

**The Trustees of  
Columbia University  
in the City of New York**

**Report on Federal Awards in Accordance with  
OMB Uniform Guidance**

**June 30, 2022**

**Employer Identification Number 13-5598093**

# The Trustees of Columbia University in the City of New York

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June 30, 2022 and 2021

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## **Report of Independent Auditors**

To The Trustees of Columbia University in the City of New York

### **Report on the Audit of the Consolidated Financial Statements**

#### ***Opinion***

We have audited the accompanying consolidated financial statements of The Trustees of Columbia University in the City of New York and its subsidiaries (the "University"), which comprise the consolidated statements of financial position as of June 30, 2022 and 2021, and the related consolidated statements of activities for the year ended June 30, 2022 and of cash flows for the years ended June 30, 2022 and 2021, including the related notes (collectively referred to as the "consolidated financial statements").

In our opinion, the accompanying consolidated financial statements present fairly, in all material respects, the financial position of the University as of June 30, 2022, and the changes in its net assets and its cash flows for the year then ended in accordance with accounting principles generally accepted in the United States of America.

#### ***Basis for Opinion***

We conducted our audit in accordance with auditing standards generally accepted in the United States of America (US GAAS) and the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States. Our responsibilities under those standards are further described in the Auditors' Responsibilities for the Audit of the Consolidated Financial Statements section of our report. We are required to be independent of the University and to meet our other ethical responsibilities, in accordance with the relevant ethical requirements relating to our audits. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

#### ***Other Matter***

We previously audited the consolidated statement of financial position as of June 30, 2021, and the related consolidated statements of activities and of cash flows for the year then ended (the statement of activities is not presented herein), and in our report dated October 20, 2021, we expressed an unmodified opinion on those consolidated financial statements. In our opinion, the information set forth in the accompanying summarized financial information as of June 30, 2021 and for the year then ended is consistent, in all material respects, with the audited consolidated financial statements from which it has been derived.

#### ***Responsibilities of Management for the Consolidated Financial Statements***

Management is responsible for the preparation and fair presentation of the consolidated financial statements in accordance with accounting principles generally accepted in the United States of America and for the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is required to evaluate whether there are conditions or events, considered in the aggregate, that raise substantial doubt about the University's ability to continue as a going concern for one year after the date the financial statements are issued.

#### ***Auditors' Responsibilities for the Audit of the Consolidated Financial Statements***

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditors' report that includes our opinion. Reasonable assurance is a high level of assurance but is not absolute assurance and therefore is not a guarantee that an audit conducted in accordance with US GAAS and *Government Auditing Standards*, will always detect a material

misstatement when it exists. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control. Misstatements are considered material if there is a substantial likelihood that, individually or in the aggregate, they would influence the judgement made by a reasonable user based on the financial statements.

In performing an audit in accordance with US GAAS and *Government Auditing Standards*, we:

- Exercise professional judgment and maintain professional skepticism throughout the audit.
- Identify and assess the risks of material misstatement of the consolidated financial statements, whether due to fraud or error, and design and perform audit procedures responsive to those risks. Such procedures include examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements.
- Obtain an understanding of internal control relevant to the University audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the University's internal control. Accordingly, no such opinion is expressed.
- Evaluate the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements.
- Conclude whether, in our judgment, there are conditions or events, considered in the aggregate, that raise substantial doubt about the University's ability to continue as a going concern for a reasonable period of time.

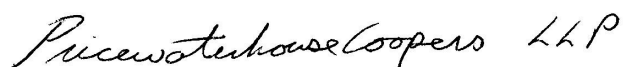
We are required to communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit, significant audit findings, and certain internal control-related matters that we identified during the audit.

### **Supplemental Information**

Our audit was conducted for the purpose of forming an opinion on the consolidated financial statements as a whole. The accompanying schedule of expenditures of federal awards for the year ended June 30, 2022 and schedule of financial responsibility data as of and for the year ended June 30, 2022 are presented for purposes of additional analysis as required by Title 2 U.S. *Code of Federal Regulations* Part 200, *Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards* (Uniform Guidance) and the Department of Education, respectively, and are not a required part of the consolidated financial statements. Such information is the responsibility of management and was derived from and relates directly to the underlying accounting and other records used to prepare the consolidated financial statements. The information has been subjected to the auditing procedures applied in the audit of the consolidated financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the consolidated financial statements or to the consolidated financial statements themselves, and other additional procedures, in accordance with auditing standards generally accepted in the United States of America. In our opinion, the schedule of expenditures of federal awards and schedule of financial responsibility data are fairly stated, in all material respects, in relation to the consolidated financial statements taken as a whole.

### **Other Reporting Required by Government Auditing Standards**

In accordance with *Government Auditing Standards*, we have also issued our report dated October 12, 2022, except with respect to Note 23 to the consolidated financial statements and the opinion on the supplemental schedule of financial responsibility ratios, as to which the date is March 28, 2023, on our consideration of the University's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts and grant agreements and other matters for the year ended June 30, 2022. The purpose of that report is solely to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing and not to provide an opinion on the effectiveness of internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the University's internal control over financial reporting and compliance.



New York, New York

October 12, 2022, except for footnote 23 with respect to the consolidated financial statements and the opinion on the schedule of financial responsibility data, as to which the date is March 28, 2023.

**The Trustees of Columbia University in the City of New York**  
**Consolidated Statements of Financial Position**  
**At June 30, 2022 and 2021**  
(in thousands of dollars)

|   | June<br>2022        | June<br>2021        |
|---|---------------------|---------------------|
| <b>Assets</b>   |                     |                     |
| Cash and cash equivalents   | \$714,875           | \$754,556           |
| Accounts receivable, net  | 637,954             | 587,688             |
| Securities held in trust by others  | 111                 | 26                  |
| Pledges receivable, net   | 581,246             | 622,853             |
| Investments, at fair value  | 14,275,431          | 15,752,353          |
| Institutional real estate   | 1,024,420           | 928,324             |
| Land, buildings, and equipment, net   | 5,053,175           | 5,027,166           |
| Right of use, lease assets  | 280,807             | 308,244             |
| Other assets  | 662,986             | 715,412             |
| <b>Total assets</b>   | <b>\$23,231,005</b> | <b>\$24,696,622</b> |
| <b>Liabilities</b>  |                     |                     |
| Accounts payable and accrued expenses   | \$431,268           | \$427,324           |
| Deferred revenue and other prepayments  | 412,843             | 400,923             |
| Finance lease obligations   | 136,087             | 129,239             |
| Right of use, lease obligations   | 290,718             | 316,329             |
| Conditional asset retirement obligations  | 130,398             | 126,828             |
| Accrued employee benefit liabilities  | 451,827             | 488,839             |
| Federal student loan funds  | 43,749              | 54,346              |
| Bonds and notes payable (including bond premium and issuance costs<br>of \$246,980 and \$272,880) (see Note 16) | 2,316,548           | 2,488,870           |
| Other long-term liabilities   | 584,336             | 638,014             |
| <b>Total liabilities</b>  | <b>4,797,774</b>    | <b>5,070,712</b>    |
| <b>Net assets</b>   |                     |                     |
| Without donor restrictions  | 8,303,326           | 8,255,479           |
| With donor restrictions   | 10,129,905          | 11,370,431          |
| <b>Total net assets</b>   | <b>18,433,231</b>   | <b>19,625,910</b>   |
| <b>Total liabilities and net assets</b>   | <b>\$23,231,005</b> | <b>\$24,696,622</b> |

See accompanying notes to the consolidated financial statements.

**The Trustees of Columbia University in the City of New York**  
**Consolidated Statements of Activities**  
**For the Year Ended June 30, 2022, with Summarized Comparative 2021 Totals**  
(in thousands of dollars)

|  | Without Donor<br>Restrictions | With Donor<br>Restrictions | June<br>2022        | June<br>2021        |
|--|-------------------------------|----------------------------|---------------------|---------------------|
| <b>Operating activities</b>  |                               |                            |                     |                     |
| <b>Revenues and support</b>  |                               |                            |                     |                     |
| Tuition and fees (net of \$524,636 and \$502,986<br>in financial aid grants, respectively) | \$1,469,287                   |                            | \$1,469,287         | \$1,138,470         |
| Government grants and contracts:   |                               |                            |                     |                     |
| Direct   | 905,073                       |                            | 905,073             | 814,851             |
| Indirect   | 307,562                       |                            | 307,562             | 281,011             |
| Private gifts, grants and contracts:   |                               |                            |                     |                     |
| Direct   | 324,971                       | \$210,431                  | 535,402             | 542,205             |
| Indirect   | 37,756                        |                            | 37,756              | 32,095              |
| Revenue from other educational and<br>research activities                                  | 216,546                       |                            | 216,546             | 199,602             |
| Patient care revenue   | 1,511,543                     |                            | 1,511,543           | 1,480,146           |
| Investment income and gains utilized   | 407,292                       | 236,485                    | 643,777             | 607,009             |
| Sales and services of auxiliary enterprises  | 200,108                       |                            | 200,108             | 99,714              |
| Net assets released from restrictions  | 648,814                       | (648,814)                  |                     |                     |
| <b>Total operating revenues and support</b>  | <b>6,028,952</b>              | <b>(201,898)</b>           | <b>5,827,054</b>    | <b>5,195,103</b>    |
| <b>Expenses</b>  |                               |                            |                     |                     |
| Instruction and educational administration   | 2,093,132                     |                            | 2,093,132           | 1,905,340           |
| Research   | 812,624                       |                            | 812,624             | 734,211             |
| Patient care expense   | 1,317,600                     |                            | 1,317,600           | 1,246,626           |
| Operation and maintenance of plant   | 322,252                       |                            | 322,252             | 312,826             |
| Institutional support  | 360,300                       |                            | 360,300             | 345,088             |
| Auxiliary enterprises  | 184,638                       |                            | 184,638             | 147,938             |
| Depreciation   | 329,390                       |                            | 329,390             | 290,839             |
| Interest   | 58,039                        |                            | 58,039              | 61,458              |
| <b>Total expenses</b>  | <b>5,477,975</b>              |                            | <b>5,477,975</b>    | <b>5,044,326</b>    |
| <b>Change in net assets from operating activities</b>                                      | <b>550,977</b>                | <b>(201,898)</b>           | <b>349,079</b>      | <b>150,777</b>      |
| <b>Nonoperating activities</b>   |                               |                            |                     |                     |
| Endowment gifts  |                               | 171,090                    | 171,090             | 152,401             |
| Current year realized and unrealized capital<br>gains (losses)                             | (295,260)                     | (756,711)                  | (1,051,971)         | 3,435,405           |
| Endowment appreciation utilized  | (193,077)                     | (406,562)                  | (599,639)           | (583,062)           |
| Change in net assets held by CPMC Fund, Inc.   | (20)                          | (7,342)                    | (7,362)             | 4,084               |
| Change in funds held by others in perpetuity   |                               | (33,830)                   | (33,830)            | 43,696              |
| Present value adjustment to split-interest agreements                                      | 1,165                         | (41,383)                   | (40,218)            | 48,634              |
| Net periodic benefit cost other than service cost  | 16,085                        |                            | 16,085              | 7,489               |
| Changes in pension and postretirement obligations  | (3,348)                       |                            | (3,348)             | 77,176              |
| Other  | 2,124                         | 5,311                      | 7,435               | (4,212)             |
| Reclassification   | (30,799)                      | 30,799                     |                     |                     |
| <b>Change in net assets from nonoperating activities</b>                                   | <b>(503,130)</b>              | <b>(1,038,628)</b>         | <b>(1,541,758)</b>  | <b>3,181,611</b>    |
| <b>Change in net assets</b>  | <b>47,847</b>                 | <b>(1,240,526)</b>         | <b>(1,192,679)</b>  | <b>3,332,388</b>    |
| <b>Net assets at beginning of year</b>   | <b>8,255,479</b>              | <b>11,370,431</b>          | <b>19,625,910</b>   | <b>16,293,522</b>   |
| <b>Net assets at end of year</b>   | <b>\$8,303,326</b>            | <b>\$10,129,905</b>        | <b>\$18,433,231</b> | <b>\$19,625,910</b> |

See accompanying notes to the consolidated financial statements.

**The Trustees of Columbia University in the City of New York**  
**Consolidated Statements of Cash Flows**  
**For the Years Ended June 30, 2022 and 2021**  
(in thousands of dollars)

|  | June<br>2022     | June<br>2021       |
|--|------------------|--------------------|
| <b>Cash flows from operating activities</b>  |                  |                    |
| (Includes adjustments to reconcile change in net assets to net cash provided by operating activities):               |                  |                    |
| Change in net assets   | (\$1,192,679)    | \$3,332,388        |
| Depreciation expense   | 329,390          | 290,839            |
| Institutional real estate depreciation   | 31,143           | 29,981             |
| Change in right of use leases and interest on finance lease obligations and conditional asset retirement obligations | 17,877           | 15,248             |
| Realized and unrealized (gains) losses   | 1,104,588        | (3,409,378)        |
| Partnership distributions  | 809,895          | 858,552            |
| Contributions restricted for permanent investment, plant, and split-interest agreements                              | (246,076)        | (220,249)          |
| Contributions other than cash  | (1,083)          | (358)              |
| Present value adjustments and actuarial liability for split-interest agreements                                      | 40,218           | (48,634)           |
| Accreted interest on bonds   | 408              | 448                |
| Change in unamortized bond premium and issuance costs  | (25,900)         | (26,318)           |
| Change in fair value of net assets held by CPMC Fund, Inc.   | 7,362            | (4,084)            |
| Change in fair value of interest in perpetual trusts held by others  | 33,830           | (43,696)           |
| Change in operating assets and liabilities:  |                  |                    |
| Accounts receivable, net   | (50,266)         | (44,522)           |
| Pledges receivable, net  | 41,607           | 3,499              |
| Other assets   | 6,198            | (45,708)           |
| Accounts payable and accrued expenses  | 41,259           | 1,506              |
| Deferred revenue and other prepayments   | 11,920           | 58,578             |
| Accrued employee benefit liabilities   | (37,012)         | 55,136             |
| Conditional asset retirement obligations and other long-term liabilities   | (11,651)         | 24,964             |
| <b>Net cash provided by operating activities</b>   | <b>911,028</b>   | <b>828,192</b>     |
| <b>Cash flows from investing activities</b>  |                  |                    |
| Proceeds from sales of investments   | 3,489,217        | 5,519,175          |
| Purchases of investments   | (3,966,980)      | (6,280,325)        |
| Collections from student notes   | 9,715            | 11,904             |
| Student notes issued   | (3,353)          | (4,292)            |
| Proceeds from / (Investment in) cash and securities held in trust by others  | (85)             | 91                 |
| Purchases of institutional real estate   | (127,239)        | (28,089)           |
| Purchases of plant and equipment   | (377,281)        | (421,563)          |
| <b>Net cash used by investing activities</b>   | <b>(976,006)</b> | <b>(1,203,099)</b> |
| <b>Cash flows from financing activities</b>  |                  |                    |
| Proceeds from contributions for:   |                  |                    |
| Investment in endowment  | 184,585          | 154,179            |
| Investment in plant  | 57,159           | 62,915             |
| Investment in split-interest agreements  | 4,332            | 3,155              |
| Investment income on split-interest agreements   | 3,270            | 3,413              |
| Payments on split-interest agreements  | (6,018)          | (5,817)            |
| Payments on finance lease obligations  | (16,796)         | (16,791)           |
| Repayment of taxable commercial paper  |                  | (150,000)          |
| Proceeds from taxable commercial paper issuance  | 25               | 125,028            |
| Repayment of bonds and notes payable   | (146,855)        | (298,774)          |
| Proceeds from bond and note issuance   |                  | 305,000            |
| Net change in federal student loan funds   | (10,597)         | (8,054)            |
| <b>Net cash provided by financing activities</b>   | <b>69,105</b>    | <b>174,254</b>     |
| Net change in cash and cash equivalents  | 4,127            | (200,653)          |
| Cash and cash equivalents at beginning of year   | 854,305          | 1,054,958          |
| Cash and cash equivalents at end of year   | <b>\$858,432</b> | <b>\$854,305</b>   |
| Supplemental disclosures of cash flow information:   |                  |                    |
| Cash and cash equivalents as shown in the Statements of Financial Position   | \$714,875        | \$754,556          |
| Cash included in Investments, at fair value (see Note 6)   | 143,557          | 99,749             |
| Total cash and cash equivalents as shown on the Consolidated Statements of Cash Flows                                | <b>\$858,432</b> | <b>\$854,305</b>   |
| Change in accounts payable for land, buildings, and equipment  | \$37,315         | \$21,362           |
| Equipment and space acquired through finance lease obligations   | \$2,537          | \$8,924            |
| Right of use, lease assets acquired through new right of use lease obligations                                       | \$1,962          | \$13,096           |
| Cash paid during the year for interest   | \$92,540         | \$103,456          |
| Noncash debt extinguishment  | (\$15,235)       |                    |

See accompanying notes to the consolidated financial statements.

# The Trustees of Columbia University in the City of New York

## Notes to the Consolidated Financial Statements

### For the Years Ended June 30, 2022 and 2021

(in thousands of dollars, unless otherwise noted)

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#### 1. Organization

The Trustees of Columbia University in the City of New York (the “University”) is a private, nonsectarian, nonprofit institution of higher education whose activities are concentrated at three locations in New York City and extend around the globe. The University provides instruction through seventeen undergraduate, graduate, and professional schools. It operates a variety of research institutes and a library system to support its teaching, learning, and research activities. The University performs research, training, and other services under grants and contracts with agencies of the federal government and other sponsoring organizations. The University enrolls approximately 35,345 full-time and part-time students and employs approximately 18,622 full-time employees, including 7,016 full-time faculty members and research staff. Of these, 1,326 hold positions in the arts and sciences, 4,193 hold health science positions, and the remainder hold positions in the other professional schools.

The University is a New York nonprofit corporation recognized as tax exempt under Section 501(c)(3) of the Internal Revenue Code.

#### **Columbia University Irving Medical Center**

Columbia University Irving Medical Center (“CUIMC”), a division of the University, located in the Washington Heights section of northern Manhattan, is one of the largest academic medical centers in the United States. It is composed of four schools: Vagelos College of Physicians and Surgeons, Mailman School of Public Health, College of Dental Medicine, and School of Nursing.

CUIMC has three primary areas of focus: patient care, scientific research, and education. CUIMC offers a wide variety of degrees, certifications, and continuing education in health sciences. Faculty patient care services, sponsored research, tuition, endowment income, patent royalties, and gifts provide the majority of CUIMC’s revenues. Approximately 4,582 students are enrolled at CUIMC with a full-time faculty of 2,830 of whom approximately 351 are tenured. Additionally, CUIMC’s staff includes 2,597 part-time faculty instructors, 1,323 full-time and 208 part-time researchers, 178 post-doctoral research trainees, and 1,229 post-doctoral clinical trainees. Approximately 64 percent of the full-time faculty and 20 percent of the part-time faculty hold clinical appointments and have admitting privileges at New York-Presbyterian (“NYP”)/CUIMC Campus.

Patient care activities include patient visits performed by Columbia faculty through its medical faculty practice plan, as well as clinical, educational and administration services provided to hospitals and other health care institutions through contractual agreements for services.

CUIMC maintains several clinical and education affiliation agreements with other organizations. The most significant affiliation agreements are with NYP, Lawrence Hospital, and Harlem Hospital. Certain faculty physicians also provide patient care and supervision of residents at NYP network hospitals and other affiliates. In addition, through interinstitutional professional service agreements and medical service agreements, CUIMC faculty provide patient care in specialty and subspecialty areas at hospitals in the tristate area and in other parts of the country and the world.

During the year ended June 30, 2022, the clinical faculty handled approximately 2.3 million outpatient and emergency room visits and participated in instruction and supervision of 597 University medical students and 1,031 residents and fellows at NYP. CUIMC physicians generated approximately 59,000 NYP hospital admissions during the year.



**The Trustees of Columbia University in the City of New York**  
**Notes to the Consolidated Financial Statements**  
**For the Years Ended June 30, 2022 and 2021**  
**(in thousands of dollars, unless otherwise noted)**

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Payments for patient care services provided by the full-time faculty in both institutional and private office settings are derived mainly from third-party payers, including commercial insurance and managed care companies (62 percent), Medicare (20 percent), Medicaid (13 percent), and direct patient payment (5 percent).

**Other Activities**

The University holds a number of limited liability companies, not-for-profit corporations and international organizations, which are established to facilitate various program and research objectives, and the results of which are included in the University's consolidated financial statements, including:

- Columbia Investment Management Company, LLC, a New York limited liability company formed by the University to manage the University's investment assets under the supervision of a Board appointed by the Trustees of the University and subject to the oversight of the Committee on Finance of the Trustees.
- Reid Hall Inc., located in Paris, France, which was donated to the University in 1964. Reid Hall, Inc., a corporation organized under New York membership corporation law as an educational and charitable organization, operates Reid Hall to promote, facilitate, and aid the educational, cultural, and social interests of students studying in France.
- Columbia University Healthcare, Inc., a not-for-profit practice entity in which the University is the sole corporate member.
- Columbia Doctors of New Jersey, P.C, Columbia Doctors of Bergen County, P.C. and Columbia Doctors of Connecticut, which are professional corporations in which the University is the sole corporate member.

The University also provides investment custodial services and manages all of the assets of Columbia Presbyterian Medical Center Fund, Inc. ("CPMC Fund, Inc."), a not-for-profit corporation that was created to hold and receive gifts for the University and NYP. The consolidated financial statements reflect the University's interest in the net assets of CPMC Fund, Inc. as well as the assets and amounts due to NYP.

**The Trustees of Columbia University in the City of New York**  
**Notes to the Consolidated Financial Statements**  
**For the Years Ended June 30, 2022 and 2021**  
**(in thousands of dollars, unless otherwise noted)**

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**2. Summary of Significant Accounting Policies**

The significant accounting policies of the University are as follows:

**Basis of Consolidation**

The consolidated financial statements of the University include the accounts of all academic and administrative departments of the University.

All significant intercompany accounts have been eliminated in consolidation.

**Basis of Presentation**

The University maintains its accounts in accordance with the principles of fund accounting. Under this method of accounting, resources for various purposes are classified into funds that are consistent with activities or objectives specified by donors. Separate accounts are maintained for each fund.

For reporting purposes, the University prepares its consolidated financial statements in accordance with accounting principles generally accepted in the United States of America (“GAAP”), including the provisions of Financial Accounting Standards Board (“FASB”) Accounting Standards Codification (“ASC”) Topic 958 Not-for-Profit Entities that requires resources be classified for reporting purposes based on the existence or absence of donor-imposed restrictions. Accordingly, the University classifies fund balances as without donor restrictions or with donor restrictions.

The consolidated financial statements of the University have, in all material respects, been prepared on an accrual basis.

**Revenues and Expenses**

Revenues are reported as increases in net assets without donor restrictions unless the use of those assets is limited by donor-imposed restrictions. Expenses are reported as decreases in net assets without donor restrictions. Gains and losses on investments are reported as increases or decreases in net assets without donor restrictions, unless their use is restricted by explicit donor stipulation or by law.

**Revenue Recognition**

Revenue related to exchange transactions is recognized under the provisions of the applicable ASC Topic, which is typically ASC Topic 606, Revenue from Contracts with Customers.

ASC Topic 606, Revenue from Contracts with Customers, requires performance of the following steps as part of the revenue recognition assessment:

- Step 1 – Identify the contract(s) with a customer
- Step 2 – Identify the performance obligation(s) in the contract
- Step 3 – Determine the transaction price
- Step 4 – Allocate the transaction price to the performance obligation(s) in the contract
- Step 5 – Recognize revenue when the entity satisfies a performance obligation

The University recognizes contributions in accordance with the revenue recognition provisions of ASC Topic 958-605, Not-for-Profit Entities. Revenue is considered a contribution if it is determined not to be an exchange transaction.

**The Trustees of Columbia University in the City of New York**  
**Notes to the Consolidated Financial Statements**  
**For the Years Ended June 30, 2022 and 2021**  
**(in thousands of dollars, unless otherwise noted)**

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Revenue recognition for the University's significant types of revenue is discussed below.

***Tuition, Fees, Room and Board, and Financial Aid***

Tuition and fees revenue is derived from degree programs and executive and continuing education programs and room and board revenue is derived from the provision of room and board services to students. Tuition and fees are recorded net of scholarships and other discounts and waivers ("Financial aid grants") and displayed in the consolidated statements of activities in "Tuition and fees". Room and board revenues are included as part of "Sales and services of auxiliary enterprises", however the recognition process mirrors that for tuition and fees. Each of these items is supported by separate contracts entered into between the University and the individual student.

Tuition and fees and room and board revenues are recognized as operating revenue in the period in which the University satisfies its performance obligations to its students. A performance obligation is a promise in a contract to transfer a distinct good or service to the customer and is the unit of accounting in ASC Topic 606. The University's performance obligations are to provide education to the student and, in certain instances, other items such as room and board. The University recognizes tuition and fees and room and board on a straight-line basis over each academic session based on gross price, net of explicit price concessions such as financial aid grants which are applied to tuition and fees. The value that is recognized for each performance obligation is set forth in publicly available University price lists and is codified in the individual contracts with each student. Individual contracts for tuition and fees and room and board display the transaction price on a standalone basis for each service to be provided to each specific student. Additionally, the contract will contain the price adjustment in the form of financial aid grants that are being awarded to the student. Given the timing of each year's academic sessions, nearly all performance obligations on behalf of the University are completed within the fiscal year.

The timing(s) of billings, cash collections and revenue recognition results in accounts receivable and deferred revenue and student deposits on the consolidated statements of financial position. Receivables are recognized only to the extent that it is probable that the University will collect substantially all of the consideration to which it is entitled in exchange for goods and services transferred to the student. Receipts received in advance of goods and services performed are recorded as deferred revenue or student deposits.

***Contributions and Pledges Receivable***

Contributions for University operations and plant, including unconditional promises to give ("pledges"), are recognized as operating revenue in the period earned. Contributions to endowment are recognized as nonoperating revenue in the period earned. Amounts expected to be collected in future years are recorded at the present value of estimated future cash flows, net of an allowance for uncollectable pledges. The discounts on those pledges are computed using an interest rate for the year in which the promise was received and considers market and credit risk as applicable. Subsequent years' accretion of the discount is included in contribution revenue. Conditional promises to give are not recognized as revenue until such time as the conditions are met.

***Grant and Contract Income***

The University receives sponsored program grant and contract income from governmental and private sources. The funding may represent a nonreciprocal transaction in which the resources provided are for the benefit of the University, the funding organization's mission, or the public at large or it may be a reciprocal transaction in exchange for an equivalent benefit in return.

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Revenues from exchange transactions are recognized as performance obligations are satisfied which in most cases mirrors the timing of when related costs are incurred. Revenues from non-exchange transactions may be subject to conditions in the form of both a barrier to entitlement and a refund of amounts paid (or a release from obligation to make future payments). The University recognizes revenue earned from conditional non-exchange transactions when the barrier is satisfied, typically as related costs are incurred. At June 30, 2022, the University has grants or contracts for which it has not yet met all obligations to recognize revenue, or the right to recognize revenue is dependent on future events. These open commitments total \$3.2 billion and it is expected that revenue will be recognized as the University fulfills its obligations over several years. In addition, the University has elected the simultaneous release option for conditional contributions that are also subject to purpose restrictions. Under this option, net assets without donor restrictions will include the donor-restricted contributions if the purpose restrictions are met in the same reporting year as the revenue is recognized.

Indirect cost recoveries on federally sponsored programs, such as the recovery of facilities and administrative (F&A) costs, are at reimbursement rates negotiated with the University's cognizant agency, the Department of Health and Human Services. The University entered into an agreement with the federal government which defines the rate at which the University can be reimbursed for F&A costs applicable to federal on-campus research effective July 1, 2021. This agreement will remain in place until such time a new agreement is reached.

***Patient Care Revenue and Expense***

Patient care activities relate to four distinct areas: medical faculty practice plans, affiliation agreements, medical and professional service agreements, and dental clinic.

Patient care expenses include direct expenses associated with providing patient care services, as well as administrative functions within the University's faculty practice organization. Patient care expense does not include rent or utilities in clinical space, as those costs are aggregated with all University space costs within "Operation and maintenance of plant".

The University provides medical care to patients via its ColumbiaDoctors faculty practice, primarily under agreements with third-party payers. The University determines performance obligations based on the nature of the services provided. Generally these performance obligations, regardless of whether the patient is receiving outpatient or inpatient services, are satisfied when the service is provided. The University bills third-party payers and patients after performance obligations are satisfied. For the limited number of patient service performance obligations that will be satisfied over a period of time, it is expected that these obligations will generally be completed soon after the end of the reporting period and the revenue related to the unsatisfied obligation will be deferred into the following fiscal year.

The University determines transaction price based on gross charges for services provided which are established on an annual basis and uniformly applied. The gross charges may be reduced by explicit price concessions, which include contractual adjustments based on agreements with third-party payers or by implicit price concessions provided to uninsured patients, which are reflected as an allowance for doubtful accounts. The University determines its allowance for doubtful accounts based on its historical collection experience with these classes of patients using a portfolio approach as a practical expedient to account for patients as a collective group rather than individually. The impact of using this practical expedient does not have a material effect on the consolidated financial

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statements. In addition, the University takes into account current and future conditions that may further impact collectability.

The University maintains several clinical and education affiliation agreements with other organizations, the largest of which is with NYP. Under these affiliation agreements, the University has a performance obligation to provide medical, professional, and supervisory staff as well as other technical assistance and clinical services. Additionally, the University operates clinical departments for specific purposes, including administration, supervision, and teaching of the NYP resident staff as well as clinical programs that the University and NYP would like to see developed or expanded. The transaction price for the provision of these services is the result of an annual negotiation between the University and the other parties to the affiliation agreements that takes the form of a joint budget agreement. All material services are performed by the University, based on the terms of the agreements, within the University's fiscal year and the related revenue is recognized accordingly in the consolidated financial statements. The revenues and expenses from these agreements are accounted for in patient care and education categories of the operating activity in the consolidated statements of activities.

***Research and Development***

The University engages in numerous research and development projects, which may be partially or fully sponsored by governmental and private funds. These costs are charged to operating expense as incurred. The University periodically funds and develops patents for certain technologies, then licenses the usage of these patents to companies for a specified period of time. The revenue, net of payments due to third parties, is recorded in "Revenue from other educational and research activities" in the consolidated statements of activities. Costs incurred with developing and maintaining these patents are expensed as incurred.

***Institutional Support***

Institutional support expense includes central administrative functions and expenses that support the management of the University. This category also includes any net operating surplus or deficit of the University's benefit pool, as recoveries from units across the University may be less than or greater than benefits paid in a given year.

***Cash and Cash Equivalents***

Cash and cash equivalents are recorded at fair value and include several depository accounts, checking accounts, institutional money market funds, and similar temporary investments with maturities of three months or less at the date of purchase. The University has elected to classify cash equivalents that are part of the University's investment portfolio as short-term investments.

***Investments***

The University's investments, consisting primarily of publicly traded fixed income and equity securities, alternative investments, and cash held for reinvestment, are stated at fair value as of June 30, 2022 and 2021. Alternative investments include investments in absolute return strategy funds, private equity funds, and real asset funds. The management of each respective fund provides the fair value of the investment. The University reflects its share of the partnerships or corporations in the consolidated financial statements.

Fair value is defined as the exchange price that would be received for an asset or paid to transfer a liability (an exit price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants on the measurement date. The University believes

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that the net asset value of its alternative investments is a reasonable estimate of fair value as of June 30, 2022 and 2021. Because alternative investment funds are not marketable, the estimated value is subject to uncertainty and, therefore, may differ from the value that would have been used had a ready market for the investment existed. Such differences could be material. The amount of gain or loss associated with these investments is reflected in the consolidated financial statements based on the University's proportionate share in the net assets of these investments.

The University's presentation in the consolidated statements of cash flows for limited liability partnerships, limited liability corporations, and other similarly structured investments is consistent with the accounting for equity method investments as it represents the underlying nature of these investments in which the University has a capital account.

The University records purchases and sales of securities on a trade-date basis. Realized gains and losses are determined on the basis of average cost of securities sold and are reflected in the consolidated statements of activities. Dividend income is recorded on the ex-dividend date, and interest income is recorded on an accrual basis.

**Split-Interest Agreements**

The University's split-interest agreements with donors consist primarily of charitable gift annuities, pooled income funds, and irrevocable charitable remainder trusts for which the University serves as custodian and trustee. Assets are invested and payments are made to donors and/or other beneficiaries in accordance with the respective agreements. In the case of irrevocable split-interest agreements whose assets are held in trusts not administered by the University (third-party charitable trusts), the University will recognize its beneficial interest when it receives sufficient reliable information and documentation that establishes the trust's existence, the University's beneficial interest, and the value of that interest.

Contribution revenues for split-interest agreements are recognized at the dates the agreements are established net of the present value of the estimated future payments to be made to the beneficiaries, if applicable, under these agreements. The discounts on those agreements are computed using an interest rate for the year in which the contribution was received and considers market and credit risk as applicable. Assets related to these agreements are recorded in "Investments, at fair value" and the liability for the present value of the estimated future payments to be made to the beneficiaries is recorded in "Other long-term liabilities" in the consolidated statements of financial position. Adjustments to the fair value of these agreements are recorded in the consolidated statements of activities under "Present value adjustment to split-interest agreements".

**Institutional Real Estate**

Institutional real estate consists primarily of properties proximate to the University's Morningside and Washington Heights campuses, the primary purpose of which is to house faculty, staff, and graduate students. The income earned on this investment is used primarily to finance operating expenditures. The properties are valued at cost and depreciated over useful lives ranging from twelve and one half to fifty years.

**Land, Buildings, and Equipment**

Land, buildings, and equipment are stated at cost net of accumulated depreciation. Depreciation is calculated on a straight-line basis over useful lives ranging from ten to one hundred years for buildings and building improvements and two to twenty years for equipment, consistent with the

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method used for government cost reimbursement purposes. Capitalized software costs are amortized over seven years. Upon disposal of assets, the costs and accumulated depreciation are removed from the accounts, and the resulting gain or loss is included in nonoperating activities.

**Collections**

The University's collections include works of art, literary works, historical treasures and artifacts maintained in the University's libraries and museums. These collections are protected and preserved for public exhibition, education, research, and the furtherance of public service. Proceeds realized from deaccessioning collection items are to be used for the acquisition of new items for the University's collection and/or enhancing the life, usefulness or quality of the existing collection through long-term direct care and preservation, which includes conservation care, cataloging and documenting and proper access and use of the collection. Accordingly, such collections are not capitalized and contributed items are not recognized as revenue for financial statement purposes.

**Interest in Perpetual Trusts Held by Others**

The University is the beneficiary of certain perpetual trusts administered by others. These trusts are recognized as contributions with donor restrictions when the University receives sufficient reliable information and documentation that establishes the trust's existence, the University's beneficial interest, and the value of that interest. The fair value of the interest in these perpetual trusts is based on the University's proportional share of the fair value of assets reported by the trust, and is recorded in "Other assets" in the consolidated statements of financial position. Adjustments to the fair value of the University's interest are reported as "Change in funds held by others in perpetuity" in nonoperating activity in the consolidated statements of activities.

**Leases**

The University enters into lease arrangements for space and equipment and, upon entering in an arrangement, determines the appropriate treatment in accordance with ASU 2016-02, Leases (Topic 842). Arrangements in which substantially all of the risks of ownership have been transferred to the University are accounted for as finance leases and extend up to seven years for equipment and up to 50 years for space.

Arrangements which do not qualify for finance lease treatment but still provide the University the right to use the underlying asset are deemed to be operating leases. These leases are recorded on the statement of financial position as "Right of use, lease assets" and "Right of use, lease obligations". The University has elected the short-term lease exemption policy which permits an entity to not capitalize short-term Right of use, lease assets in its statement of financial position. The University uses an incremental borrowing rate for discounting leases, as applicable, and has elected to separate lease and non-lease components in the calculation of the Right of use, lease assets and lease obligations. Right of use leases typically extend up to five years for equipment and up to 20 years for space.

**Conditional Asset Retirement Obligations**

Conditional asset retirement obligations are recognized for remediation or disposal of asbestos, underground storage tanks, soil, and radioactive sources and equipment as required by law. The fair value of the liability is recognized in the period in which it occurred, provided that it can be reasonably estimated.

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**Other Long-Term Liabilities**

Other long-term liabilities are obligations that extend beyond one year, or operating cycle, whichever is longer. The obligations for medical malpractice liabilities, self-insurance reserves, the fixed payer interest rate swap agreement, split-interest agreement liabilities, and other commitments are categorized in other long-term liabilities.

**Use of Estimates**

Management makes estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the consolidated financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates. The most significant estimates include valuation of investments without readily determinable prices in active markets, useful lives of depreciable assets, actuarially determined costs associated with split-interest agreements, pension, postemployment and postretirement benefits, explicit and implicit price concessions for patient and other receivables, insurance obligations, and conditional asset retirement obligations.

**2021 Presentation**

Within the consolidated statements of activities, prior year presentation of net asset categorization has been condensed for comparative purposes. Accordingly, such information should be read in conjunction with the University's audited consolidated financial statements for the year ended June 30, 2021. Further, certain prior year information has been reclassified to conform to current year presentation.

**New Authoritative Pronouncements**

In September 2020, the FASB issued ASU No. 2020-07, Not-for-Profit Entities (Topic 958), Presentation and Disclosures by Not-for-Profit Entities for Contributed Nonfinancial Assets. The ASU amends financial reporting requirements in Topic 958, Not-for-Profit Entities by providing new presentation and disclosures requirements about contributed nonfinancial assets for NFP. The University adopted ASU No. 2020-07 for the fiscal year ended June 30, 2022 with no material impact on the consolidated financial statements.

In August of 2018, the FASB issued ASU No. 2018-14, Compensation-Retirement Benefits-Defined Benefit-General (Subtopic 715-20) Disclosure Framework-Changes to the disclosure requirements for defined benefit plans. The ASU removes certain disclosure requirements and adds other new requirements. The University adopted ASU No. 2018-14 for the fiscal year ended June 30, 2022 with no material impact on the consolidated financial statements. See Note 13 for disclosures about pension and other postretirement benefits.

In August 2018, the FASB issued ASU No. 2018-15, Intangibles – Goodwill and Other – Internal-Use Software (Subtopic 350-40). The ASU amends financial reporting requirements in ASU No. 2015-05, Intangibles—Goodwill and Other—Internal-Use Software (Subtopic 350-40): Customer's Accounting for Fees Paid in a Cloud Computing Arrangement. The new guidance aligns the requirements for capitalizing implementation costs incurred in a hosting arrangement that is a service contract with the requirements for capitalizing implementation costs incurred to develop or obtain internal use software. The University adopted ASU No. 2018-15 for the fiscal year ended June 30, 2022 with no material impact on the consolidated financial statements.



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**3. Net Assets**

The University classifies its net assets as without donor restrictions or with donor restrictions. Periodically, donor redesignations may result in reclassifications of net assets. Descriptions of the two net asset categories and the types of transactions affecting each category follow.

*Without Donor Restrictions*—Net assets that are not subject to explicit donor-imposed restrictions. This category includes funds designated by the Board of Trustees to function as endowment and other undesignated funds such as tuition and other current funds, gifts without restrictions (including gifts whose donor-imposed restrictions were met during the fiscal year), net investment in plant, and student loan funds.

*With Donor Restrictions*—Net assets that are subject to explicit donor-imposed stipulations. This includes net assets with donor restrictions that will be satisfied by actions of the University, the passage of time, or both. These net assets include gifts for which the donor-imposed restriction(s) have not been met in the year of receipt (including gifts for capital projects not yet placed in service), pledges, split-interest agreements, and net assets from donor-restricted endowments not yet appropriated for spending. Once the restrictions are satisfied, or have been deemed to have been satisfied, net assets with donor restrictions are reclassified to net assets without donor restrictions.

Also included in this category are net assets with donor restrictions that require these to be maintained permanently by the University and invested to provide a perpetual source of income. Net assets with donor restrictions that are permanent include (a) the original value of gifts donated to the permanent endowment, (b) the original value of subsequent gifts to the permanent endowment, and (c) realized and unrealized gains and losses to the permanent endowment when stipulated by the donor gift instrument.

The composition of the University's net assets as of June 30 are as follows:

|  | <u>2022</u>          | <u>2021</u>          |
|--|----------------------|----------------------|
| With Donor Restrictions                      |                      |                      |
| Endowment funds                              | \$ 8,962,550         | \$ 9,900,513         |
| Unexpended capital and other <sup>(a)</sup>  | 474,197              | 695,884              |
| Pledges receivable                           | 581,246              | 622,853              |
| Annuity and life income funds                | 111,912              | 151,181              |
| Total, Net Assets With Donor Restrictions    | <u>10,129,905</u>    | <u>11,370,431</u>    |
| Without Donor Restrictions                   |                      |                      |
| Board designated endowment                   | 4,317,296            | 4,449,457            |
| Undesignated                                 | 3,986,030            | 3,806,022            |
| Total, Net Assets Without Donor Restrictions | <u>8,303,326</u>     | <u>8,255,479</u>     |
| Total Net Assets                             | <u>\$ 18,433,231</u> | <u>\$ 19,625,910</u> |

<sup>(a)</sup> Includes capital gifts not yet released from restriction, unspent gift and endowment income balances, and student loan funds.

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**4. Operating Measurement**

The University divides its consolidated statements of activities into operating and nonoperating activities. The operating activities of the University include all income and expenses related to carrying out its mission focused on education, research, and patient care. Operating revenues include investment income and endowment appreciation utilized to fund current operations, the largest portion of which is the distribution of funds budgeted in accordance with the endowment spending rule.

Nonoperating activities include current year realized and unrealized gains and losses on investments, including realized gain distributions from fund investments, less amounts withdrawn from endowment appreciation to fund operations. Nonoperating activities also include new gifts to donor-restricted endowments that the University must hold in perpetuity, changes in net assets held by CPMC Fund, Inc., changes in funds held by others in perpetuity, present value adjustments to split-interest agreements, net periodic benefit cost other than service cost, changes in pension and postretirement obligations, other items, and reclassifications.

**5. Patient Care Revenue**

The University's affiliation agreements with area hospitals generated \$446.4 million and \$412.6 million of revenue for the years ended June 30, 2022 and 2021, respectively. As of June 30, 2022 and 2021, "Accounts receivable, net" includes \$127.2 million and \$122.8 million, respectively, relating to these agreements.

Medical faculty practice revenue is reported at the estimated net realizable amounts from patients, third-party payers, and others for services rendered. Medical faculty practice revenues are \$926.0 million and \$938.4 million for the years ended June 30, 2022 and 2021, respectively. As of June 30, 2022 and 2021, patient accounts receivable amounts to \$115.2 million and \$115.5 million, respectively. Medical service agreements generated \$41.5 million and \$35.8 million of revenue for the years ended June 30, 2022 and 2021, respectively, and other patient care activities generated \$97.7 million and \$93.3 million of revenue for the years ended June 30, 2022 and 2021, respectively.

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**6. Long-Term Investments and Fair Value**

The University values its investments at fair value for financial assets and liabilities. Fair value is defined as the exchange price that would be received for an asset or paid to transfer a liability (an exit price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants on the measurement date. GAAP establishes a hierarchy of valuation inputs based on the extent to which the inputs are observable in the marketplace. Observable inputs reflect market data obtained from sources independent of the reporting entity. Unobservable inputs reflect the entity's own assumptions about how market participants would value an asset or liability based on the best information available. Valuation techniques used to measure fair value utilize relevant observable inputs and minimize the use of unobservable inputs.

The University follows a fair value hierarchy based on three levels of inputs, described below:

Fair value for Level 1 is based on quoted prices in active markets that the University has the ability to access for identical assets and liabilities. Market price data is generally obtained from exchange or dealer markets. The University does not adjust the quoted price for such assets and liabilities.

Fair value for Level 2 is based on quoted prices for similar instruments in active markets, quoted prices for identical or similar instruments in markets that are not active, or inputs other than quoted prices that are observable.

Fair value for Level 3 is based on valuation techniques that use significant inputs that are unobservable as they are not actively traded.

A financial instrument's categorization within the valuation hierarchy is based upon the lowest level of input that is significant to the fair value measurement. In determining the categorization of the University's investments within the fair value hierarchy, the University has considered market information including observable net asset values and the length of time until the investment will become redeemable. Investments for which fair value is measured using net asset values ("NAV") as a practical expedient are excluded from the hierarchy and have been reported separately within the table below. The categorization of a financial instrument within the hierarchy is based upon the pricing transparency of that instrument and does not necessarily correspond to the University's perceived risk of that instrument.

From time to time, the University may hold direct real estate investments. These investments are categorized as Level 3 within the fair value hierarchy. Valuation for material directly held real estate investments is determined from periodic valuations prepared by independent appraisers or broker opinions.

The University holds certain investments for which fair value is determined generally by using the unadjusted NAV per share as provided by the fund management as a practical expedient. Investments categorized as NAV include the University's ownership in funds that invest in alternative assets (i.e. absolute return strategy funds, private equity funds, and real asset funds) and funds that invest in equity and fixed income strategies for which observable net asset values are not available. The value of the University's investments in these funds represents the University's ownership interest in the net asset value of the respective fund. Items classified as NAV do not have a quoted price in an active market place. As a practical expedient, the University estimates the fair value of an investment at the measurement date using the NAV reported by the fund

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manager without further adjustment, provided the NAV has been calculated in accordance with or in a manner consistent with GAAP, and provided further that the University does not expect to sell the investment at a value other than NAV. The University has various processes and controls in place to ensure investment fair value is reasonable and performs various due diligence procedures over its investments including an assessment of applicable accounting policies, a review of the valuation procedures employed, and consideration of redemption features and price transparency.

The following tables present assets measured at fair value and NAV at June 30, 2022 and June 30, 2021.

|   | <b>2022</b>      |                |                |                   |                      |
|---|------------------|----------------|----------------|-------------------|----------------------|
|   | <b>Level 1</b>   | <b>Level 2</b> | <b>Level 3</b> | <b>NAV</b>        | <b>Total</b>         |
| <b>Investments:</b>                         |                  |                |                |                   |                      |
| Cash and short-term investments             | \$ 1,018,503     | \$ 376,927     |                |                   | \$ 1,395,430         |
| Global equities                             | 802,015          | 500,136        | \$ 658         | \$ 2,105,044      | 3,407,853            |
| Fixed income                                | 311,057          | 68,949         |                |                   | 380,006              |
| Absolute return strategies                  |                  | 4              |                | 4,055,448         | 4,055,452            |
| Private equity                              | 7,075            |                | 151,870        | 3,139,022         | 3,297,967            |
| Real assets                                 | 4,746            | 1,742          | 10,241         | 2,217,772         | 2,234,501            |
| Subtotal, Investments                       | <u>2,143,396</u> | <u>947,758</u> | <u>162,769</u> | <u>11,517,286</u> | <u>14,771,209</u>    |
| Receivables for securities sold             |                  |                |                |                   | 15,593               |
| Liabilities for securities purchased        |                  |                |                |                   | <u>(511,371)</u>     |
| Investments, at fair value                  |                  |                |                |                   | <u>\$ 14,275,431</u> |
| <b>Other assets:</b>                        |                  |                |                |                   |                      |
| Interest in perpetual trusts held by others |                  |                | \$ 187,676     |                   | \$ 187,676           |

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|   | 2021         |            |            |              |               |
|---|--------------|------------|------------|--------------|---------------|
|   | Level 1      | Level 2    | Level 3    | NAV          | Total         |
| Investments:                                |              |            |            |              |               |
| Cash and short-term investments             | \$ 1,264,691 | \$ 598,646 |            |              | \$ 1,863,337  |
| Global equities                             | 965,865      | 36,916     | \$ 1,280   | \$ 2,366,699 | 3,370,760     |
| Fixed income                                | 27,849       | 1,031      | 17         | 281,470      | 310,367       |
| Absolute return strategies                  |              | 1          |            | 4,387,264    | 4,387,265     |
| Private equity                              | 25,723       |            | 208,449    | 3,415,388    | 3,649,560     |
| Real assets                                 | 9,612        | 2,241      | 16,348     | 2,046,167    | 2,074,368     |
| Subtotal, Investments                       | 2,293,740    | 638,835    | 226,094    | 12,496,988   | 15,655,657    |
| Receivables for securities sold             |              |            |            |              | 98,856        |
| Liabilities for securities purchased        |              |            |            |              | (2,160)       |
| Investments, at fair value                  |              |            |            |              | \$ 15,752,353 |
| Other assets:                               |              |            |            |              |               |
| Interest in perpetual trusts held by others |              |            | \$ 221,506 |              | \$ 221,506    |

Note: The fair value of the NAV investments as of June 30, 2021 is inclusive of \$50 million of receivables for investment subscriptions entered into during the year ended June 30, 2021, with an effective date subsequent to June 30, 2021.

**Cash and Short-Term Investments**

Cash and short-term investments include government securities and money market instruments and are valued at amortized cost, which approximates fair value.

**Global Equities and Fixed Income**

Global equities and fixed income consist of investments in publicly traded U.S. and foreign common and preferred equities, funds that invest in equity and fixed income based strategies, and cash held in separate accounts committed to these strategies. The fair value of these investments is based on quoted market prices. Investments that are listed on an exchange are valued, in general, at the last reported sale price (or, if there is no sales price, at the last reported bid price, or, in the absence of reported bid prices, at the mean between the last reported bid and asked prices thereof). Fund investments in equity and fixed income based strategies are valued in accordance with NAV provided by the investment managers of the underlying funds. If the University has valued the investment based on NAV as a practical expedient, the investment has been excluded from the fair value hierarchy and will be categorized as NAV. If the valuation does not meet the practical expedient criteria and the University has the ability to redeem from a fund up to 180 days beyond the measurement date, the investment is categorized as Level 2. If the redemption period extends beyond 180 days, the investment is categorized as Level 3.

**Alternative Investments**

Alternative investments include absolute return strategies, private equity, and real assets. Holdings in these strategies may be in funds or in separate accounts with direct investments in listed equities and fixed income, as well as cash committed to fund these investments. Private equity funds include large market, leveraged buyout, and venture capital based strategies. The University values

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these investments in accordance with valuations provided by the investment managers of the underlying funds. Investments in securities that are publicly traded, whether held by a fund or in a separate account, are generally valued based on observable market prices unless a restriction exists. In addition, investments in a private equity fund may be publicly traded and valued based on observable market prices.

As a general rule, alternative investments are valued based upon the best information available for a given circumstance and may incorporate assumptions that are the best estimate after consideration of a variety of internal and external factors. The fair value of investments categorized as Level 1 are based on quoted prices on a public market. If no public market exists for the investments, the fair value is determined by taking into consideration, among other things, the last reported bid price obtained from pricing sources or broker quotes, the cost of the investment, prices of recent significant placements of similar investments of the same issuer, and subsequent developments concerning the companies to which the investments relate. The University's management may consider other factors in assessing the fair value of these investments. If the University has valued these alternative investments based on NAV as a practical expedient, the investment is excluded from the fair value hierarchy and will be categorized as NAV. For investments in absolute return strategies, if the valuation does not meet the practical expedient criteria and the University has the ability to redeem from the investment up to 180 days beyond the measurement date, the investment is categorized as Level 2. If the redemption period extends beyond 180 days, the investment is categorized as Level 3. For private equity funds and real asset funds, if the valuation does not meet the practical expedient criteria, the investments are categorized as Level 3 given that the University does not have discretion for timing of withdrawal.

The fair value of the alternative investment funds in the table above represents the amount the University would expect to receive at June 30, 2022 and 2021, if it had liquidated its investments on these dates. The University has performed due diligence around these investments and believes that the NAV of its alternative investments is a reasonable estimate of fair value as of June 30, 2022 and 2021. Alternative investments may allocate a high percentage of their assets in specific sectors of the market in order to achieve a potentially greater investment return. As a result, the investments may be susceptible to economic, political, and regulatory developments in a particular sector of the market, positive or negative, and may experience increased volatility in net asset values.

**Perpetual Trusts**

The fair value of interest in perpetual trusts held by others is based on the University's share of the income generated by the trust, ascribed to the fair value of the assets reported by the trust.

**Derivatives**

Investment fund managers may invest in derivatives, and the value of these positions is reflected in the NAV of the respective funds. Separately, the University employs derivatives primarily to hedge its risks and to rebalance its market exposures. Derivatives used may include futures, swaps, options, and forward contracts and are reflected at fair value following the definition of Level 1 and Level 2 assets as described above. Certain derivative positions held within the endowment portfolio are subject to master netting agreements included within an International Swap and Derivatives Association, Inc. ("ISDA") master agreement with each of the counterparties.

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The following positions are reflected on a net basis within “Investments, at fair value” on the consolidated statements of financial position and are summarized below.

| Derivative Instruments | Notional Exposure |       | Gross     |            | Net Fair Value | Collateral Posted |
|------------------------|-------------------|-------|-----------|------------|----------------|-------------------|
|                        | Long              | Short | Asset     | Liability  |                |                   |
| June 30, 2022          |                   |       |           |            |                |                   |
| Equity                 | \$ 625,646        |       |           | \$ (5,620) | \$ (5,620)     | \$ 109,854        |
| Currency*              |                   |       | 1,903     | (736)      | 1,167          |                   |
| June 30, 2021          |                   |       |           |            |                |                   |
| Equity                 | \$ 288,118        |       | \$ 24,493 |            | \$ 24,493      | \$ 13,489         |
| Currency*              |                   |       | 2,674     | (1,316)    | 1,358          |                   |

\*The University held currency derivative contracts with an aggregate notional amount of \$52.6 million and \$216.5 million as of June 30, 2022 and 2021, respectively.

Outside of the endowment portfolio, the University entered into a fixed payer interest rate swap as described in Note 16. The estimated fair value of the agreement is reported as a liability of \$45.9 million and \$83.4 million at June 30, 2022 and 2021, respectively, and is considered a Level 2 measurement. The derivatives are reflected as a receivable or payable, as appropriate, on the consolidated statements of financial position. Unrealized gain or loss from derivative investments is a component of the “Current year realized and unrealized capital gains (losses)” in the consolidated statements of activities.

The methods described above may produce a fair value calculation that may not be indicative of net realizable value or reflective of future fair values. Furthermore, while the University believes its valuation methods are appropriate and consistent with other market participants, the use of different methodologies or assumptions to determine the fair value of certain financial instruments could result in a different estimate of fair value at the reporting date.

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The following tables roll forward the amounts reported in the consolidated statements of financial position for financial instruments classified by the University within Level 3 of the fair value hierarchy defined above at June 30, 2022 and 2021.

|                           | June 30,<br>2021 | Transfers<br>In/Out | Purchases | Sales       | Realized<br>gain/loss | Unrealized<br>gain/loss | June 30,<br>2022 |
|---------------------------|------------------|---------------------|-----------|-------------|-----------------------|-------------------------|------------------|
| Global equities           | \$ 1,280         |                     |           |             |                       | \$ (622)                | \$ 658           |
| Fixed income              | 17               |                     |           | (33)        |                       | 16                      |                  |
| Private equity            | 208,449          | (12,468)            | 24,230    | (9,681)     | \$ 5,790              | (64,450)                | 151,870          |
| Real assets               | 16,348           |                     |           | (2,195)     |                       | (3,912)                 | 10,241           |
| Total level 3 investments | \$ 226,094       | \$ (12,468)         | \$ 24,230 | \$ (11,909) | \$ 5,790              | \$ (68,968)             | \$ 162,769       |

|  | June 30,<br>2021 | Transfers<br>In/Out | Disburse-<br>ments | Realized/<br>Unrealized<br>gain/loss,<br>net | June 30,<br>2022 |
|--|------------------|---------------------|--------------------|--|------------------|
| Interest in perpetual trusts<br>held by others | \$ 221,506       |                     | \$ (7,447)         | \$ (26,383)                                  | \$ 187,676       |

|                           | June 30,<br>2020 | Transfers<br>In/Out | Purchases | Sales      | Realized<br>gain/loss | Unrealized<br>gain/loss | June 30,<br>2021 |
|---------------------------|------------------|---------------------|-----------|------------|-----------------------|-------------------------|------------------|
| Global equities           | \$ 1,229         |                     |           | \$ (204)   |                       | \$ 255                  | \$ 1,280         |
| Fixed income              | 16               |                     | \$ 33     | (2)        |                       | (30)                    | 17               |
| Private equity            | 196,634          | (6,195)             | 21,293    | (6,546)    | \$ (109)              | 3,372                   | 208,449          |
| Real assets               | 22,360           | (3,127)             |           | (2,197)    |                       | (688)                   | 16,348           |
| Total level 3 investments | \$ 220,239       | \$ (9,322)          | \$ 21,326 | \$ (8,949) | \$ (109)              | \$ 2,909                | \$ 226,094       |

|  | June 30,<br>2020 | Transfers<br>In/Out | Disburse-<br>ments | Realized/<br>Unrealized<br>gain/loss,<br>net | June 30,<br>2021 |
|--|------------------|---------------------|--------------------|--|------------------|
| Interest in perpetual trusts<br>held by others | \$ 177,810       |                     | \$ (7,184)         | \$ 50,880                                    | \$ 221,506       |

All net realized and unrealized gains (losses) in the tables above are reflected in the consolidated statements of activities. Net unrealized gains (losses) relate to those financial instruments held by the University at June 30, 2022 and 2021. The University's policy is to recognize transfers in and transfers out as of the end of the period. Transfers between Level 3 and Level 1, Level 3 and Level 2 as well as between Level 3 and NAV are reported at gross, due to the criteria described above. There were no significant transfers between Level 1 and Level 2 for the years ended June 30, 2022 and 2021. There were no transfers between NAV and Level 2 for the years ended June 30, 2022 and 2021.

Certain investments in global equities and alternative investments may be subject to restrictions that (i) limit the University's ability to withdraw capital after such investment and (ii) limit the amount that may be withdrawn as of a given redemption date. The redemption terms of the University's investments in absolute return strategy funds vary from daily to triennial, with a portion of these investments designated as "illiquid" in "sidepockets" and that portion may not be available for withdrawal until liquidated by the investing fund and redemption notice periods range from 0 days to 180 days. Generally, as noted above, the University has no discretion as to withdrawal of its investment in private equity and real asset funds; distributions are made when sales of assets are



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made within the funds. In general, the remaining life of these private equity and real asset funds is up to 12 years.

The University is obligated under certain investment fund agreements to advance additional funding up to specified levels over a period of several years. These commitments have fixed expiration dates and other termination clauses. At June 30, 2022, the University had unfunded commitments of approximately \$2.3 billion as follows:

| <b>Asset class<br/>(\$ in millions)</b> | <b>Remaining life<br/>of fund</b> | <b>Unfunded<br/>commitments</b> | <b>Timing to draw<br/>commitments</b> |
|---|-----------------------------------|---------------------------------|---------------------------------------|
| Global equities                         | N/A                               | \$ 15                           | 1 to 8 years                          |
| Absolute return strategies              | N/A                               | 63                              | 1 to 5 years                          |
| Private equity                          | 1 to 12 years                     | 1,505                           | 1 to 12 years                         |
| Real assets                             | 1 to 12 years                     | 675                             | 1 to 12 years                         |
| Total                                   |                                   | <u>\$ 2,258</u>                 |                                       |

The University’s estimate of the lives of the funds could vary significantly depending on the investment decisions of the external fund managers, changes in the University’s portfolio, and other circumstances. Furthermore, the University’s obligation to fund the commitments noted above may be waived by the fund manager for a variety of reasons including market conditions and/or changes in investment strategy.

The University has various sources of internal liquidity at its disposal, including cash, short-term investments, marketable debt and equity securities, and lines of credit, which are available to fund the committed drawdowns.

**Investment Return**

Investment income and gains utilized on the consolidated statements of activities contains endowment appreciation utilized to fund the spending rule, institutional real estate revenue net of operating expenses and depreciation, and other investment income. Endowment appreciation utilized was \$599.6 million and \$583.1 million during 2022 and 2021, respectively. “Current year realized and unrealized capital gains (losses)” reported in nonoperating activities reflect investment returns net of external and direct internal investment costs, reduced by endowment appreciation utilized to fund the spending rule.

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**7. Endowment Funds**

The University's endowment consists of approximately 6,200 separate funds established over many years for a wide variety of purposes, which include support of specific schools or departments of the University, professorships, research, faculty support, scholarships and fellowships, library, building construction, and other purposes. The endowment includes donor-restricted endowments and funds designated by the Board of Trustees to function as endowments. Net assets associated with endowment funds are classified and reported based on the existence or absence of donor-imposed restrictions.

The University employs a market value unit method of accounting for pooled general investments. Each participating fund enters and withdraws from the pooled investment account based on monthly unit market values. Changes in the market value of investments are distributed proportionately to each fund that participates in the investment pool. Net investment income distributed during the year is allocated on a per unit basis to each participating fund.

**Relevant Law**

Under New York Prudent Management of Institutional Funds Act ("NYPMIFA"), the University may appropriate so much of a donor-restricted endowment fund as it deems prudent, considering the specific factors set forth in NYPMIFA and subject to the intent of the donor as expressed in the gift instrument. Unless stated otherwise in the gift instrument, the earnings in an endowment fund are considered to have donor restrictions until appropriated.

The University continues to classify as net assets with donor restrictions (a) the original value of gifts donated to the permanent endowment, (b) the original value of subsequent gifts to the permanent endowment, and (c) accumulations to the endowment made in accordance with the direction of the applicable donor gift instrument at the time the accumulation is added to the fund. Accumulated appreciation on donor-restricted endowment funds is also included as net assets with donor restrictions until those amounts are appropriated for expenditure by the University in a manner consistent with the standard of prudence prescribed by NYPMIFA.

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The composition and changes in the University's endowment net assets as of June 30, 2022 and 2021, are as follows:

|   | <b>2022</b>                           |                                    |                      |
|---|---------------------------------------|------------------------------------|----------------------|
|   | <b>Without Donor<br/>Restrictions</b> | <b>With Donor<br/>Restrictions</b> | <b>Total</b>         |
| <b>Changes in University endowment net assets</b> |                                       |                                    |                      |
| Opening balance - June 30, 2021                   | \$ 4,449,457                          | \$ 9,900,513                       | \$ 14,349,970        |
| Investment return                                 | (232,424)                             | (764,852)                          | (997,276)            |
| New gifts   | 1,179                                 | 210,026                            | 211,205              |
| Appropriation for expenditure                     | (230,754)                             | (430,685)                          | (661,439)            |
| Other changes:                                    |                                       |                                    |                      |
| Transfers   | 348,730                               | 28,656                             | 377,386              |
| Other / Reclassifications                         | (18,892)                              | 18,892                             |                      |
|   | <u>329,838</u>                        | <u>47,548</u>                      | <u>377,386</u>       |
| Closing balance - June 30, 2022                   | <u>\$ 4,317,296</u>                   | <u>\$ 8,962,550</u>                | <u>\$ 13,279,846</u> |
| <b>University endowment composition</b>           |                                       |                                    |                      |
| Donor-restricted endowment funds:                 |                                       |                                    |                      |
| Restricted in perpetuity                          |                                       | \$ 4,062,435                       | \$ 4,062,435         |
| Appreciation                                      |                                       | 4,242,064                          | 4,242,064            |
| Board designated endowment:                       |                                       |                                    |                      |
| Departmental funds                                | 1,879,131                             | 458,860                            | 2,337,991            |
| University funds                                  | 1,635,067                             |                                    | 1,635,067            |
| Institutional real estate, net                    | 803,098                               |                                    | 803,098              |
| CPMC Fund, Inc.                                   |                                       | 11,515                             | 11,515               |
| Interests in perpetual trusts held by others      |                                       | 187,676                            | 187,676              |
| University's endowment value                      | <u>\$ 4,317,296</u>                   | <u>\$ 8,962,550</u>                | <u>\$ 13,279,846</u> |

Note: The tables above do not include split-interest agreements, net of \$118,223 and pledges receivable, net of \$272,420.

**Reconciliation to Investments, at fair value**

|  |                 |                      |
|--|-----------------|----------------------|
| Investments, at fair value                   |                 | \$ 14,275,431        |
| Add:   |                 |                      |
| Interests in perpetual trusts held by others | 187,676         |                      |
| CPMC Fund, Inc.                              | 11,515          |                      |
| Institutional real estate, net               | 803,098         |                      |
| Other receivables and payables               | <u>3,599</u>    | 1,005,888            |
| Subtract:                                    |                 |                      |
| Other long-term investments                  | (1,730,593)     |                      |
| Split-interest agreements                    | (180,187)       |                      |
| Funds held on behalf of others               | <u>(90,693)</u> | (2,001,473)          |
| University's endowment value                 |                 | <u>\$ 13,279,846</u> |

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|   | <b>2021</b>                           |                                    |                      |
|---|---------------------------------------|------------------------------------|----------------------|
|   | <b>Without Donor<br/>Restrictions</b> | <b>With Donor<br/>Restrictions</b> | <b>Total</b>         |
| <b>Changes in University endowment net assets</b> |                                       |                                    |                      |
| Opening balance - June 30, 2020                   | \$ 3,565,407                          | \$ 7,691,614                       | \$ 11,257,021        |
| Investment return                                 | 955,012                               | 2,409,708                          | 3,364,720            |
| New gifts   | 1,248                                 | 186,086                            | 187,334              |
| Appropriation for expenditure                     | (210,602)                             | (427,395)                          | (637,997)            |
| Other changes:                                    |                                       |                                    |                      |
| Transfers   | 131,835                               | 48,780                             | 180,615              |
| Other / Reclassifications                         | 6,557                                 | (8,280)                            | (1,723)              |
|   | <u>138,392</u>                        | <u>40,500</u>                      | <u>178,892</u>       |
| Closing balance - June 30, 2021                   | <u>\$ 4,449,457</u>                   | <u>\$ 9,900,513</u>                | <u>\$ 14,349,970</u> |
| <b>University endowment composition</b>           |                                       |                                    |                      |
| Donor-restricted endowment funds:                 |                                       |                                    |                      |
| Restricted in perpetuity                          |                                       | \$ 3,842,733                       | \$ 3,842,733         |
| Appreciation                                      |                                       | 5,304,917                          | 5,304,917            |
| Board designated endowment:                       |                                       |                                    |                      |
| Departmental funds                                | 1,901,660                             | 512,480                            | 2,414,140            |
| University funds                                  | 1,855,140                             |                                    | 1,855,140            |
| Institutional real estate, net                    | 692,657                               |                                    | 692,657              |
| CPMC Fund, Inc.                                   |                                       | 18,877                             | 18,877               |
| Interests in perpetual trusts held by others      |                                       | 221,506                            | 221,506              |
| University's endowment value                      | <u>\$ 4,449,457</u>                   | <u>\$ 9,900,513</u>                | <u>\$ 14,349,970</u> |

Note: The tables above do not include split-interest agreements, net of \$157,298 and pledges receivable, net of \$285,915.

**Reconciliation to Investments, at fair value**

|  |                 |                      |
|--|-----------------|----------------------|
| Investments, at fair value                   |                 | \$ 15,752,353        |
| Add:   |                 |                      |
| Interests in perpetual trusts held by others | 221,506         |                      |
| CPMC Fund, Inc.                              | 18,877          |                      |
| Institutional real estate, net               | 692,657         |                      |
| Other receivables and payables               | <u>10,258</u>   | 943,298              |
| Subtract:                                    |                 |                      |
| Other long-term investments                  | (2,021,029)     |                      |
| Split-interest agreements                    | (225,611)       |                      |
| Funds held on behalf of others               | <u>(99,041)</u> | <u>(2,345,681)</u>   |
| University's endowment value                 |                 | <u>\$ 14,349,970</u> |

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**Return Objectives and Risk Parameters**

Endowment assets include those assets of donor-restricted funds that the University must hold in perpetuity or for a donor-specified period(s) as well as Board-designated funds. Under the University's investment policies, as approved by the Board of Trustees, the endowment assets are invested in a manner that is intended to produce performance which exceeds that of relevant indices for each asset class while assuming a moderate level of investment risk.

**Strategies Employed for Achieving Objectives**

The University relies on a total return strategy in which investment returns are achieved through both capital appreciation (realized and unrealized) and current yield (interest and dividends). The University targets a diversified asset allocation to achieve its long-term return objectives within prudent risk constraints.

**Endowment Spending Rule**

The endowment spending rule utilized by the University is designed to be directly responsive to both investment returns and the current level of price inflation. Its long-term objectives are:

- To protect the corpus of the endowment by spending no more than the real investment return;
- To cushion spending against market volatility; and
- To provide specific spending instructions and multiyear spending projections based on explicit future investment return assumptions.

The current endowment spending rule is based on two factors: first, the market value multiplied by a target spending rate of 4.5 percent, which provides a response to investment market conditions; and second, the prior year's spending plus inflation, which ties spending increases to operating needs and cushions spending against market volatility. This allows the University to maintain the purchasing power of the endowment assets held in perpetuity or for a specified term as well as to provide additional real growth through new gifts and investment return.

As a general policy, each fiscal year's distribution is calculated by adding together the following:

- a. The market value of the endowment at a point twelve months prior to the beginning of the given fiscal year, multiplied by the target spending rate, multiplied by a 40 percent weighting; and
- b. Endowment spending in the year immediately preceding the given fiscal year, grown or reduced by an inflation factor, which is defined as the Higher Education Price Index ("HEPI"), multiplied by a 60 percent weighting.

The Trustees conduct a special review in any year in which either projected endowment distributions are 0.5 percent higher or lower than the target spending rate, or if the increase in endowment distributions over the previous year is more than 3 percentage points higher or lower than HEPI. Additionally, from time to time, management may recommend and the Trustees may approve a temporary override of the spending rule to ensure the University's ability to sustain the permanent nature of the endowment.

In addition to the base spending rate described above, an additional payout component was approved as a temporary measure by the Trustees in 2008, applied as a percentage of the prior year beginning market value for certain endowments in categories key to the University's current

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development efforts, primarily endowments for purposes core to the University's educational and research mission, including financial aid and faculty support. For both years ended June 30, 2022 and 2021 the additional payout rate was 0.65 percent. The additional payout component is reviewed by the Trustees regularly and has currently been extended through the end of fiscal year 2023.

**Underwater Endowment Funds**

From time to time, the fair value of assets associated with individual donor-restricted endowment funds may fall below the original gift value, which represents the total of the initial and subsequent donor contribution amounts. When this occurs, the deficit is classified as a reduction of donor-restricted net assets. As of June 30, 2022, deficits totaling \$13.6 million existed in funds which combined had an original gift value of \$227.0 million and a current market value of \$213.4 million. As of June 30, 2021, no such deficits existed. The deficits resulted from market fluctuations that occurred after the investment of recent contributions and authorized appropriation from an endowment that was deemed prudent.

**8. Accounts Receivable**

Accounts receivable, net, consists of the following as of June 30:

|  | <u>2022</u>       | <u>2021</u>       |
|--|-------------------|-------------------|
| Patient receivables, net of contractual allowances | \$ 175,160        | \$ 160,179        |
| Government agencies                                | 131,832           | 123,937           |
| NewYork-Presbyterian Hospital                      | 140,567           | 137,363           |
| Patent and licensing                               | 7,649             | 8,440             |
| Student receivables                                | 88,174            | 73,067            |
| Investment income receivable                       | 3,951             | 4,103             |
| Other receivables                                  | <u>174,253</u>    | <u>147,762</u>    |
|  | 721,586           | 654,851           |
| Less: Allowance for doubtful accounts              | <u>(83,632)</u>   | <u>(67,163)</u>   |
| Accounts receivable, net                           | <u>\$ 637,954</u> | <u>\$ 587,688</u> |

Patient receivables for medical services are net of an allowance for contractual reserves in the amount of \$345.4 million and \$334.7 million at June 30, 2022 and 2021, respectively.

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**9. Student Loans Receivable and Financial Aid**

The University participates in various federal loan programs, in addition to administering institutional loan programs. Loans receivable from students are recorded in “Other Assets” and as of June 30 are as follows:

|  | <u>2022</u>      | <u>2021</u>      |
|--|------------------|------------------|
| Government revolving loans               | \$ 37,046        | \$ 42,388        |
| Institutional loans                      | 23,340           | 25,024           |
| Gross student loans                      | 60,386           | 67,412           |
| Less: Allowance for doubtful collections | (2,444)          | (2,462)          |
| Student loans receivable, net            | <u>\$ 57,942</u> | <u>\$ 64,950</u> |

Government revolving loans are funded principally with federal advances to the University under the Federal Perkins Loan Program and certain other programs, which are classified as liabilities on the consolidated statements of financial position. The Federal Perkins Loan Program expired on September 30, 2017 and no new disbursements were permitted after June 30, 2018, but there are outstanding balances from loans awarded in previous years. Balances totaled \$32.1 million and \$38.8 million under the Federal Perkins Loan Program, and \$11.7 million and \$15.6 million under the other programs as of June 30, 2022 and 2021, respectively. Interest earned on the revolving and institutional loan programs is reinvested to support additional loans. The repayment and interest rate terms of the institutional loans vary considerably.

Management regularly assesses the adequacy of the allowance for doubtful collections by performing ongoing evaluation of the student loan and student accounts receivable portfolios. Loans receivable under federally guaranteed student loan programs are subject to significant restrictions.

In addition to the loans identified above, the University processes and authorizes loans to students through the William D. Ford Federal Direct Loan Program. The amounts due under this loan program are not recorded in the University’s consolidated financial statements since the University does not guarantee any federal loan funds related to this program. Loans issued under this program were \$322.1 million and \$314.5 million for the years ended June 30, 2022 and 2021, respectively.

Undergraduate financial aid represents grants and awards for all or part of a student’s tuition and fees, and in certain other instances, items such as room and board. Graduate financial aid represents grants and awards for all or part of a student’s tuition and fees.

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Financial aid granted to students is summarized as follows for the year ended June 30:

|                            | <u>2022</u>       | <u>2021</u>       |
|----------------------------|-------------------|-------------------|
| Undergraduate              | \$ 222,551        | \$ 201,135        |
| Graduate                   | <u>302,085</u>    | <u>301,851</u>    |
| Total financial aid grants | <u>\$ 524,636</u> | <u>\$ 502,986</u> |

Agency activities such as tuition aid grants and Federal Pell Grant Program awards are not included in the University's consolidated financial statements. Both receipts and disbursements for these agency transactions were \$12.5 million and \$12.0 million in years ended June 30, 2022 and 2021, respectively.

**10. Pledges Receivable**

Unconditional promises to give appear as pledges receivable and revenue of the appropriate net asset category. Pledges are recorded net of an allowance for uncollectible contributions and a discount to reflect the net present value based on projected cash flows. Periodically unconditional promises to give are reviewed for collectability. As a result, the allowance for uncollectible contributions may be adjusted and some contributions may be adjusted or cancelled. Such changes will be reflected in the consolidated financial statements.

Unconditional promises, and their expected collection dates, were as follows at June 30:

|  | <u>2022</u>       | <u>2021</u>       |
|--|-------------------|-------------------|
| Less than one year                         | \$ 204,267        | \$ 217,914        |
| One to five years                          | 339,810           | 327,146           |
| More than five years                       | <u>151,774</u>    | <u>184,541</u>    |
| Total unconditional promises               | 695,851           | 729,601           |
| Less: Allowance for doubtful contributions | (35,628)          | (33,854)          |
| Less: Net present value discount           | <u>(78,977)</u>   | <u>(72,894)</u>   |
| Net pledges receivable                     | <u>\$ 581,246</u> | <u>\$ 622,853</u> |

New pledges recorded in the years ended June 30, 2022 and 2021, were discounted at an average annual rate of 3.47 percent and 1.08 percent, respectively, using a rate that considers market and credit risk. Credit risk is also considered in the allowance for doubtful contributions.

Pledges receivable were intended for the following purposes as of June 30:

|  | <u>2022</u>       | <u>2021</u>       |
|--|-------------------|-------------------|
| Endowment for educational and general purposes | \$ 272,420        | \$ 285,915        |
| New construction and modernization of plant    | 136,520           | 182,176           |
| Support of University operations               | <u>172,306</u>    | <u>154,762</u>    |
| Net pledges receivable                         | <u>\$ 581,246</u> | <u>\$ 622,853</u> |



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The University also has other outstanding pledges of \$61.6 million as of June 30, 2022. These pledges represent either gifts with donor-imposed conditions, containing both a barrier and a right of return/release, or other pledges that have not met the requirements for recognition.

**11. Land, Buildings, and Equipment**

Investments in land, buildings, and equipment, net, consisted of the following at June 30:

|                                    | 2022                                 |                          |                                    | 2021                                 |                          |                                    |
|------------------------------------|--------------------------------------|--------------------------|------------------------------------|--------------------------------------|--------------------------|------------------------------------|
|                                    | Total Land, Buildings, and Equipment | Accumulated Depreciation | Net Land, Buildings, and Equipment | Total Land, Buildings, and Equipment | Accumulated Depreciation | Net Land, Buildings, and Equipment |
| Land                               | \$ 523,294                           |                          | \$ 523,294                         | \$ 504,793                           |                          | \$ 504,793                         |
| Building and building improvements | 7,853,721                            | (3,765,403)              | 4,088,318                          | 6,778,681                            | (3,493,789)              | 3,284,892                          |
| Construction in progress           | 213,021                              |                          | 213,021                            | 996,106                              |                          | 996,106                            |
| Equipment                          | 745,719                              | (517,177)                | 228,542                            | 704,693                              | (463,318)                | 241,375                            |
| Total                              | <u>\$ 9,335,755</u>                  | <u>\$ (4,282,580)</u>    | <u>\$ 5,053,175</u>                | <u>\$ 8,984,273</u>                  | <u>\$ (3,957,107)</u>    | <u>\$ 5,027,166</u>                |

The University uses componentized depreciation to calculate depreciation expense for buildings and building improvements for research facilities included in operations. The costs of research facilities are separated into the building shell, building service systems, and fixed equipment, and each component is separately depreciated.

Equipment includes physical assets owned by the University as well as software costs and moveable equipment acquired through finance leases.

Building and building improvements include physical assets owned by the University as well as leasehold improvements, financed space leases, and construction in progress. The net book value of financed space leases at June 30, 2022 and 2021, was \$74.6 million and \$65.5 million, respectively.

**12. Accrued Employee Benefit Liabilities**

Accrued employee benefit liabilities arise from employment at the University. These include liabilities for pension, postretirement benefits, postemployment benefits, unused vacation, and deferred compensation.

Postemployment benefits relating to workers' compensation, short-term disability, and continuation of medical benefits for those on long-term disability are provided to former or inactive employees after employment but before retirement. The University records the costs of such benefits on an accrual basis if the employee has provided the services from which those benefits are derived. As of June 30, 2022 and 2021, the actuarially computed liabilities on the University's consolidated statements of financial position are \$59.3 million and \$59.6 million, respectively.

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**13. Pension and Other Postretirement Benefit Costs**

**Pension Plan Benefits**

During 2022 and 2021, the University had four non-contributory pension plans (the “pension plans”) for supporting staff employees. All four pension plans are subject to collective bargaining agreements. Two of the pension plans include defined benefits for past and future service. Two of the pension plans were terminated in December 2021; these plans provided defined benefits for service prior to January 1 and July 1, 1976, respectively. For these two terminated pension plans, future benefits were provided by defined contributions.

In addition, the University provides retirement benefits for full-time faculty, officers, certain other employees, and supporting staff under various defined contribution plans. University contributions for the plans reported in operating expenses were \$178.0 million and \$145.5 million for the years ended June 30, 2022 and 2021, respectively.

**Postretirement Health Care and Life Insurance Benefits**

The University provides postretirement health care and life insurance benefits for certain employees. The University accrues the estimated cost of these benefits over the years that eligible employees render service.

**Obligations and Funded Status**

The University follows authoritative guidance, which requires recognition on the consolidated statements of financial position of the difference between benefit obligations and any plan assets of the University’s defined benefit and other postretirement benefit plans. In addition, the authoritative guidance requires unamortized amounts (e.g., net actuarial gains or losses and prior service cost or credits) to be recognized as changes to net assets without donor restrictions and that those amounts be adjusted as they are subsequently recognized as components of net periodic pension cost.

Amounts recognized in net assets without donor restrictions are as follows:

|                             | <b>Pension Plan Benefits</b> |                  | <b>Other Postretirement Benefits</b> |                    |
|-----------------------------|------------------------------|------------------|--------------------------------------|--------------------|
|                             | <b>2022</b>                  | <b>2021</b>      | <b>2022</b>                          | <b>2021</b>        |
| Net actuarial (gain) / loss | \$ 21,109                    | \$ 41,831        | \$ (66,802)                          | \$ (84,082)        |
| Prior service cost          | 52                           | 117              |                                      |                    |
| Total amount recognized     | <u>\$ 21,161</u>             | <u>\$ 41,948</u> | <u>\$ (66,802)</u>                   | <u>\$ (84,082)</u> |

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The components of accrued benefit costs for pension benefits and other postretirement benefits are as follows:

|   | <b>Pension Plan Benefits</b> |                    | <b>Other Postretirement Benefits</b> |                   |
|---|------------------------------|--------------------|--------------------------------------|-------------------|
|   | <b>2022</b>                  | <b>2021</b>        | <b>2022</b>                          | <b>2021</b>       |
| <b>Change in benefit obligation:</b>    |                              |                    |                                      |                   |
| Benefit obligation, beginning of year   | \$ 277,208                   | \$ 274,358         | \$ 147,211                           | \$ 151,358        |
| Service cost                            | 10,840                       | 11,665             | 7,267                                | 7,596             |
| Interest cost                           | 8,830                        | 8,849              | 4,575                                | 4,753             |
| Plan participants' contributions        |                              |                    | 6,166                                | 5,974             |
| Actuarial gain                          | (65,195)                     | (4,589)            | (35,429)                             | (11,772)          |
| Federal subsidy                         |                              |                    | 462                                  | 539               |
| Plan termination                        | (9,654)                      |                    |                                      |                   |
| Net disbursements and transfers         | (9,265)                      | (13,075)           | (13,626)                             | (11,237)          |
| Benefit obligation, end of year         | <u>212,764</u>               | <u>277,208</u>     | <u>116,626</u>                       | <u>147,211</u>    |
| <b>Change in plan assets:</b>           |                              |                    |                                      |                   |
| Fair value of assets, beginning of year | 245,598                      | 219,020            | 260,243                              | 211,725           |
| Actual return on plan assets            | (43,168)                     | 28,368             | (31,159)                             | 53,781            |
| Employer contributions                  | 12,687                       | 11,285             |                                      |                   |
| Plan participants' contributions        |                              |                    | 6,166                                | 5,974             |
| Plan termination                        | (9,654)                      |                    |                                      |                   |
| Net disbursements and transfers         | (9,265)                      | (13,075)           | (13,626)                             | (11,237)          |
| Fair value of assets, end of year       | <u>196,198</u>               | <u>245,598</u>     | <u>221,624</u>                       | <u>260,243</u>    |
| Net amount recognized                   | <u>\$ (16,566)</u>           | <u>\$ (31,610)</u> | <u>\$ 104,998</u>                    | <u>\$ 113,032</u> |

**Weighted-average assumptions used to determine end of year benefit obligation**

|                               | <b>2022</b> | <b>2021</b>    |
|-------------------------------|-------------|----------------|
| Discount rate                 | 4.95%       | 2.25% to 3.10% |
| Rate of compensation increase | 3.00%       | 3.00%          |

For pension plans, actuarial gains for the year ended June 30, 2022 were the result of an increase in the discount rate and changes in demographic assumptions, offset by lower asset returns than assumed and two plan terminations. Actuarial gains for the year ended June 30, 2021 resulted from asset returns in excess of planned returns and lower utilization per experience study conducted during the year.

For postretirement plans, actuarial gains for the year ended June 30, 2022 resulted from an increase in the discount rate and plan experience through the mortality table, offset by lower asset returns than assumed and higher claims. Actuarial gains for the year ended June 30, 2021 resulted from asset returns in excess of planned returns and a lower utilization per experience study conducted during the year.

The accumulated benefit obligations for the two underfunded pension plans at June 30, 2022 and 2021, were \$196.4 and \$243.6 million, respectively.

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At June 30, 2022 and 2021, the projected benefit obligation exceeded the pension plan assets for two plans. The projected benefit obligation for the pension plans were as follows:

| <b>End of year</b>           | <b>2022</b> | <b>2021</b> |
|------------------------------|-------------|-------------|
| Projected benefit obligation | \$ 212,764  | \$ 267,393  |
| Fair value of plan assets    | 196,198     | 233,359     |

The accumulated postretirement benefit obligation for the other postretirement benefit plan and the fair value of plan assets with plan assets in excess of the accumulated postretirement benefit obligation was as follows:

| <b>End of year</b>                            | <b>2022</b> | <b>2021</b> |
|---|-------------|-------------|
| Accumulated postretirement benefit obligation | \$ 116,626  | \$ 147,211  |
| Fair value of plan assets                     | 221,624     | 260,243     |

A 6.50 percent annual rate of increase in the per capita cost of covered health care benefits for the other postretirement benefit plan was assumed for 2023. The rate was assumed to decrease gradually to 4.75 percent for year ended June 30, 2030 and remain at that level thereafter. Assumed health care cost trend rates have a significant effect on the amounts reported for the health care plans.

The asset allocation for the two defined benefit plans for both past and future service at June 30, 2022 and 2021, and the target allocation for 2023, by asset category, follows:

| <b>Asset category</b>                         | <b>Target allocation</b> | <b>Percentage of plan assets at year end</b> |             |
|---|--------------------------|--|-------------|
|   | <b>2023</b>              | <b>2022</b>                                  | <b>2021</b> |
| U.S. large cap equity and global equity funds | 26%                      | 17%  | 18%         |
| International equities (non-U.S.)             | 14%                      | 21%  | 21%         |
| High yield fixed income securities            | 10%                      | 10%  | 10%         |
| U.S. core fixed income                        | 50%                      | 52%  | 51%         |
|   | <u>100%</u>              | <u>100%</u>                                  | <u>100%</u> |

The following presents investments of the pension plans as of June 30, 2022. The Plans' investments in common collective trusts are valued at NAV as a practical expedient and are therefore excluded from the fair value hierarchy and are reported as NAV. Level 3 assets represent fixed income related investment contracts with a major life insurance company.

|                               | <b>Level 1</b> | <b>Level 2</b> | <b>Level 3</b> | <b>NAV</b>        | <b>Total</b>      |
|-------------------------------|----------------|----------------|----------------|-------------------|-------------------|
| Common collective trust funds |                |                |                |                   |                   |
| Global equity                 |                |                |                | \$ 75,241         | \$ 75,241         |
| Fixed income                  |                |                |                | 120,957           | 120,957           |
| Investments, at fair value    |                |                |                | <u>\$ 196,198</u> | <u>\$ 196,198</u> |

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The following table is a roll forward of the amounts for investments classified within Level 3 as described above.

|                           | June 30,<br>2021 | Purchases<br>(Gross) | Sales<br>(Gross)  | Investment<br>gain/(loss) | June 30,<br>2022 |
|---------------------------|------------------|----------------------|-------------------|---------------------------|------------------|
| Investment contracts      | \$ 1,956         |                      | \$ (1,969)        | \$ 13                     |                  |
| Total level 3 investments | <u>\$ 1,956</u>  |                      | <u>\$ (1,969)</u> | <u>\$ 13</u>              |                  |

The following presents investments of the pension plans as of June 30, 2021:

|                                   | Level 1 | Level 2 | Level 3         | NAV               | Total             |
|-----------------------------------|---------|---------|-----------------|-------------------|-------------------|
| Common collective trust funds     |         |         |                 |                   |                   |
| Global equity                     |         |         |                 | \$ 90,873         | \$ 90,873         |
| Fixed income                      |         |         |                 | 152,769           | 152,769           |
| Fixed income investment contracts |         |         | \$ 1,956        |                   | 1,956             |
| Investments, at fair value        |         |         | <u>\$ 1,956</u> | <u>\$ 243,642</u> | <u>\$ 245,598</u> |

The following table is a roll forward of the amounts for investments classified within Level 3 as described above.

|                           | June 30,<br>2020 | Purchases<br>(Gross) | Sales<br>(Gross) | Investment<br>gain/(loss) | June 30,<br>2021 |
|---------------------------|------------------|----------------------|------------------|---------------------------|------------------|
| Investment contracts      | \$ 1,991         |                      | \$ (161)         | \$ 126                    | \$ 1,956         |
| Total level 3 investments | <u>\$ 1,991</u>  |                      | <u>\$ (161)</u>  | <u>\$ 126</u>             | <u>\$ 1,956</u>  |

The asset allocation for the other postretirement benefit plan at June 30, 2022 and 2021, and the target allocation for 2023, by asset category, follows:

| Asset category                                | Target<br>allocation | Percentage of plan<br>assets at year's end |             |
|---|----------------------|--|-------------|
|   | 2023                 | 2022                                       | 2021        |
| U.S. large cap equity and global equity funds | 52%                  | 38%  | 38%         |
| International equities (non-U.S.)             | 16%                  | 30%  | 30%         |
| U.S. fixed income                             | 32%                  | 32%  | 32%         |
|   | <u>100%</u>          | <u>100%</u>                                | <u>100%</u> |

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The following presents investments of the other postretirement benefit plan as of June 30, 2022. The Plans' investments in common collective trusts are valued at NAV as a practical expedient and are therefore excluded from the fair value hierarchy and reported as NAV.

|                               | <u>Level 1</u> | <u>Level 2</u> | <u>Level 3</u> | <u>NAV</u>        | <u>Total</u>      |
|-------------------------------|----------------|----------------|----------------|-------------------|-------------------|
| Common collective trust funds |                |                |                |                   |                   |
| Global equity                 |                |                |                | \$ 149,623        | \$ 149,623        |
| Fixed income                  |                |                |                | 72,001            | 72,001            |
| Investments, at fair value    |                |                |                | <u>\$ 221,624</u> | <u>\$ 221,624</u> |

The following presents investments of the other postretirement benefit plan as of June 30, 2021:

|                               | <u>Level 1</u> | <u>Level 2</u> | <u>Level 3</u> | <u>NAV</u>        | <u>Total</u>      |
|-------------------------------|----------------|----------------|----------------|-------------------|-------------------|
| Common collective trust funds |                |                |                |                   |                   |
| Global equity                 |                |                |                | \$ 176,724        | \$ 176,724        |
| Fixed income                  |                |                |                | 83,519            | 83,519            |
| Investments, at fair value    |                |                |                | <u>\$ 260,243</u> | <u>\$ 260,243</u> |

**Net Periodic Benefit Cost**

The components of net periodic benefit cost for pension benefits and other postretirement benefits are as follows:

|  | <u>Pension Plan Benefits</u> |               | <u>Other Postretirement Benefits</u> |                |
|--|------------------------------|---------------|--------------------------------------|----------------|
|  | <u>2022</u>                  | <u>2021</u>   | <u>2022</u>                          | <u>2021</u>    |
| <b>Components of net periodic benefit cost</b> |                              |               |                                      |                |
| Service cost                                   | \$ 10,840                    | \$ 11,665     | \$ 7,267                             | \$ 7,596       |
| Interest cost on projected benefit obligation  | 8,830                        | 8,849         | 4,575                                | 4,753          |
| Expected return on assets                      | (12,160)                     | (11,351)      | (16,098)                             | (13,063)       |
| Amortization of prior service cost             | 65                           | 65            |                                      |                |
| Settlement loss                                | 6,636                        |               |                                      |                |
| Amortization of unrecognized net losses/(gain) | 3,999                        | 4,222         | (5,296)                              | (964)          |
| Net periodic benefit cost                      | <u>18,210</u>                | <u>13,450</u> | <u>(9,552)</u>                       | <u>(1,678)</u> |

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**Amounts recognized in the Consolidated Statements of Activities**

A summary of changes in plan assets and benefit obligations recognized in the consolidated statements of activities is as follows:

|  | <b>Pension Plan Benefits</b> |                    | <b>Other Postretirement Benefits</b> |                    |
|--|------------------------------|--------------------|--------------------------------------|--------------------|
|  | <b>2022</b>                  | <b>2021</b>        | <b>2022</b>                          | <b>2021</b>        |
| <b>Summary of changes in plan assets and benefit obligations recognized in the Consolidated Statements of Activities</b> |                              |                    |                                      |                    |
| Net periodic benefit cost - service cost   | \$ 10,840                    | \$ 11,665          | \$ 7,267                             | \$ 7,596           |
| Total recognized in operating  | <u>10,840</u>                | <u>11,665</u>      | <u>7,267</u>                         | <u>7,596</u>       |
| Net periodic benefit cost other than service cost  | 7,370                        | 1,785              | (16,819)                             | (9,274)            |
| Current year actuarial (gain)/loss   | (9,868)                      | (21,605)           | 11,984                               | (52,248)           |
| Amortization of actuarial gain/(loss)  | (3,999)                      | (4,222)            | 5,296                                | 964                |
| Settlement cost  | (6,636)                      |                    |                                      |                    |
| Amortization of prior service cost   | (65)                         | (65)               |                                      |                    |
| Total recognized in nonoperating   | <u>(13,198)</u>              | <u>(24,107)</u>    | <u>461</u>                           | <u>(60,558)</u>    |
| Total recognized in operating and nonoperating   | <u>\$ (2,358)</u>            | <u>\$ (12,442)</u> | <u>\$ 7,728</u>                      | <u>\$ (52,962)</u> |

| <b>Weighted-average assumptions used to determine net periodic pension cost</b> | <b>2022</b>    | <b>2021</b>    |
|---|----------------|----------------|
| Discount rate   | 2.25% to 3.10% | 2.15% to 3.15% |
| Expected return on plan assets  | 3.75% to 5.50% | 3.75% to 5.50% |
| Rate of compensation increase   | 3.00%          | 3.00%          |

To arrive at assumptions for expected long-term rates of return on assets in the pension plans and the postretirement benefit plan, the University considered historical returns and future expectations for returns in each asset class in the asset allocation for the previously described pension and postretirement benefit portfolios.

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**Expected Cash Flows**

Information about the expected cash flows for the plans is as follows:

|  | <u>Pension Plan<br/>Benefits</u> | <u>Other Postretirement<br/>Benefits</u> |
|--|----------------------------------|--|
| <b>Expected University contributions</b> |                                  |  |
| 2023                                     | \$ 11,496                        |  |
| <b>Expected benefit payments</b>         |                                  |  |
| 2023                                     | \$ 8,386                         | \$ 5,473                                 |
| 2024                                     | 8,990                            | 5,639                                    |
| 2025                                     | 9,611                            | 5,786                                    |
| 2026                                     | 10,212                           | 6,310                                    |
| 2027                                     | 10,827                           | 6,583                                    |
| 2028-2032                                | 64,259                           | 36,169                                   |
| Total                                    | <u>\$ 112,285</u>                | <u>\$ 65,960</u>                         |

Total benefits expected to be paid include both the University's share of the benefit cost net of Medicare subsidies and the participants' share of the cost, which is funded by participant contributions to the other postretirement benefit plan. The University receives a Medicare Part D subsidy from the federal government as reimbursement for certain retiree health benefits paid to plan participants, which was approximately \$0.5 million in fiscal year 2022.



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**14. Lease Obligations**

The University is the lessee of various equipment and space under noncancelable right of use and finance leases. Finance lease obligations at June 30, 2022 and 2021, were \$136.1 million and \$129.2 million, respectively. Right of use lease obligations at June 30, 2022 and 2021 were \$290.7 million and \$316.3 million, respectively.

Rental expense related to operating leases totaled \$38.5 million and \$40.8 million for fiscal years ended 2022 and 2021, respectively. Future minimum rental payments under right of use and finance leases are as follows:

|   | <u>Right of use</u> | <u>Finance</u>    |
|---|---------------------|-------------------|
| <b>Future minimum rental payments:</b>              |                     |                   |
| 2023  | \$ 35,266           | \$ 11,904         |
| 2024  | 34,588              | 9,099             |
| 2025  | 33,474              | 8,399             |
| 2026  | 29,516              | 7,629             |
| 2027  | 28,253              | 6,585             |
| Thereafter  | 200,442             | 216,362           |
| Total lease payments                                | <u>361,539</u>      | <u>259,978</u>    |
| Less: Imputed Interest                              | (70,821)            | (123,891)         |
| Present value of lease obligations at June 30, 2022 | <u>\$ 290,718</u>   | <u>\$ 136,087</u> |

Weighted-average remaining lease term and discount rate for right of use and finance leases are as follows:

|  | <u>2022</u> | <u>2021</u> |
|--|-------------|-------------|
| Weighted average remaining lease term (in years) |             |             |
| Right of use leases                              | 7.2         | 7.2         |
| Finance leases                                   | 17.1        | 17.1        |
| Weighted average discount rate                   |             |             |
| Right of use leases                              | 3.54%       | 3.53%       |
| Finance leases                                   | 4.41%       | 4.42%       |

Cash paid for amounts included in the measurement of lease obligations is as follows:

|  | <u>2022</u> | <u>2021</u> |
|--|-------------|-------------|
| Operating cash flows for right of use leases | \$39,125    | \$37,734    |
| Operating cash flows for finance leases      | \$9,294     | \$5,831     |
| Financing cash flows for finance leases      | \$16,796    | \$16,791    |

The University leases properties to customers under agreements that are classified as right of use leases. The University's lessor arrangements are all operating leases and do not include any sales-type or direct finance leases. Space and equipment leased to others are included in "Land, buildings, and equipment, net" and "Institutional real estate".

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**15. Conditional Asset Retirement Obligations**

Conditional asset retirement obligations are a legal obligation to perform an asset retirement activity in which the timing and/or method of settlement are conditioned on a future event that may or may not be within the control of the University. The University recognizes the fair value of this obligation in the period in which it occurred if a reasonable estimate of fair value can be made. Uncertainty with respect to the timing and/or method of settlement of the asset retirement obligation does not defer recognition of a liability.

Conditional asset retirement obligations related to remediation or disposal of asbestos, underground storage tanks, soil, radioactive sources, equipment, and miscellaneous other items were \$130.4 million and \$126.8 million at June 30, 2022 and 2021, respectively.

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**16. Bonds and Notes Payable**

Bonds and notes payable outstanding are as follows at June 30:

|   | <u>2022</u>         | <u>2021</u>         |
|---|---------------------|---------------------|
| Dormitory Authority of the State of New York, tax exempt revenue bonds, Columbia University issues: |                     |                     |
| Series 2020 A, 2.11%, maturing FY2051   | \$ 150,000          | \$ 150,000          |
| Series 2018 A, 2.45% to 3.41%, maturing FY2029 to FY2049  | 150,000             | 150,000             |
| Series 2018 B, 2.98%, maturing FY2039   | 175,185             | 175,185             |
| Series 2017 A, 2.40% to 3.49%, maturing FY2028 to FY2048  | 150,000             | 150,000             |
| Series 2017 B, 1.96% to 2.61%, maturing FY2025 to FY2030  | 40,475              | 40,475              |
| Series 2016 A-1, 1.67%, maturing FY2027   | 50,000              | 50,000              |
| Series 2016 A-2, 1.35% to 2.89%, maturing FY2024 to FY2047  | 130,000             | 130,000             |
| Series 2016 B, 1.17% to 2.04%, maturing FY2023 to FY2032  | 105,885             | 123,965             |
| Series 2015 A, 1.95% to 3.00%, maturing FY2026 to FY2046  | 92,535              | 92,535              |
| Series 2015 B, 1.64% to 1.88%, maturing FY2023 to FY2025  | 15,525              | 21,545              |
| Series 2012 A, 1.92%, maturing FY2023   | 52,005              | 89,065              |
| Series 2011 A, 3.36%, maturing FY2022   |                     | 15,000              |
| Series 2009 A, variable rate, 0.82%, maturing FY2039  | 117,000             | 117,000             |
| Series 2003 B, variable rate, 0.83%, maturing FY2024 to FY2028                                      | 30,000              | 30,000              |
| Series 2002 C, variable rates, 0.06% to 1.25%, maturing FY2025 to FY2027                            | 23,300              | 23,300              |
| Taxable Series 2021 A, 2.85%, maturing FY2051   | 125,000             | 125,000             |
| Taxable Series 2021 B, 1.52% to 2.59%, maturing FY2031 to FY2050                                    | 180,000             | 180,000             |
| Taxable Series 2020 B, 2.34%, maturing FY2024 to FY2030   | 75,000              | 75,000              |
| Taxable Series 2020 C, 2.00%, maturing FY2023 to FY2024   | 100,000             | 150,000             |
| Taxable Series 2015, 3.46%, maturing FY2046   | 75,000              | 75,000              |
| Taxable Series 2012, 3.83%, maturing FY2043   | 100,000             | 100,000             |
| New Jersey Economic Development Corporation, tax exempt   |                     |                     |
| Series 2002, variable rate, 1.30%, maturing FY2028  | 3,245               | 3,730               |
| Medium-Term Notes, Taxable Series C 6.53% to 7.36%, maturing FY2022                                 |                     | 1,210               |
| Empire State Development Corporation issues:  |                     |                     |
| 9.00%, maturing FY2029  | 4,360               | 4,852               |
| Interest-free, due FY2022   |                     | 8,100               |
| Economic Development Corporation  |                     |                     |
| Interest-free, due FY2022   |                     | 10,000              |
| Taxable Commercial Paper, variable rate, 0.05% to 2.25%   | 125,053             | 125,028             |
| Subtotal, principal payments  | <u>2,069,568</u>    | <u>2,215,990</u>    |
| Unamortized bond premium  | 250,833             | 276,896             |
| Unamortized cost of issuance  | (3,853)             | (4,016)             |
| Subtotal, bond premium and cost of issuance   | <u>246,980</u>      | <u>272,880</u>      |
| Total bonds and notes payable   | <u>\$ 2,316,548</u> | <u>\$ 2,488,870</u> |

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Estimated principal payments on bonds and notes payable and taxable commercial paper are summarized below:

| <u>Fiscal Year</u>                | <u>Principal</u>           |
|-----------------------------------|----------------------------|
| 2023                              | \$ 121,692                 |
| 2024                              | 101,395                    |
| 2025                              | 64,988                     |
| 2026                              | 71,625                     |
| 2027                              | 84,228                     |
| Thereafter (through 2051)         | <u>1,500,588</u>           |
| Subtotal, Bonds and Notes Payable | \$ 1,944,515               |
| Taxable Commercial Paper          | 125,053                    |
| Total, Principal Payments         | <u><u>\$ 2,069,568</u></u> |

The University issues most of its tax-exempt debt through the Dormitory Authority of the State of New York (“DASNY”). The University has not issued tax-exempt debt since fiscal year 2020.

In July 2020, the University issued \$125 million of Series 2021A taxable bonds. These bonds pay interest at 2.85% and mature in 2050. The proceeds from Series 2021A will be used for general corporate purposes.

In July 2020, the University issued \$180 million of Series 2021B taxable bonds. These bonds pay interest at 1.52%, 2.43% and 2.59% and mature in 2030, 2044, and 2049, respectively. The proceeds from Series 2021B will be used for general corporate purposes.

The University has a \$150 million taxable commercial paper program. In April 2021, the University issued \$125 million under its taxable commercial paper program. As of both June 30, 2022 and 2021 there was \$125 million of commercial paper outstanding under this program.

The University recorded amortization of bond premium and issuance costs, net, of \$26.1 million and \$27.1 million for the years ended June 30, 2022 and 2021, respectively, as a reduction to interest expense.

As of June 30, 2022, the University had the following operating lines of credit: \$150 million expiring in May 2025; \$100 million expiring in November 2023; \$100 million expiring in June 2023; \$200 million expiring in October 2022. Additionally, the University had two \$100 million standby lines of credit supporting self-liquidity for variable rate debt outstanding, expiring in January 2025 and January 2023. The lines are provided by six different lending institutions and, as of June 30, 2022, no balances were outstanding on the lines of credit.

The University has administrative covenants on its tax-exempt debt and lines of credit, with which it was in compliance as of June 30, 2022 and 2021.

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On October 1, 2008, the University entered into a \$200 million notional value fixed payer interest rate swap agreement to protect against the risk of interest rate changes. The estimated fair value of the swap liability was \$45.9 million and \$83.4 million at June 30, 2022 and 2021, respectively. The fair value of the swap is obtained by taking the present value of all future cash flows on the swap implied by the forward curve.

The University has letters of credit with various financial institutions totaling \$70.6 million and \$55.2 million at June 30, 2022 and 2021, respectively, primarily to secure certain self-insured liabilities in accordance with New York State requirements related to workers' compensation. There have been no draws under the letters of credit.

**17. Insurance**

In connection with managing financial risks through various third-party insurance programs, the University is self-insured in certain areas. Funded self-insurance liabilities primarily cover deductibles on general liability, trustees and officers' liability, and property insurance claims. Self-insurance liabilities are actuarially calculated on an annual basis. The University's core liability coverage is purchased through Pinnacle RRG, a Vermont-based risk retention group with seventeen other universities.

The University obtains medical malpractice insurance through MCIC and MLMIC. MCIC is a group-captive insurance company owned by the University, The Johns Hopkins Hospital, The Johns Hopkins University, University of Rochester Medical Center, Weill Cornell Medical College, Yale New Haven Health, Yale University School of Medicine, and NYP. MLMIC is a mutual company where policyholders are owners with full voting rights to elect the company's Board of Directors, thereby having direct input into vital areas of operation. The governing Board is comprised primarily of practicing physicians, dentists, and hospital administrators. More than 2,000 of the University's faculty physicians and dentists are enrolled in MCIC or MLMIC. The University has recorded self-insurance and medical malpractice liabilities of approximately \$374.7 million and \$356.7 million as of June 30, 2022 and 2021, respectively in "Other long-term liabilities". The medical malpractice liabilities of approximately \$221.8 million and \$216.5 million as of June 30, 2022 and 2021, respectively, are reported gross with an offsetting receivable for anticipated recoveries of \$153.3 million and \$145.2 million, respectively, recorded in "Other assets".

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**18. Affiliations and Related Party Transactions**

The University maintains several clinical and education affiliation agreements with other organizations. Revenues and expenses from these agreements are accounted for in the operating activities section of the consolidated statements of activities. The most significant affiliation agreement is with NYP.

The University receives reimbursement from NYP for the provision of medical, professional, and supervisory staff services as well as other technical assistance. NYP provides funding to clinical departments for specific purposes including administration, supervision, and teaching of the NYP resident staff and salary support for faculty and staff providing services to NYP. In addition, NYP provides funding for clinical programs that the University and NYP would like to see developed or expanded. NYP also provides the departments with certain facilities and services (outpatient faculty practice offices, nursing, telecommunications, etc.) for which the University is invoiced on a monthly basis. Finally, the University and NYP collaborate and fund joint projects for which specific agreements are negotiated.

In addition, the University and NYP negotiate a funds flow, which forms the basis for the affiliation agreement. The fiscal year 2022 funds flow was approximately \$416.8 million. The payments to NYP for goods and services were \$106.6 million and \$108.1 million for the years ended Jun 30, 2022 and 2021, respectively. The majority of revenues received pursuant to this agreement are reflected in the consolidated financial statements as a portion of “Patient care revenue” and the majority of the expenses related to this agreement are reflected in “Patient care expense”.

The University records both receivables from and payables to NYP on the consolidated statements of financial position. The University has no liability for obligations and debt incurred by NYP. The University and NYP operate a radiological imaging center, ColumbiaDoctors/NewYork-Presbyterian Imaging, Inc. (CDNYPI). CDNYPI is a not-for-profit membership corporation, which was incorporated to operate pursuant to the terms and provisions of Article 28 of the New York Public Health Law, whereby it provides a full range of general radiology and interventional radiology services. In order to provide for efficient delivery of services and to secure a high level of expertise from existing resources, CDNYPI has entered into clinical and administrative agreements with the University and NYP. The revenue generated from these agreements was \$40.6 million and \$34.6 million for the years ended June 30, 2022 and 2021, respectively. In addition, the University recorded an interest in CDNYPI in the amount of \$20.1 million and \$15.1 million as of June 30, 2022 and 2021, respectively.

The University controls a not-for-profit practice entity and three professional corporations and, as such, consolidates these entities into the University’s consolidated financial statements.

From time to time endowment funds held for the benefit of the University may be transferred from the CPMC Fund, Inc. to the University pursuant to the consent of the Trustees of the CPMC Fund, Inc. During the year ended June 30, 2022, the CPMC Fund, Inc. transferred one endowment to the University. The value of the endowment at the time of transfer was \$5.3 million, with \$0.7 million being donor-restricted funds that the University must hold in perpetuity. There were no transfers during the year ended June 30, 2021.

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**19. Liquidity and Availability of Resources**

As part of the University's liquidity management, financial assets are structured to be available as its general expenditures, liabilities, and other obligations come due. In addition, the University may invest cash in excess of daily requirements in short-term and/or liquid investments. To further help manage unanticipated liquidity needs, the University has committed bank lines of credit along with a taxable commercial paper program.

The University's financial assets and liquidity resources available for general expenditures within one year of the date of the consolidated statements of financial position are as follows:

|  | <u>2022</u>         | <u>2021</u>         |
|--|---------------------|---------------------|
| <b>Financial Assets:</b>   |                     |                     |
| Cash and cash equivalents  | \$ 714,875          | \$ 754,556          |
| Accounts receivable, net   | 593,353             | 549,336             |
| Pledges receivable for operations and plant, net                         | 106,031             | 119,771             |
| Operating investments  | 1,533,215           | 1,727,252           |
| Approved endowment payout for subsequent year                            | 629,050             | 554,972             |
| Other financial assets   | 17,786              | 22,107              |
| Total financial assets available within one year                         | <u>3,594,310</u>    | <u>3,727,994</u>    |
| <b>Liquidity resources:</b>  |                     |                     |
| Taxable commercial paper program   | 150,000             | 150,000             |
| Less: Taxable commercial paper issued                                    | (125,053)           | (125,000)           |
| Bank lines of credit (undrawn)   | 750,000             | 800,000             |
| Total liquidity resources available                                      | <u>774,947</u>      | <u>825,000</u>      |
| Total financial assets and liquidity resources available within one year | <u>\$ 4,369,257</u> | <u>\$ 4,552,994</u> |

Additionally, the University has board-designated funds functioning as endowments of \$4.0 billion and \$4.3 billion as of June 30, 2022 and 2021, respectively. Although the University does not intend to spend from these endowments other than amounts appropriated for general expenditure as part of its annual appropriation process, \$3.5 billion and \$3.8 billion, respectively, of these endowments without donor restrictions could be made available if necessary. However, both the funds functioning as endowment and donor-restricted endowments contain investments with lock-up provisions that reduce the total investments that could be made available (see Note 6 for disclosures about investments).

**The Trustees of Columbia University in the City of New York**  
**Notes to the Consolidated Financial Statements**  
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**20. Contingencies and Commitments**

From time to time, various claims and suits generally incident to the conduct of normal business are pending or may arise against the University.

In the opinion of counsel and management of the University, after taking into account insurance coverage, losses, if any, from the resolution of pending litigation should not have a material effect on the University's financial position or results of operations.

All funds expended in connection with government grants and contracts are subject to audit by government agencies. While the ultimate liability, if any, from audits of government grants and contracts by government agencies, claims, and suits is presently not determinable, it should not, in the opinion of counsel and management, have a material effect on the University's financial position or results of activities.

The University is subject to laws and regulations concerning environmental remediation and will, from time to time, establish reserves for potential obligations that management considers probable and for which reasonable estimates can be made (see Note 15 for disclosures about conditional asset retirement obligations). These estimates may change depending upon the nature and extent of contamination, appropriate remediation technologies, and regulatory approvals. The University is not aware of any existing conditions that it currently believes are likely to have a material adverse effect on the University's financial position, changes in net assets, or cash flows.

The University's capital improvement program and related commitments include projects that address the major strategic objectives of the University. As part of the capital improvement program, the University has entered into contracts to purchase properties with an aggregate value of \$44.5 million. As of June 30, 2022, approximately \$43.6 million is still outstanding.

The University has made commitments related to its expansion in Manhattanville, certain of which are based upon events in the future which would result in cash and in-kind payments from the University. Those that are estimable have been recorded as liabilities.



**The Trustees of Columbia University in the City of New York**  
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**21. Expenses by Functional and Natural Classification**

Expenses are reported for the University's primary program activities. The consolidated statements of activities also report certain categories of expenditures that support more than one major program of the University. These expenses include operation and maintenance of plant, depreciation expense, and interest expense.

Expenses by functional and natural classification for the years ended June 30, 2022 and 2021 are as follows:

|   | 2022                                       |            |  |                     |                                |
|---|--|------------|--|---------------------|--------------------------------|
|   | Expenses per<br>Statement of<br>Activities | Allocation | Natural Classification post Allocation |                     | Final<br>Allocated<br>Expenses |
|   |  |            | Compensation<br>and Benefits           | Other               |                                |
| Instruction and educational administration        | \$ 2,093,132                               | \$ 320,443 | \$ 1,655,687                           | \$ 757,888          | \$ 2,413,575                   |
| Research  | 812,624                                    | 114,250    | 489,141                                | 437,733             | 926,874                        |
| Patient care expense                              | 1,317,600                                  | 89,992     | 1,095,933                              | 311,659             | 1,407,592                      |
| Operation and maintenance of plant                | 322,252                                    | (322,252)  |  |                     |                                |
| Institutional support                             | 360,300                                    | 55,595     | 254,638                                | 161,257             | 415,895                        |
| Auxiliary enterprise                              | 184,638                                    | 129,401    | 113,576                                | 200,463             | 314,039                        |
| Depreciation expense                              | 329,390                                    | (329,390)  |  |                     |                                |
| Interest expense                                  | 58,039                                     | (58,039)   |  |                     |                                |
| Total operating expenses                          | 5,477,975                                  |            | 3,608,975                              | 1,869,000           | 5,477,975                      |
| Net periodic benefit cost other than service cost | (16,085)                                   |            | (16,085)                               |                     | (16,085)                       |
| Total expenses                                    | <u>\$ 5,461,890</u>                        |            | <u>\$ 3,592,890</u>                    | <u>\$ 1,869,000</u> | <u>\$ 5,461,890</u>            |

|   | 2021                                       |            |  |                     |                                |
|---|--|------------|--|---------------------|--------------------------------|
|   | Expenses per<br>Statement of<br>Activities | Allocation | Natural Classification post Allocation |                     | Final<br>Allocated<br>Expenses |
|   |  |            | Compensation<br>and Benefits           | Other               |                                |
| Instruction and educational administration        | \$ 1,905,340                               | \$ 300,419 | \$ 1,557,511                           | \$ 648,248          | \$ 2,205,759                   |
| Research  | 734,211                                    | 105,443    | 447,742                                | 391,912             | 839,654                        |
| Patient care expense                              | 1,246,626                                  | 87,219     | 1,025,328                              | 308,517             | 1,333,845                      |
| Operation and maintenance of plant                | 312,826                                    | (312,827)  |  |                     |                                |
| Institutional support                             | 345,088                                    | 51,824     | 254,055                                | 142,857             | 396,912                        |
| Auxiliary enterprise                              | 147,938                                    | 120,219    | 101,430                                | 166,726             | 268,156                        |
| Depreciation expense                              | 290,839                                    | (290,839)  |  |                     |                                |
| Interest expense                                  | 61,458                                     | (61,458)   |  |                     |                                |
| Total operating expenses                          | 5,044,326                                  |            | 3,386,066                              | 1,658,260           | 5,044,326                      |
| Net periodic benefit cost other than service cost | (7,489)                                    |            | (7,489)                                |                     | (7,489)                        |
| Total expenses                                    | <u>\$ 5,036,837</u>                        |            | <u>\$ 3,378,577</u>                    | <u>\$ 1,658,260</u> | <u>\$ 5,036,837</u>            |

The allocation of operation and maintenance of plant is based on square footage occupancy. Depreciation expense includes depreciation of buildings, building improvements, and equipment. The allocation of depreciation on buildings and building improvements is based on square footage occupancy. Depreciation on equipment is allocated to the programs for which the equipment was purchased. Interest expense is allocated according to the same methodologies used for building depreciation.

**The Trustees of Columbia University in the City of New York**  
**Notes to the Consolidated Financial Statements**  
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(in thousands of dollars, unless otherwise noted)

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**22. Subsequent Events**

The University has performed an evaluation of subsequent events through October 12, 2022, which is the date the consolidated financial statements were issued. In October 2022, the University renewed a \$200 million operating line of credit which now expires in October 2025.

**The Trustees of Columbia University in the City of New York**  
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**23. Financial Responsibility Standards**

The University participates in federal Title IV student financial assistance programs, which require it to meet standards of financial responsibility based on criteria determined by the U.S. Department of Education (ED), as set forth in 34 CFR 668.171. The criteria for private institutions include the annual calculation by ED of a financial responsibility composite score, as further outlined in 34 CFR 668.172, using audited financial statements submitted through ED's eZ-Audit system. The composite score has been and will continue to be based on three ratios: Primary Reserve, Equity, and Net Income. These ratios utilize the following financial data of the Institution, which are not otherwise presented in the financial statements or other notes to the financial statements, as of and for the year ended June 30, 2022:

| Required input per standards  | Ratio(s)<br>Uses           | Input Amount | Related financial statement<br>amount not used as input on<br>supplementary schedule |
|---|----------------------------|--------------|--|
| Property, plant and equipment, net - pre-implementation   | Primary reserve            | \$ 4,732,022 |  |
| Property, plant and equipment, net - post-implementation<br>with outstanding debt for original purchase | Primary reserve            | 1,154,765    |  |
| Property, plant and equipment, net - post-implementation<br>with outstanding debt for original purchase | Primary reserve            | 23,968       |  |
| Construction in progress  | Primary reserve            | 166,840      |  |
| Total property, plant, and equipment, net   | N/A                        |              | \$ 6,077,595   |
| Institutional real estate   |                            |              | \$ 1,024,420   |
| Land, buildings, and equipment, net   |                            |              | 5,053,175  |
| Total property, plant, and equipment, net   |                            |              | \$ 6,077,595   |
| Long-term debt - for long-term purposes pre-implementation  | Primary reserve            | \$ 1,586,760 |  |
| Long-term debt - for long-term purposes post-implementation   | Primary reserve            | 172,158      |  |
| Subtotal long-term debt for the purchase of PPE   | Primary reserve            |              | \$ 1,758,918   |
| Other long-term debt  | N/A                        |              | 693,717  |
| Total long-term debt  | N/A                        |              | \$ 2,452,635   |
| Bonds and notes payable   |                            |              | \$ 2,316,548   |
| Capital leases  |                            |              | 136,087  |
| Total long-term debt  |                            |              | \$ 2,452,635   |
| Net assets with donor restrictions: restricted by purpose or time                                       |                            |              |  |
| Annuities and life income funds with donor restrictions   | Primary reserve            | \$ 72,694    |  |
| Term endowments with donor restrictions   | Primary reserve            | 4,706,345    |  |
| Pledges   | N/A                        |              | \$ 308,827   |
| Unexpended capital and other  | N/A                        |              | 474,194  |
| Net assets with donor restrictions: restricted in perpetuity  | Primary reserve            | 4,567,845    |  |
| Total net assets with donor restrictions  |                            |              | \$ 10,129,905  |
| Unsecured related party receivable  | Primary reserve;<br>Equity | \$ 9,397     |  |
| Inputs directly from the statement of activities  |                            |              |  |
| Total expenses without donor restrictions (operating)   | Primary reserve            | \$ 5,477,975 |  |
| Plus: non-operating expenses and other losses   | Primary reserve            | 30,819       |  |
| Total expenses and losses without donor restrictions  | Primary reserve            | \$ 5,508,794 |  |
| Total operating revenue and other additions   | Net income                 | \$ 6,028,952 |  |
| Less: investment return appropriated for spending   | Net income                 | (193,077)    |  |
| Plus: non-operating revenues and other gains  | Net income                 | 19,374       |  |
| Total revenue and gains without donor restrictions  | Net income                 | \$ 5,855,249 |  |

## **Supplemental Schedule**

**The Trustees of Columbia University in the City of New York**  
**Schedule of Expenditures of Federal Awards**  
**For year ended June 30, 2022**

| <u>Federal Grantor / Pass-through Grantor</u>   | <u>Assistance Listing No.</u> | <u>Award Identification No</u> | <u>Pass-through Contract Number</u> | <u>Passthrough Name</u> | <u>Subrecipients</u> | <u>Total Expenditures (Includes Subrecipients)</u> | <b>R&amp;D Cluster</b> |
|---|-------------------------------|--------------------------------|-------------------------------------|-------------------------|----------------------|--|------------------------|
| <b>Research &amp; Development Cluster</b>   |                               |                                |                                     |                         |                      |  |                        |
| <b>Department of Health &amp; Human Services</b>  |                               |                                |                                     |                         |                      |  |                        |
| <b>Direct Awards</b>  |                               |                                |                                     |                         |                      |  |                        |
| <b>Covid 19 Related Funding:</b>  |                               |                                |                                     |                         |                      |  |                        |
| COVID-19-CISA Clinical Vaccine Safety Evaluation - Contributing Contractor  | 93.RD                         | CDC 200-2012-53665/0005        |                                     |                         | \$0                  | \$307,516  |                        |
| COVID-19-Analysis and Simulation of Bacterial Infections and Resource Strain inHospitals during the COVID-19 Pandemic | 93.084                        | 6U01CK000592-02-00             |                                     |                         | \$0                  | \$393,412  |                        |
| COVID-19-Essential Nurse Documentation: Studying EHR Burden during COVID-19 (END-Burden)                              | 93.226                        | 1R01HS28454-01A1               |                                     |                         | \$0                  | \$2,812  |                        |
| COVID-19-Ryan White HIV/AIDS Program AIDS Education and Training Centers Program COVID 19 Response                    | 93.914                        | 1H1LHA37344-01-00              |                                     |                         | \$-4,643             | \$61,421   |                        |
|   |                               |                                |                                     |                         | <u>-4,643</u>        | <u>765,161</u>                                     |                        |
| Biomedical Advanced Research and Development Authority  | 93.RD                         | BARDA 75A50121C00017           |                                     |                         | \$829,542            | \$2,177,701  |                        |
| Training in General, Pediatric, and Public Health Dentistry   | 93.059                        | 5D88HP37554 -02-00             |                                     |                         | \$0                  | \$704,719  |                        |
| Innovations in Applied Public Health Research   | 93.061                        | 5R01TS000285-02-00             |                                     |                         | \$0                  | \$199,012  |                        |
| Prevention of Disease, Disability, and Death by Infectious Diseases   | 93.084                        | 5U01CK000592-02-00             |                                     |                         | \$0                  | \$495,582  |                        |
| Food and Drug Administration Research   | 93.103                        | 5R01FD005745-03                |                                     |                         | \$33,373             | \$1,390,972  |                        |

The accompanying footnotes are an integral part of the Schedule of Expenditures of Federal Awards

**The Trustees of Columbia University in the City of New York**  
**Schedule of Expenditures of Federal Awards**  
**For year ended June 30, 2022**

| <u>Federal Grantor / Pass-through Grantor</u>   | <u>Assistance Listing No.</u> | <u>Award Identification No</u> | <u>Pass-through Contract Number</u> | <u>Passthrough Name</u> | <u>Subrecipients</u> | <u>R&amp;D Cluster</u><br><u>Total Expenditures (Includes Subrecipients)</u> |
|---|-------------------------------|--------------------------------|-------------------------------------|-------------------------|----------------------|--|
| Maternal and Child Health Federal Consolidated Programs   | 93.110                        | 5 H17MC40192 02 00             |                                     |                         | \$0                  | \$56,336   |
| Emergency Medical Services for Children   | 93.127                        | 5U03MC00007 22 00              |                                     |                         | \$225,645            | \$570,205  |
| Injury Prevention and Control Research and State and Community Based Programs   | 93.136                        | 5R49CE003094-04-00             |                                     |                         | \$39,802             | \$755,472  |
| Community Programs to Improve Minority Health Grant Program   | 93.137                        | 1CPIMP211308-01-00             |                                     |                         | \$0                  | \$215,326  |
| National Research Service Award in Primary Care Medicine  | 93.186                        | 6T32HP10260 14 02              |                                     |                         | \$0                  | \$90,547   |
| National Research Service Awards Health Services Research Training  | 93.225                        | 5T32HS026121-05                |                                     |                         | \$0                  | \$495,372  |
| Research on Healthcare Costs, Quality and Outcomes  | 93.226                        | 5R01HS025198-05                |                                     |                         | \$533,936            | \$3,228,977  |
| Centers for Disease Control and Prevention Investigations and Technical Assistance  | 93.283                        | 5U01DP006436-04-00             |                                     |                         | \$107,381            | \$987,120  |
| CDC Undergraduate Public Health Scholars Program (CUPS): A Public Health Experience to Expose Undergraduates Interested in Minority Health to Public Health and the Public Health Professions | 93.456                        | 5NU50MN000003-05-00            |                                     |                         | \$0                  | \$761,202  |
| Public Health Training Centers Program  | 93.516                        | 6UB6HP31686-04-01              |                                     |                         | \$369,174            | \$819,761  |

The accompanying footnotes are an integral part of the Schedule of Expenditures of Federal Awards

**The Trustees of Columbia University in the City of New York**  
**Schedule of Expenditures of Federal Awards**  
**For year ended June 30, 2022**

| <u>Federal Grantor / Pass-through Grantor</u>   | <u>Assistance Listing No.</u> | <u>Award Identification No</u> | <u>Pass-through Contract Number</u> | <u>Passthrough Name</u>                          | <u>Subrecipients</u> | <u>R&amp;D Cluster</u>                             |
|---|-------------------------------|--------------------------------|-------------------------------------|--|----------------------|--|
|   |                               |                                |                                     |  |                      | <u>Total Expenditures (Includes Subrecipients)</u> |
| Mental and Behavioral Health Education and Training Grants  | 93.732                        | 5 MC1HP42105 02 00             |                                     |  | \$0                  | \$443,785  |
| Ryan White HIV/AIDS Dental Reimbursement and Community Based Dental Partnership Grants  | 93.924                        | 5H65HA00014 -20 -00            |                                     |  | \$140,440            | \$312,322  |
| HIV Demonstration, Research, Public and Professional Education Projects   | 93.941                        | 1U01PS005229-01-00             |                                     |  | \$32,679             | \$420,411  |
| Primary Care Medicine and Dentistry Clinician Educator Career Development Awards  | 93.976                        | 5K02HP30811 -04-00             |                                     |  | \$0                  | \$37,811   |
| Sexually Transmitted Diseases (STD) Provider Education Grants   | 93.978                        | 5NU62PS924586-03-00            |                                     |  | \$0                  | \$647,903  |
|   |                               |                                |                                     |  | <u>2,311,972</u>     | <u>14,810,536</u>                                  |
| Total Direct Award Programs   |                               |                                |                                     |  | <u>\$2,307,329</u>   | <u>\$15,575,697</u>                                |
| <b>Pass-through Awards</b>  |                               |                                |                                     |  |                      |  |
| <b>Covid 19 Related Funding:</b>  |                               |                                |                                     |  |                      |  |
| <b>Biomedical Advanced Research and Development Authority</b>   |                               |                                |                                     |  |                      |  |
| COVID-19-An AI-Based Multi-Functional Hand-Held Lumify Ultrasound for Automatic and Intelligent Quantitative Assessment of Lung Injuries, Diseases and Traumatic Injuries in a Mass-Casualty Incident | 93.RD                         | ORSHUN 1019000 COLUMBIA        | 75A50120C000097                     | OREGON HEALTH SCIENCES UNIVERSITY                | \$0                  | \$167,541  |
| COVID-19-Virtual Network to Investigate the Trajectory of COVID-19-Related Severe Outcomes  | 93.RD                         | WESTAT 6765-00SA005            | 75D30120C07986                      | WESTAT   | \$0                  | \$28,960   |
| COVID-19-Applied Research to Address the Coronavirus (COVID-19) Emerging Public Health Emergency, BAA NOTICE ID 75301-20-R-67897  | 93.RD                         | ABTAI 51352                    | 75D30120C08150                      | ABT ASSOCIATES INC.                              | \$0                  | \$251,049  |
| COVID-19-Monitoring Diversity in SARS-CoV-2 Genomes for Tracking Emerging Variants, Measuring Impact of Mitigation Strategies, and Gauging Clinical Outcomes  | 93.RD                         | CHOP GRT-00001190              | 75D30121C11102                      | CHILDREN'S HOSPITAL OF PHILADELPHIA              | \$0                  | \$72,864   |
|   |                               |                                |                                     |  | <u>\$0</u>           | <u>\$520,414</u>                                   |
| <b>Centers for Disease Control and Prevention Investigations and Technical Assistance</b>   |                               |                                |                                     |  |                      |  |
| COVID-19-Virtual Network to Investigate the Trajectory of COVID-19-Related Severe Outcomes  | 93.283                        | Westat 6765-00-SA010           | 75D30120C07986                      | WESTAT   | \$0                  | \$406,686  |
|   |                               |                                |                                     |  | <u>\$0</u>           | <u>\$406,686</u>                                   |
| <b>Strengthening Public Health Systems and Services through National Partnerships to Improve and Protect the Nation's Health</b>  |                               |                                |                                     |  |                      |  |
| COVID-19-Modeling and forecast of COVID 19 at state and county scales   | 93.421                        | CSTE 7727                      | 5NU38OT000297                       | COUNCIL OF STATE AND TERRITORIAL EPIDEMIOLOGISTS | \$0                  | \$47,352   |
| COVID-19-Heterogeneous forecast and nowcast of COVID -19 at county scale  | 93.421                        | CSTE 7456                      | 5NU38OT000297-02-00                 | COUNCIL OF STATE AND TERRITORIAL EPIDEMIOLOGISTS | \$0                  | \$192,478  |
| COVID-19-COVID-19 Electronic Health Data Initiative   | 93.421                        | TFGH CD33-PCOR                 | NU38OT000316-03-02                  | TASK FORCE FOR GLOBAL HEALTH INC                 | \$0                  | \$83,704   |

The accompanying footnotes are an integral part of the Schedule of Expenditures of Federal Awards

**The Trustees of Columbia University in the City of New York**  
**Schedule of Expenditures of Federal Awards**  
**For year ended June 30, 2022**

| Federal Grantor / Pass-through Grantor   | Assistance Listing No. | Award Identification No    | Pass-through Contract Number                       | Passthrough Name                       | R&D Cluster   |   |
|--|------------------------|----------------------------|--|--|---------------|---|
|  |                        |                            |  |  | Subrecipients | Total Expenditures (Includes Subrecipients) |
|  |                        |                            |  |  | \$0           | \$323,534                                   |
|  |                        |                            |  |  | 0             | 1,250,634                                   |
| <b>Biomedical Advanced Research and Development Authority</b>  |                        |                            |  |  |               |   |
| An AI-Based Multi-Functional Hand-Held Lumify Ultrasound for Automatic and Intelligent Quantitative Assessment of Lung Injuries, Diseases and Traumatic Injuries in a Mass-Casualty Incident             | 93.RD                  | ORSHUN 1019000 COLUMBIA    | 75A50120C000097                                    | OREGON HEALTH SCIENCES UNIVERSITY      | \$0           | \$45,223                                    |
| Virtual Network to Investigate the Trajectory of COVID-19-Related Severe Outcomes  | 93.RD                  | WESTAT 6765-00SA005        | 75D30120C07986                                     | WESTAT                                 | \$0           | \$5,711                                     |
| Applied Research to Address the Coronavirus (COVID-19) Emerging Public Health Emergency, BAA NOTICE ID 75301-20-R-67897  | 93.RD                  | ABTAI 51352                | 75D30120C08150                                     | ABT ASSOCIATES INC.                    | \$0           | \$1,329,982                                 |
| Respiratory Virus Transmission Network   | 93.RD                  | VUMC 96462                 | 75D30121C11656                                     | VANDERBILT UNIVERSITY MEDICAL CENTER   | \$0           | \$241,457                                   |
| Study to Investigate the Combination of Physical Activity and Heart Rate with the Use of Actigraphy as a Novel, Well-defined, Reliable, Sensitive, Easy -to-use and Non-invasive Study                   | 93.RD                  | UCOL FY21.827.008          | 75F40119C10090                                     | UNIVERSITY OF COLORADO                 | \$0           | \$37,500                                    |
| QUANTIFYING PATIENTS' BENEFIT-RISK TRADEOFFS ASSOCIATED WITH PERCUTANEOUS REVASCULARIZATION OPTIONS FOR PERIPHERAL ARTERIAL DISEASE: A COLLABORATIVE EFFORT WITH THE RAPID PATHWAYS PATIENT SCIENCE WORK | 93.RD                  | DUMC A034238               | 75F40120C00179                                     | DUKE UNIVERSITY MEDICAL CENTER         | \$0           | \$20,833                                    |
| Pandemic Influenza Study TASK ORDER NO. 50345  | 93.RD                  | ABTAI 50345                | HHSD20002013M53890B/200-ABT ASSOCIATES INC. 2013-F |  | \$0           | \$2,587                                     |
| Biodosimetry After Radiologic and Nuclear Events   | 93.RD                  | ASELL PO 20170003          | PO 20170003  | ASELL LLC.                             | \$0           | \$37,597                                    |
|  |                        |                            |  |  | \$0           | \$1,720,890                                 |
| <b>Prevention of Disease, Disability, and Death by Infectious Diseases</b>   |                        |                            |  |  |               |   |
| Northeast Regional Center for Excellence in Vector Borne Diseases  | 93.084                 | CU 81477-10822             | 6U01CK000509-01-11                                 | CORNELL UNIVERSITY                     | \$0           | \$445,838                                   |
|  |                        |                            |  |  | \$0           | \$445,838                                   |
| <b>Food and Drug Administration Research</b>   |                        |                            |  |  |               |   |
| Analgesic, Anesthetic, and Addiction Clinical Trial Translations, Innovations, Opportunities, and Networks (ACTION) Public-Private Partnership   | 93.103                 | URMC SUB00000201           | 1U01FD007474-01                                    | UNIVERSITY OF ROCHESTER MEDICAL CENTER | \$0           | \$32,112                                    |
| Analgesic, Anesthetic, and Addiction Clinical Trial Translations, Innovations, Opportunities, and Networks (ACTTION) public-private partnership  | 93.103                 | URMC 417811G URFAOGR511088 | 5U01FD005936-05                                    | UNIVERSITY OF ROCHESTER MEDICAL CENTER | \$0           | \$10,243                                    |
|  |                        |                            |  |  | \$0           | \$42,355                                    |
| <b>Injury Prevention and Control Research and State and Community Based Programs</b>   |                        |                            |  |  |               |   |
| Michigan Youth Violence Prevention Center (MI-YVPC) Community Engagement and Revitalization  | 93.136                 | UMICHG 3004386942          | 5U01CE002698-02                                    | UNIVERSITY OF MICHIGAN                 | \$0           | \$-46,559                                   |
| Studying the Philadelphia Resilience Project as a Response to Overdose   | 93.136                 | UPENN 580641               | 6R01CE003143-01-01                                 | UNIVERSITY OF PENNSYLVANIA             | \$0           | \$25,805                                    |
|  |                        |                            |  |  | \$0           | \$-20,754                                   |
| <b>Research on Healthcare Costs, Quality and Outcomes</b>  |                        |                            |  |  |               |   |
| SNEPT and SPLIT Network Implementation of a QoI measure in pediatric transplant recipients   | 93.226                 | UAP 136450-3               | 1U18HS028380-01                                    | UNIVERSITY OF PITTSBURGH               | \$0           | \$12,001                                    |
| Consumer Assessment of Healthcare Providers and Systems CAHPS V  | 93.226                 | YU GR112701 (CON-80002977) | 5U18HS016978-13                                    | YALE UNIVERSITY                        | \$0           | \$18,596                                    |
| Preventing Wrong Drug and Wrong Patient Errors with Indication Alerts in CPOE Systems  | 93.226                 | NWU SP0037488-PROJ0010282  | R01HS024945  | NORTHWESTERN UNIVERSITY                | \$0           | \$25,597                                    |

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**The Trustees of Columbia University in the City of New York**  
**Schedule of Expenditures of Federal Awards**  
**For year ended June 30, 2022**

| <u>Federal Grantor / Pass-through Grantor</u>  | <u>Assistance Listing No.</u> | <u>Award Identification No</u> | <u>Pass-through Contract Number</u> | <u>Passthrough Name</u>                       | <u>Subrecipients</u> | <u>Total Expenditures (Includes Subrecipients)</u> | <b>R&amp;D Cluster</b> |
|--|-------------------------------|--------------------------------|-------------------------------------|---|----------------------|--|------------------------|
| Homecare-CONCERN: Building risk models for preventable hospitalizations and emergency department visits in homecare              | 93.226                        | VNSNY 4629 2020 CUSON          | R01HS027742                         | VISITING NURSE SERVICE OF NEW YORK            | \$0                  | \$25,056   |                        |
|  |                               |                                |                                     |   |                      | <u>\$0</u>   | <u>\$81,250</u>        |
| <b>Policy Research and Evaluation Grants</b>   |                               |                                |                                     |   |                      |  |                        |
| Supporting the Development of the Poverty Research Center at the University of Wisconsin   | 93.239                        | UWIMAD 703K802                 | 1H79AE000103-01                     | UNIVERSITY OF WISCONSIN MADISON               | \$0                  | \$35,759   |                        |
|  |                               |                                |                                     |   |                      | <u>\$0</u>   | <u>\$35,759</u>        |
| <b>Substance Abuse and Mental Health Services Projects of Regional and National Significance</b>                                 |                               |                                |                                     |   |                      |  |                        |
| Mental Disorders Prevalence Study  | 93.243                        | RTI 2-312-0217186-65729L       | 1H79FG000030-01                     | RESEARCH TRIANGLE INSTITUTE                   | \$0                  | \$229,901  |                        |
| SAMHSA s Suicide Prevention Resource Center Grant  | 93.243                        | CUOHSC RS20201621-01           | 1H79SM083028-01                     | UNIVERSITY OF OKLAHOMA HEALTH SCIENCES CENTER | \$0                  | \$55,234   |                        |
| Medication Assisted Treatment Program at Project HOME  | 93.243                        | PROHOME CU62310-01             | 1H79TI081611-01                     | PROJECT H.O.M.E.                              | \$0                  | \$36,133   |                        |
| 2019 Providers Clinical Support System-Medicated Assisted Treatment  | 93.243                        | AAAP PCSSMAT19-15              | 1H79TI081968-01                     | AMERICAN ACADEMY OF ADDICTION PSYCHIATRY      | \$0                  | \$112,538  |                        |
| Increasing Community Access to Early Childhood EBT Services at the Family PEACE Trauma Treatment Program                         | 93.243                        | NYPH CU19-3449                 | U79SM063220-01                      | PRESBYTERIAN HOSPITAL IN THE CITY OF NEWYORK  | \$0                  | \$62,367   |                        |
|  |                               |                                |                                     |   |                      | <u>\$0</u>   | <u>\$496,173</u>       |
| <b>Advanced Nursing Education Workforce Grant Program</b>  |                               |                                |                                     |   |                      |  |                        |
| Advanced Nursing Education Nurse Practitioner Residency Integration Program (ANE-NPRIP)  | 93.247                        | CHCNTWK CU20-1905              | 1T58HP39869-01-00                   | COMMUNITY HEALTHCARE NETWORK                  | \$0                  | \$300,477  |                        |
| HRSA Advanced Nursing Education Nurse Practitioner Residency (ANE-NPR) Program   | 93.247                        | BASSETT CU19-0741              | HRSA 1T14HP33198-01-00              | BASSETT HEALTHCARE NETWORK                    | \$0                  | \$31,489   |                        |
|  |                               |                                |                                     |   |                      | <u>\$0</u>   | <u>\$331,966</u>       |
| <b>Occupational Safety and Health Program</b>  |                               |                                |                                     |   |                      |  |                        |
| Prenatal WTC Chemical Exposures, Birth Outcomes and CardiometabolicRisks   | 93.262                        | NYU 17-A1-00-006514            | U01OH011299                         | NEW YORK UNIVERSITY MEDICAL CENTER            | \$0                  | \$75,267   |                        |
|  |                               |                                |                                     |   |                      | <u>\$0</u>   | <u>\$75,267</u>        |
| <b>Protecting and Improving Health Globally: Building and Strengthening Public Health Impact, Systems, Capacity and Security</b> |                               |                                |                                     |   |                      |  |                        |
| Ethiopia SI GEEKS Data Triangulation   | 93.318                        | TFGH CU21-1643                 | 6NU2GGH002090                       | TASK FORCE FOR GLOBAL HEALTH INC              | \$0                  | \$55,373   |                        |
|  |                               |                                |                                     |   |                      | <u>\$0</u>   | <u>\$55,373</u>        |
| <b>Sickle Cell Treatment Demonstration Program</b>   |                               |                                |                                     |   |                      |  |                        |
| Northeast Region Sickle Cell Disease Treatment Demonstration Regional Collaborative Program                                      | 93.365                        | JH 2003735144                  | 5U1EMC227864-06-00                  | JOHNS HOPKINS UNIVERSITY                      | \$0                  | \$28,417   |                        |
|  |                               |                                |                                     |   |                      | <u>\$0</u>   | <u>\$28,417</u>        |
| <b>ACL National Institute on Disability, Independent Living, and Rehabilitation Research</b>                                     |                               |                                |                                     |   |                      |  |                        |
| RERC on TECH. for the Deaf and Hard of Hearing   | 93.433                        | GU #25172                      | 90RE5020-02-01                      | GALLAUDET UNIVERSITY                          | \$0                  | \$11,288   |                        |
|  |                               |                                |                                     |   |                      | <u>\$0</u>   | <u>\$11,288</u>        |
| <b>Opioid STR</b>  |                               |                                |                                     |   |                      |  |                        |
| Opioid Response Network: Collaborating, Advancing, Responding, Educating   | 93.788                        | AAAP SOR-CARE-40               | 1H79 TI083343-01                    | AMERICAN ACADEMY OF ADDICTION PSYCHIATRY      | \$0                  | \$183,919  |                        |

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**The Trustees of Columbia University in the City of New York**  
**Schedule of Expenditures of Federal Awards**  
**For year ended June 30, 2022**

| <u>Federal Grantor / Pass-through Grantor</u>  | <u>Assistance Listing No.</u> | <u>Award Identification No</u> | <u>Pass-through Contract Number</u> | <u>Passthrough Name</u>                 | <b>R&amp;D Cluster</b> |  |
|--|-------------------------------|--------------------------------|-------------------------------------|---|------------------------|--|
|  |                               |                                |                                     |   | <u>Subrecipients</u>   | <u>Total Expenditures (Includes Subrecipients)</u> |
|  |                               |                                |                                     |   | \$0                    | \$183,919  |
| <b>Health Careers Opportunity Program</b>  |                               |                                |                                     |   |                        |  |
| HCOP Northeast Regional Alliance (NERA) MedPrep Scholars Program   | 93.822                        | ISMMS 0253-6647-4609           | 1D18HP321210100                     | ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI | \$0                    | \$133,149  |
|  |                               |                                |                                     |   | \$0                    | \$133,149  |
| <b>HIV Emergency Relief Project Grants</b>   |                               |                                |                                     |   |                        |  |
| RYAN WHITE PART A CONTRACT 93-EVL-4645 FOR PLANNING AND EVALUATION (BASE)  | 93.914                        | 93-EVL-4645T-502               | 6 H89HA00015 31 01                  | Public Health Solutions                 | \$0                    | \$686,242  |
|  |                               |                                |                                     |   | \$0                    | \$686,242  |
|  |                               |                                |                                     |   | 0                      | 4,307,132  |
|  |                               |                                |                                     |   | \$0                    | \$5,557,766  |
| <b>Total Department of Health &amp; Human Services (Excluding NIH)</b>   |                               |                                |                                     |   | <b>\$2,307,329</b>     | <b>\$21,133,463</b>                                |
| <b>National Institute of Health</b>  |                               |                                |                                     |   |                        |  |
| <b>Direct Awards</b>   |                               |                                |                                     |   |                        |  |
| <b>Covid 19 Related Funding:</b>   |                               |                                |                                     |   |                        |  |
| COVID-19-Effects of Prenatal Exposure To Environmental Tobacco Smoke on Brain Function and Academic Skills                       | 93.113                        | 5K23ES026239-05                |                                     |   | \$9,634                | \$64,351   |
| COVID-19-Neurocognitive & neuropsychiatric impact of chemosensory alterations: Implications of olfactory dysfunction in COVID-19 | 93.173                        | 5K23DC019678-02                |                                     |   | \$26,119               | \$283,851  |
| COVID-19-OVID-19 Mother Baby Outcomes (COMBO): brain-behavior functioning  | 93.242                        | 5R01MH126531-02                |                                     |   | \$144,809              | \$719,229  |
| COVID-19-Tissue Engineering Resource Center-Treatment of COVID-19 Induced Acute Respiratory Distress by Inhalation of Exosomes   | 93.286                        | 3P41EB027062-02S1              |                                     |   | \$0                    | \$5,039  |
| COVID-19-Impact of Social Cohesion and Social Capital in PrEP Uptake and Adherence Among Transwomen of Color                     | 93.307                        | 3R01MD013554-05S1              |                                     |   | \$0                    | \$303,760  |
| COVID-19-Optimizing SARS-CoV-2 wastewater based surveillance in urban and university campus settings                             | 93.310                        | 5U01DA053949-02                |                                     |   | \$45,662               | \$2,831,046  |
| COVID-19-Cancer Center Support Grant   | 93.394                        | 3P30CA013696-45S3              |                                     |   | \$0                    | \$1,478  |

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**The Trustees of Columbia University in the City of New York**  
**Schedule of Expenditures of Federal Awards**  
**For year ended June 30, 2022**

| <u>Federal Grantor / Pass-through Grantor</u>  | <u>Assistance Listing No.</u> | <u>Award Identification No</u> | <u>Pass-through Contract Number</u> | <u>Passthrough Name</u> | <u>Subrecipients</u> | <u>R&amp;D Cluster</u><br><u>Total Expenditures (Includes Subrecipients)</u> |
|--|-------------------------------|--------------------------------|-------------------------------------|-------------------------|----------------------|--|
| COVID-19-Columbia University Minority/Underserved Site NCI Community Oncology Research Program | 93.399                        | 5UG1CA189960-09                |                                     |                         | \$0                  | \$2,530  |
| COVID-19-Ubiquitin Regulation of K Channels in Health and Disease                              | 93.837                        | 3R01HL142111-04S1              |                                     |                         | \$29,822             | \$593,940  |
| COVID-19-COVID-19 Lung Microvascular and Parenchymal Sequelae (Lung-MaPS)                      | 93.838                        | 5R01HL157634-02                |                                     |                         | \$361,343            | \$1,236,423  |
| COVID-19-RECONFIG - REcovery of CONsciousness Following Intracerebral hemorrhage               | 93.853                        | 5R01NS106014-04                |                                     |                         | \$0                  | \$53,543   |
| COVID-19-Engineering protease-resistant antiviral peptide inhibitors for SARS-CoV-2            | 93.855                        | 5R01AI160961-02                |                                     |                         | \$77,755             | \$2,776,301  |
| COVID-19-Discovering and Applying Knowledge in Clinical Databases                              | 93.879                        | 2R01LM006910-22                |                                     |                         | \$0                  | \$33,859   |
| COVID-19-Health and Psychosocial Need: The Asenze study of risk and protection in adolescence  | 93.989                        | 5R01TW011228-04                |                                     |                         | \$0                  | \$3,932  |
|  |                               |                                |                                     |                         | 695,144              | 8,909,282  |
| Fogarty International Center/NIH/DHHS  | 93.RD                         | FIC CU19-1769                  |                                     |                         | \$98,835             | \$11,802,047   |
| Family Smoking Prevention and Tobacco Control Act Regulatory Research                          | 93.077                        | 5R21HL153700-02                |                                     |                         | \$0                  | \$161,652  |
| Environmental Health   | 93.113                        | 5T32ES007322-20                |                                     |                         | \$2,780,076          | \$15,737,246   |

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**Schedule of Expenditures of Federal Awards**  
**For year ended June 30, 2022**

| <u>Federal Grantor / Pass-through Grantor</u>  | <u>Assistance Listing No.</u> | <u>Award Identification No</u> | <u>Pass-through Contract Number</u> | <u>Passthrough Name</u> | <u>Subrecipients</u> | <u>Total Expenditures (Includes Subrecipients)</u> | <b>R&amp;D Cluster</b> |
|--|-------------------------------|--------------------------------|-------------------------------------|-------------------------|----------------------|--|------------------------|
| Oral Diseases and Disorders Research   | 93.121                        | 5R01DE029068-04                |                                     |                         | \$698,709            | \$5,530,123  |                        |
| NIEHS Superfund Hazardous Substances_Basic Research and Education                    | 93.143                        | 5P42ES010349-18                |                                     |                         | \$43,398             | \$53,309   |                        |
| Human Genome Research  | 93.172                        | 5U01HG008680-06                |                                     |                         | \$590,574            | \$7,030,926  |                        |
| Research Related to Deafness and Communication Disorders                             | 93.173                        | 5R01DC018060-04                |                                     |                         | \$864,504            | \$6,213,223  |                        |
| Research and Training in Complementary and Integrative Health                        | 93.213                        | 5DP1AT011979-02                |                                     |                         | \$4,300              | \$1,063,039  |                        |
| National Center on Sleep Disorders Research  | 93.233                        | 5R01HL141494-05                |                                     |                         | \$11,469             | \$1,779,615  |                        |
| Mental Health Research Grants  | 93.242                        | 5P50MH109429-05                |                                     |                         | \$6,315,651          | \$36,690,028                                       |                        |
| Alcohol Research Programs  | 93.273                        | 51R01AA027079-04               |                                     |                         | \$958,197            | \$5,234,667  |                        |
| Drug Abuse and Addiction Research Programs   | 93.279                        | 5UM1DA049415-04                |                                     |                         | \$5,120,905          | \$26,848,032                                       |                        |
| Discovery and Applied Research for Technological Innovations to Improve Human Health | 93.286                        | 5P41EB027062-04                |                                     |                         | \$595,979            | \$6,843,339  |                        |

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**The Trustees of Columbia University in the City of New York**  
**Schedule of Expenditures of Federal Awards**  
**For year ended June 30, 2022**

| <u>Federal Grantor / Pass-through Grantor</u>        | <u>Assistance Listing No.</u> | <u>Award Identification No</u> | <u>Pass-through Contract Number</u> | <u>Passthrough Name</u> | <u>Subrecipients</u> | <u>R&amp;D Cluster</u><br><u>Total Expenditures (Includes Subrecipients)</u> |
|--|-------------------------------|--------------------------------|-------------------------------------|-------------------------|----------------------|--|
| Minority Health and Health Disparities Research      | 93.307                        | 5U01MD011279-05                |                                     |                         | \$707,595            | \$4,419,200  |
| Trans-NIH Research Support                           | 93.310                        | 3OT2OD026556-01S3              |                                     |                         | \$4,979,791          | \$19,249,896   |
| National Center for Advancing Translational Sciences | 93.350                        | 5U18TR003211-02                |                                     |                         | \$348,450            | \$4,606,843  |
| Research Infrastructure Programs                     | 93.351                        | 1S10OD028696-01A1              |                                     |                         | \$0                  | \$1,337,500  |
| Construction Support                                 | 93.352                        | 1C06OD030152-01                |                                     |                         | \$0                  | \$340,184  |
| 21st Century Cures Act - Beau Biden Cancer Moonshot  | 93.353                        | 5U01CA247573-03                |                                     |                         | \$0                  | \$530,521  |
| Nursing Research                                     | 93.361                        | 5R01NR017571-05                |                                     |                         | \$1,241,184          | \$5,293,383  |
| Cancer Cause and Prevention Research                 | 93.393                        | 5U01CA164920-10                |                                     |                         | \$2,968,650          | \$18,556,254   |
| Cancer Detection and Diagnosis Research              | 93.394                        | 5R01CA238433-04                |                                     |                         | \$503,723            | \$2,445,760  |
| Cancer Treatment Research                            | 93.395                        | 5R01CA201788-07                |                                     |                         | \$236,658            | \$5,317,426  |
| Cancer Biology Research                              | 93.396                        | 5P01CA087497-20                |                                     |                         | \$2,404,146          | \$22,077,492   |

The accompanying footnotes are an integral part of the Schedule of Expenditures of Federal Awards

**The Trustees of Columbia University in the City of New York**  
**Schedule of Expenditures of Federal Awards**  
**For year ended June 30, 2022**

| <u>Federal Grantor / Pass-through Grantor</u>                                | <u>Assistance Listing No.</u> | <u>Award Identification No</u> | <u>Pass-through Contract Number</u> | <u>Passthrough Name</u> | <u>Subrecipients</u> | <u>R&amp;D Cluster</u>                             |
|--|-------------------------------|--------------------------------|-------------------------------------|-------------------------|----------------------|--|
|  |                               |                                |                                     |                         |                      | <u>Total Expenditures (Includes Subrecipients)</u> |
| Cancer Centers Support Grants  | 93.397                        | 5P30CA013696-47                |                                     |                         | \$626,556            | \$7,890,965  |
| Cancer Research Manpower   | 93.398                        | 5T32CA203703-07                |                                     |                         | \$0                  | \$3,312,451  |
| Cancer Control   | 93.399                        | 5UG1CA189960-09                |                                     |                         | \$45,000             | \$850,055  |
| Preventing Heart Attacks and Strokes in High Need Areas                      | 93.816                        | 7R01AI067946-13                |                                     |                         | \$0                  | \$73,141   |
| Cardiovascular Diseases Research   | 93.837                        | 5R01HL139671-04                |                                     |                         | \$4,256,653          | \$37,718,186                                       |
| Lung Diseases Research   | 93.838                        | 5R01HL093081-11                |                                     |                         | \$2,740,066          | \$14,822,741                                       |
| Blood Diseases and Resources Research  | 93.839                        | 5R01HL148151-04                |                                     |                         | \$1,374,692          | \$6,435,856  |
| Arthritis, Musculoskeletal and Skin Diseases Research                        | 93.846                        | 5R01AR071986-04                |                                     |                         | \$1,147,631          | \$9,039,716  |
| Diabetes, Digestive, and Kidney Diseases Extramural Research                 | 93.847                        | 5U01DK123559-04                |                                     |                         | \$4,880,231          | \$38,679,836                                       |
| Extramural Research Programs in the Neurosciences and Neurological Disorders | 93.853                        | 5U01NS095869-05                |                                     |                         | \$12,291,001         | \$57,172,771                                       |
| Allergy and Infectious Diseases Research                                     | 93.855                        | 4U54AI138370-06                |                                     |                         | \$5,607,427          | \$45,572,163                                       |

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**The Trustees of Columbia University in the City of New York**  
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| <u>Federal Grantor / Pass-through Grantor</u>  | <u>Assistance Listing No.</u> | <u>Award Identification No</u> | <u>Pass-through Contract Number</u> | <u>Passthrough Name</u>                 | <u>Subrecipients</u> | <b>R&amp;D Cluster</b>                             |
|--|-------------------------------|--------------------------------|-------------------------------------|---|----------------------|--|
|  |                               |                                |                                     |   |                      | <u>Total Expenditures (Includes Subrecipients)</u> |
| National Cancer Institute/NIH/DHHS   | 93.856                        | 5R01CA224428-05                |                                     |   | \$183,614            | \$1,178,335  |
| Biomedical Research and Research Training  | 93.859                        | 2T32GM007367-42                |                                     |   | \$457,232            | \$32,777,239                                       |
| Child Health and Human Development Extramural Research   | 93.865                        | 5R01HD104599-03                |                                     |   | \$4,564,314          | \$15,296,675                                       |
| Aging Research   | 93.866                        | 5U01AG051412-05                |                                     |   | \$14,376,593         | \$81,251,068                                       |
| Vision Research  | 93.867                        | 5R24EY028758-02                |                                     |   | \$914,374            | \$13,814,952                                       |
| Medical Library Assistance   | 93.879                        | 5T15LM007079-30                |                                     |   | \$573,462            | \$3,431,150  |
| International Research and Research Training   | 93.989                        | 5R01TW011228-04                |                                     |   | \$338,419            | \$871,437  |
|  |                               |                                |                                     |   | <u>85,850,059</u>    | <u>579,350,442</u>                                 |
| Total Direct Award Programs  |                               |                                |                                     |   | <u>\$86,545,203</u>  | <u>\$588,259,724</u>                               |
| <b>Pass-through Awards</b>   |                               |                                |                                     |   |                      |  |
| <b>Covid 19 Related Funding:</b>   |                               |                                |                                     |   |                      |  |
| <b>National Cancer Institute/NIH/DHHS</b>  |                               |                                |                                     |   |                      |  |
| COVID-19-Multiplexed in-solution serological test for SARS-COV-2, human coronaviruses and other respiratory pathogens  | 93.RD                         | ASU ASUB00000660               | 75N91019D00024                      | ARIZONA STATE UNIVERSITY                | \$0                  | \$477,148  |
| COVID-19-An International Multicenter, Adaptive, Randomized Double-Blind, Placebo-Controlled Trial of the Safety, Tolerability and Efficacy of Anti-Coronavirus Hyperimmune Intravenous Immunoglobulin for the T | 93.RD                         | LEIDOS 21CTA-DC0021            | 75N91020F00009                      | LEIDOS BIOMEDICAL RESEARCH INC          | \$0                  | \$79,339   |
| COVID-19- In vitro testing and early detection of SARS-CoV-2 variants  | 93.RD                         | ISSM 0258-A700-4609            | 75N93021C00014                      | ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI | \$0                  | \$1,215,385  |
| COVID-19-Adaptive Platform Treatment Trial for Outpatients with COVID-19 (Adapt Out COVID)   | 93.RD                         | ACTIV-2/A5401                  | HHSN272201700078C                   | PPD DEVELOPMENT                         | \$0                  | \$11,764   |
|  |                               |                                |                                     |   | <u>\$0</u>           | <u>\$1,783,636</u>                                 |

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**The Trustees of Columbia University in the City of New York**  
**Schedule of Expenditures of Federal Awards**  
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| <u>Federal Grantor / Pass-through Grantor</u>   | <u>Assistance Listing No.</u> | <u>Award Identification No</u> | <u>Pass-through Contract Number</u> | <u>Passthrough Name</u>                                 | <u>Subrecipients</u> | <u>Total Expenditures (Includes Subrecipients)</u> | <b>R&amp;D Cluster</b> |
|---|-------------------------------|--------------------------------|-------------------------------------|---|----------------------|--|------------------------|
| <b>Research on Healthcare Costs, Quality and Outcomes</b>   |                               |                                |                                     |   |                      |  |                        |
| COVID-19-Evaluating and Enhancing Health Information Technology for COVID-19 Emergency Response Workflow in a Specialized COVID-19 Hospital in a Medically Underserved Community                          | 93.226                        | SUNYRF 100-1165500-90112       | 1R01HS028220-01                     | RESEARCH FOUNDATION OF THE STATE UNIVERSITY OF NEW YORK | \$0                  | \$21,064   |                        |
|   |                               |                                |                                     |   | \$0                  | \$21,064   |                        |
| <b>Mental Health Research Grants</b>  |                               |                                |                                     |   |                      |  |                        |
| COVID-19-Web-Based Therapist Training on Complicated Grief Therapy  | 93.242                        | CFT 001                        | 1R41MH118126-01A1                   | CENTER FOR TELEPSYCHOLOGY                               | \$0                  | \$17,072   |                        |
| COVID-19-Adapting Coordinated Specialty Care in the Post COVID-19 Era   | 93.242                        | RFMH 27327                     | 3R01MH120597-02S1                   | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC               | \$0                  | \$1,133  |                        |
| COVID-19-StepWell: Stepped Care Mental Health and Substance Use Telehealth Services for COVID-19 Affected Patients  | 93.242                        | SRFMH 154388                   | 3U19MH113203-04S3                   | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC               | \$0                  | \$196,879  |                        |
|   |                               |                                |                                     |   | \$0                  | \$215,084  |                        |
| <b>Drug Abuse and Addiction Research Programs</b>   |                               |                                |                                     |   |                      |  |                        |
| COVID-19-Methadone in the Time of COVID: A natural experiment on the impact of relaxed methadone regulations on treatment outcome   | 93.279                        | 21-A0-R2-003671                | 3UG1DA013035-19S3                   | NEW YORK UNIVERSITY                                     | \$0                  | \$46,912   |                        |
|   |                               |                                |                                     |   | \$0                  | \$46,912   |                        |
| <b>Trans-NIH Research Support</b>   |                               |                                |                                     |   |                      |  |                        |
| COVID-19-Diagnosing and predicting risk in children with SARS-CoV-2-related illness   | 93.310                        | UCSD KR704295                  | 1R61HD105590-01                     | UNIVERSITY OF CALIFORNIA, SAN DIEGO                     | \$0                  | \$202,469  |                        |
| COVID-19-Antibody library display for precision screening of antibody responses to SARS-CoV-2   | 93.310                        | KUCR FY2021-048                | 3DP5OD023118-05S1                   | UNIVERSITY OF KANSAS CENTER FOR RESEARCH, INC.          | \$0                  | \$2,471  |                        |
| COVID-19-Leveraging Social Networks to Increase COVID-19 Testing Uptake: A Comparison of Credible Messenger and Chain Referral Recruitment Approaches   | 93.310                        | RFMH 152302                    | 3UG1DA050071-02S1                   | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC               | \$0                  | \$173,353  |                        |
|   |                               |                                |                                     |   | \$0                  | \$378,293  |                        |
| <b>Cardiovascular Diseases Research</b>   |                               |                                |                                     |   |                      |  |                        |
| COVID-19-A5332: Randomized Trial to Prevent Vascular Events in HIV - REPRIEVE ( Study ) and the REPRIEVE sub-study A5333s: Effects of Pitavastatin on Coronary Artery Disease and Inflammatory Biomarkers | 93.837                        | BWH CU21-2542                  | 3U01HL123336-06S2                   | BRIGHAM AND WOMEN'S HOSPITAL                            | \$0                  | \$3,000  |                        |
| COVID-19-Pediatric Heart Network U24HL135691  | 93.837                        | NERI CU17-3862                 | U24HL135691                         | NEW ENGLAND RESEARCH INSTITUTES                         | \$0                  | \$107,026  |                        |
|   |                               |                                |                                     |   | \$0                  | \$110,026  |                        |
| <b>Lung Diseases Research</b>   |                               |                                |                                     |   |                      |  |                        |
| COVID-19-Collaborative Cohort of Cohorts for COVID-19 Research (C4R)  | 93.838                        | RTI 22-312-0217571-66178       | 1OT2HL156812-01                     | RESEARCH TRIANGLE INSTITUTE                             | \$5,680,988          | \$7,826,946  |                        |
| COVID-19-NIH RECOVER: A Multi-site Observational Study of Post-Acute Sequelae of SARS-CoV-2 Infection in Pediatric Populations  | 93.838                        | NYMC PED-05-21                 | OT2HL161847-01                      | NEW YORK UNIVERSITY MEDICAL CENTER                      | \$0                  | \$245,344  |                        |
|   |                               |                                |                                     |   | \$5,680,988          | \$8,072,290  |                        |
| <b>Translation and Implementation Science Research for Heart, Lung, Blood Diseases, and Sleep Disorders</b>   |                               |                                |                                     |   |                      |  |                        |
| COVID-19- ACTIV 4d RAAS   | 93.840                        | VUMC 92541                     | 1OT2HL156812-01                     | VANDERBILT UNIVERSITY MEDICAL CENTER                    | \$0                  | \$5,031  |                        |
|   |                               |                                |                                     |   | \$0                  | \$5,031  |                        |
| <b>Diabetes, Digestive, and Kidney Diseases Extramural Research</b>   |                               |                                |                                     |   |                      |  |                        |
| COVID-19- Experimental and natural SARS-CoV-2 infection of the human pancreas   | 93.847                        | ISMMS 0255-F641-4609           | 1R01DK130425-01                     | ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI                 | \$0                  | \$26,876   |                        |
|   |                               |                                |                                     |   | \$0                  | \$26,876   |                        |

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**The Trustees of Columbia University in the City of New York**  
**Schedule of Expenditures of Federal Awards**  
**For year ended June 30, 2022**

| <u>Federal Grantor / Pass-through Grantor</u>   | <u>Assistance Listing No.</u> | <u>Award Identification No</u> | <u>Pass-through Contract Number</u> | <u>Passthrough Name</u>                     | <u>Subrecipients</u> | <u>R&amp;D Cluster</u>                             |
|---|-------------------------------|--------------------------------|-------------------------------------|---|----------------------|--|
|   |                               |                                |                                     |   |                      | <u>Total Expenditures (Includes Subrecipients)</u> |
| <b>Allergy and Infectious Diseases Research</b>   |                               |                                |                                     |   |                      |  |
| COVID-19-Surveillance of COVID-19 at the building scale: SARS-CoV-2 in building dust  | 93.855                        | OSU GR126534/SPC-1000006185    | 1R21AI68817-01                      | OHIO STATE UNIVERSITY                       | \$0                  | \$1,812  |
| COVID-19-Immune Tolerance Network   | 93.855                        | BRI FY21ITN440                 | 2UM1AI109565-08                     | BENAROYA RESEARCH INSTITUTE                 | \$0                  | \$51,814   |
| COVID-19-COVID-19 Prevention Network (CoVPN) Site Preparation   | 93.855                        | FHCRC 0001033117               | 3UM1AI068614-14                     | FRED HUTCHINSON CANCER CENTER               | \$0                  | \$2,677  |
| COVID-19-CoVPN 3002 Protocol Funding (PF) - New York-Columbia P&S Clinical Research Site  | 93.855                        | FHCRC 0001035530               | 3UM1AI068614-14S1                   | FRED HUTCHINSON CANCER CENTER               | \$0                  | \$1,545,427  |
| COVID-19-A randomized controlled study to assess SARS CoV-2 infection, viral shedding, and subsequent potential transmission in university students immunized with Moderna COVID-19 Vaccine                               | 93.855                        | HCRC 0001064473                | 3UM1AI068614-15                     | FRED HUTCHINSON CANCER CENTER               | \$0                  | \$-36,108  |
| COVID-19-COVID-19 Prevention Network (CoVPN) Site Preparedness Funding-New York - Bronx Prevention Clinical Research site   | 93.855                        | FHCRC 0001081380               | 3UM1AI068614-15S1                   | FRED HUTCHINSON CANCER CENTER               | \$0                  | \$121,107  |
| COVID-19-CoVPN Vaccine Site Preparation   | 93.855                        | PO20002667                     | 3UM1AI06861914S1                    | FHI DEVELOPMENT 360 LLC                     | \$0                  | \$-21,363  |
| COVID-19-ADAPT Out COVID: ACTIV-2/ACTG A5401  | 93.855                        | UCLA CRS 30329 CU 30606 A5401  | 3UM1AI068636-14S2                   | UNIVERSITY OF CALIFORNIA, LOS ANGELES       | \$0                  | \$84,039   |
| COVID-19-Genetic and ecological determinants of coronavirus recombination   | 93.855                        | UCD A21-2861-S001-A02          | 5R01AI149693-03                     | UNIVERSITY OF CALIFORNIA, DAVIS             | \$0                  | \$54,536   |
| COVID-19-CoVPN 3003: A Randomized, Double-blind, Placebo-controlled Phase 3 Study to Assess the Efficacy and Safety of Ad26.COVS.2.S for the Prevention of SARS-CoV-2- mediated COVID-19 in Adults Aged 18 Years or Older | 93.855                        | FHID P020003035                | UM1 AI068619                        | FHI DEVELOPMENT 360 LLC                     | \$0                  | \$192,465  |
| COVID-19-CoVPN 5002 Seroprevalence Study  | 93.855                        | FHID PO20002908                | UM1AI068619                         | FHI DEVELOPMENT 360 LLC                     | \$0                  | \$2,473,427  |
|   |                               |                                |                                     |   | \$0                  | \$4,469,833  |
| <b>Biomedical Research and Research Training</b>  |                               |                                |                                     |   |                      |  |
| COVID-19-Efficient Statistical Learning Methods for Personalized Medicine Using Large Scale Biomedical Data.  | 93.859                        | UNC 5118007                    | 3R01GM124104-03S1                   | UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL | \$0                  | \$92,280   |
|   |                               |                                |                                     |   | \$0                  | \$92,280   |
| <b>Child Health and Human Development Extramural Research</b>   |                               |                                |                                     |   |                      |  |
| COVID-19-Fragile Families and the Transition to Adulthood   | 93.865                        | PU SUB0000462                  | 5R01HD036916-18                     | PRINCETON UNIVERSITY                        | \$0                  | \$7,062  |
|   |                               |                                |                                     |   | \$0                  | \$7,062  |
|   |                               |                                |                                     |   | 5,680,988            | 15,228,387   |
| <b>National Institutes of Health/DHHS</b>   |                               |                                |                                     |   |                      |  |
| Direct activators of protein phosphatase 2A (PP2A) as novel Alzheimer s Disease (AD) therapeutics   | 93.RD                         | ATUX CU20-1222                 | 1R43AG071040-01                     | ATUX ISKAY LLC                              | \$0                  | \$57,682   |
| Strong Heart Study (SHS) - AZ Field Center Core Field Studies, TO 75N2019F0001  | 93.RD                         | MERI 5002263976                | 75N2019D00023                       | Medstar Research Institute                  | \$0                  | \$45,928   |
| Strong Heart Study Arizona Field Center   | 93.RD                         | MERI 5001681646                | 75N2019D00023/TO-75N2019 F0001      | Medstar Research Institute                  | \$0                  | \$28,886   |
| Integrated imaging and molecular analysis of glioblastoma using SCOPE-Seq on the AIR FLOW System  | 93.RD                         | CMICRO 021820                  | 75N91019C00029                      | CELL MICROSYSTEMS                           | \$0                  | \$159,908  |
| Leidos RFP S18-144QF2   | 93.RD                         | LEIDOS S18-144QF2              | 75N91019D00024                      | LEIDOS BIOMEDICAL RESEARCH INC              | \$0                  | \$157,781  |

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|--|-------------------------------|----------------------------------|-------------------------------------|--|----------------------|--|------------------------|
| Deep Learning Clinical Trial Matching System   | 93.RD                         | MB CU20-4666                     | 75N91020C00016                      | MASSIVE BIO INC  | \$0                  | \$20,002   |                        |
| CNT-Vectored Delivery of mRNA for HIV-Vaccines   | 93.RD                         | LUNA 33483.02ADARC               | 75N93019C00034<br>3441-ARM-2S 3     | LUNA LABS USA LLC  | \$0                  | \$173,669  |                        |
| Patient-Derived Models Tissue Procurement Protocol for the National Cancer Institute   | 93.RD                         | LEIDOS 17X152                    | HHSN261200800001E                   | LEIDOS BIOMEDICAL RESEARCH INC   | \$0                  | \$58,697   |                        |
| PumpKIN Trial  | 93.RD                         | NERI CU18-1664                   | HHSN2682012000001                   | NEW ENGLAND RESEARCH INSTITUTES  | \$0                  | \$11,000   |                        |
| Pharmacokinetics and Safety Profile of Digoxin in Infants with Single Ventricle Congenital Heart Disease                               | 93.RD                         | DUKEU 243797                     | HHSN-275201800003I                  | DUKE UNIVERSITY  | \$0                  | \$7,960  |                        |
|  |                               |                                  |                                     |  | \$0                  | \$721,513  |                        |
| <b>National Institutes of Health/DHHS</b>  |                               |                                  |                                     |  |                      |  |                        |
| Improving Blood Pressure Screening and Treatment Strategies in Young Adults  | 93.RD                         | KFDNI RNG211455-Columbia         | 1R01HL158790-01                     | Kaiser Foundation Research Institute-<br>-Division of Research         | \$0                  | \$85,934   |                        |
| Long-Acting RNAi Therapy for Atherosclerosis and Insulin Resistance  | 93.RD                         | BWH 125535                       | 1R01HL159012-01                     | BRIGHAM AND WOMEN'S HOSPITAL   | \$0                  | \$321,251  |                        |
| The Clinical Significance of Incidental White Matter Lesions on MRI Amongst a Diverse Population with Cognitive Complaints (INDEED)    | 93.RD                         | CUD CU22-0748                    | 1U19NS120384                        | UNIVERSITY OF CALIFORNIA, DAVIS  | \$0                  | \$37,783   |                        |
| National Alzheimer s Coordinating Center (NACC)- Competitive Renewal   | 93.RD                         | UWSC12960                        | 1U24AG072122-01                     | UNIVERSITY OF WASHINGTONSEATTLE WASHINGTON                             | \$0                  | \$23,118   |                        |
| ACTG Protocol Funding - Core Funding   | 93.RD                         | UCLA CRS 30329 CU 30606<br>A5401 | 2UM1A1068636-15                     | UNIVERSITY OF CALIFORNIA, LOS ANGELES                                  | \$0                  | \$-25,137  |                        |
| National Alzheimer s Coordinating Center   | 93.RD                         | UWASH CU21-1939                  | 3U24AG072122-01S1                   | UNIVERSITY OF WASHINGTONSEATTLE WASHINGTON                             | \$0                  | \$82,740   |                        |
| School vs. Home Environmental Exposure and Respiratory Outcomes (SHEERO)   | 93.RD                         | CDUKE A03-5266                   | DUKE                                | DUKE CLINICAL RESEARCH INSTITUTE                                       | \$0                  | \$52,185   |                        |
| Pilot Study of Denosumab in BRCA1/2 Mutation Carriers Scheduled for Risk-Reducing Salpingo-Oophorectomy                                | 93.RD                         | UTMDA<br>3001109242/3001109711   | HHSN261201200034I                   | UNIVERSITY OF TEXAS M.D.<br>ANDERSON CANCERCENTER                      | \$0                  | \$40,272   |                        |
| HVTN Research & Mentorship Program (RAMP)  | 93.RD                         | FHCC CU22-1487                   | NIH                                 | FRED HUTCHINSON CANCER CENTER  | \$0                  | \$11,000   |                        |
| Investigating neuroanatomical underpinnings of apathy in ADRD through neuroimaging and electrical manipulation                         | 93.RD                         | BCMh CU20-3451                   | R01MH127200                         | BAYLOR COLLEGE OF MEDICINE--<br>HOUSTON                                | \$0                  | \$168,774  |                        |
|  |                               |                                  |                                     |  | \$0                  | \$797,920  |                        |
| <b>Family Smoking Prevention and Tobacco Control Act Regulatory Research</b>   |                               |                                  |                                     |  |                      |  |                        |
| Examining the Effects of Advertising, Packaging, and Labeling, and Perceptions, Use, and Exposure of Combustible Tobacco Products      | 93.077                        | RUTGER PO 25098129               | 1U54CA229973-01                     | RUTGERS, THE STATE UNIVERSITY OF<br>NEW JERDEPARTMENT OF<br>RADIOL OGY | \$0                  | \$122,784  |                        |
|  |                               |                                  |                                     |  | \$0                  | \$122,784  |                        |
| <b>Environmental Health</b>  |                               |                                  |                                     |  |                      |  |                        |
| Air Particulate, Metals, and Cognitive Performance in an Aging Cohort- Roles of Circulating Extracellular Vesicles and Non-coding RNAs | 93.113                        | HARVARD 112557-5108340           | 1R01ES027747-01                     | HARVARD UNIVERSITY   | \$0                  | \$439,615  |                        |
| The Effects of Environmental Exposures on Semen Quality and the Sperm Epigenome.   | 93.113                        | BWH 118582                       | 1R01ES028712-01                     | BRIGHAM AND WOMEN'S HOSPITAL   | \$0                  | \$91,416   |                        |
| Impact of preconception and onward exposure to air pollution on growth trajectories of infants and children                            | 93.113                        | DUKEU A03-3136                   | 1R01ES029945-01A1                   | DUKE UNIVERSITY  | \$0                  | \$31,179   |                        |
| A national birth cohort study of prenatal factors and neurodevelopmental psychiatric disorders   | 93.113                        | RFMH 147870                      | 1R01ES030966-01A1                   | RESEARCH FOUNDATION FOR<br>MENTAL HYGIENEINC                           | \$0                  | \$51,818   |                        |

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|--|-------------------------------|--------------------------------|-------------------------------------|---|----------------------|--|------------------------|
| Urban air pollution and neurobehavioral trajectories in the ABCD study   | 93.113                        | USC 139981076                  | 1R01ES031074-01A1                   | UNIVERSITY OF SOUTHERN CALIFORNIA                                   | \$0                  | \$31,132   |                        |
| Developmental Exposure to Arsenic: Pneumonia, Immunity, and Microbiome (DEAPIM)  | 93.113                        | UNMEX 3RKW2                    | 1R01ES031743-01A1                   | UNIVERSITY OF NEW MEXICO  | \$40,987             | \$226,673  |                        |
| Building Capacity to study mixed metal-induced neurotoxicity in Bangladeshi children-A1  | 93.113                        | TEXASSU 22200C                 | 1R01ES032149-01A1                   | TEXAS STATE UNIVERSITY  | \$0                  | \$57,132   |                        |
| The Role of Air Pollution in Emotional Neurodevelopment and Risk for Psychiatric Disorders                                     | 93.113                        | USC 138935395                  | 1R01ES032295-01                     | UNIVERSITY OF SOUTHERN CALIFORNIA                                   | \$0                  | \$30,248   |                        |
| The Impact of Drought on Arsenic Exposure and Cardiometabolic Outcomes in a Rural Aging Population                             | 93.113                        | FY22.659.003                   | 1R01ES032612-01A1                   | UNIVERSITY OF COLORADO  | \$0                  | \$29,639   |                        |
| Ambient Air Pollution, Weather, and Placental Abrupton (APWA)  | 93.113                        | RUTGERS 2100                   | 1R01ES033190-01                     | RUTGERS, THE STATE UNIVERSITY OF NEW JERSEY DEPARTMENT OF PAEDIATRY | \$0                  | \$19,822   |                        |
| Extreme weather, air pollution, and stroke among an aging female population  | 93.113                        | BRICHCC 63427.2010840.669304   | 1R01ES033413-01                     | BECKMAN RESEARCH INSTITUTE OF THE CITY OF HOPE CANCER CENTER        | \$0                  | \$34,725   |                        |
| Xenobiotic Receptors in the Crossroad of Xenobiotic Metabolism and Endobiotic Metabolism                                       | 93.113                        | UPITT AWD00000936 (133648-2)   | 1R35ES030429-01                     | UNIVERSITY OF PITTSBURGH  | \$0                  | \$20,000   |                        |
| Human Health Exposure Analysis Resource (HHEAR) Data Center  | 93.113                        | 0255-C751-4609                 | 2U2CES026555-02                     | ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI                             | \$0                  | \$103,896  |                        |
| Stress-Chemical Interactions and Neurobehavior in School Age Children  | 93.113                        | ISMMS 0255-5545-4609           | 5R01ES013744-13                     | ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI                             | \$0                  | \$26,126   |                        |
| Participatory Interventions to Reduce Arsenic Exposure in American Indian Communities  | 93.113                        | JHU 2003073212                 | 5R01ES025135-02                     | JOHNS HOPKINS UNIVERSITY  | \$0                  | \$12,476   |                        |
| Prenatal endocrine-disrupting chemicals and social/cognitive risk in mothers and infants: Potential biologic pathways          | 93.113                        | RFMH 26840                     | 5R01ES027424                        | RESEARCH FOUNDATION FOR MENTAL HYGIENE INC                          | \$0                  | \$224,286  |                        |
| Prenatal metal mixtures and neurodevelopment: Role of placental extracellular microRNAs  | 93.113                        | ISMMS 0255-B981-4609           | 5R01ES030302-02                     | ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI                             | \$0                  | \$149,845  |                        |
| Air Particulate Pollution and Stress: Effects and Mechanisms for Long-term Maternal Obesity Risks                              | 93.113                        | ISMMS 0255-E141-4609           | 5R01ES032242-02                     | ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI                             | \$0                  | \$129,138  |                        |
| The Programming Research in Obesity, Growth, Environmental and Social Stress (PROGRESS) Cohort                                 | 93.113                        | ISMM 0255-4921-4609            | 5R24ES028622-02                     | ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI                             | \$0                  | \$30,506   |                        |
| Manganese-related Neurotoxicity in Asymptomatic Welders  | 93.113                        | PSU COLES019672                | R01ES019672                         | PENNSYLVANIA STATE UNIVERSITY                                       | \$0                  | \$11,571   |                        |
| Arsenic and Immune Response to Influenza Vaccination in Pregnant Women and Newborns  | 93.113                        | JHU 2003603451                 | R01ES026973                         | JOHNS HOPKINS UNIVERSITY  | \$0                  | \$15,392   |                        |
|  |                               |                                |                                     |   | \$40,987             | \$1,766,635  |                        |
| <b>Oral Diseases and Disorders Research</b>  |                               |                                |                                     |   |                      |  |                        |
| Development of Minimally Invasive Drug Delivery System for TMJ Regeneration  | 93.121                        | WNT CU19-2978                  | R24DE028215                         | WNT SCIENTIFIC LLC  | \$0                  | \$302,050  |                        |
|  |                               |                                |                                     |   | \$0                  | \$302,050  |                        |
| <b>Injury Prevention and Control Research and State and Community Based Programs</b>   |                               |                                |                                     |   |                      |  |                        |
| Association of maternal inflammation with preterm delivery and maternal disease progression                                    | 93.136                        | Westat 6579-S61                | HHSN2752018000011                   | WESTAT  | \$0                  | \$12,053   |                        |
|  |                               |                                |                                     |   | \$0                  | \$12,053   |                        |
| <b>Human Genome Research</b>   |                               |                                |                                     |   |                      |  |                        |
| Developing Clinical Translational Tools to Communicate Genetic Risk to Individuals who are at Clinical High Risk for Psychosis | 93.172                        | NYU F1228-01                   | 1R21HG010420-01A1                   | NEW YORK UNIVERSITY   | \$0                  | \$19,899   |                        |

The accompanying footnotes are an integral part of the Schedule of Expenditures of Federal Awards

**The Trustees of Columbia University in the City of New York**  
**Schedule of Expenditures of Federal Awards**  
**For year ended June 30, 2022**

| <u>Federal Grantor / Pass-through Grantor</u>   | <u>Assistance Listing No.</u> | <u>Award Identification No</u> | <u>Pass-through Contract Number</u> | <u>Passthrough Name</u>   | <u>Subrecipients</u> | <u>Total Expenditures (Includes Subrecipients)</u> | <b>R&amp;D Cluster</b> |
|---|-------------------------------|--------------------------------|-------------------------------------|---|----------------------|--|------------------------|
| LC/MS-Based Direct RNA Sequencing with Concomitant Capability to Sequence Multiple Base Modifications at Single-base Resolution | 93.172                        | NYIT 1R56HG011099-01C1         | 1R56HG011099-01                     | New York Institute of Technology                                  | \$0                  | \$1,602  |                        |
| Center for Integrated Cellular Analysis   | 93.172                        | NYGC 2019-0014-CU-01           | 1RM1HG011014-01                     | NEW YORK GENOME CENTER  | \$0                  | \$284,769  |                        |
| The Duke FUNCTION Center: Pioneering the comprehensive identification of combinatorial noncoding causes of disease              | 93.172                        | DU A034194                     | 1RM1-HG011123-01A1                  | DUKE UNIVERSITY MEDICAL CENTER                                    | \$0                  | \$68,197   |                        |
| ELSI.hub: National Center for ELSI Resources and Analysis   | 93.172                        | SU 62196601-139696             | 1U24HG010733-01                     | STANFORD UNIVERSITY   | \$14,490             | \$640,472  |                        |
| Exome sequencing in Diverse Populations in Colorado & Oregon  | 93.172                        | KAISER OOS030229-Columbia      | 2U01HG007292-06                     | Kaiser Foundation Research Institute-Division of Research         | \$0                  | \$17,943   |                        |
| Tensor Array Methods for RNA-Seq Analysis   | 93.172                        | UMICHG SUBK00014336            | 5R01HG010731-03                     | UNIVERSITY OF MICHIGAN  | \$0                  | \$-25,599  |                        |
| New Methods for Constructing and Evaluating Polygenic Scores  | 93.172                        | SU 62472179-159655             | 5R01HG011432-02                     | STANFORD UNIVERSITY   | \$0                  | \$132,836  |                        |
|   |                               |                                |                                     |   | \$14,490             | \$1,140,119  |                        |
| <b>Research Related to Deafness and Communication Disorders</b>   |                               |                                |                                     |   |                      |  |                        |
| Randomized Controlled Trial of Valganciclovir for Asymptomatic Cytomegalovirus Infected Hearing Impaired Infants (ValEAR Trial) | 93.173                        | UUMC 10041913-010              | 1U01DC014706-01A1                   | UNIVERSITY OF UTAH MEDICAL CENTER                                 | \$0                  | \$-1   |                        |
| Implantable Microphones for Fully Implantable Hearing Prosthetics   | 93.173                        | MEA 530673                     | 5R01DC016874-02                     | MASSACHUSETTS EYE AND EAR   | \$0                  | \$25,981   |                        |
| Characterizing the temporal processing of sound in human auditory cortex  | 93.173                        | NYU 20-A1-00-1003975           | 5R01DC018805-02                     | NEW YORK UNIVERSITY   | \$0                  | \$75,009   |                        |
|   |                               |                                |                                     |   | \$0                  | \$100,989  |                        |
| <b>Research and Training in Complementary and Integrative Health</b>  |                               |                                |                                     |   |                      |  |                        |
| Metals in the Trial to Assess Chelation Therapy 2 (TACT2)   | 93.213                        | MSMCM R01 AT009273             | 1R01AT009273-01                     | MOUNT SINAI MEDICAL CENTER-MIAMI                                  | \$0                  | \$206,647  |                        |
| Defining disease mechanisms in SLC35A2 epilepsy   | 93.213                        | UNCCH 5118022                  | 1R01NS11507-01A1                    | UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL                       | \$0                  | \$72,309   |                        |
| Comprehensive CBT via reSET for a Hub and Spoke MAT System of Care  | 93.213                        | PSU COLAT010118                | 1R21AT010118-01                     | PENNSYLVANIA STATE UNIVERSITY                                     | \$0                  | \$67,664   |                        |
|   |                               |                                |                                     |   | \$0                  | \$346,620  |                        |
| <b>Mental Health Research Grants</b>  |                               |                                |                                     |   |                      |  |                        |
| Neural dynamics underlying rule based decision-making   | 93.242                        | SRFMH 145453                   | 1K08MH120434-01                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC                         | \$0                  | \$86,106   |                        |
| Hospital Discharge Planning and Transition to Outpatient Psychiatric Care   | 93.242                        | RFMH 26439                     | 1R01MH106558-01A1                   | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC                         | \$0                  | \$34,034   |                        |
| 2/2 Familial Early-Onset Suicide Attempt Biomarkers   | 93.242                        | RFMH 26230                     | 1R01MH108032-01                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC                         | \$0                  | \$22,954   |                        |
| Biomarkers of Conversion Risk and Treatment Response in Early-Stage Schizophrenia   | 93.242                        | CUMC 213052-1                  | 1R01MH110270-01A1                   | WEILL (JOAN AND SANFORD I.) MEDICAL COLLEGE OF CORNELL UNIVERSITY | \$0                  | \$63,257   |                        |
| Improving Cognition via Exercise in Schizophrenia   | 93.242                        | MSSM 0255-3351-4609            | 1R01MH110623-01A1                   | ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI                           | \$0                  | \$89,732   |                        |
| Identifying Reproducible Brain Signatures of Obsessive Compulsive Profiles  | 93.242                        | RFMH 26719                     | 1R01MH113250-01                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC                         | \$0                  | \$76,825   |                        |
| An Adaptive Algorithm-Based Approach to Treatment for Adolescent Depression   | 93.242                        | UMINN N006073701               | 1R01MH113748-01                     | UNIVERSITY OF MINNESOTA   | \$0                  | \$40,227   |                        |

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**The Trustees of Columbia University in the City of New York**  
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| <u>Federal Grantor / Pass-through Grantor</u>   | <u>Assistance Listing No.</u> | <u>Award Identification No</u> | <u>Pass-through Contract Number</u> | <u>Passthrough Name</u>                            | <u>Subrecipients</u> | <u>Total Expenditures (Includes Subrecipients)</u> | <u>R&amp;D Cluster</u> |
|---|-------------------------------|--------------------------------|-------------------------------------|--|----------------------|--|------------------------|
| The Neurobiology of Violence in a Psychosis-Risk Cohort   | 93.242                        | RFMH 26737                     | 1R01MH113861-01                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC          | \$0                  | \$244,876  |                        |
| 2/5 Neurocognitive and neuroimaging biomarkers: predicting progression towards dementia in patients with treatment resistant late-life depression.  | 93.242                        | RFMH 26754                     | 1R01MH114980-01                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC          | \$0                  | \$1,073  |                        |
| Deconstructing the cellular control of hippocampal functions related to mental health: a role for birth order.  | 93.242                        | RFMH 27114                     | 1R01MH115215-01                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC          | \$0                  | \$156,334  |                        |
| VITAL Start (Video-intervention to Inspire Treatment Adherence for Life): Brief facility based video intervention to improve retention and adherence to ART among pregnant and breastfeeding women.     | 93.242                        | BCM 7000000715                 | 1R01MH115793-01A1                   | BAYLOR COLLEGE OF MEDICINE--HOUSTON                | \$0                  | \$45,833   |                        |
| Targeting cotransmission for circuit-specific pharmacotherapy   | 93.242                        | RFMH 27032                     | 1R01MH117128-01                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC          | \$0                  | \$98,294   |                        |
| Individualized Risk Prediction in Persons at Clinical High Risk for Psychosis Using Neuromelanin-Sensitive MRI  | 93.242                        | RFMH 27054                     | 1R01MH117323-01                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC          | \$0                  | \$63,347   |                        |
| Uncovering the Risk Architecture of Suicidal Behaviors: a Representative Sample at High Risk  | 93.242                        | RFMH 27322                     | 1R01MH117360-01                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC          | \$0                  | \$117,660  |                        |
| Inflammatory Biomarkers and Kynurenine Metabolites Tracking Suicidal Ideation and Behavior  | 93.242                        | VAI V3362-R1-2                 | 1R01MH118211-01A1                   | VAN ANDEL INSTITUTE                                | \$0                  | \$67,152   |                        |
| Maternal exposure to antidepressants and psychiatric outcomes among offspring in a national birth cohort  | 93.242                        | RFMH 141316                    | 1R01MH118247-01                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC          | \$0                  | \$49,689   |                        |
| 1/7 Clozapine for the Prevention of Violence in Schizophrenia: a Randomized Clinical Trial  | 93.242                        | RFMH 27890                     | 1R01MH120317-01                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC          | \$0                  | \$187,954  |                        |
| OnTrackNY s Learning Healthcare System  | 93.242                        | RFMH 27327                     | 1R01MH120597-01                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC          | \$0                  | \$95,037   |                        |
| Maternal adversity, inflammation, and neurodevelopment: How intergenerational processes perpetuate disadvantage in a low-resource setting   | 93.242                        | RFMH 27494                     | 1R01MH121070-01                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC          | \$0                  | \$58,331   |                        |
| Origins and developmental sequelae of neurophysiological variability in infants at high risk for autism   | 93.242                        | TC 512160-01                   | 1R01MH121605-01                     | TEACHERS COLLEGE COLUMBIA UNIVERSITY               | \$0                  | \$3,558  |                        |
| Behavioral and Neural Correlates of Deficits in Naturalistic Visual and Auditory Social Cognition in Individuals at Clinical High-Risk for Schizophrenia  | 93.242                        | RFMH 27622                     | 1R01MH121790-01                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC          | \$0                  | \$104,817  |                        |
| 1/4 Leveraging EHR-linked biobanks for deep phenotyping, polygenic risk score modeling, and outcomes analysis in psychiatric disorders  | 93.242                        | RFMH 27354                     | 1R01MH121921-01                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC          | \$0                  | \$79,337   |                        |
| Testing the effectiveness of an evidence-based transdiagnostic cognitive behavioral therapy approach for improving HIV treatment outcomes among violence-affected and virally suppressed women in South | 93.242                        | BU 4500003536                  | 1R01MH121998-01                     | BOSTON UNIVERSITY                                  | \$0                  | \$13,902   |                        |
| Validation of Pragmatic Implementation Measure for Task Sharing in Mental Health Services   | 93.242                        | NYU F1415-01                   | 1R01MH122851-01                     | NEW YORK UNIVERSITY                                | \$0                  | \$18,666   |                        |
| Glutamatergic Mechanisms of Psychosis and Target Engagement   | 93.242                        | RFMH 27637                     | 1R01MH123142-01                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC          | \$0                  | \$112,347  |                        |
| Adolescence, Motivation and the Maturation of the Prefrontal Cortex   | 93.242                        | RFMH 27501                     | 1R01MH123153-01                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC          | \$0                  | \$110,557  |                        |
| Synthesizing Best Practice to Accelerate Access to Emerging HIV Prevention Modalities   | 93.242                        | RFCUNY CM00004822-02           | 1R01MH123262-01                     | RESEARCH FOUNDATION OF CITY UNIVERSITY OF NEW YORK | \$0                  | \$201,892  |                        |
| Neural substrates of deficits in naturalistic social cognition in schizophrenia   | 93.242                        | RFMH 27570                     | 1R01MH123639-01                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC          | \$0                  | \$58,384   |                        |
| 1/2-Dopaminergic Dysfunction in Late-Life Depression (The D3 Study)   | 93.242                        | RFMH 27618                     | 1R01MH123660-01                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC          | \$0                  | \$25,826   |                        |
| A Data Science Framework for Empirically Evaluating and Deriving Reproducible and Transferrable RDoC Constructs in Youth  | 93.242                        | RFMH 27617                     | 1R01MH124106-01                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC          | \$0                  | \$74,893   |                        |
| Co-Regulation of Striatal Dopamine and Acetylcholine During Flexible Learning   | 93.242                        | RFMH 27918                     | 1R01MH124858-01                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC          | \$0                  | \$74,498   |                        |

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|---|-------------------------------|--------------------------------|-------------------------------------|---|----------------------|--|------------------------|
| VTA-NAc GABAergic communication underlying stress-induced reward deficits   | 93.242                        | RFMH 27860                     | 1R01MH124998-01A1                   | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC | \$0                  | \$12,699   |                        |
| Application of Advanced Quantitative Methods to Schizophrenia Research  | 93.242                        | RFMH 27727                     | 1R01MH125030-01                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC | \$0                  | \$85,792   |                        |
| IM ketamine for rapid reduction of suicidal thoughts in high-risk ED patients: a midazolam-controlled trial   | 93.242                        | RFMH 27640                     | 1R01MH125155-01                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC | \$0                  | \$111,733  |                        |
| Testing a Diathesis-Stress Model of Adolescent Suicide: Dopaminergic, Social, and Inhibitory Mechanisms   | 93.242                        | RFMH 27815                     | 1R01MH126181-01                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC | \$0                  | \$107,519  |                        |
| Development and clinical interpretation of machine learning emergency department suicide prediction algorithms using electronic health records and claims data          | 93.242                        | UPENN 583167                   | 1R01MH126895-01                     | UNIVERSITY OF PENNSYLVANIA                | \$0                  | \$11,590   |                        |
| Longitudinal trajectories in treated and untreated schizophrenia  | 93.242                        | NYU F1967-01                   | 1R01MH127631-01                     | NEW YORK UNIVERSITY                       | \$0                  | \$26,299   |                        |
| CRCNS Research Proposal Collaborative Research: Multiple Time Scale Memory Consolidation in Neural Networks   | 93.242                        | NYU F1940-01                   | 1R01MH129031-01                     | NEW YORK UNIVERSITY                       | \$0                  | \$54,806   |                        |
| Nonparametric depth-based methods for analyzing high dimensional data. Applications to biomedical r   | 93.242                        | 500667-78050                   | 1R21MH120534-01                     | NORTHEASTERN UNIVERSITY                   | \$0                  | \$31,048   |                        |
| An adolescent sensitive period for thalamo-prefrontal circuit maturation  | 93.242                        | RFMH 27400                     | 1R21MH121334-01                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC | \$0                  | \$-1,088   |                        |
| Identifying Positive Valence System Neural Deficits in Adolescent Depression  | 93.242                        | RFMH 27856                     | 1R21MH125044-01A1                   | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC | \$0                  | \$26,940   |                        |
| Development of dopamine D2 receptor-targeted DARTs  | 93.242                        | RFMH 27807                     | 1R21MH126499-01                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC | \$0                  | \$38,526   |                        |
| Research Education in Child Psychiatry Residency  | 93.242                        | RFMH 27834                     | 1R25MH125775-01                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC | \$0                  | \$4,366  |                        |
| Neurally targeted group intervention to reduce early childhood anxiety  | 93.242                        | UMICHG SUBK00016843            | 1R33MH121641-01A1                   | UNIVERSITY OF MICHIGAN                    | \$0                  | \$16,417   |                        |
| Optimizing Relapse Prevention and Changing Habits (REACH+) in Anorexia Nervosa  | 93.242                        | RFMH 27905                     | 1R34M127180-01                      | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC | \$0                  | \$60,835   |                        |
| Does the Addition of Cognitive Remediation to Coordinated Specialty Care Services Improve Functional Outcome?   | 93.242                        | RFMH 27104                     | 1R34MH118318-01                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC | \$0                  | \$88,095   |                        |
| Engaging Black Youth in Depression and Suicide Prevention Treatment with Urban Schools: A Preliminary Study   | 93.242                        | NYU F1106-01                   | 1R34MH119290-01                     | NEW YORK UNIVERSITY                       | \$0                  | \$23,462   |                        |
| Optimizing Study Design to Test a Community-level Intervention to Reduce Intersectional Stigma and Increase HIV Testing and Prevention among African-American/Black MSM | 93.242                        | CCNY 00003796-00               | 1R34MH121295-01                     | City College of New York                  | \$0                  | \$-4   |                        |
| Web-Based Therapist Training on Complicated Grief Therapy   | 93.242                        | CFT 001                        | 1R41MH118126-01A1                   | CENTER FOR TELEPSYCHOLOGY                 | \$100                | \$43,103   |                        |
| Sensittrak: Automated assessment of forelimb sensation  | 93.242                        | R41NS120748-P1SUB1             | 1R41NS120748-01A1                   | VULINTUS INC                              | \$0                  | \$146,356  |                        |
| NNCI Synapse: Development of a mobile application to disseminate neuroscience training to medical professionals   | 93.242                        | CFSI CU17-1085                 | 1R44MH11546-01                      | The Center for Social Innovation          | \$0                  | \$16,392   |                        |
| Virtual Neuro-navigation System for Personalized, Community-Based TMS   | 93.242                        | SOTERIX SMICU0901              | 1R44MH126833-01A1                   | SOTERIX MEDICAL INC                       | \$0                  | \$56,144   |                        |
| Imaging the Neurodevelopmental Trajectory of Depression and Anxiety with HCP Protocols  | 93.242                        | MGH 235921                     | 1R56MH121426-01                     | MASSACHUSETTS GENERAL HOSPITAL            | \$0                  | \$359  |                        |
| D-serine augmentation of neuroplasticity-based auditory learning in schizophrenia   | 93.242                        | RFMH 27132                     | 1R60MH116093                        | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC | \$0                  | \$15,755   |                        |
| Use of Advanced Analytics to Understand Brain-Behavior Screen Media Activity Relationship in ABCD Da  | 93.242                        | YU CON-80003352 (RF1MH128614-0 | 1RF1MH128614-01                     | YALE UNIVERSITY                           | \$0                  | \$57,288   |                        |

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|--|-------------------------------|--------------------------------|-------------------------------------|---|----------------------|--|------------------------|
| A Translational and Neurocomputational Evaluation of a D1R Partial Agonist for Schizophrenia                                       | 93.242                        | YU GR110672(CON 80002564)      | 1U01MH121766-01                     | YALE UNIVERSITY                           | \$0                  | \$41,728   |                        |
| HIV Center for Clinical and Behavioral Studies   | 93.242                        | SRFMH 151533                   | 2P30MH043520-30                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC | \$0                  | \$258,998  |                        |
| Antecedents of Suicidal Behavior Related Neurobiology  | 93.242                        | RFMH 27823                     | 2P50MH090964-05                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC | \$0                  | \$601,556  |                        |
| Early Cortical Processing in Schizophrenia   | 93.242                        | RFMH 27066                     | 2R01MH049334-27A1                   | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC | \$0                  | \$112,411  |                        |
| Structure and Function of Dopamine Receptors   | 93.242                        | RFMH 27888                     | 2R01MH054137-23A1                   | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC | \$0                  | \$147,132  |                        |
| Pathways to successful aging among perinatally HIV-infected and exposed young adults. Risk resilience, and the role of HIV (CASA4) | 93.242                        | RFMH 142647                    | 2R01MH069133-16                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC | \$0                  | \$88,569   |                        |
| Biotyping Placebo and Treatment-Specific Responses for Precision Medicine  | 93.242                        | 17-A0-00-007642-01             | 2R01MH099003-06                     | NEW YORK UNIVERSITY MEDICAL CENTER        | \$0                  | \$78,094   |                        |
| Optimizing and Personalizing Interventions for Schizophrenia Across the Lifespan (OPAL)  | 93.242                        | RFMH 27097                     | 3P50MH115843-02S2                   | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC | \$0                  | \$16,227   |                        |
| EEG/MRI Controlled TMS Real-Time Neural Feedback in Anti-Depressive Treatment  | 93.242                        | MUSC A00-1979-S001             | 4R33MH106775-04                     | MEDICAL UNIVERSITY OF SOUTH CAROLINA      | \$0                  | \$72,374   |                        |
| Targeting Dopaminergic Mechanisms of Slowing to Improve Late Life Depression (R33 Phase)   | 93.242                        | SRFMH 27103                    | 4R33MH110029-03                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC | \$0                  | \$26,089   |                        |
| Gaze-contingent music reward therapy for social anxiety  | 93.242                        | RFMH 27820                     | 4R33MH116089-03                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC | \$0                  | \$20,902   |                        |
| D-Serine Augmentation of Neuroplasticity-Based Auditory Learning in Schizophrenia  | 93.242                        | RFMH 27974                     | 4R33MH116093-03                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC | \$0                  | \$56,478   |                        |
| Neural mechanisms for the genesis of conceptual information  | 93.242                        | SRFMH 144711                   | 5K08MH115365-02                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC | \$0                  | \$9,130  |                        |
| Neural and Behavioral Mechanisms of Abstraction in Humans  | 93.242                        | SRFMH 146785                   | 5K08MH121775-03                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC | \$0                  | \$50,044   |                        |
| HIV Center for Clinical and Behavioral Studies   | 93.242                        | RFMH 28034                     | 5P30MH043520-31                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC | \$0                  | \$75,216   |                        |
| Antecedents of Suicidal Behavior Related Neurobiology  | 93.242                        | RFMH 153426                    | 5P50MH090964-09                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC | \$0                  | \$119,395  |                        |
| Optimizing and Personalizing Interventions for Schizophrenia Across the Lifespan (OPAL)  | 93.242                        | RFMH 27699                     | 5P50MH115843-03                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC | \$0                  | \$284,918  |                        |
| Intervening Early with Neglected Children: Key Behavioral and Neurobiological Outcomes in Adolescence                              | 93.242                        | UDELWARE 55078                 | 5R01MH074374-12                     | UNIVERSITY OF DELAWARE                    | \$0                  | \$34,493   |                        |
| Functionally selective D2R s, striatal circuit function and motivation   | 93.242                        | RFMH 26444                     | 5R01MH093672-08                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC | \$0                  | \$136,322  |                        |
| Improving the Emergency Department Management of Deliberate Self-Harm  | 93.242                        | UPENN 568947/10052478/19439    | 5R01MH107452-05                     | UNIVERSITY OF PENNSYLVANIA                | \$0                  | \$36,069   |                        |
| Longitudinal Assessment of Neural Circuits in Adolescents with Anorexia Nervosa  | 93.242                        | RFMH 26643                     | 5R01MH110445-04                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC | \$0                  | \$68,593   |                        |
| Cognitive ans Neural Mechanisms of the Accelerated Aging Phenotype in PTSD   | 93.242                        | RFMH 26738                     | 5R01MH111596-03                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC | \$0                  | \$92,954   |                        |
| Functional Brain Networks Mediating Individuals Differences in Valence Bias  | 93.242                        | UNL 24-1219-0001-002           | 5R01MH111640-03                     | UNIVERSITY OF NEBRASKA- LINCOLN           | \$0                  | \$12,937   |                        |
| Hippocampal memory circuits in delusions   | 93.242                        | NYU 17-A1-00-006880-01         | 5R01MH112733-05                     | NEW YORK UNIVERSITY                       | \$0                  | \$175,211  |                        |

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**For year ended June 30, 2022**

| <u>Federal Grantor / Pass-through Grantor</u>   | <u>Assistance Listing No.</u> | <u>Award Identification No</u> | <u>Pass-through Contract Number</u> | <u>Passthrough Name</u>                                 | <u>Subrecipients</u> | <u>Total Expenditures (Includes Subrecipients)</u> | <b>R&amp;D Cluster</b> |
|---|-------------------------------|--------------------------------|-------------------------------------|---|----------------------|--|------------------------|
| Deficient Belief Updating as a Convergent Computational Mechanism of Psychosis  | 93.242                        | RFMH 27033                     | 5R01MH114965-02                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC               | \$0                  | \$70,314   |                        |
| Evaluating Implementation Strategies to Scale-up Transdiagnostic Evidence-based Mental Health Care in Zambia (Mental Health- CBT)             | 93.242                        | CIDRZ M101S14F04               | 5R01MH115495-03                     | Centre for Infectious Diseases Researchin Zambia        | \$0                  | \$15,854   |                        |
| Effect of GABAergic Inhibition of Dendritic Spines on Synaptic Pruning in mPFC During Adolescence   | 93.242                        | SUNYRF 100-1151016-83329       | 5R01MH115900-04                     | RESEARCH FOUNDATION OF THE STATE UNIVERSITY OF NEW YORK | \$0                  | \$323,683  |                        |
| BIOPSYCHOSOCIAL MECHANISMS UNDERLYING INTERNALIZING PSYCHOPATHOLOGY IN A PROSPECTIVE, POPULATION-BASED COHORT OF SEXUAL MINORITY YOUNG ADULTS | 93.242                        | CON-80002951 (GR112516)        | 5R01MH118245-03                     | YALE UNIVERSITY   | \$0                  | \$24,808   |                        |
| Social Processing Deficits in Remitted Adolescent Depression  | 93.242                        | RFMH 27394                     | 5R01MH119771-02                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC               | \$0                  | \$21,081   |                        |
| Interactive development of reinforcement learning and adaptive memory   | 93.242                        | NYU F1758-01                   | 5R01MH126183-02                     | NEW YORK UNIVERSITY                                     | \$0                  | \$8,538  |                        |
| OnTrackChile for First Episode Psychosis  | 93.242                        | UOH CU17-1224                  | 5R01MH15502-02                      | UNIVERSIDAD DE O'HIGGINS                                | \$0                  | \$288,397  |                        |
| Clearscope  | 93.242                        | MBF SUBR44MH116827-04          | 5R44MH116827-04                     | MBF BIOSCIENCE  | \$0                  | \$181,965  |                        |
| Large-Aperture Electrically Tunable Lenses with 40 Microsecond Hysteresis-Free Response for Remote Focusing                                   | 93.242                        | BNLS CU17-2671                 | 5R44MH117430-03                     | Boulder Nonlinear Systems                               | \$0                  | \$335,779  |                        |
| High-throughput Physiological Micro-connectivity Mapping in Vivo  | 93.242                        | UCB 00010181                   | 5RF1MH120680-02                     | UNIVERSITY OF CALIFORNIA, BERKELEY                      | \$0                  | \$113,628  |                        |
| Genetic neuroscience: How human genes and alleles shape neuronal phenotypes   | 93.242                        | BRINST 5100482-5500001084      | 5U01MH115727-04                     | BROAD INSTITUTE   | \$0                  | \$12,683   |                        |
| Mobile Assessment for the Prediction of Suicide (MAPS)  | 93.242                        | OREGON 281450B                 | 5U01MH1163923-02                    | UNIVERSITY OF OREGON                                    | \$0                  | \$33,246   |                        |
| PRIDE SSA - Partnerships in Research to Implement and Disseminate Sustainable and Scalable Evidence Based Practices in sub-Saharan Africa     | 93.242                        | RFMH 27757                     | 5U19MH113203-02                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC               | \$0                  | \$20,405   |                        |
| Characterizing Cognition Across the Lifespan in Untreated Psychosis in China  | 93.242                        | NYU F8752-04                   | 7R01MH108385-03                     | NEW YORK UNIVERSITY                                     | \$0                  | \$-2   |                        |
| Temporal Dynamics of Neurophysiological Patterns as Treatment Targets in SZ   | 93.242                        | RFMH 26985                     | 7R01MH109289-04                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC               | \$0                  | \$35,112   |                        |
| Structural Stigma and HIV Prevention Outcomes   | 93.242                        | HARVARD 136051-5117272         | 7R01MH112384-05                     | HARVARD UNIVERSITY                                      | \$0                  | \$21,288   |                        |
| Investigating quantitative signatures of autism in toddlers   | 93.242                        | QCCUNY CM00007612-00           | 7R01MH121605-03                     | RESEARCH FOUNDATION OF CITY UNIVERSITY OF NEW YORK      | \$0                  | \$36,407   |                        |
| Generating a formal set of collaborative standards for sharing behavioral data and task designs to enable reproducibility in neuroscience     | 93.242                        | WAHU WU-21-182                 | 7RF1MH120034-02                     | WASHINGTON UNIVERSITY                                   | \$0                  | \$87,599   |                        |
| 1/2 Task control circuit targets for obsessive compulsive behaviors in children   | 93.242                        | RFMH 27047                     | R01MH115024                         | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC               | \$0                  | \$61,754   |                        |
|   |                               |                                |                                     |   | <b>\$100</b>         | <b>\$7,820,203</b>                                 |                        |
| <b>Alcohol Research Programs</b>  |                               |                                |                                     |   |                      |  |                        |
| Zambia Alabama HIV Alcohol Comorbidities Program (ZAMBAMA)  | 93.273                        | 000530477-SP002-SC001          | 1P01AA029540-01                     | UNIVERSITY OF ALABAMA AT BIRMINGHAM                     | \$0                  | \$8,040  |                        |
| A Randomized Trial of Abandoned Housing Remediation, Substance Abuse and Violence   | 93.273                        | UPENN 569453                   | 1R01AA024941-01                     | UNIVERSITY OF PENNSYLVANIA                              | \$0                  | \$197,523  |                        |
| Dose and Pattern of Adverse Effects in the Diagnosis of Fetal Alcohol Spectrum Disorders: A Secondary Analysis of Data from Five Cohorts      | 93.273                        | WSU18044                       | 1R01AA025905-01                     | WAYNE STATE UNIVERSITY                                  | \$0                  | \$18,677   |                        |
| Community I-STAR Mozambique : Community Implementation of SBIRT using Technology for Alcohol use Reduction in Mozambique                      | 93.273                        | RFMH 27048                     | 1R01AA025947-01                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC               | \$0                  | \$3,797  |                        |

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| <u>Federal Grantor / Pass-through Grantor</u>  | <u>Assistance Listing No.</u> | <u>Award Identification No.</u> | <u>Pass-through Contract Number</u> | <u>Passthrough Name</u>   | <u>Subrecipients</u> | <u>Total Expenditures (Includes Subrecipients)</u> | <b>R&amp;D Cluster</b> |
|--|-------------------------------|---------------------------------|-------------------------------------|---|----------------------|--|------------------------|
| Could long-acting medications facilitate ending AIDS by 2030 in southern Africa? An allocative efficiency analysis   | 93.273                        | NYUMC 19-A1-00-1001516          | 1R01AA027481-01A1                   | NEW YORK UNIVERSITY MEDICAL CENTER                                  | \$0                  | \$61,955   |                        |
| Intersectional Approaches to Population-Level Health Research: Role of HIV Risk, Chronic Conditions, and Mental Health Disparities in Diverse Sexual Minority Youth          | 93.273                        | 60059892 CU                     | 1R01AA029044-01A1                   | NORTHWESTERN UNIVERSITY   | \$0                  | \$29,229   |                        |
| Cortical Subcortical Reorganization and Risk Behaviors of Early Alcohol Use Initiation   | 93.273                        | CON-800003347 (GR114511)        | 1R01AA029611-01                     | YALE UNIVERSITY   | \$0                  | \$95,225   |                        |
| Impact of supportive policies on minority stress, drinking and health among women  | 93.273                        | UIL 16343                       | 2R01AA013328-10A1                   | UNIVERSITY OF ILLINOIS, BOARD OF TRUSTEES                           | \$0                  | \$323,839  |                        |
| Role of Alcohol Disparities in HIV Risk among Sexual Minority Youth  | 93.273                        | NWU 60057464 CU                 | 3R01AA024409-05S1                   | NORTHWESTERN UNIVERSITY   | \$0                  | \$43,901   |                        |
|  |                               |                                 |                                     |   | \$0                  | \$782,186  |                        |
| <b>Drug Abuse and Addiction Research Programs</b>  |                               |                                 |                                     |   |                      |  |                        |
| Health and justice: a continuum of care for HIV and SU for justice involved youth  | 93.279                        | RFMH 130318                     | 1 R01 DA043122-01                   | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC                           | \$0                  | \$82,744   |                        |
| Antecedents and Consequences of Cocaine Taking: Impact of Oxytocin   | 93.279                        | RFMH 26741                      | 1R01DA041543-01                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC                           | \$0                  | \$165,503  |                        |
| Micro- to Nanoscale Neurotransmitter Sensors   | 93.279                        | UCLA 2000GVG295                 | 1R01DA045550-01                     | UNIVERSITY OF CALIFORNIA, LOS ANGELES                               | \$0                  | \$211,541  |                        |
| Examining the synergistic effects of cannabis and prescription opioid policies on chronic pain, opioid prescribing, and opioid poisoning                                     | 93.279                        | 19-A0-00-1002539                | 1R01DA045872-01A1                   | NEW YORK UNIVERSITY   | \$0                  | \$344,161  |                        |
| Sex-dependent effects of cannabis: Assessing abuse-related and pharmacokinetic differences between men and women   | 93.279                        | UCLA 2000 G XK823               | 1R01DA047296-01A1                   | UNIVERSITY OF CALIFORNIA, LOS ANGELES                               | \$0                  | \$26,025   |                        |
| Opioid Overdoses Among Medicaid Beneficiaries: Predictors, Outcomes and State Policy Effect  | 93.279                        | RUTGER 1284                     | 1R01DA047347-01                     | RUTGERS, THE STATE UNIVERSITY OF NEW JERSEY DEPARTMENT OF RADIOLOGY | \$0                  | \$10,142   |                        |
| Neurocognitive mechanisms underlying smartphone-assisted prevention of relapse in opioid use disorder  | 93.279                        | UARK 55623                      | 1R01DA048022-01A1                   | UNIVERSITY OF ARKANSAS  | \$0                  | \$16,031   |                        |
| Impact of Medical and Recreational Marijuana Laws On Cannabis, Opioids And Psychiatric Medications: National Study of VA Patients, 2000 - 2024                               | 93.279                        | 1015580/3/27298                 | 1R01DA048860-01                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC                           | \$0                  | \$148,091  |                        |
| Leveraging Social Media to Develop The Cannabis Exposure Index (CEI), A standardized Measure of Cannabis Use   | 93.279                        | DARTC R1483                     | 1R01DA050032-01A1                   | DARTMOUTH COLLEGE   | \$0                  | \$56,874   |                        |
| SOAR: Smartphones for Opioid Addiction Recovery  | 93.279                        | 21-A0-00-1005963                | 1R01DA054220-01                     | NEW YORK UNIVERSITY MEDICAL CENTER                                  | \$0                  | \$25,374   |                        |
| Social-environmental drivers of stimulant use and its impact on HIV prevention and treatment in Black men who have sex with men  | 93.279                        | RFMH 155214                     | 1R21DA053156-01A1                   | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC                           | \$0                  | \$17,654   |                        |
| Peer-based HIV Self-testing among High Risk Women Who Inject or Use Drugs in Kazakhstan, Central Asia  | 93.279                        | RFCUNY CM00005426-01            | 1R34DA049664-01A1                   | RESEARCH FOUNDATION OF CITY UNIVERSITY OF NEW YORK                  | \$0                  | \$176,821  |                        |
| On Demand Electrostimulation   | 93.279                        | CORIDEA CORCOL-001              | 1R43DA055401-01                     | CORIDEA LLC   | \$0                  | \$19,306   |                        |
| Development of Opioid Use Disorder Severity Scale  | 93.279                        | YU CON-80002907 (GR115931)      | 1U01DA051639-01                     | YALE UNIVERSITY   | \$0                  | \$1,351  |                        |
| Efficacy of buprenorphine and XR-naltrexone combination for relapse prevention in opioid use disorder  | 93.279                        | RFMH 27585                      | 1U01DA146430-01A1                   | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC                           | \$0                  | \$78,211   |                        |
| METHODOLOGY AND ADVANCED ANALYTICS RESOURCE CENTER (MAARC)   | 93.279                        | UofC AWD100228                  | 1U2CDA050098-01                     | UNIVERSITY OF CHICAGO   | \$0                  | \$30,714   |                        |
| Facilitating Opioid Care Connections: System level strategies to improve use of MAT and movement through the opioid care cascade for defendants in a new Opioid Court system | 93.279                        | RFMH 27305                      | 1UG1DA050071-01                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC                           | \$0                  | \$137,264  |                        |
| Vaccines for Fentanyl and Its Derivatives: A Strategy to Reduce Illicit Use and Overdose   | 93.279                        | UMINN N007622802                | 1UG3DA048386-01                     | UNIVERSITY OF MINNESOTA   | \$0                  | \$55,094   |                        |

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| <u>Federal Grantor / Pass-through Grantor</u>  | <u>Assistance Listing No.</u> | <u>Award Identification No</u> | <u>Pass-through Contract Number</u> | <u>Passthrough Name</u>                                 | <u>Subrecipients</u> | <u>Total Expenditures (Includes Subrecipients)</u> | <b>R&amp;D Cluster</b> |
|--|-------------------------------|--------------------------------|-------------------------------------|---|----------------------|--|------------------------|
| Combining Pregabalin with Lofexidine: Can it Increase the Success of Transition to Naltrexone?                                 | 93.279                        | UPENN 578203                   | 1UG3DA049694-01                     | UNIVERSITY OF PENNSYLVANIA                              | \$0                  | \$1,804  |                        |
| Monitoring the Future: Drug Use and Lifestyles of American Youth   | 93.279                        | UMICHG 3004489406              | 2R01DA001411-43                     | UNIVERSITY OF MICHIGAN                                  | \$0                  | \$76,259   |                        |
| Translational Research Training on Addictions for Racial/Ethnic Minorities   | 93.279                        | RFCUNY CM0004811-00            | 2R25DA035161-06                     | RESEARCH FOUNDATION OF CITY UNIVERSITY OF NEW YORK      | \$0                  | \$13,553   |                        |
| NIDA Clinical Trials Network: Greater New York Node  | 93.279                        | NYU 20-00-00-003671            | 2UG1DA013035-19                     | NEW YORK UNIVERSITY                                     | \$0                  | \$110,239  |                        |
| Florida Node Alliance of the National Drug Abuse Treatment Clinical Trials Network   | 93.279                        | UMIAMI OS00000236              | 2UG1DA013720-21                     | UNIVERSITY OF MIAMI                                     | \$0                  | \$289,367  |                        |
| The Cumulative Risk of Substance Exposure and Early Life Adversity on Child Health Development and Outcomes                    | 93.279                        | AMH R34DA050288-A              | 3R34DA050288-01S1                   | AVERA MCKENNAN HOSP & UNIV HEALTH CTR                   | \$0                  | \$81,711   |                        |
| NIDA Clinical Trials Network: New York Node (CTN-0100)   | 93.279                        | NYU 22-A0-S3-003671 /117236    | 3UG1DA013035-20S2                   | NEW YORK UNIVERSITY MEDICAL CENTER                      | \$0                  | \$39,304   |                        |
| Clinical Trials Network: Greater New York Node CTN-0094: Data  | 93.279                        | NYU 21-A0-S3-003671/117434     | 3UG1DA013035-20S4                   | NEW YORK UNIVERSITY MEDICAL CENTER                      | \$0                  | \$311,610  |                        |
| CTN-0121: Integrated Care and Treatment for Severe Infectious Diseases and Substance Use Disorders among Hospitalized Patients | 93.279                        | UMIAMI OS00000846              | 3UG1DA013720-22S3                   | UNIVERSITY OF MIAMI                                     | \$0                  | \$116,982  |                        |
| Clinical Trials Network: New England Node: CTN0099 ED-INNOVATION   | 93.279                        | YU GR109716                    | 3UG1DA015831-19S1                   | YALE UNIVERSITY   | \$0                  | \$249,426  |                        |
| Pharmacological Probes Based on Mitragynine Pseudoindoxyl  | 93.279                        | SLCP 807-1-01                  | 4R33DA045884-03                     | UNIVERSITY OF HEALTH SCIENCES AND PHARMACY IN ST. LOUIS | \$0                  | \$117,004  |                        |
| Evaluation of Safety and Pharmacokinetics of Naltrexone Implant  | 93.279                        | RFMH CU20-4657                 | 4UH3DA047720-03                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC               | \$0                  | \$83,959   |                        |
| Ending HIV/AIDS Among People Who Use Drugs: Overcoming Challenges  | 93.279                        | NYU F1658-S018                 | 5P30DA011041-24                     | NEW YORK UNIVERSITY                                     | \$0                  | \$35,391   |                        |
| Cannabis Relapse: Influence of Tobacco Cessation   | 93.279                        | RFMH 27059                     | 5R01DA031005-07                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC               | \$0                  | \$71,142   |                        |
| HIV/Drug Abuse Prevention Research Ethics Training Institute   | 93.279                        | FORDUN FORD0048                | 5R25DA031608-09                     | FORDHAM UNIVERSITY                                      | \$0                  | \$812  |                        |
| Phase 1a/1b Clinical Trials of Multivalent Opioid Vaccine  | 93.279                        | RFMH 27040                     | 5UG3DA047711-02                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC               | \$0                  | \$282,440  |                        |
| Missing Data Matters: Substance Use Disorder Clinical Trials   | 93.279                        | UTAH 10058454-01               | 7R01DA046534-04                     | UNIVERSITY OF UTAH                                      | \$0                  | \$2,631  |                        |
| Evaluation of safety and pharmacokinetics of naltrexone implant  | 93.279                        | RFMH 27797                     | UH3DA047720-03                      | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC               | \$0                  | \$132,516  |                        |
|  |                               |                                |                                     |   | \$0                  | \$3,619,051  |                        |
| <b>Discovery and Applied Research for Technological Innovations to Improve Human Health</b>                                    |                               |                                |                                     |   |                      |  |                        |
| Noninvasive Quantification of Brain Glucose Metabolism Using a Portable Positron Emission Tomography Camera.                   | 93.286                        | RFMH 27000                     | 1R01EB026481-01                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC               | \$0                  | \$75,992   |                        |
| Causal Inference for Neuroimaging  | 93.286                        | JH 2003851642                  | 5R01EB016061-08                     | JOHNS HOPKINS UNIVERSITY                                | \$0                  | \$68,673   |                        |
| Tools for modeling state-dependent sensory encoding by neural populations across spatial and temporal scales                   | 93.286                        | ORHSUN 1014876 COLUMBIA        | 5R01EB028155-02                     | OREGON HEALTH SCIENCES UNIVERSITY                       | \$0                  | \$144,748  |                        |
| FEBio Software Suite   | 93.286                        | UTAH 10052732-COL              | 5U24EB029007-03                     | UNIVERSITY OF UTAH                                      | \$0                  | \$33,498   |                        |
| Imaging Human brain Function with Minimal Mobility Restrictions  | 93.286                        | UMINN N006264801               | U01EB025153                         | UNIVERSITY OF MINNESOTA                                 | \$0                  | \$377,692  |                        |

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|---|-------------------------------|--------------------------------|-------------------------------------|---|------------------------|--|
|   |                               |                                |                                     |   | <u>Subrecipients</u>   | <u>Total Expenditures (Includes Subrecipients)</u> |
|   |                               |                                |                                     |   | \$0                    | \$700,603  |
| <b>Minority Health and Health Disparities Research</b>  |                               |                                |                                     |   |                        |  |
| Peer-Administered Asthma Self-Management Intervention in Urban Middle Schools   | 93.307                        | RIH 710-7137328                | 1R01MD012225-01                     | RHODE ISLAND HOSPITAL                     | \$0                    | \$28,844   |
| Maternal trauma, circulating microRNA in extracellular vesicles, and programming of childhood respiratory outcomes  | 93.307                        | ISMMS 0255-B281-4609           | 1R01MD013310-01                     | ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI   | \$0                    | \$68,303   |
| Social Stress Epigenetics and Cardio-Metabolic Health Among Latinos   | 93.307                        | EMORYU A193700                 | 1R01MD013320-01A1                   | EMORY UNIVERSITY                          | \$0                    | \$125,970  |
| Identifying and exploring solutions to the ethical challenges of Apo1 testing of donors with recent African ancestry through mixed methods research with stakeholders | 93.307                        | WU-20-108-MOD-2                | 1R01MD014161-01                     | WASHINGTON UNIVERSITY                     | \$0                    | \$44,920   |
| Social Stress, Epigenetics and Cardiometabolic Health Among Youth   | 93.307                        | EMORYU A556942                 | 1R01MD015204-01A1                   | EMORY UNIVERSITY                          | \$0                    | \$17,519   |
| Racial Disparity in Diagnostic Evaluation of Uterine Cancer   | 93.307                        | YU CON-80003273 (GR113900)     | 1R01MD016386-01                     | YALE UNIVERSITY                           | \$0                    | \$128,994  |
| Support via Online Social Networks to promote Safe Infant Care practices Toward Reducing Racial Disparities in Infant Mortality (SUPER SONIC)                         | 93.307                        | UV GB10972.169699              | 5R01MD007702-07                     | UNIVERSITY OF VIRGINIA                    | \$0                    | \$34,668   |
| Data Driven Methods for Missing Data Imputation in Surgical Disparities Research  | 93.307                        | GWU 19-M111                    | 5R01MD013901-03                     | GEORGE WASHINGTON UNIVERSITY              | \$0                    | \$10,835   |
|   |                               |                                |                                     |   | \$0                    | \$460,053  |
| <b>Trans-NIH Research Support</b>   |                               |                                |                                     |   |                        |  |
| A randomized controlled trial of concentrated investment in Black neighborhoods to address structural racism as a fundamental cause of poor health                    | 93.310                        | UPenn 583513                   | 1U01OD033246-01                     | UNIVERSITY OF PENNSYLVANIA                | \$0                    | \$48,328   |
| CHEAR Center for Data Science   | 93.310                        | 0255-0225-4609                 | 1U2CES026555-01                     | ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI   | \$0                    | \$-1   |
| Environmental Influences on Child Health Outcomes (ECHO) Coordinating Center  | 93.310                        | DUKEU A03-5218                 | 1U2COD023375-01                     | DUKE UNIVERSITY                           | \$0                    | \$28,924   |
| Data and Research Support Center  | 93.310                        | VUMC59350                      | 1U2COD23196-01                      | VANDERBILT UNIVERSITY MEDICAL CENTER      | \$0                    | \$2,076,906  |
| Children s Respiratory Research and Environment Workgroup (CREW)  | 93.310                        | UWM 800K450                    | 1UG3OD023282-01                     | UNIVERSITY OF WISCONSIN MADISON           | \$0                    | \$18,694   |
| Exposome Contributors to Child Health Originating from National Fetal Growth Study (ECCHO-NFGS)   | 93.310                        | A00-2818-S001                  | 1UG3OD023316-01                     | MEDICAL UNIVERSITY OF SOUTH CAROLINA      | \$0                    | \$191,983  |
| Breaking The Cycle Of Intergenerational Disadvantage: Neurodevelopment Among Puerto Rican Children  | 93.310                        | RFMH 150349                    | 1UG3OD023328-01                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC | \$0                    | \$232,084  |
| ECHO Consortium on Perinatal Programming of Neurodevelopment  | 93.310                        | ISMMS 0255-2299-4609           | 1UG3OD023337-01                     | ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI   | \$0                    | \$126,114  |
| An integrated and diverse genomic medicine program for undiagnosed diseases   | 93.310                        | DUKEU A033653                  | 2U01HG007672-05                     | DUKE UNIVERSITY MEDICAL CENTER            | \$0                    | \$177,374  |
| Quasi-mechanistic modeling of cell line drug response using neural networks as time evolution operators   | 93.310                        | 1090580-437271                 | 3OT2OD026675-01S3                   | CARNEGIE MELLON UNIVERSITY                | \$0                    | \$12,415   |
| Environmental Influences on Child Health Outcomes in the Northern Plains Safe Passage Study Cohort  | 93.310                        | AMH 5UH3OD023279-B4            | 4UH3OD023279                        | AVERA MCKENNAN HOSP & UNIV HEALTH CTR     | \$0                    | \$443,666  |
| Environmental Influences on Child Health Outcomes in the Northern Plains Safe Passage Study Cohort  | 93.310                        | AVERA 5UH3OD023279-A3          | 4UH3OD023279-04                     | AVERA MCKENNAN HOSP & UNIV HEALTH CTR     | \$0                    | \$385,395  |
| Mega-Scale Identification Tools for Xenobiotic Metabolism   | 93.310                        | EMORYU A522325                 | 5U2CES030163-02                     | EMORY UNIVERSITY                          | \$0                    | \$29,502   |
| ECHO Coordinating Center  | 93.310                        | DUKEU 2037934                  | 5U2COD023375-04                     | DUKE UNIVERSITY                           | \$0                    | \$59,817   |

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| <u>Federal Grantor / Pass-through Grantor</u>   | <u>Assistance Listing No.</u> | <u>Award Identification No</u> | <u>Pass-through Contract Number</u> | <u>Passthrough Name</u>                        | <u>Subrecipients</u> | <u>Total Expenditures (Includes Subrecipients)</u> | <b>R&amp;D Cluster</b> |
|---|-------------------------------|--------------------------------|-------------------------------------|--|----------------------|--|------------------------|
| Children s Respiratory Research and Environment Workgroup (CREW)  | 93.310                        | UWM 000001626                  | 5UH3OD023282-04                     | UNIVERSITY OF WISCONSIN MADISON                | \$0                  | \$668,090  |                        |
|   |                               |                                |                                     |  |                      | <b>\$0</b>   | <b>\$4,499,291</b>     |
| <b>National Center for Advancing Translational Sciences</b>   |                               |                                |                                     |  |                      |  |                        |
| Gut Microbiota in the Modulation of Outcomes after Liver Transplant   | 93.350                        | VCU FP00011749 SA001           | 1R21TR003095-01A1                   | VIRGINIA COMMONWEALTH UNIVERSITY               | \$0                  | \$46,738   |                        |
| Open Health Natural Language Processing Collaboratory   | 93.350                        | MAORO COL-231278/65497608      | 1U01TR002062-01                     | Mayo Clinic -- Rochester                       | \$0                  | \$241,514  |                        |
| Coordinated medical treatment of opioid use disorder and infectious disease   | 93.350                        | YU GR109957 (CON-80002430)     | 1U01TR002763-01                     | YALE UNIVERSITY                                | \$0                  | \$46,305   |                        |
| Improving Clinical Trial Enrollment and Recruitment Education at CTSA hubs (I-CERCH)  | 93.350                        | VUMC 59243                     | 1U24TR001579-01                     | VANDERBILT UNIVERSITY MEDICAL CENTER           | \$0                  | \$19,466   |                        |
| Safety and Efficacy of Itacitinib in treatment of JAK/STAT gain of function disorders   | 93.350                        | BCMh 7000001566                | 1UG3TR003908-01                     | BAYLOR COLLEGE OF MEDICINE--HOUSTON            | \$0                  | \$34,719   |                        |
| CD2H - National COVID Cohort Collaborative (N3C) Supplement   | 93.350                        | JHU 1011902-001                | 3U24TR002306-04S1                   | JOHNS HOPKINS UNIVERSITY                       | \$0                  | \$15,218   |                        |
| University of Pittsburgh Clinical and Translational Science Institute ACT Supplement  | 93.350                        | AWD000000243 (134445-1)        | 3UL1TR001857-01S1                   | UNIVERSITY OF PITTSBURGH                       | \$0                  | \$2,192  |                        |
| Systemic Inflammation in Microphysiological Models of Muscle and Vascular Disease   | 93.350                        | DUKEU A03-3576                 | 5UH3TR002142-05                     | DUKE UNIVERSITY                                | \$0                  | \$184,157  |                        |
| A First in Class Disease Modifying Therapy to Treat Alpha-1 Antitrypsin Deficiency a Genetically Linked Orphan Disease (UH3 Phase II)           | 93.350                        | 000518169-SC009                | 5UH3TR002450-03                     | UNIVERSITY OF ALABAMA AT BIRMINGHAM            | \$0                  | \$79,203   |                        |
|   |                               |                                |                                     |  |                      | <b>\$0</b>   | <b>\$669,512</b>       |
| <b>21st Century Cures Act - Beau Biden Cancer Moonshot</b>  |                               |                                |                                     |  |                      |  |                        |
| Advancing the Quality of Cancer Care through Behavioral Economics and Implementation Science  | 93.353                        | UPENN 580281                   | 1-P50-CA-244690-01                  | UNIVERSITY OF PENNSYLVANIA                     | \$0                  | \$34,039   |                        |
| Transition to Metastatic State: Lung Cancer, Pancreatic Cancer and Brain Metastasis-Functional Unit 3   | 93.353                        | MSKCC C21844671                | 5U2CCA233284-04                     | MEMORIAL SLOAN-KETTERING CANCER CENTER         | \$0                  | \$65,110   |                        |
|   |                               |                                |                                     |  |                      | <b>\$0</b>   | <b>\$99,149</b>        |
| <b>Nursing Research</b>   |                               |                                |                                     |  |                      |  |                        |
| Neighborhoods, networks, and the HIV care continuum among HIV infected MSM in NYC   | 93.361                        | NYBC IDP-NIH620                | 1R01MH118960-01A1                   | NEW YORK BLOOD CENTER                          | \$0                  | \$51,935   |                        |
| Gender Affirmation, Quality of Life, and Access to Care: A Mixed-Method Longitudinal Investigation  | 93.361                        | VNSNY 4633 2021 CUSON          | 1R01NR019315-01A1                   | VISITING NURSE SERVICE OF NEW YORK             | \$0                  | \$99,580   |                        |
| Improving Ethical Care for Patients who are Incapacitated with No Evident Advance Directives or Surrogates (INEADS)                             | 93.361                        | ISMMS 0255-E151-4609           | 1R21NR019319-01                     | ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI        | \$0                  | \$61,982   |                        |
| The role of host-microbial interactions in altering preterm birth risk among black women  | 93.361                        | UPENN 579470                   | 2R01NR014784-06                     | UNIVERSITY OF PENNSYLVANIA                     | \$0                  | \$30,651   |                        |
|   |                               |                                |                                     |  |                      | <b>\$0</b>   | <b>\$244,148</b>       |
| <b>Cancer Cause and Prevention Research</b>   |                               |                                |                                     |  |                      |  |                        |
| Enhancing responses to immune checkpoint blockade in melanoma via modulation of the microbiome  | 93.393                        | UTMD 3001244409                | 1R01CA219896-01A1                   | UNIVERSITY OF TEXAS M.D. ANDERSON CANCERCENTER | \$0                  | \$48,515   |                        |
| Improving Delivery of Genetic Services to High Risk Childhood Cancer Survivors: A Randomized Study of Remote Genetic Services Versus Usual Care | 93.393                        | UCHICA AWD101267 (SUB00000376) | 1R01CA237369-01A1                   | UNIVERSITY OF CHICAGO                          | \$0                  | \$7,681  |                        |
| Tumor Immune Contexture and Breast Cancer Disparities: A Multi-Disciplinary Study in Women of African and European Ancestry                     | 93.393                        | RPCI 394-01                    | 1R01CA247281-01A1                   | ROSWELL PARK CANCER INSTITUTE                  | \$0                  | \$-11  |                        |

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| <u>Federal Grantor / Pass-through Grantor</u>   | <u>Assistance Listing No.</u> | <u>Award Identification No</u> | <u>Pass-through Contract Number</u> | <u>Passthrough Name</u>   | <u>Subrecipients</u> | <u>Total Expenditures (Includes Subrecipients)</u> | <u>R&amp;D Cluster</u> |
|---|-------------------------------|--------------------------------|-------------------------------------|---|----------------------|--|------------------------|
| Longitudinal investigation of sociocultural and behavioral influences on symptom management, biological response, and functioning between Chinese and White breast cancer survivors | 93.393                        | GU 7774559                     | 1R01CA248413-01A1                   | GEORGETOWN UNIVERSITY   | \$0                  | \$20,093   |                        |
| Addressing Cancer-Related Financial Hardship through Delivery of a Proactive Financial Navigation Intervention  | 93.393                        | FHCRC 0001115022               | 1R01CA248656-01                     | FRED HUTCHINSON CANCER CENTER                                       | \$0                  | \$42,942   |                        |
| The ASPIRES Study: Activating Cancer Survivors and their Primary Care Providers to Increase Colorectal  | 93.393                        | UoC AWD101813                  | 1R01CA255269-01                     | UNIVERSITY OF CHICAGO   | \$0                  | \$15,852   |                        |
| Leveraging tumor registries and pathology specimens to facilitate genetic testing and traceback for ovarian cancer  | 93.393                        | KFDNI OOS030500-COLU-03        | 1U01CA244323-01                     | Kaiser Foundation Research Institute-<br>-Division of Research      | \$0                  | \$89,485   |                        |
| A web-based patient-reported symptom monitoring and self-management portal for adolescent and young adult breast cancer survivors   | 93.393                        | DFCI 1315802                   | 1U01CA246648-01A1                   | DANA-FARBER CANCER INSTITUTE  | \$0                  | \$179,927  |                        |
| Structural Cell Biology of DNA Repair Machines  | 93.393                        | LBNL 7341650                   | 2P01CA092584-16                     | LAWRENCE BERKELEY NATIONAL LABORATORY                               | \$0                  | \$22,096   |                        |
| Role of Histone and Histone-like Mutations in the Oncogenesis of Human Cancers  | 93.393                        | RFU SUB00000166                | 2P01CA196539-06                     | ROCKEFELLER UNIVERSITY  | \$0                  | \$350,090  |                        |
| EMPOWER Study: Promoting Breast Cancer Screening in Women Who Survived Childhood Cancer   | 93.393                        | DUKE A033139                   | 5R01CA134722-08                     | DUKE UNIVERSITY MEDICAL CENTER                                      | \$0                  | \$14,835   |                        |
| Adoption, Diffusion, And Implementation of Tobacco 21 Policies To Address Health Disparities  | 93.393                        | RUTGER 1160319                 | 5R01CA231139-02                     | RUTGERS, THE STATE UNIVERSITY OF NEW JERSEY DEPARTMENT OF RADIOLOGY | \$0                  | \$46,847   |                        |
| Cell lineage determinants of p53-driven fate outcomes in vivo   | 93.393                        | ISMMS 0255-E071-4609           | 5R01CA257548-02                     | ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI                             | \$0                  | \$160,090  |                        |
| (PQ#9) Targeting leaky ryanodine receptor (RyR2) to treat and prevent chemotherapy-associated cognitive dysfunction in patients with breast cancer                                  | 93.393                        | UTMD 3001762327                | 7R01CA206025-06                     | UNIVERSITY OF TEXAS M.D. ANDERSON CANCER CENTER                     | \$0                  | \$103,404  |                        |
| 19-M116 Mechanisms and Genomics of Esophageal Carcinogenesis  | 93.393                        | 19-M116                        | 7R01CA208711-05                     | GEORGE WASHINGTON UNIVERSITY  | \$0                  | \$5,540  |                        |
| Symptom Screening Linked to Care Pathways for Children with Cancer: a Cluster Randomized Trial  | 93.393                        | HSC 6610100234                 | R01CA251112-01                      | HOSPITAL FOR SICK CHILDREN  | \$0                  | \$25,018   |                        |
| MULTI-ANCESTRY MAPPING OF PANCREATIC CANCER SUSCEPTIBILITY LOCI   | 93.393                        | JHU CU 21-1997                 | U01CA247283                         | JOHNS HOPKINS UNIVERSITY  | \$0                  | \$25,199   |                        |
| Advanced Development and Dissemination of EMERSE for Cancer Phenotyping from Medical Records  | 93.393                        | UMICHG 3004700011              | U24CA204863                         | UNIVERSITY OF MICHIGAN  | \$0                  | \$47,661   |                        |
|   |                               |                                |                                     |   | \$0                  | \$1,205,264  |                        |
| <b>Cancer Detection and Diagnosis Research</b>  |                               |                                |                                     |   |                      |  |                        |
| Tyrosine phosphorylation of p27Kip1 as a biomarker to identify Cdk4/6 inhibitor response  | 93.394                        | 100-116346-91776               | 1R01CA24966701A1                    | STATE UNIVERSITY OF NEW YORK, DOWNSTATE MEDICAL CENTER              | \$0                  | \$15,522   |                        |
| Genomic biomarkers of splenic lymphoma  | 93.394                        | UPENN 581239                   | 1R01CA255655-01                     | UNIVERSITY OF PENNSYLVANIA  | \$0                  | \$32,769   |                        |
| Circulating Biomarker Consortium for Pancreatic Cancer Early Detection  | 93.394                        | DFCI 1283205                   | 1U01CA210171-01                     | DANA-FARBER CANCER INSTITUTE  | \$0                  | \$60,162   |                        |
| Using Markers to Improve Pancreatic Cancer Screening and surveillance   | 93.394                        | JHU 2004290640                 | 5U01CA210170-03                     | JOHNS HOPKINS UNIVERSITY  | \$0                  | \$950  |                        |
| Computational modeling of tumor burden by CT to advance cancer therapeutics   | 93.394                        | INOVA FP-152539-A              | R01CA194783                         | INOVA HEALTH SYSTEM   | \$0                  | \$204,169  |                        |
| Quantitative imaging tools to derive DW-MRI oncological biomarkers  | 93.394                        | MSKCC BD522043A                | U01CA211205                         | MEMORIAL SLOAN-KETTERING CANCER CENTER                              | \$0                  | \$166,536  |                        |
|   |                               |                                |                                     |   | \$0                  | \$480,108  |                        |
| <b>Cancer Treatment Research</b>  |                               |                                |                                     |   |                      |  |                        |
| Using Arginine Metabolic Therapies for Sarcoma  | 93.395                        | WUSOM WU-20-149                | 1R01CA227115-01A1                   | Washington University School of Medicine in St. Louis               | \$0                  | \$10,624   |                        |

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|--|-------------------------------|--------------------------------|-------------------------------------|---|----------------------|--|
|  |                               |                                |                                     |   |                      | <u>Total Expenditures (Includes Subrecipients)</u> |
| ECOG-ACRIN Integrated Leukemia Translational Research Center   | 93.395                        | MSKCC BD525251B                | 1UG1CA233332-01                     | MEMORIAL SLOAN-KETTERING CANCER CENTER                            | \$0                  | \$11,558   |
| NIH COG Pediatric Early Phase Clinical Trial Network Grant   | 93.395                        | CHOP 9500120719-04C            | 1UM1CA228823-01                     | CHILDREN'S HOSPITAL OF PHILADELPHIA                               | \$0                  | \$149,500  |
| Discovery of Anticancer Agents from Diverse Natural Origin   | 93.395                        | UNCG 20190268.1                | 2P01CA125066-11A1                   | UNIVERSITY OF NORTH CAROLINA GREENSBORO                           | \$0                  | \$33,000   |
| A Phase II, Open Label, Multi-Center Study in Adults with Recurrent High Grade Glioma  | 93.395                        | ONCI CU19-1093                 | 2R44CA192427-04                     | ONCOCEUTICS IN  | \$0                  | \$8,160  |
| SWOG Network Group Operations Center of the NCTN   | 93.395                        | OHSU 1013080                   | 2U10CA180888-06                     | OREGON HEALTH SCIENCES UNIVERSITY                                 | \$0                  | \$156,068  |
| Administrative Supplement for VICTORY Early Clinical Trials Consortium   | 93.395                        | GR109625 (CON-80002374)        | 2UM1CA186689-06                     | YALE UNIVERSITY   | \$0                  | \$40,975   |
| The Genomic Determinants and Mechanisms Underlying Immunotherapy Efficacy and Resistance   | 93.395                        | CLEVELCL 1496-SUB              | 5R35CA232097-03                     | CLEVELAND CLINIC  | \$0                  | -\$13,658  |
| Maximizing Local Access to Therapeutic Deliveries in Glioblastoma  | 93.395                        | WFUHS 4411111 CORE 3           | P01CA207206                         | WAKE FOREST UNIVERSITY  | \$0                  | \$366,113  |
| Support, NIH COG Phase 1 Grant   | 93.395                        | CHOP CU15-2115                 | UM1CA097452                         | CHILDREN'S HOSPITAL OF PHILADELPHIA                               | \$0                  | \$20,000   |
|  |                               |                                |                                     |   | <u>\$0</u>           | <u>\$782,340</u>                                   |
| <b>Cancer Biology Research</b>   |                               |                                |                                     |   |                      |  |
| Targeting metabolic stress to induce pancreatic tumor cell death   | 93.396                        | UMICHG SUBK00012257            | 1R01CA244931-01A1                   | UNIVERSITY OF MICHIGAN  | \$0                  | \$33,146   |
| Lentiviral-Induced Swine Model of Spinal Cord Glioma   | 93.396                        | EMORYU A539786                 | 1R01CA2511393-01A1                  | EMORY UNIVERSITY  | \$0                  | \$86,668   |
| Image-based models of tumor-immune dynamics in glioblastoma  | 93.396                        | MAYO AZ COL-281375/PO #6794679 | 1U01CA250481-01A1                   | MAYO CLINIC--ARIZONA  | \$0                  | \$143,483  |
| HIF-1alpha and FBP2 in sarcoma metabolism, progression, and metastasis   | 93.396                        | 571047                         | 5R01CA158301-10                     | UNIVERSITY OF PENNSYLVANIA  | \$0                  | \$52,114   |
| Patient-Derived Models of Prostate Cancer for Personalized Medicine  | 93.396                        | UTMDA 30001831256              | 5U01CA224044-03                     | UNIVERSITY OF TEXAS M.D. ANDERSON CANCERCENTER                    | \$0                  | \$82,892   |
| Nuclear Dysfunction in Cancer: The Role of Mechanical Stresses Transmitted by the LINC Complex   | 93.396                        | TAMU M2101419                  | U01CA225566                         | TEXAS A&M UNIVERSITY  | \$0                  | \$328,808  |
|  |                               |                                |                                     |   | <u>\$0</u>           | <u>\$727,111</u>                                   |
| <b>Cancer Centers Support Grants</b>   |                               |                                |                                     |   |                      |  |
| MSK SPORE in Lymphoma-(Project 4: Targeting Acetyltransferase Gene Inactivation in Diffuse Large B Cell Lymphoma)                              | 93.397                        | MSKCC BD520439D                | 1P50CA192937-01A1                   | MEMORIAL SLOAN-KETTERING CANCER CENTER                            | \$0                  | \$67,472   |
| Towards Understanding Prostate Cancer Heterogeneity - Weill Cornell Medicine (WCM) SPORE in Prostate Cancer (Project 4)                        | 93.397                        | WCMC 213827                    | 1P50CA211024-01A1                   | WEILL (JOAN AND SANFORD I.) MEDICAL COLLEGE OF CORNELL UNIVERSITY | \$0                  | \$134,979  |
| MSK SPORE in Genomic Instability in Breast Cancer (DRP PP: Characterizing Oncogenic PI3K Variant Function and Inhibition Across Cancer)        | 93.397                        | BD528257                       | 1P50CA247749-01                     | MEMORIAL SLOAN-KETTERING CANCER CENTER                            | \$0                  | \$49,998   |
| Center for Systems-level Study of Metastasis   | 93.397                        | RFU SUB00000255                | 1U54CA261701-01                     | ROCKEFELLER UNIVERSITY  | \$0                  | \$1,836  |
| Characterizing and overcoming resistance to ERBB2 directed therapy in metastatic gastric and esophageal adenocarcinoma                         | 93.397                        | DFCI 1220313                   | 5P50CA127003-13                     | DANA-FARBER CANCER INSTITUTE                                      | \$0                  | \$136,799  |
| Single-cell transcriptomic analysis of childhood Burkitt lymphoma  | 93.397                        | MSKCC BD527979                 | 5P50CA192937-05                     | MEMORIAL SLOAN-KETTERING CANCER CENTER                            | \$0                  | \$21,704   |
| Identifying children with subclinical neurocognitive decline and susceptibility to oxidative damage during the early months of therapy for ALL | 93.397                        | MSKCC BD528141                 | 5R01CA220568-03                     | MEMORIAL SLOAN-KETTERING CANCER CENTER                            | \$0                  | \$10,236   |

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|--|-------------------------------|--------------------------------|-------------------------------------|---|----------------------|--|------------------------|
| Systems Pharmacology of Therapeutic and Adverse Responses to Immune Checkpoint and Small Molecule Drugs    | 93.397                        | HMS 152308.5115347.0511        | 5U54CA225088-02                     | HARVARD MEDICAL SCHOOL  | \$0                  | \$142,715  |                        |
|  |                               |                                |                                     |   | \$0                  | \$565,739  |                        |
| <b>Cancer Control</b>  |                               |                                |                                     |   |                      |  |                        |
| NRG Oncology NCORP Research Base   | 93.399                        | NCORP-Kachnic-GY6              | 2UG1CA189867-06                     | NRG ONCOLOGY  | \$0                  | \$98,904   |                        |
| NRG Oncology NCORP Research Base   | 93.399                        | NCORP-CHIN-GY8                 | 2UG1CA189867-08                     | NRG ONCOLOGY  | \$0                  | \$18,619   |                        |
| Committee Leadership: COG NCORP Research Base  | 93.399                        | CHOP FP00028127 SUB13 01       | 2UG1CA189955-06                     | CHILDREN'S HOSPITAL OF PHILADELPHIA                             | \$0                  | \$-3   |                        |
| SWOG NCORP Research Base   | 93.399                        | ORHSUN 1014562 COLUMBIA        | 2UG1CA189974-06                     | OREGON HEALTH SCIENCES UNIVERSITY                               | \$0                  | \$357,137  |                        |
| Children s Oncology Group NCORP Research Base - Beauchemin Agreement                                       | 93.399                        | CHOP PO# 20147689              | 5UG1CA189955-07                     | CHILDREN'S HOSPITAL OF PHILADELPHIA                             | \$0                  | \$15,508   |                        |
| Children s Oncology Group NCI Community Oncology Research Program (NCORP)Research Base grant               | 93.399                        | PHI AR04853                    | 7UG1CA189955-08                     | Public Health Institute   | \$0                  | \$17,794   |                        |
|  |                               |                                |                                     |   | \$0                  | \$507,959  |                        |
| <b>ACL National Institute on Disability, Independent Living, and Rehabilitation Research</b>               |                               |                                |                                     |   |                      |  |                        |
| Home Evaluation System with a Triangulating Intervention Approach:HESTIA-NextGen                           | 93.433                        | UWIS 213405490                 | 90DPGE0016-01-00                    | UNIVERSITY OF WISCONSIN   | \$0                  | \$76,095   |                        |
|  |                               |                                |                                     |   | \$0                  | \$76,095   |                        |
| <b>Cardiovascular Diseases Research</b>  |                               |                                |                                     |   |                      |  |                        |
| RAGE/DIAPH1 and Myocardial Infarction (Project 1)  | 93.837                        | NYUMC 18-A0-00-1001609         | 1P01HL146367-01                     | NEW YORK UNIVERSITY MEDICAL CENTER                              | \$0                  | \$10,390   |                        |
| Ambulatory blood pressure and falls in older treated patients with hypertension                            | 93.837                        | KFDNI#OOS030382-CU             | 1R01HL136445-01A1                   | Kaiser Foundation Research Institute-<br>-Division of Research  | \$0                  | \$67,184   |                        |
| Cardiac MR imaging of hemorrhagic reperfusion injury after myocardial infarction                           | 93.837                        | UPENN 574412                   | 1R01HL137984-01A1                   | UNIVERSITY OF PENNSYLVANIA                                      | \$0                  | \$80,000   |                        |
| Evaluating novel approaches forestimating awake and sleep blood pressure                                   | 93.837                        | UAB 000518835-SC001            | 1R01HL139716-01A1                   | UNIVERSITY OF ALABAMA AT BIRMINGHAM                             | \$0                  | \$288,177  |                        |
| Biomechanical Indicators of Bicuspid Aortic Valve Dysfunction  | 93.837                        | UTEXAUS CU17-2783              | 1R01HL142504-01                     | UNIVERSITY OF TEXAS AT AUSTIN                                   | \$0                  | \$86,886   |                        |
| Oxidation-mediated structural degeneration of Bioprosthetic Heart Valves                                   | 93.837                        | CHPHI 3201170622               | 1R01HL143008-01                     | CHILDREN'S HOSPITAL OF PHILADELPHIA                             | \$0                  | \$316,359  |                        |
| Whole-genome sequencing analysis of coronary atherosclerosis and related traits                            | 93.837                        | UTEXHOUS SA0000631             | 1R01HL146860-01A1                   | UNIVERSITY OF TEXAS HOUSTON HEALTH SCIENCE CENTER               | \$0                  | \$9,673  |                        |
| Deep probabilistic predictive models for stroke and coronary heart disease                                 | 93.837                        | NYU F1182-01                   | 1R01HL148248-01                     | NEW YORK UNIVERSITY   | \$0                  | \$483,742  |                        |
| Nutritional Omics of Pulmonary Function Decline  | 93.837                        | RTI 4-312-0217030-65776L       | 1R01HL149352-01                     | RESEARCH TRIANGLE INSTITUTE                                     | \$0                  | \$25,396   |                        |
| Cardiovascular Health After Placental Abruption (CHAP)   | 93.837                        | RTSU 1646                      | 1R01HL150065-01A1                   | RUTGERS, THE STATE UNIVERSITY OF NEW JERDEPARTMENT OF RADIOLOGY | \$0                  | \$13,899   |                        |
| A stress-induced promoter pause release program in cardiomyocytes protecting against myocardial infarction | 93.837                        | UCSD 131709481 KR Invoice/PO 7 | 1R01HL150521                        | UNIVERSITY OF CALIFORNIA, SAN DIEGO                             | \$0                  | \$49,331   |                        |
| Impact of minority stress on cardiovascular disease risk and resilience                                    | 93.837                        | RFMH 153479                    | 1R01HL151559-01                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC                       | \$0                  | \$122,793  |                        |

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| <u>Federal Grantor / Pass-through Grantor</u>   | <u>Assistance Listing No.</u> | <u>Award Identification No</u> | <u>Pass-through Contract Number</u> | <u>Passthrough Name</u>   | <u>Subrecipients</u> | <u>Total Expenditures (Includes Subrecipients)</u> | <u>R&amp;D Cluster</u> |
|---|-------------------------------|--------------------------------|-------------------------------------|---|----------------------|--|------------------------|
| Childhood Mass Trauma Exposure, Inflammatory Programming, and Psychopathology in Young Adulthood  | 93.837                        | RFMH 27522                     | 1R01HL152385-01A1                   | RESEARCH FOUNDATION FOR MENTAL HYGIENE/INC                        | \$0                  | \$67,974   |                        |
| Influencing Basic Behavioral Mechanisms of Action while targeting Daily Walking in Those at Risk for Cardiovascular Disease: Science of Behavior Change Factorial Experiment of Behavioral Change | 93.837                        | AWD00001348                    | 1R01HL153810-01A1                   | FEINSTEIN INSTITUTE FOR MEDICAL RESEARCH                          | \$0                  | \$69,590   |                        |
| Generalizable prediction of medication adherence in heart failure   | 93.837                        | NYU 20-A0-00-1004676           | 1R01HL155149-01                     | NEW YORK UNIVERSITY MEDICAL CENTER                                | \$0                  | \$47,883   |                        |
| Unbiased discovery of dynamic NAV1.5 interact   | 93.837                        | WCMC 212305                    | 1R01HL160089-01                     | WEILL (JOAN AND SANFORD I.) MEDICAL COLLEGE OF CORNELL UNIVERSITY | \$0                  | \$183,294  |                        |
| Effectiveness of Strategies to Improve Outcomes after Hospitalization for Acute Myocardial Infarction in Older Adults   | 93.837                        | YU CON-8000354 (GR115524)      | 1R01HL160822-01                     | YALE UNIVERSITY   | \$0                  | \$12,873   |                        |
| Eating, Activity, and Weight-Related Problems Across the Life Course in Diverse Populations   | 93.837                        | UMINN P006297201               | 1R35HL139853-01                     | UNIVERSITY OF MINNESOTA   | \$0                  | \$33,479   |                        |
| Blood Pressure as a Modifiable Risk Factor for Cardiovascular Events in Liver Transplant Recipients   | 93.837                        | 60060152 COL                   | 1R56HL155093-01                     | NORTHWESTERN UNIVERSITY   | \$0                  | \$47,911   |                        |
| REPRIEVE A5332 and A5333S   | 93.837                        | BWH CU15-0282                  | 1U01HL123336-01                     | BRIGHAM AND WOMEN'S HOSPITAL                                      | \$0                  | \$58,772   |                        |
| Continuation of the nuMoM2b Heart Health Study  | 93.837                        | RTI 2-312-0217457-65971L       | 1U01HL145358-01A1                   | RESEARCH TRIANGLE INSTITUTE                                       | \$50,432             | \$152,241  |                        |
| Atlanta MACS/WIHS Combined Cohort Study Clinical Research Site  | 93.837                        | EMORYU A322408                 | 1U01HL46241-01                      | EMORY UNIVERSITY  | \$0                  | \$60,001   |                        |
| Milrinone in congenital diaphragmatic hernia trial  | 93.837                        | 5-312-0216392-66524L           | 1U24HD095254-01                     | RESEARCH TRIANGLE INSTITUTE                                       | \$0                  | \$2,553  |                        |
| Pathways of Tissue Lipid Uptake   | 93.837                        | NYUMC 20-A1-00-003442          | 2R01HL045095-29A1                   | NEW YORK UNIVERSITY MEDICAL CENTER                                | \$0                  | \$10,044   |                        |
| Structure and function of voltage-gated calcium channels  | 93.837                        | UCSF 12002sc                   | 2R01HL080050-14A1                   | UNIVERSITY OF CALIFORNIA SAN FRANCISCO                            | \$0                  | \$166,028  |                        |
| Quantitative Prediction of Disease and Outcomes from Next Generation SPECT and CT   | 93.837                        | CSMCLA CU 0001703992           | 2R01HL089765-10                     | CEDARS-SINAI MEDICAL CENTER                                       | \$0                  | \$95,514   |                        |
| Incorporation of a Hypertension Working Group into the Jackson Heart Study  | 93.837                        | UAB 000528903-SC003            | 2R01HL117323-08                     | UNIVERSITY OF ALABAMA AT BIRMINGHAM                               | \$0                  | \$131,119  |                        |
| Serotonin Signaling in Mitral Valve Homeostasis, Maintenance and Restoration  | 93.837                        | GRT 00001011                   | 2R01HL131872-05                     | CHILDREN'S HOSPITAL OF PHILADELPHIA                               | \$0                  | \$383,775  |                        |
| Anticoagulation for New-Onset Post-Operative Atrial Fibrillation after CABG   | 93.837                        | ISMMS 0255-A344-4605           | 2U01HL088942-12                     | ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI                           | \$0                  | \$5,591  |                        |
| Administrative Coordinating Center: Bench to Bassinet Program   | 93.837                        | CHMCO 313945                   | 2U01HL131003-06                     | CHILDREN'S HOSPITAL MEDICAL CENTER - OHIO                         | \$0                  | \$20,159   |                        |
| SVRIII: Brain Connectome and Neurodevelopment Outcomes  | 93.837                        | UPITT CU19-3219                | 5R01HL128818-05                     | UNIVERSITY OF PITTSBURGH  | \$0                  | \$21,826   |                        |
| Deep phenotyping of human knockouts and population studies of the APOC3 Pathway   | 93.837                        | UPENN 571188                   | 5R01HL133339-04                     | UNIVERSITY OF PENNSYLVANIA  | \$0                  | \$81,950   |                        |
| Optically Guided Catheter Ablation of Atrial Fibrillation   | 93.837                        | CWRU RES514542                 | 5R01HL149369-03                     | CASE WESTERN RESERVE UNIVERSITY                                   | \$0                  | \$170,995  |                        |
| UCSF Research in Implementation Sciences for Equity (RISE 2) - Applying Theory-informed, Mixed Methods to Identify Multi-level Determinants of Cardiac Rehabilitation                             | 93.837                        | UCSF 13071sc                   | 5R25HL126146-07                     | UNIVERSITY OF CALIFORNIA SAN FRANCISCO                            | \$0                  | \$8,422  |                        |
| Chronic Hypertension and Pregnancy-CHAP Clinical Coordinating Center  | 93.837                        | UAB 00503570-002               | 5U01HL120338-02                     | UNIVERSITY OF ALABAMA AT BIRMINGHAM                               | \$0                  | \$301  |                        |
| Influenza Vaccine to Effectively Stop Cardio Thoracic Events andDecompensated heart failure (INVESTED)  | 93.837                        | BWH PHC #114117                | 5U01HL130163-02                     | BRIGHAM AND WOMEN'S HOSPITAL                                      | \$0                  | \$23,617   |                        |

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| <u>Federal Grantor / Pass-through Grantor</u>  | <u>Assistance Listing No.</u> | <u>Award Identification No</u> | <u>Pass-through Contract Number</u> | <u>Passthrough Name</u>   | <u>Subrecipients</u> | <u>Total Expenditures (Includes Subrecipients)</u> | <b>R&amp;D Cluster</b> |
|--|-------------------------------|--------------------------------|-------------------------------------|---|----------------------|--|------------------------|
| Multicenter Interventional Lymphangioliomyomatosis Early Disease Trial   | 93.837                        | UCINCI 010575-008              | 5U01HL131755-03                     | UNIVERSITY OF CINCINNATI, COLLEGE OF MEDICINE                     | \$0                  | \$15,076   |                        |
| RLDC molecular pathway-driven diagnostic and therapeutics for rare lung diseases   | 93.837                        | LAMF CU16-0725                 | 5U54HL127672-02                     | LAM FOUNDATION  | \$0                  | \$12,747   |                        |
| TRANSFORM-HF Study   | 93.837                        | YU GR104830                    | 7U01HL125511-02                     | YALE UNIVERSITY   | \$0                  | \$3,320  |                        |
| Notch in Angiogenesis and Vascular Biology   | 93.837                        | UIL 16880-00                   | R01HL112626                         | UNIVERSITY OF ILLINOIS, BOARD OF TRUSTEES                         | \$0                  | \$19   |                        |
| Population Effects of Motivation Interviewing on Pediatric Obesity in Primary Care   | 93.837                        | AAP 101905-Columbia            | R01HL128231-01A1                    | AMERICAN ACADEMY OF PEDIATRICS                                    | \$0                  | \$11,962   |                        |
| International Study of Comparative Health Effectiveness with Medical and Invasive Approaches   | 93.837                        | NYU CU13-1776                  | U01HL105907                         | NEW YORK UNIVERSITY MEDICAL CENTER                                | \$0                  | \$3,181  |                        |
| Study Chair and Data Core for the COmparison of Methods of Pulmonary blood flow Augmentation in neonates: Shunt versus Stent (The COMPASS Trial) | 93.837                        | NERI CU21-2083                 | U24HL135691                         | NEW ENGLAND RESEARCH INSTITUTES                                   | \$0                  | \$118,965  |                        |
| 1/2 A randomized controlled trial of pravastatin to prevent preeclampsia in high-risk women  | 93.837                        | OSU 60076777                   | UH3HL140131                         | OHIO STATE UNIVERSITY   | \$0                  | \$18,541   |                        |
|  |                               |                                |                                     |   | <b>\$50,432</b>      | <b>\$3,593,553</b>                                 |                        |
| <b>Lung Diseases Research</b>  |                               |                                |                                     |   |                      |  |                        |
| Secondhand smoke and asthma: Mechanistic outcomes of DNA methylation in T cells  | 93.838                        | SU 60519233-107979             | 1R01HL118612-01                     | STANFORD UNIVERSITY   | \$0                  | \$2,790  |                        |
| Frailty and patient centered outcomes in candidates for lung transplantation   | 93.838                        | UCSF 10296sc                   | 1R01HL134851-01A1                   | UNIVERSITY OF CALIFORNIA SAN FRANCISCO                            | \$0                  | \$46,201   |                        |
| Sleep and Well-being in High Risk Youth  | 93.838                        | RFMH 26555                     | 1R01HL134856-01                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC                         | \$0                  | \$26,060   |                        |
| The CAPTURE Study: Validating a Unique COPD Screening Tool in Primary Care   | 93.838                        | WCMC 213441-6                  | 1R01HL136682-01                     | WEILL (JOAN AND SANFORD I.) MEDICAL COLLEGE OF CORNELL UNIVERSITY | \$0                  | \$26,496   |                        |
| The Road to Destination Therapy: Optimizing Long-Term Mechanical Cardiopulmonary Support for Pulmonary Hypertension                              | 93.838                        | VUMC 67475                     | 1R01HL140231-01A1                   | VANDERBILT UNIVERSITY MEDICAL CENTER                              | \$0                  | \$13,310   |                        |
| Understanding the Origins of Early COPD  | 93.838                        | WCMC 192243-1                  | 1R01HL144718-01A1                   | WEILL (JOAN AND SANFORD I.) MEDICAL COLLEGE OF CORNELL UNIVERSITY | \$0                  | \$7,875  |                        |
| Impact of Prenatal Vitamin A Deficiency on Cell Fate Alterations in Adult Airway Hyper Responsiveness  | 93.838                        | AECM 311707                    | 1R01HL145302-01A1                   | ALBERT EINSTEIN COLLEGE OF MEDICINEESHIVA UNIVERSITY              | \$0                  | \$287,365  |                        |
| Detecting pleiotropic effects through integration of omics data  | 93.838                        | YALE GR105810 (CON-80001760)   | 1R01HL145660-01A1                   | YALE UNIVERSITY   | \$0                  | \$261,797  |                        |
| BEside Exclusion of Pulmonary Emboli in Children without Exposure to Radiation-BEEPER  | 93.838                        | IUSM 8486-CU                   | 1R01HL148247-01A1                   | INDIANA UNIVERSITY  | \$0                  | \$22,823   |                        |
| ASCEND (ARDS in Children and ECMO initiation strategies impact on Neuro-Development)   | 93.838                        | UMICHG SUBK00014478            | 1R01HL153519-01                     | UNIVERSITY OF MICHIGAN  | \$0                  | \$1,800  |                        |
| Balancing Airway Progenitor versus Progeny: a Pathway from Mitochondria  | 93.838                        | UCS KR704693                   | 1R01HL160019-01                     | UNIVERSITY OF CALIFORNIA, SAN DIEGO                               | \$0                  | \$19,530   |                        |
| Evaluation of the Asthma Management Program to Promote Activity for Students In Schools (AsthmaPASS)   | 93.838                        | AECM 311874                    | 1R61HL147908-01A1                   | ALBERT EINSTEIN COLLEGE OF MEDICINEESHIVA UNIVERSITY              | \$0                  | \$24,689   |                        |
| ORal Bacterial EXtracts (ORBEX): Primary Prevention of Asthma and Wheezing in Children   | 93.838                        | UA 330411                      | 1U01HL130045-01                     | UNIVERSITY OF ARIZONA   | \$0                  | \$33,101   |                        |
| SPIROMICS II: Biological underpinnings of COPD heterogeneity and progression   | 93.838                        | UCSF CU17-3435                 | 1U01HL137880-01                     | UNIVERSITY OF CALIFORNIA SAN FRANCISCO                            | \$0                  | \$225,423  |                        |
| Long Term Follow-up of the Lung Transplant Outcomes Group (LTOG) Cohort  | 93.838                        | UPENN 582270                   | 1U01HL145435-01                     | UNIVERSITY OF PENNSYLVANIA  | \$0                  | \$90,753   |                        |

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| <u>Federal Grantor / Pass-through Grantor</u>   | <u>Assistance Listing No.</u> | <u>Award Identification No.</u> | <u>Pass-through Contract Number</u> | <u>Passthrough Name</u>  | <u>Subrecipients</u> | <u>Total Expenditures (Includes Subrecipients)</u> | <b>R&amp;D Cluster</b> |
|---|-------------------------------|---------------------------------|-------------------------------------|--|----------------------|--|------------------------|
| SPIROMICS GIC Support   | 93.838                        | UNC-CH 5111451                  | 1U24HL141762-01                     | UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL                            | \$0                  | \$4,140  |                        |
| PATINA - Precision Administration of Treatment in Neutrophilic severe Asthma  | 93.838                        | BWH 118345                      | 1UG1HL139124-01                     | BRIGHAM AND WOMEN'S HOSPITAL   | \$0                  | \$13,007   |                        |
| AZithromycin Therapy in Preschoolers with a Severe Wheezing Episode Diagnosed at the Emergency Department (AZ-SWED)   | 93.838                        | UA 585141                       | 1UG3HL147016-01A1                   | UNIVERSITY OF ARIZONA  | \$0                  | \$48,577   |                        |
| 1/2 Kids MoD PAH Trial: Mono- vs. Duo-Therapy In Pediatric Pulmonary Arterial Hypertension  | 93.838                        | JH 2005385029                   | 1UG3HL151458-01A1                   | JOHNS HOPKINS UNIVERSITY   | \$0                  | \$59,971   |                        |
| (1 of 2) Genetic Epidemiology of COPD   | 93.838                        | NJMRCCS 20073011                | 2U01HL089897                        | National Jewish Health   | \$0                  | \$172,795  |                        |
| Pulmonary Vascular Disease Phenomics Program (PVDOMICS) Data Coordinating Center  | 93.838                        | CLEVELCL 1426-SUB               | 4U01HL125177-06                     | CLEVELAND CLINIC   | \$0                  | \$1,696  |                        |
| CT-Based Modeling of Bone Micro Architecture and Fracture-Risk in COPD  | 93.838                        | UIO S00925-01                   | 5R01HL142042-02                     | UNIVERSITY OF IOWA   | \$0                  | \$177,386  |                        |
| Pulmonary Vascular Disease Phenomic Program (PVDOMICS)Data Coordinating   | 93.838                        | CLEVELCL 743-SUB                | 5U01HL125177-03                     | CLEVELAND CLINIC   | \$0                  | \$280  |                        |
| Data, Modeling, and Coordination Center for PrecISE Network   | 93.838                        | UNC-CH 5122707-H3COLUMBIA       | 5U24HL138998-03                     | UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL                            | \$0                  | \$16,327   |                        |
| Genetic and developmental mechanisms of congenital diaphragmatic hernia   | 93.838                        | UCSD KR 704654                  | 7R01HL146859-03                     | UNIVERSITY OF CALIFORNIA, SAN DIEGO                                    | \$0                  | \$31,136   |                        |
| Bedside Exclusion of Pulmonary Emboli in Children without Exposure to Radiation (BEEPER) Grant Transfer   | 93.838                        | WSHU WSU22085                   | 7R01HL148247-03                     | WAYNE STATE UNIVERSITY   | \$0                  | \$32,165   |                        |
| A Post-Acute Sequelae of SARS CoV-2 Infection Initiative: NYU Langone Health Clinical Science Core, Data Resource Core, and PASC Biorepository Core   | 93.838                        | UCOL FY22.1126.041              | OT2HL161847-01                      | UNIVERSITY OF COLORADO   | \$0                  | \$82,653   |                        |
| RESEARCHING COVID TO ENHANCE RECOVERY (RECOVER) INITIATIVE  | 93.838                        | WCMC 220367-1                   | OTSHL161847-01                      | WEILL (JOAN AND SANFORD I.) MEDICAL COLLEGE OF CORNELL UNIVERSITY      | \$0                  | \$209,127  |                        |
| Azheimer s Disease Genetics Consortium  | 93.838                        | UPENN 579279                    | U01AG032984                         | UNIVERSITY OF PENNSYLVANIA   | \$0                  | \$90,243   |                        |
|   |                               |                                 |                                     |  | <u>\$0</u>           | <u>\$2,029,516</u>                                 |                        |
| <b>Blood Diseases and Resources Research</b>  |                               |                                 |                                     |  |                      |  |                        |
| Linking Endotypes and Outcomes in Pediatric Acute Respiratory Distress Syndrome   | 93.839                        | CHOP 3201710624                 | 1R01HL148054-01                     | CHILDREN'S HOSPITAL OF PHILADELPHIA                                    | \$0                  | \$5,490  |                        |
| Composite Health Assessment Model for Older Adults: Applying Pre-transplant Comorbidity, Geriatric Assessment, and Biomarkers to Predict Non-Relapse Mortality after Allogeneic Transplantation | 93.839                        | CIBMTR CU19-2653                | 5U24HL138660-03                     | CIBMTR (CENTER FOR INTERNATIONAL BLOOD AND MARROW TRANSPLANT RESEARCH) | \$0                  | \$486  |                        |
| Immunobiology of Transfusion  | 93.839                        | UVA GB10756. PO#2218568         | 7P01HL132819-03                     | UNIVERSITY OF VIRGINIA   | \$0                  | \$45,056   |                        |
| DISPLACE: Dissemination and Implementation of Stroke Prevention looking at the Care Environment   | 93.839                        | UAB 000524452-010               | 7R01HL133896-03                     | UNIVERSITY OF ALABAMA AT BIRMINGHAM                                    | \$0                  | \$33,569   |                        |
| TET2-mediated transcriptional and epigenetic control of normal and malignant hematopoiesis  | 93.839                        | UTHSCSA 166754/165804           | 7R01HL146664-02                     | UNIVERSITY OF TEXAS HEALTH SCIENCE CENTER AT SAN ANTONIO               | \$0                  | \$243,000  |                        |
|   |                               |                                 |                                     |  | <u>\$0</u>           | <u>\$327,601</u>                                   |                        |
| <b>Translation and Implementation Science Research for Heart, Lung, Blood Diseases, and Sleep Disorders</b>   |                               |                                 |                                     |  |                      |  |                        |
| Actions to Decrease Disparities in Risk and Engage in Shared Support for Blood Pressure Control (ADDRESS-BP) in Black   | 93.840                        | NYU 20-A1-00-1003342            | UG3HL151310                         | NEW YORK UNIVERSITY  | \$0                  | \$22,991   |                        |
|   |                               |                                 |                                     |  | <u>\$0</u>           | <u>\$22,991</u>                                    |                        |
| <b>Arthritis, Musculoskeletal and Skin Diseases Research</b>  |                               |                                 |                                     |  |                      |  |                        |

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|--|-------------------------------|--------------------------------|-------------------------------------|---|----------------------|--|------------------------|
| Drugs, Germs, and Joints: Antibiotics, Gut Microbiota, and Juvenile Idiopathic Arthritis                                 | 93.846                        | RUTGERS 0252                   | 1K23AR070286-02                     | RUTGERS, THE STATE UNIVERSITY OF NEW JERSEY DEPARTMENT OF RADIOLOGY | \$0                  | \$2,297  |                        |
| Multiscale models of fibrous interface mechanics   | 93.846                        | WU-21-59                       | 1R01AR077793-01                     | WASHINGTON UNIVERSITY   | \$0                  | \$123,168  |                        |
| Development and Validation of a Novel and HIV-Relevant Prediction Model for Fracture                                     | 93.846                        | CON-80003104                   | 1R01AR078715-01A1                   | YALE UNIVERSITY   | \$0                  | \$9,998  |                        |
| Small Molecules to Promote Tendon Regeneration by Specific Targeting of Endogenous Stem Cells                            | 93.846                        | WNT CU20-3470                  | 1R41AR079360-01                     | WNT SCIENTIFIC LLC  | \$0                  | \$113,679  |                        |
| Treatments Against RA and Effect on FDG PET/Ct: The Target Trial   | 93.846                        | BWH 113296                     | 1U01AR068043-01                     | BRIGHAM AND WOMEN'S HOSPITAL  | \$0                  | \$151,161  |                        |
| A sequenced-strategy for improving outcomes in patients with knee osteoarthritis pain                                    | 93.846                        | JHU 2004879865                 | 4UH3AR077360-02                     | JOHNS HOPKINS UNIVERSITY  | \$0                  | \$1,627  |                        |
| Engineering Polymers to Scavenge DAMPs in Arthritis and Lupus  | 93.846                        | DUKEU A031921                  | 5R01AR073935-04                     | DUKE UNIVERSITY   | \$0                  | \$217,083  |                        |
|  |                               |                                |                                     |   | \$0                  | \$619,013  |                        |
| <b>Diabetes, Digestive, and Kidney Diseases Extramural Research</b>  |                               |                                |                                     |   |                      |  |                        |
| Study of coding variants in human obesity and their functional characterization using human iPSC-derived cellular models | 93.847                        | ISMMS 0255-2211-4609           | 1R01DK110113-01                     | ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI                             | \$0                  | \$2,276  |                        |
| Pathogenesis of compromised bone quality and mechanics in chronic kidney disease   | 93.847                        | IUSM IN46887773CU              | 1R01DK110871-01                     | INDIANA UNIVERSITY SCHOOL OF MEDICINE                               | \$0                  | \$-41,722  |                        |
| Mechanisms mediating podocyte-parietal epithelial cell crosstalk in proliferative glomerulopathies                       | 93.847                        | RFSUNY 89194/2/1163728         | 1R01DK12184601A1                    | RESEARCH FOUNDATION OF THE STATE UNIVERSITY OF NEW YORK             | \$0                  | \$18,029   |                        |
| Identification of unique nitric oxide-expressing hematopoietic stem cells and their special vascular niche               | 93.847                        | BIDMC 01063258                 | 1R01DK121889-01A                    | BETH ISRAEL DEACONESS MEDICAL CENTER                                | \$0                  | \$31   |                        |
| Targeting RAGE/DIAPH1: Novel Therapeutic Strategy for Diabetic Complications   | 93.847                        | NYUMC 20-A1-00-1002209         | 1R01DK122456-01A1                   | NEW YORK UNIVERSITY MEDICAL CENTER                                  | \$0                  | \$2,277  |                        |
| Resilience to obesity in carriers of monogenic obesity mutations a study on the underlying mechanisms                    | 93.847                        | ISMMS 0255-D641-4609           | 1R01DK124097-01A1                   | ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI                             | \$0                  | \$138,303  |                        |
| Role of the gut microbiome in the bone loss induced by hyperparathyroidism in mice                                       | 93.847                        | EMORYU A495330                 | 1R01DK124821-01A1                   | EMORY UNIVERSITY  | \$0                  | \$103,378  |                        |
| The Impact of Diabetes on Patients with Glomerular Disease: CureGN-Diabetes  | 93.847                        | UNC-CH 5120530                 | 1R01DK126959-01                     | UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL                         | \$0                  | \$102,989  |                        |
| Elucidating Genetic and Environmental Second Hits in Racial and Ethnic Minorities with APOL1 High-Risk Genotypes         | 93.847                        | 0255-E521-4609                 | 1R01DK127139-01                     | ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI                             | \$0                  | \$107,858  |                        |
| Preclinical Validation of PPARg Acetylation Inhibitors for Diabetes Prevention and Treatment                             | 93.847                        | UOHSC RS20210075-01            | 1R01DK128848-01                     | UNIVERSITY OF OKLAHOMA HEALTH SCIENCES CENTER                       | \$0                  | \$262,752  |                        |
| Biomechanical drivers of cystogenesis  | 93.847                        | ISMMS 0255-F751-4609           | 1R01DK131047-01                     | ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI                             | \$0                  | \$16,697   |                        |
| QSM to Guide Iron Chelating Therapy in Transfusional Iron Overload   | 93.847                        | CUMC 221107                    | 1R01K116126-01A1                    | WEILL (JOAN AND SANFORD I.) MEDICAL COLLEGE OF CORNELL UNIVERSITY   | \$0                  | \$124,834  |                        |
| The organization of neural representations for flexible behavior in the human brain                                      | 93.847                        | BROWNU 0001873                 | 1R01MH125497-01A1                   | BROWN UNIVERSITY  | \$0                  | \$10,289   |                        |
| Dissecting the Pathogenesis and Outcomes of PSC Using Mutomics by Studying the Exosome and Genome                        | 93.847                        | COL-245818-04/PO#68169653      | 1RC2DK118619-01                     | Mayo Clinic -- Rochester  | \$0                  | \$41,979   |                        |
| Integrating large scale genomics and functional studies to accelerate FSGS/NS discovery                                  | 93.847                        | BIDMC 01062791                 | 1RC2DK122397-01A1                   | BETH ISRAEL DEACONESS MEDICAL CENTER                                | \$0                  | \$433,321  |                        |
| A trial of transplanting Hepatitis C-viremic kidneys into Hepatitis C-Negative kidney recipients (THINKER-NEXT)          | 93.847                        | UPENN 584696                   | 1U01DK126654-01                     | UNIVERSITY OF PENNSYLVANIA  | \$0                  | \$204,231  |                        |

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|--|-------------------------------|--------------------------------|-------------------------------------|---|----------------------|--|------------------------|
| Strategies and Therapies for Outcomes Prevention in Cirrhosis: The STOP-C Liver Cirrhosis Network              | 93.847                        | WCMC 212169                    | 1U01DK130221-01                     | WEILL (JOAN AND SANFORD I.) MEDICAL COLLEGE OF CORNELL UNIVERSITY | \$0                  | \$126,434  |                        |
| Center for Identification and Study of Individuals with Atypical Diabetes Mellitus                             | 93.847                        | FP068366-01 H                  | 1U54DK118612-01                     | UNIVERSITY OF CHICAGO   | \$0                  | \$148,226  |                        |
| The Insulin-Only Bionic Pancreas Pivotal Trial: Testing the iLet in Adults and Children with Type 1 Diabetes   | 93.847                        | JCHR CU20-0743                 | 1UC4DK108612-01                     | Jaeb Center for Health Research                                   | \$0                  | \$124,492  |                        |
| Long-term Consequences of HIV in the Kidney  | 93.847                        | BCMh 7000000385                | 2P01DK056492-01                     | BAYLOR COLLEGE OF MEDICINE--HOUSTON                               | \$0                  | \$158,485  |                        |
| Probing the Biochemical Mechanisms of Amyloid Disease  | 93.847                        | SCRIPPS 5-53806                | 2R01DK046335-25A1                   | Scripps Research Institute  | \$0                  | \$1,514  |                        |
| Modulating pathogenic T cells in Type 1 diabetes   | 93.847                        | YU GR106198                    | 2R01DK057846-15                     | YALE UNIVERSITY   | \$0                  | \$32,684   |                        |
| APOL1 associated kidney disease  | 93.847                        | 582940                         | 2R01DK105821-06                     | UNIVERSITY OF PENNSYLVANIA  | \$0                  | \$28,401   |                        |
| Role of RTN1A in the Progression of Diabetic Nephropathy   | 93.847                        | ISMMS 0255-1032-4609           | 2R01DK109683-05                     | ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI                           | \$0                  | \$39,852   |                        |
| Treatment Options For Type 2 Diabetes In Adolescents and Youth (Today) Trial T2P2                              | 93.847                        | GWU 16-D06                     | 2U01DK061230-12                     | GEORGE WASHINGTON UNIVERSITY                                      | \$0                  | \$26,193   |                        |
| Glycemia Reduction Approaches in Diabetes: A Comparative Effectiveness (GRADE) Study                           | 93.847                        | GW S-GRD1718-LL7               | 2U01DK098246-06                     | GEORGE WASHINGTON UNIVERSITY                                      | \$0                  | \$116,198  |                        |
| Data Coordinating Center for Type 1 Diabetes TrialNet  | 93.847                        | USF 6163-1082-00-B             | 2U01DK106993-02                     | UNIVERSITY OF SOUTH FLORIDA                                       | \$0                  | \$320,820  |                        |
| Continuation of the Nonalcoholic Steatohepatitis Clinical Research Network (NASH CRN) Data Coordinating Center | 93.847                        | JHU 2005108234                 | 2U24DK061730-18                     | JOHNS HOPKINS UNIVERSITY  | \$0                  | \$14,331   |                        |
| Epidemiology of Diabetes Interventions and Complications   | 93.847                        | CWRU RES516002                 | 3U01DK094157-06S1                   | CASE WESTERN RESERVE UNIVERSITY                                   | \$0                  | \$9,213  |                        |
| Glycemic Profile of Pregnancy Consortium Biostatistics Research Center   | 93.847                        | NWU 60057524 CU                | 3U01DK123759-02S1                   | NORTHWESTERN UNIVERSITY   | \$0                  | \$16,486   |                        |
| Methylomics of Prenatal GDM: Natural History & Lifestyle Intervention in Children                              | 93.847                        | LSU 50363-S3                   | 5R01DK100790-02                     | LOUISIANA STATE UNIVERSITY (BOARD OF SUPERVISORS OF LSU & A&M)    | \$0                  | \$4,780  |                        |
| Emotional Distress in a Comparative Effectiveness Trial of Diabetes Treatments                                 | 93.847                        | GWU CU14-1924                  | 5R01DK104845-05                     | GEORGE WASHINGTON UNIVERSITY                                      | \$0                  | \$2,905  |                        |
| REPRIEVE A5332 Kidney Function Sub Study / Effect of Pitavastatin on Kidney Function in HIV-infected Persons   | 93.847                        | UCLA 1560 B XA412              | 5R01DK108438-04                     | UNIVERSITY OF CALIFORNIA, LOS ANGELES                             | \$0                  | \$-5,030   |                        |
| Skeletal Health in Type 1 Diabetes and the Role of Diabetic Kidney Disease                                     | 93.847                        | NCIRE SCH2284-11               | 5R01DK125646-02                     | NORTHERN CALIFORNIA INSTITUTE FOR RESEARCH AND EDUCATION          | \$0                  | \$13,842   |                        |
| Diabetes Prevention Program Outcomes Study (DPPOS) Phase 3   | 93.847                        | GWU S-DPP2021-JC23             | 5U01DK048489-27                     | GEORGE WASHINGTON UNIVERSITY                                      | \$0                  | \$19,168   |                        |
| Improving Medication Adherence in adolescents who had a Liver Transplant: IMALT                                | 93.847                        | ISMMS 0255-A943-4609           | 5U01DK119200-02                     | ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI                           | \$0                  | \$21,286   |                        |
| The Subgingival Microbiome and Impaired Glucose Regulation   | 93.847                        | UM P006923603                  | 7R01DK102932-04                     | UNIVERSITY OF MINNESOTA   | \$0                  | \$40,686   |                        |
| Trialnet Type 1 Diabetes Natural History Study   | 93.847                        | UFLRDA 260937                  | NIDDK                               | UNIVERSITY OF SOUTH FLORIDA                                       | \$0                  | \$60,556   |                        |
| Losartan for the Treatment of Pediatric NAFLD: A Phase 2 Randomized, Placebo-Controlled Trial (STOP-NAFLD).    | 93.847                        | JH 2003854718                  | U01DK061730                         | JOHNS HOPKINS UNIVERSITY  | \$0                  | \$-2,845   |                        |
|  |                               |                                |                                     |   | \$0                  | \$2,846,199  |                        |

**Extramural Research Programs in the Neurosciences and Neurological Disorders**

The accompanying footnotes are an integral part of the Schedule of Expenditures of Federal Awards

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| <u>Federal Grantor / Pass-through Grantor</u>   | <u>Assistance Listing No.</u> | <u>Award Identification No</u> | <u>Pass-through Contract Number</u> | <u>Passthrough Name</u>   | <u>Subrecipients</u> | <u>Total Expenditures (Includes Subrecipients)</u> | <u>R&amp;D Cluster</u> |
|---|-------------------------------|--------------------------------|-------------------------------------|---|----------------------|--|------------------------|
| Carotid Revascularization Endarterectomy vs. Stent Trial  | 93.853                        | UMDNJ CU11-3191                | 1 R01 NS038384 01                   | RUTGERS, THE STATE UNIVERSITY OF NEW JERSEY DEPARTMENT OF RADIOLOGY | \$0                  | \$58,783   |                        |
| Trajectories and modifiable risk factors of brain, gait, and cognitive decline in aging   | 93.853                        | AECM 311762                    | 1R01AG062659-01A1                   | ALBERT EINSTEIN COLLEGE OF MEDICINE SHIVA UNIVERSITY                | \$0                  | \$55,165   |                        |
| Targeting Endosomal Receptors for Treatment of Chronic Pain   | 93.853                        | NYU F1628-01                   | 1R01DE029951-01                     | NEW YORK UNIVERSITY   | \$0                  | \$185,224  |                        |
| Carotid Revascularization and Medical Management for Asymptomatic Carotid Stenosis Trial - Hemodynamics (CREST-H)                               | 93.853                        | MAOJF COL-232483               | 1R01NS097876-01A1                   | Mayo Clinic Jacksonville  | \$0                  | \$5,839  |                        |
| Long-term outcome in unruptured brain arteriovenous malformation patients   | 93.853                        | UCSF 10177sc                   | 1R01NS099268-01A1                   | UNIVERSITY OF CALIFORNIA SAN FRANCISCO                              | \$0                  | \$104,931  |                        |
| MRI Predictors of Disease and Disability Progression in African Americans With Multiple Sclerosis   | 93.853                        | ISMMS 0255-4191-4609           | 1R01NS10081-01A1                    | ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI                             | \$0                  | \$-1,406   |                        |
| The Effect of Lower Pressure over the Life Course on Late-life Cognition in Black   | 93.853                        | UMICHG 300465879               | 1R01NS102715-01                     | UNIVERSITY OF MICHIGAN  | \$0                  | \$54,318   |                        |
| Novel regulation and function of the lncRNA Gomafu in human neurons   | 93.853                        | EMORYU A228115                 | 1R01NS110110-01A1                   | EMORY UNIVERSITY  | \$0                  | \$63,691   |                        |
| Understanding the fast and slow spatiotemporal dynamics of human seizures   | 93.853                        | BU 4500003407                  | 1R01NS110669-01                     | BOSTON UNIVERSITY   | \$0                  | \$154,423  |                        |
| Mitochondrial control of protein translation in Fragile X   | 93.853                        | YU GR107040 (CON-80001842)     | 1R01NS112706-01                     | YALE UNIVERSITY   | \$0                  | \$178,994  |                        |
| Targeting Go and Grow in Glioblastoma   | 93.853                        | MAYO CJ COL-272751/PO #6753053 | 1R01NS118513-01                     | Mayo Clinic Jacksonville  | \$0                  | \$306,254  |                        |
| Directing fate, subtype identity and survival in human pluripotent-derived midbrain dopamine neurons  | 93.853                        | MSKCC C21868477                | 1R01NS1188067-01A1                  | MEMORIAL SLOAN-KETTERING CANCER CENTER                              | \$0                  | \$31,528   |                        |
| Corticospinal neuron dysfunction and degeneration in ALS: testing the role of corticomotor connectivity in motor neuron disease.                | 93.853                        | WMBMRI 112005-01               | 1R01NS119508-01                     | WINIFRED MASTERTON BURKE MED RES INST                               | \$0                  | \$72,489   |                        |
| Diffusion MRI Model Parameter Estimation to Study Brain Microstructure as it Relates to Cognitive Status in Mild Traumatic Brain Injury         | 93.853                        | NYU 21-A1-00-1006161           | 1R01NS119767-01A1                   | NEW YORK UNIVERSITY   | \$0                  | \$37,110   |                        |
| Recovery Of Stroke - Longitudinal Assessment With Neuroimaging (ROSE LAWN) (Columbia SOW)   | 93.853                        | UCINCI 013382-00002            | 1R01NS120493-01                     | UNIVERSITY OF CINCINNATI  | \$0                  | \$22,897   |                        |
| Control of the axon initial segment in epilepsy   | 93.853                        | 62613057-192061                | 1R01NS121106-01                     | STANFORD UNIVERSITY   | \$0                  | \$372,385  |                        |
| Mechanisms of Pain Associated with Trigeminal Nerve Injury  | 93.853                        | UPITT AWD00004493 (136640-1)   | 1R01NS122784-01                     | UNIVERSITY OF PITTSBURGH  | \$0                  | \$60,402   |                        |
| Development of 3D-FAST Optical Interface for Rapid Volumetric Neural Sensing and Modulation   | 93.853                        | UCOL FY22.889.001              | 1R01NS123665-01                     | UNIVERSITY OF COLORADO  | \$0                  | \$105,046  |                        |
| Changing the neuromodulation game: ultrasound fenestration of the blood brain barrier for noninvasive viral transfection of primate CNS neurons | 93.853                        | NKI 154775                     | 1R34NS122272-01                     | Nathan S. Kline Institute for Psychiatric Research                  | \$0                  | \$23,200   |                        |
| Development of Mechanisms Underlying Human Motor Learning   | 93.853                        | KKINS CU20-2768                | 1R35NS122266-01                     | KENNEDY KRIEGER INSTITUTE   | \$0                  | \$38,459   |                        |
| Routes to enhanced HIV neuropathogenesis through expression of subclinical levels of endogenous amyloid-beta                                    | 93.853                        | MSSM 0255-E021-4609            | 1R56NS119438-01                     | ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI                             | \$0                  | \$78,970   |                        |
| Unpacking the Importance of the Structural Injuries of MTBI   | 93.853                        | NYU 20-A0-00-1004792           | 1R56NS119767-01                     | NEW YORK UNIVERSITY   | \$0                  | \$8,408  |                        |
| Topiramate as a Disease Altering Therapy for Cryptogenic Sensory Peripheral Neuropathy (CSPN) (NN108) Study                                     | 93.853                        | MGH CU18-2043                  | 1U01NS095388-01A1                   | MASSACHUSETTS GENERAL HOSPITAL                                      | \$0                  | \$5,607  |                        |
| Sleep for Stroke Management and Recovery Trial (Sleep SMART) Stroke Trial   | 93.853                        | UCINCI 011337-135721           | 1U01NS099043-01A1                   | UNIVERSITY OF CINCINNATI  | \$0                  | \$324  |                        |

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|---|-------------------------------|--------------------------------|-------------------------------------|---|----------------------|--|------------------------|
| Clinical Study: Brain Oxygen Optimization in Severe TBI Phase -3 (BOOST-3) Trial CSPR # 002   | 93.853                        | UMICHG SUBK10409CSPR-002       | 1U01NS099046-01A1                   | UNIVERSITY OF MICHIGAN                      | \$0                  | \$4,050  |                        |
| High-Speed Volumetric imaging of neural activity throughout the livingbrain   | 93.853                        | UCB 00009591                   | 1U01NS103489-01                     | UNIVERSITY OF CALIFORNIA, BERKELEY          | \$0                  | \$6,263  |                        |
| High density - cellular resolution multielectrode arrays with spatially selective unidirectional and rotating fields for investigation of neuronal networks | 93.853                        | UMINN N006207501               | 1U01NS103569-01                     | UNIVERSITY OF MINNESOTA                     | \$0                  | \$-4   |                        |
| Circuitry underlying response summation in mouse and primate: theory and experiment   | 93.853                        | SALK CU17-3850                 | 1U01NS108683-01                     | SALK INSTITUTE FOR BIOLOGICAL STUDIES       | \$0                  | \$556,851  |                        |
| Optimization and dissemination of non-linear Acousto-Optic Lens microscopy for multiscale 3D two-photon imaging   | 93.853                        | UCL CU18-4210                  | 1U01NS113273-01                     | UNIVERSITY COLLEGE LONDON                   | \$0                  | \$41,536   |                        |
| Study in Parkinson Disease of Exercise Phase 3 Clinical Trial: SPARX3   | 93.853                        | NU 60054977 COL                | 1U01NS113851-01                     | NORTHWESTERN UNIVERSITY                     | \$0                  | \$211  |                        |
| Optimization, application and dissemination of high-speed hybrid multiphoton volumetric imaging technologies  | 93.853                        | RFU SUB00000144                | 1U01NS115530-01                     | ROCKEFELLER UNIVERSITY                      | \$0                  | \$255,096  |                        |
| Optimization of Clear Optically Matched Panoramic Access Channel Technique (COMPACT) for large-scale deep-brain neurophotonic interface                     | 93.853                        | PU 11001101-015                | 1U01NS118302-01                     | PURDUE UNIVERSITY                           | \$0                  | \$37,034   |                        |
| Investigation and Treatment of Undiagnosed Neuroinflammatory Diseases   | 93.853                        | UCSF 13232sc                   | 1U01NS120836-01                     | UNIVERSITY OF CALIFORNIA SAN FRANCISCO      | \$0                  | \$194,400  |                        |
| Towards a Complete Description of the Circuitry Underlying SharpWave-Mediated Memory Replay   | 93.853                        | SU CU17-0676                   | 1U19NS104590-01                     | STANFORD UNIVERSITY                         | \$0                  | \$492,479  |                        |
| Community Outreach and Engagement   | 93.853                        | 3-312-0216124-66140L           | 1U24NS105535-01                     | RESEARCH TRIANGLE INSTITUTE                 | \$0                  | \$170,074  |                        |
| Synergistic Interaction of amyloid-beta and alpha-synuclein in Lewy body Dementia - Project 3   | 93.853                        | MAOJF COL-259090               | 1U54NS110435-01A1                   | Mayo Clinic Jacksonville                    | \$0                  | \$536,121  |                        |
| kHz-rate in Vivo Imaging of Neural Activity throughout the Living Brain   | 93.853                        | UCB 00009979                   | 1UF1NS107696-01                     | UNIVERSITY OF CALIFORNIA, BERKELEY          | \$0                  | \$204,894  |                        |
| Shedding light on brain circuits mediating navigation of the odor plume in a natural environment  | 93.853                        | UCOL FY21.237.001              | 1UF1NS116241-01                     | UNIVERSITY OF COLORADO                      | \$0                  | \$45,878   |                        |
| Risk Factors FOR Stroke and Cognitive Decline in a Tri-Ethnic Region  | 93.853                        | UMIAMI OS00000185              | 2R01NS029993-23A1                   | UNIVERSITY OF MIAMI                         | \$0                  | \$26,113   |                        |
| Vascular Determinants of Dementia and Cognitive Decline in a Tri-EthnicRegion   | 93.853                        | UMIAMI OS00000824              | 2R56NS029993-28A1                   | UNIVERSITY OF MIAMI                         | \$0                  | \$25,109   |                        |
| Maternal Outcomes and Neurodevelopmental Effects of Antiepileptic Drugs (MONEAD) II   | 93.853                        | SU 61865504-125439             | 2U01NS038455-16A1                   | STANFORD UNIVERSITY                         | \$0                  | \$31,001   |                        |
| Vascular contributions to cognitive impairment and dementia and Stroke in a Bi-racial National Sample   | 93.853                        | UAB 000513792-005              | 2U01NS041588-17                     | UNIVERSITY OF ALABAMA AT BIRMINGHAM         | \$0                  | \$221,472  |                        |
| Growth and development of Striatal Cerebellum circuitry in subjects at risk for Huntington s Disease  | 93.853                        | UIO S01224-01                  | 2U01NS055903-10                     | UNIVERSITY OF IOWA                          | \$0                  | \$346,846  |                        |
| Carotid Revascularization and Medical Management for Asymptomatic Carotid Stenosis Trial (CREST-2) Trial ( Study )  | 93.853                        | MAOJF COU-224063-05/66631416   | 2U01NS080168-08                     | Mayo Clinic Jacksonville                    | \$0                  | \$23,990   |                        |
| The Inherited Neuropathy Consortium (INC) RDCRC - Overall   | 93.853                        | UOI S01111-02                  | 2U54NS065712-12                     | UNIVERSITY OF IOWA                          | \$0                  | \$9,991  |                        |
| CReATe CAPTURE (Clinical Procedures To Support Research)  | 93.853                        | UMIAMI SPC-001819              | 2U54NS092091-06                     | UNIVERSITY OF MIAMI                         | \$0                  | \$18,857   |                        |
| Innate and Adaptive Immunity in Parkinson Disease - Clinical Research Core.   | 93.853                        | UAB 000519299-SP002-001        | 5P50NS108675-03                     | UNIVERSITY OF ALABAMA AT BIRMINGHAM         | \$0                  | \$6,729  |                        |
| Engineering stem cell therapies to understand and overcome glioblastoma adaption  | 93.853                        | UNC-CH 5109024                 | 5R01NS099368-04                     | UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL | \$0                  | \$857  |                        |

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|---|-------------------------------|--------------------------------|-------------------------------------|--|----------------------|--|------------------------|
| ICH Recovery Grant  | 93.853                        | UCINCI 011078-00017            | 5R01NS100417-02                     | UNIVERSITY OF CINCINNATI, COLLEGE OF MEDICINE            | \$0                  | \$32,989   |                        |
| Discovery and analysis of the C. elegans neuronal gene expression network (CENGEN)  | 93.853                        | YU GR101266 (CON-80003188)     | 5R01NS100547-05                     | YALE UNIVERSITY  | \$0                  | \$164,382  |                        |
| Androgen Receptors and Sex Differences in the Biological Clock  | 93.853                        | ORHSUN 1012987 COLUMBIA        | 5R01NS102962-04                     | OREGON HEALTH SCIENCES UNIVERSITY                        | \$0                  | \$88,886   |                        |
| miR regulation of the neurovasculature function in health and disease   | 93.853                        | SCII 22199-208-490             | 5R01NS107344-03                     | SCINTILLON INSTITUTE                                     | \$0                  | \$82,213   |                        |
| Astrocytes-mediated regulation of Wnt/b-catenin pathway in ischemic brain repair  | 93.853                        | UPITT AWD000001584 (133896-1)  | 5R01NS110755-02                     | UNIVERSITY OF PITTSBURGH                                 | \$0                  | \$18,878   |                        |
| Lab-to-Marketplace: Commercialization of a stretchable microelectrode array   | 93.853                        | BEEDINC 2R44NS086118-03A1-CU   | 5R44NS086118-04                     | BIOMED STRETCH. ELASTIC DEVICES, LLC                     | \$0                  | \$6,930  |                        |
| Carotid Revascularization and Medical Management for Asymptomatic Carotid Stenosis Trial (CREST-2) Trial (                                  | 93.853                        | MAOJF COU-224063-03            | 5U01NS080168-07                     | Mayo Clinic Jacksonville                                 | \$0                  | \$16,592   |                        |
| NSTN National Clinical Coordinating Center Administrative Agreement   | 93.853                        | UCINCI 011414-Adm-Marshall     | 5U01NS086872-08                     | UNIVERSITY OF CINCINNATI                                 | \$0                  | \$97,694   |                        |
| Neurological Emergencies Treatment Trials (NETT)- ESETT   | 93.853                        | SUBK00004095-ESETT             | 5U01NS088034-04                     | UNIVERSITY OF MICHIGAN                                   | \$0                  | \$25,000   |                        |
| Using Direct Brain Stimulation to Study Cognitive Electrophysiology   | 93.853                        | UPENN 577998                   | 5U01NS113198-03                     | UNIVERSITY OF PENNSYLVANIA                               | \$0                  | \$95,140   |                        |
| Mapping Algorithmic State Space in the Human Brain  | 93.853                        | BCMH 7000001579                | 5U01NS121472-02                     | BAYLOR COLLEGE OF MEDICINE--HOUSTON                      | \$0                  | \$271,269  |                        |
| DISCOVERY: Determinants of Incident Stroke Cognitive Outcomes and Vascular Effects on Recovery  | 93.853                        | MGH 235400                     | 5U19NS115388-03                     | MASSACHUSETTS GENERAL HOSPITAL                           | \$0                  | \$29,772   |                        |
| Targeting Kif11 to Treat Glioblastoma Invasion and Proliferation  | 93.853                        | MAOJF COL-232390               | 7R01NS073610-06                     | Mayo Clinic Jacksonville                                 | \$0                  | \$93,184   |                        |
| Clinical Pathological Study of Cognitive Impairment in Essential Tremor   | 93.853                        | UTSW GMO211107 PO0000002121A   | 7R01NS086736-07                     | UNIVERSITY OF TEXAS SOUTHWESTERN MEDICALCENTER AT DALLAS | \$0                  | \$201,951  |                        |
| Pathologomics - Essential Tremor in the Broader Context of Neurodegeneration  | 93.853                        | UTSW GMO210306 PO0000002284    | 7R01NS088257-07                     | UNIVERSITY OF TEXAS SOUTHWESTERN MEDICALCENTER AT DALLAS | \$0                  | \$194,121  |                        |
| Identification and molecular characterization of somatic mutations in MCD   | 93.853                        | UNCCH 5116795                  | 7R01NS094596-05                     | UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL              | \$0                  | \$37,813   |                        |
| Environmental Epidemiology of Essential Tremor  | 93.853                        | GMO210309 PO0000002288         | 7R01NS094607-06                     | UNIVERSITY OF TEXAS SOUTHWESTERN MEDICALCENTER AT DALLAS | \$0                  | \$115,644  |                        |
| Mechanisms of Regulation of Progenitor Proliferation and Transformation   | 93.853                        | RFCUNY 42012-00-12             | 7R01NS052738                        | RESEARCH FOUNDATION OF CITY UNIVERSITY OF NEW YORK       | \$0                  | \$40,739   |                        |
| Deep brain photoacoustic tomography at single-neuron resolution using arrays of photonic emitters and high-frequency ultrasound transducers | 93.853                        | CALTECH 67C-1097568/S389076    | U01NS099717                         | CALIFORNIA INSTITUTE OF TECHNOLOGY                       | \$0                  | \$287,147  |                        |
| Wide Deployment of Massively Multiplexed Nanosystems for Brain Activity Mapping   | 93.853                        | CALTECH S389576                | U01NS099726                         | CALIFORNIA INSTITUTE OF TECHNOLOGY                       | \$0                  | \$127,558  |                        |
| Dynamic Neural Mechanisms of Audiovisual Speech Perception  | 93.853                        | UPENN 582947                   | U01NS113339                         | UNIVERSITY OF PENNSYLVANIA                               | \$0                  | \$140,379  |                        |
| Project 2 - Neural Basis of Motor Pattern Loops   | 93.853                        | CIT 21B-1098370                | U19NS104655                         | CALIFORNIA INSTITUTE OF TECHNOLOGY                       | \$38,953             | \$429,467  |                        |
|   |                               |                                |                                     |  | \$38,953             | \$7,876,637  |                        |
| <b>Allergy and Infectious Diseases Research</b>   |                               |                                |                                     |  |                      |  |                        |
| Strategies for Tuberculosis Control in Prisons  | 93.855                        | SU 61485127-124916             | 1R01AI13005801                      | STANFORD UNIVERSITY                                      | \$0                  | \$16,953   |                        |

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|---|-------------------------------|--------------------------------|-------------------------------------|--|----------------------|--|
| The Role of Casual Contact and Migration in XDR TB Transmission in South Africa: a Geospatial, Genomic and Social Network study     | 93.855                        | EU T937299                     | 1R01AI138646-01                     | EMORY UNIVERSITY                                     | \$0                  | \$29,009   |
| New tools for antimalarial target identification  | 93.855                        | UCT30846                       | 1R01AI143521-01                     | UNIVERSITY OF CAPE TOWN                              | \$0                  | \$27,614   |
| The generation and protective function of lung tissue resident memory T cells following SARS-CoV-2 infection or vaccination         | 93.855                        | SCRIPPS CU21-2650              | 1R01AI167372-01A1                   | Scripps Research Institute                           | \$0                  | \$2,357  |
| Emergence of bedaquiline and clofazimine resistance after interruption of drug-resistance TB therapy in high HIV prevalence setting | 93.855                        | AECM 311663                    | 1R01AL145679-01A1                   | ALBERT EINSTEIN COLLEGE OF MEDICINEESHIVA UNIVERSITY | \$0                  | \$16,207   |
| Differentially culturable tubercle Bacteria: The missing link in TB Transmission  | 93.855                        | WHC D1811140-04                | 1R01AL147349-01                     | WITS HEALTH CONSORTIUM                               | \$0                  | \$281,952  |
| Innovative contact tracing strategies for detecting TB in mobile rural and urban South African populations                          | 93.855                        | 2004483467                     | 1R01AL147681-01                     | JOHNS HOPKINS UNIVERSITY                             | \$0                  | \$39,909   |
| Defining the nuclear import pathways of HIV-1   | 93.855                        | 213273-Columbia                | 1R01AL162694-01A1                   | LOYOLA UNIVERSITY CHICAGO                            | \$0                  | \$73,142   |
| Automated Visual Evaluation for Cervical Cancer Screening in HIV positive Women   | 93.855                        | UCT00028959                    | 1R01CA250011-01                     | UNIVERSITY OF CAPE TOWN                              | \$0                  | \$122,962  |
| Novel predictors of survival among breast cancer patients with/without HIV in South Africa  | 93.855                        | WHC 2007170-01                 | 1R01CA250012-01                     | WITS HEALTH CONSORTIUM                               | \$0                  | \$129,663  |
| Parasite-specific proteasome inhibitors to combat multi-drug resistant malaria  | 93.855                        | SU 61424825-123798             | 1R21AI127581-01                     | STANFORD UNIVERSITY                                  | \$0                  | \$168,031  |
| CD73 for sepsis   | 93.855                        | PPI CU21-3785                  | 1R41AI149789-01A1                   | PURINE PHARMACEUTICALS, INC.                         | \$0                  | \$67,543   |
| Intravenous ivermectin for sepsis   | 93.855                        | PPI CU21-3784                  | 1R41AI156935-01                     | PURINE PHARMACEUTICALS, INC.                         | \$0                  | \$67,499   |
| Tissue-engineered lymph node stroma to study peripheral tolerance in autoimmune diabetes  | 93.855                        | UMIAMI OS00000474              | 1R56AI151217-01A1                   | UNIVERSITY OF MIAMI                                  | \$0                  | \$80,933   |
| leDEA Asia-Pacific Research Collaboration   | 93.855                        | AMFAR 110279-71-ISTA           | 1U01AI069907                        | AMERICAN FOUNDATION FOR AIDS RESEARCH (AMFAR)        | \$0                  | \$29,158   |
| Hope in Action: A Clinical Trial of HIV-to-HIV Deceased Donor Kidney Transplantation  | 93.855                        | JHU 2003649381                 | 1U01AI134591-01                     | JOHNS HOPKINS UNIVERSITY                             | \$0                  | \$12,251   |
| Targeting Inflammation and Alloimmunity in Heart Transplant Recipients with Tocilizumab , ( Study )                                 | 93.855                        | MGH 232560                     | 1U01AI136816-01                     | MASSACHUSETTS GENERAL HOSPITAL                       | \$0                  | \$35,038   |
| HOPE in Action: A clinical trial of HIV-to-HIV Liver Transplantation  | 93.855                        | JH 2004360332                  | 1U01AI138897-01                     | JOHNS HOPKINS UNIVERSITY                             | \$0                  | \$10,188   |
| Rapid Low-Cost Paper-based Radiation Biodosimetry that reveals individuals organ injuries   | 93.855                        | ASU B00000501                  | 1U01AI148319-01                     | ARIZONA STATE UNIVERSITY                             | \$0                  | \$126,585  |
| MHC & KIR Sequencing and Association Analyses in the iGeneTrain Studies Effort  | 93.855                        | UPENN 582580                   | 1U01AI152960-01                     | UNIVERSITY OF PENNSYLVANIA                           | \$0                  | \$20,696   |
| Molecular Mechanisms of Adjuvant Triplet Combinations   | 93.855                        | UCHICA AWD101938 (SUB00000486) | 1U01AI160418-01                     | UNIVERSITY OF CHICAGO                                | \$0                  | \$95,371   |
| A Clinical Study of Latiglutenase as a Treatment for Symptom Reduction for Celiac Disease   | 93.855                        | IMGX CU18-2990                 | 1U44AI134590-01A1                   | IMMUNOGENX   | \$0                  | \$8,925  |
| Congenital and Perinatal Infections Rare Diseases Clinical Research Consortium (RDCRC)  | 93.855                        | UAB 000522211-029              | 1U54AI150225-01                     | UNIVERSITY OF ALABAMA AT BIRMINGHAM                  | \$0                  | \$11,163   |
| INNER CITY ASTHMA CONSORTIUM (ICAC3): CORE  | 93.855                        | UWIS 0000000796                | 1UM1AI114271-01                     | UNIVERSITY OF WISCONSIN                              | \$0                  | \$91,294   |
| Childhood Asthma in Urban Settings (CAUSE)- Leadership Center   | 93.855                        | UWM 0000001419                 | 1UM1AI160040-01                     | UNIVERSITY OF WISCONSIN MADISON                      | \$0                  | \$808,051  |

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**The Trustees of Columbia University in the City of New York**  
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| <u>Federal Grantor / Pass-through Grantor</u>  | <u>Assistance Listing No.</u> | <u>Award Identification No</u> | <u>Pass-through Contract Number</u> | <u>Passthrough Name</u>   | <u>Subrecipients</u> | <u>R&amp;D Cluster</u><br><u>Total Expenditures (Includes Subrecipients)</u> |
|--|-------------------------------|--------------------------------|-------------------------------------|---|----------------------|--|
| Function of antimalarial drug resistance proteins  | 93.855                        | GU 411310                      | 2R01AI056312-10A1                   | GEORGETOWN UNIVERSITY   | \$0                  | \$66,927   |
| Function of Antimalarial Drug Resistance Proteins  | 93.855                        | GWU 414700 GR 414915-CU        | 2R01AI056312-15                     | GEORGETOWN UNIVERSITY   | \$0                  | \$37,231   |
| Advanced Genotypic and Phenotypic Monitoring of Drug Resistant TB to Improve TB Treatment Outcomes   | 93.855                        | AECM 311952                    | 2R01AI114900-07A1                   | ALBERT EINSTEIN COLLEGE OF MEDICINEESHIVA UNIVERSITY              | \$0                  | \$108,403  |
| Monochromatic 222 nm UV light: Development of safe, cost-effective technology for the efficient reduction of bacterial and viral infection and transmission                        | 93.855                        | EPINHSUB19-01                  | 2R42AI125006-2A1                    | EDEN PARK ILLUMINATION  | \$0                  | \$77,790   |
| East Africa International Epidemiology Database to evaluate AIDS (leDEA) Regional Consortium   | 93.855                        | IU 8982 COL                    | 2U01AI069911-16                     | INDIANA UNIVERSITY  | \$0                  | \$34,489   |
| Central Africa International Epidemiology Database to Evaluate AIDS (CA-leDEA)   | 93.855                        | AECM 31614BJ                   | 2U01AI096299-07                     | ALBERT EINSTEIN COLLEGE OF MEDICINEESHIVA UNIVERSITY              | \$0                  | \$-591   |
| East Africa international Epidemiologic Database to Evaluate AIDS (leDEA) Regional Consortium  | 93.855                        | 8073 COL                       | 2U01AI09629911-11                   | INDIANA UNIVERSITY  | \$0                  | \$34,833   |
| Central African International Epidemiological Database to Evaluate AIDS  | 93.855                        | AECM 31121B                    | 2U01AI096299-13                     | ALBERT EINSTEIN COLLEGE OF MEDICINEESHIVA UNIVERSITY              | \$0                  | \$51,739   |
| Amanitin-CD5 mAb conjugate to deplete host peripheral T cells and thymocytes and induce durable chimerism with tolerance in nonhuman primates                                      | 93.855                        | UWIS 0000001549                | 2U01AI102456-06                     | UNIVERSITY OF WISCONSIN MADISON                                   | \$0                  | \$238,022  |
| Vaccine induced immunity in the young and aged   | 93.855                        | EMORYU A335572                 | 2U19AI057266-16                     | EMORY UNIVERSITY  | \$0                  | \$132,068  |
| HVTN Research & Mentorship Program (RAMP)  | 93.855                        | FHCRC 0001075710               | 2UM1AI068614-15                     | FRED HUTCHINSON CANCER CENTER                                     | \$0                  | \$87,666   |
| Immune Tolerance Network   | 93.855                        | BRI FY21ITN440                 | 2UM1AI109565-08                     | BENAROYA RESEARCH INSTITUTE                                       | \$0                  | \$42,146   |
| Kwazulu-Natal Clinical Trials Unit (CTU)   | 93.855                        | CAPRISA UM1AI069469            | 2UM11069469-15                      | CENTRE FOR THE AIDS PROGRAMME OFRESEARCH IN SOUTH AFRICA          | \$0                  | \$251,979  |
| HVTN Protocol Funding  | 93.855                        | FHCRC 0001062694               | 2UMAI068614-08                      | FRED HUTCHINSON CANCER CENTER                                     | \$0                  | \$26,471   |
| Dynamics and Tuning of the MHC II Presented Peptidome  | 93.855                        | WCMC 203313                    | 3R01AI37198-04S1                    | WEILL (JOAN AND SANFORD I.) MEDICAL COLLEGE OF CORNELL UNIVERSITY | \$0                  | \$69,170   |
| Molecular Regulation of B cells and T cells in Human SLE // Protocol   | 93.855                        | EMORYU A585613                 | 3U19AI110483-08S4                   | EMORY UNIVERSITY  | \$0                  | \$40,488   |
| A randomized controlled study to assess SARS CoV-2 infection, viral shedding, and subsequent potential transmission in university students immunized with Moderna COVID-19 Vaccine | 93.855                        | HCRC 0001064446                | 3UM1AI068614-15S1                   | FRED HUTCHINSON CANCER CENTER                                     | \$0                  | \$-17,653  |
| ADAPT Out COVID: ACTIV-2/ACTG A5401  | 93.855                        | UCLA CRS 30329 CU 30606 A5401  | 3UM1AI068636-14S2                   | UNIVERSITY OF CALIFORNIA, LOS ANGELES                             | \$0                  | \$13,137   |
| HPTN083 Protocol Funding - Implementation Costs Harlem CRS   | 93.855                        | PO17001995                     | 5 UM1AI068619-11                    | FHI DEVELOPMENT 360 LLC   | \$0                  | \$147,834  |
| Antimicrobial Resistant E. Coli before and after California Senate Bill 27 (ARES): a natural experiment  | 93.855                        | KFDNI RNG113791-Columbia       | 5R01AI30066-04                      | Kaiser Foundation Research Institute-Division of Research         | \$0                  | \$34,236   |
| Optimizing Industrial-Scale GMP Processes for Recovering and Banking Deceased Donor Bone Marrow  | 93.855                        | OSSIUM OOS030382-CU            | 5R44AI129444-03                     | OSSIUM HEALTH, INC.   | \$0                  | \$292,093  |
| School Inner-City Asthma Intervention Study  | 93.855                        | CHB GENFD0001578885            | 5U01AI110397-02                     | CHILDREN'S HOSPITAL BOSTON  | \$0                  | \$247,681  |
| AMERICAN AND ASIAN CENTERS FOR ARBOVIRUS RESEARCH AND ENHANCED SURVEILLANCE (A2CARES)  | 93.855                        | UC 00010878                    | 5U01AI151788-02                     | UNIVERSITY OF CALIFORNIA, BERKELEY                                | \$0                  | \$16,968   |
| HPTN 083 Protocol Funding - Development Cost   | 93.855                        | FHID PO16002898                | 5UM1AI068619                        | FHI DEVELOPMENT 360 LLC   | \$0                  | \$38,936   |

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**The Trustees of Columbia University in the City of New York**  
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| <u>Federal Grantor / Pass-through Grantor</u>   | <u>Assistance Listing No.</u> | <u>Award Identification No</u> | <u>Pass-through Contract Number</u> | <u>Passthrough Name</u>                              | <u>Subrecipients</u> | <u>Total Expenditures (Includes Subrecipients)</u> | <b>R&amp;D Cluster</b> |
|---|-------------------------------|--------------------------------|-------------------------------------|--|----------------------|--|------------------------|
| HPTN083 Protocol Funding - Implementation Costs Bronx CRS   | 93.855                        | FHID PO17002294                | 5UM1AI068619-11                     | FHI DEVELOPMENT 360 LLC                              | \$0                  | \$56,777   |                        |
| International Maternal Pediatric Adolescent AIDS Clinical Trials Network  | 93.855                        | JHC 2004512905                 | 5UM1AI068632-14                     | JOHNS HOPKINS UNIVERSITY                             | \$0                  | \$89,598   |                        |
| Immune Tolerance Network  | 93.855                        | BRI FY16ITN109                 | 5UM1AI109565-02                     | BENAROYA RESEARCH INSTITUTE                          | \$0                  | \$12,003   |                        |
| Immune Tolerance Network Efficacy of Belimumab and Rituximab Compared to Rituximab Alone for the Treatment of Primary Membranous Nephropathy  | 93.855                        | FY22ITN326                     | 5UM1AI109565-06                     | BENAROYA RESEARCH INSTITUTE                          | \$0                  | \$46,761   |                        |
| The molecular basis of the carbapenem resistance epidemic   | 93.855                        | HMH G10063-19028               | 7R01AI090155-10                     | HACKENSACK MERIDIAN HEALTH                           | \$0                  | \$26,433   |                        |
| ACTG Protocol Funding - Core Funding  | 93.855                        | UCLA CU18-2702                 | 7UM1AI068636-13                     | UNIVERSITY OF CALIFORNIA, LOS ANGELES                | \$0                  | \$140,064  |                        |
| Evaluating the Healthix Bottom Up Strategy in New York City Using an Implementation Science Framework   | 93.855                        | AECM 311888                    | P30AI124414-05                      | ALBERT EINSTEIN COLLEGE OF MEDICINEESHIVA UNIVERSITY | \$0                  | \$7,972  |                        |
| A dual-beta-lactam strategy for treating multi drug resistant M abscessus   | 93.855                        | HMH 19022                      | R01AI141805                         | HACKENSACK MERIDIAN HEALTH                           | \$0                  | \$83,581   |                        |
| Development of a novel broad-spectrum inhibitor of non-polio enteroviruses associated with acute flaccid myelitis   | 93.855                        | MBX CU19-2734                  | R43AI150001-01A1                    | MICROBIOTIX INC                                      | \$0                  | \$119,078  |                        |
| Composition and structure of antibody receptors at the surface of primary human cells during immune activation  | 93.855                        | UGA SUB00002365                | U01AL148114                         | UNIVERSITY OF GEORGIA                                | \$0                  | \$193,823  |                        |
| HPTN 094 Integra  | 93.855                        | FHID PO21000092                | UM1 AI068619                        | FHI DEVELOPMENT 360 LLC                              | \$0                  | \$573,686  |                        |
| HPTN 081/085 Protocol Funding - Implementation - Centralized Laboratory and Other Operational Support   | 93.855                        | FHID PO16003322                | UM1 AI068619                        | FHI DEVELOPMENT 360 LLC                              | \$0                  | \$204,470  |                        |
| HPTN 084: A Phase 3 Double Blind Safety and Efficacy Study of Long-Acting Injectable Cabotegravir Compared to Daily Oral TDF/FTC for Pre- Exposure Prophylaxis in HIVUninfected Women | 93.855                        | FHI360 PO18001958              | UM1AI068619                         | FHI DEVELOPMENT 360 LLC                              | \$54,956             | \$1,430,964  |                        |
|   |                               |                                |                                     |  | \$54,956             | \$7,429,767  |                        |
| <b>Biomedical Research and Research Training</b>  |                               |                                |                                     |  |                      |  |                        |
| Efficient Statistical Learning Methods for Personalized Medicine Using Large Scale Biomedical Data.   | 93.859                        | UNC-CH 5110020                 | 1R01GM124104-01A1                   | UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL          | \$0                  | \$52,920   |                        |
| Statistical Methods for Single-Cell Transcriptomics   | 93.859                        | UPENN 572782                   | 1R01GM125301-01                     | UNIVERSITY OF PENNSYLVANIA                           | \$0                  | \$19,830   |                        |
| The mechanism through which mRNA translation enhancer elements drive cap-independent translation  | 93.859                        | RFCUNY CM00002680-00           | 1R01GM128239-01A1                   | RESEARCH FOUNDATION OF CITY UNIVERSITY OF NEW YORK   | \$0                  | \$117,273  |                        |
| The role of collisions in rescuing stalled ribosomes in bacteria  | 93.859                        | JH 2005039040                  | 1R01GM136960-01A1                   | JOHNS HOPKINS UNIVERSITY                             | \$0                  | \$28,713   |                        |
| Kyaterekera Project: A Combination Intervention Addressing Sexual Risk-Taking Behaviors Among Vulnerable Women in Uganda  | 93.859                        | WASHU WU-19-203-MOD-1          | 1R01MH116768-01A1                   | WASHINGTON UNIVERSITY                                | \$0                  | \$62,081   |                        |
| MAVEN: Developing Diverse Senior Scientists Leaders   | 93.859                        | FIMR AWD00001308-CU            | 1R25GM139082-01                     | FEINSTEIN INSTITUTE FOR MEDICAL RESEARCH             | \$0                  | \$24,884   |                        |
| Structure-Based Antagonism of HIV1 Envelope Function in Cell Entry  | 93.859                        | DREXEL 910001-Columbia         | 2P01GM056550-22                     | DREXEL UNIVERSITY                                    | \$0                  | \$310,164  |                        |
| Modulation of KCNQ1 Channel Activity  | 93.859                        | UMIAMI OS00000504              | 2R01GM109762-05                     | UNIVERSITY OF MIAMI                                  | \$0                  | \$224,265  |                        |
| Guanidinium Toxins as Molecular Probes for NaV Study  | 93.859                        | SU 62585450-119297             | 2R01GM117263-05                     | STANFORD UNIVERSITY                                  | \$0                  | \$122,295  |                        |
| Center on Macromolecular Dynamics by NMR Spectroscopy   | 93.859                        | NYSBC G00915-01                | 5P41GM118302-02                     | NEW YORK STRUCTURAL BIOLOGY CENTER                   | \$0                  | \$95,170   |                        |

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| <u>Federal Grantor / Pass-through Grantor</u>  | <u>Assistance Listing No.</u> | <u>Award Identification No</u> | <u>Pass-through Contract Number</u> | <u>Passthrough Name</u>   | <u>Subrecipients</u> | <u>Total Expenditures (Includes Subrecipients)</u> | <b>R&amp;D Cluster</b> |
|--|-------------------------------|--------------------------------|-------------------------------------|---|----------------------|--|------------------------|
| FEBio - Finite Elements for Biomechanics and Biophysics  | 93.859                        | UTAH 10054274-Columbia         | 5R01GM083925-14                     | UNIVERSITY OF UTAH  | \$0                  | \$204,148  |                        |
| Methods for integrated analysis of multi-level omics data  | 93.859                        | MGH 235245                     | 7R01GM127862-03                     | MASSACHUSETTS GENERAL HOSPITAL                                    | \$0                  | \$41,303   |                        |
|  |                               |                                |                                     |   | \$0                  | \$1,303,046  |                        |
| <b>Child Health and Human Development Extramural Research</b>  |                               |                                |                                     |   |                      |  |                        |
| Developmental Mechanisms of Trachea-Esophageal Birth Defects,project 1   | 93.865                        | CHMCO 140554                   | 1P01HD093363-01                     | CINCINNATI CHILDREN'S MEDICAL CENTER                              | \$0                  | \$288,056  |                        |
| Pediatric HIV/AIDS Cohort Study (PHACS): 2020  | 93.865                        | HARVARD 117267-0108-5115581    | 1P01HD103113-01                     | HARVARD UNIVERSITY  | \$0                  | \$8,077  |                        |
| Medical Optimization & Management of Pregnancies with Overt Type 2 Diabetes (MOMPOD)   | 93.865                        | UNC 5106225                    | 1R01HD086139-01A1                   | UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL                       | \$0                  | \$-16,820  |                        |
| Impact of Combined Use of Depot Medroxyprogesterone Acetate Contraception and Tenofovir PreExposure Prophylaxis on Bone Health (Depo-PrEP)                 | 93.865                        | UWSC9850                       | 1R01HD089843-01A1                   | UNIVERSITY OF WASHINGTON/SEATTLE WASHINGTON                       | \$0                  | \$15,822   |                        |
| WeCare   | 93.865                        | AAP CU18-0762                  | 1R01HD090191-01                     | AMERICAN ACADEMY OF PEDIATRICS                                    | \$0                  | \$19,062   |                        |
| FANMI: A community-based cohort model for HIV adolescent care in Haiti   | 93.865                        | 204412                         | 1R01HD091935-01A1                   | WEILL (JOAN AND SANFORD I.) MEDICAL COLLEGE OF CORNELL UNIVERSITY | \$0                  | \$6,430  |                        |
| Using Smart Phones to Understand the Link between Social and Geographical Context and HIV Risk Behavior Among MSM  | 93.865                        | YU GR101489 (CON-80001024      | 1R01HD092185-01                     | YALE UNIVERSITY   | \$0                  | \$11,496   |                        |
| Socioeconomic Disparities in Cognitive & Neural Development in the First 3 Years   | 93.865                        | TC 512158-01                   | 1R01HD093707-01                     | TEACHERS COLLEGE COLUMBIA UNIVERSITY                              | \$0                  | \$17,597   |                        |
| Place matters - Adaptable Solutions to Violence at the Community Level   | 93.865                        | TUL-HSC-557611-20/21           | 1R01HD095609-01                     | TULANE UNIVERSITY   | \$0                  | \$45,627   |                        |
| Burden and Risk of Neurological and Cognitive Impairment in Pediatric Sickle Cell Anemia in Uganda (BRAIN SAFE II)   | 93.865                        | GHU CU18-3693                  | 1R01HD096559-01A1                   | GLOBAL HEALTH UGANDA  | \$0                  | \$63,417   |                        |
| The NICU Antibiotics and Outcomes (NANO) Trial   | 93.865                        | UPITT AWD00001006 (133613-2)   | 1R01HD097578-01A1                   | UNIVERSITY OF PITTSBURGH  | \$0                  | \$25,876   |                        |
| Childhood Pulmonary and Related Outcomes after Perinatal Exposure to Adjunctive Azithromycin Prophylaxis for Cesarean Delivery (C/SOAP Follow-Up Study II) | 93.865                        | UAB 000523794-SC003            | 1R01HD098132-01                     | UNIVERSITY OF ALABAMA AT BIRMINGHAM                               | \$0                  | \$6,443  |                        |
| Community violence and disparities in maternal and infant health: effects and mechanisms   | 93.865                        | UC 00010352                    | 1R01HD098138-01A1                   | UNIVERSITY OF CALIFORNIA, BERKELEY                                | \$0                  | \$40,929   |                        |
| Women s HIV Cohort Study: HIV infection and treatment among women of reproductive age  | 93.865                        | UM SPC-001401                  | 1R01HD101352-01                     | UNIVERSITY OF MIAMI   | \$0                  | \$26,411   |                        |
| Neuro-behavioral Disorders after Appendectomy in Childhood   | 93.865                        | GRT-00000289                   | 1R01HD101415-01                     | CHILDREN'S HOSPITAL OF PHILADELPHIA                               | \$0                  | \$92,280   |                        |
| PRagMatic Pediatric Trial of Balanced versus NOrmal Saline FIUId in Sepsis (PRoMPT BOLUS)  | 93.865                        | CHOP GRT-00000762              | 1R01HD101528-01                     | CHILDREN'S HOSPITAL OF PHILADELPHIA                               | \$0                  | \$40,859   |                        |
| Racial Disparities in Preterm Births and Fetal Loss  | 93.865                        | UCI 2021-1546                  | 1R01HD103736-01A1                   | UNIVERSITY OF CALIFORNIA, IRVINE                                  | \$0                  | \$33,435   |                        |
| The Genomic Architecture of Pregnancy Loss   | 93.865                        | MGH 239748                     | 1R01HD105266-01                     | MASSACHUSETTS GENERAL HOSPITAL                                    | \$0                  | \$65,770   |                        |
| Large scale genome sequencing and integrative analyses to define genomic predictors of recurrent pregnancy loss  | 93.865                        | YU CON-8000531 (GR115508)      | 1R01HD105267-01                     | YALE UNIVERSITY   | \$0                  | \$6,920  |                        |
| Using EV-microRNAs to identify a non-invasive biomarker of uterine fibroid outcomes  | 93.865                        | GWU 19-M30                     | 1R21HD096248-01A1                   | GEORGE WASHINGTON UNIVERSITY                                      | \$0                  | \$53,655   |                        |
| The Role of Hypothalamic Pituitary-Adrenal Axis Dysregulation in Preterm Birth   | 93.865                        | HARVARD 117342-5115037         | 1R21HD102822-01                     | HARVARD UNIVERSITY  | \$0                  | \$25,478   |                        |

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|--|------------------------|------------------------------|------------------------------|--|---------------|---|
|  |                        |                              |                              |  |               | Total Expenditures (Includes Subrecipients) |
| The Alzheimer s Biomarker Consortium Down Syndrome (ABC-DS)  | 93.865                 | UPITT AWD00002130 (136595-3) | 1U19AG068054-01              | UNIVERSITY OF PITTSBURGH                                 | \$0           | \$1,155,371                                 |
| Fragile Families and the Transition to Adulthood   | 93.865                 | PU SUB0000361                | 2R01HD036916-16A1            | PRINCETON UNIVERSITY                                     | \$0           | \$54,739                                    |
| Predictive Informatics Monitoring in the Neonatal Intensive Care Unit  | 93.865                 | UV GB10607-PO#2230352        | 2R01HD072071-04A1            | UNIVERSITY OF VIRGINIA                                   | \$0           | \$212,931                                   |
| A multi-modality, multi-scale approach to understanding parturition  | 93.865                 | UWIS 865K196                 | 2R01HD072077-06              | UNIVERSITY OF WISCONSIN MADISON                          | \$0           | \$290,766                                   |
| Suubi+Adherence-R2:Examining the longitudinal HIV treatment adherence among youth living with HIV (YLHIV) transitioning into young adulthood                                 | 93.865                 | WUSOM WU-21-267              | 2R01HD074949-07              | Washington University School of Medicine in St. Louis    | \$0           | \$37,340                                    |
| Early life adversities and the emergence of risk and resilience: A longitudinal study of child development   | 93.865                 | UNC 5117284                  | 2R01HD075875-07A1            | UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL              | \$0           | \$67,616                                    |
| Innovation across the spectrum of pediatric HIV care   | 93.865                 | MGH 235202                   | 2R01HD079214-06A1            | MASSACHUSETTS GENERAL HOSPITAL                           | \$0           | \$23,200                                    |
| Reserve against Disability in Early Multiple Sclerosis (RADIEMS) Longitudinal Cohort Study   | 93.865                 | MSSM 0255-1472-4609          | 2R01HD082176-06A1            | ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI                  | \$0           | \$19,614                                    |
| The Maternal Fetal Medicine Unit Network   | 93.865                 | GWU CU14-1338                | 2U10HD036801-16              | GEORGE WASHINGTON UNIVERSITY                             | \$28,534      | \$299,868                                   |
| Gene Mutation and Rescue in Diaphragmatic Hernia   | 93.865                 | MGH 230914                   | 5P01HD068250-08              | MASSACHUSETTS GENERAL HOSPITAL                           | \$0           | \$258,477                                   |
| Clinical Diagnostic Sequencing of Structural Variation   | 93.865                 | MGH 239749                   | 5R01HD081256                 | MASSACHUSETTS GENERAL HOSPITAL                           | \$0           | \$14,132                                    |
| Molecular mechanisms of infection-mediated cervical ripening   | 93.865                 | UTSW GMO 160410              | 5R01HD086495-05              | UNIVERSITY OF TEXAS SOUTHWESTERN MEDICALCENTER AT DALLAS | \$0           | \$13,585                                    |
| Mechanisms by which steroid hormones modulate cervical extracellular matrix structure and function during pregnancy and provide therapeutic protection against preterm birth | 93.865                 | UTSW GMO 170904 PO# 0000939B | 5R01HD088481-05              | UNIVERSITY OF TEXAS SOUTHWESTERN MEDICALCENTER AT DALLAS | \$0           | \$30,307                                    |
| Innovative PK/PD Approaches to Optimize TBM Treatment in Children (PATCH Study)  | 93.865                 | JHU 2002824937               | R01HD074944-02               | JOHNS HOPKINS UNIVERSITY                                 | \$0           | \$-1  |
| Protection Against Cognitive Decline in MS: Longitudinal Investigation of Reserve  | 93.865                 | MSSM 0255-1471-4609          | R01HD082176                  | ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI                  | \$0           | \$-494                                      |
| Neurobiological Pathways Underlying Maladaptive Behaviors in Youth   | 93.865                 | MSU RC107642CU               | R01HD093334                  | MICHIGAN STATE UNIVERSITY                                | \$0           | \$56,379                                    |
| The Maternal Fetal Medicine Unit Network   | 93.865                 | GWU CU21-2046                | U24HD036801                  | GEORGE WASHINGTON UNIVERSITY                             | \$230,847     | \$783,115                                   |
|  |                        |                              |                              |  | \$259,381     | \$4,193,765                                 |
| <b>Aging Research</b>  |                        |                              |                              |  |               |   |
| Royal Center for Personalized Trials: Physical Activity Promotion to Foster Healthy Aging  | 93.866                 | AWD00001307-CU               | 1P30AG063786-01              | FEINSTEIN INSTITUTE FOR MEDICAL RESEARCH                 | \$0           | \$62,083                                    |
| Re-visiting Methods for MCI Diagnosis to Improve Biomarker and Trial Findings  | 93.866                 | UCSD 73333288 (S9001382)     | 1R01AG049810-01A1            | UNIVERSITY OF CALIFORNIA, SAN DIEGO                      | \$0           | \$28,555                                    |
| Novel Cognitive and Functional Measures for Alzheimer s Disease Prevention Trials  | 93.866                 | SRFMH 139964                 | 1R01AG051346-01A1            | RESEARCH FOUNDATION FOR MENTAL HYGIENE INC               | \$0           | \$339,098                                   |
| Cognitive Function, Alzheimer s Disease and Related Disorders in the HAALSI Cohort   | 93.866                 | HARVARD 116362-5111693       | 1R01AG054066-01A1            | HARVARD UNIVERSITY                                       | \$0           | \$115,137                                   |
| Slow wave sleep (SWS) and the effect of African ancestry on amyloid burden, a longitudinal study   | 93.866                 | NYU 17-A1-00-007453-01       | 1R01AG056531-01A1            | NEW YORK UNIVERSITY                                      | \$0           | \$34,841                                    |
| Identifying the molecular systems, networks, and key molecules that underlie cognitive resilience  | 93.866                 | RUMC 17021705-Sub02          | 1R01AG057911-01              | RUSH UNIVERSITY MEDICAL CENTER                           | \$0           | \$65,856                                    |

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**The Trustees of Columbia University in the City of New York**  
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| <u>Federal Grantor / Pass-through Grantor</u>   | <u>Assistance Listing No.</u> | <u>Award Identification No</u> | <u>Pass-through Contract Number</u> | <u>Passthrough Name</u>                            | <u>Subrecipients</u> | <u>Total Expenditures (Includes Subrecipients)</u> | <b>R&amp;D Cluster</b> |
|---|-------------------------------|--------------------------------|-------------------------------------|--|----------------------|--|------------------------|
| The Action for Health in Diabetes ADRD study (LookAHEAD-MIND)   | 93.866                        | WFUHS 162-55811085045103-10000 | 1R01AG058571-01                     | WAKE FOREST UNIVERSITY                             | \$0                  | \$24,496   |                        |
| Child Maltreatment and Risk for Mild Cognitive Impairment and Alzheimer s Disease   | 93.866                        | RFCUNY CM00001842-00           | 1R01AG05863-01A                     | RESEARCH FOUNDATION OF CITY UNIVERSITY OF NEW YORK | \$0                  | \$173,274  |                        |
| Stress, Epigenetics, and Aging  | 93.866                        | EMORYU A008616                 | 1R01AG058704-01                     | EMORY UNIVERSITY                                   | \$0                  | \$93,368   |                        |
| Educational and Early Life Predictors of Mild Cognitive Impairment: New Evidence about Mediators and Moderators from High School & Beyond                   | 93.866                        | UMINN H007058802               | 1R01AG058719-01A1                   | UNIVERSITY OF MINNESOTA                            | \$0                  | \$132,104  |                        |
| Subclinical Vascular Contributions to Alzheimer s Disease: The Multi Ethnic Study of Atherosclerosis (MESA) Multisite Study of AD                           | 93.866                        | WFUHS 551083                   | 1R01AG058969-01                     | WAKE FOREST UNIVERSITY                             | \$0                  | \$567,084  |                        |
| Predicting post-transplant mortality and global functional health based on pre-transplant functional status in liver transplantation                        | 93.866                        | UCSF 10865sc                   | 1R01AG059183-01                     | UNIVERSITY OF CALIFORNIA SAN FRANCISCO             | \$0                  | \$54,998   |                        |
| Assessing the interactive effect of lifetime and old age cognitive engagement on cognitive decline and dementia: cognitive reserve versus use it or lose it | 93.866                        | UMICHG SUBK00011643            | 1R01AG062447-01A1                   | UNIVERSITY OF MICHIGAN                             | \$0                  | \$34,469   |                        |
| Postoperative Delirium and Alzheimer s Disease Related Dementias  | 93.866                        | BWH 234365                     | 1R01AG062509-01                     | BRIGHAM AND WOMEN'S HOSPITAL                       | \$0                  | \$213,652  |                        |
| UCD A20-0610-S002 The Neuropathologic Landscape of Alzheimer s Disease Hispanic decedents   | 93.866                        | UCD A20-0610-S002              | 1R01AG062517-01A1                   | UNIVERSITY OF CALIFORNIA, DAVIS                    | \$0                  | \$45,796   |                        |
| Dissecting the genomic etiology of non-Mendelian early-onset Alzheimer disease and related phenotypes   | 93.866                        | UMIAMI SPC-001236              | 1R01AG064614-01                     | UNIVERSITY OF MIAMI                                | \$0                  | \$547,298  |                        |
| Beta1-selective blockade for prevention of postmenopausal bone loss: A randomized controlled trial  | 93.866                        | MAORO THE-277060-02            | 1R01AG065154-01A1                   | Mayo Clinic -- Rochester                           | \$0                  | \$517,550  |                        |
| Statistical method for neural mechanism mediating and moderating cognitive system in Alzheimer s disease and aging research.                                | 93.866                        | RFMH 27412                     | 1R01AG065278-01A1                   | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC          | \$0                  | \$94,887   |                        |
| Best Case/Worst Case: A Multisite Randomized Clinical Trial of Scenario Planning for Patients with End-Stage Kidney Disease                                 | 93.866                        | UWIS 0000000686                | 1R01AG065365-01                     | UNIVERSITY OF WISCONSIN                            | \$0                  | \$38,559   |                        |
| Spontaneous Speech and Health Disparities in Risk of Cognitive Decline: WHICAP Offspring Ancillary Study  | 93.866                        | KENT 403056-COL                | 1R01AG065432-01                     | KENT STATE UNIVERSITY                              | \$0                  | \$314,003  |                        |
| National Cohort Studies of Alzheimer s Disease, Related Dementias and Air Pollution   | 93.866                        | HARVARD 112576-5113206         | 1R01AG066793-01                     | HARVARD UNIVERSITY                                 | \$0                  | \$22,502   |                        |
| Metabolic regulation of human DNA methylation clocks  | 93.866                        | RFMH 27496                     | 1R01AG066828-01                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC          | \$0                  | \$15,657   |                        |
| 24-hour activity cycles to optimize cognitive resilience to Alzheimer s disease in African Americans: the Jackson Heart Study                               | 93.866                        | UAB SC002-Pal                  | 1R01AG067513-01                     | UNIVERSITY OF ALABAMA AT BIRMINGHAM                | \$0                  | \$122,975  |                        |
| Contributions of stress reactivity to risk of Alzheimer s disease and related dementias in a community-based cohort   | 93.866                        | NWU 60060219 CU                | 1R01AG067557-01A1                   | NORTHWESTERN UNIVERSITY                            | \$0                  | \$22,385   |                        |
| Chaperome networks in Alzheimer s Disease   | 93.866                        | MSKCC C22055357                | 1R01AG067598-01A1                   | MEMORIAL SLOAN-KETTERING CANCER CENTER             | \$0                  | \$456,678  |                        |
| Social Convoys, Cognitive Reserve and Resilience, and Risk for Alzheimer s Disease and Related Dementias  | 93.866                        | RFMH 27627                     | 1R01AG069041-01                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC          | \$0                  | \$202,130  |                        |
| Social Convoys, Cognitive Reserve and Resilience, and Risk for Alzheimer s Disease and Related Dementias  | 93.866                        | RFMH 27627                     | 1R01AG069041--01                    | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC          | \$0                  | \$48,877   |                        |
| Characterization of an 18F COX-2 PET ligand for in vivo brain imaging   | 93.866                        | RFMH 151573                    | 1R01AG070042-01                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC          | \$0                  | \$66,453   |                        |
| Longitudinal Relationships Among Sleep, Cognition and Alzheimer s Disease Biomarkers: Discerning Causal Associations, Mediators, and Susceptibility         | 93.866                        | BWH 125298                     | 1R01AG070867-01                     | BRIGHAM AND WOMEN'S HOSPITAL                       | \$0                  | \$182,760  |                        |
| Contribution of Longitudinal Neighborhood Determinants to Cognitive Health and Dementia Disparities within a Multi-Ethnic Cohort                            | 93.866                        | DREXEL 900142                  | 1R01AG072634-01                     | DREXEL UNIVERSITY                                  | \$0                  | \$62,938   |                        |

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| <u>Federal Grantor / Pass-through Grantor</u>   | <u>Assistance Listing No.</u> | <u>Award Identification No</u> | <u>Pass-through Contract Number</u> | <u>Passthrough Name</u>   | <u>Subrecipients</u> | <u>Total Expenditures (Includes Subrecipients)</u> | <u>R&amp;D Cluster</u> |
|---|-------------------------------|--------------------------------|-------------------------------------|---|----------------------|--|------------------------|
| PP2A Dysregulation in the Pathogenesis of alphaSynucleinopathies  | 93.866                        | RUTGERS 0131                   | 1R01NS101134-01                     | RUTGERS, THE STATE UNIVERSITY OF NEW JERSEY DEPARTMENT OF RADIOLOGY | \$0                  | \$17,767   |                        |
| Acute Effects of Cannabis on Cognition and Mobility in Older HIV-Infected and Uninfected Women  | 93.866                        | AECM 311343                    | 1R21AG059505-01                     | ALBERT EINSTEIN COLLEGE OF MEDICINE SHIVA UNIVERSITY                | \$0                  | \$13,558   |                        |
| Nurses' documentation of patient diagnoses, symptoms and interventions for home care patients with Alzheimer's Disease and related dementias: A natural language processing study | 93.866                        | VNSNY 4627C                    | 1R21AG065753-01A1                   | VISITING NURSE SERVICE OF NEW YORK                                  | \$0                  | \$19,600   |                        |
| Relationship between CNS Tau burden and perioperative neurocognitive disorder   | 93.866                        | UOP 580814                     | 1R21AG067114-01                     | UNIVERSITY OF PENNSYLVANIA  | \$0                  | \$95,089   |                        |
| Screening to Improve Survival in AL Amyloidosis   | 93.866                        | TMC 5019000-SERV               | 1R21AG070502-01                     | TUFTS MEDICAL CENTER, INC.  | \$0                  | \$41,246   |                        |
| Development of a stress kinase inhibitor therapeutic candidate for Alzheimer's Disease and related dementia   | 93.866                        | NKT071388001                   | 1R44 AG071388-01                    | NEUROKINE THERAPEUTICS  | \$0                  | \$190,896  |                        |
| Cell type influence on exosome signaling and early pathologic signatures in Alzheimer's disease   | 93.866                        | SCRIPPS 5-54377                | 1R56AG062618-01A1                   | Scrrips Research Institute  | \$0                  | \$110,587  |                        |
| Hippocampal circuit plasticity in human normal aging and Alzheimer's Disease  | 93.866                        | RFMH 27645                     | 1R56AG063372-01A1                   | RESEARCH FOUNDATION FOR MENTAL HYGIENE INC                          | \$0                  | \$101,055  |                        |
| The Origins of Alzheimer Disease in Individuals of African Ancestry   | 93.866                        | UMIAMI OS00000650              | 1R56AG072547-01                     | UNIVERSITY OF MIAMI   | \$0                  | \$449,574  |                        |
| Exploring the Role of the Brain Epigenome: Cognitive Decline and Life Experience  | 93.866                        | RUMC 09111306-sub3             | 1RF1AG036042-01                     | RUSH UNIVERSITY MEDICAL CENTER                                      | \$0                  | \$58,771   |                        |
| Genomic Characterization of Alzheimer's Disease Risk in the Puerto Rican population   | 93.866                        | UMIAMI 667606                  | 1RF1AG054074-01                     | UNIVERSITY OF MIAMI   | \$0                  | \$16,440   |                        |
| Genetic Epidemiology of Early Onset Alzheimer's disease in Caribbean Hispanics and nonHispanic Whites   | 93.866                        | UMIAMI SPC-000135              | 1RF1AG054080-01                     | UNIVERSITY OF MIAMI   | \$0                  | \$-21,495  |                        |
| Healthy Heart, Healthy Brain? A pooled life-course cohort for dementia risk assessment  | 93.866                        | 11276sc                        | 1RF1AG054443-01                     | UNIVERSITY OF CALIFORNIA SAN FRANCISCO                              | \$0                  | \$178,175  |                        |
| Prevention of Alzheimer's disease in women: risks and benefits of hormone therapy   | 93.866                        | MAORO THE-234899-02            | 1RF1AG057547-01                     | Mayo Clinic -- Rochester  | \$0                  | \$278,667  |                        |
| The Effect of Vascular Risk Factors on Risk of Alzheimer's Disease and Related Dementias after Stroke (STROKE COG)  | 93.866                        | UMICHG SUBK0001205             | 1RF1AG068410-01                     | UNIVERSITY OF MICHIGAN  | \$0                  | \$34,817   |                        |
| Glucose homeostasis and the risk of Alzheimer's disease and Alzheimer's disease related dementias in the Multi-Ethnic Study of Atherosclerosis                                    | 93.866                        | WUBGSM 1092-45116-11000000260  | 1RF1AG070881-01A1                   | WAKE FOREST UNIVERSITY  | \$0                  | \$59,531   |                        |
| Replication and Extension in African Americans of AD Sequencing   | 93.866                        | UMIAMI SPC-000756              | 1U01AG052410-01                     | UNIVERSITY OF MIAMI   | \$0                  | \$48,519   |                        |
| Early Onset AD Consortium - the LEAD Study (LEADS)  | 93.866                        | IN-4683237-COL                 | 1U01AG057195-01A1                   | INDIANA UNIVERSITY  | \$0                  | \$50,736   |                        |
| Therapeutic target discovery in ADSP data via comprehensive whole-genome analysis incorporating ethnic diversity and systems  | 93.866                        | BU 4500004112                  | 1U01AG058589-01A1                   | BOSTON UNIVERSITY   | \$0                  | \$410,644  |                        |
| The Alzheimer Disease Sequence Analysis Collaborative   | 93.866                        | CWRU RES515785                 | 1U01AG058654-01A1                   | CASE WESTERN RESERVE UNIVERSITY                                     | \$0                  | \$158,227  |                        |
| Additional Sequencing Cohorts for the Alzheimer's Disease Sequencing Project  | 93.866                        | UMIAMI SPC-001303              | 1U01AG062943-01                     | UNIVERSITY OF MIAMI   | \$0                  | \$105,839  |                        |
| Preclinical development of a novel small molecule inhibitor of Alzheimer's disease-related cognitive impairment   | 93.866                        | NWU 60056114 CU                | 1U01AG066722-01                     | NORTHWESTERN UNIVERSITY   | \$0                  | \$466,045  |                        |
| Additional Sequencing for the Alzheimer's Disease Sequencing Project (ADSP)   | 93.866                        | UMIAMI OS00000156              | 1U01AG066767-1                      | UNIVERSITY OF MIAMI   | \$0                  | \$92,813   |                        |
| Ultrascale Machine Learning to Empower Discovery in Alzheimer's Disease Biobanks  | 93.866                        | USC 137299535                  | 1U01AG068057-01                     | UNIVERSITY OF SOUTHERN CALIFORNIA                                   | \$0                  | \$281,975  |                        |

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| <u>Federal Grantor / Pass-through Grantor</u>   | <u>Assistance Listing No.</u> | <u>Award Identification No</u> | <u>Pass-through Contract Number</u> | <u>Passthrough Name</u>                               | <u>Subrecipients</u> | <u>R&amp;D Cluster</u><br><u>Total Expenditures (Includes Subrecipients)</u> |
|---|-------------------------------|--------------------------------|-------------------------------------|---|----------------------|--|
| Integrative Pathways to Health & Illness  | 93.866                        | UWIS 0000000779                | 1U19051426-01A1                     | UNIVERSITY OF WISCONSIN                               | \$0                  | \$4,847  |
| The Long Life Family Study: Columbia University   | 93.866                        | WUSOM WU-22-0479               | 1U19AG063893-01                     | Washington University School of Medicine in St. Louis | \$0                  | \$1,520,445  |
| ARTFL LEFFTDS Longitudinal Frontotemporal Lobar Degeneration (ALLFTD) - Clinical Core Fixed   | 93.866                        | MAORO CBL-263134-01            | 1U19AG063911-01                     | Mayo Clinic -- Rochester                              | \$0                  | \$86,113   |
| Adult Changes in Thought (ACT) Research Program - Life Course Core (C)  | 93.866                        | KPWRI RNG211397-COLUMBIAU      | 1U19AG066567-01A1                   | KAISER PERMANENTE WASHINGTON RESEARCH IN-STITUTE      | \$0                  | \$104,261  |
| Resistance to Alzheimer s Disease in Centenarians and their Offspring (RADCO)   | 93.866                        | BU CU20-3428                   | 1U19AG073172-01                     | BOSTON UNIVERSITY                                     | \$0                  | \$15,106   |
| Alzheimer s Disease Sequencing Project Phenotype Harmonization Consortium   | 93.866                        | VANDER VUMC95856               | 1U24AG074855-01                     | VANDERBILT UNIVERSITY MEDICAL CENTER                  | \$0                  | \$10,161   |
| The Microvascular Aging and Eicosanoids Women s Evaluation of Systemic aging Tenacity (MAE-WEST) Specialized Center of Research Excellence (SCORE) on Sex Differences | 93.866                        | CSMCLA 1761036                 | 1U54AG065141-01                     | CEDARS-SINAI MEDICAL CENTER                           | \$0                  | \$1,629  |
| Improving Health Outcomes for an Aging Population   | 93.866                        | NBER 4135G.30.16.Columbia      | 2P01AG005842-30                     | National Bureau of Economic Research                  | \$0                  | \$72,389   |
| DNA Repair, Mutations and Cellular Aging  | 93.866                        | AECM 31168B                    | 2P01AG017242-24                     | ALBERT EINSTEIN COLLEGE OF MEDICINEESHIVA UNIVERSITY  | \$0                  | \$62,360   |
| What Does Health Insurance Do? Evidence from the Oregon Health  | 93.866                        | NBER 4126B.COLUMBIA            | 2R01AG034151-06A1                   | National Bureau of Economic Research                  | \$0                  | \$21,898   |
| Pathogenesis of Postoperative Cognitive Dysfunction   | 93.866                        | MGH 235316                     | 2R01AG041274-06A1                   | MASSACHUSETTS GENERAL HOSPITAL                        | \$0                  | \$287,732  |
| Enhancing Retrospective Life History Data in the Health and Retirement Study  | 93.866                        | SUBK00010395                   | 2R01AG051142-05                     | UNIVERSITY OF MICHIGAN                                | \$0                  | \$15,227   |
| Dominantly Inherited Alzheimer Network  | 93.866                        | WASHU CU20-0606                | 2U19AG032438-08                     | WASHINGTON UNIVERSITY                                 | \$0                  | \$14,035   |
| Biomarkers of Cognitive Decline Among Normal Individuals: The Biocard Cohort  | 93.866                        | JHU 2004408143                 | 2U19AG033655-11                     | JOHNS HOPKINS UNIVERSITY                              | \$0                  | \$41,666   |
| Genome Center for Alzheimer s Disease (GCAD)- CORE C  | 93.866                        | UPENN 584632                   | 2U54AG052427-06                     | UNIVERSITY OF PENNSYLVANIA                            | \$0                  | \$91,752   |
| Novel Cognitive and Functional Measures for Alzheimer s Disease Prevention Trials: Sensitivity to Biomarkers  | 93.866                        | RFMH 27026                     | 3R01AG051346-03S1                   | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC             | \$0                  | \$156,774  |
| Novel Cognitive and Functional Measure for Alzheimer s Disease Prevention Trials  | 93.866                        | RFMH 27026                     | 3R01AG051346-03S2                   | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC             | \$0                  | \$1,394  |
| Improving the Usage and Impact of the Integrated Aging Studies Databank and Registry  | 93.866                        | WUBGSM 1016-33664-11000000333  | 3U24AG059624-04S1                   | WAKE FOREST UNIVERSITY                                | \$0                  | \$17,496   |
| Exploring the Latent Class Structure of Inhibition in Aging   | 93.866                        | USC 127427367                  | 4R00AG055684-03                     | UNIVERSITY OF SOUTHERN CALIFORNIA                     | \$0                  | \$23,781   |
| Risk Factors, Pathology and Clinical Expressions of AD  | 93.866                        | RUMC L97092581-Sub07           | 5R01AG015819-18                     | RUSH UNIVERSITY MEDICAL CENTER                        | \$0                  | \$128,742  |
| Tau-Sliceosome Interactions in Alzheimer s Disease  | 93.866                        | BCMh 7000000572                | 5R01AG053960-05                     | BAYLOR COLLEGE OF MEDICINE--HOUSTON                   | \$0                  | \$48,647   |
| Pitavastatin to Reduce Physical Function Impairment and Frailty in HIV (PREPARE)  | 93.866                        | UCLA CU19-0515                 | 5R01AG054366-03                     | UNIVERSITY OF CALIFORNIA, LOS ANGELES                 | \$0                  | \$53,934   |
| Human tissue specific age-related gene expression changes, their genetic regulations and the link to human diseases   | 93.866                        | ISMMS 0255-4711-4609           | 5R01AG055501-03                     | ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI               | \$0                  | \$112,033  |
| Probing Heterogeneity of Alzheimer s Disease using iPSCs  | 93.866                        | BWH 119586                     | 5R01AG055909-03                     | BRIGHAM AND WOMEN'S HOSPITAL                          | \$0                  | \$36,419   |

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|--|-------------------------------|--------------------------------|-------------------------------------|---|----------------------|--|
|  |                               |                                |                                     |   |                      | <u>Total Expenditures (Includes Subrecipients)</u> |
| Mindfulness Meditation and Insomnia in Alzheimer Disease Caregivers: Inflammatory and Biological Aging Mechanism   | 93.866                        | UCLA 2000 G VK311              | 5R01AG056424-02                     | UNIVERSITY OF CALIFORNIA, LOS ANGELES                             | \$0                  | \$9,936  |
| Combinatorial Actions of Genetic Variants and Gender Bias of Alzheimer sDisease  | 93.866                        | UCSD 131780734                 | 5R01AG057706-03                     | UNIVERSITY OF CALIFORNIA, SAN DIEGO                               | \$9,506              | \$770,751  |
| Life Course Process of Alzheimer s Disease: Sex Difference and Biosocial Mechanisms  | 93.866                        | 5113228                        | 5R01AG057800-02                     | UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL                       | \$0                  | \$22,947   |
| Resilience to Alzheimer s disease in humans with exceptional longevity   | 93.866                        | AECOM 311234                   | 5R01AG057909-04                     | ALBERT EINSTEIN COLLEGE OF MEDICINEESHIVA UNIVERSITY              | \$0                  | \$287,399  |
| Elucidating the molecular drivers of impaired mobility and motor function in AD and related pathologies  | 93.866                        | RUMC 17092603-Sub02            | 5R01AG059732-02                     | RUSH UNIVERSITY MEDICAL CENTER                                    | \$0                  | \$24,361   |
| Defining the programmed proteome rejuvenation underlying gametogenesis   | 93.866                        | UCB 00010791                   | 5R01AG071869-02                     | UNIVERSITY OF CALIFORNIA, BERKELEY                                | \$0                  | \$340,962  |
| A Multicenter, Randomized, DoubleBlind, Placebo-Controlled, Ascending Dose Study to Evaluate the Safety, Tolerability, Pharmacokinetics (PK) and Pharmacodynamic (PD) Effects of Posiphen in the Subject | 93.866                        | UCSD 92880900 (S9002311)       | 5U19AG010483-26                     | UNIVERSITY OF CALIFORNIA, SAN DIEGO                               | \$0                  | \$13,785   |
| Genetic Variant-Based Drug Discovery Targeting Conserved Pathways of Aging   | 93.866                        | AECM 31169B                    | 5U19AG056278-04                     | ALBERT EINSTEIN COLLEGE OF MEDICINEESHIVA UNIVERSITY              | \$0                  | \$112,633  |
| Temporal Trends, Novel Imaging and Molecular Characterization of Preclinical and Clinical Alzheimer s Disease in the Framingham Cohorts  | 93.866                        | UTHSCSA 164208/163074          | 7R01AG054076-03                     | UNIVERSITY OF TEXAS HEALTH SCIENCE CENTER AT SAN ANTONIO          | \$0                  | \$45,280   |
| Functional connectivity network in default mode regions provides the underlying infrastructure for taskbased functional co-de/activation networks  | 93.866                        | WCMC 212545-1                  | 7R01AG057962-03                     | WEILL (JOAN AND SANFORD I.) MEDICAL COLLEGE OF CORNELL UNIVERSITY | \$0                  | \$38,574   |
| Differential vulnerability to tauopathy in Alzheimer s disease and Frontotemporal Lobe Dementia  | 93.866                        | UCL CU20-2502                  | 7RF1AG063521-02                     | UNIVERSITY COLLEGE LONDON   | \$0                  | \$60,258   |
| ARTFL LEFFTDS Longitudinal Frontotemporal Lobar Degeneration (ALLFTD) - Clinical Core  | 93.866                        | MAORO COL-263134               | IUI9AG063911-01                     | Mayo Clinic -- Rochester  | \$0                  | \$202,683  |
| The Four Repeat Tauopathy Neuroimaging Initiative  | 93.866                        | UCSF 10375sc                   | R01AG038791                         | UNIVERSITY OF CALIFORNIA SAN FRANCISCO                            | \$0                  | \$1,240  |
| Combinatorial regulation of the enhancer codes in senescence   | 93.866                        | UCSD 131072963 MP Invoice/P0 S | R01AG061521                         | UNIVERSITY OF CALIFORNIA, SAN DIEGO                               | \$36,780             | \$92,542   |
| Preferred Hospital-SNF Relationships and Variation in Information Sharing Practices: Impact on Care Transition for Persons with AD/ADRD  | 93.866                        | P008759353                     | R03AG072215                         | UNIVERSITY OF MINNESOTA   | \$0                  | \$14,364   |
| Impact of Financial Incentives on Setting of Care for Older Adults with Alzheimer s Disease and Related Dementias  | 93.866                        | RAND SCON-00000378             | R21AG069787                         | RAND CORPORATION  | \$0                  | \$20,005   |
| Asian Cohort for Alzheimer s Disease (ACAD)  | 93.866                        | UOP 580820                     | R56A6069130                         | UNIVERSITY OF PENNSYLVANIA  | \$0                  | \$332,493  |
| Health and Retirement Study Yrs 29-34  | 93.866                        | UMICHG 3005916841              | U01AG009740                         | UNIVERSITY OF MICHIGAN  | \$0                  | \$41,799   |
| Whole Genome Sequencing in Ethnically Diverse Cohorts for the ADSP Follow Up Study (FUS)   | 93.866                        | UMIAMI SPC-001254              | U01AG057659                         | UNIVERSITY OF MIAMI   | \$0                  | \$295,963  |
| Health and Retirement Study Yrs 29- 34: Harmonized Cognitive Assessment Protocol (HCAP)  | 93.866                        | UMICHG 3004832623              | U01AG058499                         | UNIVERSITY OF MICHIGAN  | \$0                  | \$13,623   |
| Alzheimer s Disease Neuroimaging Initiative 3 (ADNI3)  | 93.866                        | USC 79634713                   | U19AG02                             | UNIVERSITY OF SOUTHERN CALIFORNIA                                 | \$0                  | \$3,135  |
| Alzheimer s Clinical Trials Consortium (ACTC) (U24)  | 93.866                        | USC 105637272                  | U24AG057437                         | UNIVERSITY OF SOUTHERN CALIFORNIA                                 | \$0                  | \$183,501  |
| ARMADA: Advancing Reliable Measurement in Alzheimer s Disease and cognitive Aging  | 93.866                        | NWU 60048330CU                 | U2CAG057441                         | NORTHWESTERN UNIVERSITY   | \$0                  | \$181,885  |
|  |                               |                                |                                     |   | \$46,286             | \$13,998,499                                       |

**Vision Research**

The accompanying footnotes are an integral part of the Schedule of Expenditures of Federal Awards



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|--|-------------------------------|-----------------------------------|-------------------------------------|---|----------------------|--|------------------------|
| HEY: Hispanic Study  | 93.867                        | UTEXAS<br>1R21EY029605-01(01)     | 1R21EY029605-01                     | UNIVERSITY OF TEXAS - RIO GRANDE VALLEY                 | \$0                  | \$1,552  |                        |
| Optical gearbox for high speed neural recording                                      | 93.867                        | PURDUNIV CU21-2737                | 1R21EY032382-01                     | PURDUE UNIVERSITY                                       | \$0                  | \$63,023   |                        |
| Translational Research for Retinal Degeneration Therapies                            | 93.867                        | UPENN 583307                      | 2R01EY017549-15                     | UNIVERSITY OF PENNSYLVANIA                              | \$0                  | \$14,511   |                        |
| Cell Death Pathways in Glaucomatous Neurodegeneration                                | 93.867                        | ROCHSTR 417821G / UR<br>FAO GR511 | 2R01EY018606-11A1                   | UNIVERSITY OF ROCHESTER                                 | \$0                  | \$265,350  |                        |
| Translational Gene Therapy for CNGB1 Retinitis Pigmentosa                            | 93.867                        | MSU RC108391UC                    | R24EY027285                         | MICHIGAN STATE UNIVERSITY                               | \$0                  | \$117,800  |                        |
|  |                               |                                   |                                     |   | <u>\$0</u>           | <u>\$462,236</u>                                   |                        |
| <b>Medical Library Assistance</b>  |                               |                                   |                                     |   |                      |  |                        |
| BIGDATA: Causal Inference in Large-Scale Time Series                                 | 93.879                        | SIT 2102255-01                    | 2R01LM011826-08                     | STEVENS INSTITUTE OF TECHNOLOGY                         | \$0                  | \$131,099  |                        |
| Mechanistic Machine Learning   | 93.879                        | UCD CU19-2358                     | 7R01LM012734                        | UNIVERSITY OF COLORADO                                  | \$0                  | \$22,014   |                        |
|  |                               |                                   |                                     |   | <u>\$0</u>           | <u>\$153,113</u>                                   |                        |
| <b>International Research and Research Training</b>                                  |                               |                                   |                                     |   |                      |  |                        |
| Capacity development for HIV and mental health research in Asia (CHIMERA)            | 93.989                        | AMFAR 110278-70-ISTA              | 1D43TW011302-01                     | AMERICAN FOUNDATION FOR AIDS RESEARCH (AMFAR)           | \$0                  | \$8,359  |                        |
| Bangladesh Center for Global Environmental and Occupational Health                   | 93.989                        | UCHICAGO FP056723-D               | 1U2RTW010122-01                     | UNIVERSITY OF CHICAGO                                   | \$0                  | \$364  |                        |
| PALOP Mental Health Implementation Research Training                                 | 93.989                        | RFMH 27610                        | 2D43TW009675-06                     | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC               | \$0                  | \$13,778   |                        |
| KNMU-SUNY HIV Research Training Program  | 93.989                        | RFSUNY 100-1132446-74921          | 5DA43TW010046-03                    | RESEARCH FOUNDATION OF THE STATE UNIVERSITY OF NEW YORK | \$0                  | \$-41  |                        |
|  |                               |                                   |                                     |   | <u>\$0</u>           | <u>\$22,460</u>                                    |                        |
|  |                               |                                   |                                     |   | <u>505,585</u>       | <u>73,427,891</u>                                  |                        |
| Total Pass-through Programs  |                               |                                   |                                     |   | <u>\$6,186,573</u>   | <u>\$88,656,278</u>                                |                        |
| <b>Total National Institute of Health</b>  |                               |                                   |                                     |   | <u>\$92,731,776</u>  | <u>\$676,916,002</u>                               |                        |
| <b>Grand Total: Department of Health &amp; Human Services</b>                        |                               |                                   |                                     |   | <u>\$95,039,105</u>  | <u>\$698,049,465</u>                               |                        |
| <b>National Science Foundation</b>   |                               |                                   |                                     |   |                      |  |                        |
| <b>Direct Awards</b>   |                               |                                   |                                     |   |                      |  |                        |
| <b>Covid 19 Related Funding:</b>   |                               |                                   |                                     |   |                      |  |                        |
| COVID-19-RAPID: Viral Structure-Function-Activity in the Engineered Wastewater Cycle | 47.041                        | CBET-2026599                      |                                     |   | \$0                  | \$-18,575  |                        |
| COVID-19-Modeling Financial Catastrophe and COVID-19 Super Spreader Events           | 47.049                        | DMS-2106433                       |                                     |   | \$0                  | \$101,033  |                        |

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|--|-------------------------------|--------------------------------|-------------------------------------|-------------------------|----------------------|--|------------------------|
| COVID-19-2018-2023 Ship Operations -R/V Marcus G. Langseth   | 47.050                        | OCE-1829304                    |                                     |                         | \$18,822             | \$1,836,490  |                        |
| COVID-19-RAPID: Collaborative Research: The Internet under Widespread Shelter-in-Place: Resilience, Response, and Lessons for the Future | 47.070                        | CNS-2028550                    |                                     |                         | \$0                  | \$15,133   |                        |
| COVID-19-RAPID: Flexible, Efficient, and Available Bayesian Computation for Epidemic Models  | 47.074                        | DEB-2055251                    |                                     |                         | \$0                  | \$133,164  |                        |
| COVID-19-RAPID: Science and Social Networks: COVID-19 in an Urban Epicenter  | 47.075                        | SES-2029336                    |                                     |                         | \$0                  | \$4,797  |                        |
| COVID-19-CIC-E: COVID Information Commons Extension for Pandemic Recovery  | 47.083                        | OIA-2139391                    |                                     |                         | \$0                  | \$393,065  |                        |
|  |                               |                                |                                     |                         | <u>18,822</u>        | <u>2,465,107</u>                                   |                        |
| Computationally-scalable Black-box Tool for Bayesian Model Estimation  | 47.RD                         | 49100421C0026                  |                                     |                         | \$0                  | \$561,676  |                        |
| EFRI NewLAW: Novel Approaches to RF Non-Reciprocity in Semiconductor Systems   | 47.041                        | EFMA-1641100                   |                                     |                         | \$565,189            | \$5,605,705  |                        |
| MREFC: US ATLAS HL-LHC Upgrade Project   | 47.049                        | PHY-1948993                    |                                     |                         | \$5,710,301          | \$23,405,596                                       |                        |
| 2018-2023 Ship Operations -R/V Marcus G. Langseth  | 47.050                        | OCE-1829304                    |                                     |                         | \$3,056,447          | \$32,531,899                                       |                        |
| IRNC: Testbed: COSMOS Interconnecting Continents (COSMIC)  | 47.070                        | OAC-2029295                    |                                     |                         | \$1,019,034          | \$11,756,241                                       |                        |

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|---|-------------------------------|--------------------------------|-------------------------------------|---|----------------------------|--|------------------------|
| NeuroNex Theory Team: Columbia University Theoretical Neuroscience Center   | 47.074                        | DBI-1707398                    |                                     |   | \$740,990                  | \$6,195,376  |                        |
| Testing the limits of deep neural network models of human vision with optimized stimuli   | 47.075                        | BCS-1948004                    |                                     |   | \$147,537                  | \$3,590,702  |                        |
| Graduate Research Fellowship Program (GRFP)   | 47.076                        | DGE-2036197                    |                                     |   | \$0                        | \$6,436,832  |                        |
| Supporting Antarctic Research with Ongoing Operations and Development of the USAP-DC Project Catalog and Data Repository                    | 47.078                        | OPP-1936530                    |                                     |   | \$0                        | \$1,634,460  |                        |
| Collaborative Research: AccelNet: Clean Air Monitoring and Solutions Network (CAMS-Net)   | 47.079                        | OISE-2020677                   |                                     |   | \$0                        | \$224,765  |                        |
| NSF Convergence Accelerator Track D America s Water Risk: Water System Data Pooling for Climate Vulnerability Assessment and Warning System | 47.083                        | OIA-2040613                    |                                     |   | \$586,451                  | \$1,511,659  |                        |
|   |                               |                                |                                     |   | <u>11,825,949</u>          | <u>93,454,911</u>                                  |                        |
| <b>Total Direct Award Programs</b>  |                               |                                |                                     |   | <u><b>\$11,844,771</b></u> | <u><b>\$95,920,018</b></u>                         |                        |
| <b>Pass-through Awards</b>  |                               |                                |                                     |   |                            |  |                        |
| <b>Covid 19 Related Funding:</b>  |                               |                                |                                     |   |                            |  |                        |
| <b>Engineering</b>  |                               |                                |                                     |   |                            |  |                        |
| COVID-19-RAPID: Examining Greenspace Access Impacts on Well-being During the COVID-19 Pandemic  | 47.041                        | BARNARD CU-2029301             | CBET-2029301                        | BARNARD COLLEGE                             | \$0                        | \$13,392   |                        |
|   |                               |                                |                                     |   | <u>\$0</u>                 | <u>\$13,392</u>                                    |                        |
|   |                               |                                |                                     |   | <u>0</u>                   | <u>13,392</u>                                      |                        |
| <b>National Science Foundation</b>  |                               |                                |                                     |   |                            |  |                        |
| Neutron Imaging of Arecibo Observatory Cable Sockets for Forensic Quantification of Wire-Socket Failure Mechanism                           | 47.RD                         | TMST CU21-2339                 | NSF CU21-2339                       | THORNTON TOMASETTI                          | \$0                        | \$33,232   |                        |
|   |                               |                                |                                     |   | <u>\$0</u>                 | <u>\$33,232</u>                                    |                        |
| <b>Engineering</b>  |                               |                                |                                     |   |                            |  |                        |
| DMREF: Collaborative Research: Design of surface functionality through surface composition and structure                                    | 47.041                        | CMU 1122746-425274             | CBET-1921946                        | CARNEGIE MELLON UNIVERSITY                  | \$0                        | \$56,150   |                        |
| AI Institute in Dynamic Systems   | 47.041                        | UWASH UWSC13224                | CBET-2112085                        | UNIVERSITY OF WASHINGTON SEATTLE WASHINGTON | \$0                        | \$160,241  |                        |

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|---|-------------------------------|--------------------------------|-------------------------------------|--|----------------------|--|------------------------|
| FMNet: NYC Future Manufacturing Collective  | 47.041                        | NYU F1545-01                   | CMMI-2036802                        | NEW YORK UNIVERSITY                                | \$0                  | \$26,119   |                        |
| LEAP-HI: Coordinated Advance in Reproductive Engineering for Health Research (CARE4HeR)   | 47.041                        | VPTISU 480759-19020            | CMMI-2053851                        | VIRGINIA POLYTECHNIC INSTITUTE AND STATEUNIVERSITY | \$0                  | \$40,344   |                        |
| Nanosystems Engineering Research Center for Directed Multiscale Assembly of Cellular Metamaterials with Nanoscale Precision:CELL-MET                                    | 47.041                        | BU 4500004144                  | EEC-1647837                         | BOSTON UNIVERSITY                                  | \$0                  | \$168,906  |                        |
| Mid-Infrared Topological Plasmon-Polaritons with 2D Materials   | 47.041                        | UMINN A006382202               | EFMA-1741660                        | UNIVERSITY OF MINNESOTA                            | \$0                  | \$31,079   |                        |
| EFRI DCheM: Digital design of a network of distributed modular and agile manufacturing systems with optimal supply chain for personalized medical treatments            | 47.041                        | PURDUNIV 10001913-050          | EFMA-2132142                        | PURDUE UNIVERSITY                                  | \$0                  | \$11,736   |                        |
| Self-Powered Wireless Networking Technology for Monitoring Civil Infrastructure   | 47.041                        | VATECHI 445588-19020A          | IIP-1738689                         | VIRGINIA TECHNICAL INSTITUTE                       | \$0                  | \$5,917  |                        |
| I-Corps Node (Track 2): New York City Regional Innovation Node (NYCRIN)   | 47.041                        | RFCUNY CM00000546-00           | IIP-1740622                         | RESEARCH FOUNDATION OF CITY UNIVERSITY OF NEW YORK | \$0                  | \$250,709  |                        |
| NSF I -Corps Hub: New York Region   | 47.041                        | RFCUNY CM00007239-00           | IIP-2048498                         | RESEARCH FOUNDATION OF CITY UNIVERSITY OF NEW YORK | \$0                  | \$41,781   |                        |
| STTR Phase II: CMOS Integrated Piezoelectric Vapor Sensors  | 47.041                        | LELANTOS CU21-1288             | IIP-2126910                         | LELANTOS   | \$0                  | \$67,465   |                        |
|   |                               |                                |                                     |  | <b>\$0</b>           | <b>\$860,447</b>                                   |                        |
| <b>Mathematical and Physical Sciences</b>   |                               |                                |                                     |  |                      |  |                        |
| Unveiling Particle Energization in Astrophysical Plasmas  | 47.049                        | RCSA 27471                     | CHE-2039044                         | RES. CORP. FOR SCIENCE ADVANCEMENT                 | \$0                  | \$25,036   |                        |
| NSF Center for the Chemistry of Molecularly Optimized Networks  | 47.049                        | DUKEU 333-2768                 | CHE-2116298                         | DUKE UNIVERSITY                                    | \$0                  | \$130,965  |                        |
| MRI Consortium: Development of Magneto-Ellipsometer for the MET Beamline of the National Synchrotron Light Source (NSLS-II), Brookhaven National Laboratory             | 47.049                        | NJIT 996996                    | DMR-1828061                         | NEW JERSEY INSTITUTE OF TECHNOLOGY                 | \$0                  | \$152,796  |                        |
| Harnessing room-temperature quantum-dot-like states in 2D materials for nanoscale nonclassical light  | 47.049                        | MONTANA G108-21-W8416          | DMR-2004437                         | MONTANA STATE UNIVERSITY                           | \$0                  | \$159,534  |                        |
| TRIPDS+X: VIS: Creating an Annual Data Science Forum  | 47.049                        | GIT AWD-102378-G1              | DMS-1839340                         | GEORGIA INSTITUTE OF TECHNOLOGY                    | \$0                  | \$10,626   |                        |
| STC: Center for Integration of Modern Optoelectronic Materials on Demand  | 47.049                        | UWSC 12979                     | NSF-2019444                         | UNIVERSITY OF WASHINGTONSEATTLE WASHINGTON         | \$0                  | \$24,858   |                        |
| U.S. ATLAS Operations: Discovery and Measurement at the Energy Frontier   | 47.049                        | RFSUNY 76749/1136652/2M&O      | PHY-1624739                         | STATE UNIV. OF NEW YORK STONY BROOK                | \$0                  | \$34,029   |                        |
| TeV Astrophysics with the VERITAS Gamma Ray Observatory   | 47.049                        | BARNARD CU-1806554             | PHY-1806554                         | BARNARD COLLEGE                                    | \$0                  | \$4,360  |                        |
| Wou-MMA: Understanding Cosmic Particle Accelerators with the VERITAS and CTA Gamma-Ray Observatories  | 47.049                        | BARNARD CU-2110497             | PHY-2110497                         | BARNARD COLLEGE                                    | \$0                  | \$110,301  |                        |
| WoU-MMA: Studying Extreme Particle Accelerators with VERITAS and CTA  | 47.049                        | UMARY 104695-Z3831201          | PHY-2200857                         | UNIVERSITY OF MARYLAND                             | \$0                  | \$95,244   |                        |
|   |                               |                                |                                     |  | <b>\$0</b>           | <b>\$747,749</b>                                   |                        |
| <b>Geosciences</b>  |                               |                                |                                     |  |                      |  |                        |
| Creating better forecasting and predictive capabilities for coastal flooding due to storms  | 47.050                        | UCAR SUBAWD002256              | AGS-1755088                         | UNIVERSITY CORPORATION FOR ATMOSPHERIC RESEARCH    | \$0                  | \$9,091  |                        |
| Advancing Carbonyl Sulfide (OCS) as an Independent Atmospheric Tracer for Global Photosynthesis through Quantification of Microbial-Mediated Sources and Sinks in Soils | 47.050                        | UA 587365                      | AGS-1933280                         | UNIVERSITY OF ARIZONA                              | \$0                  | \$25,551   |                        |
| How do Energy Fluxes Link Precipitation Variability Across the Tropical Weather-Climate Continuum?  | 47.050                        | PU SUB0000556                  | AGS-2123327                         | PRINCETON UNIVERSITY                               | \$0                  | \$3,964  |                        |

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|--|-------------------------------|--------------------------------|-------------------------------------|---|----------------------|--|------------------------|
| Ocean Sciences for Rural Communities via Informal Science Education: Pop-Up/Drill Down Science   | 47.050                        | COL SA16-35                    | DRL-1515856                         | Consortium for Ocean Leadership                                     | \$0                  | \$26,799   |                        |
| LDEO Operation of Continuous GNSS Stations in Russia   | 47.050                        | IRIS SU-19-1001-01-LDEO        | EAR-1724509                         | Incorporated Research Institutions for Seismology                   | \$0                  | \$21,281   |                        |
| CAREER: Long-term Controls on Short-term Patterns of Magmatism: Towards a Unified Framework for Crustal Magma Transport                        | 47.050                        | OREGON 2009T0A                 | EAR-1848554                         | UNIVERSITY OF OREGON  | \$0                  | \$16,288   |                        |
| CNH-L: Volcanism, Hydrology and Social Conflict: Lessons from Hellenistic and Roman-Era Egypt and Mesopotamia                                  | 47.050                        | YU GR104087(CON-80001396)      | ICER-1824770                        | YALE UNIVERSITY   | \$0                  | \$128,317  |                        |
| Collaborative Research: Global Ocean Repeat Hydrography Carbon & Tracer Measurements, 2015-2020  | 47.050                        | UWASH UWSC8202                 | OCE-1433922                         | UNIVERSITY OF WASHINGTON SEATTLE WASHINGTON                         | \$0                  | \$14,122   |                        |
| Collaborative Research: Global Ocean Repeat Hydrography, Carbon, and Tracer Measurements, 2015-2020  | 47.050                        | UCSD 59692302                  | OCE-1437015                         | UNIVERSITY OF CALIFORNIA, SAN DIEGO                                 | \$0                  | \$410,199  |                        |
| Designing a Modern, Scalable and Sustainable Infrastructure for the National Deep Submergence Facility (NDSF)                                  | 47.050                        | WHOI A101532                   | OCE-1638805                         | WOODS HOLE OCEANOGRAPHIC INSTITUTION                                | \$0                  | \$31,162   |                        |
| Worthington Deployment   | 47.050                        | WHOI REV-A101491               | OCE-1806608                         | WOODS HOLE OCEANOGRAPHIC INSTITUTION                                | \$0                  | \$55,033   |                        |
| Ocean Observatories Initiative Facility Board (OOIFB) Administrative Support Office  | 47.050                        | URI 0007471/0107122            | OCE-1833654-009                     | UNIVERSITY OF RHODE ISLAND  | \$0                  | \$42,350   |                        |
| Collaborative Research: Ecology and Evolution of Microbial Interactions in a Changing Ocean  | 47.050                        | UALASKA UAF 20-0084            | OCE-1937715                         | UNIVERSITY OF ALASKA FAIRBANKS                                      | \$0                  | \$140  |                        |
| Center for Chemical Currencies of a Microbial Planet (C-CoMP)  | 47.050                        | WHOI A101559                   | OCE-2019589                         | WOODS HOLE OCEANOGRAPHIC INSTITUTION                                | \$0                  | \$15,674   |                        |
| Collaborative Research: US GOSHIP 2021-2026 Repeat Hydrography, Carbon and Tracers   | 47.050                        | UCSD KR 704508                 | OCE-2023545                         | UNIVERSITY OF CALIFORNIA, SAN DIEGO                                 | \$0                  | \$22,921   |                        |
| Imaging Small-scale Convection and Structure of the Mantle in the South Pacific: a US Contribution to International Collaboration PacificArray | 47.050                        | NAU 1004583-01                 | OCE-2051265                         | NORTHERN ARIZONA UNIVERSITY   | \$0                  | \$20,392   |                        |
| Collaborative Research: Seismic Imaging of Volcano Construction, Underplating and Flexure along the Hawaii-Emperor Seamount Chain              | 47.050                        | NAU 1004591-01                 | OCE-2051501                         | NORTHERN ARIZONA UNIVERSITY   | \$0                  | \$103,764  |                        |
| NSFPLR-NERC The Future of the Thwaites Glacier and its Contribution to Sea-Level Rise Science  | 47.050                        | UCOL 1556529                   | OPP-1738913                         | UNIVERSITY OF COLORADO  | \$0                  | \$15,452   |                        |
| NSFPLR-NERC: Ground Geophysics Survey of Thwaites Glacier  | 47.050                        | PSU 5861-CU-NSF-8934           | OPP-1738934                         | PENNSYLVANIA STATE UNIVERSITY                                       | \$0                  | \$33,557   |                        |
| NSF-NERC: Stability and Instability of Records of External Drivers and Resulting Past Behavior of Thwaites Glacier                             | 47.050                        | HOUSTN R-18-0061               | OPP-1738942                         | UNIVERSITY OF HOUSTON   | \$0                  | \$14,567   |                        |
|  |                               |                                |                                     |   | \$0                  | \$1,010,624  |                        |
| <b>Computer and Information Science and Engineering</b>  |                               |                                |                                     |   |                      |  |                        |
| MolSSI Seed Software Fellows   | 47.070                        | VPTISU 479590-19020            | ACI-15647580                        | VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY                 | \$0                  | \$28,161   |                        |
| SPX: Integrating Persistent Memory in the Cloud  | 47.070                        | UV GA11375.PO#2236709          | CCF-1822965                         | UNIVERSITY OF VIRGINIA  | \$0                  | \$8,356  |                        |
| Computing Innovation Fellows 2020 Project  | 47.070                        | CRA CIF2020-CU-64              | CCF-2030859                         | Computing Research Association                                      | \$0                  | \$129,430  |                        |
| PAWR Platform Full Proposal-COSMOS: Cloud-Enhanced Open Software-Defined Mobile-Wireless Testbed for City-Scale Deployment                     | 47.070                        | RUTGER 0425                    | CNS-1827923                         | RUTGERS, THE STATE UNIVERSITY OF NEW JERSEY DEPARTMENT OF RADIOLOGY | \$12,435             | \$60,449   |                        |
| Mid-Scale RI-1 (M1:IP): FABRIC: Adaptive Programmable Research Infrastructure for Computer Science and Science Applications                    | 47.070                        | UNC-CH 5115815                 | CNS-1935966                         | UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL                         | \$0                  | \$99,823   |                        |
| CPS: Security and Privacy: Medium : Detecting and Controlling Unwanted Data Flows in the Internet of Things                                    | 47.070                        | UCHICA AWD100678 (SUB00000205) | CNS-1953740                         | UNIVERSITY OF CHICAGO   | \$0                  | \$24,937   |                        |

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| <u>Federal Grantor / Pass-through Grantor</u>   | <u>Assistance Listing No.</u> | <u>Award Identification No</u> | <u>Pass-through Contract Number</u> | <u>Passthrough Name</u>   | <u>Subrecipients</u> | <u>Total Expenditures (Includes Subrecipients)</u> | <b>R&amp;D Cluster</b> |
|---|-------------------------------|--------------------------------|-------------------------------------|---|----------------------|--|------------------------|
| Computing Innovation Fellows 2021 Project   | 47.070                        | CRA 2021CIF-Columbia-34        | CNS-2127309                         | Computing Research Association                                      | \$0                  | \$59,493   |                        |
| A Framework for Data Intensive Discovery in Multimessenger Astrophysics   | 47.070                        | UWIS 203405434                 | OAC-1934752                         | UNIVERSITY OF WISCONSIN   | \$0                  | \$63,255   |                        |
| Collaborative Research: Predictive Risk Investigation System (PRISM) for Multi-layer Dynamic Interconnection Analysis                           | 47.070                        | CU 90549-11302                 | OAC-1940276                         | CORNELL UNIVERSITY  | \$0                  | \$49,004   |                        |
|   |                               |                                |                                     |   | \$12,435             | \$522,908  |                        |
| <b>Biological Sciences</b>  |                               |                                |                                     |   |                      |  |                        |
| LTER: Luquillo LTER VI: Understanding Ecosystem Change in Northeastern Puerto Rico  | 47.074                        | UPR 2019-007                   | DEB-1831952                         | UNIVERSITY OF PUERTO RICO   | \$0                  | \$47,496   |                        |
| CRCNS Research Project: Solving the Neural Code of Hydra  | 47.074                        | UWASH UWSC10704                | EF-1822550                          | UNIVERSITY OF WASHINGTON SEATTLE WASHINGTON                         | \$0                  | \$43,725   |                        |
| The rules of microbiota colonization of the mammalian gut   | 47.074                        | BWH 2025515                    | NSF2025515                          | BRIGHAM AND WOMEN'S HOSPITAL  | \$0                  | \$424,671  |                        |
|   |                               |                                |                                     |   | \$0                  | \$515,892  |                        |
| <b>Social, Behavioral, and Economic Sciences</b>  |                               |                                |                                     |   |                      |  |                        |
| Benchmarking Spatial Patterns of Glacier Change   | 47.075                        | SUNYBF R1182085                | BCS-1853705                         | STATE UNIVERSITY OF NEW YORK AT BUFFALO                             | \$0                  | \$59,577   |                        |
| A Geospatial Analysis of Glacier Volume Change  | 47.075                        | UTAH 10051082-COL              | BCS-1853881                         | UNIVERSITY OF UTAH  | \$0                  | \$20,819   |                        |
| The Impact of Disruptions to Migration on Land Use and Resilience in Agricultural Systems   | 47.075                        | UCOL 1562021                   | BCS-2149191                         | UNIVERSITY OF COLORADO  | \$0                  | \$6,396  |                        |
| CAREER: Trust, Cooperation, and Collective Action in Diverse Communities  | 47.075                        | NYU F6637-01                   | SES-2101730                         | NEW YORK UNIVERSITY   | \$0                  | \$10,706   |                        |
| Clean Growth and Comparative Advantage  | 47.075                        | YU CON-80003513 (GR115437)     | SES-2117288                         | YALE UNIVERSITY   | \$0                  | \$23,526   |                        |
| The Effects of the World War II Research Effort on Post-war U.S. Science, Technology and Innovation   | 47.075                        | DUKE 333-2681                  | SMA-1951470                         | DUKE UNIVERSITY   | \$0                  | \$132,970  |                        |
|   |                               |                                |                                     |   | \$0                  | \$253,994  |                        |
| <b>Education and Human Resources</b>  |                               |                                |                                     |   |                      |  |                        |
| Fostering Computational Thinking Through Neural Engineering Activities in High School Biology Classes   | 47.076                        | UCONN 147661195                | DLR-2101615                         | UNIVERSITY OF CONNECTICUT   | \$0                  | \$36,442   |                        |
| Curriculum and Community Enterprise for Restoration of Keystone Species in New York Harbor  | 47.076                        | PACEU CD0005703                | DRL-1759006                         | PACE UNIVERSITY   | \$0                  | \$2,539  |                        |
|   |                               |                                |                                     |   | \$0                  | \$38,981   |                        |
| <b>Polar Programs</b>   |                               |                                |                                     |   |                      |  |                        |
| Continuing Operations Proposal: The United States Polar Rock Repository as a Research Tool for Understanding Antarctica's Geological Evolution  | 47.078                        | OSU SPC-1000005329/GR124610    | OPP-1643713                         | OHIO STATE UNIVERSITY   | \$0                  | \$14,245   |                        |
| Mapping Antarctic Subglacial Water in Three Dimensions with Novel Electromagnetic Techniques  | 47.078                        | UCSD 96644852                  | OPP-1643917                         | UNIVERSITY OF CALIFORNIA, SAN DIEGO                                 | \$0                  | \$3,056  |                        |
| LTER Palmer, Antarctica (PAL): Land-Shelf-Ocean Connectivity, Ecosystem Resilience and Transformation in a Sea-Ice Influenced Pelagic Ecosystem | 47.078                        | RUTGER 1352                    | OPP-2023425                         | RUTGERS, THE STATE UNIVERSITY OF NEW JERSEY DEPARTMENT OF RADIOLOGY | \$0                  | \$4,012  |                        |
|   |                               |                                |                                     |   | \$0                  | \$21,313   |                        |
| <b>Office of International Science and Engineering</b>  |                               |                                |                                     |   |                      |  |                        |
| PIRE: Climate Research Education in the Americas using Tree-Ring and Cave Sediment Examples (PIRE-CREATE)                                       | 47.079                        | SUNYA 18-28-79761              | OISE-1743738                        | STATE UNIVERSITY OF NEW YORK AT ALBANY                              | \$0                  | \$305,795  |                        |

The accompanying footnotes are an integral part of the Schedule of Expenditures of Federal Awards

**The Trustees of Columbia University in the City of New York**  
**Schedule of Expenditures of Federal Awards**  
**For year ended June 30, 2022**

| <u>Federal Grantor / Pass-through Grantor</u>   | <u>Assistance Listing No.</u>      | <u>Award Identification No</u> | <u>Pass-through Contract Number</u> | <u>Passthrough Name</u>           | <u>Subrecipients</u>       | <u>Total Expenditures (Includes Subrecipients)</u> | <b>R&amp;D Cluster</b> |
|---|------------------------------------|--------------------------------|-------------------------------------|-----------------------------------|----------------------------|--|------------------------|
| AccelNet:3D Concrete Printing Network (3DConnect) - An International Alliance for Concrete Additive Manufacturing   | 47.079                             | ASUB00000615                   | OISE-2020095                        | ARIZONA STATE UNIVERSITY          | \$0                        | \$11,172   |                        |
|   |                                    |                                |                                     |                                   | <u>\$0</u>                 | <u>\$316,967</u>                                   |                        |
| <b>Integrative Activities</b>   |                                    |                                |                                     |                                   |                            |  |                        |
| NSF Convergence Accelerator Workshop: Integrated Research on Societal Infrastructure Resilience to Stressing Events through Interdisciplinary and Transdisciplinary Convergence | 47.083                             | USC SCON-00002728              | OIA-2124634                         | UNIVERSITY OF SOUTHERN CALIFORNIA | \$0                        | \$4,997  |                        |
| PIRE: Dust Simulated Drawdown of Atmospheric CO2 as a Trigger for Northern Hemisphere Glaciation  | 47.083                             | ROCHSTR 416748                 | OISE-1545859                        | UNIVERSITY OF ROCHESTER           | \$0                        | \$86,591   |                        |
|   |                                    |                                |                                     |                                   | <u>\$0</u>                 | <u>\$91,588</u>                                    |                        |
|   |                                    |                                |                                     |                                   | <u>12,435</u>              | <u>4,413,695</u>                                   |                        |
| <b>Total Pass-through Programs</b>  |                                    |                                |                                     |                                   | <b><u>\$12,435</u></b>     | <b><u>\$4,427,087</u></b>                          |                        |
| <b>Total</b>  | <b>National Science Foundation</b> |                                |                                     |                                   | <b><u>\$11,857,206</u></b> | <b><u>\$100,347,105</u></b>                        |                        |

**National Aeronautics & Space Administration**

**Direct Awards**

**Covid 19 Related Funding:**

|   |        |            |  |  |          |               |  |
|---|--------|------------|--|--|----------|---------------|--|
| COVID-19-Decision and Information System for the Coastal Waters of Oman (DISCO) - an Integrative tool for Managing Coastal Resources under Changing Climate | 43.001 | NNX17AG66G |  |  | \$0      | \$57,168      |  |
|   |        |            |  |  | <u>0</u> | <u>57,168</u> |  |

|  |       |               |  |  |     |             |  |
|--|-------|---------------|--|--|-----|-------------|--|
| Socioeconomic Data and Applications Distributed Active Archive Center (DAAC) for the EOS Data and Information Systems (EOSDIS) | 43.RD | 80GSFC18C0111 |  |  | \$0 | \$5,164,339 |  |
|--|-------|---------------|--|--|-----|-------------|--|

|   |        |               |  |  |           |              |  |
|---|--------|---------------|--|--|-----------|--------------|--|
| Interdisciplinary Research on Earth and Planetary Systems Modeling, the Impacts of Climate Change, and the Habitability of Other Worlds | 43.001 | 80NSSC20M0282 |  |  | \$931,405 | \$13,258,135 |  |
|---|--------|---------------|--|--|-----------|--------------|--|

|   |        |            |  |  |     |          |  |
|---|--------|------------|--|--|-----|----------|--|
| Physical and Biological Modulators of Space Radiation Carcinogenesis: Mechanistically-Based Model D | 43.003 | NNX16AR81A |  |  | \$0 | \$61,476 |  |
|---|--------|------------|--|--|-----|----------|--|

|  |        |               |  |  |     |      |  |
|--|--------|---------------|--|--|-----|------|--|
| Circulating miRNAs Provides Systemic Host Response to Microgravity: Utilizing GeneLab datasets to identify molecular targets for spaceflight studies | 43.007 | 80NSSC19K1658 |  |  | \$0 | \$32 |  |
|--|--------|---------------|--|--|-----|------|--|

|   |        |               |  |  |     |          |  |
|---|--------|---------------|--|--|-----|----------|--|
| Dual Desalination/Concentrator Microfluidic Device for Amino Acid Sample Preparation for Search-For-Life Missions | 43.012 | 80NSSC19K1180 |  |  | \$0 | \$71,448 |  |
|---|--------|---------------|--|--|-----|----------|--|

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**The Trustees of Columbia University in the City of New York**  
**Schedule of Expenditures of Federal Awards**  
**For year ended June 30, 2022**

| <u>Federal Grantor / Pass-through Grantor</u>  | <u>Assistance Listing No.</u> | <u>Award Identification No</u> | <u>Pass-through Contract Number</u> | <u>Passthrough Name</u>                                | <u>R&amp;D Cluster</u> |  |
|--|-------------------------------|--------------------------------|-------------------------------------|--|------------------------|--|
|  |                               |                                |                                     |  | <u>Subrecipients</u>   | <u>Total Expenditures (Includes Subrecipients)</u> |
|  |                               |                                |                                     |  | 931,405                | 18,555,430   |
| Total Direct Award Programs  |                               |                                |                                     |  | <b>\$931,405</b>       | <b>\$18,612,598</b>                                |
| <b>Pass-through Awards</b>   |                               |                                |                                     |  |                        |  |
| <b>Covid 19 Related Funding:</b>   |                               |                                |                                     |  |                        |  |
| <b>Science</b>   |                               |                                |                                     |  |                        |  |
| COVID-19-Ecological and Sociodemographic Determinants and Impacts of Urbanization and Restoration on Intertwined Urban-Wetland-Estuarine Systems     | 43.001                        | CCONY CM00001790-04            | 80NSSC17K0258                       | City College of New York                               | \$0                    | \$31,554   |
| COVID-19-Modeling the Economic Impact of COVID-19 with EO-Based Technologies   | 43.001                        | IMAGE 20-94-05-03              | 80NSSC20K1810                       | ImageCat, Inc.   | \$0                    | \$5,906  |
|  |                               |                                |                                     |  | <u>\$0</u>             | <u>\$37,460</u>                                    |
|  |                               |                                |                                     |  | <u>0</u>               | <u>37,460</u>                                      |
| <b>National Aeronautics &amp; Space Administration</b>   |                               |                                |                                     |  |                        |  |
| Geostationary Littoral Imaging and Monitoring Radiometer (GLIMR) Instrument  | 43.RD                         | UNH L0141                      | 80LARC21DA002                       | UNIVERSITY OF NEW HAMPSHIRE                            | \$0                    | \$28,200   |
| Bridging the Gap Between Galaxy and Star Formation with Star Clusters  | 43.RD                         | HST-HF2-51438.002-A            | NAS5-26555                          | Space Telescope Science Institute                      | \$0                    | \$321,122  |
| Operation, Densification, and Upgrade of Continuous GNSS Stations in Russia in the Framework of MOU between LDEO & JPL                               | 43.RD                         | JPLCIT 1452786                 | NAS7-03001                          | JET PROPULSION LAB, CALIFORNIA INSTITUTE OF TECHNOLOGY | \$14,102               | \$14,102   |
| High Resolution Spectroscopy of the Spectral Feature in CCO J0821-4300   | 43.RD                         | SAO GO0-21055X                 | NAS8-03060                          | Smithsonian Astrophysical Observatory                  | \$0                    | \$224,643  |
| CYGNSS Estimates of Surface Heat Fluxes in Low-Latitude Extratropical Cyclones   | 43.RD                         | JPLCIT 1616842                 | NASA CU18-2642                      | JET PROPULSION LAB, CALIFORNIA INSTITUTE OF TECHNOLOGY | \$0                    | \$15,683   |
| Weather Regime Tools for Subseasonal to Seasonal Forecasting of California Atmospheric Ridging Events  | 43.RD                         | JPLCIT 1649520                 | NASA CU19-2536                      | JET PROPULSION LAB, CALIFORNIA INSTITUTE OF TECHNOLOGY | \$0                    | \$67,130   |
| Mapping the Baryonic Majority: Comprehensive Multi-Mission Analysis of the Circumgalactic Medium (CGM) and the Intergalactic Medium (IGM)            | 43.RD                         | JPLCIT 1663357                 | NASA CU20-3055                      | JET PROPULSION LAB, CALIFORNIA INSTITUTE OF TECHNOLOGY | \$0                    | \$25,843   |
| Columbia University Participation in The Nuclear Spectroscopic Telescope Array (NuSTAR): Bringing the High Energy Universe Into Focus (Bridge Phase) | 43.RD                         | CALTECH S376760                | NNG08FD60C                          | CALIFORNIA INSTITUTE OF TECHNOLOGY                     | \$0                    | \$259,431  |
| WFIRST Infrared Nearby Galaxy Survey   | 43.RD                         | UWASH UWSC9083                 | NNG16PJ28C                          | UNIVERSITY OF WASHINGTON SEATTLE WASHINGTON            | \$0                    | \$11,072   |
|  |                               |                                |                                     |  | <u>\$14,102</u>        | <u>\$967,226</u>                                   |
| <b>Science</b>   |                               |                                |                                     |  |                        |  |
| TREX: Toolbox for Research and Exploration   | 43.001                        | PSINST 1523 Columbia Universit | 80ARC017M00005                      | PLANETARY SCIENCE INSTITUTE                            | \$0                    | \$60,368   |
| Ecological and Sociodemographic Determinants and Impacts of Urbanization and Restoration on Intertwined Urban-Wetland-Estuarine Systems              | 43.001                        | CCONY CM00001790-04            | 80NSSC17K0258                       | City College of New York                               | \$0                    | \$14,995   |
| SLICE: Spectral Signs of Life in Ice   | 43.001                        | MONTANA G104-19-W7250          | 80NSSC18K0814                       | MONTANA STATE UNIVERSITY                               | \$0                    | \$26,772   |
| Participation in the Effects of Density Fluctuations on Alfvén Wave Turbulence in a Coronal Hole Program   | 43.001                        | SAO SV9-89006                  | 80NSSC18K1207                       | Smithsonian Astrophysical Observatory                  | \$0                    | \$240  |
| Europa STI - Exploring Communication Techniques and Strategies for Sending Signals Through the ICE (STI) for an Ice-Ocean Probe                      | 43.001                        | JH 155891                      | 80NSSC19K0613                       | JOHNS HOPKINS UNIVERSITY                               | \$0                    | \$174,057  |
| Ag Out: An Enhanced IMERG-based Agricultural Outlook System to Support Food Security and Agriculture in the Developing World                         | 43.001                        | UCSB KK1981                    | 80NSSC19K0686                       | UNIVERSITY OF CALIFORNIA, SANTA BARBARA                | \$0                    | \$25,950   |

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**The Trustees of Columbia University in the City of New York**  
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| <u>Federal Grantor / Pass-through Grantor</u>  | <u>Assistance Listing No.</u> | <u>Award Identification No</u> | <u>Pass-through Contract Number</u> | <u>Passthrough Name</u>                     | <u>Subrecipients</u> | <u>Total Expenditures (Includes Subrecipients)</u> | <b>R&amp;D Cluster</b> |
|--|-------------------------------|--------------------------------|-------------------------------------|---|----------------------|--|------------------------|
| Open Critical Infrastructure Exposure for Disaster Forecasting, Mitigation, and Response   | 43.001                        | IMAGE 19-94-03:03              | 80NSSC19K1112                       | ImageCat, Inc.                              | \$0                  | \$6,076  |                        |
| Nano-infrared identification of phosphorous in returned samples  | 43.001                        | UCSD 702975                    | 80NSSC19K1210                       | UNIVERSITY OF CALIFORNIA, SAN DIEGO         | \$0                  | \$241,267  |                        |
| Three-Dimensional Observational Estimates of Mesoscale Eddy Kinetic Energy in the Global Ocean: Understanding the Energetics of the Climate System | 43.001                        | UWASH UWSC11553                | 80NSSC19K1252                       | UNIVERSITY OF WASHINGTON/SEATTLE WASHINGTON | \$0                  | \$13,874   |                        |
| Exploring Ocean Worlds: Ocean System Science to Support the Search for Life  | 43.001                        | WHOI A101471                   | 80NSSC19K1427                       | WOODS HOLE OCEANOGRAPHIC INSTITUTION        | \$0                  | \$28,619   |                        |
| Using Earth Observations and Statistical Models to Enhance Drought, Food Security, and Agricultural Outlooks in Eastern and Southern Africa        | 43.001                        | UCSB KK2043                    | 80NSSC20K0159                       | UNIVERSITY OF CALIFORNIA, SANTA BARBARA     | \$0                  | \$29,737   |                        |
| Inferring Ocean Transport from SWOT  | 43.001                        | NYU F1533-01                   | 80NSSC20K1142                       | NEW YORK UNIVERSITY                         | \$0                  | \$42,778   |                        |
| Oxidizing Oases in the Paleoproterozoic Moodies Group, Barberton Greenstone Belt, South Africa   | 43.001                        | TAMU M2101726                  | 80NSSC21K0443                       | TEXAS A&M UNIVERSITY                        | \$0                  | \$42,372   |                        |
| Advancing Remote Sensing of Microplastics on the Surface Ocean   | 43.001                        | UCONN 434859                   | 80NSSC21K0515                       | UNIVERSITY OF CONNECTICUT                   | \$0                  | \$7,495  |                        |
| Technology for Sending Signals Through the Ice (STI Tech) on Ocean Worlds  | 43.001                        | JH 172059                      | 80NSSC21K0995                       | JOHNS HOPKINS UNIVERSITY                    | \$0                  | \$103,607  |                        |
| Gas and Galaxies Across Cosmic Time with Enzo-E  | 43.001                        | STSCI 52577                    | 80NSSC21K1053                       | Space Telescope Science Institute           | \$0                  | \$19,079   |                        |
| High resolution imagery to train and validate deep learning models of inundation extent for multiple satellite sensors                             | 43.001                        | ASU 639401                     | 80NSSC21K1163                       | ARIZONA STATE UNIVERSITY                    | \$0                  | \$15,891   |                        |
| Investigating the roles of turbulences and reconnection in generating supra thermal seed populations for SEP events                                | 43.001                        | PU SUB0000545                  | 80NSSC21K1326                       | PRINCETON UNIVERSITY                        | \$0                  | \$31,399   |                        |
| Observational Estimates of Radiative Forcing by Greenhouse Gases in the Presence of Clouds   | 43.001                        | UMARY NASA0070-01              | 80NSSC21K1968                       | UNIVERSITY OF MARYLAND                      | \$0                  | \$11,224   |                        |
| Pangeo ML - Open Source Tools and Pipelines for Scalable Machine Learning Using NASA Earth Observation Data  | 43.001                        | CBP SUBAWD003                  | 80NSSC21M0065                       | CARBONPLAN                                  | \$0                  | \$83,067   |                        |
| Remote sensing of the ocean surface refractive index and oil spill detection for the PACE mission  | 43.001                        | TRI CU19-2545                  | NASA CU19-2545                      | TERRA RESEARCH INC                          | \$0                  | \$18,920   |                        |
| A Multi-Frequency Campaign to Probe Uranus Dynamics and Deep Atmospheric Structure   | 43.001                        | UCB 00009673                   | NNX16AK14G                          | UNIVERSITY OF CALIFORNIA, BERKELEY          | \$0                  | \$24,673   |                        |
| Valuation of Applications Benefits Linked with Earth Science (VALUABLES) Consortium  | 43.001                        | REFF 1619                      | NNX17AD26A                          | RESOURCES FOR THE FUTURE                    | \$0                  | \$29,788   |                        |
|  |                               |                                |                                     |   | <b>\$0</b>           | <b>\$1,052,248</b>                                 |                        |
| <b>Exploration</b>   |                               |                                |                                     |   |                      |  |                        |
| pace radiation-induced persistent estrogenic response and risk of breast cancer development  | 43.003                        | GU 424468 GR413893-CU          | 80NSCC19K1649                       | GEORGETOWN UNIVERSITY                       | \$0                  | \$62,141   |                        |
| Space radiation and gastrointestinal cancer: A comprehensive strategy for risk assessment and model development                                    | 43.003                        | GU 410967 GR410946-CU-Project  | NNX15A121G                          | GEORGETOWN UNIVERSITY                       | \$0                  | \$65,680   |                        |
| miRNA Signature Detection and Countermeasures Against HZE Radiation Exposure for Tissue Degeneration   | 43.003                        | BCMh 7000000822                | NNX16A069A                          | BAYLOR COLLEGE OF MEDICINE--HOUSTON         | \$0                  | \$20,972   |                        |
| Human Multi-tissue Platform to Study Effects of Space Radiation and Countermeasures/RAD0104  | 43.003                        | BCMh 7000001227                | NNX16A069A                          | BAYLOR COLLEGE OF MEDICINE--HOUSTON         | \$0                  | \$987,328  |                        |
|  |                               |                                |                                     |   | <b>\$0</b>           | <b>\$1,136,121</b>                                 |                        |
| <b>Office of Stem Engagement (OSTEM)</b>   |                               |                                |                                     |   |                      |  |                        |
| NASA STEM Pathway Activities-Consortium for Education (NSPACE)   | 43.008                        | OKSU SPOCS-CU                  | 80NSSC17M0021                       | OKLAHOMA STATE UNIVERSITY                   | \$0                  | \$15,583   |                        |

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**The Trustees of Columbia University in the City of New York**  
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| <u>Federal Grantor / Pass-through Grantor</u> | <u>Assistance Listing No.</u>                          | <u>Award Identification No.</u> | <u>Pass-through Contract Number</u> | <u>Passthrough Name</u> | <u>Subrecipients</u> | <u>R&amp;D Cluster</u>                             |
|---|--|---------------------------------|-------------------------------------|-------------------------|----------------------|--|
|   |  |                                 |                                     |                         |                      | <u>Total Expenditures (Includes Subrecipients)</u> |
| New York Space Grant Consortium               | 43.008   | CU 90830-20366                  | 80NSSC20M0096                       | CORNELL UNIVERSITY      | \$0                  | \$36,371   |
|   |  |                                 |                                     |                         | \$0                  | \$51,954   |
|   |  |                                 |                                     |                         | 14,102               | 3,207,549  |
| Total Pass-through Programs                   |  |                                 |                                     |                         | <b>\$14,102</b>      | <b>\$3,245,009</b>                                 |
| <b>Total</b>                                  | <b>National Aeronautics &amp; Space Administration</b> |                                 |                                     |                         | <b>\$945,507</b>     | <b>\$21,857,607</b>                                |

**Department of Energy**

**Direct Awards**

|  |        |                   |  |  |                    |                     |
|--|--------|-------------------|--|--|--------------------|---------------------|
| MOU/BNL for Oleg Gang  | 81.RD  | BNL CU16-2135     |  |  | \$0                | \$290,016           |
| HIGH BETA TOKAMAK RESEARCH   | 81.049 | DE-FG02-86ER53222 |  |  | \$1,410,183        | \$13,559,155        |
| Harnessing Microbial Batteries for Efficient, Sustainable Water Treatment and Recycling in Rural Areas                               | 81.086 | DE-EE0009506      |  |  | \$33,411           | \$349,164           |
| GIS-based Graphical User Interface Tool for Analysis of Solar Thermal Desalination Systems and High Potential Implementation Regions | 81.087 | DE-EE0008401      |  |  | \$0                | \$84,532            |
| Next Generation Fiber-Encapsulated Nanoscale Hybrid Materials for Direct Air Capture with Selective Water Rejection                  | 81.089 | DE-FE0031963      |  |  | \$135,604          | \$409,052           |
| PINE: Photonic Integrated Network Energy Efficient Datacenters   | 81.135 | DE-AR0000843      |  |  | \$1,104,258        | \$4,337,603         |
|  |        |                   |  |  | 2,683,456          | 19,029,522          |
| Total Direct Award Programs  |        |                   |  |  | <b>\$2,683,456</b> | <b>\$19,029,522</b> |

**Pass-through Awards**

|  |       |              |                   |                                       |     |           |
|--|-------|--------------|-------------------|---------------------------------------|-----|-----------|
| <b>Department of Energy</b>                |       |              |                   |                                       |     |           |
| Infrared Nano-Imaging of Metastable States | 81.RD | LBNL 7431739 | DE-AC02-05CH11231 | LAWRENCE BERKELEY NATIONAL LABORATORY | \$0 | \$120,798 |

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|---|-------------------------------|---------------------------------|-------------------------------------|--|----------------------|--|------------------------|
| Deep Underground Neutrino Experiment (DUNE)   | 81.RD                         | FERMI 665837                    | DE-AC02-07CH11359                   | Fermi National Accelerator Laboratory    | \$0                  | \$5,147  |                        |
| Hybrid Quantum/Classical Algorithms for Photochemistry and Nonadiabatic Dynamics  | 81.RD                         | SNAL No. 200586                 | DE-AC02-76SF00515                   | SLAC NATIONAL ACCELERATOR LABORATORY     | \$0                  | \$184,224  |                        |
| Design of Carbide and Bimetallic Catalysts and Electrocatalysts   | 81.RD                         | BNL NO.233521                   | DE-AC02-98CH10886                   | Brookhaven National Laboratory           | \$0                  | \$251,018  |                        |
| GO ORNL PROGRAM for Nikhil Rampal   | 81.RD                         | ORNL 4000160263                 | DE-AC05-00OR22725                   | OAK RIDGE NATIONAL LABORATORY            | \$0                  | \$78,933   |                        |
| Emissions-MIP - An Emissions Sensitivity Evaluation   | 81.RD                         | PNNL 479284                     | DE-AC05-76RL01830                   | Pacific Northwest National Laboratory    | \$0                  | \$37,734   |                        |
| Center for Thermal Energy Transport under Irradiation   | 81.RD                         | BEA No. 208385                  | DE-AC07-05ID14517                   | BATTELLE ENERGY ALLIANCE, LLC            | \$0                  | \$309,878  |                        |
| Pathways to Achieving Pipe Parity for Solar Thermal Desalination of High Salinity Brines  | 81.RD                         | NREL SUB-2022-10085             | DE-AC36-08GO28308                   | National Renewable Energy Laboratory     | \$0                  | \$87,497   |                        |
| Secure Biosystems from Sequence to Cell to Populations  | 81.RD                         | NO. B640460                     | DE-AC52-07NA27344                   | Lawrence Livermore National Laboratory   | \$0                  | \$423,229  |                        |
| AURORA: Autonomous and Resilient Operation of Energy Systems with Renewables  | 81.RD                         | SIEMENS 173-1                   | DE-EE0008768                        | SIEMENS CORPORATE RESEARCH, INCORPORATED | \$0                  | \$144,933  |                        |
| Climate Attribution through Enhanced Fingerprinting   | 81.RD                         | SANDIA 2331335                  | DE-NA0003525                        | SANDIA NATIONAL LABORATORIES             | \$0                  | \$11,120   |                        |
| sPHENIX: digitizer readout system production  | 81.RD                         | BNL 382403                      | DE-SC0012704                        | Brookhaven National Laboratory           | \$0                  | \$2,340,282  |                        |
| Flow Ordering and Hierarchical Bottleneck Identification for High Speed Data Networks   | 81.RD                         | RLABS CU20-0100                 | DE-SC0019523                        | RESERVOIR LABS                           | \$0                  | \$29,302   |                        |
| Dual Function Materials for Direct Air Capture of CO2   | 81.RD                         | SUSTEON S-038-1                 | DE-SC0020795                        | SUSTEON INC                              | \$0                  | \$117,648  |                        |
| Photonic Memory Controller Module (P-MCM)   | 81.RD                         | FPHOTO MCM-P2B                  | DOE CU18-0610                       | FREEDOM PHOTONICS                        | \$0                  | \$235,557  |                        |
| Establishing Approaches for Creating 3D Ordered Hierarchical Materials Through a Combination of DNA-Programmable Assembly at Nanoscale and Atomic Templating for Sub-NM Scale | 81.RD                         | BNL 366419                      | DOE CU18-2347                       | Brookhaven National Laboratory           | \$0                  | \$60,440   |                        |
| sPHENIX EMCAL Detector Upgrade at RHIC  | 81.RD                         | BNL 356535                      | DOE CU19-0001                       | Brookhaven National Laboratory           | \$0                  | \$666  |                        |
| sPHENIX Minimum Bias Detector at RHIC   | 81.RD                         | BNL 354298                      | DOE CU19-0187                       | Brookhaven National Laboratory           | \$0                  | \$414  |                        |
| Photonic-Storage Subsystem Input/Output (P-SSIO) Interface  | 81.RD                         | FPHOTO S7146-01                 | DOE CU19-0376                       | FREEDOM PHOTONICS                        | \$0                  | \$260,553  |                        |
| Joint Appointment Agreement FY22 for Prof. Kumar  | 81.RD                         | BNL 22441                       | DOE CU21-1284                       | Brookhaven National Laboratory           | \$0                  | \$110,537  |                        |
| Synthesis of Nanoporous Membranes by Self-Assembly Using Spray Deposition   | 81.RD                         | BNL 401599                      | DOE CU21-2635                       | Brookhaven National Laboratory           | \$0                  | \$41,358   |                        |
| Machine-Learned Design of Experiments for Optimal Model Calibration   | 81.RD                         | SANDIA 2306877                  | DOE CU21-3153                       | SANDIA NATIONAL LABORATORIES             | \$0                  | \$61,140   |                        |
| Machine-Learned Anisotropic Constitutive Modeling for an Aluminum Alloy   | 81.RD                         | SANDIA 2340278                  | DOE CU21-4014                       | SANDIA NATIONAL LABORATORIES             | \$0                  | \$19,636   |                        |
| Graduate Student Support Creating designated 3D structural matrices   | 81.RD                         | BNL 409302                      | DOE CU21-4062                       | Brookhaven National Laboratory           | \$0                  | \$18,433   |                        |
| Tackling Solid-State Electrochemical Interfaces from Structure to Function Through High Performance Computing and Machine Learning  | 81.RD                         | BNL 414881                      | DOE CU22-1196                       | Brookhaven National Laboratory           | \$0                  | \$1,583  |                        |

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|--|-------------------------------|--------------------------------|-------------------------------------|---|------------------------|--|
|  |                               |                                |                                     |   | <u>Subrecipients</u>   | <u>Total Expenditures (Includes Subrecipients)</u> |
|  |                               |                                |                                     |   | \$0                    | \$4,952,060  |
| <b>Department of Energy</b>  |                               |                                |                                     |   |                        |  |
| The Nanostructure Problem in Strongly Correlated Electron and Related Materials  | 81.RD                         | BNL CU08-9027                  | DE-AC02-98CH10886                   | Brookhaven National Laboratory                          | \$0                    | \$108,203  |
|  |                               |                                |                                     |   | \$0                    | \$108,203  |
| <b>Office of Science Financial Assistance Program</b>  |                               |                                |                                     |   |                        |  |
| Center for Bio-Inspired Energy Science (CBES)  | 81.049                        | SP0027267-PROJ0011442          | DE-SC0000989                        | NORTHWESTERN UNIVERSITY                                 | \$0                    | \$180,880  |
| Rational Design of Innovative Catalytic Technologies for Biomass Derivative Utilization  | 81.049                        | UD 32826                       | DE-SC0001004                        | UNIVERSITY OF DELAWARE                                  | \$0                    | \$118,085  |
| EFRC: Center for Mesoscale Conductivity  | 81.049                        | RFSUNY 68856                   | DE-SC0012673                        | RESEARCH FOUNDATION OF THE STATE UNIVERSITY OF NEW YORK | \$0                    | \$304,075  |
| Improving Parameterization of Ice Microphysical Processes in Arctic Clouds using a Synergistic Modeling and Observational Approach   | 81.049                        | PSU 5933-CU-USDOE-8933         | DE-SC0018933                        | PENNSYLVANIA STATE UNIVERSITY                           | \$0                    | \$48,139   |
| GENESIS: A Next Generation Synthesis Center  | 81.049                        | SUNYSB 82192/1148574/2         | DE-SC0019212                        | STATE UNIV. OF NEW YORK STONY BROOK                     | \$0                    | \$179,045  |
| Breakthrough Electrolytes for Energy Storage (BEES)  | 81.049                        | CWRU RES513723                 | DE-SC0019409                        | CASE WESTERN RESERVE UNIVERSITY                         | \$0                    | \$139,471  |
| Planar Systems for Quantum Information   | 81.049                        | CU 86856-11154                 | DE-SC0019481                        | CORNELL UNIVERSITY                                      | \$0                    | \$234,273  |
| Early Stages in the Lifecycle of Polar Liquid-Bearing Clouds   | 81.049                        | PSU S001043-DOE                | DE-SC0021004                        | PENNSYLVANIA STATE UNIVERSITY                           | \$0                    | \$72,549   |
| Modulating Integrated Multielectron Processes with Singlet Fission Chromophores  | 81.049                        | RFCUNY CM00006743-00           | DE-SC0022036                        | GRADUATE CENTER- CITY UNIVERSITY OF NEWYORK             | \$0                    | \$58,310   |
| Traversing the death valley separating short and long times in non-equilibrium quantum dynamical simulations of real materials   | 81.049                        | CALTECH S534322                | DE-SC0022088                        | CALIFORNIA INSTITUTE OF TECHNOLOGY                      | \$0                    | \$109,925  |
| Understanding Multi-Stressor and Multi-Scale Drivers of Feedbacks, Cascading Failures, and Risk Management Pathways within Complex MSD Systems   | 81.049                        | PSU S002342-USDOE              | DE-SC0022141                        | PENNSYLVANIA STATE UNIVERSITY                           | \$0                    | \$72,840   |
| From Structured Solvents to Hybrid Materials (SS2HM) for Chemically Selective Capture and Electromagnetic Release of CO2   | 81.049                        | CWRU RES516682                 | DE-SC0022214                        | CASE WESTERN RESERVE UNIVERSITY                         | \$0                    | \$11,020   |
|  |                               |                                |                                     |   | \$0                    | \$1,528,612  |
| <b>Conservation Research and Development</b>   |                               |                                |                                     |   |                        |  |
| Development of Tailored Fiber Placement, Multi-functional, High-Performance Composite Material Systems for High Volume Manufacture of Structural Battery Enclosure                     | 81.086                        | GMAUTO 4301260198              | DE-EE0009204                        | GENERAL MOTORS  | \$0                    | \$343,403  |
| Integrated Reuse and Co-Utilization of Slag, Sludge and Dust With Inherent Heavy Metal Capture and Nanoscale Calcium Carbonate Production as an Enhanced Fluxing Agent in Steel Plants | 81.086                        | CU 137181-20864                | DE-EE0009391                        | CORNELL UNIVERSITY                                      | \$0                    | \$77,541   |
| INSIGHT: Cadmium (Cd)-Free Quantum Dots (QD) Building Blocks for Human Centric Lighting  | 81.086                        | OSRAMOS CU21-0426              | DE-EE0009692                        | AMS-OSRAM USA INC.                                      | \$0                    | \$114,691  |
|  |                               |                                |                                     |   | \$0                    | \$535,635  |
| <b>Renewable Energy Research and Development</b>   |                               |                                |                                     |   |                        |  |
| Development of Composite Photocatalyst Materials that are Highly Selective for Solar Hydrogen Production and their Evaluation in Z-Scheme Reactor Designs                              | 81.087                        | UCI 2020-1298                  | DE-EE0008838                        | UNIVERSITY OF CALIFORNIA, IRVINE                        | \$0                    | \$217,842  |
|  |                               |                                |                                     |   | \$0                    | \$217,842  |
| <b>Fossil Energy Research and Development</b>  |                               |                                |                                     |   |                        |  |
| Deepwater Methane Hydrate Characterization in the Gulf of Mexico: Scientific Assessment and Production Potential   | 81.089                        | UTA14-001159                   | DE-FE0023919                        | UNIVERSITY OF TEXAS AT AUSTIN                           | \$0                    | \$143,433  |

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|---|-------------------------------|--------------------------------|-------------------------------------|-------------------------|----------------------|--|------------------------|
| Bench-Scale Development of a Novel Direct Air Capture Technology Using High-Capacity Structured Sorbents              | 81.089                        | SUSTEON SUST000050             | DE-FE0032118                        | SUSTEON INC             | \$0                  | \$57,438   |                        |
| Collaborative Development Projects - Photonic Memory Controller Module (P-MCM)  | 81.089                        | PLCC CU18-0520                 | DOE CU18-0520                       | PLC CONNECTIONS         | \$0                  | \$238,586  |                        |
|   |                               |                                |                                     |                         | <u>\$0</u>           | <u>\$439,457</u>                                   |                        |
| <b>Defense Nuclear Nonproliferation Research</b>  |                               |                                |                                     |                         |                      |  |                        |
| Consortium for Monitoring, Technology, and Verification (MTV)   | 81.113                        | UMICH SUBK00009795             | DE-NA003920                         | UNIVERSITY OF MICHIGAN  | \$0                  | \$249,212  |                        |
|   |                               |                                |                                     |                         | <u>\$0</u>           | <u>\$249,212</u>                                   |                        |
| <b>Predictive Science Academic Alliance Program</b>   |                               |                                |                                     |                         |                      |  |                        |
| Center for Micromorphic Multiphysics Porous and Particulate Materials Simulations Within Exascale Computing Workflows | 81.124                        | UCOL 1559906                   | DE-NA0003962                        | UNIVERSITY OF COLORADO  | \$0                  | \$62,700   |                        |
|   |                               |                                |                                     |                         | <u>\$0</u>           | <u>\$62,700</u>                                    |                        |
| <b>Advanced Research Projects Agency - Energy</b>   |                               |                                |                                     |                         |                      |  |                        |
| Minimally Orchestrated Storage Technology for Duration Addition to Electricity Storage                                | 81.135                        | PRIMUS CU18-3145               | DE-AR0000990                        | PRIMUS POWER            | \$0                  | \$-203,930   |                        |
| An Iterative Approach for Solving the SCOPF Problem Applying LP, SOCP and NLP Subproblems                             | 81.135                        | NWU 60052596 CU                | DE-AR0001077                        | NORTHWESTERN UNIVERSITY | \$0                  | \$27,780   |                        |
|   |                               |                                |                                     |                         | <u>\$0</u>           | <u>\$-176,150</u>                                  |                        |
|   |                               |                                |                                     |                         | <u>0</u>             | <u>7,917,571</u>                                   |                        |
| Total Pass-through Programs   |                               |                                |                                     |                         | <u>\$0</u>           | <u>\$7,917,571</u>                                 |                        |
| <b>Total Department of Energy</b>   |                               |                                |                                     |                         | <u>\$2,683,456</u>   | <u>\$26,947,093</u>                                |                        |

**Department of Defense**

**Direct Awards**

**Covid 19 Related Funding:**

|  |        |                  |  |  |               |                |  |
|--|--------|------------------|--|--|---------------|----------------|--|
| COVID-19-COVID-19 Lung Injury, ARDS, and Thrombosis: Acute Disease and Long-Term Subphenotypes   | 12.420 | W81XWH2110216    |  |  | \$18,534      | \$547,796      |  |
|  |        |                  |  |  | <u>18,534</u> | <u>547,796</u> |  |
| BISC: Bioelectronic Interfacing to Sensory Cortex with massive, fully implanted, flexible wireless CMOS surface recording and stimulating arrays | 12.RD  | N66001-17-C-4002 |  |  | \$1,864,576   | \$4,024,432    |  |
| Reengineering the Nervous System of a Cnidarian  | 12.300 | N00014-20-1-2828 |  |  | \$200,876     | \$4,853,122    |  |

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|---|-------------------------------|--------------------------------|-------------------------------------|-------------------------------------|----------------------|--|
|   |                               |                                |                                     |                                     |                      | <u>Total Expenditures (Includes Subrecipients)</u> |
| Development of Inhibitors of the Aging Process of Organophosphate Adducts of AChE   | 12.351                        | HDTRA1-16-1-0053               |                                     |                                     | \$27,770             | \$116,483  |
| A novel bioengineering approach for generation of functional lungs in swine   | 12.420                        | W81XWH2010823                  |                                     |                                     | \$595,391            | \$14,671,662                                       |
| A Symbiotic Agent-Based Network Platform Linking Expert Knowledge and Machine Learning for Systemic Risk Mitigation       | 12.431                        | W911NF1910013                  |                                     |                                     | \$740,396            | \$2,937,766  |
| Physiologically-informed Just-in-time Agent Intervention Facilitates Trust-formation in Heterogeneous Teams               | 12.630                        | W911NF2120125                  |                                     |                                     | \$0                  | \$85,957   |
| Ensembles of Molecules in Controlled Quantum States for Quantum Simulations, Ultracold Reactions, and Precision Metrology | 12.800                        | FA9550-21-1-0069               |                                     |                                     | \$1,415,473          | \$2,756,194  |
| TRAUMAS: Treatment and recovery augmented with electrical and ultrasound- mediated actuation and sensing                  | 12.910                        | D20AC00004                     |                                     |                                     | \$2,834,554          | \$7,999,351  |
|   |                               |                                |                                     |                                     | <u>7,679,036</u>     | <u>37,444,967</u>                                  |
| Total Direct Award Programs   |                               |                                |                                     |                                     | <u>\$7,697,570</u>   | <u>\$37,992,763</u>                                |
| <b>Pass-through Awards</b>  |                               |                                |                                     |                                     |                      |  |
| <b>Covid 19 Related Funding:</b>  |                               |                                |                                     |                                     |                      |  |
| <b>Department of the Army, Army Medical Research and Materiel Command</b>   |                               |                                |                                     |                                     |                      |  |
| COVID-19-Layer-by-Layer Multiple Antigen Nano-delivery Platform for SARSCoV-2 Vaccines                                    | 12.RD                         | LUNA 344103                    | W81XWH-21-C-0057                    | LUNA LABS USA LLC                   | \$0                  | \$279,724  |
|   |                               |                                |                                     |                                     | <u>\$0</u>           | <u>\$279,724</u>                                   |
|   |                               |                                |                                     |                                     | <u>0</u>             | <u>279,724</u>                                     |
| <b>Department of Defense</b>  |                               |                                |                                     |                                     |                      |  |
| Columbia Entrepreneurship, Innovation, and Design Support for MD5 Staff   | 12.RD                         | CMI2 1904-01-012-01            | 47QTCA18D00DK                       | CIVIL-MILITARY INNOVATION INSTITUTE | \$0                  | \$17,192   |
| Reverse Engineering Neocortical Intelligence  | 12.RD                         | BCM PO7000000428               | D16PC0000                           | BAYLOR COLLEGE OF MEDICINE--HOUSTON | \$0                  | \$25,837   |
| Deep Intermodal Video Analytics   | 12.RD                         | UMARY 92485-Z9618204           | D17PC00345                          | UNIVERSITY OF MARYLAND              | \$0                  | \$180,842  |
| Engineered Living Materials   | 12.RD                         | ECODES CU16-2615               | DARPA-BAA-16-50                     | ECOVATIVE DESIGN                    | \$0                  | \$584,210  |

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|--|-------------------------------|--------------------------------|-------------------------------------|--|----------------------|------------------------|--|
| Optimizing Micro Resonator s Based Sensor  | 12.RD                         | IMO PO#4441083200              | DOD CU20-2364                       | ISRAELI MINISTRY OF DEFENSE                | \$21,543             |                        | \$52,174   |
| Long Term Potentiation Deficits after Repetitive Primary Blast   | 12.RD                         | SURVICE S17-095006             | DOTC-17-01-INIT0086/OTA 2014-3      | SURVICE ENGINEERING                        | \$0                  |                        | \$-4   |
| Long Term Potentiation Deficits after Repetitive Primary Blast   | 12.RD                         | SURVICE S21-095010             | DOTC-19-04-INIT4280                 | SURVICE ENGINEERING                        | \$0                  |                        | \$29,434   |
| High Performance Computing (HPC) Network Topologies Utilizing Reconfigurable Photonics Switches              | 12.RD                         | BAHI A10119/PROJECT AB10438    | FA807518D0004                       | BOOZ ALLEN HAMILTON INC                    | \$0                  |                        | \$148,037  |
| F2-13636 Project OWL Phase II SBIR   | 12.RD                         | OWL CU20-3530                  | FA864920P1017                       | PROJECT OWL LLC                            | \$0                  |                        | \$34,358   |
| Exploring Bile Acid Metabolizing Gut Bacteria as a Modulator of Human Performance                            | 12.RD                         | S-168-4X5-001                  | FA8650-19-D-6109/FA8650-20-F-       | UES INC                                    | \$0                  |                        | \$35,708   |
| Progressive Damage Model Benchmarking for Ceramic Matrix Composite Components in Turbine Engine Applications | 12.RD                         | ARTCOS 195208-19-05-C1         | FA8650-19-C-5208                    | ARCTOS TECHNOLOGY SOLUTIONS LLC            | \$0                  |                        | \$40,933   |
| Simultaneous Transmit and Receive Wideband Adaptive Reconfigurable Self-Interference-canceller (STARWARS)    | 12.RD                         | BAESNSS 1106443                | FA8650-21-C-7002                    | Bae Systems National Security SolutionsInc | \$0                  |                        | \$213,839  |
| Suppression by Reflective Filtering using Wideband N-Way Circulators (SURFIN)                                | 12.RD                         | RAYTHN 4202508979              | FA8650-21-C-7008                    | RAYTHEON COMPANY                           | \$0                  |                        | \$95,532   |
| Investigating methods for estimating causally identifiable functionals                                       | 12.RD                         | CMU 22-00092-SUB-000           | FA8702-15-D0002                     | CARNEGIE MELLON UNIVERSITY                 | \$0                  |                        | \$100,583  |
| Photonic IC (PIC) and Laser Source Development for Silicon Photonic Designs                                  | 12.RD                         | INTEL CW2070504                | HR00111830002                       | INTEL CORPORATION                          | \$0                  |                        | \$865,925  |
| EPOCHS: Efficient Programmability of Cognitive Heterogeneous Systems   | 12.RD                         | IBM CW2912424                  | HR0011-18-C-0122                    | IBM THOMAS J WATSON RES. CTR.              | \$0                  |                        | \$372,142  |
| FROMAGER: Formal Reasoning OverMachine-code Assets, Given with Explicit Reticence                            | 12.RD                         | GALOIS No. 2020-008            | HR00111950076                       | GALOIS INC                                 | \$0                  |                        | \$106,481  |
| Secure Handling of Isolated Executables without Leaking Data (SHIELD)  | 12.RD                         | PERSPECTA PO-0018620           | HR0011-19-S0017                     | PERSPECTA LABS                             | \$0                  |                        | \$158,061  |
| OPTICS   | 12.RD                         | PERSPECTA PO-0020017           | HR001119S0082                       | PERSPECTA LABS                             | \$0                  |                        | \$557,164  |
| Detection of novel attacks from unknown toolchain through embedding designs / reverse attack vector          | 12.RD                         | GEGR 401168808                 | HR00112090133                       | GE GLOBAL RESEARCHLOPMENT COMPANY          | \$0                  |                        | \$9,414  |
| Semantic Information Defender  | 12.RD                         | KITWARE K003088-00-S01         | HR001120C0123                       | Kitware, Inc.                              | \$0                  |                        | \$644,665  |
| POCUS Automated Interpretation (POCUS AI)  | 12.RD                         | NETRIAS 20-001                 | HR00112190078                       | NETRIAS                                    | \$0                  |                        | \$62,077   |
| Fast Event-based Neuromorphic Camera and Electronics   | 12.RD                         | ASUB00000852                   | HR0011-21-C-0134                    | ARIZONA STATE UNIVERSITY                   | \$0                  |                        | \$130,119  |
| III-nitride flat optics device for broadband infrared to visible nonlinear conversion                        | 12.RD                         | BBN 90224                      | HR0011-21-C-0244                    | BBN TECHNOLOGIES CORP.                     | \$0                  |                        | \$134,289  |
| ANGEL: Assistant Navigating a Graphical Event Library  | 12.RD                         | KITWARE K003623-00-S02         | HR001122C0007                       | Kitware, Inc.                              | \$0                  |                        | \$87,699   |
| IBIS: Implantable bioluminescence interface for an all-optical neuroprosthesis to the visual cortex          | 12.RD                         | JBPL 295-B Phase III           | N66001-17-C-4012                    | JOHN B. PIERCE LABORATORY                  | \$0                  |                        | \$61,897   |
| Magnetic Optical and Acoustic Neural Access (MOANA) System   | 12.RD                         | RICEUNIV R1A26D                | N6600119C4020                       | RICE UNIVERSITY                            | \$0                  |                        | \$798,280  |
| ARION: A Real-time HPC Platform with In-memory Non-Von-Neumann Processing and Optical Networking             | 12.RD                         | GIT AWD-000785-S1              | N6600120C4002                       | GEORGIA INSTITUTE OF TECHNOLOGY            | \$0                  |                        | \$429,248  |

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|--|-------------------------------|--------------------------------|-------------------------------------|---|----------------------|--|------------------------|
| REFUEL: Verified Composition and Flattening of Unified Enclave Layers  | 12.RD                         | YU CON-80002961(GR112402)      | N6600121C4018                       | YALE UNIVERSITY                         | \$0                  | \$436,822  |                        |
| Energy Efficient, Non-Silicon Digital Signal Processing (DSP)  | 12.RD                         | HYPRES HYP-N68335-18-C-0654    | NAVY CU18-0788                      | HYPRES INC                              | \$0                  | \$99,642   |                        |
| Effects of Traumatic Brain Injury and Post-Traumatic Stress Disorder and Alzheimer s Disease on Brain Tau in Vietnam Veterans using ADNI | 12.RD                         | USC 69979617                   | W81XWH-14-1-0462                    | UNIVERSITY OF SOUTHERN CALIFORNIA       | \$0                  | \$3,861  |                        |
| Multicenter Randomized Trial of Everolimus in Pediatric Heart Transplantation  | 12.RD                         | CHMCB CU17-3614                | W81XWH-17-1-0532                    | CHILDREN'S HOSPITAL BOSTON              | \$0                  | \$2,880  |                        |
| Abelian Bridge to Non-Abelian Anyons in Ultra-Cold Atoms and Graphene  | 12.RD                         | UCSB KK1813                    | W911NF-17-1-0323                    | UNIVERSITY OF CALIFORNIA, SANTA BARBARA | \$0                  | \$19,633   |                        |
| Adaptable Tactical Communications Phase 2  | 12.RD                         | ACGI PO#1063                   | W911NF21C0021                       | ASPEN CONSULTING GROUP INC.             | \$0                  | \$155,171  |                        |
| Opportunistic Sensing for Dismounted Operations (OSDO), Human Guided Machine Learning (HGML)   | 12.RD                         | DCS W911QX-21-F-0154           | W911QX21D0004                       | DCS CORPORATION                         | \$0                  | \$42,436   |                        |
| Cone of Silence  | 12.RD                         | DZYNE DRP008-S-001             | W912CG-21-P-0010                    | DZYNE TECHNOLOGIES INCORPORATED         | \$0                  | \$75,000   |                        |
| Cone of Silence Phase 2  | 12.RD                         | DZYNE DRP009-S-001             | W912CG-22-C-0010                    | DZYNE TECHNOLOGIES INCORPORATED         | \$0                  | \$27,911   |                        |
|  |                               |                                |                                     |   | \$21,543             | \$6,839,492  |                        |
| <b>Basic and Applied Scientific Research</b>   |                               |                                |                                     |   |                      |  |                        |
| Reasoning about Event Schemas for Induction of Knowledge (RESIN)   | 12.300                        | RPI A20-0047-S001              | FA8750-19-2-1004                    | RENSSELAER POLYTECHNIC INSTITUTE        | \$0                  | \$520,028  |                        |
| Government Secure Voice Architecture   | 12.300                        | TAMU M2100433                  | FA8750-20-2-1005                    | TEXAS A&M UNIVERSITY                    | \$0                  | \$12,983   |                        |
| Carbon-based Hierarchically Integrated Synthetic Electronics (CHISEL)  | 12.300                        | UCB 00009293                   | N00014-16-1-2921                    | UNIVERSITY OF CALIFORNIA, BERKELEY      | \$0                  | \$152,851  |                        |
| ABIDES: Adaptive Blnary DEbloating and Security  | 12.300                        | SIT 2102747-02                 | N00014-17-1-2788                    | STEVENS INSTITUTE OF TECHNOLOGY         | \$0                  | \$398,636  |                        |
| Elements of Causal Learning: Basic Concepts, Theory, Methods, Algorithms and Applications  | 12.300                        | TEMPLE 264443-01-TCU           | N00014-19-1-2468                    | TEMPLE UNIVERSITY                       | \$0                  | \$116,946  |                        |
| Virtually Co-located Augmented Reality Spaces for Visualization, Training and Navigation   | 12.300                        | VU UNIV61657                   | N00014-20-1-2719                    | VANDERBILT UNIVERSITY                   | \$0                  | \$3,904  |                        |
| Optical Detection of Ensonified Ocean Waves  | 12.300                        | INTCON C3242                   | N00014-21-1-2496                    | INTEGRAL CONSULTING                     | \$0                  | \$47,310   |                        |
|  |                               |                                |                                     |   | \$0                  | \$1,252,658  |                        |
| <b>Scientific Research - Combating Weapons of Mass Destruction</b>   |                               |                                |                                     |   |                      |  |                        |
| Exogenous regulation of acute lung injury  | 12.351                        | CCONY CM00004481-01            | HDTRA11810049                       | City College of New York                | \$0                  | \$210,391  |                        |
|  |                               |                                |                                     |   | \$0                  | \$210,391  |                        |
| <b>Pest Management and Vector Control Research</b>   |                               |                                |                                     |   |                      |  |                        |
| Novel Evaluation of Control and Prevention Strategies for Ticks and Tick-Borne Disease   | 12.355                        | CU 89560-11268                 | W911QY1910006                       | CORNELL UNIVERSITY                      | \$0                  | \$75,828   |                        |
|  |                               |                                |                                     |   | \$0                  | \$75,828   |                        |
| <b>Military Medical Research and Development</b>   |                               |                                |                                     |   |                      |  |                        |
| RAGE/Diaph1, Diabetes, and Kidney Disease: Mechanisms and Novel Therapeutic Strategies   | 12.420                        | NYUMC 17-AO-00-007334-01       | W81XWH-17-1-0201                    | NEW YORK UNIVERSITY MEDICAL CENTER      | \$0                  | \$11,991   |                        |

The accompanying footnotes are an integral part of the Schedule of Expenditures of Federal Awards



**The Trustees of Columbia University in the City of New York**  
**Schedule of Expenditures of Federal Awards**  
**For year ended June 30, 2022**

| <u>Federal Grantor / Pass-through Grantor</u>  | <u>Assistance Listing No.</u> | <u>Award Identification No</u> | <u>Pass-through Contract Number</u> | <u>Passthrough Name</u>  | <u>Subrecipients</u> | <u>Total Expenditures (Includes Subrecipients)</u> | <b>R&amp;D Cluster</b> |
|--|-------------------------------|--------------------------------|-------------------------------------|--|----------------------|--|------------------------|
| Investigation of the NMDA Antagonist Ketamine as a Treatment for Tinnitus  | 12.420                        | RFMH 26965                     | W81XWH1810221                       | RESEARCH FOUNDATION FOR MENTAL HYGIENEINC                              | \$0                  | \$70,878   |                        |
| Prostate Cancer Clinical Consortium Clinical Research Site: TargetedTherapies  | 12.420                        | WCMC 220154                    | W81XWH1820032                       | CORNELL UNIVERSITY   | \$0                  | \$63,035   |                        |
| HIV Immunoprophylaxis with bispecific antibody   | 12.420                        | HJFAMM 5795                    | W81XWH18-2-0400                     | Jackson (Henry M.) Foundation for the Advancement of Military Medicine | \$0                  | \$125,009  |                        |
| Heating cold prostate tumors with PSMA-targeted alpha therapy and pembrolizumab  | 12.420                        | WCMC 220755                    | W81XWH2010706                       | WEILL (JOAN AND SANFORD I.) MEDICAL COLLEGE OF CORNELL UNIVERSITY      | \$0                  | \$49,715   |                        |
| Determinants of Aneurysm Formation in Autosomal Dominant Polycystic Kidney Disease   | 12.420                        | UMARY F303852-1                | W81XWH2010762                       | UNIVERSITY OF MARYLAND   | \$0                  | \$136,442  |                        |
| Novel complex structural variants and epigenetic alterations link the genomes of prostate cancer in African Americans with outcome disparity   | 12.420                        | WCMC 210043                    | W81XWH2110762                       | WEILL (JOAN AND SANFORD I.) MEDICAL COLLEGE OF CORNELL UNIVERSITY      | \$0                  | \$13,893   |                        |
|  |                               |                                |                                     |  | \$0                  | \$470,963  |                        |
| <b>Basic Scientific Research</b>   |                               |                                |                                     |  |                      |  |                        |
| Bio-inspired Design of Adaptive Catalysis Center   | 12.431                        | UTAH10034220-S4                | W911NF-14-1-0263                    | UNIVERSITY OF UTAH   | \$0                  | \$604,450  |                        |
| Fractional PDEs for Conservation Laws and Beyond: Theory, Numerics and Applications  | 12.431                        | BROWN 00000825                 | W911NF1510562                       | BROWN UNIVERSITY   | \$0                  | \$73,793   |                        |
| Multiscale Integration of Neural, Social, and Network Theory to Understand and Predict Transitions from Illness to Wellness: A Proof of Concept with Mindfulness, Hypnosis and Alcohol Use Disorders | 12.431                        | UPENN 574211                   | W911NF1810244                       | UNIVERSITY OF PENNSYLVANIA   | \$0                  | \$121,691  |                        |
| Towards a Multi-Scale Theory on Coupled Human Mobility and Environmental Change  | 12.431                        | UFLRDA UFDSPO0012221           | W911NF1810267                       | UNIVERSITY OF FLORIDA  | \$0                  | \$230,931  |                        |
| Algorithms and Distribution-Free Models for Social and Information Networks  | 12.431                        | UCSCRUZ A19-0477-S001          | W911NF1910294                       | UNIVERSITY OF CALIFORNIA SANTA CRUZ                                    | \$0                  | \$172,797  |                        |
| Anomalous Polar Textures in Quasi- 1D Chalcogenides and Heterostructures   | 12.431                        | USC SCON-00002260              | W911NF-21-1-0327                    | UNIVERSITY OF SOUTHERN CALIFORNIA                                      | \$0                  | \$92,864   |                        |
| Multifunctional devices in precisely engineered van der Waals homojunctions  | 12.431                        | HARVARD 134396-5117991         | W911NF2120147                       | HARVARD UNIVERSITY   | \$0                  | \$308,641  |                        |
|  |                               |                                |                                     |  | \$0                  | \$1,605,167  |                        |
| <b>Basic, Applied, and Advanced Research in Science and Engineering</b>  |                               |                                |                                     |  |                      |  |                        |
| Micro and Meso Signatures of Success in Human-Autonomy Teams   | 12.630                        | NU 504149-78051                | W911NF1920135                       | NORTHEASTERN UNIVERSITY  | \$0                  | \$291,700  |                        |
| Neural Network Models of Competency Status To Enhance Human-Agent Team Performance   | 12.630                        | UDELAWARE 59130                | W911NF2020080                       | UNIVERSITY OF DELAWARE   | \$0                  | \$22,499   |                        |
|  |                               |                                |                                     |  | \$0                  | \$314,199  |                        |
| <b>Uniformed Services University Medical Research Projects</b>   |                               |                                |                                     |  |                      |  |                        |
| Investigating the transcriptional landscape of blast-related traumatic brain injury on the single cell level- a pilot study  | 12.750                        | USU 5741                       | HU00011920008                       | Jackson (Henry M.) Foundation for the Advancement of Military Medicine | \$0                  | \$98,663   |                        |
|  |                               |                                |                                     |  | \$0                  | \$98,663   |                        |
| <b>Air Force Defense Research Sciences Program</b>   |                               |                                |                                     |  |                      |  |                        |
| Krypton Disinfection Lighting  | 12.800                        | FUT CU20-2357                  | FA864920C0235                       | FAR UV TECHNOLOGIES INC  | \$0                  | \$41,781   |                        |
| Magnet-Free Non-Reciprocal Metamaterials Based on Spatio-Temporal Modulation   | 12.800                        | RFCUNY CM00001529-00           | FA9550-18-1-0379                    | RESEARCH FOUNDATION OF CITY UNIVERSITY OF NEW YORK                     | \$0                  | \$605,352  |                        |
| (MURI) Theory, Implementations, and Applications of Mean Field Games: The Second Generation  | 12.800                        | PU SUB0000339                  | FA9550-19-1-0291                    | PRINCETON UNIVERSITY   | \$0                  | \$39,394   |                        |

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**The Trustees of Columbia University in the City of New York**  
**Schedule of Expenditures of Federal Awards**  
**For year ended June 30, 2022**

| <u>Federal Grantor / Pass-through Grantor</u>   | <u>Assistance Listing No.</u> | <u>Award Identification No</u> | <u>Pass-through Contract Number</u> | <u>Passthrough Name</u>                            | <u>Subrecipients</u> | <u>Total Expenditures (Includes Subrecipients)</u> | <b>R&amp;D Cluster</b> |
|---|-------------------------------|--------------------------------|-------------------------------------|--|----------------------|--|------------------------|
| (MURI) Integrating Multiscale Modeling and Experiments to Develop a Meso-Informed Predictive Capability for Explosives Safety and Performance | 12.800                        | UMISS C00064537-6              | FA9550-19-1-0318                    | UNIVERSITY OF MISSOURI                             | \$0                  | \$164,372  |                        |
| Mechanistic Studies of Microdroplet Chemistry   | 12.800                        | SU 62742083-204669             | FA9550-21-0170                      | STANFORD UNIVERSITY                                | \$0                  | \$115,720  |                        |
| (MURI-21) Molecular Systems Control in Networks of Communicating, Phase-Separated Droplets in Yeast   | 12.800                        | RFCUNY CM00005568-00           | FA9550-21-1-0091                    | RESEARCH FOUNDATION OF CITY UNIVERSITY OF NEW YORK | \$0                  | \$50,580   |                        |
|   |                               |                                |                                     |  | <u>\$0</u>           | <u>\$1,017,199</u>                                 |                        |
| <b>Research and Technology Development</b>  |                               |                                |                                     |  |                      |  |                        |
| Non-Equilibrium Order Parameter Optoelectronics for Quantum Information Processing  | 12.910                        | UCSD 122059822 (S9002421)      | D18AC00014                          | UNIVERSITY OF CALIFORNIA, SAN DIEGO                | \$0                  | \$132,778  |                        |
| DECADES: Deeply-Customized Accelerator-Oriented Data Supply Systems Synthesis   | 12.910                        | PU SUB0000254                  | FA8650-18-2-7862                    | PRINCETON UNIVERSITY                               | \$0                  | \$352,740  |                        |
| Smart Glass for Object Recognition  | 12.910                        | UWM 0000000704                 | FA8650-20-01-7028                   | UNIVERSITY OF WISCONSIN MADISON                    | \$0                  | \$39,874   |                        |
| Electrogenic Regulation of Sleep Biomolecules for Circadian Cycle Adjustment  | 12.910                        | SU 62621899-192767             | FA8650-21-2-7121                    | STANFORD UNIVERSITY                                | \$0                  | \$545,329  |                        |
| Generating Alternatives for Interpretation and Analysis (GAIA)  | 12.910                        | USC 98328001                   | FA8750-18-2-0014                    | UNIVERSITY OF SOUTHERN CALIFORNIA                  | \$0                  | \$556,153  |                        |
| CORAL: Combined Representations for Adept Learning  | 12.910                        | USC 124130701                  | FA8750-19-1-1000                    | UNIVERSITY OF SOUTHERN CALIFORNIA                  | \$0                  | \$116,778  |                        |
| Continual Learning Across Synapses, Circuits, and Brain Areas   | 12.910                        | BRI 7000000603                 | HR0011-18-2-0025                    | Baylor Research Institute                          | \$0                  | \$61,072   |                        |
| ZK Proofs Unbound: Next-Generation Pipelines for Real-world Applications  | 12.910                        | NYU F1400-1                    | HR00112020022                       | NEW YORK UNIVERSITY                                | \$0                  | \$127,376  |                        |
| TONIC: Trusted Online Content   | 12.910                        | UCB 00010808                   | HR00112020054                       | UNIVERSITY OF CALIFORNIA, BERKELEY                 | \$0                  | \$114,179  |                        |
| Efficient infrared-to-visible conversion with an upconverting nanoparticle microlaser   | 12.910                        | UNIVMEL TA106974-CU            | HR00112220006                       | University of Melbourne                            | \$0                  | \$70,185   |                        |
| HEPIUS: Holistic electrical, ultrasonic, and physiological interventions unburdening those with spinal cord injury                            | 12.910                        | JHU 2004888623                 | N6600012024075                      | JOHNS HOPKINS UNIVERSITY                           | \$0                  | \$595,140  |                        |
| Discovering Common Sense from Video, Images, Text and Knowledge Bases   | 12.910                        | USC 123870980                  | N660011924032                       | UNIVERSITY OF SOUTHERN CALIFORNIA                  | \$0                  | \$564,220  |                        |
| Synthesizing and Quantifying Novel Videos for Classifying, Detecting, and Tracking Activities   | 12.910                        | UMARY 85946-Z9448201           | W911NF2020009                       | UNIVERSITY OF MARYLAND                             | \$0                  | \$179,878  |                        |
|   |                               |                                |                                     |  | <u>\$0</u>           | <u>\$3,455,702</u>                                 |                        |
|   |                               |                                |                                     |  | <u>21,543</u>        | <u>15,340,262</u>                                  |                        |
| Total Pass-through Programs   |                               |                                |                                     |  | <u>\$21,543</u>      | <u>\$15,619,986</u>                                |                        |
| <b>Total Department of Defense</b>  |                               |                                |                                     |  | <u>\$7,719,113</u>   | <u>\$53,612,749</u>                                |                        |
| <b>Department of Commerce</b>   |                               |                                |                                     |  |                      |  |                        |
| <b>Direct Awards</b>  |                               |                                |                                     |  |                      |  |                        |
| <b>Covid 19 Related Funding:</b>  |                               |                                |                                     |  |                      |  |                        |
| COVID-19-Understanding Methane Changes in Cities Affected by COVID-19 Shutdowns   | 11.431                        | NA21OAR4310235                 |                                     |  | \$0                  | \$51,236   |                        |

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**The Trustees of Columbia University in the City of New York**  
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| <u>Federal Grantor / Pass-through Grantor</u>   | <u>Assistance Listing No.</u> | <u>Award Identification No.</u> | <u>Pass-through Contract Number</u> | <u>Passthrough Name</u>                         | <b>R&amp;D Cluster</b> |  |
|---|-------------------------------|---------------------------------|-------------------------------------|---|------------------------|--|
|   |                               |                                 |                                     |   | <u>Subrecipients</u>   | <u>Total Expenditures (Includes Subrecipients)</u> |
|   |                               |                                 |                                     |   | 0                      | 51,236   |
| Developing Novel Methods to Measure Historic Wetland Accretion  | 11.420                        | NA20NOS4200140                  |                                     |   | \$0                    | \$53,007   |
| Supporting Regional Implementation of Integrated Climate Resilience: Consortium for Climate Risk in the Urban Northeast (CCRUN) Phase II                                | 11.431                        | NA20OAR4310147A                 |                                     |   | \$475,096              | \$2,267,163  |
| Maintenance and Development of the Subseasonal to Seasonal Prediction Project (S2S) Database and Tools in IRI Data Library  | 11.459                        | NA21OAR4590266                  |                                     |   | \$0                    | \$144,702  |
| Development and Evaluation of New Statistical Calibration Methods for Multi-Model Ensemble Week 3-4 Probabilistic Forecasts   | 11.468                        | NA18NWS4680067                  |                                     |   | \$0                    | \$22,824   |
| Experimentally-driven mapping of QoS-to-QoE for Mission-Critical Voice  | 11.609                        | 70NANB19H003                    |                                     |   | \$43,846               | \$596,901  |
|   |                               |                                 |                                     |   | <u>518,942</u>         | <u>3,084,597</u>                                   |
| Total Direct Award Programs   |                               |                                 |                                     |   | <u>\$518,942</u>       | <u>\$3,135,833</u>                                 |
| <b>Pass-through Awards</b>  |                               |                                 |                                     |   |                        |  |
| <b>National Oceanic &amp; Atmospheric Administration/Department of Commerce</b>   |                               |                                 |                                     |   |                        |  |
| High-resolution Shipboard Measurements of Phytoplankton Functional Types, Size Classes and Photosynthetic Competency in Support of SUOMI-VIIRS Ocean Color Observations | 11.RD                         | GSTI SA18-CUNY01                | ST-1330-17-CQ-0050                  | GLOBAL SCIENCE & TECHNOLOGY INC                 | \$0                    | \$49,603   |
|   |                               |                                 |                                     |   | <u>\$0</u>             | <u>\$49,603</u>                                    |
| <b>Climate and Atmospheric Research</b>   |                               |                                 |                                     |   |                        |  |
| Weddell Sea Moorings  | 11.431                        | UCAR SUBAWD001040               | NA18OAR4310253B                     | UNIVERSITY CORPORATION FOR ATMOSPHERIC RESEARCH | \$0                    | \$4,809  |
| Integrating Seasonal and Sub-Seasonal Climate Information into Public Health Contexts: Co-Producing Decision Support Applications in Puerto Rico and Dominica           | 11.431                        | UA 470206                       | NA18OAR4310338                      | UNIVERSITY OF ARIZONA                           | \$0                    | \$15,854   |
| RSFO - CCRUN - Resilience of Small and Medium Businesses in Coastal Communities in the New York - New Jersey Metropolitan Region  | 11.431                        | UCAR SUBAWD002736               | NA20OAR4310253C                     | UNIVERSITY CORPORATION FOR ATMOSPHERIC RESEARCH | \$12,859               | \$45,551   |
|   |                               |                                 |                                     |   | <u>\$12,859</u>        | <u>\$66,214</u>                                    |
| <b>National Oceanic and Atmospheric Administration (NOAA) Cooperative Institutes</b>  |                               |                                 |                                     |   |                        |  |
| Surface Water pCO2 measurements from Ships  | 11.432                        | UMIAMI OS00000053               | NA15OAR4320064                      | UNIVERSITY OF MIAMI                             | \$0                    | \$73,184   |

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**The Trustees of Columbia University in the City of New York**  
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|  |                               |                                |                                     |   |                      | <b>R&amp;D Cluster</b>                             |
|--|-------------------------------|--------------------------------|-------------------------------------|---|----------------------|--|
| <u>Federal Grantor / Pass-through Grantor</u>  | <u>Assistance Listing No.</u> | <u>Award Identification No</u> | <u>Pass-through Contract Number</u> | <u>Passthrough Name</u>                 | <u>Subrecipients</u> | <u>Total Expenditures (Includes Subrecipients)</u> |
| Ocean Exploration Cooperative Institute (OECI): Discovering the New America                            | 11.432                        | OET 60500-1                    | NA19OAR4320072                      | OCEAN EXPLORATION TRUST                 | \$0                  | \$78,883   |
| NMME Phase-2: New Innovation in Seasonal Prediction Science  | 11.432                        | UMIAMI OS00000747              | NA20OAR4320472                      | UNIVERSITY OF MIAMI                     | \$0                  | \$15,411   |
|  |                               |                                |                                     |   | <u>\$0</u>           | <u>\$167,478</u>                                   |
| <b>Weather and Air Quality Research</b>  |                               |                                |                                     |   |                      |  |
| Enhancements to the RTE+RRTMGP Radiation Code in Support of NOAA Operational Forecasts                 | 11.459                        | AER P2516-001                  | NA21OAR4590161                      | ATMOSPHERIC AND ENVIRONMENTAL RESEARCH  | \$0                  | \$19,642   |
|  |                               |                                |                                     |   | <u>\$0</u>           | <u>\$19,642</u>                                    |
|  |                               |                                |                                     |   | <u>12,859</u>        | <u>302,937</u>                                     |
|  |                               |                                |                                     |   | <u>\$12,859</u>      | <u>\$302,937</u>                                   |
| Total Pass-through Programs  |                               |                                |                                     |   | <u>\$531,801</u>     | <u>\$3,438,770</u>                                 |
| <b>Total Department of Commerce</b>  |                               |                                |                                     |   |                      |  |
| <b>Department of Health &amp; Human Services</b>   |                               |                                |                                     |   |                      |  |
| <b>Pass-through Awards</b>   |                               |                                |                                     |   |                      |  |
| <b>Centers for Disease Control and Prevention/DHHS</b>   |                               |                                |                                     |   |                      |  |
| Continued Arsenic Testing for Hunterdon Healthcare Patients  | 93.RD                         | NJDEP 8882968                  | CDC CU20-1087                       | NEW JERSEY DEPT. OF ENVIRON. PROTECTION | \$0                  | \$14,451   |
|  |                               |                                |                                     |   | <u>\$0</u>           | <u>\$14,451</u>                                    |
|  |                               |                                |                                     |   | <u>0</u>             | <u>14,451</u>                                      |
|  |                               |                                |                                     |   | <u>\$0</u>           | <u>\$14,451</u>                                    |
| Total Pass-through Programs  |                               |                                |                                     |   | <u>\$0</u>           | <u>\$14,451</u>                                    |
| <b>Total Department of Health &amp; Human Services (Excluding NIH)</b>                                 |                               |                                |                                     |   | <u>\$0</u>           | <u>\$14,451</u>                                    |
| <b>Department of Education</b>   |                               |                                |                                     |   |                      |  |
| <b>Direct Awards</b>   |                               |                                |                                     |   |                      |  |
| Columbia South Asia Institute: National Resource Centers   | 84.015                        | P015A180034 - 21               |                                     |   | \$158,216            | \$631,865  |
| Fulbright-Hays Doctoral Dissertation Research Abroad   | 84.022                        | P022A210018-21                 |                                     |   | \$0                  | \$134,614  |
| Efficient and Flexible Tools for Complex Multilevel and Latent Variable Modeling in Education Research | 84.305                        | R305D190048 - 21               |                                     |   | \$88,293             | \$251,990  |
|  |                               |                                |                                     |   | <u>246,509</u>       | <u>1,018,469</u>                                   |
| Total Direct Award Programs  |                               |                                |                                     |   | <u>\$246,509</u>     | <u>\$1,018,469</u>                                 |

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**The Trustees of Columbia University in the City of New York**  
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|   |  |                               |                                 |                                     |  | <b>R&amp;D Cluster</b> |  |
|---|--|-------------------------------|---------------------------------|-------------------------------------|--|------------------------|--|
| <u>Federal Grantor / Pass-through Grantor</u>           |  | <u>Assistance Listing No.</u> | <u>Award Identification No.</u> | <u>Pass-through Contract Number</u> | <u>Passthrough Name</u>                      | <u>Subrecipients</u>   | <u>Total Expenditures (Includes Subrecipients)</u> |
| <b>Total</b>  | <b>Department of Education</b>   |                               |                                 |                                     |  | <b>\$246,509</b>       | <b>\$1,018,469</b>                                 |
| <b>Department of Agriculture</b>                        |  |                               |                                 |                                     |  |                        |  |
| <b>Direct Awards</b>                                    |  |                               |                                 |                                     |  |                        |  |
|   | Multi-Breadbasket Failures and Shocks to Food Systems: AgMIP Simulations                                     | 10.250                        | 59-6000-0-0071                  |                                     |  | \$0                    | \$33,820   |
|   | An Integrated Approach to a Zero-Energy Greenhouse Using Solar and Geothermal Energy                         | 10.310                        | USDA 2021-67021-34201           |                                     |  | \$0                    | \$42,340   |
|   | Puerto Rico Forest Disturbance and Regrowth Data Collection  | 10.684                        | USFS 19-DG-11132762-045         |                                     |  | \$0                    | \$80,023   |
|   |  |                               |                                 |                                     |  | <u>0</u>               | <u>156,183</u>                                     |
|   | <b>Total Direct Award Programs</b>   |                               |                                 |                                     |  | <b>\$0</b>             | <b>\$156,183</b>                                   |
| <b>Pass-through Awards</b>                              |  |                               |                                 |                                     |  |                        |  |
| <b>Agricultural Research Basic and Applied Research</b> |  |                               |                                 |                                     |  |                        |  |
|   | Molecular characterization of innate immune responses during HIV-1 and Zika virus coinfection of macrophages | 10.001                        | CRDF R-202104-67759             | NIAID                               | CIVILIAN RESEARCH AND DEVELOPMENT FOUNDATION | \$0                    | \$9,914  |
|   |  |                               |                                 |                                     |  | <u>\$0</u>             | <u>\$9,914</u>                                     |
|   |  |                               |                                 |                                     |  | <u>0</u>               | <u>9,914</u>                                       |
|   | <b>Total Pass-through Programs</b>   |                               |                                 |                                     |  | <b>\$0</b>             | <b>\$9,914</b>                                     |
| <b>Total</b>  | <b>Department of Agriculture</b>   |                               |                                 |                                     |  | <b>\$0</b>             | <b>\$166,097</b>                                   |
| <b>Department of Homeland Security</b>                  |  |                               |                                 |                                     |  |                        |  |
| <b>Direct Awards</b>                                    |  |                               |                                 |                                     |  |                        |  |
|   | Addressing Gaps in Housing Disaster Recovery: A Training Program for the Whole Community                     | 97.005                        | EMW-2017-CA-00043-S01           |                                     |  | \$0                    | \$73,567   |
|   |  |                               |                                 |                                     |  | <u>0</u>               | <u>73,567</u>                                      |
|   | <b>Total Direct Award Programs</b>   |                               |                                 |                                     |  | <b>\$0</b>             | <b>\$73,567</b>                                    |
| <b>Total</b>  | <b>Department of Homeland Security</b>   |                               |                                 |                                     |  | <b>\$0</b>             | <b>\$73,567</b>                                    |
| <b>Department of Interior</b>                           |  |                               |                                 |                                     |  |                        |  |
| <b>Direct Awards</b>                                    |  |                               |                                 |                                     |  |                        |  |

The accompanying footnotes are an integral part of the Schedule of Expenditures of Federal Awards

**The Trustees of Columbia University in the City of New York**  
**Schedule of Expenditures of Federal Awards**  
**For year ended June 30, 2022**

| <u>Federal Grantor / Pass-through Grantor</u>   | <u>Assistance Listing No.</u> | <u>Award Identification No.</u> | <u>Pass-through Contract Number</u> | <u>Passthrough Name</u>                                       | <u>Subrecipients</u> | <b>R&amp;D Cluster</b>                             |
|---|-------------------------------|---------------------------------|-------------------------------------|---|----------------------|--|
|   |                               |                                 |                                     |   |                      | <u>Total Expenditures (Includes Subrecipients)</u> |
| Enabling Enhanced Water Recovery and Minimized Concentrate for Desalination of San Joaquin Valley Irrigation Drainage             | 15.506                        | DIBR R21AC10032                 |                                     |   | \$0                  | \$145,458  |
| Earthquake Simulators and Next Generation Hazard Models (UCERF4): Collaborative Research with Columbia University and USGS Golden | 15.807                        | G21AP10345-00                   |                                     |   | \$0                  | \$114,845  |
|   |                               |                                 |                                     |   | 0                    | 260,303  |
| Total Direct Award Programs   |                               |                                 |                                     |   | <b>\$0</b>           | <b>\$260,303</b>                                   |
| <b>Pass-through Awards</b>  |                               |                                 |                                     |   |                      |  |
| <b>National and Regional Climate Adaptation Science Centers</b>   |                               |                                 |                                     |   |                      |  |
| Host Cycle II of the Northeast Climate Adaption Science Center  | 15.820                        | UMASSAMH 22-015184-F-00         | G19AC00091                          | UNIVERSITY OF MASSACHUSETTS AMHERST                           | \$0                  | \$37,950   |
|   |                               |                                 |                                     |   | \$0                  | \$37,950   |
|   |                               |                                 |                                     |   | 0                    | 37,950   |
| Total Pass-through Programs   |                               |                                 |                                     |   | <b>\$0</b>           | <b>\$37,950</b>                                    |
| <b>Total Department of Interior</b>   |                               |                                 |                                     |   | <b>\$0</b>           | <b>\$298,253</b>                                   |
| <b>Department of Justice</b>  |                               |                                 |                                     |   |                      |  |
| <b>Pass-through Awards</b>  |                               |                                 |                                     |   |                      |  |
| <b>Crime Victim Assistance</b>  |                               |                                 |                                     |   |                      |  |
| SA COVID-19 Recovery Fund   | 16.575                        | NYSOPDV PDV01-T00018GG-1310000  | DOJ CU21-2722                       | NEW YORK STATE OFFICE FOR THE PREVENTION OF DOMESTIC VIOLENCE | \$0                  | \$37,388   |
|   |                               |                                 |                                     |   | \$0                  | \$37,388   |
| <b>Second Chance Act Reentry Initiative</b>   |                               |                                 |                                     |   |                      |  |
| Learning Lab for Justice-Involved Emerging Adults in Massachusetts  | 16.812                        | UTEC CU20-2547                  | BJA 2017-11540                      | UTEC  | \$0                  | \$21,877   |
| Evaluation and Development Services in Support of DOJ-Funded Reentry Initiatives  | 16.812                        | UTEC CU21-3870                  | DOJ 2020-CY-BX-0019                 | UTEC  | \$0                  | \$11,308   |
|   |                               |                                 |                                     |   | \$0                  | \$33,185   |
|   |                               |                                 |                                     |   | 0                    | 70,573   |
| Total Pass-through Programs   |                               |                                 |                                     |   | <b>\$0</b>           | <b>\$70,573</b>                                    |
| <b>Total Department of Justice</b>  |                               |                                 |                                     |   | <b>\$0</b>           | <b>\$70,573</b>                                    |
| <b>Department of State</b>  |                               |                                 |                                     |   |                      |  |
| <b>Direct Awards</b>  |                               |                                 |                                     |   |                      |  |

The accompanying footnotes are an integral part of the Schedule of Expenditures of Federal Awards

**The Trustees of Columbia University in the City of New York**  
**Schedule of Expenditures of Federal Awards**  
**For year ended June 30, 2022**

| <u>Federal Grantor / Pass-through Grantor</u>   | <u>Assistance Listing No.</u> | <u>Award Identification No.</u> | <u>Pass-through Contract Number</u> | <u>Passthrough Name</u>   | <u>Subrecipients</u> | <u>Total Expenditures (Includes Subrecipients)</u> | <b>R&amp;D Cluster</b> |
|---|-------------------------------|---------------------------------|-------------------------------------|---|----------------------|--|------------------------|
| Correlation Detection and Location of Small Seismic Events in a Broad Region of Interest using data from a Rare Deployment  | 19.RD                         | 19AQMM20P1944                   |                                     |   | \$0                  | \$122,218  |                        |
| Open Start Up Morocco 2   | 19.040                        | SMO55021CA3030                  |                                     |   | \$0                  | \$191,056  |                        |
| Supporting Chain of Command Analysis, Documentation, Preservation and Building Capacity of Civil Society to Pursue Justice and Accountability for Abuses Committed in Syria | 19.345                        | SLMAQM20GR2491                  |                                     |   | \$391,586            | \$526,247  |                        |
|   |                               |                                 |                                     |   | <u>391,586</u>       | <u>839,521</u>                                     |                        |
| Total Direct Award Programs   |                               |                                 |                                     |   | <u>\$391,586</u>     | <u>\$839,521</u>                                   |                        |
| <b>Pass-through Awards</b>  |                               |                                 |                                     |   |                      |  |                        |
| <b>International Programs to Support Democracy, Human Rights and Labor</b>  |                               |                                 |                                     |   |                      |  |                        |
| Developing Transitional Justice   | 19.345                        | NED 2020-08117                  | S-LMAQM-20-GR-2006                  | NATIONAL ENDOWMENT FOR DEMOCRACY                                    | \$0                  | \$16,325   |                        |
|   |                               |                                 |                                     |   | <u>\$0</u>           | <u>\$16,325</u>                                    |                        |
|   |                               |                                 |                                     |   | <u>0</u>             | <u>16,325</u>                                      |                        |
| Total Pass-through Programs   |                               |                                 |                                     |   | <u>\$0</u>           | <u>\$16,325</u>                                    |                        |
| <b>Total Department of State</b>  |                               |                                 |                                     |   | <u>\$391,586</u>     | <u>\$855,846</u>                                   |                        |
| <b>Department of Transportation</b>   |                               |                                 |                                     |   |                      |  |                        |
| <b>Pass-through Awards</b>  |                               |                                 |                                     |   |                      |  |                        |
| <b>University Transportation Centers Program</b>  |                               |                                 |                                     |   |                      |  |                        |
| Center for Advanced Infrastructure and Transportation (CAIT) Regional UTC Consortium  | 20.701                        | RUTGER PO<br>966112/PID#824227  | DOT 69A3551847102                   | RUTGERS, THE STATE UNIVERSITY OF NEW JERSEY DEPARTMENT OF RADIOLOGY | \$0                  | \$123,232  |                        |
|   |                               |                                 |                                     |   | <u>\$0</u>           | <u>\$123,232</u>                                   |                        |
|   |                               |                                 |                                     |   | <u>0</u>             | <u>123,232</u>                                     |                        |
| Total Pass-through Programs   |                               |                                 |                                     |   | <u>\$0</u>           | <u>\$123,232</u>                                   |                        |
| <b>Total Department of Transportation</b>   |                               |                                 |                                     |   | <u>\$0</u>           | <u>\$123,232</u>                                   |                        |
| <b>Department of Veterans Affairs</b>   |                               |                                 |                                     |   |                      |  |                        |
| <b>Direct Awards</b>  |                               |                                 |                                     |   |                      |  |                        |
| Neuroinflammatory and Epigenetic Mechanisms of Blood-Brain Barrier Compromise in Suicide  | 64.RD                         | JJPVA 36C24E18D0058             |                                     |   | \$0                  | \$-16  |                        |
|   |                               |                                 |                                     |   | <u>0</u>             | <u>-16</u>   |                        |

The accompanying footnotes are an integral part of the Schedule of Expenditures of Federal Awards

**The Trustees of Columbia University in the City of New York**  
**Schedule of Expenditures of Federal Awards**  
**For year ended June 30, 2022**

| <u>Federal Grantor / Pass-through Grantor</u>   | <u>Assistance Listing No.</u> | <u>Award Identification No</u> | <u>Pass-through Contract Number</u> | <u>Passthrough Name</u>  | <u>Subrecipients</u> | <u>Total Expenditures (Includes Subrecipients)</u> | <b>R&amp;D Cluster</b> |
|---|-------------------------------|--------------------------------|-------------------------------------|--------------------------|----------------------|--|------------------------|
| Total Direct Award Programs   |                               |                                |                                     |                          | <u>\$0</u>           | <u>\$-16</u>                                       |                        |
| <b>Total Department of Veterans Affairs</b>   |                               |                                |                                     |                          | <u>\$0</u>           | <u>\$-16</u>                                       |                        |
| <b>Dept. of HousingUrban Development</b>  |                               |                                |                                     |                          |                      |  |                        |
| <b>Direct Awards</b>  |                               |                                |                                     |                          |                      |  |                        |
| Urban fungal exposure, sensitization and asthma among a low-income population   | 14.906                        | NYHHUOO42-18                   |                                     |                          | \$222,761            | \$341,401  |                        |
|   |                               |                                |                                     |                          | <u>222,761</u>       | <u>341,401</u>                                     |                        |
| Total Direct Award Programs   |                               |                                |                                     |                          | <u>\$222,761</u>     | <u>\$341,401</u>                                   |                        |
| <b>Pass-through Awards</b>  |                               |                                |                                     |                          |                      |  |                        |
| <b>Lead Technical Studies Grants</b>  |                               |                                |                                     |                          |                      |  |                        |
| Better Recognition of Exposure to Asthma Triggers in the Home Environment using Smartphones (BREATHE-Smart)                                     | 14.902                        | OSU<br>SPC-1000004622/GR122799 | OHHHU0057-20                        | OHIO STATE UNIVERSITY    | \$0                  | \$19,774   |                        |
|   |                               |                                |                                     |                          | <u>\$0</u>           | <u>\$19,774</u>                                    |                        |
|   |                               |                                |                                     |                          | <u>0</u>             | <u>19,774</u>                                      |                        |
| Total Pass-through Programs   |                               |                                |                                     |                          | <u>\$0</u>           | <u>\$19,774</u>                                    |                        |
| <b>Total Dept. of HousingUrban Development</b>  |                               |                                |                                     |                          | <u>\$222,761</u>     | <u>\$361,175</u>                                   |                        |
| <b>Environmental Protection Agency</b>  |                               |                                |                                     |                          |                      |  |                        |
| <b>Direct Awards</b>  |                               |                                |                                     |                          |                      |  |                        |
| Automated Model Reduction for Chemical Mechanisms   | 66.509                        | EPA 84001301                   |                                     |                          | \$0                  | \$203,145  |                        |
|   |                               |                                |                                     |                          | <u>0</u>             | <u>203,145</u>                                     |                        |
| Total Direct Award Programs   |                               |                                |                                     |                          | <u>\$0</u>           | <u>\$203,145</u>                                   |                        |
| <b>Pass-through Awards</b>  |                               |                                |                                     |                          |                      |  |                        |
| <b>Environmental Protection Agency</b>  |                               |                                |                                     |                          |                      |  |                        |
| Support for EPA s Activities - Examining Sectoral Impacts of Climate Change and Linking Observations and Projections                            | 66.RD                         | ICFI 20SSSK0016                | 68HERH19D0029                       | ICF INTERNATIONAL        | \$0                  | \$24   |                        |
|   |                               |                                |                                     |                          | <u>\$0</u>           | <u>\$24</u>  |                        |
| <b>Long Island Sound Program</b>  |                               |                                |                                     |                          |                      |  |                        |
| Refined Integration of Remote Sensing with Biological Parameters for Improved Management of LIS Water Quality/Long Island Sound Study 2018-2022 | 66.437                        | CCONY CM00005171-01            | LI-96261317-0                       | City College of New York | \$0                  | \$48,496   |                        |
|   |                               |                                |                                     |                          | <u>\$0</u>           | <u>\$48,496</u>                                    |                        |
| <b>Science To Achieve Results (STAR) Research Program</b>   |                               |                                |                                     |                          |                      |  |                        |

The accompanying footnotes are an integral part of the Schedule of Expenditures of Federal Awards



**The Trustees of Columbia University in the City of New York**  
**Schedule of Expenditures of Federal Awards**  
**For year ended June 30, 2022**

| <u>Federal Grantor / Pass-through Grantor</u>   | <u>Assistance Listing No.</u> | <u>Award Identification No</u> | <u>Pass-through Contract Number</u> | <u>Passthrough Name</u>   | <u>Subrecipients</u> | <u>Total Expenditures (Includes Subrecipients)</u> |
|---|-------------------------------|--------------------------------|-------------------------------------|---------------------------|----------------------|--|
| <b>R&amp;D Cluster</b>  |                               |                                |                                     |                           |                      |  |
| Mainstream Deammonification with Biological Phosphorus Removal                              | 66.509                        | WARF 5096                      | EPA 84008601-0                      | WATER RESEARCH FOUNDATION | \$0                  | \$16,584   |
|   |                               |                                |                                     |                           | <u>\$0</u>           | <u>\$16,584</u>                                    |
| <b>Office of Research and Development Consolidated Research/Training/Fellowships</b>        |                               |                                |                                     |                           |                      |  |
| Accounting for the Health Benefits of Air Pollution Regulations in China, 2008-2020         | 66.511                        | BU 4500003962                  | EPA CR-83998101                     | BOSTON UNIVERSITY         | \$0                  | \$33,569   |
|   |                               |                                |                                     |                           | <u>\$0</u>           | <u>\$33,569</u>                                    |
|   |                               |                                |                                     |                           | <u>0</u>             | <u>98,673</u>                                      |
|   |                               |                                |                                     |                           | <u>\$0</u>           | <u>\$98,673</u>                                    |
| Total Pass-through Programs   |                               |                                |                                     |                           | <u>\$0</u>           | <u>\$98,673</u>                                    |
| <b>Total Environmental Protection Agency</b>  |                               |                                |                                     |                           | <u>\$0</u>           | <u>\$301,818</u>                                   |
| <b>Japan US Friendship Commission</b>   |                               |                                |                                     |                           |                      |  |
| <b>Direct Awards</b>  |                               |                                |                                     |                           |                      |  |
| 2021-2022 Japan-U.S. Friendship Commission Prize for the Translation of Japanese Literature | 90.300                        | JAPUS 21-13                    |                                     |                           | \$0                  | \$10,945   |
|   |                               |                                |                                     |                           | <u>0</u>             | <u>10,945</u>                                      |
| Total Direct Award Programs   |                               |                                |                                     |                           | <u>\$0</u>           | <u>\$10,945</u>                                    |
| <b>Total Japan US Friendship Commission</b>   |                               |                                |                                     |                           | <u>\$0</u>           | <u>\$10,945</u>                                    |
| <b>Nat. Endowment for the ArtsHumanities</b>  |                               |                                |                                     |                           |                      |  |
| <b>Direct Awards</b>  |                               |                                |                                     |                           |                      |  |
| An Integrated Online Archive for International History                                      | 45.149                        | PW-277555-21                   |                                     |                           | \$0                  | \$121,405  |
|   |                               |                                |                                     |                           | <u>0</u>             | <u>121,405</u>                                     |
| Total Direct Award Programs   |                               |                                |                                     |                           | <u>\$0</u>           | <u>\$121,405</u>                                   |
| <b>Total Nat. Endowment for the ArtsHumanities</b>  |                               |                                |                                     |                           | <u>\$0</u>           | <u>\$121,405</u>                                   |
| <b>Other Agencies / Gov't</b>   |                               |                                |                                     |                           |                      |  |
| <b>Direct Awards</b>  |                               |                                |                                     |                           |                      |  |
| Immunogens of high impact livestock pathogens   | 99.RD                         | KSU-1048                       |                                     |                           | \$0                  | \$35,377   |
|   |                               |                                |                                     |                           | <u>0</u>             | <u>35,377</u>                                      |
| Total Direct Award Programs   |                               |                                |                                     |                           | <u>\$0</u>           | <u>\$35,377</u>                                    |

The accompanying footnotes are an integral part of the Schedule of Expenditures of Federal Awards

**The Trustees of Columbia University in the City of New York**  
**Schedule of Expenditures of Federal Awards**  
**For year ended June 30, 2022**

| <u>Federal Grantor / Pass-through Grantor</u>  | <u>Assistance Listing No.</u>         | <u>Award Identification No</u> | <u>Pass-through Contract Number</u> | <u>Passthrough Name</u>                                 | <u>Subrecipients</u> | <u>Total Expenditures (Includes Subrecipients)</u> |
|--|---------------------------------------|--------------------------------|-------------------------------------|---|----------------------|--|
| <b>R&amp;D Cluster</b>   |                                       |                                |                                     |   |                      |  |
| <b>Pass-through Awards</b>   |                                       |                                |                                     |   |                      |  |
| <b>Small Business Development Centers</b>  |                                       |                                |                                     |   |                      |  |
| The New York Small Business Development Center (NY SBDC)   | 59.037                                | SUNYRF 89275                   | SBA 1163898                         | RESEARCH FOUNDATION OF THE STATE UNIVERSITY OF NEW YORK | \$0                  | \$35,222   |
|  |                                       |                                |                                     |   | \$0                  | \$35,222   |
|  |                                       |                                |                                     |   | 0                    | 35,222   |
| Total Pass-through Programs  |                                       |                                |                                     |   | <b>\$0</b>           | <b>\$35,222</b>                                    |
| <b>Total</b>   | <b>Other Agencies / Gov't</b>         |                                |                                     |   | <b>\$0</b>           | <b>\$70,599</b>                                    |
| <b>Social Security Administration</b>  |                                       |                                |                                     |   |                      |  |
| <b>Pass-through Awards</b>   |                                       |                                |                                     |   |                      |  |
| <b>Social Security Administration/DHHS</b>   |                                       |                                |                                     |   |                      |  |
| Early Intervention Mental Health Demonstration Study   | 96.RD                                 | WESTAT 6464-S02                | SS001660014                         | WESTAT  | \$0                  | \$141,075  |
|  |                                       |                                |                                     |   | \$0                  | \$141,075  |
|  |                                       |                                |                                     |   | 0                    | 141,075  |
| Total Pass-through Programs  |                                       |                                |                                     |   | <b>\$0</b>           | <b>\$141,075</b>                                   |
| <b>Total</b>   | <b>Social Security Administration</b> |                                |                                     |   | <b>\$0</b>           | <b>\$141,075</b>                                   |
| <b>United States Agency for International Dvlpt.</b>   |                                       |                                |                                     |   |                      |  |
| <b>Direct Awards</b>   |                                       |                                |                                     |   |                      |  |
| Nolkup: an app to access low arsenic water in Bangladesh   | 98.RD                                 | 7200AA21FA00010                |                                     |   | \$0                  | \$7,024  |
|  |                                       |                                |                                     |   | 0                    | 7,024  |
| Total Direct Award Programs  |                                       |                                |                                     |   | <b>\$0</b>           | <b>\$7,024</b>                                     |
| <b>Pass-through Awards</b>   |                                       |                                |                                     |   |                      |  |
| <b>U.S. Agency for International Development</b>   |                                       |                                |                                     |   |                      |  |
| Strengthening Disaster and Climate Resilience in the Eastern and Southern Caribbean (SDCR) Project | 98.RD                                 | CIMH CU20-1330                 | AID CU20-1330                       | CARIBBEAN INST FOR METEOROLOGY & HYDROLO                | \$0                  | \$38,648   |
| SERVIR for USAID West Africa   | 98.RD                                 | TETRARD 1865-Columbia-001      | AID-OAA-I-13-00058                  | TETRA TECH ARD  | \$0                  | \$6,538  |
|  |                                       |                                |                                     |   | \$0                  | \$45,186   |
| <b>USAID Foreign Assistance for Programs Overseas</b>  |                                       |                                |                                     |   |                      |  |
| Developing Acute Care and Emergency Referral Systems   | 98.001                                | CATHOLICRS CU 18-2493          | 7200AA18CA00051                     | CATHOLIC RELIEF SERVICES                                | \$86,562             | \$340,089  |
| Malaria Lab Resistance Mutants (Columbia)  | 98.001                                | MMV RD-08-0015                 | AID CU09-1816                       | Medicines for Malaria Venture                           | \$0                  | \$369,218  |

The accompanying footnotes are an integral part of the Schedule of Expenditures of Federal Awards

**The Trustees of Columbia University in the City of New York**  
**Schedule of Expenditures of Federal Awards**  
**For year ended June 30, 2022**

|   |   |                                |                                     |                           |                      | <b>R&amp;D Cluster</b>                             |
|---|---|--------------------------------|-------------------------------------|---------------------------|----------------------|--|
| <u>Federal Grantor / Pass-through Grantor</u>   | <u>Assistance Listing No.</u>                       | <u>Award Identification No</u> | <u>Pass-through Contract Number</u> | <u>Passthrough Name</u>   | <u>Subrecipients</u> | <u>Total Expenditures (Includes Subrecipients)</u> |
| Preparing for Ring Opportunities through Market Introduction Support and Knowledge Exchange (PROMISE)   | 98.001  | FHID PO20002930                | AID-OAA-A-15-00045                  | FHI DEVELOPMENT 360 LLC   | \$0                  | \$77,674   |
| Simplification of Linkage to and Delivery of Antiretroviral Therapy in USAID-PEPFAR Supported Programs  | 98.001  | WHC D1509970                   | AID-OAA-A-15-0069                   | WITS HEALTH CONSORTIUM    | \$0                  | \$-141   |
| Evaluating the implementation and effectiveness of an integrated psychosocial intervention to reduce psychological distress and intimate partner violence among forced migrants in Ecuador and Panama | 98.001  | FY20-A04-6024                  | AID-OAA-A-17-00002                  | HIAS                      | \$0                  | \$52,836   |
| Clean Air Catalyst: A Global Partnership for Accelerating Clean Air Solutions   | 98.001  | WRI G2264                      | USAID 7200AA20CA00014               | WORLD RESOURCES INSTITUTE | \$0                  | \$81,607   |
|   |   |                                |                                     |                           | <u>\$86,562</u>      | <u>\$921,283</u>                                   |
|   |   |                                |                                     |                           | <u>86,562</u>        | <u>966,469</u>                                     |
| Total Pass-through Programs   |   |                                |                                     |                           | <u>\$86,562</u>      | <u>\$966,469</u>                                   |
| <b>Total</b>  | <b>United States Agency for International Dvlp.</b> |                                |                                     |                           | <u>\$86,562</u>      | <u>\$973,493</u>                                   |
| <b>Total:</b>   | <b>Research &amp; Development Cluster</b>           |                                |                                     |                           | <u>\$119,723,606</u> | <u>\$908,853,771</u>                               |

The accompanying footnotes are an integral part of the Schedule of Expenditures of Federal Awards

**The Trustees of Columbia University in the City of New York**  
**Schedule of Expenditures of Federal Awards**  
**For year ended June 30, 2022**

**Student Financial Aid Cluster**

| <u>Federal Grantor / Pass-through Grantor</u>                           | <u>Assistance Listing No.</u> | <u>Award Identification No</u> | <u>Pass-through Contract Number</u> | <u>Passthrough Name</u> | <u>Subrecipients</u> | <u>Total Expenditures (Includes Subrecipients)</u> |
|---|-------------------------------|--------------------------------|-------------------------------------|-------------------------|----------------------|--|
| <b>Student Financial Assistance Cluster</b>                             |                               |                                |                                     |                         |                      |  |
| <b>Department of Health &amp; Human Services</b>                        |                               |                                |                                     |                         |                      |  |
| <b>Direct Awards</b>  |                               |                                |                                     |                         |                      |  |
| Health Professionals  | 93.342                        |                                |                                     |                         | \$0                  | \$10,083,936                                       |
| .....   |                               |                                |                                     |                         |                      |  |
| Nursing Students  | 93.364                        |                                |                                     |                         | \$0                  | \$1,172,132  |
| .....   |                               |                                |                                     |                         |                      |  |
| Total Direct Award Programs   |                               |                                |                                     |                         | <u>0</u>             | <u>11,256,068</u>                                  |
| <b>Total: Department of Health &amp; Human Services (Excluding NIH)</b> |                               |                                |                                     |                         | <u>\$0</u>           | <u>\$11,256,068</u>                                |
| <b>Department of Education</b>  |                               |                                |                                     |                         |                      |  |
| <b>Direct Awards</b>  |                               |                                |                                     |                         |                      |  |
| Federal Perkins Loans   | 84.038                        |                                |                                     |                         | \$0                  | \$26,654,736                                       |
| .....   |                               |                                |                                     |                         |                      |  |
| Total Direct Award Programs   |                               |                                |                                     |                         | <u>0</u>             | <u>26,654,736</u>                                  |
| <b>Total: Department of Education</b>                                   |                               |                                |                                     |                         | <u>\$0</u>           | <u>\$26,654,736</u>                                |
| <b>Department of Education</b>  |                               |                                |                                     |                         |                      |  |
| <b>Direct Awards</b>  |                               |                                |                                     |                         |                      |  |
| Supplemental Education Opportunity Grant 2021-2022                      | 84.007                        | P007A212737                    |                                     |                         | \$0                  | \$1,634,411  |
| .....   |                               |                                |                                     |                         |                      |  |
| Federal Work Study 2021-2022  | 84.033                        | P033A212737                    |                                     |                         | \$0                  | \$5,343,146  |
| .....   |                               |                                |                                     |                         |                      |  |

The accompanying footnotes are an integral part of the Schedule of Expenditures of Federal Awards

**The Trustees of Columbia University in the City of New York**  
**Schedule of Expenditures of Federal Awards**  
**For year ended June 30, 2022**

**Student Financial Aid Cluster**

| <u>Federal Grantor / Pass-through Grantor</u>      | <u>Assistance Listing No.</u> | <u>Award Identification No</u> | <u>Pass-through Contract Number</u> | <u>Passthrough Name</u> | <u>Subrecipients</u> | <u>Total Expenditures (Includes Subrecipients)</u> |
|--|-------------------------------|--------------------------------|-------------------------------------|-------------------------|----------------------|--|
| Federal PELL Grant Program 2021-2022               | 84.063                        | P063P211840                    |                                     |                         | \$0                  | \$10,685,852                                       |
| .....  |                               |                                |                                     |                         |                      |  |
| Federal Direct Loan Program 2021/2022              | 84.268                        | P268K221840                    |                                     |                         | \$0                  | \$322,104,830                                      |
| .....  |                               |                                |                                     |                         |                      |  |
| Total Direct Award Programs                        |                               |                                |                                     |                         | 0                    | 339,768,239  |
| <b>Total: Department of Education</b>              |                               |                                |                                     |                         | <b>\$0</b>           | <b>\$339,768,239</b>                               |
| .....  |                               |                                |                                     |                         |                      |  |
| <b>Total: Student Financial Assistance Cluster</b> |                               |                                |                                     |                         | <b>\$0</b>           | <b>\$377,679,043</b>                               |

The accompanying footnotes are an integral part of the Schedule of Expenditures of Federal Awards

**The Trustees of Columbia University in the City of New York**  
**Schedule of Expenditures of Federal Awards**  
**For year ended June 30, 2022**

| <u>Federal Grantor / Pass-through Grantor</u>  | <u>Assistance Listing No.</u>                                    | <u>Award Identification No</u> | <u>Pass-through Contract Number</u> | <u>Passthrough Name</u>                        | <u>Subrecipients</u> | <u>Global Aids</u><br><u>Total Expenditures</u><br><u>(Includes Subrecipients)</u> |
|--|--|--------------------------------|-------------------------------------|--|----------------------|--|
| <b>Global Aids</b>   |  |                                |                                     |  |                      |  |
| <b>Department of Health &amp; Human Services</b>   |  |                                |                                     |  |                      |  |
| <b>Direct Awards</b>   |  |                                |                                     |  |                      |  |
| <b>Covid 19 Related Funding:</b>   |  |                                |                                     |  |                      |  |
| COVID-19-Community-Based HIV Services for Key Populations and Adolescent Girls and Young Women | 93.067   | 6NU2GGH001941-05-10            |                                     |  | \$0                  | \$5,728,232  |
|  |  |                                |                                     |  | <u>0</u>             | <u>5,728,232</u>   |
| Global AIDS  | 93.067   | 6NU2GGH002368-01-04            |                                     |  | \$8,127,845          | \$196,739,292  |
|  |  |                                |                                     |  | <u>8,127,845</u>     | <u>196,739,292</u>   |
| <b>Total Direct Award Programs</b>   |  |                                |                                     |  | <b>\$8,127,845</b>   | <b>\$202,467,524</b>   |
| <b>Pass-through Awards</b>   |  |                                |                                     |  |                      |  |
| <b>Global AIDS</b>   |  |                                |                                     |  |                      |  |
| Key Populations Investment Fund Project  | 93.067   | IRDO-1NU2GGH001963-ICA<br>P    | 1NU2GGH001963                       | IMPACT RESEARCH AND<br>DEVELOPMENTORGANIZATION | \$0                  | \$31,703   |
|  |  |                                |                                     |  | <u>\$0</u>           | <u>\$31,703</u>  |
|  |  |                                |                                     |  | <u>0</u>             | <u>31,703</u>  |
| <b>Total Pass-through Programs</b>   |  |                                |                                     |  | <b>\$0</b>           | <b>\$31,703</b>  |
| <b>Total</b>   | <b>Department of Health &amp; Human Services (Excluding NIH)</b> |                                |                                     |  | <b>\$8,127,845</b>   | <b>\$202,499,227</b>   |
| <b>Grand Total: Department of Health &amp; Human Services</b>                                  |  |                                |                                     |  | <b>\$8,127,845</b>   | <b>\$202,499,227</b>   |
| <b>Total:</b>  | <b>Global Aids</b>   |                                |                                     |  | <b>\$8,127,845</b>   | <b>\$202,499,227</b>   |

The accompanying footnotes are an integral part of the Schedule of Expenditures of Federal Awards

**The Trustees of Columbia University in the City of New York**  
**Schedule of Expenditures of Federal Awards**  
**For year ended June 30, 2022**

**Higher Education Emergency Relief Fund**

| <u>Federal Grantor / Pass-through Grantor</u>                             | <u>Assistance Listing No.</u> | <u>Award Identification No</u> | <u>Pass-through Contract Number</u> | <u>Passthrough Name</u> | <u>Subrecipients</u> | <u>Total Expenditures (Includes Subrecipients)</u> |
|---|-------------------------------|--------------------------------|-------------------------------------|-------------------------|----------------------|--|
| <b>Higher Education Emergency Relief Fund</b>                             |                               |                                |                                     |                         |                      |  |
| <b>Department of Education</b>  |                               |                                |                                     |                         |                      |  |
| <b>Direct Awards</b>  |                               |                                |                                     |                         |                      |  |
| <b>Covid 19 Related Funding:</b>  |                               |                                |                                     |                         |                      |  |
| COVID-19-Columbia University CARE Act Application                         | 84.425E                       | P425E202142                    |                                     |                         | \$0                  | \$22,392,119                                       |
| .....   |                               |                                |                                     |                         |                      |  |
| COVID-19-Columbia University HEERF II Application - Institutional Portion | 84.425F                       | P425F205200                    |                                     |                         | \$0                  | \$25,403,190                                       |
| .....   |                               |                                |                                     |                         |                      |  |
| Total Direct Award Programs   |                               |                                |                                     |                         | <u>0</u>             | <u>47,795,309</u>                                  |
| <b>Total Department of Education</b>                                      |                               |                                |                                     |                         | <u>\$0</u>           | <u>\$47,795,309</u>                                |
| <b>Total: Higher Education Emergency Relief Fund</b>                      |                               |                                |                                     |                         | <u>\$0</u>           | <u>\$47,795,309</u>                                |

The accompanying footnotes are an integral part of the Schedule of Expenditures of Federal Awards

**The Trustees of Columbia University in the City of New York**  
**Schedule of Expenditures of Federal Awards**  
**For year ended June 30, 2022**

| <u>Federal Grantor / Pass-through Grantor</u>   | <u>Assistance Listing No.</u>                    | <u>Award Identification No</u> | <u>Pass-through Contract Number</u> | <u>Passthrough Name</u>                            | <u>Subrecipients</u> | <u>Total Expenditures (Includes Subrecipients)</u> |
|---|--|--------------------------------|-------------------------------------|--|----------------------|--|
| <b>Highway Planning and Construction Cluster</b>  |  |                                |                                     |  |                      |  |
| <b>Department of Transportation</b>   |  |                                |                                     |  |                      |  |
| <b>Pass-through Awards</b>  |  |                                |                                     |  |                      |  |
| <b>Highway Planning and Construction</b>  |  |                                |                                     |  |                      |  |
| September 11th Program for Regional Transportation Planning: Year 2020-2021 Academic Initiative | 20.205   | RFCUNY CM00005129              | DOT CU20-3280                       | RESEARCH FOUNDATION OF CITY UNIVERSITY OF NEW YORK | \$0                  | \$9,000  |
|   |  |                                |                                     |  | \$0                  | \$9,000  |
|   |  |                                |                                     |  | 0                    | 9,000  |
| Total Pass-through Programs   |  |                                |                                     |  | \$0                  | \$9,000  |
| <b>Total</b>  | <b>Department of Transportation</b>              |                                |                                     |  | <b>\$0</b>           | <b>\$9,000</b>                                     |
| <b>Total:</b>   | <b>Highway Planning and Construction Cluster</b> |                                |                                     |  | <b>\$0</b>           | <b>\$9,000</b>                                     |

The accompanying footnotes are an integral part of the Schedule of Expenditures of Federal Awards



**The Trustees of Columbia University in the City of New York**  
**Schedule of Expenditures of Federal Awards**  
**For year ended June 30, 2022**

| <u>Federal Grantor / Pass-through Grantor</u>  | <u>Assistance Listing No.</u>       | <u>Award Identification No</u> | <u>Pass-through Contract Number</u> | <u>Passthrough Name</u> | <u>Subrecipients</u> | <u>Total Expenditures (Includes Subrecipients)</u> |
|--|-------------------------------------|--------------------------------|-------------------------------------|-------------------------|----------------------|--|
| <b>Highway Safety Cluster</b>  |                                     |                                |                                     |                         |                      |  |
| <b>Department of Transportation</b>  |                                     |                                |                                     |                         |                      |  |
| <b>Pass-through Awards</b>   |                                     |                                |                                     |                         |                      |  |
| <b>National Priority Safety Programs</b>   |                                     |                                |                                     |                         |                      |  |
| Integrating Single and Polysubstance Impaired Driving Data into the Crash Outcome Data Evaluation System (CODES) | 20.616                              | HRI 6582-01                    | DOT CU20-1445                       | Health Research Inc     | \$0                  | \$90,356   |
|  |                                     |                                |                                     |                         | \$0                  | \$90,356   |
|  |                                     |                                |                                     |                         | 0                    | 90,356   |
| Total Pass-through Programs  |                                     |                                |                                     |                         | <b>\$0</b>           | <b>\$90,356</b>                                    |
| <b>Total</b>   | <b>Department of Transportation</b> |                                |                                     |                         | <b>\$0</b>           | <b>\$90,356</b>                                    |
| <b>Total:</b>  | <b>Highway Safety Cluster</b>       |                                |                                     |                         | <b>\$0</b>           | <b>\$90,356</b>                                    |

The accompanying footnotes are an integral part of the Schedule of Expenditures of Federal Awards

**The Trustees of Columbia University in the City of New York**  
**Schedule of Expenditures of Federal Awards**  
**For year ended June 30, 2022**

| <u>Federal Grantor / Pass-through Grantor</u>                          | <u>Assistance Listing No.</u> | <u>Award Identification No</u> | <u>Pass-through Contract Number</u> | <u>Passthrough Name</u> | <u>Subrecipients</u> | <b>TRIO Cluster</b><br><u>Total Expenditures (Includes Subrecipients)</u> |
|--|-------------------------------|--------------------------------|-------------------------------------|-------------------------|----------------------|---|
| <b>TRIO Cluster</b>  |                               |                                |                                     |                         |                      |   |
| <b>Department of Education</b>   |                               |                                |                                     |                         |                      |   |
| <b>Direct Awards</b>   |                               |                                |                                     |                         |                      |   |
| Talent Search Program at Columbia University s Double Discovery Center | 84.044                        | P044A210414                    |                                     |                         | \$0                  | \$401,571   |
| .....  |                               |                                |                                     |                         |                      |   |
| TRIO Upward Bound Program  | 84.047                        | P047A170670-21                 |                                     |                         | \$0                  | \$839,750   |
| .....  |                               |                                |                                     |                         |                      |   |
| Total Direct Award Programs  |                               |                                |                                     |                         | <u>0</u>             | <u>1,241,321</u>  |
| <b>Total Department of Education</b>                                   |                               |                                |                                     |                         | <u>\$0</u>           | <u>\$1,241,321</u>  |
| <b>Total: TRIO Cluster</b>   |                               |                                |                                     |                         | <u>\$0</u>           | <u>\$1,241,321</u>  |

The accompanying footnotes are an integral part of the Schedule of Expenditures of Federal Awards

**The Trustees of Columbia University in the City of New York**  
**Schedule of Expenditures of Federal Awards**  
**For year ended June 30, 2022**

| <u>Federal Grantor / Pass-through Grantor</u>   | <u>Assistance Listing No.</u> | <u>Award Identification No</u> | <u>Pass-through Contract Number</u> | <u>Passthrough Name</u> | <u>Subrecipients</u> | <u>Other Programs</u><br><u>Total Expenditures</u><br><u>(Includes Subrecipients)</u> |
|---|-------------------------------|--------------------------------|-------------------------------------|-------------------------|----------------------|---|
| <b>Other Programs</b>   |                               |                                |                                     |                         |                      |   |
| <b>Department of Health &amp; Human Services</b>  |                               |                                |                                     |                         |                      |   |
| <b>Direct Awards</b>  |                               |                                |                                     |                         |                      |   |
| <b>Covid 19 Related Funding:</b>  |                               |                                |                                     |                         |                      |   |
| COVID-19-CDC IPA Mobility Agreement   | 93 .U01                       | 20IPA2014150                   |                                     |                         | \$0                  | \$4,988   |
| COVID-19-Strengthening Sustainability of Global Health Security Objectives in Sierra Leone                                    | 93.318                        | 6NU2HGH000035-02-01            |                                     |                         | \$0                  | \$612,255   |
|   |                               |                                |                                     |                         | <u>0</u>             | <u>617,243</u>  |
| National Institute for Occupational Safety & Health/CDC/DHHS  | 93 .U02                       | 20IPA2014150                   |                                     |                         | \$0                  | \$29,164  |
| Nurse Anesthetist Traineeship   | 93.124                        | 5A22HP33098-04-00              |                                     |                         | \$0                  | \$62,989  |
| HIV-Related Training and Technical Assistance   | 93.145                        | 5U1OHA29291-08-00              |                                     |                         | \$2,102,778          | \$4,067,948   |
| Health Systems Strengthening and HIV/AIDS Prevention, Care and Treatment under the President's Emergency Plan for AIDS Relief | 93.266                        | 6UH6HA30739-04-10              |                                     |                         | \$0                  | \$2,827,947   |
| Complex Humanitarian Emergency and War-Related Injury Public Health Activities  | 93.269                        | 6U01GH001644-05-03             |                                     |                         | \$0                  | \$41,092  |
| Protecting and Improving Health Globally: Building and Strengthening Public Health Impact, Systems, Capacity and Security     | 93.318                        | 6NU2HGH000048-02-05            |                                     |                         | \$0                  | \$3,627,731   |
| Grants for Primary Care Training and Enhancement  | 93.884                        | 4T0BHP29302- 05- 01            |                                     |                         | \$0                  | \$3,120   |

The accompanying footnotes are an integral part of the Schedule of Expenditures of Federal Awards

**The Trustees of Columbia University in the City of New York**  
**Schedule of Expenditures of Federal Awards**  
**For year ended June 30, 2022**

| <u>Federal Grantor / Pass-through Grantor</u>  | <u>Assistance Listing No.</u> | <u>Award Identification No.</u> | <u>Pass-through Contract Number</u> | <u>Passthrough Name</u>                      | <u>Subrecipients</u>      | <u>Other Programs</u><br><u>Total Expenditures</u><br><u>(Includes Subrecipients)</u> |
|--|-------------------------------|---------------------------------|-------------------------------------|--|---------------------------|---|
| Ryan White HIV/AIDS Dental Reimbursement and Community Based Dental Partnership Grants   | 93.924                        | 1T22HA45125 01 00               |                                     |  | \$0                       | \$251,592   |
|  |                               |                                 |                                     |  | <u>2,102,778</u>          | <u>10,911,583</u>   |
| <b>Total Direct Award Programs</b>   |                               |                                 |                                     |  | <b><u>\$2,102,778</u></b> | <b><u>\$11,528,826</u></b>  |
| <b>Pass-through Awards</b>   |                               |                                 |                                     |  |                           |   |
| <b>Covid 19 Related Funding:</b>   |                               |                                 |                                     |  |                           |   |
| <b>Protecting and Improving Health Globally: Building and Strengthening Public Health Impact, Systems, Capacity and Security</b> |                               |                                 |                                     |  |                           |   |
| COVID-19-COVID-19 Vaccine Introduction in Sierra Leone   | 93.318                        | TFGH CU21-1349                  | NU511P000873                        | TASK FORCE FOR GLOBAL HEALTH INC             | \$0                       | \$159,246   |
|  |                               |                                 |                                     |  | <u>\$0</u>                | <u>\$159,246</u>  |
|  |                               |                                 |                                     |  | <u>0</u>                  | <u>159,246</u>  |
| <b>HIV Prevention Activities Non-Governmental Organization Based</b>   |                               |                                 |                                     |  |                           |   |
| ASCLM/Alliance CDC PS21-2102   | 93.939                        | ASCNYC CU22-0732                | 1NU62PS924688-01-00                 | AIDS SERVICE CENTER OF LOWER MANHATTANINC    | \$0                       | \$76,898  |
| Comprehensive High-Impact HIV Prevention Prog  | 93.939                        | NYPH CU22-1358                  | 1NU62PS924702-01-00                 | PRESBYTERIAN HOSPITAL IN THE CITY OF NEWYORK | \$0                       | \$93,209  |
| Comprehensive High-Impact HIV Prevention Projects for Community- Based Organizations   | 93.939                        | ASCNYC CU161123                 | U65PS004743                         | AIDS SERVICE CENTER OF LOWER MANHATTANINC    | \$0                       | \$18,788  |
|  |                               |                                 |                                     |  | <u>\$0</u>                | <u>\$188,895</u>  |
|  |                               |                                 |                                     |  | <u>0</u>                  | <u>188,895</u>  |
| <b>Total Pass-through Programs</b>   |                               |                                 |                                     |  | <b><u>\$0</u></b>         | <b><u>\$348,141</u></b>   |
| <b>Total Department of Health &amp; Human Services (Excluding NIH)</b>   |                               |                                 |                                     |  | <b><u>\$2,102,778</u></b> | <b><u>\$11,876,967</u></b>  |
| <b>National Institute of Health</b>  |                               |                                 |                                     |  |                           |   |
| <b>Pass-through Awards</b>   |                               |                                 |                                     |  |                           |   |
| <b>National Institute on Drug Abuse/NIH/DHHS</b>   |                               |                                 |                                     |  |                           |   |
| TeleBup Program  | 93 .U03                       | SAEM RE2020-0000000131          | NIDA                                | SOCIETY FOR ACADEMIC EMERGENCY MEDICINE      | \$0                       | \$11,410  |
|  |                               |                                 |                                     |  | <u>\$0</u>                | <u>\$11,410</u>   |
|  |                               |                                 |                                     |  | <u>0</u>                  | <u>11,410</u>   |
| <b>Total Pass-through Programs</b>   |                               |                                 |                                     |  | <b><u>\$0</u></b>         | <b><u>\$11,410</u></b>  |
| <b>Total National Institute of Health</b>  |                               |                                 |                                     |  | <b><u>\$0</u></b>         | <b><u>\$11,410</u></b>  |
| <b>Grand Total: Department of Health &amp; Human Services</b>  |                               |                                 |                                     |  | <b><u>\$2,102,778</u></b> | <b><u>\$11,888,377</u></b>  |
| <b>National Aeronautics &amp; Space Administration</b>   |                               |                                 |                                     |  |                           |   |
| <b>Direct Awards</b>   |                               |                                 |                                     |  |                           |   |

The accompanying footnotes are an integral part of the Schedule of Expenditures of Federal Awards

**The Trustees of Columbia University in the City of New York**  
**Schedule of Expenditures of Federal Awards**  
**For year ended June 30, 2022**

| <u>Federal Grantor / Pass-through Grantor</u>                                     | <u>Assistance Listing No.</u> | <u>Award Identification No</u> | <u>Pass-through Contract Number</u> | <u>Passthrough Name</u>                                   | <u>Subrecipients</u> | <u>Other Programs</u><br><u>Total Expenditures</u><br><u>(Includes Subrecipients)</u> |
|---|-------------------------------|--------------------------------|-------------------------------------|---|----------------------|---|
| NASA Johnson Space Center- Intergovernmental Personnel Agreement (IPA)            | 43 .U01                       | IPA-AH-19-060                  |                                     |   | \$0                  | \$165,230   |
| <hr/>   |                               |                                |                                     |   |                      |   |
| Variable Stiffness Compliant Mechanisms for Deployable, Reconfigurable Structures | 43.012                        | 80NSSC20K0587                  |                                     |   | \$0                  | \$66,482  |
| <hr/>   |                               |                                |                                     |   |                      |   |
|   |                               |                                |                                     |   | <u>0</u>             | <u>231,712</u>  |
| Total Direct Award Programs   |                               |                                |                                     |   | <u>\$0</u>           | <u>\$231,712</u>  |
| <b>Pass-through Awards</b>  |                               |                                |                                     |   |                      |   |
| <b>National Aeronautics &amp; SpaceAdministration</b>                             |                               |                                |                                     |   |                      |   |
| Assistance in the Organization of the 2021 Salinity Science Conference            | 43 .U02                       | JPLCIT 1661438                 | NASA CU20-4421                      | JET PROPULSION LAB, CALIFORNIA<br>INSTITUTE OF TECHNOLOGY | \$0                  | \$115,862   |
| <hr/>   |                               |                                |                                     |   |                      |   |
|   |                               |                                |                                     |   | <u>\$0</u>           | <u>\$115,862</u>  |
| Total Pass-through Programs   |                               |                                |                                     |   | <u>0</u>             | <u>115,862</u>  |
| <b>Total National Aeronautics &amp; Space Administration</b>                      |                               |                                |                                     |   | <u>\$0</u>           | <u>\$115,862</u>  |
|   |                               |                                |                                     |   | <u>\$0</u>           | <u>\$347,574</u>  |
| <b>Department of Defense</b>  |                               |                                |                                     |   |                      |   |
| <b>Direct Awards</b>  |                               |                                |                                     |   |                      |   |
| Hacking for Defense at Columbia University  | 12.300                        | N00014-19-1-2002               |                                     |   | \$0                  | \$1,552   |
| <hr/>   |                               |                                |                                     |   |                      |   |
|   |                               |                                |                                     |   | <u>0</u>             | <u>1,552</u>  |
| Total Direct Award Programs   |                               |                                |                                     |   | <u>\$0</u>           | <u>\$1,552</u>  |
| <b>Total Department of Defense</b>  |                               |                                |                                     |   | <u>\$0</u>           | <u>\$1,552</u>  |
| <b>Department of Education</b>  |                               |                                |                                     |   |                      |   |
| <b>Direct Awards</b>  |                               |                                |                                     |   |                      |   |
| FLAS: Middle East Institute, Columbia University, Title VI Proposal               | 84.015                        | P015B180080-21                 |                                     |   | \$6,614              | \$1,285,311   |
| <hr/>   |                               |                                |                                     |   |                      |   |
|   |                               |                                |                                     |   | <u>6,614</u>         | <u>1,285,311</u>  |
| Total Direct Award Programs   |                               |                                |                                     |   | <u>\$6,614</u>       | <u>\$1,285,311</u>  |

The accompanying footnotes are an integral part of the Schedule of Expenditures of Federal Awards

**The Trustees of Columbia University in the City of New York**  
**Schedule of Expenditures of Federal Awards**  
**For year ended June 30, 2022**

|   |  |                               |                                |                                     |                         | <b>Other Programs</b> |  |
|---|--|-------------------------------|--------------------------------|-------------------------------------|-------------------------|-----------------------|--|
| <u>Federal Grantor / Pass-through Grantor</u> |  | <u>Assistance Listing No.</u> | <u>Award Identification No</u> | <u>Pass-through Contract Number</u> | <u>Passthrough Name</u> | <u>Subrecipients</u>  | <u>Total Expenditures (Includes Subrecipients)</u> |
| <b>Total</b>                                  | <b>Department of Education</b>   |                               |                                |                                     |                         | <b>\$6,614</b>        | <b>\$1,285,311</b>                                 |
| <b>Department of Homeland Security</b>        |  |                               |                                |                                     |                         |                       |  |
| <b>Direct Awards</b>                          |  |                               |                                |                                     |                         |                       |  |
| .....   |  |                               |                                |                                     |                         |                       |  |
|   | Training Solutions: Transitioning Disaster Survivors from Temporary to Permanent Housing                                 | 97.005                        | EMW-2018-CA-00068-S01          |                                     |                         | \$0                   | \$1,837,015  |
|   |  |                               |                                |                                     |                         | <u>0</u>              | <u>1,837,015</u>                                   |
| Total Direct Award Programs                   |  |                               |                                |                                     |                         | <u>\$0</u>            | <u>\$1,837,015</u>                                 |
| <b>Total</b>                                  | <b>Department of Homeland Security</b>   |                               |                                |                                     |                         | <b>\$0</b>            | <b>\$1,837,015</b>                                 |
| <b>Department of Justice</b>                  |  |                               |                                |                                     |                         |                       |  |
| <b>Direct Awards</b>                          |  |                               |                                |                                     |                         |                       |  |
| .....   |  |                               |                                |                                     |                         |                       |  |
|   | ReNew Court Pilot  | 16 .U01                       | USDCNJ CU19-2776               |                                     |                         | \$0                   | \$80,150   |
|   |  |                               |                                |                                     |                         | <u>0</u>              | <u>80,150</u>                                      |
| Total Direct Award Programs                   |  |                               |                                |                                     |                         | <u>\$0</u>            | <u>\$80,150</u>                                    |
| <b>Total</b>                                  | <b>Department of Justice</b>   |                               |                                |                                     |                         | <b>\$0</b>            | <b>\$80,150</b>                                    |
| <b>Department of State</b>                    |  |                               |                                |                                     |                         |                       |  |
| <b>Direct Awards</b>                          |  |                               |                                |                                     |                         |                       |  |
| .....   |  |                               |                                |                                     |                         |                       |  |
|   | FY-18 - Ngwang Choephel Fellowship Program: Tibet  | 19.012                        | S-ECAGD-18-GR-0004             |                                     |                         | \$0                   | \$267,958  |
|   |  |                               |                                |                                     |                         | <u>0</u>              | <u>267,958</u>                                     |
|   | Support the Regional Framework Agreements (RFA) on Air Pollution in Africa with afocus on East Africa                    | 19.017                        | SLMAQM20CA2347                 |                                     |                         | \$927                 | \$103,136  |
|   |  |                               |                                |                                     |                         | <u>927</u>            | <u>103,136</u>                                     |
|   | To Implement Renovation of Badinan Gate Project Which Restore Damaged Historic Aspects of the Gate to its Original State | 19.021                        | SIZ-100-19-GR0031              |                                     |                         | \$131,710             | \$312,813  |
|   |  |                               |                                |                                     |                         | <u>131,710</u>        | <u>312,813</u>                                     |
| Total Direct Award Programs                   |  |                               |                                |                                     |                         | <u>\$132,637</u>      | <u>\$683,907</u>                                   |

The accompanying footnotes are an integral part of the Schedule of Expenditures of Federal Awards

**The Trustees of Columbia University in the City of New York**  
**Schedule of Expenditures of Federal Awards**  
**For year ended June 30, 2022**

|   |  |                               |                                 |                                     |   | <b>Other Programs</b> |  |
|---|--|-------------------------------|---------------------------------|-------------------------------------|---|-----------------------|--|
| <u>Federal Grantor / Pass-through Grantor</u> |  | <u>Assistance Listing No.</u> | <u>Award Identification No.</u> | <u>Pass-through Contract Number</u> | <u>Passthrough Name</u>                                 | <u>Subrecipients</u>  | <u>Total Expenditures (Includes Subrecipients)</u> |
| <b>Total</b>                                  | <b>Department of State</b>   |                               |                                 |                                     |   | <b>\$132,637</b>      | <b>\$683,907</b>                                   |
| <b>Department of Veterans Affairs</b>         |  |                               |                                 |                                     |   |                       |  |
| <b>Direct Awards</b>                          |  |                               |                                 |                                     |   |                       |  |
|   | Post exertion malaise in GWI Brain autonomic and behavioral interactions | 64 .U01                       | 36C24E19D0034                   |                                     |   | \$0                   | \$229,466  |
|   |  |                               |                                 |                                     |   | <u>0</u>              | <u>229,466</u>                                     |
| Total Direct Award Programs                   |  |                               |                                 |                                     |   | <u>\$0</u>            | <u>\$229,466</u>                                   |
| <b>Pass-through Awards</b>                    |  |                               |                                 |                                     |   |                       |  |
| <b>Department of Veterans Affairs</b>         |  |                               |                                 |                                     |   |                       |  |
|   | Dynamic Regulation of Erythropoietin Gene Expression in Mammals - IPAs   | 64 .U02                       | JJPVA CU20-0737                 | DVAMC IPA                           | JAMES J PETERS VA MEDICAL CENTER                        | \$0                   | \$8,743  |
|   |  |                               |                                 |                                     |   | <u>\$0</u>            | <u>\$8,743</u>                                     |
|   |  |                               |                                 |                                     |   | <u>0</u>              | <u>8,743</u>                                       |
| Total Pass-through Programs                   |  |                               |                                 |                                     |   | <u>\$0</u>            | <u>\$8,743</u>                                     |
| <b>Total</b>                                  | <b>Department of Veterans Affairs</b>                                    |                               |                                 |                                     |   | <b>\$0</b>            | <b>\$238,209</b>                                   |
| <b>Nat. Endowment for the ArtsHumanities</b>  |  |                               |                                 |                                     |   |                       |  |
| <b>Direct Awards</b>                          |  |                               |                                 |                                     |   |                       |  |
|   | Promotion of the Arts Grants to Organizations and Individuals            | 45.024                        | NEA 1887916-31-22               |                                     |   | \$0                   | \$15,000   |
|   |  |                               |                                 |                                     |   | <u>0</u>              | <u>15,000</u>                                      |
| Total Direct Award Programs                   |  |                               |                                 |                                     |   | <u>\$0</u>            | <u>\$15,000</u>                                    |
| <b>Total</b>                                  | <b>Nat. Endowment for the ArtsHumanities</b>                             |                               |                                 |                                     |   | <b>\$0</b>            | <b>\$15,000</b>                                    |
| <b>Other Agencies / Gov't</b>                 |  |                               |                                 |                                     |   |                       |  |
| <b>Pass-through Awards</b>                    |  |                               |                                 |                                     |   |                       |  |
| <b>Covid 19 Related Funding:</b>              |  |                               |                                 |                                     |   |                       |  |
| <b>Small Business Development Centers</b>     |  |                               |                                 |                                     |   |                       |  |
|   | COVID-19-The Small Business Development Centers Cares                    | 59.037                        | SUNYRF 88013                    | SBA CU20-2061                       | RESEARCH FOUNDATION OF THE STATE UNIVERSITY OF NEW YORK | \$0                   | \$129,125  |
|   |  |                               |                                 |                                     |   | <u>\$0</u>            | <u>\$129,125</u>                                   |
|   |  |                               |                                 |                                     |   | <u>0</u>              | <u>129,125</u>                                     |
| Total Pass-through Programs                   |  |                               |                                 |                                     |   | <u>\$0</u>            | <u>\$129,125</u>                                   |
| <b>Total</b>                                  | <b>Other Agencies / Gov't</b>  |                               |                                 |                                     |   | <b>\$0</b>            | <b>\$129,125</b>                                   |

The accompanying footnotes are an integral part of the Schedule of Expenditures of Federal Awards

**The Trustees of Columbia University in the City of New York**  
**Schedule of Expenditures of Federal Awards**  
**For year ended June 30, 2022**

| <u>Federal Grantor / Pass-through Grantor</u>  | <u>Assistance Listing No.</u>                        | <u>Award Identification No</u>            | <u>Pass-through Contract Number</u>   | <u>Passthrough Name</u>                           | <u>Subrecipients</u> | <u>Other Programs</u><br><u>Total Expenditures</u><br><u>(Includes Subrecipients)</u> |
|--|--|---|---------------------------------------|---|----------------------|---|
| <b>United States Agency for International Dvlpt.</b>   |  |   |                                       |   |                      |   |
| <b>Direct Awards</b>   |  |   |                                       |   |                      |   |
| Malaria Diagnosis and Treatment Activity   | 98.001   | 72066318CA00005                           |                                       |   | \$0                  | \$3,347,168   |
|  |  |   |                                       |   | <u>0</u>             | <u>3,347,168</u>  |
| Total Direct Award Programs  |  |   |                                       |   | <u>\$0</u>           | <u>\$3,347,168</u>  |
| <b>Pass-through Awards</b>   |  |   |                                       |   |                      |   |
| <b>U.S. Agency for International Development</b>   |  |   |                                       |   |                      |   |
| Egyptian Economic Governance for Development Project II  | 98 .U01  | DAI 1004369-21S-35968-00                  | AID<br>7200AA18D00008/72026320F<br>00 | DAI   | \$0                  | \$226,167   |
|  |  |   |                                       |   | <u>\$0</u>           | <u>\$226,167</u>  |
| <b>USAID Foreign Assistance for Programs Overseas</b>  |  |   |                                       |   |                      |   |
| Meeting Targets and Maintaining Epidemic Control   | 98.001   | JHPIEGO 19-SBA-149                        | 7200AA19CA00003                       | JOHNS HOPKINS PROG FOR INTRN'L<br>EDUCA. INGYN/OB | \$201,092            | \$6,725,073   |
| One Health Workforce - Next Generation (OHW-NG)  | 98.001   | UCD A20-1412-S007                         | 7200AA19CA00018                       | UNIVERSITY OF CALIFORNIA, DAVIS                   | \$0                  | \$613,964   |
|  |  |   |                                       |   | <u>\$201,092</u>     | <u>\$7,339,037</u>  |
|  |  |   |                                       |   | <u>201,092</u>       | <u>7,565,204</u>  |
| Total Pass-through Programs  |  |   |                                       |   | <u>\$201,092</u>     | <u>\$7,565,204</u>  |
| <b>Total</b>   | <b>United States Agency for International Dvlpt.</b> |   |                                       |   | <u>\$201,092</u>     | <u>\$10,912,372</u>   |
| <b>Provider Relief Fund</b>  |  |   |                                       |   |                      |   |
| <b>Direct Awards</b>   |  |   |                                       |   |                      |   |
| COVID-19 CARES Act General and Administrative (G&A) Benefit Expenses, Healthcare Related Expenses & Possible Lost Revenue Reimbursements | 93.498   | General and Administrative (G&A) Expenses |                                       |   | \$0                  | \$83,792,525  |
|  |  |   |                                       |   | <u>0</u>             | <u>83,792,525</u>   |
| Total Direct Award Programs  |  |   |                                       |   | <u>\$0</u>           | <u>\$83,792,525</u>   |
| <b>Total</b>   | <b>Provider Relief Fund</b>                          |   |                                       |   | <u>\$0</u>           | <u>\$83,792,525</u>   |
| <b>Total:</b>  | <b>Other Programs</b>                                |   |                                       |   | <u>\$2,443,121</u>   | <u>\$111,211,117</u>  |
| <b>Total Federal Award Expenditures:</b>   |  |   |                                       |   | <u>\$130,294,572</u> | <u>\$1,649,379,144</u>  |

The accompanying footnotes are an integral part of the Schedule of Expenditures of Federal Awards



# The Trustees of Columbia University in the City of New York

## Notes to Summary Schedule of Expenditures of Federal Awards

### Year ended June 30, 2022

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#### 1. Basis of Presentation

The accompanying Schedule of Expenditures of Federal Awards (the "Schedule") has been prepared in accordance with OMB Uniform Guidance. The purpose of the Schedule is to present a summary of those activities of the University for the year ended June 30, 2022, which have been financed by the U.S. Government ("Federal awards"). For purposes of the Schedule, Federal awards include all Federal assistance entered into directly between the University and the Federal government and also between the University and other primary recipients of Federal government funds (pass-through), recorded on the accrual basis of accounting. Negative amounts listed on the Schedule represent adjustments, in the normal course of business, to amounts included on the prior year's Schedule. The project number on the Schedule represents the number assigned by the direct or originating sponsor, and when not available an alpha-numeric number is assigned by the University to manage sponsored project spending. The passthrough contract number on the Schedule represents the number assigned by the pass-through entity to the applicable program. Federal award Assistance number and pass-through numbers are provided when available.

#### 2. Facility and Administrative Costs

The University elects not to use the 10% de minimis rate allowed under the Uniform Guidance. The University and the Federal government currently operate under a provisional agreement that provides for facilities and administrative ("F&A") cost rates under federal grants and contracts as of July 1, 2021. This agreement will remain in place until such time a new agreement is reached. The following are F&A provisional cost rates established by the University:

|   | <b>Rate</b> |
|---|-------------|
| <u>All campuses, excluding Lamont-Doherty Earth Observatory</u> |             |
| On-campus   | 62.5%       |
| Off-campus  | 26.0%       |
| Off-campus modified   | 28.5%       |
| <u>Lamont-Doherty Earth Observatory</u>                         |             |
| On-campus   | 54.5%       |
| Off-campus  | 26.0%       |
| Off-campus modified   | 28.5%       |
| <u>Other sponsored activity</u>                                 |             |
| On-campus   | 31.0%       |
| Off-campus  | 26.0%       |

#### 3. Guaranteed Student Loan Programs

With respect to the Federal Direct Lending Program (Federal Assistance Listing #84.268), the University is only responsible for the performance of certain administrative duties; therefore, the transactions and the balances of loans outstanding related to this program are not included in the University's consolidated financial statements. The schedule includes the amounts loaned to students during the year ended June 30, 2022. It is not practical to estimate the outstanding balance of loans under this program.

**The Trustees of Columbia University in the City of New York**  
**Notes to Summary Schedule of Expenditures of Federal Awards**  
**Year ended June 30, 2022**

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**4. Student Loan Programs**

The University is responsible for the oversight and management of the U.S. Department of Education's Federal Title IV Program which includes Federal Perkins Loan Programs (Federal Assistance Listing #84.038), as well as Health Resources and Services Administration (HRSA) Title VII and Title VIII loan programs funded by the Department of Health and Human Services:

*(Amounts in thousands)*

| <b>Federal Agency</b> | <b>Loan Program</b>  | <b>Federal Assistance Listing Number</b> | <b>Outstanding Principal Balance at June 30, 2022</b> |
|-----------------------|----------------------|--|---|
| Education             | Perkins Loan         | 84.038                                   | \$ 21,802   |
| DHHS                  | Health Professionals | 93.342                                   | 8,578   |
| DHHS                  | Nursing Students     | 93.364                                   | <u>1,052</u>  |
|                       |                      |  | <b>\$ 31,432</b>                                      |

The federally approved administrative cost allowed under the Title IV program for Federal Work study, Federal Perkins and Federal SEOG for the fiscal year ending June 30, 2022 was \$368 thousand. This expense was charged to the Federal Work Study Program. The administrative cost allowance is determined as a percentage of the total program expenditures. The formula permits administrative cost charges at 4.5% of the first \$5.5 million expended and 3% on expenditures over \$5.5 million.

**5. CARES Act Funding**

The Schedule includes grant activity related to the DHHS Coronavirus Aid Relief and Economic Security ("CARES") Act Assistance Listing Number 93.498. As required based on guidance in the 2022 OMB Compliance Supplement, the Schedule includes all Period 2 and 3 funds received between July 1, 2020 and June 30, 2021 and expended by June 30, 2022 as reported to HRSA via the PRF Reporting Portal. In addition, the University received other COVID-19 related funding, identified on separate lines in the Schedule by Federal Assistance Listing number with "COVID-19" as a prefix added to the program name in the specific cluster where they reside.

**The Trustees of Columbia University in the City of New York**  
**Schedule of Financial Responsibility Data**  
**For the Years Ended June 30, 2022 and 2021**  
(in thousands of dollars, unless otherwise noted)

| Location in financial statements or related notes   | Financial element   | GAAP financial statement line item or disclosure | Amount used as ratio input |
|---|---|--|----------------------------|
| <b>Primary Reserve Ratio: Expendable Net Assets</b> |   |  |                            |
| Statement of financial position                     | Net assets without donor restrictions   | \$ 8,303,326                                     | \$ 8,303,326               |
| Statement of financial position                     | Net assets with donor restrictions  | 10,129,905                                       | 10,129,905                 |
| Note 23, Financial Responsibility Standards         | Unsecured related party receivable  | 9,397  | 9,397                      |
| Note 23, Financial Responsibility Standards         | Total property, plant, and equipment, net   | 6,077,595  |                            |
| Note 23, Financial Responsibility Standards         | Property, plant and equipment, net - pre-implementation   |  | 4,732,022                  |
| Note 23, Financial Responsibility Standards         | Property, plant and equipment, net - post-implementation with outstanding debt for original purchase    |  | 23,968                     |
| Note 23, Financial Responsibility Standards         | Property, plant and equipment, net - post-implementation without outstanding debt for original purchase |  | 1,154,765                  |
| Note 23, Financial Responsibility Standards         | Construction in progress  |  | 166,840                    |
| Statement of financial position                     | Total lease right-of-use assets   | 280,807  |                            |
| N/A   | Lease right-of-use assets, pre-implementation   |  | -                          |
| Statement of financial position                     | Lease right-of-use assets, post-implementation  |  | 280,807                    |
| N/A   | Intangible assets   | -  | -                          |
| Statement of financial position                     | Post-employment and pension liabilities (Accrued employee benefit liabilities)                          | 451,827  | 451,827                    |
| Note 23, Financial Responsibility Standards         | Total long-term debt  | 1,758,918  |                            |
| Note 23, Financial Responsibility Standards         | Long-term debt - for long-term purposes pre-implementation  |  | 1,586,760                  |
| Note 23, Financial Responsibility Standards         | Long-term debt - for long-term purposes post-implementation   |  | 172,158                    |
| N/A   | Line of Credit for Construction in progress   |  | -                          |
| Statement of financial position                     | Total liability related to lease right-of-use assets  | 290,718  |                            |
| N/A   | Liability related to lease right-of-use assets - pre-implementation                                     |  | -                          |
| Statement of financial position                     | Liability related to lease right-of-use assets - post-implementation                                    |  | 290,718                    |
| Note 23, Financial Responsibility Standards         | Annuities and life income funds with donor restrictions   | 72,694   | 72,694                     |
| Note 23, Financial Responsibility Standards         | Term endowments with donor restrictions   | 4,706,345  | 4,706,345                  |
| Note 23, Financial Responsibility Standards         | Net assets with donor restrictions: restricted in perpetuity  | 4,567,845  | 4,567,845                  |
| <b>Primary Reserve Ratio: Expenses and Losses</b>   |   |  |                            |
| Note 23, Financial Responsibility Standards         | Total expenses and losses without donor restrictions  | \$ 5,508,794                                     | \$ 5,508,794               |
| <b>Equity Ratio: Modified Net Assets</b>            |   |  |                            |
| Statement of financial position                     | Net assets without donor restrictions   | \$ 8,303,326                                     | \$ 8,303,326               |
| Statement of financial position                     | Net assets with donor restrictions  | 10,129,905                                       | 10,129,905                 |
| N/A   | Intangible assets   | -  | -                          |
| Note 23, Financial Responsibility Standards         | Unsecured related party receivable  | 9,397  | 9,397                      |
| <b>Equity Ratio: Modified Assets</b>                |   |  |                            |
| Statement of financial position                     | Total assets  | \$ 23,231,005                                    | \$ 23,231,005              |
| N/A   | Lease right-of-use assets, pre-implementation   |  | -                          |
| N/A   | Intangible assets   | -  | -                          |
| Note 23, Financial Responsibility Standards         | Unsecured related party receivable  | 9,397  | 9,397                      |
| <b>Net Income Ratio</b>                             |   |  |                            |
| Statement of activities                             | Change in net assets without donor restrictions   | \$ 47,847  | \$ 47,847                  |
| Note 23, Financial Responsibility Standards         | Total revenues and gains without donor restrictions   |  | 5,855,249                  |

See accompanying independent auditors' report.



## **Report of Independent Auditors on Internal Control Over Financial Reporting and on Compliance and Other Matters Based on an Audit of Financial Statements Performed in Accordance with *Government Auditing Standards***

To The Trustees of Columbia University in the City of New York

We have audited, in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards* issued by the Comptroller General of the United States, the consolidated financial statements of The Trustees of Columbia University in the City of New York and its subsidiaries (the "University"), which comprise the consolidated balance sheet as of June 30, 2022, and the related consolidated statements of activities and of cash flows for the year then ended, and the related notes (collectively referred to as the "consolidated financial statements"), and have issued our report thereon dated October 12, 2022, except for footnote 23 with respect to the consolidated financial statements and the opinion on the schedule of financial responsibility data, as to which the date is March 28, 2023.

### **Report on Internal Control Over Financial Reporting**

In planning and performing our audit of the financial statements, we considered the University's internal control over financial reporting ("internal control") as a basis for designing audit procedures that are appropriate in the circumstances for the purpose of expressing our opinion on the financial statements, but not for the purpose of expressing an opinion on the effectiveness of the University's internal control. Accordingly, we do not express an opinion on the effectiveness of the University's internal control.

A *deficiency in internal control* exists when the design or operation of a control does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct, misstatements on a timely basis. A *material weakness* is a deficiency, or a combination of deficiencies, in internal control such that there is a reasonable possibility that a material misstatement of the entity's financial statements will not be prevented, or detected and corrected on a timely basis. A *significant deficiency* is a deficiency, or a combination of deficiencies, in internal control that is less severe than a material weakness, yet important enough to merit attention by those charged with governance.

Our consideration of internal control was for the limited purpose described in the first paragraph of this section and was not designed to identify all deficiencies in internal control that might be material weaknesses or significant deficiencies. Given these limitations, during our audit we did not identify any deficiencies in internal control that we consider to be material weaknesses. However, material weaknesses may exist that have not been identified.

### **Report on Compliance and Other Matters**

As part of obtaining reasonable assurance about whether the University's financial statements are free from material misstatement, we performed tests of its compliance with certain provisions of laws, regulations, contracts and grant agreements, noncompliance with which could have a direct and material effect on the financial statements. However, providing an opinion on compliance with those provisions was not an objective of our audit and, accordingly, we do not express such an opinion. The results of our tests disclosed no instances of noncompliance or other matters that are required to be reported under *Government Auditing Standards*.



### **Purpose of this Report**

The purpose of this report is solely to describe the scope of our testing of internal control and compliance and the results of that testing, and not to provide an opinion on the effectiveness of the University's internal control or on compliance. This report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the University's internal control and compliance. Accordingly, this communication is not suitable for any other purpose.

*PricewaterhouseCoopers LLP*

New York, New York

October 12, 2022, except for footnote 23 with respect to the consolidated financial statements and the opinion on the schedule of financial responsibility data, as to which the date is March 28, 2023.



## **Report of Independent Auditors on Compliance for Each Major Program and on Internal Control Over Compliance Required by Uniform Guidance**

To The Trustees of Columbia University in the City of New York

### **Report on Compliance for Each Major Federal Program**

#### ***Opinion on Each Major Federal Program***

We have audited The Trustees of Columbia University in the City of New York and its subsidiaries' (the "University") compliance with the types of compliance requirements identified as subject to audit in the *OMB Compliance Supplement* that could have a direct and material effect on each of the University's major federal programs for the year ended June 30, 2022. The University's major federal programs are identified in the summary of auditor's results section of the accompanying schedule of findings and questioned costs.

In our opinion, the University complied, in all material respects, with the types of compliance requirements referred to above that could have a direct and material effect on each of its major federal programs for the year ended June 30, 2022.

#### ***Basis for Opinion on Each Major Federal Program***

We conducted our audit of compliance in accordance with auditing standards generally accepted in the United States of America (US GAAS); the standards applicable to financial audits contained in *Government Auditing Standards* issued by the Comptroller General of the United States; and the audit requirements of Title 2 U.S. *Code of Federal Regulations* Part 200, *Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards* (Uniform Guidance). Our responsibilities under those standards and the Uniform Guidance are further described in the Auditors' Responsibilities for the Audit of Compliance section of our report.

We are required to be independent of the University and to meet our other ethical responsibilities, in accordance with relevant ethical requirements relating to our audit. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion on compliance for each major federal program. Our audit does not provide a legal determination of the University's compliance with the compliance requirements referred to above.

#### ***Responsibilities of Management for Compliance***

Management is responsible for compliance with the requirements referred to above and for the design, implementation, and maintenance of effective internal control over compliance with the requirements of laws, statutes, regulations, rules and provisions of contracts or grant agreements applicable to the University's federal programs.

#### ***Auditors' Responsibilities for the Audit of Compliance***

Our objectives are to obtain reasonable assurance about whether material noncompliance with the compliance requirements referred to above occurred, whether due to fraud or error, and express an opinion on the University's compliance based on our audit. Reasonable assurance is a high level of assurance but is not absolute assurance and therefore is not a guarantee that an audit conducted in accordance with US GAAS, *Government Auditing Standards*, and the Uniform Guidance will always detect material noncompliance when it exists. The risk of not detecting material noncompliance resulting from fraud is higher than for that resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control. Noncompliance with the compliance requirements referred to above is considered material, if there is a substantial likelihood that, individually or in the aggregate, it would influence the judgment made by a reasonable user of the report on compliance about the University's compliance with the requirements of each major federal program as a whole.



In performing an audit in accordance with US GAAS, *Government Auditing Standards*, and the Uniform Guidance, we:

- Exercise professional judgment and maintain professional skepticism throughout the audit.
- Identify and assess the risks of material noncompliance, whether due to fraud or error, and design and perform audit procedures responsive to those risks. Such procedures include examining, on a test basis, evidence regarding the University's compliance with the compliance requirements referred to above and performing such other procedures as we considered necessary in the circumstances.
- Obtain an understanding of the University's internal control over compliance relevant to the audit in order to design audit procedures that are appropriate in the circumstances and to test and report on internal control over compliance in accordance with the Uniform Guidance, but not for the purpose of expressing an opinion on the effectiveness of the University's internal control over compliance. Accordingly, no such opinion is expressed.

We are required to communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and any significant deficiencies and material weaknesses in internal control over compliance that we identified during the audit.

### ***Report on Internal Control Over Compliance***

*A deficiency in internal control over compliance* exists when the design or operation of a control over compliance does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct, noncompliance with a type of compliance requirement of a federal program on a timely basis. *A material weakness in internal control over compliance* is a deficiency, or combination of deficiencies, in internal control over compliance, such that there is a reasonable possibility that material noncompliance with a type of compliance requirement of a federal program will not be prevented, or detected and corrected, on a timely basis. *A significant deficiency in internal control over compliance* is a deficiency, or a combination of deficiencies, in internal control over compliance with a type of compliance requirement of a federal program that is less severe than a material weakness in internal control over compliance, yet important enough to merit attention by those charged with governance.

Our consideration of internal control over compliance was for the limited purpose described in the Auditors' Responsibilities for the Audit of Compliance section above and was not designed to identify all deficiencies in internal control over compliance that might be material weaknesses or significant deficiencies in internal control over compliance. Given these limitations, during our audit we did not identify any deficiencies in internal control over compliance that we consider to be material weaknesses, as defined above. However, material weaknesses or significant deficiencies in internal control over compliance may exist that were not identified.

Our audit was not designed for the purpose of expressing an opinion on the effectiveness of internal control over compliance. Accordingly, no such opinion is expressed.

The purpose of this report on internal control over compliance is solely to describe the scope of our testing of internal control over compliance and the results of that testing based on the requirements of the Uniform Guidance. Accordingly, this report is not suitable for any other purpose.

*PricewaterhouseCoopers LLP*

New York, New York  
March 28, 2023

**The Trustees of Columbia University in the City of New York**  
**Summary of Independent Auditors' Results**  
**Year Ended June 30, 2022**

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**Section I – Summary of Independent Auditors' Results**

**Financial Statements**

Type of report of independent auditors issued: **Unmodified**

Internal control over financial reporting:  
 Material weakness (es) identified? \_\_\_\_\_ Yes   X   No

Significant deficiencies(s) identified that are not considered to be material weaknesses? \_\_\_\_\_ Yes   X   None reported

Noncompliance material to financial statements noted? \_\_\_\_\_ Yes   X   No

**Federal Awards**

Internal Control over major programs:  
 Material weakness (es) identified? \_\_\_\_\_ Yes   X   No

Significant deficiencies(s) identified that are not considered to be material weaknesses \_\_\_\_\_ Yes   X   None reported

Type of independent auditors' report issued on compliance for major programs: **Unmodified**

Any audit findings disclosed that are required to be reported in accordance with 2 CFR 200.516(a)? \_\_\_\_\_ Yes   X   No

Identification of major programs:

| <u>Federal Assistance Listing Number(s)</u> | <u>Name of Federal Program or Cluster</u>                     |
|---|---|
| Various                                     | Research & Development Cluster                                |
| 93.266                                      | ICAP2   |
| 93.498                                      | COVID-19 CARES Act: Provider Relief Fund                      |
| 84.425E, 84.425F                            | COVID-19 CARES Act: Higher Education<br>Emergency Relief Fund |

Dollar threshold used to distinguish between Type A and Type B programs: \$4,948,137

Auditee qualified as low-risk auditee?   X   Yes \_\_\_\_\_ No



**The Trustees of Columbia University in the City of New York**  
**Schedule of Findings and Questioned Costs**  
**Year Ended June 30, 2022**

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**Section II—Financial Statement Findings**

As a result of our audit, no instances of noncompliance related to the financial statements that are required to be reported in accordance with *Government Auditing Standards* were identified.

**Section III—Federal Award Findings and Questioned Costs**

No federal award findings and questioned costs were reported as a result of our audit.

**The Trustees of Columbia University in the City of New York**  
**Summary Schedule of Prior Audit Findings**  
**Year Ended June 30, 2022**

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There were no prior year audit findings that require an update in this report.