Harvard University

Report on Federal Awards in Accordance with the Uniform Guidance
June 30, 2022
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Part I

Financial Statements and
Schedule of Expenditures of Federal Awards

Report of Independent Auditors

To the Joint Committee on Inspection of the Governing Boards of Harvard University

Report on the Audit of the Consolidated Financial Statements

Opinion

We have audited the accompanying consolidated financial statements of Harvard University and its subsidiaries (the "University"), which comprise the consolidated balance sheet as of June 30, 2022, and the related consolidated statements of changes in net assets with general operating account detail and of changes in net assets of the endowment 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 consolidated financial position of the University as of June 30, 2022, the changes in its net assets for the year ended June 30, 2022, and its cash flows for the years ended June 30, 2022 and 2021 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 audit. 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 balance sheet as of June 30, 2021, and the related consolidated statements of changes in net assets with general operating account detail, of changes in net assets of the endowment and of cash flows for the year then ended (the balance sheet and the statements of changes in net assets with general operating account detail and of changes in net assets of the endowment are not presented herein), and in our report dated October 13, 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 consolidated 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 consolidated financial statements are issued.

Auditors' Responsibilities for the Audit of the Consolidated Financial Statements

Our objectives are to obtain reasonable assurance about whether the consolidated 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 judgment made by a reasonable user based on the consolidated 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 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 evaluate 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 is 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 is 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 is 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 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.

PricewaterhouseCoopers LLP

Boston, Massachusetts
October 12, 2022

CONSOLIDATED BALANCE SHEETS

with summarized financial information as of June 30, 2021

In thousands of dollars	June 30 2022	2021
ASSETS:		
Cash and cash equivalents	**$ 283,227**	$ 224,042
Receivables, net *(Note 4)*	**339,792**	322,482
Prepayments and deferred charges	**317,448**	315,172
Operating leases — right of use assets *(Note 18)*	**677,147**	689,962
Notes receivable, net *(Note 5)*	**380,812**	377,596
Pledges receivable, net *(Note 6)*	**2,592,434**	2,335,958
Fixed assets, net *(Note 7)*	**8,442,840**	8,463,008
Interests in trusts held by others *(Note 3)*	**432,896**	515,757
Securities pledged to counterparties, at fair value *(Note 3)*	**179,514**	290,388
Investment portfolio, at fair value *(Note 3)*	**59,135,219**	61,141,750
TOTAL ASSETS	**$ 72,781,329**	**$ 74,676,115**
LIABILITIES:		
Accounts payable	**$ 486,707**	$ 488,896
Deferred revenue and other liabilities	**1,679,364**	1,716,026
Operating lease liabilities *(Note 18)*	**689,342**	702,872
Other liabilities associated with the investment portfolio *(Notes 3 and 10)*	**718,031**	756,237
Liabilities due under split interest agreements *(Note 9)*	**886,017**	1,019,357
Bonds and notes payable *(Note 10)*	**6,117,203**	5,503,199
Accrued retirement obligations *(Note 11)*	**928,514**	1,078,647
Government loan advances *(Note 5)*	**29,457**	35,807
TOTAL LIABILITIES	**11,534,635**	**11,301,041**
NET ASSETS	**61,246,694**	**63,375,074**
TOTAL LIABILITIES AND NET ASSETS	**$ 72,781,329**	**$ 74,676,115**

	Without donor restrictions	With donor restrictions	June 30 2022	2021
NET ASSETS:				
General Operating Account (GOA) *(Note 8)*	$ 6,519,858	$ 3,148,616	$ 9,668,474	$ 9,435,991
Endowment *(Note 8)*	9,057,969	41,819,711	50,877,680	53,165,753
Split interest agreements *(Note 9)*		700,540	700,540	773,330
TOTAL NET ASSETS	**$ 15,577,827**	**$ 45,668,867**	**$ 61,246,694**	**$ 63,375,074**

The accompanying notes are an integral part of the consolidated financial statements.

CONSOLIDATED STATEMENTS OF CHANGES IN NET ASSETS WITH GENERAL OPERATING ACCOUNT DETAIL

with summarized financial information for the year ended June 30, 2021

In thousands of dollars	Without Donor Restrictions	With Donor Restrictions	For the year ended June 30 2022	2021
OPERATING REVENUE:				
Net student income *(Notes 2 and 12)*	$ 1,223,363		**$ 1,223,363**	$ 888,284
Sponsored support *(Note 13)*				
Federal government – direct costs	460,707		**460,707**	442,268
Federal government – indirect costs	181,439		**181,439**	182,750
Non-federal sponsors – direct costs	77,632	$ 210,670	**288,302**	259,553
Non-federal sponsors – indirect costs	23,859	21,450	**45,309**	42,116
Total sponsored support	743,637	232,120	**975,757**	**926,687**
Gifts for current use *(Note 14)*	140,625	364,111	**504,736**	540,959
Investment income:				
Endowment returns made available for operations *(Note 8)*	395,456	1,723,399	**2,118,855**	2,039,524
GOA returns made available for operations	153,110		**153,110**	143,788
Other investment income	14,591	7,056	**21,647**	15,917
Total investment income	563,157	1,730,455	**2,293,612**	**2,199,229**
Other revenue *(Note 15)*	838,323		**838,323**	693,915
Net assets released from restriction	2,151,569	(2,151,569)	**0**	0
TOTAL OPERATING REVENUE	**5,660,674**	**175,117**	**5,835,791**	**5,249,074**
OPERATING EXPENSES:				
Salaries and wages	2,206,342		**2,206,342**	2,076,665
Employee benefits *(Note 11)*	583,931		**583,931**	578,126
Services purchased	732,709		**732,709**	644,699
Depreciation *(Note 7)*	428,860		**428,860**	410,229
Space and occupancy	353,786		**353,786**	316,916
Supplies and equipment	271,084		**271,084**	210,697
Interest *(Note 10)*	187,534		**187,534**	183,455
Scholarships and other student awards *(Note 12)*	171,312		**171,312**	160,744
Other expenses *(Note 16)*	494,575		**494,575**	384,825
TOTAL OPERATING EXPENSES	**5,430,133**	**0**	**5,430,133**	**4,966,356**
NET OPERATING SURPLUS	**230,541**	**175,117**	**405,658**	**282,718**
NON-OPERATING ACTIVITIES:				
Income from GOA investments	15,206		**15,206**	2,504
GOA realized and change in unrealized (depreciation)/appreciation, net *(Note 3)*	(259,353)		**(259,353)**	1,529,850
GOA returns made available for operations	(153,110)		**(153,110)**	(143,787)
Change in pledge balances *(Note 6)*		88,930	**88,930**	(12,362)
Change in interests in trusts held by others		(5,803)	**(5,803)**	765
Gifts for facilities and loan funds *(Note 14)*		87,874	**87,874**	135,488
Change in retirement obligations *(Note 11)*	142,745		**142,745**	105,987
Other changes	(11,067)		**(11,067)**	(162,718)
Transfers between GOA and endowment *(Note 8)*	(110,323)	6,513	**(103,810)**	(616)
Transfers between GOA and split interest agreements *(Note 9)*		25,213	**25,213**	21,019
Non-operating net assets released from restrictions	76,828	(76,828)	**0**	0
TOTAL NON-OPERATING ACTIVITIES	**(299,074)**	**125,899**	**(173,175)**	**1,476,130**
GENERAL OPERATING ACCOUNT NET CHANGE DURING THE YEAR	**(68,533)**	**301,016**	**232,483**	**1,758,848**
Endowment net change during the year	(365,086)	(1,922,987)	**(2,288,073)**	11,271,373
Split interest agreements net change during the year *(Note 9)*		(72,790)	**(72,790)**	175,137
NET CHANGE DURING THE YEAR	**(433,619)**	**(1,694,761)**	**(2,128,380)**	**13,205,358**
Net assets, beginning of year	16,011,446	47,363,628	**63,375,074**	**50,169,716**
NET ASSETS, END OF YEAR	**$ 15,577,827**	**$ 45,668,867**	**$ 61,246,694**	**$ 63,375,074**

The accompanying notes are an integral part of the consolidated financial statements.

CONSOLIDATED STATEMENTS OF CHANGES IN NET ASSETS OF THE ENDOWMENT

with summarized financial information for the year ended June 30, 2021

In thousands of dollars	Without Donor Restrictions	With Donor Restrictions	For the year ended June 30 2022	2021
Investment return *(Note 3):*				
Income from general investments	$ 24,464	$ 108,460	**$ 132,924**	$ 17,923
Realized and change in unrealized (depreciation)/appreciation, net	(196,758)	(878,123)	**(1,074,881)**	12,814,780
Total investment return	(172,294)	(769,663)	**(941,957)**	**12,832,703**
Endowment returns made available for operations	(395,456)	(1,723,399)	**(2,118,855)**	(2,039,524)
Net investment return	(567,750)	(2,493,062)	**(3,060,812)**	**10,793,179**
Gifts for endowment *(Note 14)*	49,443	534,207	**583,650**	465,019
Transfers between endowment and the GOA *(Note 8)*	110,323	(6,513)	**103,810**	616
Capitalization of split interest agreements *(Note 9)*		18,603	**18,603**	16,830
Change in pledge balances *(Note 6)*		168,095	**168,095**	(54,262)
Change in interests in trusts held by others *(Note 8)*		(77,058)	**(77,058)**	87,633
Other changes	(4,059)	(20,302)	**(24,361)**	(37,642)
Net assets released from restrictions	46,957	(46,957)	**0**	0
NET CHANGE DURING THE YEAR	**(365,086)**	**(1,922,987)**	**(2,288,073)**	**11,271,373**
Net assets of the endowment, beginning of year	9,423,055	43,742,698	**53,165,753**	41,894,380
NET ASSETS OF THE ENDOWMENT, END OF YEAR	**$ 9,057,969**	**$ 41,819,711**	**$ 50,877,680**	**$ 53,165,753**

The accompanying notes are an integral part of the consolidated financial statements.

CONSOLIDATED STATEMENTS OF CASH FLOWS

In thousands of dollars	For the year ended June 30 2022	2021
CASH FLOWS FROM OPERATING ACTIVITIES:		
Change in net assets	**$ (2,128,380)**	$ 13,205,358
Adjustments to reconcile change in net assets to net cash (used in) operating activities:		
Depreciation	**428,860**	410,229
Amortization of premium and discount related to bonds and notes payable	**(35,865)**	(38,512)
Realized and change in unrealized depreciation/(appreciation), net	**1,511,867**	(14,741,458)
Change in fair value of interest rate exchange agreements	**(22,704)**	(12,928)
Change in interests in trusts held by others	**82,861**	(88,398)
Change in liabilities due under split interest agreements	**(101,062)**	226,092
Gifts of donated securities	**(81,017)**	(111,634)
Proceeds from the sales of gifts of unrestricted securities	**15,069**	22,290
Gifts for restricted purposes	**(556,994)**	(527,463)
Cost of issuance of debt	**343**	362
Loss on disposal of assets	**23,439**	39,033
Change in accrued retirement obligations	**(150,133)**	(137,604)
Non-cash operating lease costs	**12,815**	64,737
Changes in operating assets and liabilities:		
Receivables, net	**(17,310)**	(59,751)
Prepayments and deferred charges	**(2,276)**	(10,252)
Pledges receivable, net	**(256,476)**	67,217
Accounts payable	**(6,807)**	155,865
Deferred revenue and other liabilities	**(36,662)**	135,848
Operating lease liability	**(13,530)**	(64,727)
NET CASH (USED IN) OPERATING ACTIVITIES	**(1,333,962)**	**(1,465,696)**
CASH FLOWS FROM INVESTING ACTIVITIES:		
Loans made to students, faculty, and staff	**(64,584)**	(50,412)
Payments received on student, faculty, and staff loans	**48,654**	55,893
Change in other notes receivable	**12,714**	(10,843)
Proceeds from the sales and maturities of investments	**15,503,537**	17,206,874
Purchase of investments	**(14,028,307)**	(15,952,533)
Change associated with repurchase agreements	**(699,810)**	427,855
Additions to fixed assets	**(426,773)**	(472,027)
NET CASH PROVIDED BY INVESTING ACTIVITIES	**345,431**	**1,204,807**
CASH FLOWS FROM FINANCING ACTIVITIES:		
Change in overdrafts included in accounts payable	**(740)**	6,377
Change in split interest agreements from new contributions, income and payments to annuitants	**(32,278)**	(26,319)
Proceeds from issuance of debt	**746,530**	
Debt repayments	**(97,004)**	(123,330)
Proceeds from the sales of gifts of restricted securities	**65,948**	89,344
Gifts for restricted purposes	**556,994**	527,463
Change in government loan advances	**(6,350)**	(8,941)
NET CASH PROVIDED BY FINANCING ACTIVITIES	**1,233,100**	**464,594**
NET CHANGE IN CASH	**244,569**	**203,705**
Cash, beginning of year	**1,564,303**	**1,360,598**
CASH, END OF YEAR	**$ 1,808,872**	**$ 1,564,303**
Cash and cash equivalents (per *Consolidated Balance Sheets)*	**$ 283,227**	**$ 224,042**
Cash and cash equivalents held in investments *(Note 3)*	**1,525,645**	**1,340,261**
TOTAL CASH AND CASH EQUIVALENTS	**$ 1,808,872**	**$ 1,564,303**
Supplemental disclosure of cash flow information:		
Accounts payable related to fixed asset additions	$ 45,583	$ 40,225
Cash paid for interest	$ 222,932	$ 223,715

The accompanying notes are an integral part of the consolidated financial statements.

1. UNIVERSITY ORGANIZATION

Harvard University (the "University") is a private, not-for-profit institution of higher education with approximately 7,100 undergraduate and 14,100 graduate students in fiscal year 2022, as compared to 5,200 undergraduate and 13,400 graduate students in fiscal year 2021. Established in 1636, the University includes the Faculty of Arts and Sciences, the John A. Paulson School of Engineering and Applied Sciences, the Division of Continuing Education, ten graduate and professional Schools, the Radcliffe Institute for Advanced Study, a variety of research museums and institutes, and an extensive library system to support the teaching and research activities of the Harvard community.

The President and Fellows of Harvard College (the "Corporation"), a governing board of the University, has oversight responsibility for all of the University's financial affairs. The Corporation delegates substantial authority to the Schools and departments for the management of their resources and operations.

The University includes Harvard Management Company (HMC), a wholly owned subsidiary founded in 1974 to manage the University's investment assets. HMC is governed by a Board of Directors that is appointed by the Corporation.

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Basis of presentation

The accompanying consolidated financial statements have been prepared on the accrual basis of accounting and include the accounts of the University and affiliated organizations controlled by the University. Significant inter-affiliate accounts and transactions have been eliminated.

Funds transferred to the University on behalf of specific beneficiaries (agency funds) are recorded as assets and liabilities in the *Consolidated Balance Sheets* and are not included in the *Consolidated Statements of Changes in Net Assets with General Operating Account Detail*.

The consolidated financial statements include certain prior year summarized comparative information in total, not by net asset classification. This information is not presented in sufficient detail to conform to generally accepted accounting principles (GAAP). Accordingly, such information should be read in conjunction with the University's financial statements for the year ended June 30, 2021, from which the summarized information is derived. Certain prior year amounts have been reclassified to conform to current year presentation.

Net asset classifications

For the purposes of financial reporting, the University classifies resources into two net asset categories pursuant to any donor-imposed restrictions and applicable law. Accordingly, the net assets of the University are classified in the accompanying consolidated financial statements in the categories that follow:

WITHOUT DONOR RESTRICTIONS—Net assets not subject to donor-imposed restrictions. Funds invested in fixed assets and unrestricted endowment funds comprise 81% of the University's net assets without donor-imposed restrictions as of June 30, 2022. In addition, this category includes gifts and endowment income balances where the donor restriction has been met, University-designated loan funds, and other current funds.

WITH DONOR RESTRICTIONS—Net assets subject to legal or donor-imposed restrictions that will be satisfied either by actions of the University, the passage of time, or both. These net assets include net assets subject to donor-imposed restrictions that are invested to provide a perpetual source of income to the University. Generally, donors of these assets require the University to maintain and invest the original contribution in perpetuity but permit the use of some or all investment returns for general or specific purposes. The appreciation on these perpetual contributions must be reported as net assets with donor restrictions until appropriated for spending in accordance with Massachusetts law. Also included in this category are gifts donated for a particular purpose and amounts subject to time restrictions such as funds pledged for future payment.

Revenues from sources other than contributions are generally reported as increases in net assets without donor 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 donor stipulations or by law. Investment returns earned by restricted donor funds are initially classified as net assets with donor restrictions and then reclassified to net assets without donor restrictions when expenses are appropriated or incurred for their intended purpose. Expirations of donor restrictions on net assets

are reported as reclassifications from net assets with donor restrictions to net assets without donor restrictions and appear as "Net assets released from restrictions" and "Non-operating net assets released from restrictions" in the *Consolidated Statements of Changes in Net Assets*.

Liquidity and availability

As part of the University's liquidity management, it has a policy to structure its financial assets to be available as its general expenditures, liabilities and other obligations come due. A significant portion of the University's annual expenditures are funded by operating revenues in the current year including student income, sponsored support, endowment returns made available for operations, gifts for current use and other revenues.

The University's financial assets available within one year of the balance sheet date for general expenditure, such as operating expenses, scheduled principal payments on debt, and capital construction costs not financed with debt, are as follows (in thousands):

	June 30, 2022	June 30, 2021
FINANCIAL ASSETS		
Cash and cash equivalents	$ 283,227	$ 224,042
Receivables, net	339,792	322,482
Pledge receivables due in one year	376,097	347,284
Cash equivalents and short-term investments held separately by General Operating Account (GOA)[1]	2,236,157	1,539,736
Endowment returns made available for operations in the following year	2,460,142	2,308,724
TOTAL FINANCIAL ASSETS AVAILABLE WITHIN ONE YEAR	**$ 5,695,415**	**$ 4,742,268**
LIQUIDITY RESOURCES		
Credit facility, undrawn balance	1,500,000	1,500,000
Tax-exempt commercial paper, undrawn balance	1,000,000	1,000,000
Taxable commercial paper, undrawn balance	2,000,000	2,000,000
TOTAL FINANCIAL ASSETS AND RESOURCES AVAILABLE WITHIN ONE YEAR	**$ 10,195,415**	**$ 9,242,268**

[1] *The University has a policy of maintaining liquidity outside of the General Investment Accounting (GIA) through a combination of cash equivalents and short-term investments, as referenced on page 7 in the Financial Overview.*

Endowment and GOA returns liquidated from investments and made available for operations over the course of the fiscal year are distributed to University department and program budgets to spend, subject to donor restrictions where applicable.

While the University has no intention of doing so, there are additional investments held by the University and the endowment that could be liquidated in the event of an unexpected disruption. While a portion of the endowment is subject to donor restrictions, there is $9.1 billion and $9.4 billion in endowment funds without donor restrictions at June 30, 2022 and 2021, respectively and $4.7 billion and $4.8 billion of General Operating Account investments (GOA) at June 30, 2022 and 2021, respectively, that could be accessed with the approval of the Corporation and subject to the redemption provisions described in *Note 3*.

Revenue recognition

Revenue is recognized when control of promised goods or services is transferred to customers, in an amount that reflects the consideration the University expects to be entitled to in exchange for those goods or services.

Student income is derived from degree programs as well as executive and continuing education programs and includes tuition, fees, and board and lodging. Student income is recognized ratably over the academic period of the course or program offered based on time elapsed, and scholarships awarded to students reduce the amount of revenue recognized. The University's individual schools have various billing and academic cycles and the majority of our programs are completed within the fiscal year. Student income received in advance of services to be rendered is recorded as deferred revenue which totaled $209.1 million and $226.0 million, respectively, at June 30, 2022 and 2021, which are primarily recognized in the subsequent fiscal year.

Total student income of $1.2 billion and $888.3 million was recorded during the years ended June 30, 2022 and 2021, respectively. Student tuition, fees, board and lodging at published rates is summarized as follows for the years ended June 30, 2022 and 2021 (in thousands of dollars):

	2022	2021
Undergraduate program	**$ 390,809**	$ 278,412
Graduate and professional degree programs	**652,005**	581,259
Continuing education and executive programs	**486,682**	395,076
Board and lodging	**199,771**	69,496

Scholarships applied to student charges were $505,904 and $435,959 for the years ended June 20, 2022 and 2021, respectively.

Unconditional contributions including pledges are recognized immediately and classified as either net assets with donor restrictions or net assets without donor restrictions. Conditional contributions for which cash is received are accounted for as a liability within deferred revenue.

Sponsored support of $975.8 million includes support from governmental and private sources. Certain sponsored arrangements are considered exchange arrangements, and revenue under these agreements is recognized based on the University's fulfillment of the contract, which is typically based on costs incurred or the achievement of milestones. Other sponsored support is considered contribution revenue, which is recognized when any donor-imposed conditions have been met, if applicable. Sponsored conditional contributions received, where the barrier to entitlement is not yet overcome, are recorded as deferred revenues of $61.1 million and $68.2 million as of June 30, 2022 and 2021, respectively. As of June 30, 2022, the University also had $1.5 billion awarded but not yet expended contributions related to sponsored programs where the condition had not yet been met. This is subject to federal appropriations. Funding received in advance of recognition is recorded as deferred revenue.

Other revenue of $838.3 million in fiscal 2022 and $693.9 million in fiscal 2021 includes several revenue streams considered exchange contracts with customers totaling $728.1 million for fiscal year 2022 and $605.3 million in fiscal 2021. These revenues are recognized at the point in time goods or services are provided. Deferred revenues related to other revenue of $104.7 million and $102.1 million were recorded as of June 30, 2022 and 2021, which are primarily recognized in the subsequent fiscal year.

Measure of operations

Revenues earned, expenses incurred, and returns made available for operations for the purpose of teaching, conducting research, and the other programs and services of the University are the components of "Net operating surplus" in the *Consolidated Statements of Changes in Net Assets with General Operating Account Detail*. The University's non-operating activity within the *Consolidated Statements of Changes in Net Assets with General Operating Account Detail* includes contributions to the University's building construction and renovation funds, investment returns (net of amounts made available for operations), change in pledge balances, long-term benefit plan obligation funding changes, and other infrequent transactions.

Collections

The University's vast array of museums and libraries contains priceless works of art, historical treasures, literary works, and artifacts. These collections are protected and preserved for public exhibition, education, research, and the furtherance of public service. They are neither disposed of for financial gain nor encumbered in any manner. Accordingly, such collections are not recorded for financial statement purposes. Proceeds on deaccessioned collections are used to fund new collections or the direct care of existing collections. Direct care is defined as general care for the preservation of a collection.

Insurance programs

The University, together with the Harvard-affiliated teaching hospitals, has formed a captive insurance company, Controlled Risk Insurance Company (CRICO), to provide limited professional liability, general liability, and medical malpractice insurance for its shareholders. The University self-insures a portion of its professional liability and general liability programs and maintains a reserve for incurred claims, including those related to Harvard Medical School activities not occurring in the affiliated teaching hospitals. CRICO provided malpractice coverage applies with no deductible for medical professionals practicing within Harvard's University Health Services department, the School of Dental Medicine, and the T.H. Chan School of Public Health. The University also maintains reserves for the self-insured portion of claims related to automobile liability, property damage, and workers' compensation; these programs are supplemented with commercial excess insurance above the University's self-insured retention. In addition, the University is self-insured for unemployment, the primary retiree health plan, and all health and dental plans for active employees. The University's claims liabilities are recognized as incurred, including claims that have been incurred but not reported, and are included in operating expenses.

Tax

The University is a tax-exempt organization under Section 501(c)(3) of the Internal Revenue Code.

On December 22, 2017, the Tax Cuts and Jobs Act (the "Act") was enacted. The Act impacts the University in several ways, including the addition of excise taxes on executive compensation and net investment income, as well as new rules for calculating unrelated business taxable income. The University records an estimate for related tax expense based on currently available regulatory guidance of the Act and continues to evaluate the impact of the Act on current and future tax positions.

Use of estimates

The preparation of financial statements in accordance with U.S. GAAP requires management to make estimates and assumptions that affect reported amounts and disclosures. Actual results could differ from those estimates.

New accounting pronouncements

Effective July 1, 2021, the University adopted ASU 2018-15, *Intangibles—Goodwill and Other—Internal-Use Software (Subtopic 350-40): Customer's Accounting for Implementation Costs Incurred in a Cloud Computing Arrangement That is a Service Contract*. This 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 or software licenses. The University adopted ASU 2018-15 prospectively. This guidance did not have a significant impact on the University's consolidated financial statements.

Effective July 1, 2021, the University adopted ASU 2020-07, *Presentation and Disclosures by Not-for-Profit Entities for Contributed Nonfinancial Assets*. This guidance is intended to increase transparency on how contributed nonfinancial assets are to be used and valued. The University adopted ASU 2020-07 prospectively. This guidance did not have a significant impact on the University's consolidated financial statements.

Effective July 1, 2021, the University adopted ASU 2018-14, *Disclosure Framework—Changes to the Disclosure Requirements for Defined Benefit Plans,* which amends ASC 715, *Compensation—Retirement Benefits*. This accounting pronouncement modifies the disclosure requirements for employers that sponsor defined benefit pension or other postretirement plans. The University adopted ASU 2018-14 on a retrospective basis. The effects of adopting this amendment are addressed in *Note 11*.

Effective July 1, 2020, the University adopted ASU 2019-03, *Not-for-Profit Entities (Topic 958): Updating the Definition of Collections*. The accounting pronouncements updates the definition of "collections" to align with the definition used by the American Alliance of Museums. The change in the definition requires proceeds from sales of collections to be used for acquisition of additional collections or direct care of existing collections. The University adopted ASU 2019-03 prospectively. The guidance did not have a significant impact on the University's consolidated financial statements.

3. INVESTMENTS

Investments are presented at fair value in accordance with GAAP and under the guidelines prescribed by the HMC investment valuation policy, which is reviewed and approved by the HMC Board of Directors on an annual basis.

The majority of the University's investments are managed by HMC in the GIA, a pooled investment account that consists primarily of endowment assets. Certain other investments such as cash, short-term investments, split interest agreements and other assets, are managed separately from the GIA.

The University's investment holdings as of June 30, 2022 and 2021 presented on the *Consolidated Balance Sheets* are summarized in the following table (in thousands of dollars):

	2022	2021
Investment portfolio assets		
Pooled general investment account assets	**$ 55,938,831**	$ 58,566,261
Other investments	**3,196,388**	2,575,489
Investment portfolio, at fair value	**59,135,219**	**61,141,750**
Securities pledged to counterparties, at fair value	**179,514**	290,388
TOTAL INVESTMENT ASSETS	**59,314,733**	**61,432,138**
Pooled general investment account liabilities	**709,422**	724,924
Interest rate exchange agreement	**8,609**	31,313
TOTAL OTHER LIABILITIES ASSOCIATED WITH THE INVESTMENT PORTFOLIO	**718,031**	**756,237**
TOTAL INVESTMENTS, NET	**$ 58,596,702**	**$ 60,675,901**

As of June 30, 2022 and 2021, University net investments were comprised of the following components (in thousands of dollars):

	2022	2021
POOLED GENERAL INVESTMENT ACCOUNT		
Endowment[1]	**$ 48,798,038**	$ 51,279,803
General operating account	**4,658,269**	4,777,430
Split interest agreements	**934,971**	1,021,209
Other internally designated funds	**1,017,645**	1,053,283
TOTAL POOLED GENERAL INVESTMENT ACCOUNT NET ASSETS	**$ 55,408,923**	**$ 58,131,725**
OTHER INVESTMENTS OUTSIDE THE GENERAL INVESTMENT ACCOUNT		
General operating and other investments[2]	**2,536,192**	1,772,698
Split interest agreements	**651,587**	771,478
TOTAL OTHER INVESTMENTS OUTSIDE THE GENERAL INVESTMENT ACCOUNT	**$ 3,187,779**	**$ 2,544,176**
TOTAL INVESTMENTS, NET	**$ 58,596,702**	**$ 60,675,901**

[1] *As of June 30, 2022, the total net assets of the endowment of $50,877,680 is comprised of investments in the GIA of $48,798,038, pledges of $1,433,186, interests in trusts held by others of $403,626, and $242,830 of other non-GIA investments and GIA interest and dividends net of all internal and external management fees and expenses. See* Note 8 *for further composition of the net assets of the endowment.*

[2] *Consists primarily of repurchase agreements, US government securities, money markets, and fixed income funds, totaling $2,238,277 and $1,563,715 as of June 30, 2022 and 2021, respectively.*

Investment return

A summary of the University's total return on investments for fiscal years 2022 and 2021 is presented below (in thousands of dollars):

	2022	2021
Return on pooled general investment account:		
Realized and change in unrealized (depreciation)/appreciation, net	**$ (1,223,200)**	$ 14,522,886
Interest, dividend, fees, and expenses, net	**150,734**	20,216
Total return on pooled general investment account[1]	**(1,072,466)**	**14,543,102**
Return on other investments:		
Realized and change in unrealized depreciation/(appreciation), net	**(288,667)**	218,572
Interest, dividend, fees, and expenses, net	**36,225**	26,093
Total return on other investments	**$ (252,442)**	**$ 244,665**
Realized and change in unrealized appreciation on interest rate exchange agreement, net	**19,169**	9,272
TOTAL RETURN ON INVESTMENTS[2]	**$ (1,305,739)**	**$ 14,797,039**

[1] *Net of all internal and external management fees and expenses.*

[2] *Total return on investments is comprised of returns on the endowment, GOA, Split Interest Agreements and other.*

Fair value hierarchy

The University's investments have been categorized based upon the fair value hierarchy in accordance with ASC 820, which prioritizes the inputs to valuation techniques used to measure fair value of investment assets and liabilities into three levels:

LEVEL 1 Unadjusted quoted prices in active markets that are accessible at the measurement date for identical, unrestricted assets or liabilities;

LEVEL 2 Quoted prices in markets that are not considered to be active or financial instruments for which all significant inputs are observable, either directly or indirectly;

LEVEL 3 Prices or valuations that require inputs that are significant to the fair value measurement, unobservable and/or require the University to develop its own assumptions.

Investments in externally managed funds where the University utilizes net asset values (as reported by external managers) as a practical expedient for fair value measurements are excluded from the fair value hierarchy.

The level of an asset or liability within the fair value hierarchy is based on the lowest level of any input that is significant to the fair value measurement. The University endeavors to utilize all relevant and available information in measuring fair value.

The following is a summary of the levels within the fair value hierarchy for those investment assets and liabilities subject to fair value measurement as of June 30, 2022 and summarized as of June 30, 2021 (in thousands of dollars):

	2022					2021
	Level 1	Level 2	Level 3	NAV as Practical Expedient	Total	Total
ASSETS:						
Cash and cash equivalents[1]	$ 1,525,645				**$ 1,525,645**	**$ 1,340,261**
Repurchase agreements		$ 749,873			**749,873**	**50,063**
Domestic equity	1,401,469			$ 1,683,807	**3,085,276**	**4,311,314**
Foreign equity	240,005			1,831,265	**2,071,270**	**2,154,920**
Global equity				1,262,693	**1,262,693**	**2,351,562**
Domestic fixed income	1,711,458	10,018		1,065,873	**2,787,349**	**2,399,417**
Foreign fixed income	17,479				**17,479**	**1,920**
Emerging market equity and debt	15,371			3,337,355	**3,352,726**	**4,562,151**
High yield	2,787		$ 298,319		**301,106**	**275,622**
Hedge funds				16,774,488	**16,774,488**	**18,030,872**
Private equity			1,174,625	20,766,298	**21,940,923**	**20,688,062**
Natural resources	3,506			427,623	**431,129**	**464,278**
Real estate			25,074	3,252,246	**3,277,320**	**2,907,096**
Inflation-indexed bonds	1,097,023				**1,097,023**	**1,156,229**
Due from brokers	14,583	2,963	4,640		**22,186**	**13,911**
Other investments		65,208			**65,208**	**35,532**
INVESTMENT ASSETS SUBJECT TO FAIR VALUE LEVELING	**$ 6,029,326**	**$ 828,062**	**$ 1,502,658**	**$ 50,401,648**	**$ 58,761,694**	**$ 60,743,210**
Other investment assets not subject to fair value[2]					**553,039**	**688,928**
TOTAL INVESTMENT ASSETS[3]					**$ 59,314,733**	**$ 61,432,138**
Interests in trusts held by others[4]			432,896		**432,896**	**515,757**
NON-INVESTMENT ASSETS SUBJECT TO FAIR VALUE LEVELING			**$ 432,896**		**$ 432,896**	**$ 515,757**
TOTAL ASSETS					**$ 59,747,629**	**$ 61,947,895**
LIABILITIES:						
Due to brokers[5]		$ 77,081			**$ 77,081**	**$ 131,941**
Other liabilities subject to fair value			$ 154,949		**154,949**	**148,728**
INVESTMENT LIABILITIES SUBJECT TO FAIR VALUE LEVELING		**$ 77,081**	**$ 154,949**		**$ 232,030**	**$ 280,669**
Other investment liabilities not subject to fair value					**486,001**	**475,568**
TOTAL INVESTMENT LIABILITIES[3]					**$ 718,031**	**$ 756,237**
Liabilities due under split interest agreements[4]		$ 886,017			**886,017**	**1,019,357**
NON-INVESTMENT LIABILITIES SUBJECT TO FAIR VALUE LEVELING		**$ 886,017**			**$ 886,017**	**$ 1,019,357**
TOTAL LIABILITIES					**$ 1,604,048**	**$ 1,775,594**

[1] *This amount includes cash, cash equivalents and amounts generally described as restricted cash or restricted cash equivalents as presented in the* Consolidated Statements of Cash Flows. *This excludes money markets held in "Cash and cash equivalents" on the* Consolidated Balance Sheets *of $65.0 million as of June 30, 2022 and 2021, respectively, which are Level 1 investments.*

[2] *As of June 30, 2022 and 2021 other assets not subject to fair value consist primarily of receivables for transactions that settled subsequent to the balance sheet date of $480,949 and $612,801, respectively.*

[3] *As of June 30, 2022 and 2021, total investment assets, net equal $58,596,702 and $60,675,901, respectively.*

[4] *Amounts excluded from investments and included separately on the University's* Consolidated Balance Sheets.

[5] *Includes fair value of an interest rate exchange agreement on the University's debt portfolio of $8,609 and $31,313 as of June 30, 2022 and 2021, respectively.*

The following is a rollforward of Level 3 investments for the year ended June 30, 2022 and the summarized June 30, 2021 rollforward of Level 3 investments (in thousands of dollars).

	Beginning balance as of July 1, 2021	Net realized gains/ (losses)	Net change in unrealized appreciation/ (depreciation)[1]	Purchases/ contributions	Sales/ distributions	Transfers into Level 3	Transfers out of Level 3[2]	Ending balance as of June 30, 2022
INVESTMENT ASSETS:								
High yield	$ 273,571	$ 1,009	$ (2,137)	$ 290,539	$ (264,663)			**$ 298,319**
Private equity	1,891,116	17,613	81,577	304,947	(977,166)		$ (143,462)	**1,174,625**
Real estate	23,859		115	1,100				**25,074**
Due from brokers	4,625		15					**4,640**
INVESTMENT ASSETS SUBJECT TO FAIR VALUE LEVELING	**$ 2,193,171**	**$ 18,622**	**$ 79,570**	**$ 596,586**	**$ (1,241,829)**		**$ (143,462)**	**$ 1,502,658**
Interests in trusts held by others	515,757		(81,754)		(1,107)			**$ 432,896**
NON-INVESTMENT ASSETS SUBJECT TO FAIR VALUE LEVELING	**$ 515,757**		**$ (81,754)**		**$ (1,107)**			**$ 432,896**
TOTAL ASSETS SUBJECT TO FAIR VALUE LEVELING	**$ 2,708,928**	**$ 18,622**	**$ (2,184)**	**$ 596,586**	**$ (1,242,936)**		**$ (143,462)**	**$ 1,935,554**
INVESTMENT LIABILITIES:								
Other liabilities subject to fair value	$ 148,728		$ (1,098)	$ (34,550)	$ 41,869			**$ 154,949**
TOTAL LIABILITIES SUBJECT TO FAIR VALUE LEVELING	**$ 148,728**	**$ 0**	**$ (1,098)**	**$ (34,550)**	**$ 41,869**			**$ 154,949**
NET ASSETS SUBJECT TO FAIR VALUE LEVELING	**$ 2,560,200**	**$ 18,622**	**$ (1,086)**	**$ 631,136**	**$ (1,284,805)**		**$ (143,462)**	**$ 1,780,605**

[1] *Total change in unrealized appreciation/(depreciation) relating to Level 3 investment assets and investment liabilities still held by the University at June 30, 2022 is $95,568 and is reflected in "Realized and change in unrealized (depreciation)/appreciation, net" in the* Consolidated Statements of Changes in Net Assets.

[2] *The transfers out of Level 3 represent interests in private companies that underwent an initial public offering during the fiscal year.*

	Beginning balance as of July 1, 2020	Net realized gains/ (losses)	Net change in unrealized appreciation/ (depreciation)[1]	Purchases/ contributions	Sales/ distributions	Transfers into Level 3	Transfers out of Level 3	Ending balance as of June 30, 2021
PRIOR YEAR NET ASSETS SUBJECT TO FAIR VALUE LEVELING	**$ 2,251,138**	**$ (4,142)**	**$ 163,716**	**$ 652,052**	**$ (761,969)**	**$ 740,943**	**$ (481,538)**	**$ 2,560,200**

[1] *Total change in unrealized appreciation/(depreciation) relating to Level 3 investment assets and investment liabilities still held by the University at June 30, 2021 is $206,133 and is reflected in "Realized and change in unrealized (depreciation)/appreciation, net" in the* Consolidated Statements of Changes in Net Assets.

Investment strategy and risk

The University utilizes a number of wholly owned subsidiary entities to support its investment activities. The consolidated financial statements include all assets, liabilities, income, and expenses associated with these entities and intercompany accounts and transactions have been eliminated during consolidation.

The University's investment strategy incorporates a diversified asset allocation approach and maintains, within defined limits, exposure to the movements of the global public and private equity, fixed income, real estate, and commodities markets. Exposure to these markets is achieved through direct investments in individual securities, investments in special purpose vehicles and/or through investments in vehicles advised by external managers.

Investments in global markets involve a multitude of risks such as price, interest rate, market, sovereign, currency, liquidity and credit risks, amongst many others. The University manages exposure to these risks through established policies and procedures related to its ongoing investment diligence and operational due diligence programs. The University also considers manager concentration risk. As of June 30, 2022, 16% of the GIA NAV was invested across 5 diversified fund managers. The University anticipates that the value and composition of its investments may, from time to time, fluctuate substantially in response to any or all of the risks described herein.

Cash and cash equivalents

Cash and cash equivalents are recorded at cost, which approximates fair value, and includes cash in bank accounts, institutional money market funds and other temporary

investments held for working capital purposes with original maturities of three months or less. Cash and cash equivalents do not include cash balances held as collateral by the University. Cash and cash equivalents designated for investment purposes are included in the "Investment portfolio, at fair value" in the *Consolidated Balance Sheets*.

Repurchase agreements

The University *Consolidated Balance Sheets* display the assets generated by repurchase transactions. The University enters into these transactions under agreements containing master netting arrangements. The University requires the fair value of the collateral exchanged under these agreements to be equal to or in excess of the total amount of the agreement, including interest where applicable. At June 30, 2022 and 2021 the University had gross asset repurchase agreements of $0.8 billion and $0.1 billion which were fully collateralized. The University does not offset repurchase agreements that are subject to master netting arrangements or similar arrangements on the University's *Consolidated Balance Sheets*.

Dividend and interest income

Dividend income is recognized net of applicable withholding taxes on the ex-dividend date. Non-cash dividends are recorded at the fair value of the securities received. Interest income and expense is recorded net of applicable withholding taxes, on an accrual basis. The University amortizes bond premiums and accretes bond discounts using the effective yield method and when cash collection is expected.

Traded securities

Instruments listed or traded on a securities exchange are valued at the last quoted price on the primary exchange where the security is traded. Where there is no readily available closing price on the valuation date, long positions are valued at the bid price and short positions are valued at the ask price. Restrictions that are attached to a security are factored into the valuation of that security, reflective of the estimated impact of those restrictions. Investments in non-exchange traded debt and equity instruments are primarily valued using inputs provided by independent pricing services or by broker/dealers who actively make markets in these securities.

Derivatives

The University uses a variety of financial instruments with off-balance sheet risk involving contractual or optional commitments for future settlement, which are exchange traded or executed over the counter (OTC). These instruments are used to (1) manage exposure to certain asset classes and/or various market risks, (2) arbitrage mispricings of related securities and (3) to manage the interest, cost and risk associated with its outstanding and/or future debt. These instruments are classified as due to/from brokers and may include option, swap, credit default, interest rate, and forward contracts. These types of instruments are primarily valued using industry standard models with independent market inputs, or by broker quotes. Inputs such as prices, spreads, curves, and/or broker quotes are evaluated for source reliability and consistency with industry standards. Counterparty marks obtained and utilized to determine daily collateral requirements are also used to corroborate input reasonability. The University considers current market conditions including interest rate and credit risks in its evaluation of inputs, pricing methodologies, and models utilized to determine fair values.

In connection with its investments in derivatives, the University maintains master netting agreements and collateral agreements with its counterparties. These agreements provide the University the right, in the event of default by the counterparty (such as bankruptcy or a failure to pay or perform), to net a counterparty's rights and obligations under the agreement and to liquidate and offset collateral against any net amount owed by the counterparty. Collateral, generally in the form of debt obligations issued by the US Treasury, is exchanged on a daily basis as required by fluctuations in the market.

Specific credit limits are established for counterparties based on their individual credit ratings. Credit limits are monitored daily by the University and are adjusted according to policy, as necessary. Some of the financial instruments entered into by the University contain credit-risk-related contingency features that allow the parties to the agreement to demand immediate payment for outstanding contracts and/or collateral.

The following table presents information about the University's derivatives by primary risk exposure for the years ended June 30, 2022 and 2021 (in thousands of dollars):

	As of June 30, 2022			For the year ended June 30, 2022	As of June 30, 2021			For the year ended June 30, 2021
Primary risk exposure	Average Quarterly Notional	Gross derivative assets	Gross derivative liabilities	Net profit/ (loss)[4]	Average Quarterly Notional	Gross derivative assets	Gross derivative liabilities	Net profit/ (loss)[4]
Equity instruments	$ 5,009,087	$ 79,784	$ 130,849	$ 484,118	$ 5,904,280	$ 88,221	$ 179,670	$ (726,954)
Fixed income instruments[1]	117,000		8,609	19,169	117,000		31,313	9,272
Currency instruments	6,867	1,628	1,626	2,290	7,951	5,966	5,963	3,163
Credit instruments	4,752	4,777		(24)	4,747	4,729		(49)
SUBTOTAL		**$ 86,189**	**$ 141,084**	**$ 505,553**		**$ 98,916**	**$ 216,946**	**$ (714,568)**
TOTAL COUNTERPARTY NETTING[2]		**(68,643)**	**(68,643)**			**(85,005)**	**(85,005)**	
NET AMOUNTS INCLUDED IN THE *CONSOLIDATED BALANCE SHEETS*[3]		**17,546**	**72,441**			**13,911**	**131,941**	
Collateral								
Cash collateral received/posted		115				5,467		
Securities collateral received/ posted[5]		9,606	156,121			3,183	250,592	
TOTAL SECURITIES COLLATERAL RECEIVED/POSTED[5]		**9,721**	**156,121**			**8,650**	**250,592**	
NET AMOUNT		**7,825**	**(83,680)**			**5,261**	**(118,651)**	
NET AMOUNT IN ACCORDANCE WITH ASC 210[6]		**$ 7,825**	**$ 0**			**$ 5,261**	**$ 0**	

[1] *For the year ended June 30, 2022 and 2021 the balance represents an interest rate exchange swap on the University's debt portfolio.*
[2] *GAAP permits the netting of derivative assets and liabilities and the related cash collateral received and paid when a legally enforceable master netting agreement exists between the University and a derivative counterparty.*
[3] *Included within the "Investment portfolio, at fair value" and "Other liabilities associated with the investment portfolio" line items of the* Consolidated Balance Sheets.
[4] *Included within "Realized and change in unrealized (depreciation)/appreciation, net" within the* Consolidated Statements of Changes in Net Assets.
[5] *Includes securities posted to meet initial margin requirements on exchange traded futures.*
[6] *Excludes any over-collateralized amounts in accordance with ASC 210.*

External advisors

Investments managed by external advisors include investments in private equity, real estate, natural resources, hedge funds, and other externally managed funds. The University generally utilizes the capital account balance provided by the external advisor as a practical expedient to fair value. To evaluate the adequacy of these fair value measurements, the University has assessed factors including, but not limited to, the external advisor's adherence to fair value principles in calculating the capital account balance, the existence of transactions at NAV at the measurement date and the existence or absence of certain restrictions at the measurement date. In addition, the University evaluates these external advisors through ongoing due diligence and operational oversight, which includes an analysis of an advisor's use of and adherence to fair value principles.

The University, as an investor, has commitments to make periodic contributions in future periods to the investments managed by external advisors. The amounts of these expected disbursements as of June 30, 2022 and 2021 are disclosed below (in thousands of dollars):

	As of June 30, 2022			As of June 30, 2021		
	Fair value[1]	Remaining unfunded commitments	Estimated remaining life[2]	Fair value[1]	Remaining unfunded commitments	Estimated remaining life[2]
Private equity funds	$ 17,394,411	$ 8,858,770	4 – 10	$ 16,240,336	$ 7,688,416	4 – 10
Real estate funds	3,052,042	2,068,329	4 – 10	2,881,483	1,856,495	4 – 10
Other externally managed funds[3]	3,259,851	2,902,708	2 – 8	3,654,807	2,921,156	2 – 8
TOTAL	**$ 23,706,304**	**$ 13,829,807**		**$ 22,776,626**	**$ 12,466,067**	

[1] *Represents the fair value of the funded portion of investments with remaining unfunded commitments.*
[2] *The estimated remaining lives of these funds, expressed in years, are forward-looking projections based on the University's estimates and could vary significantly depending on the investment decisions of external managers, changes in the University's investment portfolio, and other circumstances.*
[3] *Investments in externally managed funds primarily include exposures to hedge funds and natural resources.*

Investments in externally managed funds generally have limited redemption options for investors and, subsequent to final closing, may or may not permit subscriptions by new or existing investors. These entities may also have the ability to impose gates, lockups and other restrictions on an investor's ability to readily redeem out of their investment interest in the fund.

Direct investments

Direct investments are primarily valued using a combination of independent appraisals and/or one or more industry standard valuation techniques (e.g., income approach, market approach, or cost approach). The income approach is primarily based on the investment's anticipated future income using one of two principal methods: the discounted cash flow method or the capitalization method. Inputs and estimates developed and utilized with these techniques may be subjective, unobservable, and require judgment regarding significant matters such as estimating the amount and timing of future cash flows, forward pricing assumptions and the selection of discount and capitalization rates that appropriately reflect market and credit risks.

The market approach derives investment value through comparison to recent and relevant market transactions with similar investment characteristics. The cost approach is utilized when the cost of the investment is determined to be the best representation of fair value. This method is typically used for newly purchased or undeveloped assets. When applicable, the University examines market data and collaborates closely with independent appraisers to arrive at the best estimation of fair value for each respective asset. The HMC Board of Directors discusses the valuation process and results with HMC management, and makes determinations on significant matters impacting valuation that may arise from time to time.

The following table presents the ranges of significant unobservable inputs used to value the University's Level 3 assets. While the inputs described below represent the range of inputs utilized as of the measurement date, these inputs may change over time, which may have a material effect on the valuation of these types of investments in the future.

	As of June 30, 2022			As of June 30, 2021		
Significant unobservable input by asset class[1]	Level 3 investments subject to fair value (in thousands of dollars)[2]	Range of inputs utilized in valuation model[3]	Weighted average of inputs utilized in valuation model	Level 3 investments subject to fair value (in thousands of dollars)[2]	Range of inputs utilized in valuation model[3]	Weighted average of inputs utilized in valuation model
High yield:	$ 279,893			$ 239,573		
Income approach discount rate		7.7% – 14.9%	9.8%		6.0% – 16.1%	7.7%
Collateral coverage recovery rate		100%	100%		100%	100%
EBITDA multiple		5.3x – 23.0x	8.6x		7.5x – 19.0x	8.8x
Real estate:	17,391			17,391		
Income approach discount rate		14.5%	14.5%		14.5%	14.5%
Income approach growth rate		3.0%	3.0%		3.0%	3.0%
Discount for lack of marketability		15.0%	15.0%		15.0%	15.0%
Private equity:	121,108			207,033		
Income approach discount rate		8.0% – 14.0%	13.6%		6.0% – 15.0%	14.3%
Cost multiple		3.1x	3.1x		2.5x	2.5x
EBITDA multiple					9.0x	9.0x
Other liabilities subject to fair value	(154,949)			(148,728)		
Market interest rate		2.4% – 3.7%	3.3%		2.5% – 2.8%	2.6%
NET AMOUNT	**$ 263,443**			**$ 315,269**		

[1] *The fair value of investments may be determined using multiple valuation techniques.*
[2] *Included within Level 3 investments is $1,517,162 and $2,244,931 as of June 30, 2022 and 2021, respectively, which were valued using other inputs including, but not limited to, single source broker quotations, third party pricing and recent transactions.*
[3] *The range of inputs encompasses a variety of investment types within each asset class.*

4. RECEIVABLES

The major components of receivables, net of reserves for doubtful accounts of $16.5 million and $13.7 million as of June 30, 2022 and 2021, respectively, were as follows (in thousands of dollars):

	2022	2021
Federal sponsored support	**$ 67,130**	$ 57,321
Executive education	**63,484**	73,400
Publications	**61,545**	55,058
Leases	**32,525**	32,731
Tuition and fees	**19,584**	20,774
Non-federal sponsored support	**13,159**	11,536
Gift receipts	**17,344**	7,985
Other	**65,021**	63,677
TOTAL RECEIVABLES, NET	**$ 339,792**	**$ 322,482**

5. NOTES RECEIVABLE

Notes receivable are recorded initially at face value plus accrued interest, which approximates fair value. Notes receivable, and related allowance for doubtful accounts, were as follows (in thousands of dollars):

	2022			2021		
	Receivable	Allowance	Net	Receivable	Allowance	Net
Student loans:						
Government revolving	$ 26,754	$ 643	**$ 26,111**	$ 31,933	$ 832	**$ 31,101**
Institutional	72,489	1,644	**70,845**	77,306	2,237	**75,069**
Total student loans	99,243	2,287	**96,956**	109,239	3,069	**106,170**
Faculty and staff loans	277,234	179	**277,055**	252,090	179	**251,911**
Other loans	49,448	42,647	**6,801**	57,615	38,100	**19,515**
TOTAL	**$ 425,925**	**$ 45,113**	**$ 380,812**	**$ 418,944**	**$ 41,348**	**$ 377,596**

Government revolving loans are funded principally with federal advances to the University under the Perkins Loan, the Health Professions Student Loan (HPSL) and Loans for Disadvantaged Students in Health Professions (LDS) Programs. These advances totaled $29.5 million and $35.8 million as of June 30, 2022 and 2021, respectively, and are classified as liabilities in the *Consolidated Balance Sheets*. During fiscal year 2018, the Perkins Loan Program ended and as a result the University began making required repayments to the government. In fiscal year 2022, the University made the requested $5.9 million repayment. 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.

Faculty and staff notes receivable primarily consists of mortgage and educational loans. Mortgages include shared appreciation loans, loans that bear interest at the applicable federal rate and interest-free loans. In addition, certain mortgages that bear interest at the current market rate or applicable federal rate may be subsidized for an initial period. The educational loans are primarily zero-interest loans.

The University assesses the adequacy of the allowance for doubtful accounts by evaluating the loan portfolio, including such factors as the differing economic risks associated with each loan category, the financial condition of specific borrowers, the economic environment in which the borrowers operate, the level of delinquent loans, the value of any collateral, and, where applicable, the existence of any guarantees or indemnifications. In addition to these factors, the University reviews the aging of the loans receivable and the default rate in comparison to prior years. The allowance is adjusted based on these reviews. The University considers the allowance at June 30, 2022 and 2021 to be reasonable and adequate to absorb potential credit losses inherent in the loan portfolio.

6. PLEDGES RECEIVABLE

Unconditional promises to donate to the University in the future are initially recorded at fair value (pledge net of discount) and subsequently amortized over the expected payment period, net of an allowance for uncollectible pledges. The University's indicative 1- to 15-year taxable unsecured borrowing rate is used to discount pledges receivable at the end of the fiscal year they are received. Discounts of $246.6 million and $76.3 million for the years ended June 30, 2022 and 2021, respectively, were calculated using rates ranging from 1.0% to 3.9%.

Pledges receivable included in the financial statements as of June 30, 2022 and 2021 are expected to be realized as follows (in thousands of dollars):

	2022	2021
Within one year	**$ 816,775**	$ 660,300
Between one and five years	**1,637,886**	1,673,468
More than five years	**541,641**	257,232
Less: discount and allowance for uncollectible pledges	**(403,868)**	(255,042)
TOTAL PLEDGES RECEIVABLE, NET	**$ 2,592,434**	**$ 2,335,958**

Pledges receivable as of June 30, 2022 and 2021 have been designated for the following purposes (in thousands of dollars):

	2022	2021
General Operating Account balances:		
Gifts for current use	**$ 665,632**	$ 533,952
Non-federal sponsored awards	**186,725**	184,113
Construction and life income	**306,891**	352,802
Total General Operating Account balances	**1,159,248**	**1,070,867**
Endowment	**1,433,186**	1,265,091
TOTAL PLEDGES RECEIVABLE, NET	**$ 2,592,434**	**$ 2,335,958**

Because of uncertainties with regard to realizability and valuation, bequest intentions and other conditional promises are only recognized as assets if and when the specified conditions are met. Non-bequest conditional pledges totaled $110.0 million and $115.1 million as of June 30, 2022 and 2021, respectively.

7. FIXED ASSETS

Fixed assets are reported at cost or, if a gift, at fair value as of the date of the gift, net of accumulated depreciation. Depreciation is computed using the straight-line method over the estimated useful lives of the assets.

The major categories of fixed assets as of June 30, 2022 and 2021 are summarized as follows (in thousands of dollars):

	2022	2021	Estimated useful life (in years)
Research facilities	**$ 3,418,161**	$ 3,364,398	*
Classroom and office facilities	**2,543,625**	2,395,225	35
Housing facilities	**2,525,545**	2,408,385	35
Other facilities	**425,737**	460,640	35
Service facilities	**1,114,162**	1,065,126	35
Libraries	**541,080**	534,930	35
Museums and assembly facilities	**990,568**	987,906	35
Athletic facilities	**263,825**	259,254	35
Land	**1,024,986**	1,024,697	N/A
Construction in progress	**357,434**	401,316	N/A
Equipment	**1,468,066**	1,429,723	**
SUBTOTAL AT COST	**14,673,189**	**14,331,600**	
Less: accumulated depreciation	**(6,230,349)**	(5,868,592)	
FIXED ASSETS, NET	**$ 8,442,840**	**$ 8,463,008**	

** Estimated useful lives of components range from 10 to 45 years.*
*** Estimated useful lives of equipment range from 4 to 15 years.*

Certain University facilities are subject to restrictions as to use, structural modifications, and ownership transfer. Included in the fixed asset balances are restricted facilities with a net book value of $267.4 million and $280.7 million as of June 30, 2022 and 2021, respectively.

The costs of research facilities are separated into the shell, roof, finishes, fixed equipment, and services. These components are separately depreciated.

Equipment includes general and scientific equipment, computers, software, furniture, and vehicles.

The University has asset retirement obligations of $189.2 million and $200.1 million, which are included in "Deferred revenue and other liabilities" in the *Consolidated Balance Sheets* as of June 30, 2022 and 2021, respectively.

Right-of-use assets from finance leases of $52.3 million and $59.0 million are included in "Fixed assets" in the *Consolidated Balance Sheets* as of June 30, 2022 and 2021, respectively. Lease liabilities from finance leases of $88.2 million and $96.8 million are included in "Deferred revenue and other liabilities" in the *Consolidated Balance Sheets* as of June 30, 2022 and 2021, respectively.

8. ENDOWMENT AND GENERAL OPERATING ACCOUNT NET ASSETS

The University's net assets consisted of the following as of June 30, 2022 and 2021 (in thousands of dollars):

	2022			2021		
	Without donor restrictions	With donor restrictions	Total	Without donor restrictions	With donor restrictions	Total
NATURE OF SPECIFIC NET ASSETS						
Perpetual endowment funds		$ 9,057,578	**$ 9,057,578**		$ 8,562,120	**$ 8,562,120**
Endowment funds and appreciation subject to distribution policy and appropriation		30,925,321	**30,925,321**		33,434,803	**33,434,803**
Endowment funds without restriction, board designated and subject to distribution policy	$ 9,057,969		**9,057,969**	$ 9,423,055		**9,423,055**
Pledge balances		1,433,186	**1,433,186**		1,265,091	**1,265,091**
Interests in trusts held by others		403,626	**403,626**		480,684	**480,684**
TOTAL ENDOWMENT	**9,057,969**	**41,819,711**	**50,877,680**	**9,423,055**	**43,742,698**	**53,165,753**
Operating	6,519,858		**6,519,858**	6,588,391		**6,588,391**
Unexpended contributions and endowment distributions		3,048,468	**3,048,468**		2,747,969	**2,747,969**
Student loan funds		100,148	**100,148**		99,631	**99,631**
TOTAL GENERAL OPERATING ACCOUNT	**6,519,858**	**3,148,616**	**9,668,474**	**6,588,391**	**2,847,600**	**9,435,991**
Split interest agreements *(Note 9)*		**700,540**	**700,540**		**773,330**	**773,330**
TOTAL NET ASSETS	**$ 15,577,827**	**$ 45,668,867**	**$ 61,246,694**	**$ 16,011,446**	**$ 47,363,628**	**$ 63,375,074**

Endowment

The University's endowment consists of approximately 14,400 separate funds established over many years for a wide variety of purposes. Endowment fund balances are classified and reported in accordance with donor specifications and state law. The endowment includes both donor-restricted endowment funds and funds functioning as endowment which are not subject to donor-imposed restrictions, however decisions to spend their principal require the approval of the Corporation and therefore are classified as Board-designated endowment funds. The majority of the endowment is invested in the GIA *(Note 3)*.

The University is also the beneficiary of certain irrevocable trusts held and administered by others. The estimated fair values of trust assets, which include the present values of expected future cash flows from outside trusts and the fair value of the underlying assets of perpetual trusts, are recognized as assets and increases in net assets when the required trust documentation is provided to the University.

The fair values of these trusts are provided by the external trustees and are adjusted annually by the University. These are included as Level 3 investments in the fair value hierarchy table in *Note 3*.

The University's endowment distribution policies are designed to preserve the value of the endowment in real terms (after inflation) and generate a predictable stream of available income. Each fall, the Corporation approves the endowment distribution for the following fiscal year. Distribution from an underwater endowment fund (a fund below its historic dollar value) could continue in limited and defined circumstances under the University's endowment

distribution policy. To the extent that the fair value of a donor restricted endowment fund falls below its historic dollar value it would be reported as a reduction of net assets with donor restrictions.

At June 30, 2022 and 2021, funds in a deficit position were reported in net assets with donor restrictions and are comprised as follows (in thousands):

	2022	2021
Fair value of underwater endowment funds	**$ 369,782**	$ 23,401
Historic dollar value	**378,931**	24,253
TOTAL DEFICIT OF UNDERWATER ENDOWMENT FUNDS	**$ (9,149)**	**$ (852)**

The endowment distribution is based in part on presumptive guidance from a formula that is intended to provide budgetary stability by smoothing the impact of annual investment gains and losses. The formula's inputs reflect expectations about long-term returns and inflation rates. For fiscal year 2022, the endowment distribution approved by the Corporation (prior to decapitalizations) was equal to 4.2% of the fair value of the endowment invested in the GIA as of the beginning of the fiscal year. The total endowment distribution made available for operations was $2.1 billion and $2.0 billion in fiscal year 2022 and 2021, respectively.

Each year the Corporation also approves certain decapitalizations from the endowment to support strategic, mission-critical activities or objectives that are typically one-time or time-limited and therefore, are excluded from net operating surplus. These decapitalizations totaled $36.7 million and $32.8 million in fiscal year 2022 and 2021, respectively. These additional decapitalizations, in combination with the endowment distribution, resulted in an aggregate payout rate of 4.2% and 5.2% in fiscal year 2022 and 2021, respectively.

General operating account

The GOA consists of the general or current funds of the University as well as the assets and liabilities related to student and faculty loans and facilities. The GOA accepts, manages, and pays interest on deposits made by University departments; invests surplus working capital; makes loans; and arranges external financing for major capital projects. It is used to manage, control, and execute all University financial transactions, except for those related to investment activities conducted by HMC.

9. SPLIT INTEREST AGREEMENTS

Under split interest agreements, donors enter into trust or other arrangements with the University in which the University receives benefits that are shared with other beneficiaries and institutions. Split interest agreement (SIA) investment assets are invested primarily in the GIA and publicly-traded securities, a small segment is managed by an external advisor, and all are recorded in the "Investment portfolio, at fair value" in the University's *Consolidated Balance Sheets*. Additional disclosures are included in *Note 3*. Associated liabilities are recorded at the present value of estimated future payments due to beneficiaries and other institutions. These liabilities are calculated using the University's current taxable unsecured borrowing rate of 3.5% and 1.0% as of June 30, 2022 and 2021, respectively. All split interest agreement net assets and the respective activity are reported within net assets with donor restrictions. Upon termination of a split interest agreement, the net assets are transferred to the GOA or endowment accordingly.

The changes in split interest agreement net assets for fiscal years 2022 and 2021 were as follows (in thousands of dollars):

	2022	2021
Investment return:		
Investment income	**$ 17,152**	$ 9,961
Realized and change in unrealized (depreciation)/appreciation, net	**(158,186)**	402,937
Total investment return	**(141,034)**	**412,898**
Gifts *(Note 14)*[1]	**12,290**	10,761
Payments to annuitants	**(76,057)**	(71,358)
Transfers to endowment	**(18,603)**	(16,830)
Transfers between SIA and the GOA	**(25,213)**	(21,019)
Change in liabilities and other adjustments	**175,827**	(139,315)
NET CHANGE DURING THE YEAR	**(72,790)**	**175,137**
Total split interest agreement net assets, beginning of year	**773,330**	598,193
TOTAL SPLIT INTEREST AGREEMENT NET ASSETS, END OF YEAR	**$ 700,540**	**$ 773,330**

[1] *Shown at net present value. The undiscounted value of these gifts was $26,626 and $35,078 for the years ended June 30, 2022 and 2021, respectively.*

Split interest agreement net assets as of June 30, 2022 and 2021 consisted of the following (in thousands of dollars):

	2022	2021
Split interest agreement investments *(Note 3)*		
Charitable remainder trusts	**$ 1,039,122**	$ 1,170,553
Charitable lead trusts	**101,899**	116,254
Charitable gift annuities	**305,536**	342,917
Pooled income funds	**140,000**	162,963
Total split interest agreement investments[1]	**1,586,557**	**1,792,687**
Liabilities due under split interest agreements:		
Amounts due to beneficiaries	**(819,802)**	(930,260)
Amounts due to other institutions	**(66,215)**	(89,097)
Total liabilities due under split interest agreements	**(886,017)**	**(1,019,357)**
TOTAL SPLIT INTEREST AGREEMENT NET ASSETS, END OF YEAR	**$ 700,540**	**$ 773,330**

[1] *For the year ended June 30, 2022, $934,970 of SIA investments are held in the pooled general investment account and $651,587 of SIA investments are held in the other investments outside the general investment account. For the year ended June 30, 2021, $1,021,209 of SIA investments are held in the pooled general investment account and $771,478 of SIA investments are held in the other investments outside the general investment account. Refer to* Note 3.

10. BONDS AND NOTES PAYABLE

Bonds and notes payable as of June 30, 2022 and 2021 were as follows (in thousands of dollars):

	Fiscal year of issue	Fiscal year of final maturity[1]	Effective rate[2]	Outstanding principal 2022[3]	Outstanding principal 2021[3]
TAX-EXEMPT BONDS:					
Variable-rate demand bonds:					
Series R – daily	2000-2006	2032	0.1%	$ 114,750	$ 131,200
Series Y – weekly	2000	2036	0.2%	117,905	117,905
Total variable-rate bonds			0.1%	232,655	249,105
Fixed-rate bonds:					
Series 2010A	2010	2022	4.9%		49,590
Series 2016A	2017	2041	4.0%	1,461,370	1,487,675
Series 2020A	2020	2031	4.1%	346,680	346,680
Series 2022B	2022	2033	4.2%	207,830	
Total fixed-rate bonds			4.1%	2,015,880	1,883,945
TOTAL TAX-EXEMPT BONDS			**3.7%**	**2,248,535**	**2,133,050**
TAXABLE BONDS					
Fixed-rate bonds:					
Series 2008A	2008	2039	5.6%	243,000	243,000
Series 2008D	2009	2039	6.5%	500,000	500,000
Series 2010C	2011	2041	4.9%	300,000	300,000
Series 2013A	2013	2038	3.4%	402,000	402,000
Series 2016B	2017	2057	3.3%	1,000,000	1,000,000
Series 2020B	2020	2051	2.5%	500,000	500,000
Series 2022A	2022	2053	3.8%	500,000	
Total fixed-rate bonds			4.1%	3,445,000	2,945,000
TOTAL TAXABLE BONDS			**4.1%**	**3,445,000**	**2,945,000**
Notes payable	Various	Various	Various	83,796	88,355
Unamortized original issuance premium/discount, net				360,763	355,467
Unamortized bond issuance costs				(20,891)	(18,673)
TOTAL BONDS AND NOTES PAYABLE			**3.9%**	**$ 6,117,203**	**$ 5,503,199**

[1] *The weighted average maturity of the portfolio on June 30, 2022 was 18.5 years.*

[2] *For fixed-rate bonds the effective rate is calculated as: coupon rate x (par value / book value*). For variable rate bonds the effective rate is the one-year average rate. Effective rates are exclusive of the Series Y interest rate exchange agreement, which would increase the overall portfolio rate by 0.06% (3.96% vs. 3.90%). *Book value = par value + unamortized original issuance premium - unamortized original issuance discount, underwriter's discount, and cost of issuance.*

[3] *Par only—balances exclude original issuance premiums/discounts.*

Interest expense related to bonds and notes payable, net of amortization and accretion, was $183.0 million and $180.6 million for fiscal 2022 and 2021, respectively. The interest expense in the *Consolidated Statements of Changes in Net Assets with General Operating Account Detail* includes additional components related to capital leases. Excluding unamortized discounts and premiums, unamortized underwriter's discount and unamortized cost of issuance, scheduled principal payments are (in thousands of dollars):

Fiscal year	Principal payments
2023	$ 42,060
2024	92,253
2025	41,441
2026	100,967
2027	102,795
Thereafter	5,397,815
TOTAL PRINCIPAL PAYMENTS	**$ 5,777,331**

In fiscal year 2022, the University issued $500 million of taxable fixed-rate Series 2022A Bonds and $250 million ($207.8 million par) of tax-exempt fixed-rate Series 2022B Bonds, which were designated and independently verified as Green Bonds. Proceeds from the Series 2022A issue will be used to finance future University capital spending. Proceeds from the Series 2022B issue will be used to finance or refinance three sustainable capital projects on campus, in support of the University's sustainability goals.

Offsetting the fiscal year 2022 bond issuances were $97.0 million of principal maturities, along with $36.9 million of amortizing bond premium (net of amortizing fees and issuance discounts), resulting in an overall increase to the University's bonds and notes payable from $5.5 billion to $6.1 billion.

The University is rated Aaa by Moody's Investors Service and AAA by Standard & Poor's Global Ratings. Both the Moody's rating and the Standard & Poor's rating were re-affirmed in February 2022. Additionally, both Moody's and Standard & Poor's rated Harvard's Series 2022A and Series 2022B bond issuances Aaa/AAA in April 2022.

The University has one unsecured, revolving credit facility with a syndicate of banks totaling $1.5 billion, which expires in March 2024. The facility was renewed in March 2021. There was no outstanding drawn balance on the credit facility at June 30, 2022.

The University has taxable commercial paper available totaling $2 billion. There was no outstanding drawn balance on the taxable commercial paper line at June 30, 2022.

The University has tax-exempt commercial paper available totaling $1 billion. There was no outstanding drawn balance on the tax-exempt commercial paper line at June 30, 2022. In August 2021, the University obtained reauthorization of its tax-exempt commercial paper program.

As of June 30, 2022, the University had $232.7 million of variable rate demand bonds outstanding with either a daily or weekly interest rate reset. In the event that the University receives notice of any optional tender on its variable rate demand bonds, or if the bonds become subject to mandatory tender, the purchase price of the bonds will be paid from the remarketing of such bonds. However, if the remarketing proceeds are insufficient, the University will have a general obligation to purchase the bonds tendered with cash on hand.

Interest rate exchange agreements

In fiscal 2022, the University had in place one interest rate exchange agreement, used to manage the interest cost and risk associated with a portion of its outstanding variable rate debt.

The fair value of the interest rate exchange agreement was ($8.6) million and ($31.3) million as of June 30, 2022 and 2021, respectively, and is recorded in "Other liabilities associated with the investment portfolio" on the University's *Consolidated Balance Sheets.*

11. EMPLOYEE BENEFITS

The University offers current employees a choice of health plans, a dental plan, short-term and long-term disability plans, life insurance, tuition assistance, and a variety of other benefits such as subsidized passes for public transportation and for Harvard athletic facilities. In addition, the University has retirement plans covering substantially all employees.

The University uses a measurement date of June 30 for its pension and postretirement health plans.

457(b) deferred compensation plan

The University offers a non-qualified deferred compensation plan under Internal Revenue Code 457(b) to a select group of employees. There is no University contribution related to the plan. The University has recorded both an asset and a liability related to the plan of $191.5 million as of June 30, 2022 and $207.8 million as of June 30, 2021; the assets are included in "Prepayments and deferred charges" and the liabilities are included in "Deferred revenue and other liabilities" on the University's *Consolidated Balance Sheets*.

Pension benefits

All eligible faculty members and staff are covered by retirement programs that include a defined benefit component, a defined contribution component, or a combination of the two.

In accordance with the Employee Retirement Income Security Act (ERISA) requirements, the University has established a trust to hold plan assets for its defined benefit pension plans. The fair value of the trust's assets was $851.2 million and $1.1 billion as of June 30, 2022 and 2021, respectively. During fiscal years 2022 and 2021, the University made cash contributions to the defined benefit pension plan of $20.0 million and $61.2 million, respectively. The University recorded expenses for its defined contribution plans of $155.1 million for fiscal year 2022 and $153.4 million for fiscal year 2021.

Postretirement health benefits

The University provides postretirement health coverage and life insurance to substantially all of its employees. As of June 30, 2022, the University had internally designated and invested $1.0 billion in the GIA to fund the postretirement health benefit accrued liability of $835.2 million. As of June 30, 2021, the University had internally designated and invested $1.0 billion to fund the postretirement health benefit accrued liability of $1.0 billion.

The following table sets forth the pension and postretirement plans' funded status that is reported in the *Consolidated Balance Sheets* as of June 30, 2022 and 2021 (in thousands of dollars):

	Pension benefits		Postretirement health benefits	
	2022	2021	2022	2021
Change in projected benefit obligation:				
Projected benefit obligation, beginning of year	**$ 1,139,945**	$ 1,220,094	**$ 1,000,395**	$ 955,571
Service cost	**11,208**	12,950	**32,542**	32,961
Interest cost	**34,980**	36,673	**32,643**	32,728
Plan participants' contributions			**9,527**	8,361
Gross benefits paid	**(52,631)**	(103,677)	**(40,664)**	(25,125)
Actuarial gain	**(188,991)**	(26,555)	**(199,211)**	(4,101)
Plan amendments			**(24)**	
Special termination benefits[1]		460		
PROJECTED BENEFIT OBLIGATION, END OF YEAR[2]	**944,511**	**1,139,945**	**835,208**	**1,000,395**
Change in plan assets:				
Fair value of plan assets, beginning of year	**1,061,693**	959,414		
Actual return on plan assets	**(177,857)**	144,732		
Employer contributions	**20,000**	61,224	**31,137**	16,765
Plan participants' contributions			**9,527**	8,361
Gross benefits paid	**(52,631)**	(103,677)	**(40,664)**	(25,126)
FAIR VALUE OF PLAN ASSETS, END OF YEAR	**851,205**	**1,061,693**	**0**	**0**
UNFUNDED STATUS[3]	**$ (93,306)**	**$ (78,252)**	**$ (835,208)**	**$ (1,000,395)**

[1] *Represents costs associated with a voluntary early retirement program offered to plan participants.*
[2] *Measurement of the University's pension obligation including assumed salary increases (required by GAAP).*
[3] *These amounts totaling $928,514 as of June 30, 2022 and $1,078,647 as of June 30, 2021 are included in the "Accrued Retirement Obligations" line in the* Consolidated Balance Sheets.

The accumulated pension benefit obligation (ABO) is a measurement of the University's pension benefit obligation, based on past and present compensation levels and does not include assumed salary increases. The ABO was $846.8 million at June 30, 2022 and $1.0 billion at June 30, 2021. The funded status disclosed above has been prepared in accordance with pension accounting rules. When measured on an IRS funding basis, which informs the University's required cash contribution amount, the plan was overfunded at January 1, 2022.

Net periodic benefit cost

Components of net periodic benefit cost and other amounts recognized in the *Consolidated Statements of Changes in Net Assets with General Operating Account Detail* are summarized as follows for the years ended June 30, 2022 and 2021 (in thousands of dollars):

	Pension benefits		Postretirement health benefits	
	2022	2021	2022	2021
Components of net periodic benefit cost:				
Operating				
Service cost	**$ 11,208**	$ 12,950	**$ 32,542**	$ 32,961
Special termination benefits		460		
Total operating activity	**11,208**	13,410	**32,542**	32,961
Non-operating				
Interest cost	**34,980**	36,673	**32,643**	32,728
Expected return on plan assets	**(40,026)**	(47,300)		
Amortization of:				
Actuarial loss/(gain)	**7,242**	16,230	**(4,650)**	(5,116)
Prior service cost/(credit)	**287**	288	**(7,929)**	(7,929)
Total non-operating activity[1]	**2,483**	5,891	**20,064**	19,683
Total net periodic benefit cost	**13,691**	**19,301**	**52,606**	**52,644**
Other amounts recognized in non-operating activity in unrestricted net assets:				
Current year net actuarial loss/(gain)	**28,893**	(123,987)	**(199,211)**	(4,101)
Plan amendments			**(24)**	
Amortization of:				
Prior service (cost)/credit	**(287)**	(288)	**7,929**	7,929
Actuarial (loss)/gain	**(7,242)**	(16,230)	**4,650**	5,116
Total other amounts recognized in non-operating activity[1]	**21,364**	**(140,505)**	**(186,656)**	**8,944**
TOTAL RECOGNIZED IN *CONSOLIDATED STATEMENTS OF CHANGES IN NET ASSETS WITH GENERAL OPERATING ACCOUNT DETAIL*	**$ 35,055**	**$ (121,204)**	**$ (134,050)**	**$ 61,588**

[1] *These amounts totaling ($142,745) in fiscal year 2022 and ($105,987) in fiscal year 2021 include gains and losses and other changes in the actuarially determined benefit obligations arising in the current period but that have not yet been reflected within net periodic benefit cost/(income) and are included in the "Change in Retirement Obligations" line in the* Consolidated Statements of Changes in Net Assets with General Operating Account Detail.

Cumulative amounts recognized as non-operating changes in net assets without donor restrictions are summarized as follows for the years ended June 30, 2022 and 2021 (in thousands of dollars):

	Pension benefits		Postretirement health benefits	
	2022	2021	2022	2021
Net actuarial loss/(gain)	**$ 62,248**	$ 40,596	**$ (362,492)**	$ (167,932)
Prior service cost/(credit)	**320**	607	**(33,765)**	(41,670)
CUMULATIVE AMOUNTS RECOGNIZED IN UNRESTRICTED NET ASSETS	**$ 62,568**	**$ 41,203**	**$ (396,257)**	**$ (209,602)**

Other assumptions and health care cost trend rates used in determining the year end obligation as well as the net periodic benefit (income)/cost of the pension and postretirement health plans are summarized as follows for fiscal years 2022 and 2021:

	Pension benefits		Postretirement health benefits	
	2022	2021	2022	2021
Weighted-average assumptions used to determine benefit obligation as of June 30:				
Discount rate	**5.05%**	3.15%	**4.90%**	3.20%
Compensation increase trend:				
Average rate	N/A	3.50%	N/A	3.50%
Initial rate	**5.00%**	N/A	**5.00%**	N/A
Ultimate rate	**3.50%**	N/A	**3.50%**	N/A
Year of ultimate	**2025**	N/A	**2025**	N/A
Cash balance (or similar formula) interest crediting rate	**5.25%**	5.25%	N/A	N/A
Pension increases for in-payment benefits increase trend:				
Average rate	N/A	0.25%	N/A	N/A
Initial rate	**1.50%**	N/A	N/A	N/A
Ultimate rate	**0.25%**	N/A	N/A	N/A
Year of ultimate	**2025**	N/A	N/A	N/A
Health care cost trend rate:				
Current rate	N/A	N/A	**7.00%**	6.50%
Ultimate rate	N/A	N/A	**5.00%**	4.75%
Year of ultimate	N/A	N/A	**2029**	2025
Weighted-average assumptions used to determine net periodic benefit (income)/cost:				
Discount rate	**3.15%**	3.15%	**3.20%**	3.35%
Expected long-term rate of return on plan assets	**4.50%**	5.50%	N/A	N/A
Compensation increase trend:				
Average rate	**3.50%**	3.50%	**3.50%**	3.50%
Initial rate	**0.00%**	0.00%	N/A	N/A
Ultimate rate	N/A	0.25%	N/A	N/A
Year of ultimate	N/A	2025	N/A	N/A
Pension increases for in-payment benefits increase trend:				
Average rate	**0.25%**	0.00%	N/A	N/A
Health care cost trend rate:				
Initial rate	N/A	N/A	**6.50%**	6.50%
Ultimate rate	N/A	N/A	**4.75%**	4.75%
Year of ultimate	N/A	N/A	**2025**	2025

The expected return on pension plan assets is determined by utilizing an independent advisor's capital markets model, which takes into account the expected real return, before inflation, for each of the pension portfolio's asset classes, as well as the correlation of any one asset class to every other asset class. This model calculates the real returns and correlations and derives an expected real return for the entire portfolio, given the percentage weighting allocated to each asset class. After calculating the expected real return, an assessment is made to accommodate the expected inflation rate for the forthcoming period. The final expected return on assets is the aggregate of the expected real return plus the expected inflation rate.

Plan assets

The actual asset allocation of the investment portfolio for the pension plan at June 30, 2022 and 2021, along with target allocations for June 30, 2023, is as follows:

	2023 Target	June 30, 2022	June 30, 2021
Asset allocation by category for pension plan:			
Fixed income securities	75-85%	79.7%	77.0%
Equity securities	15-25	19.6	19.8
Cash	1-5	0.7	3.2
TOTAL OF ASSET ALLOCATION CATEGORIES		**100.0%**	**100.0%**

The University's investment strategy for the pension portfolio is to manage the assets across a broad and diversified range of investment categories, both domestic and international. The objective is to achieve a risk-adjusted return that is in line with the long-term obligations that the University has to the pension plan beneficiaries. During fiscal year 2022, the University increased its allocation to fixed income securities to manage the interest rate volatility associated with its pension obligations. The University expects to keep this strategy in future years. The investment program is also managed to comply with all ERISA regulations.

The following is a summary of the levels within the fair value hierarchy for the pension plan assets subject to fair value measurement as of June 30, 2022 and 2021 (in thousands of dollars):

	2022					2021
	Level 1	Level 2	Level 3	NAV as practical expedient	Total	Total
PLAN ASSETS:						
Cash and short-term investments	$ 17,942				**$ 17,942**	$ 57,999
Domestic equity	87,025				**87,025**	104,391
Foreign equity	26,035			$ 36,921	**62,956**	75,522
Domestic fixed income				633,453	**633,453**	746,979
Foreign fixed income					**0**	8,479
Emerging market equity and debt	12,880				**12,880**	22,895
Hedge funds				265	**265**	321
Private equity				1,368	**1,368**	1,799
High yield				35,313	**35,313**	41,215
PLAN ASSETS SUBJECT TO FAIR VALUE LEVELING	**$ 143,882**	**$ 0**	**$ 0**	**$ 707,320**	**$ 851,202**	**$ 1,059,600**
Other assets not subject to fair value					**3**	2,126
TOTAL PLAN ASSETS					**$ 851,205**	**$ 1,061,726**
PLAN LIABILITIES:						
Due to brokers					**$ 0**	$ (33)
PLAN LIABILITIES SUBJECT TO FAIR VALUE LEVELING	**$ 0**	**$ 0**	**$ 0**	**$ 0**	**$ 0**	**$ (33)**
TOTAL PLAN LIABILITIES					**$ 0**	**$ (33)**

Expected future benefit payments

Employer contributions of $10.0 million are expected for fiscal year 2023 to fund the pension benefit plan.

The following table summarizes expected benefit payments and subsidies for pension and other postretirement health benefits for the University (in thousands of dollars):

	Expected benefit payments	
Fiscal year	Pension	Postretirement health
2023	$ 65,446	$ 26,643
2024	65,425	28,974
2025	67,316	31,068
2026	68,908	33,578
2027	70,132	36,165
Thereafter	361,470	220,713

12. STUDENT FINANCIAL AID

Financial aid granted to students in fiscal 2022 and 2021 is summarized as follows (in thousands of dollars):

	2022	2021
Scholarships and other student awards:		
Scholarships applied to student income[1]	**$ 505,904**	$ 435,959
Scholarships and other student awards paid directly to students	**171,312**	160,744
Total scholarships and other student awards	**677,216**	**596,703**
Student employment	**93,581**	84,273
Student loans	**14,124**	13,064
Agency financial aid[2]	**21,505**	21,279
TOTAL STUDENT FINANCIAL AID	**$ 806,426**	**$ 715,319**

[1] *Includes $224,863 and $164,232 in fiscal 2022 and 2021, respectively, of undergraduate scholarships applied to student income.*
[2] *Represents aid from sponsors for which the University acts as an agent for the recipient.*

13. SPONSORED SUPPORT

Total expenditures funded by US government sponsors or by institutions that subcontract federally sponsored projects to the University were $642.1 million and $625.0 million in fiscal year 2022 and 2021, respectively. The University's principal source of federally sponsored funds is the Department of Health and Human Services. The University also has many non-federal sources of sponsored awards and grants, including corporations, foundations, state and local governments, foreign governments, and research institutes.

Sponsored grants and contracts normally provide for the recovery of direct and indirect costs. Recovery of related indirect costs is generally recorded at fixed or predetermined rates negotiated with the federal government and other sponsors. Predetermined federal indirect cost rates have been established for the University Area, the Medical School (including the School of Dental Medicine), and the T.H. Chan School of Public Health through fiscal year 2024. Funds received for federally sponsored activity are subject to audit.

14. GIFTS

Gifts are classified as net assets with or without restrictions in accordance with donor specifications.

Additionally, gifts are categorized by purpose as "Current use", "Non-federal sponsored grants", "Endowment funds", "Split interest agreements", or "Loan funds and facilities".

Gifts received for the year ended June 30, 2022 are summarized as follows (in thousands of dollars):

	2022		
	Gifts received	Donor redesignations/ other changes	Total
Current use	$ 514,361	$ (9,625)	**$ 504,736**
Non-federal sponsored grants	235,481	(3,361)	**232,120**
Endowment funds	579,987	3,663	**583,650**
Split interest agreements[1]	12,290		**12,290**
Loan funds and facilities	81,943	5,931	**87,874**
TOTAL GIFTS	**$ 1,424,062**	**$ (3,392)**	**$ 1,420,670**

[1] *Shown at net present value. The undiscounted value of these gifts was $26,626 for the year ended June 30, 2022.*

Gifts received for the year ended June 30, 2021 are summarized as follows (in thousands of dollars):

	2021		
	Gifts received	Donor redesignations/ other changes	Total
Current use	$ 545,756	$ (4,797)	**$ 540,959**
Non-federal sponsored grants	211,571	(2,789)	**208,782**
Endowment funds	462,991	2,028	**465,019**
Split interest agreements[1]	10,761		**10,761**
Loan funds and facilities	133,211	2,277	**135,488**
TOTAL GIFTS	**$ 1,364,290**	**$ (3,281)**	**$ 1,361,009**

[1] *Shown at net present value. The undiscounted value of these gifts was $35,078 for the year ended June 30, 2021.*

15. OTHER REVENUE

The major components of other revenue for the years ended June 30, 2022 and 2021 were as follows (in thousands of dollars):

	2022	2021
Publications and royalties from copyrights	**$ 277,104**	$ 253,113
Royalties from the commercialization of intellectual property[1]	**152,078**	107,164
Services income	**135,240**	96,443
Rental and parking[2]	**116,070**	87,646
Health and clinic fees	**70,214**	61,461
Sales income	**31,423**	23,703
Interest income	**8,373**	7,079
Other student income	**4,326**	3,582
Other	**43,495**	53,724
TOTAL OTHER REVENUE	**$ 838,323**	**$ 693,915**

[1] *Excludes distribution to external parties.*
[2] *The University is the lessor of space and facilities under operating leases, the income from which is included in rental and parking.*

16. OTHER EXPENSES

The major components of other expenses for the years ended June 30, 2022 and 2021 were as follows (in thousands of dollars):

	2022	2021
Subcontract expenses under sponsored projects	**$ 179,212**	$ 161,910
Advertising	**53,007**	40,444
Publishing	**45,097**	39,316
Travel	**43,737**	1,965
Taxes and fees	**38,706**	35,294
Insurance	**25,669**	15,749
Fixed asset impairments	**21,385**	20,804
Postage	**14,907**	13,265
Telephone	**11,153**	10,968
Other	**61,702**	45,110
TOTAL OTHER EXPENSES	**$ 494,575**	**$ 384,825**

17. FUNCTIONAL AND NATURAL CLASSIFICATION OF OPERATING EXPENSES

Operating expenses are allocated functionally on a direct basis. Operations and maintenance expenses are allocated based on square footage.

Operating expenses by functional classification for the years ended June 30, 2022 and 2021 were as follows (in thousands of dollars):

	2022				
	Instruction and academic support	Research[1]	Student services and support	Institutional support and auxiliary	Total
Salaries and wages	$ 1,149,598	$ 310,492	$ 144,458	$ 601,794	**$ 2,206,342**
Employee benefits	286,322	74,786	49,844	172,979	**583,931**
Services purchased	374,555	95,246	60,739	202,169	**732,709**
Depreciation	47,664	155,568	16,520	209,108	**428,860**
Space and occupancy	106,798	62,355	31,766	152,867	**353,786**
Supplies and equipment	90,926	55,364	41,906	82,888	**271,084**
Interest	18,549	43,775	13,071	112,139	**187,534**
Scholarships and other student awards			171,312		**171,312**
Other expense and overhead allocations	1,866	424,292	28,407	40,010	**494,575**
TOTAL EXPENSES	**$ 2,076,278**	**$ 1,221,878**	**$ 558,023**	**$ 1,573,954**	**$ 5,430,133**

[1] *The methodology used to allocate expenses for financial statement purposes is different than methodologies used for other purposes, such as governmental surveys.*

	2021				
	Instruction and academic support	Research[1]	Student services and support	Institutional support and auxiliary	Total
Salaries and wages	$ 1,111,716	$ 306,555	$ 140,842	$ 517,552	**$ 2,076,665**
Employee benefits	305,452	76,866	52,679	143,129	**578,126**
Services purchased	354,294	91,675	45,082	153,648	**644,699**
Depreciation	47,187	147,189	16,487	199,366	**410,229**
Space and occupancy	82,442	56,063	27,742	150,669	**316,916**
Supplies and equipment	68,242	55,497	34,903	52,055	**210,697**
Interest	17,840	31,203	12,653	121,759	**183,455**
Scholarships and other student awards			160,744		**160,744**
Other expense and overhead allocations	(39,494)	400,693	15,301	8,325	**384,825**
TOTAL EXPENSES	**$ 1,947,679**	**$ 1,165,741**	**$ 506,433**	**$ 1,346,503**	**$ 4,966,356**

[1] *The methodology used to allocate expenses for financial statement purposes is different than methodologies used for other purposes, such as governmental surveys.*

18. COMMITMENTS AND CONTINGENCIES

Lease commitments

The University is the lessee of equipment and space under operating (rental) and finance leases. The University determines whether a contract is a lease at inception. Identified leases are subsequently measured, classified, and recognized at lease commencement. The University categorizes leases with contractual terms longer than twelve months as either operating or finance. The University's leases generally have terms that range from one to five years for equipment and one to twenty years for property, with certain leases inclusive of renewal options if they are considered to be reasonably assured at lease commencement. Right of use assets and lease liabilities for operating leases are included in "Operating leases—right of use assets" and "Operating lease liabilities", respectively, in the *Consolidated Balance Sheets*. Finance lease right of use assets and lease liabilities are included in "Fixed assets" and "Deferred revenue and other liabilities", respectively, in the *Consolidated Balance Sheets*. Lease assets represent our right to use an underlying asset for the lease term and lease liabilities represent our obligation to make lease payments arising from the lease.

Operating and finance lease right of use assets and associated lease liabilities are recognized based on the present value of future minimum lease payments to be made over the expected lease term, using the collateralized incremental borrowing rate at the commencement date in determining the present value of future payments. Rent expense related to operating leases, including short-term leases and variable lease payments, was $101.2 million and $95.4 million in fiscal year 2022 and 2021, respectively.

Maturity analysis of the annual undiscounted cash flows reconciled to the carrying value of the operating and finance lease liabilities (in thousands of dollars):

	Operating	Finance
2023	$ 84,515	$ 13,640
2024	76,230	11,255
2025	69,951	11,645
2026	65,157	21,734
2027	60,518	11,696
Thereafter	484,169	95,232
TOTAL LEASE PAYMENTS	840,540	165,202
Less: Imputed Interest	(151,198)	(77,004)
PRESENT VALUE OF LEASE LIABILITIES	**$ 689,342**	**$ 88,198**

Weighted-average remaining lease term and discount rate for operating and finance leases were as follows:

	June 30, 2022
Weighted Average Remaining Lease Term	
Operating Leases	15.2 YEARS
Finance Leases	14.4 YEARS
Weighted Average Discount Rate	
Operating Leases	2.4%
Finance Leases	2.4%

As of June 30, 2022, the University has $180.6 million of future payments under a lease for research facilities and office space that have not yet commenced. This lease will commence during fiscal year 2023 with a lease term of 15 years.

The University leases properties to customers under agreements that are classified as operating or sales-type leases. Property leased to others in operating lease arrangements are included in "Fixed assets" in the *Consolidated Balance Sheets*. Revenue is recognized to the extent that amounts are determined to be collectible.

Fixed asset-related commitments

The University has various commitments for capital projects involving construction and renovation of certain facilities, real estate acquisitions, and equipment purchases, for which the outstanding commitments as of June 30, 2022 totaled approximately $267.2 million.

Environmental remediation

The University is subject to laws and regulations concerning environmental remediation and has established reserves for potential obligations that management considers to be probable and for which reasonable estimates can be made. These estimates may change substantially depending on new information regarding the nature and extent of contamination, appropriate remediation technologies, and regulatory approvals. Costs of future environmental remediation have been discounted to their net present value. Management is not aware of any existing conditions that it believes are likely to have a material adverse effect on the University's financial position, changes in net assets, or cash flows.

General

The University is a defendant in various legal actions arising from the normal course of its operations. While it is not possible to predict accurately or determine the eventual outcome of such actions, management believes that the outcome of these proceedings will not have a material adverse effect on the University's financial position, changes in net assets, or cash flows.

The University has evaluated subsequent events through October 12, 2022, the date the consolidated financial statements were issued. The University has concluded that no material events have occurred that are not accounted for in the accompanying consolidated financial statements or disclosed in the accompanying notes.

Schedule of Expenditures of Federal Awards

Harvard University
Schedule of Expenditures of Federal Awards
Year Ended June 30, 2022

Federal Grantor/Pass-through Grantor/Program or Cluster Title	Assistance Listing Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
Research and Development (R&D) Cluster					
Direct Award					
Agency for International Development					
Advancing Economic Diversification in Ethiopia	98.001	72066319CA00005		$ 1,753,648	$ -
COVID-19 Economic Response and Long-Term Growth in Jordan	98.001	72027820CA00002		1,245,872	-
Raskin Welfare Reform: Transition to Electronic Distribution	98.001	7200AA19FA00002		508,181	267,953
Total for Assistance Listing Number 98.001				**3,507,701**	**267,953**
Kartu Prakerja: Evaluating Indonesia's Jobs Training and Cash Transfer Program	98.RD	7200AA21FA00005		85,485	-
Total for Assistance Listing Number 98.RD				**85,485**	**-**
Total for Agency for International Development Direct Award R&D Cluster				**3,593,186**	**267,953**
Air Force Office of Scientific Research					
Towards a New Quantum Platform Based on Ultracold Molecules	12.800	FA2386-21-1-4089		61,196	-
Waveguide-coupled Interlayer Exciton Condensation LED in 2D Heterostructures for Quantum Optics	12.800	FA2386-21-1-4086		78,172	-
Total for Assistance Listing Number 12.800				**139,368**	**-**
Total for Air Force Office of Scientific Research Direct Award R&D Cluster				**139,368**	**-**
Delta Regional Authority					
Authentic Leadership: Delta Leadership Institute	90.RD	No Award Number		55,032	-
Total for Assistance Listing Number 90.RD				**55,032**	**-**
Total for Delta Regional Authority Direct Award R&D Cluster				**55,032**	**-**
Department of Agriculture					
Adaptive forest management options for white ash influenced by the invasive emerald ash borer	10.310	2021-68008-34102		114,849	66,209
Toward a comprehensive understanding of the economic and ecological impacts of land protection	10.310	2021-67023-34491		215,801	58,785
Total for Assistance Listing Number 10.310				**330,650**	**124,994**
Transects across New England landscapes: Investigating historical disturbances, vegetation dynamics, and functional changes in forest ecosystems	10.664	17-JV-11242306-038		5,547	-
Total for Assistance Listing Number 10.664				**5,547**	**-**
Past and future land use / land cover change within watersheds of the upper Great Lakes	10.RD	19-CR-11242313-123		26,529	-
Total for Assistance Listing Number 10.RD				**26,529**	**-**
Total for Department of Agriculture Direct Award R&D Cluster				**362,726**	**124,994**
Department of Commerce					
CO2-Air Quality Urban Synthesis and Analysis	11.431	NA20OAR4310303		74,152	-
Data assimilation to leverage diverse datasets for improved CO2 and CH4 flux estimation and future observing system design	11.431	NA19OAR4310173		52,832	-
Long-term trends of tropospheric ozone constrained by global observation networks and GEOS-Chem	11.431	NA19OAR4310176		57,258	-
Maritime Continent as a barrier to the MJO propagation: an analysis of the sensitivity of convection to column moisture	11.431	NA17OAR4310260		27,143	-
Monitoring smoke hazards across the western United States: Tools for fire scientists, policymakers, and stakeholders	11.431	NA22OAR4310140		18,481	-
Understanding methane changes in cities affected by COVID-19 shutdowns	11.431	NA21OAR4310237		21,753	-
Total for Assistance Listing Number 11.431				**251,619**	**-**
Total for Department of Commerce Direct Award R&D Cluster				**251,619**	**-**
Department of Defense					
Unseen Legacies of the Vietnam War: Finding, Archiving and Sharing the Missing Data and Historical Ephemera of Vietnamese War Dead	12.015	HQ00342120011		778,818	15,872
Total for Assistance Listing Number 12.015				**778,818**	**15,872**
Adaptive Choice Set Construction for Complex Decision Making	12.300	N00014-19-1-2025		330,048	-
An end-to-end architecture for efficient choice: From perception to goals	12.300	N00014-22-1-2205		17,800	-
Analysis of high dimensional Gibbs samplers and Bayesian modeling of climate data	12.300	N00014-18-1-2730		27,620	-
Artificial Cellular Metabolism	12.300	N00014-20-1-2679		2,922	-
Bio-Electrical Energy from Seafloor Methane Sources	12.300	N00014-19-1-2244		21,270	-
Biophysiokinetic effect of NIR on cochlear oxidative stress and TTS	12.300	N00014-16-1-2966		1,795	-
Carbon Dioxide Reduction Catalysis to Eliminate the Need for Rebreathers in Diving Operations	12.300	N00014-22-1-2470		40,854	-
Chemistry of Seawater Electrolysis and Byproduct Management for Underwater Breathing	12.300	N00014-19-1-2385		344,827	-
Decision Making in Heterogenous Multi-Agent Systems with Misinformation and Sparse Communication	12.300	N00014-21-1-2714		120,411	-
DNA-based technologies for reading and writing large-scale molecular patterns with nanoscale-precision	12.300	N00014-18-1-2549		282,654	-
DURIP: A 3D knitting machine to develop smart robotic garments for warfighter protection, communication and rehabilitation	12.300	N00014-19-1-2220		95,519	-
Embedded Deep Learning and Advanced Computation	12.300	FA8750-18-1-0112		61,968	-
Ethical Decision Making Through Social Choice and Machine Learning	12.300	N00014-20-1-2488		107,088	-

Harvard University
Schedule of Expenditures of Federal Awards
Year Ended June 30, 2022

Federal Grantor/Pass-through Grantor/Program or Cluster Title	Assistance Listing Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
Exploration of Kac's walk and analysis of bayesian distributed computing	12.300	N00014-21-1-2664		185,511	-
Fluidic Powered Soft Fabric-Based Actuators for Wearable Robotic Applications	12.300	N00014-17-1-2121		99,218	-
High-Tc Superconductivity at Oxide-Chalcogenide Interfaces	12.300	N00014-18-1-2691		7,116	-
Many-Body Quantum Dynamics with Microscope Control- A New Research Frontier	12.300	N00014-18-1-2863		618,947	-
Materials Design for Thermal Radiation Blocking Thermal Barrier Coatings	12.300	N00014-21-1-2478		112,108	-
MicroRNA-mediated genomic stability and NIHL susceptibility	12.300	N00014-17-1-2647		596	-
Nanostructured Surfaces for Integrated Optoelectronics, Plasmonics, and Quantum Optics	12.300	N00014-16-1-2825		363,223	-
Next-Generation Materials for Oxygen Generation, Transport, and Storage in the Undersea Environment	12.300	N00014-20-1-2418		1,490,660	597,946
Porous Metal-Organic Liquids as a New Platform for Investigation Gas-Liquid Interactions	12.300	N00014-19-1-2148		107,357	-
Practical and Scalable Quantum Simulators for Chemistry and Materials	12.300	N00014-16-1-2008		35,447	-
Programmable Architected Materials	12.300	N00014-16-1-2823		244,167	-
Programmable Assembly of Functional Human Tissues	12.300	N00014-21-1-2958		121,280	-
Quantum Engineered van der Waals Heterostructures for Topological Electronic Structures toward Novel Device Applications	12.300	N00014-18-1-2877		245,628	-
Quantum Information Processing With Phonons	12.300	N00014-20-1-2425		336,411	-
Quantum Opto-Mechanics with Atoms and Nanostructured Diamond: QOMAND	12.300	N00014-15-1-2761		46,736	46,736
Real-time Distributed Coordination of Multi-agent Systems under Limited Communication	12.300	N00014-19-1-2217		188,263	-
Self-Organized Collective Systems using Implicit Coordination: Closing the perception gap between theory and implementation for 3D underwater robot swarms	12.300	N00014-20-1-2320		100,744	-
Soft Robotic Instructional Kits for Education and STEM Outreach	12.300	N00014-19-1-2386		12,545	-
Synthetic Bioelectrical Materials for Sensing, Pattern Formation, and Computation	12.300	N00014-18-1-2859		727,008	-
Towards Living Materials with Synthetic Building Blocks	12.300	N00014-17-1-3029		309,215	-
TwoRavens: Intuitive Statistical Exploration, Model Extraction, and Curation	12.300	FA8750-17-2-0114		2,251	2,169
Total for Assistance Listing Number 12.300				**6,809,207**	**646,851**
Fundamental Studies of Stored Energy for Photochemical Destruction of CWA Simulants	12.351	HDTRA 12110016		377,153	34,273
Total for Assistance Listing Number 12.351				**377,153**	**34,273**
A prospective study of serum levels of polyunsaturated fatty acids and effects on multiple sclerosis disease activity and progression	12.420	W81XWH1910155		91,605	-
An evolutionary approach to vulnerability mapping in order identify alternative and synergistic therapeutic strategies for TSC and related diseases	12.420	W81XWH1810659		1,636	-
Chemigenomic Drug Discovery for Tuberculosis	12.420	W81XWH-17-1-0692		2,087,113	1,830,305
Genes, environment, and Prodromal features of Parkinson disease	12.420	W81XWH-20-1-0303		524,501	51,611
Gut Symbiotic Lipid A Family: Structures and Immunomodulation in IBD	12.420	W81XWH1910625		131,744	-
Inflammatory and Immune Mechanisms Relating PTSD and Depression to Ovarian Cancer Risk.	12.420	W81XWH2110326		195,409	69,780
Mapping the routes to tumor cell death in TSC	12.420	W81XWH-18-1-0370		12,426	-
Metabolomic Predictors of MS Outcomes	12.420	W81XWH1810341		177,980	15,053
Piezo1-mediated mechanotransduction as key regulator of bone health in adult mice.	12.420	W81XWH2110449		201,631	-
Posttraumatic Stress Disorder and Ovarian Cancer Risk	12.420	W81XWH1710153		10,630	-
Theranostic Cellular Backpacks for Precision Imaging and Treatment of Traumatic Brain Injury Sites	12.420	W81XWH1920011		1,057,197	390,181
Understanding the role of gene-environment interactions in the degeneration of human dopaminergic neurons in Parkinson's Disease	12.420	W81XWH1910696		275,023	-
Total for Assistance Listing Number 12.420				**4,766,895**	**2,356,930**
An Automated Scientific Discovery Framework (ASDF) for Mechanistic Reasoning Across Complex Data	12.431	W911NF-18-1-0124		15	-
Continuation Study: A Systems Approach to Understanding Post-Traumatic Stress Disorder	12.431	W911NF-17-2-0086		224,404	67,251
Control of Many-Body States Using Strong Coherent Light-Matter Coupling in Terahertz Cavities	12.431	W911NF2110184		84,061	-
CRISPR-based Diagnostics for Food and Waterborne Pathogen Detection	12.431	W911QY2110006		80,860	-
Design of Automatically Dispersed Metals on Oxides as Catalysts for Oxidative Decomposition of Chemical Warfare Agents	12.431	W911NF-20-2-0183		108,426	94,117
Facility For the Development and Characterization of New High-Performance Submillimeter Wave Lasers	12.431	W911NF2010157		22,990	-
Hydrodynamic Electron Transport in 2-Dimensional Materials for Nanoelectronics	12.431	W911NF-17-1-0574		178,619	30,819
ii.3.AMP: Hybrid quantum-classical algorithm for analyzing many-body systems: from NMR inference to validating microscopic theories on quantum simulators	12.431	W911NF2010163		2,946	-
Imaging and Control of Biological Transduction using NV-DIamond	12.431	W911NF-15-1-0548		817,915	589,845
Multi-Functional devices in precisely engineered van der Waals homojunctions	12.431	W911NF2120147		1,036,644	514,210
Programmable Optical Lattice for Fermi-Hubbard Quantum Simulations	12.431	W911NF2010104		101,989	-
Quantum Nanophotonics with Lithium Niobate	12.431	W911NF2010248		145	-
Quantum Optimization with Programmable Simulators based on Atom Arrays	12.431	W911NF2010021		2,550,710	1,867,677
Quantum Sensing of Quantum Materials	12.431	W911NF-17-1-0023		54,173	-
Quon Pictorial Language, Analysis, Quantum Information	12.431	W911NF1910302		181,225	-

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Topological Superconductivity using Layered Materials	12.431	W911NF1810316		192,723	125,460
Toward Mathematical Intelligence and Certifiable Automated Reasoning: Theoretical Understanding and Experimental Realization	12.431	W911NF2010082		1,154,042	346,039
Understanding and Engineering Transient Mechanical Responses in Nanoparticle-Reinforced Heterogenous Particulate Systems	12.431	W911NF2120146		538,113	270,807
Widely-tunable, compact sub-millimeter source operating at room-temperature from 100 GHz to 1 THz	12.431	W911NF1920168		152,885	-
Total for Assistance Listing Number 12.431				**7,482,885**	**3,906,225**
[Quantum Accelerator] Frequency Domain Quantum Communications using Electro-Optic Photonic Molecule	12.800	FA9550-21-1-0056		13,418	-
Cooperative Radiation Phenomena for Quantum Information Processing and Metrology	12.800	FA9550-19-1-0233		90,344	-
Distributed Coordination in Multi-agent Networked Systems Algorithms and Fundamental Limits	12.800	FA9550-18-1-0150		24,353	-
Enhanced Superconductivity through Picoscale Engineering	12.800	FA9550-21-1-0043		377,159	-
Entangling Ultracold Atoms	12.800	FA9550-19-1-0089		331,403	-
High-index dielectric metasurfaces for enhanced magneto-optics	12.800	FA9550-19-1-0352		257,848	-
Laser Cooling and Trapping of Asymmetric Top Molecules for Quantum Science	12.800	FA9550-22-1-0288		8,907	-
Laser Cooling of Complex Molecules for Quantum Science	12.800	FA9550-19-1-0068		189,257	-
Metasurface Polarization Optics and Imaging	12.800	FA9550-19-1-0135		248,198	-
Modulating Cellular Performance with Nanoscale Biocircuits	12.800	FA9550-19-1-0246		393,442	-
Nanostructured Optics for High-Power Laser Applications	12.800	FA9550-19-1-0376		216,415	-
New Approaches to Quantum Control with Individual Molecule Sensitivity	12.800	FA9550-20-1-0323		1,295,545	997,484
The Neural Architecture of Reinforcement Learning in Partially Observable Environments	12.800	FA9550-20-1-0413		175,503	47,516
Tunneling Phenomena in Interface Superconductors	12.800	FA9550-21-1-0429		807,462	91,857
Wigner Crystals in Atomically Thin Heterostructures	12.800	FA9550-21-1-0216		238,319	-
Total for Assistance Listing Number 12.800				**4,667,573**	**1,136,857**
Active Context	12.910	W911NF-15-1-0544		204,195	-
Automated End-To-End Design And Digital Fabrication Of Multi-Task Soft Robots Via Deep Representations	12.910	HR00112110007		64,680	-
Collaborative scientific discovery with semantically linked machine-built models	12.910	W911NF2010255		305,480	-
DARPA Biological Control: A generalizable approach to engineer ultra-precise cellular control systems with applications to drug resistance	12.910	HR0011-16-2-0049		13,539	-
Design and Engineering of Biostasis Proteins	12.910	W911NF1920017		422,139	3,255
High-efficiency aberration corrected large metalenses	12.910	HR00111810001		309,663	-
Identifying pathogenic bacteria by phenotyping	12.910	W911NF-19-2-0018		3,112,235	750,056
Information Storage and Processing Using Time-Ordered Strings of Molbytes, and Molecular Processes	12.910	W911NF-18-2-0030		428,473	296,464
Mechanism Design for Resource Coordination in Dynamic, Multi-Actor Worlds	12.910	HR00111920029		1,024,504	147,840
RNA therapeutics assessment in Human Organ Chips	12.910	HR0011-22-2-0017		431,954	-
STOP PAIN: Safe Therapeutic Options for Pain and Inflammation	12.910	HR0011-19-2-0022		5,593,141	2,735,538
Time-Tolerant Biostasis Therapeutics	12.910	W911NF1920027		5,175,373	676,124
Ultra-Rapid Drug Repurposing for COVID19 Therapeutics	12.910	HR0011-20-2-0040		817,013	817,013
Total for Assistance Listing Number 12.910				**17,902,389**	**5,426,290**
An Integrative Exploration of Actuation and Power Systems for Microrobots	12.RD	HR001119C0044		(10,354)	-
Evaluating the Importance of Precursor Transport and Transformation for Groundwater Contamination with Poly- and Perfluoroalkyl Substances	12.RD	W912HQ19C0002		329,818	125,261
General and Flag Officer Homeland Security Executive Seminar	12.RD	W912SV20D0001		343,319	-
Integration of top-down and bottom-up methodologies for accurate modeling of biological networks	12.RD	FA8750-17-C-0255		175,912	-
Laser Cooling of Polyatomic Molecules	12.RD	FA9550-21-1-0136		342,160	-
Personalized computational modeling to support effective use of back support exosuits to prevent back injuries	12.RD	W81XWH2010609		308,413	-
Transmitters, Receivers, Amplifiers for Microwave Photonics On Lithium Niobate (TRAMPOLiN)	12.RD	HR001120C0137		1,123,649	867,811
Total for Assistance Listing Number 12.RD				**2,612,917**	**993,072**
Total for Department of Defense Direct Award R&D Cluster				**45,397,837**	**14,516,370**
Department of Education					
Fulbright-Hays Doctoral Dissertation Research Abroad	84.022	P022A200047		213,688	-
Total for Assistance Listing Number 84.022				**213,688**	**-**
Core Academic Language Skills Instrument: Refining the assessment to measure and monitor English Learners' progress	84.305	R305A190034-22		216,818	127,270
Developing and Testing Training Modes for Improving Teachers' Race-Related Competencies to Promote Student Learners' Academic Adjustment	84.305	R305A200278-22		414,806	-
National Center on Rural Education Research Networks	84.305	R305C190004 - 22		1,667,802	77,639
Partnering in Education Research (PIER) An Interdisciplinary Pre-doctoral Training Program	84.305	R305B200012-21		506,784	-

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Partnering in Education Research (PIER): A Predoctoral Interdisciplinary Training Program	84.305	R305B150010-19		264,593	-
Student Outcomes of Integrative Mental Health Services	84.305	R305A140253-16		51,139	-
Total for Assistance Listing Number 84.305				**3,121,942**	**204,909**
Total for Department of Education Direct Award R&D Cluster				**3,335,630**	**204,909**
Department of Energy					
A Lagrangian study of the transition from shallow to deep convection using ASR observations and LES simulations	81.049	DE-SC0018120		44,438	-
Biomimetic Self-Growing Modular Materials with Encoded Morphologies and Deformabilities	81.049	DE-SC0005247		610,444	102,499
Carbonate Management to Enable Energy- and Carbon-Efficient CO2 Electrolysis	81.049	DE-SC0021639		278,355	-
CATALYST DESIGN FOR SMALL MOLECULE ACTIVIATION OF ENERGY CONSEQUENCE	81.049	DE-SC0019144		15,796	-
Converting Metal–Organic Liquids into Microporous Glasses via Non-Equilibrium Syntheses	81.049	DE-SC0021145		161,698	-
Correlated Quasiparticles in Graphene	81.049	DE-SC0012260		314,055	-
Data Structure Alchemy	81.049	DE-SC0020200		182,540	-
Design and Assembly of Atomically-Precise Quantum Materials and Devices	81.049	DE-SC0020128		461,527	67,015
Discovering Dark Matter Clumps and Primordial Particles with Galaxies	81.049	DE-SC0020223		147,083	-
Dynamics of Many-Body Quantum Entanglement	81.049	DE-SC0019030		124,199	-
Epitaxial Stabilization of Novel Superconductors for Energy Generation, Storage and Distribution	81.049	DE-SC0021925		195,281	-
INTEGRATED MESOSCALE ARCHITECTURES FOR SUSTAINABLE CATALYSIS (IMASC)	81.049	DE-SC0012573		2,439,490	918,271
Machine learning for accelerated understanding of dynamic catalysis	81.049	DE-SC0022199		360,836	111,929
Microbial Ecology, Proteogenomics and Computational Optima	81.049	DE-FG02-02ER63445		2,760,556	-
Mixed-Metal Oxide Energy Conversion Catalysts for Integration with Photoabsorbers	81.049	DE-SC0017619		510,519	-
Programmable quantum simulators for lattice gauge theories and gauge-gravity correspondence	81.049	DE-SC0021013		371,068	-
Pursuing Dark Energy with Large Galaxy Redshift Surveys: Baryon Acoustic Oscillations and Beyond	81.049	DE-SC0013718		2,067	-
QPress: Quantum Press for Next-Generation Quantum Information Platforms	81.049	DE-SC0019300		530,542	390,838
Quantum Field Theory and Theoretical Particle Physics	81.049	DE-SC0013607		201,434	-
Research in High Energy Physics	81.049	DE-SC0007881		1,322,057	-
State-to-State Molecular Reactions in the Ultracold Regime	81.049	DE-SC0019020		163,846	-
Theoretical Research in High Energy Physics	81.049	DE-SC0007870		389,818	-
Transport and Imaging of Novel Phases of Moiré Quantum Matter	81.049	DE-SC0001819		680,003	298,165
Understanding Flow Cell Porous Electrodes as an Active Materials for Electrochemical Transformations	81.049	DE-SC0020170		586,120	87,667
Total for Assistance Listing Number 81.049				**12,853,772**	**1,976,384**
Experimental Demonstration of Alkalinity Concentration Swing for Direct Air Capture of Carbon Dioxide	81.089	DE-FE0031964		418,599	-
Total for Assistance Listing Number 81.089				**418,599**	**-**
From Z to Planets: Phase III	81.112	DE-NA0003904		238,132	53,855
Metallic Hydrogen: Reflectance, Metastability, and Superconductivity	81.112	DE-NA0004087		26,552	-
The Properties of Metallic Hydrogen	81.112	DE-NA0003917		297,101	-
Total for Assistance Listing Number 81.112				**561,785**	**53,855**
CIRCE: Circularizing Industries by Raising Carbon Efficiency	81.135	DE-AR0001509		449,524	-
GaN NMR Spectrometer Integrated Circuits Towards Broadly Distributed On-line Monitoring and Management of Subsurface Oil/Gas Reservoirs and Downstream	81.135	DE-AR0001063		512,779	-
Total for Assistance Listing Number 81.135				**962,303**	**-**
AQUEOUS SOLUBLE ORGANIC MOLECULE AND ELECTRODE DEVELOPMENT	81.RD	428977		(144)	-
ATLAS Phase II Upgrade: ITk Strip Stave Assembly	81.RD	340452		16,593	-
Conceptual Engineering Design and Prototype of Small Aperture Telescope (SAT) Optical System	81.RD	7590651		144,729	-
Long Lifetime Aqueous Soluble Organic Flow Battery Development	81.RD	535264		273,205	-
WBS 1.2.4.1 Trigger Processor Integration and Commissioning	81.RD	358424		141,545	-
Wire Tension for DUNE Anode Plane Assemblies	81.RD	665148		225,837	-
Total for Assistance Listing Number 81.RD				**801,765**	**-**
Total for Department of Energy Direct Award R&D Cluster				**15,598,224**	**2,030,239**
Department of Housing & Urban Development					
First-Time Homeownership in Fringe Cities: A Case Study of Brockton MA	14.506	RP-19-MA-004		809	-
Total for Assistance Listing Number 14.506				**809**	**-**
Optimizing the Impact of Smoke-Free Residential Policies using an Evidence-Informed Implementation Approach	14.906	MAHHU0041-18		223,235	-
Targeted Interventions to Reduce Environmental Exposures	14.906	MAHHU0068-21		35,095	-
Total for Assistance Listing Number 14.906				**258,330**	**-**

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THE EDWARD M. GRAMLICH FELLOWSHIP IN COMMUNITY AND ECONOMIC DEVELOPMENT SUMMER FELLOWSHIP PROGRAM - Summer 2022	14.RD	R-NONINT-2022-67163		10,000	-
Total for Assistance Listing Number 14.RD				**10,000**	**-**
Total for Department of Housing & Urban Development Direct Award R&D Cluster				**269,139**	**-**
Department of Justice					
Applying a Development Evaluation Approach to Address Community Safety and Health Challenges of Reintegration Programs in the USA	16.560	2019-ZA-CX-0001		450,356	-
Augmenting, Analyzing, and Archiving Criminal Trajectories in Four Birth Cohorts from the Project on Human Development in Chicago Neighborhoods, 1995-2023	16.560	2020-JX-FX-0002		128,659	41,262
Evaluability Assessment and Development of Psychological and Behavioral Health Approaches to Prevent Terrorism and Facilitate Reintegration of Violent Extremists	16.560	15PNIJ-21-GG-02727-DOMR		27,936	-
The Final Stage Reentry Project: An RCT of Expungement and Its Effect on Recidivism, Housing, and Employment	16.560	2019-RY-BX-0001		197,411	51,143
Total for Assistance Listing Number 16.560				**804,362**	**92,405**
Total for Department of Justice Direct Award R&D Cluster				**804,362**	**92,405**
Department of State					
Investigating the Feasibility of Extracting Digital Data from Analog Microform Seismogram Recordings	19.RD	19AQMM20P1475		66,293	-
Total for Assistance Listing Number 19.RD				**66,293**	**-**
Total for Department of State Direct Award R&D Cluster				**66,293**	**-**
Department of the Interior					
Implementation of Curvature Correction in DigitSeis for Pen-Type Analog Seismograms	15.807	G21AP10008-00		30,145	-
Total for Assistance Listing Number 15.807				**30,145**	**-**
Historic Resource Study: African-American Civil Rights Leaders and the Roosevelts	15.946	P17AC00787-02		33,196	-
Total for Assistance Listing Number 15.946				**33,196**	**-**
Total for Department of the Interior Direct Award R&D Cluster				**63,341**	**-**
Department of Veterans Affairs					
MAVERIC Project	64.RD	36C24E18D0048 36C24E21N0139		1,001,229	36,621
Total for Assistance Listing Number 64.RD				**1,001,229**	**36,621**
Total for Department of Veterans Affairs Direct Award R&D Cluster				**1,001,229**	**36,621**
Department of Health and Human Services					
Postdoctoral Training in General, Pediatric and Public Health Dentistry and Dental Hygiene	93.059	5 D88HP37552 03 00		271,746	10,741
Total for Assistance Listing Number 93.059				**271,746**	**10,741**
Pre-disease biomarkers of persistent organic pollutants, immune system, and amyotrophic lateral sclerosis	93.061	5R01TS000315-03		119,727	43,992
Serological profiling of the human virome and ALS risk in a military population	93.061	5R01TS000318-03-00		202,687	25,921
Total for Assistance Listing Number 93.061				**322,414**	**69,913**
Characterizing mechanisms and consequences of intergenic transcription in human cancers	93.077	1F31CA264958-01		25,747	-
Total for Assistance Listing Number 93.077				**25,747**	**-**
Scaffolds mimicking antigen presenting cells	93.103	5R01FD006589-03		13,530	-
Total for Assistance Listing Number 93.103				**13,530**	**-**
Training Grant in Maternal and Child Health	93.110	6T76MC00001 66 01		358,023	-
Total for Assistance Listing Number 93.110				**358,023**	**-**
A big data approach to phthalates, hormones, and ADHD	93.113	5R21ES028900-02		18,677	18,677
Air Particulate, Metals, and Cognitive Performance in an Aging Cohort- Roles of Circulating Extracellular Vesicles and Non-coding	93.113	5R01ES027747-05		645,622	271,529
Assessing the effects of exposures to phthalates in both the female and male germlines	93.113	5F31ES032631-02 REVISED		32,976	-
Causal machine learning methods for studying the effects of environmental exposures on childhood cancer using natural experiments	93.113	5K01ES032458-02		137,329	-
Data science tools to identify robust exposure-phenotype associations for precision medicine	93.113	5R01ES032470-02		450,204	59,445
Early and late-life metal exposures and Alzheimer's disease	93.113	5R01ES024165-05REVISED		94,444	3,474
Effects of Environmental Phthalates and Chemical Mixtures on Male Puberty and Semen Quality	93.113	5R01ES014370-15		465,260	246,412
Engineered Nanomaterial Synthesis, Characterization and Method Development Center for Nano-safety Research	93.113	5U24ES026946-05		133,322	89,835
Environmental Obesogens and Weight Change in the POUNDS LOST Trial	93.113	5R01ES022981-07		359,279	141,203
Graduate Training in Biostatistics	93.113	5T32ES007142-40		529,070	-
Harvard Chan School NIEHS Center for Environmental Health	93.113	5P30ES000002-58REVISED		1,969,331	54,700
Human Exposure to Bisphenol A, Phthalates and Fertility, Pregnancy Outcomes	93.113	5R01ES009718-20 REVISED		(139)	(92)
Identifying low dose measurement error corrected effects of multiple pollutants using causal modeling	93.113	5R01ES032418-02		393,141	-
International Society for Environmental Epidemiology (ISEE) Annual Conference	93.113	5R13ES032292-03		16,470	-

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Maternal and Paternal Preconception Environmental Exposures and Children's Health	93.113	5R01ES027408-05		353,429	104,054
Metals and developmental origins of late life cognitive function	93.113	5R01ES031943-03		418,833	63,034
Multi-Pathway DNA Repair Capacity Measurements in Lung Cancer Patients and Healthy Controls	93.113	5U01ES029520-05		648,628	119,138
Novel markers of exposure and pathways of response to Chromium	93.113	5R01ES027981-03		264,673	13,820
Nurses Health Study 3: A multiple exposure environmental epidemiology cohort of young adults	93.113	5R24ES028521-05		287,776	100,082
Organ on chip technology to evaluate engineered nanomaterial toxicity	93.113	5U01ES027272-05		134,487	-
Per- and Polyfluoroalkyl substances mixtures and maternal cardiovascular disease risk across the reproductive life course	93.113	5R01ES031065-03		701,775	248,294
Phthalates, Gestational Diabetes, and Markers of Type 2 Diabetes Risk in Women	93.113	5R01ES026166-06		321,147	19,002
Pregnancy and postpartum as vulnerable exposure windows: phthalates and maternal cardiometabolic health	93.113	1R01ES033185-01A1		25,486	-
Pregnancy and postpartum as vulnerable exposure windows: phthalates and maternal cardiometabolic health	93.113	1R56ES033185-01REVISED		57,648	4,996
Relationship Between Multiple Environmental Exposures and CVD Incidence and Survival: Vulnerability and Susceptibility	93.113	5R01ES028033-05		732,257	346,620
Retrospective assessment of radon progeny and pollution effects in COPD	93.113	5R21ES029637-02		95,148	10,316
SPP1, Oxidative Stress, and Lead Toxicity	93.113	5R01ES029097-04		588,284	258,038
The Impact of Maternal and Paternal Preconception Perfluoroalkyl Substance (PFAS) Exposure on Reproductive and Perinatal	93.113	5R01ES031657-03		775,061	140,259
Training Program in Environmental Epidemiology	93.113	5T32ES007069-40		15,691	-
Training Program in Environmental Epidemiology	93.113	5T32ES007069-43		605,435	-
Vulnerability During Infancy to Immunotoxic Contaminant Exposures	93.113	5R01ES030394-03		305,073	263,171
Total for Assistance Listing Number 93.113				**11,575,817**	**2,576,007**
Anti-Inflammatory Mesenchymal Stem Cell Therapy for Dental Applications	93.121	5K08DE025292-05		3,265	-
Bayesian multivariate image analysis for studying oral microbiome biogeography	93.121	5R21DE026872-02		157,804	-
Biology of cortical bone of long bones and calvarium Role of Sfrp4 in periosteal bone formation	93.121	5R01DE029615-03 REVISED		452,697	8,913
Chemical Approaches to Rescue Human Mitochondrial Disease Mutations	93.121	5F30DE028206-04 REVISED		49,071	-
Engineering Skeletal Muscle With Biodegradable Hydrogels	93.121	5R01DE013349-21		718,754	-
Gas-Hedgehog signaling in intramembranous bone formation and expansion	93.121	5R01DE025866-04		271,490	-
Multivariate Bayesian variable selection for high-dimensional oral microbiome data	93.121	7R03DE027486-02REVISED		56,628	-
Targeting the source: bacterial specific pain mechanisms in dental pulp	93.121	7R56DE027368-02 REVISED		11,406	-
Total for Assistance Listing Number 93.121				**1,721,115**	**8,913**
Health Promotion and Disease Prevention Research Centers	93.135	5U48DP006376-04-00		969,010	-
Total for Assistance Listing Number 93.135				**969,010**	**-**
Safety and Health Management of Hazards Associated with Emerging Technologies.	93.143	5R25ES023635-07REVISED		65,060	-
Metals and Metal Mixtures: Cognitive Aging, Remediation and Exposure Sources (MEMCARE)	93.143	5P42ES030990-03		2,089,616	655,428
Total for Assistance Listing Number 93.143				**2,154,676**	**655,428**
Advanced tools for using ancient DNA to study biology and history	93.172	3R01HG012287-10S1		485,229	-
Center for Genome Imaging	93.172	5RM1HG011016-02 REVISED		1,726,690	198,059
Coordinating Center for the Undiagnosed Disease Network Phase II	93.172	5U01HG007530-08 REVISED		4,131,453	1,323,147
Direct sequencing of nascent RNA to uncover the functional impact of genetic variants on RNA processing	93.172	1R21HG011682-01A1		327,368	-
Flybase: A Drosophila Genomic and Genetic Database	93.172	5U41HG000739-25 REVISED		(3,427)	(3,427)
FLYBASE: A DROSOPHILA GENOMIC AND GENETIC DATABASE	93.172	5U41HG000739-30		2,978,838	1,502,442
Functionally specialized components of disease heritability in ENCODE data	93.172	3U01HG009379-04S1		535,838	306,100
HMMER and Infernal: Finding distant homologs of sequences and RNA structures	93.172	2R01HG009116-05		347,977	-
HMMER and Infernal: Finding distant homologs of sequences and RNA structures	93.172	5R01HG009116-04		44	-
Identifying genetic code reassignments in nucleotide sequence databases	93.172	5F31HG010984-02 REVISED		15,235	-
Leveraging functional data to predict disease risk in multi-ethnic populations	93.172	5R01HG006399-11		199,723	30,060
Mechanisms of Transcriptional Control Revealed by Nascent Transcript Sequencing	93.172	5R01HG007173-09		234,592	-
Methods for disease mapping in multi-ethnic populations	93.172	5R01HG006399-09 REVISED		245,183	202,000
Multi-allelic forms of human genome structural variation	93.172	2R56HG006855-09 REVISED		99,677	-
New approaches for leveraging single-cell data to identify disease-critical genes and gene sets	93.172	1K99HG012203-01		40,184	-
Powering whole genome sequence-based genetic discovery for common human diseases	93.172	3U01HG009088-04S4		657,654	496,405
Pragmatic randomized trial of polygenic risk scoring for common diseases in primary care	93.172	5R35HG010706-03 REVISED		502,549	-
Statistical and high-throughput models of enhancer function and evolution	93.172	5R01HG011485-02 (REVISED)		723,203	144,317
Structurally complex genome loci in human populations and human phenotypes	93.172	2R01HG006855-09A1		401,945	-
Systematic Exploration of the Human Interactome III	93.172	5U24HG006673-10		725,768	-
Tagmentation-based Indexing for Methylation Sequencing as a novel method of high-throughput methylation clock measurement	93.172	1R21HG011850-01		171,556	-
Training in Bioinformatics and Integrative Genomics	93.172	5T32HG002295-19		700,048	-
Total for Assistance Listing Number 93.172				**15,247,327**	**4,199,103**

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Characterizing the Functional Architecture of the Necklace Olfactory System	93.173	3R01DC016222-05S1		260,832	-
Afferent-efferent interactions in the developing cochlea	93.173	5R01DC015974-05 REVISED		205,626	-
Assessment of speech- and fine-motor coordination and their link to language in children with autism spectrum disorder	93.173	1F31DC019509-01A1		25,747	-
Binding of PCDH15 to TMC1 for Mechanosensation in the Inner Ear	93.173	5F32DC018713-03 REVISED		66,513	-
Clear speech in ALS: Effects of feedback from a novel ASR practice paradigm and practice dosage	93.173	5F31DC019016-02		32,120	-
Cortical feedback and olfactory processing	93.173	5R01DC016289-05 (REVISED)		324,168	-
Corticostriatal Contributions to Auditory Perceptual Hypersensitivity	93.173	5F31DC018974-02 REVISED		30,053	-
Development of Specializations Required for Temporal Coding in Octopus Cells	93.173	1F32DC020070-01 REVISED		55,562	-
Diversification of spiral ganglion neurons during development and in maturity	93.173	5R21DC018356-02 REVISED		(281)	-
Elucidating the structural determinants of odor specificity in insect olfactory receptors	93.173	4R00DC019401-03		31,570	-
Emergence of valence coding in the ventral striatum	93.173	5R01DC017311-04 (REVISED)		477,952	-
Gene Therapy for Hearing and Balance Disorders	93.173	5R01DC016932-05		269,073	41,267
Genetic Dissection of Auditory Circuit Assembly	93.173	5R01DC009223-13		473,661	-
Individual and population differences in the representation of harmonic sounds	93.173	5F31DC018433-02 REVISED		13,950	-
Language-specific and language-general mechanisms in bilingual aphasic individuals	93.173	1K99DC019973-01A1		6,073	-
Learning-mediated plasticity in cortical feedback projections to the olfactory bulb	93.173	5K99DC017754-02		64,623	-
Mechanisms of Hair Cell Mechanotransduction Channel Gating	93.173	5R21DC018631-03		167,007	-
Morphological and Molecular Development of Efferent Innervation of the Cochlea	93.173	5F32DC019009-03		70,533	-
Neuron-Glia Interactions in the Cochlea	93.173	1R01DC020182-01		66,729	-
Olfactory tubercle circuits involved in odor valence assignment	93.173	5F32DC017891-03		15,585	-
Synaptic and Circuit Mechanisms of Olfactory Processing	93.173	5R01DC008174-15		439,770	-
Synaptic and Functional Changes in Cochlear and Vestibular Hair Cells of Tmc Mutant Mice	93.173	5F32DC018233-02 REVISED		4,788	-
The mechanism of inner ear pressure homeostasis by the endolymphatic sac	93.173	5R01DC015478-05		270,043	-
Training for Speech and Hearing Sciences	93.173	5T32DC000038-30 REVISED		674,875	-
Transcriptional diversity in olfactory sensory neurons	93.173	5F31DC019017-02		30,053	-
What Causes Hearing Loss: Advancing the Methods	93.173	5R01DC017717-03		264,237	75,776
Total for Assistance Listing Number 93.173				**4,340,862**	**117,043**
Telehealth Technology Enabled Learning Program	93.211	6U3IRH43510 01 01		115,683	-
Total for Assistance Listing Number 93.211				**115,683**	**-**
2020 Research Day on Teaching Kitchens and Self Care Practices	93.213	1R13AT010554-01		(718)	-
2022 Teaching Kitchen Research Conference	93.213	1R13AT011986-01		2,922	-
Chemical biology of bacterial symbionts	93.213	5R01AT009874-11		12,292	-
Identification and characterization of gut microbial bioactive molecules that determine predisposition to autoimmune disease and atopy	93.213	3R01AT009708-04S1		315,329	125,634
Inequities in Health Outcomes in the Twenty-First Century: Understanding New Causes and the Impact of Delivery System Reforms on Health Care Disparities	93.213	5DP5OD024564-05		385,204	-
Sensory receptors of the vagus nerve	93.213	5DP1AT009497-05		948,007	-
Spinal Cord Nociceptive Circuits that Deliver Outputs to the Brain to Initiate Pain	93.213	1R01AT011447-01 REVISED		823,815	333,335
Total for Assistance Listing Number 93.213				**2,486,851**	**458,969**
Comparing Targeted and Non-Targeted Approaches to Improving the Value of Cancer Care Services	93.226	5R01HS026498-04		374,593	38,427
Deriving an Evidence Base for Emergency Management in U.S. Hospitals: Toward Resilience in the Midst of COVID-19	93.226	5R01HS028240-02		258,301	42,171
Engineering highly reliable learning lab	93.226	5P30HS024453-04Revised		35,789	28,421
Health Policy Training Grant	93.226	5T32HS000055-29		392,149	-
Identifying Predictors of Hospital Admission from the ED Among the Elderly	93.226	5R01HS025408-04 REVISED		319,448	85,878
Prescribing of opioids at hospital discharge and associated adverse patient outcomes	93.226	5R01HS026753-03 REVISED		155,575	21,528
Quality and Outcomes under Medicaid Managed Care: Evidence from Random Plan Assignment	93.226	5K01HS025786-04		162,073	-
R18 Closed Loop Diagnostics : AHRQ R18 Patient Safety Learning Laboratories	93.226	5R18HS027282-03		325,761	179,886
Risk Aversion, Fear of Malpractice, and Medical Decision Making in the Emergency Department	93.226	5R01HS026730-03		255,822	47,913
Variation in Adoption of Evidence-Based and Patient Centered Care at the Delivery System Level	93.226	1R36HS028537-01A1		15,566	-
Total for Assistance Listing Number 93.226				**2,295,077**	**444,224**
2/4 Powering Genetic Discovery for Severe Mental Illness in Latin American and African Ancestries	93.242	5U01MH125045-02REVISED		791,485	-
A novel output pathway from the cerebellum for regulation of diverse non-motor behaviors	93.242	5R01MH122570-03 REVISED		624,462	-
A Tool for Synapse-level Circuit Analysis of Human Cerebral Cortex Specimens.	93.242	5UG3MH123386-02		660,274	-
Behavioral and Neurocognitive Mechanisms Linking Peer Victimization to Adolescent Psychopathology	93.242	1K99MH126163-01A1 (REVISED)		80,058	-

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Bidirectional Interactions of Cortex and Basal Ganglia During Action Selection	93.242	5F32MH125596-02		69,362	-
Biological/behavioral rhythms and suicidal behavior: A real-time monitoring study	93.242	5K23MH120439-03		170,374	4,147
Brain-wide correlation of single-cell firing properties to patterns of gene expression	93.242	1RF1MH117042-01		41,758	-
Building a robust organoid platform to study the developmental potential and physiology of human specific cortical cell types	93.242	1RF1MH123948-01		752,302	-
Characterizing pubertal and age mechanisms of neurodevelopment and association with rising internalizing symptoms	93.242	1R01MH129493-01 (REVISED)		23,756	-
Child Trauma and the Development of Neural Systems Underlying Emotion Regulation	93.242	7R01MH103291-05 REVISED		9,467	-
Clinician-Consumer Collaboration in Transdiagnostic, Modular Youth Psychotherapy	93.242	5F31MH127862-02		35,667	-
Comprehensive and multi-resolution mapping of cell morphology and wiring through X-ray holographic nano-tomography	93.242	1RF1MH128949-01 REVISED		79,857	-
Computational and neural underpinnings of decision-making in social contexts	93.242	5K00MH125856-03		78,237	-
Cortical interneuron subtypes adapt to signals from local pyramidal cells	93.242	5F32MH125464-02		62,409	-
CRCNS: Leveraging decision-making variability to identify underlying computations	93.242	5R01MH115554-03		542	-
Deprivation and Threat: Dimensions of Early Experience and Neural Development	93.242	5R01MH106482-05 REVISED		175,478	-
Developmental origins of mental illness: evolution and reversibility	93.242	5P50MH094271-10		1,766,601	365,806
Dissecting the assembly of vertebrate neurotransmitter release sites	93.242	5R01MH113349-05 REVISED		238,696	-
Distributed Neural Activity Patterns Underlying Practice-Based Learning	93.242	1K99MH127471-01A1		24,767	-
Emotional Awareness: An integrative neural mechanism linking childhood trauma with psychopathology	93.242	1K99MH127248-01A1		26,012	-
ESSENCE (Enabling translation of Science to Service to ENhance Depression CarE)	93.242	5U19MH113211-05		553,826	331,512
Ethical and Policy Aspects of Cortical Visual Prosthetics Research: An Empirical Neuroethics Study	93.242	7F32MH127776-02		44,609	-
Event-related Neuroimaging of Human Memory Formation	93.242	5R01MH060941-19 (REVISED)		28,088	-
Event-related Neuroimaging of Human Memory Formation	93.242	5R01MH060941-21		205,037	-
Exploring a Novel Paradigm of Schizophrenia and Bipolar Disorder	93.242	5R01MH113279-05		262,821	-
Genetic Topography of Brain Morphology in Relation to Language in Large N Study of Schizophrenia	93.242	5R03MH122759-02 REVISED		63,817	-
Genomic mechanisms of firing rate homeostasis	93.242	5R01MH116223-05 REVISED		433,634	-
Health Policy Training Program: Promoting Outcomes, Quality, and Diffusion of Medical Advances	93.242	5T32MH019733-28		338,097	-
High throughput assaying of circuit activity and connectivity in brain organoids	93.242	1RF1MH123977-01 (REVISED)		832,734	302,513
Impact of Telemedicine on Medicare Beneficiaries with Mental Illness	93.242	5R01MH112829-04 REVISED		338,604	72,676
In situ transcriptome imaging in single cells	93.242	5R01MH113094-05		134,279	-
Integrating common and rare genetic variation in autism spectrum disorder	93.242	1F30MH129009-01 REVISED		14,896	-
Intensive longitudinal study of suicidal behaviors and related health outcomes	93.242	5U01MH116928-04		908,004	76,859
Leveraging EHR data to evaluate key treatment decisions to prevent suicideralated behaviors	93.242	5R01MH121478-03		749,123	129,381
Mathematical and computational modeling of suicidal thoughts and behaviors	93.242	5F31MH125495-02		31,382	-
Modeling ASD-linked genetic mutations in 3D human brain organoids	93.242	5R01MH112940-05 (REVISED)		468,428	219,905
Molecular, spatial, and functional development of innate behavior in the periaqueductal gray	93.242	5F31MH120911-03		29,967	-
Neural mechanisms of foraging decisions	93.242	5F32MH126505-02 (REVISED)		65,954	-
Neurodevelopment In HEU Children Exposed In Utero To Dolutegravir Or Efavirenz	93.242	5R01MH121191-03		263,169	224,756
Neurodevelopmental Mechanisms Underlying Stress Vulnerability during Adolescence	93.242	1R56MH119194-01		(17,119)	-
Neurodevelopmental Mechanisms Underlying Stress Vulnerability during Adolescence	93.242	5R37MH119194-02		1,737,355	-
New approaches to understand neuronal microcircuit dynamics for working memory□	93.242	5R01MH107620-05 REVISED		1,510	-
New Methodologies for Connectomics	93.242	1K99MH128891-01		52,266	-
Non-invasive targeted neuromodulation via focused ultrasound BBB permeabilization	93.242	5R01MH116858-04		500,334	202,859
Optical measurement of causal functional connectivity in posterior parietal cortex	93.242	5F32MH118698-03		28,272	-
Pathogenic mechanisms in post-bereavement psychopathology: Contributions of gene-environment interplay, psychosocial factors, and cognitive ability in two population-based cohorts	93.242	5K23MH117278-04		200,526	-
Ph.D. Training in Neuroscience	93.242	5T32MH020017-25		693,818	-
Platform technologies for scalable highly multiplexed proteomic phenotyping of the brain	93.242	1RF1MH128861-01 (REVISED)		505,512	248,465
Post Traumatic Stress Disorder and Accelerated Aging in Women	93.242	5R01MH101269-08		873,598	612,138
Precision Mapping the Human Cerebellum for Neuromodulation and Understanding of Brain Disorders	93.242	5R01MH124004-03		689,559	63,733
Pregnancy influences maternal immune cell function and fetal brain development	93.242	5R01MH119459-03		583,627	-
Real-time fMRI Neurofeedback as a Tool to Mitigate Auditory Hallucinations in Patients with Schizophrenia	93.242	4R33MH113751-03 REVISED		339,894	170,547
Real-time fMRI Neurofeedback as a Tool to Mitigate Auditory Hallucinations in Patients with Schizophrenia	93.242	5R61MH113751-02 REVISED		51,398	51,398
Regional and Genetic Diversity of Cortical Interneurons	93.242	5R01MH071679-16 REVISED		93,735	83,299
Somatic Mosaicism in Neuropsychiatric Disorders	93.242	5F31MH124292-02 REVISED		37,904	-
Structural Stigma and HIV Prevention Outcomes	93.242	5R01MH112384-06		558,882	504,478
Subcortical influence on the respiratory coordination of cortical neurodynamics related to cognition	93.242	1R21MH125242-01A1		96,559	-

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Temporal Specification of Basal Forebrain Circuitry	93.242	5R01MH119156-02		27,912	-
Testing FIRST in Youth Outpatient Psychotherapy	93.242	5R01MH124965-02 (REVISED)		679,207	139,300
The Brain Wiring of Frontostriatal Connections in Early Psychosis	93.242	5R21MH121704-02 REVISED		42,835	27,663
The molecular and cellular basis of cortical interneuron divergence	93.242	2R37MH071679-17A1		560,903	-
Tools to broaden access to high-throughput functional connectomics	93.242	1RF1MH117808-01A1 REVISED		1,293,141	681,564
Training Program in Psychiatric Genetics and Translational Research	93.242	5T32MH017119-33		(389)	-
Training Program in Psychiatric Genetics and Translational Research	93.242	5T32MH017119-36		388,608	-
Use of Telemedicine in the Treatment of Mental Illness	93.242	2R01MH112829-05 REVISED		129,722	-
Total for Assistance Listing Number 93.242				**21,627,602**	**4,512,999**
A Novel portable KXRF measurement system for in vivo metal measurements	93.262	6K01OH011648-03-03		8,926	-
Lung Disease in Chinese Textile Workers	93.262	5R01OH002421-26-00		372,450	127,061
The Harvard TH Chan School of Public Health Center for Work, Health and Wellbeing	93.262	6U19OH008861-14-06		582,055	520,875
The Harvard TH Chan School of Public Health Center for Work, Health and Wellbeing	93.262	6U19OH008861-15-02		858,901	270,086
The HSPH Education and Research Center of Occupational Safety and Health	93.262	6T42OH008416-17-02		1,633,536	-
Total for Assistance Listing Number 93.262				**3,455,868**	**918,022**
Alcohol and Breast Cancer: Genetic Interactions and Effects on Aromatase Inhibitor Therapy	93.273	3K01AA027831-03S1		115,158	-
Data-Based Methods for Just-In-Time Adaptive Interventions in Alcohol Use	93.273	5R01AA023187-05		34,397	-
Medications for Alcohol Use Disorder: Unfilled Prescriptions and Treatment Trajectories	93.273	5R01AA029267-02		518,341	233,928
Total for Assistance Listing Number 93.273				**667,896**	**233,928**
Multi-Study Integer Programming Methods for Human Voltammetry	93.279	5F31DA052153-02REVISED		32,292	-
Next Generation Cell-Type-Specific Viral Vectors for Non-Neuronal Brain Cell Types	93.279	1RF1DA048787-01		786,760	-
Opioid Prescribing and Chronic Pain in the Primary Care Setting	93.279	5F30DA052116-02		35,448	-
Precision pharmacology of the opioids	93.279	5DP1DA046586-04		405,930	-
Stress, Arousal and Mood: Affective Influences on Decisions under Uncertainty	93.279	5R01DA042855-05		320,505	-
Telemedicine for Treatment of Opioid Use Disorder	93.279	5R01DA048533-04		760,361	113,867
The Development and Validation of an Index to Measure Vicarious Trauma Exposure Among Substance Use Providers	93.279	1R36DA055242-01		3,681	-
Validated tools for identifying, characterizing, and targeting all non-neuronal cells in the brain and determining the neuro-glio-vascular connectome	93.279	1RF1DA048786-01		377,218	-
Total for Assistance Listing Number 93.279				**2,722,195**	**113,867**
Brain-wide Neuronal Circuit Mapping with X-ray Nano-Holography	93.286	1K99EB032217-01		64,998	-
Designing complex living systems for monitoring and responding to disease progression	93.286	1F32EB030907-01A1 Revised		18,049	-
MSC Encapsulation with Thin Gel Coating	93.286	5R01EB023287-03		(29,531)	-
Total for Assistance Listing Number 93.286				**53,516**	**-**
Advancing novel methods to measure and analyze multiple types of discrimination for population health research	93.307	5R01MD012793-03 REVISED		652,933	189,104
Disparities in Exposure and Health Effects of Multiple Environmental Stressors Across the Life Course	93.307	3P50MD010428-05S1REVISED		341,729	296,606
DNA methylation and adversity: pathways from exposures to health inequities	93.307	5R01MD014304-04REVISED		583,262	402,036
Health Reform and Oral Health Disparities: a Mixed Methods Evaluation	93.307	5R00MD012253-04		173,748	-
Reducing oral health disparities in children using predictive analytics and mathematical modeling	93.307	1K99MD016895-01		45,431	-
Work Requirements and Health Care Disparities in Medicaid: A Randomized Controlled Trial	93.307	5R01MD014970-04 REVISED		249,852	27,229
Total for Assistance Listing Number 93.307				**2,046,955**	**914,975**
4D Nucleome Network Data Coordination and Integration Center	93.310	5U01CA200059-07		2,324,001	249,069
Antibody therapeutics for human viral hemorrhagic fevers and prevention of late neurological syndromes	93.310	5DP5OD023084-05		1,691	-
Deconvolution and reconstruction of immune histories to enhance infectious disease prevention and vaccination strategies and optimize surveillance efforts	93.310	5DP5OD028145-03REVISED		(183,399)	-
Exploring the unknown protein universe using evolutionary information	93.310	5DP5OD026389-04		172,071	-
High-throughput single-molecule protein identification via super-resolution imaging	93.310	5DP1GM133052-04		1,189,512	-
High-Throughput, Highly Multiplexed In Situ Proteomic Imaging of Human Tissues	93.310	5UH3CA255133-04 (REVISED)		581,283	-
HuBMAP HIVE Tools Component Supplement	93.310	3OT2OD026677-01S4		875,780	-
Identifying Principles of Protein Mechanics by Applying Force and Observing Motion	93.310	1DP2GM141000-01		628,914	-
Interoperability and Collaboration with the Common Fund Data Ecosystem to Improve Utility of 4DN Data	93.310	1 OT2 OD032119-01		227,660	-
Investigating Organ Formation and the Emergence of Complexity in the Visual System Using Comparative Developmental Approaches	93.310	5DP5OD023111-05		182,796	-
Leveraging Single-Cell Analysis to Elucidate Mechanisms of Vertebrate Limb Regeneration	93.310	4DP2HD087953-03 REVISED		84,634	-

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Mechanisms of arousal threshold and sleep homeostasis	93.310	1DP2AT009498-01 REVISED		133,456	-
Molecular Causes of Down Syndrome Associated Congenital Heart Disease and Other Phenotypes	93.310	1R01HL151257-01 REVISED		848,356	-
Molecular determinants of neuronal protein homeostasis through plasma membrane-localized proteasome complexes	93.310	5DP5OD028133-02 REVISED		31,658	-
Pharmaco Response Signatures and Disease Mechanism	93.310	5U54HL127365-06 REVISED		(1,914)	-
Psychological functions of music in infancy	93.310	5DP5OD024566-05 (REVISED)		318,317	-
Research Training on Harnessing Data Science for Global Health Priorities in Africa	93.310	1U2RTW012140-01		75,732	51,072
Single-cell epigenomic and cellular plasticity	93.310	1DP2HL151353-01		479,376	-
Subcellular RNA-Proteome Mapping in Subtype- and Circuit-specific Growth Cones: Development, Cell Biology, Disease, and Regeneration	93.310	5DP1NS106665-05		846,374	-
The Harvard Dataverse repository: A generalist repository integrated with a Data Commons	93.310	1OT2DB000004-01 (REVISED)		98,727	-
The Molecular Basis of Caste Development and Evolution in Ants	93.310	5DP5OD029792-02		392,557	-
Tools to facilitate manipulation of protein-specific glycosylation stoichiometry in cells	93.310	5U01CA242098-03		316,875	21,177
Toward mechanistic cognitive neuroscience: cell types, connectivity, and patterned perturbations	93.310	5DP1MH125776-02		1,381,149	-
Uncovering molecular effectors of mammalian aging	93.310	5DP1AG063419-05		853,536	-
Total for Assistance Listing Number 93.310				**11,859,142**	**321,318**
Institutional Career Development Core	93.350	5KL2TR002542-04 REVISED		1,525,915	1,341,684
NRSA Training Core	93.350	5TL1TR002543-05		613,498	-
Robotic Apparel to Enable Low Force Haptic Cueing for Improving Parkinson's Gait	93.350	5U01TR002775-03 (REVISED)		408,531	45,826
The Harvard Clinical and Translational Science Center	93.350	5UL1TR002541-05		15,926,882	6,297,657
Total for Assistance Listing Number 93.350				**18,474,826**	**7,685,167**
600 MHz NMR Spectrometer Console	93.351	1S10OD028526-01		259,705	-
Drosophila resources for modeling human diseases	93.351	5R24OD021997-04 REVISED		205,971	-
Next-generation Drosophila cell lines to elucidate the cellular basis of human diseases	93.351	5R24OD019847-04		262,279	152,677
Resources for functional studies in Drosophila	93.351	1R24OD031952-01 REVISED		5,513	-
TRiP resources for modeling human disease	93.351	3R24OD030002-03S1		1,021,497	-
Using CRISPR technology to study the function of paralogous genes	93.351	5R24OD026435-04		360,696	139,033
Total for Assistance Listing Number 93.351				**2,115,661**	**291,710**
Biomaterials to Create T Cell Immunity	93.353	1U54CA244726-01		1,896,712	556,767
Integrative Visualization of Spatiotemporal Tumor Atlases	93.353	1R33CA263666-01 REVISED		46,606	-
The Implementation Science Center for Cancer Control Equity	93.353	5P50CA244433-03		3,984,688	2,801,725
The pre-cancer atlases of cutaneous and hematologic origin (PATCH Center)	93.353	1U2CCA233262-01 REVISED		1,689,377	563,126
Total for Assistance Listing Number 93.353				**7,617,383**	**3,921,618**
Household contact tuberculosis preventive therapy program in rural Eastern Cape, South Africa	93.361	5K23NR019019-02 REVISED		25,055	-
Total for Assistance Listing Number 93.361				**25,055**	**-**
Cancer Epidemiology Cohort in Male Health Professionals	93.393	5U01CA167552-10REVISED		1,725,874	78,654
Cellular engineering to improve the efficacy and specificity of targeted immunotherapy	93.393	1F99CA264312-01		29,100	-
Characterizing the effects of extracellular matrix viscoelasticity on dendritic cell activation	93.393	4K00CA253759-03		20,234	-
Colorectal carcinogenesis and Fusobacterium nucleatum: oncomicrobe, oncometabolites, and oncoimmunology	93.393	5R01CA154426-10		207,605	-
Comparative Modeling to Inform Cervical Cancer Control Policies	93.393	3U01CA253912-02S2Revised		1,266,062	831,271
Comparative Modeling to Inform Cervical Cancer Control Policies	93.393	5U01CA199334-05REVISED		6,274	5,943
Conflict-driven aneuploidy and genomic instability caused by meiotic proteins	93.393	4K00CA234523-03		270	-
Genomic targets of oncoproteins and tumor suppressors	93.393	5R01CA107486-13		7,573	-
Impact of screening and diagnostic intensity on the study of prostate cancer epidemiology	93.393	5R03CA226942-02		22,188	-
Improving Mammography Completion and Follow-Up in Community Health Centers	93.393	5R03CA256233-02		67,420	11,761
Informing anti-tobacco communications with affective and decision science: Application of the Appraisal Tendency Framework	93.393	5R01CA224545-03		513,202	50,079
Integrating diet, lifestyle and tumor tissue molecular subtyping to study the role of adolescent calcium intake on the risk of early onset colorectal neoplasia	93.393	5R21CA230873-02		631	-
Integrative Approach to Understand the Role of Diet, Physical Activity and Adiposity on Survival in Patients with Colorectal, Endometrial and Prostate Cancer	93.393	5R03CA249027-02		88,153	13,052
Investigation of the carcinogenic effects of bactericidal antibiotics in the gut	93.393	5K00CA245801-04		88,481	-
Life Course Cancer Epidemiology Cohort in Women	93.393	5U01CA176726-09		2,226,758	1,484,602
Marine omega-3 fatty acid, gut microbiome and colorectal cancer prevention	93.393	5R00CA215314-04		293,323	161,677
Molecular Biology of Oncogenic Papillomaviruses	93.393	5R35CA197262-07 REVISED		997,709	-
Multifactoral breast cancer risk prediction accounting for ethnic and tumor diversity	93.393	5U01CA249866-03		504,747	272,504

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Semi-supervised Algorithms for Risk Assessment with Noisy EHR Data	93.393	5R21CA242940-02		78,366	5,592
Single-cell analysis of tumor-microenvironment interactions in follicular lymphoma	93.393	5R21CA220147-03		(7,057)	-
Single-molecule analysis of eukaryotic transcription activation	93.393	5R01CA246500-03 REVISED		366,972	178,666
Statistical Methods for Analysis of Massive Genetic and Genomic Data in Cancer Research	93.393	5R35CA197449-07		902,889	-
Statistical methods for cancer genomics and cell-free DNA analysis	93.393	5R01CA240299-03		468,772	106,438
T Cell Receptor Forces: From Molecular Mapping to Cancer Therapeutic Triggering	93.393	5K00CA234959-04		85,764	-
The Boston Lung Cancer Survival Cohort	93.393	5U01CA209414-06		1,173,233	509,850
The Genetic Architecture of Breast Parenchymal Textural Features and its Implications for Breast Cancer Risk	93.393	5R03CA224196-02REV		325	-
The Impact of a Changing Health Care Delivery System on the Quality of Oncology Care	93.393	5R01CA255035-02 REVISED		646,703	170,322
Theory and methods for mediation and interaction	93.393	5R01CA222147-05REVISED		415,056	148,293
Understanding the Mechanism of a Gut Microbial Genotoxin Involved in Colorectal Carcinogenesis	93.393	5R01CA208834-05		22,154	5,337
Total for Assistance Listing Number 93.393				**12,218,781**	**4,034,041**
COVID-19: Causal, Statistical and Mathematical Modeling with Serologic Data	93.394	1U01CA261277-01Revised		359,789	59,425
High dimensional digital pathology to investigate the tumor micro environment and its impact on response to therapy	93.394	5R50CA252138-02		176,987	-
Total for Assistance Listing Number 93.394				**536,776**	**59,425**
Biomaterial Cancer Vaccines that Generate Patient-Specific Antigen In Situ	93.395	5R01CA223255-05 (REVISED)		592,597	-
Developmental regulation of apoptosis as a modifiable driver of radiotherapy-induced neurocognitive impairment in pediatric patients	93.395	5R37CA248565-03 REVISED		442,689	-
Synthesis and Study of Natural and Non-natural Antiproliferative Agents	93.395	5R01CA047148-33		48,594	-
Target MDM2/MDMX for reducing normal tissue toxicity induced by chemotherapy	93.395	5R01CA233558-03		287,793	-
Total for Assistance Listing Number 93.395				**1,371,673**	**-**
3D Models of Immunotherapy	93.396	5U01CA214369-05		392,973	93,524
Cellular and molecular mechanism of Hippo signaling in suppressing liver tumor formation	93.396	5R01CA222571-04		205,262	-
Decoding and targeting the PI3K-mTOR signaling network in cancer	93.396	5R35CA197459-07		909,424	44,192
Elucidating chromatin organization with molecular rulers	93.396	5R21CA235421-02		62,028	-
Identification of Transposable Element Insertions in the Kids First Data□	93.396	5R03CA249364-02		54,584	-
Molecular mechanisms of Nutrient sensing in cancer	93.396	5R01CA213062-05		319,075	-
Notch Signaling in Cancer	93.396	5R35CA220340-06		1,103,466	-
Progenitor cell states contributing to aging and lung cancer	93.396	1U01CA267827-01		215,107	33,177
Roles of Eukaryotic Translation Initiation Factors in Gene Expression	93.396	5R01CA200913-05		88,258	-
Single Cell Genome-Wide Myeloid Response Profiling in Immunotherapy	93.396	5R01CA218579-05		562,314	243,407
Tracking the evolution of breast cancer through single cell analyses of premalignant breast tissues from women at high risk for cancer development	93.396	5R35CA242428-03		1,197,285	-
Understanding the Mechanism of a Gut Microbial Genotoxin Involved in Colorectal Carcinogenesis	93.396	2R01CA208834-06		460,344	40,175
Unraveling the Complexities of Risk and Mechanism in Cancer	93.396	5R35CA220523-05		801,897	113,421
WebMeV: A Robust Platform for Intuitive Genomic Data Analysis	93.396	5U24CA231846-03REVISED		668,571	-
Total for Assistance Listing Number 93.396				**7,040,588**	**567,896**
Systems Pharmacology of Therapeutic and Adverse Responses to ImmuneCheckpoint and Small Molecule Drugs	93.397	5U54CA225088-05		2,442,110	400,558
Total for Assistance Listing Number 93.397				**2,442,110**	**400,558**
Characterizing ETV6 as a regulator of EWS-FLI oncoprotein in Ewing Sarcoma	93.398	5F30CA246925-02		48,883	-
Clinical trial data analysis to design novel treatment regimens in oncology	93.398	5F30CA260780-02		37,794	-
Deciphering the mechanism of colibactin-induced DNA damage through quantitative and biochemical approaches	93.398	5F32CA254165-03		66,430	-
Deciphering the role of Six2 in regulating cancer stem cell properties and promoting late-stage metastasis in breast cancer	93.398	5K00CA223023-06		89,402	-
Defining the biochemical functions of the TSC tumor suppressors in mTORC1 signaling	93.398	3F31CA239432-01A1S1		8,830	-
Defining the role of the BCL7 subunit of mammalian SWI/SNF chromatin remodeling complexes in human cancer	93.398	1F31CA271427-01		4,392	-
Determining the role of LSD1 in multiple myeloma through a multi-omics approach at single cell resolution	93.398	5F31CA257625-02 (REVISED)		34,196	-
Developing polycistronic replication-defective herpes simplex virus vectors as immunotherapeutic tools for treating melanoma	93.398	1F31CA235898-01A1 REVISED		2,110	-
Development of ubiquitin-specific protease 8 (USP8) inhibitors	93.398	5F31CA261127-02		37,912	-
Dissecting the Execution Phase of BAK-Mediated Apoptosis in Cancer	93.398	5F30CA264846-02		37,980	-
Elucidating Oncogenic Mechanisms of CBL RING Domain Mutations	93.398	5F30CA236112-03		44,577	-
Harvard Education Program in Cancer Prevention Control	93.398	5T32CA057711-28		440,452	-
Identifying optimal dynamic strategies for prostate cancer control	93.398	5K99CA248335-02 REVISED		73,365	-
Impact of RPS 15 mutation on development and progression of chronic lymphocytic leukemia	93.398	5F31CA239443-03		48,883	-
Interrogating the role for ATP-dependent chromatin remodeling complexes in immune response	93.398	5F30CA239317-04 REVISED		51,165	-
Investigating how cancer cells maintain redox homeostasis to support biomass production	93.398	1F30CA268633-01		23,067	-
Investigating the intracellular signaling mechanisms of coinhibitory receptor PD-1	93.398	5F31CA247073-02		31,999	-

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Investigating the role of ALG3 in the regulation of N-glycosylation by PI3K/AKT signaling in breast and lung cancer	93.398	5F31CA250094-03 REVISED		33,492	-
Investigating the role of EZH2 as a therapeutic target in colorectal cancers	93.398	5F31CA260804-02 REVISED		32,335	-
Investigating the role of Strada signaling in promoting AML chemoresistance	93.398	5F31CA213902-03 REVISED		23,365	-
MCV ST activates specific gene transcription by redirecting the activity of the Tip60/p400 complex	93.398	5F31CA239345-03		27,900	-
Mechanisms of tumor microenvironmental regulation of T-cell infiltration in melanoma	93.398	5F31CA260802-02 REVISED		32,335	-
Methods for Mendelian randomization and mediation analysis using integrative genetic and genomic data for breast cancer	93.398	5K99CA256513-02		89,079	-
Optimizing the therapeutic index for pediatric medulloblastomas by targeting apoptosis	93.398	5F31CA246811-02		39,681	-
Overcoming Tumor Resistance with Enzyme-Instructed Nanoscale Assemblies and Immunotherapies	93.398	5K00CA234746-04		94,096	-
Program for Training in Cancer Epidemiology	93.398	5T32CA009001-46		739,355	-
Racial disparities in advanced prostate cancer care: An analysis of treatment patterns and patient experience	93.398	1F30CA264965-01A1		6,459	-
Redefining the Molecular Landscape of Melanoma	93.398	5F31CA239347-03 REVISED		13,950	-
Regulation by mTORC1 of the lysosomal efflux of essential amino acids	93.398	5F30CA236179-05 REVISED		48,991	-
Regulation of the cell cycle and growth signaling pathways by a sensing mechanism for Vitamin B5-Coenzyme A metabolism	93.398	5F31CA254169-02		33,320	-
Role of a Two-Factor Genetic Circuit Regulating Stemness in Colorectal Cancer	93.398	5F30CA260739-02		49,997	-
Role of Chromatin Bridges in Activating Innate Immune Signaling following Failed Mitosis	93.398	5F31CA254156-02 (REVISED)		34,617	-
Role of the Gut Microbiota in Regulating Responses to anti-PD-1 Cancer Immunotherapy	93.398	5F32CA247072-03 REVISED		77,416	-
Small molecule inhibitors for the study of colibactin-induced carcinogenesis by gut microbes	93.398	5F31CA247069-03 (REVISED)		39,337	-
Substrates and Functions of the Sideroflexin Mitochondrial Transporter Family	93.398	5R00CA241332-04		247,455	-
Targeting the PI3K/AKT pathway in cancer using a pan-AKT degrader	93.398	5F31CA254000-02		25,704	-
Targeting Unique Myeloid Populations to Overcome Anti-PD-1 Resistance Conferred by Specific Cancer Mutations	93.398	5K08CA248960-02 REVISED		40,956	-
The mechanism of cancer-specific allele selection for K-RAS	93.398	5F31CA243163-02		3,080	-
Training Grant in Quantitative Sciences for Cancer Research	93.398	2T32CA009337-41		448,028	-
Training Grant in Quantitative Sciences for Cancer Research	93.398	5T32CA009337-40		116,369	-
Understanding the role of TWIST1 in colorectal cancer progression and metastasis	93.398	5F30CA260789-02		37,751	-
Unraveling the influence of genetic subtype on spatial configurations of tissue and immune compartment composition in clear cell renal cell carcinoma	93.398	5F31CA250136-03		32,666	-
Total for Assistance Listing Number 93.398				**3,449,171**	**-**
A novel approach to professional development for early childhood educators and caregivers	93.647	90PD0305-02-01		5,140	-
Total for Assistance Listing Number 93.647				**5,140**	**-**
A defend and destroy approach to curing HIV	93.837	5U19HL129903-05 REVISED		408,846	198,281
A Novel Cognition-based Guidance System to Improve Surgical Safety	93.837	5R01HL126896-05		585,389	413,135
Bioprinting A Physiologically Aligned, Thick Cardiac Tissue for Regenerative Medicine	93.837	5F31HL144043-03		34,525	-
Characterizing the mechanism of loss-of-function mutations in ALPK3 in the pathogenesis of cardiomyopathy	93.837	5F30HL147389-04		48,883	-
Complement Activation and Initiation of Heart Regeneration	93.837	5R01HL137710-04		357,051	-
CVD Epidemiology Training Program in Behavior, the Environment and Global Health	93.837	5T32HL098048-13		537,641	-
Defining Genetic Architecture and Pathways of DCM	93.837	5R01HL080494-14 REVISED		660,584	-
Developing and Evaluating Health and Environmental Messages to Improve Diet in Emerging Adults	93.837	1K01HL158608-01A1		11,057	-
Diet quality and cardiometabolic disparities among Latino ethnic subgroups	93.837	5K01HL120951-05REVISED		357	-
Dietary Etiologies of Heart Disease	93.837	5R01HL035464-31		355,493	120,461
Genetic Signals in Ventricular Hypertrophy	93.837	5R01HL084553-13		629,767	-
Integrating lifecourse approaches, biologic and digital phenotypes in support of heart and lung disease epidemiologic research.	93.837	3U01HL145386-04S1		2,278,188	1,308,341
Investigating the contribution of rare coding variants to cardiovascular diseases	93.837	5F31HL154537-02		29,924	-
Mediterranean diet, Metabolites, and cardiovascular Disease	93.837	2R01HL118264-09		78,289	-
Mediterranean diet, Metabolites, and cardiovascular Disease	93.837	5R01HL118264-08REVISED		651,691	516,672
Molecular Architecture Of The Mitochondrial Calcium Uniporter	93.837	5R01HL130143-04		(5,038)	-
Molecular Quiescence and Cardiomyocyte Maturation	93.837	5R01HL151684-03 (REVISED)		538,380	-
Multi-scale modeling of inherited pediatric cardiomyopathies	93.837	3UH3HL141798-05S1		688,737	103,773
Neuronal and vascular interactions in the CNS	93.837	5R01HL153261-03		830,745	-
NHLBI Summer Training Experience to Increase Diversity in Health-Related Research	93.837	5R25HL121029-08		72,825	-
Novel pathways controlling macrophage inflammation and resolution in atherosclerosis	93.837	5R01HL148137-04		647,495	89,739
Precision Cardiovascular Medicine for Multi-Ethnic Populations	93.837	5K01HL138259-04		61,352	-
Reverse Engineering the Alveolus: From cellular to microenvironmental specification during development	93.837	5R00HL127267-05REVISED		24,809	-
Role of interleukin-3 in autoimmune and viral myocarditis	93.837	5F31HL147364-03 REVISED		4,306	-
Statistical methods for analysis of single-cell variability	93.837	5R01HL131768-05 REVISED		39,691	39,691

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Statistical Methods for Integrative Analysis of Large-Scale Multi-Ethnic Whole Genome Sequencing Studies and Biobanks of Common Diseases	93.837	1R01HL163560-01		6,450	-
The Effects of Early Psychosocial Deprivation on Cardiometabolic Risk in Early Adulthood	93.837	5R01HL151848-03 REVISED		397,566	305,119
The role of mitochondrial DNA mutations in chemotherapy induced cardiomyopathy	93.837	5F32HL154644-03		61,347	-
Training in Interdisciplinary Pulmonary Sciences	93.837	5T32HL007118-45		325,574	-
Total for Assistance Listing Number 93.837				**10,361,924**	**3,095,212**
Function and application of lung surfactant proteins	93.838	5R01HL150520-03 REVISED		290,121	110,717
Investigating the effects of airway injury on the alveolar compartment of the lung.	93.838	1F31HL159919-01		29,100	-
Lung-on-a-Chip Disease Models for Efficacy Testing	93.838	3UH3HL141797-04S1 (REVISED)		1,911,351	113,354
MicroRNA-10a in Airway Smooth Muscle and Asthma	93.838	5R01HL139496-04REVISED		188,981	117,665
Neural-Epithelial Encoding of Airway Senses	93.838	5F32HL156583-02 REVISED		66,479	-
Physics of bronchial epithelial unjamming	93.838	5R01HL148152-04		555,924	-
Predicting Pulmonary and Cardiac Morbidity in Preterm Infants with Deep Learning	93.838	5K01HL141771-05		137,096	-
Statistical Methods to Integrate Rich Functional and Phenotypic Data in Whole Genome Sequencing Analyses	93.838	1K99HL151877-01A1REVISED		17,464	-
Training in Interdisciplinary Pulmonary Sciences	93.838	5T32HL007118-47		301,345	-
Total for Assistance Listing Number 93.838				**3,497,861**	**341,736**
Cap-Dependency in Hematopoietic Stem and Progenitor Cell Translation	93.839	1F31HL158020-01		27,900	-
DNA Damage Repair Pathways Play a Critical Role in Myeloid Differentiation	93.839	1F31HL159913-01		18,182	-
Erythrocyte maturation through global remodeling of the proteome	93.839	5R01HL153970-02 REVISED		587,999	201,611
Investigating host kinase modulation of erythrocyte deformability during Plasmodium falciparum invasion	93.839	5F31HL154510-02		29,891	-
Mechanisms of DNA interstrand cross-link repair	93.839	5R01HL098316-10		317,090	-
Recognition of Orphan Ribosomal Subunit Proteins by the Ubiquitin-Proteasome System	93.839	1F31HL157976-01		36,998	-
Single-Cell Profiling and Lineage Tracing of Zebrafish Hematopoiesis	93.839	5F30HL152628-03 Revised		33,406	-
Stem Cell-Niche Interactions in the Establishment of Hematopoietic Stem Cell Heterogeneity	93.839	5F31HL149154-03		33,320	-
Structure and Function of the VWF Helical Tubule Required for Hemostasis	93.839	1F30HL162128-01 REVISED		14,856	-
The Molecular Mechanism of the CD19-CD81 B Cell Co-Receptor Complex	93.839	5F31HL147459-03		28,456	-
Understanding the role of Id2 in T cell differentiation and activation during GVHD	93.839	5F31HL156288-02 REVISED		41,629	-
Total for Assistance Listing Number 93.839				**1,169,727**	**201,611**
PRIMECare Trial: Preventing Ischemic Heart Disease with mHealth, electronic decision support, and Community Health Workers	93.840	5R01HL149912-02		617,326	292,350
Project Title: PROSPECT: Puerto Rico Observational Study of Psychosocial, Environmental, and Chronic Disease Trends	93.840	5R01HL143792-05		626,016	336,484
Simulation Modeling and Disparities in Obesity and Chronic Disease	93.840	5R01HL146625-04		239,873	-
Total for Assistance Listing Number 93.840				**1,483,215**	**628,834**
The role of mechanical stimulation in macrophage-mediated skeletal muscle regeneration in an in vitro injury model	93.846	5F31AR075367-04		32,996	-
BMP2 Regulation of Periosteal Function	93.846	5R01AR077432-03		677,763	-
Characterization of the Insulin to Autophagy Pathway in Muscles	93.846	5R01AR057352-13		403,123	-
Development, Evaluation and Translation of Robotic Apparel for Alleviating Low Back Pain	93.846	1UH2AR076731-01		170,185	72,293
Development, Evaluation and Translation of Robotic Apparel for Alleviating Low Back Pain	93.846	4UH3AR076731-02		507,206	-
Elucidation of the Role of Creb5 in Synovial Joint Formation	93.846	5R01AR074385-03 REVISED		663,668	16,795
Epigenetic regulation of skeletal patterning and morphogenesis during development	93.846	5K01AR069197-05 REVISED		29,042	-
Interdependence of lineages within the mammalian skin	93.846	5R01AR070825-05 (REVISED)		215,307	-
Investigating modes of cartilage cell size regulation and fate during endochondral ossification	93.846	3F32AR076187-03S1		74,170	-
Mechanism of action of PTH: New signaling components that regulate bone formation and bone marrow fat	93.846	5R01AR073774-03		456,934	87,928
Molecular Mechanism of Wnt/Planar Cell Polarity Signaling	93.846	5R01AR070877-05		602,061	-
Muscle Tregs in health and disease	93.846	5R01AR070334-07 REVISED		454,561	-
Nerve-stem cell interactions during skin homeostasis and wound repair	93.846	5F32AR079252-02		71,272	-
Rapid functional genetics to study stem cell-niche interactions in the skin	93.846	1R01AR080110-01		76,587	-
Real-time quantification of muscle-tendon dynamics for individualized and adaptive robot-assisted locomotion	93.846	5R21AR076686-02		211,894	32,237
Regulation of Skin Inflammation by Nociceptive Sensory Neurons	93.846	5R01AR068383-05		2,511	-
The role of GGPS1 and CYP1A1 mutations in atypical femoral fracture	93.846	5R21AR076687-02		125,238	-
The role of notochord derived signaling, mechanical force generation and AF derived Tgfβ signaling on intervertebral disc formation	93.846	5F32AR076226-03		67,996	-
Uncovering the Genetic Mechanisms Behind Joint-Specific Osteoarthritis	93.846	5R01AR070139-05 REVISED		715,034	238,482
Using axolotls to define innate mechanisms for combatting fibrosis	93.846	5F32AR075381-02 (REVISED)		11,367	-
Total for Assistance Listing Number 93.846				**5,568,915**	**447,735**

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Adipose-tissue Tregs: important players in immunological control of metabolism	93.847	5R01DK092541-12		491,607	-
Aire, a zinc-finger protein that controls autoimmunity	93.847	5R01DK060027-20 REVISED		98,197	-
Automated Glucose Regulation to improve Diabetes Control and Outcomes for Pregnant Women with Type 1 Diabetes and Fetus	93.847	5R01DK120358-03		583,946	411,017
Bacterial metabolites controlling Th17 and Treg cells	93.847	2R01DK110559-07A1		464,608	-
Bacterial Metabolites controlling Th17 cells	93.847	5R01DK110559-06		59,062	27,000
Central circuitry controlling micturition	93.847	5R01DK114834-04		159,584	17,738
Characterization of a G Protein-Coupled Receptor Implicated in Intestinal Lipid Homeostasis of Drosophila melanogaster.	93.847	1F31DK130254-01		23,492	-
Charting human islet maturation via combined soft nanoelectronics and single-cell spatial transcriptomics	93.847	5DP1DK130673-02		876,254	-
Chronic Inflammation and Type 2 Diabetes: A Multi-omics Approach	93.847	3K99DK122128-02S1		67,633	-
Circadian Control of Pancreatic Beta-cell Maturation by Dec1	93.847	1K01DK129442-01 (REVISED)		50,036	-
Controlled release of RNA-targeting therapy to promote healing of diabetic ulcers	93.847	1F30DK130564-01		44,445	-
Coordination of Energy Metabolism Across Individual Tissues in Mammals	93.847	5R00DK117066-05REVISED		330,624	-
Deciphering the molecular basis of T1D in human cells using functional genomics	93.847	1DP3DK111898-01 REVISED		(7,075)	-
Dietary Biomarkers Development Center at Harvard University	93.847	5U2CDK129670-02		628,682	149,421
Dissecting the molecular mechanisms underlying lipotoxicity in the kidney	93.847	5F31DK126252-02		33,277	-
Drosophila as a model to study modifiers of Cystic Fibrosis	93.847	1F32DK130290-01A1		20,691	-
Effect of Arrestin Domain-Containing 4 Protein on Glucose Metabolism	93.847	1F32DK126289-01A1		58,951	-
Elucidating mechanisms of SIRT1 activation	93.847	5R01DK100263-05		137,814	-
Elucidating the role of the microbiome in inducing gut permeability and inflammation	93.847	1K99DK128503-01A1		43,010	-
Ex Vivo Generation of Functional Kidney Tissues for Transplantation	93.847	5UC2DK126023-03		954,919	520,428
Examining the role of succinate-SUCNR1 signaling in skeletal muscle remodeling following exercise	93.847	5F31DK128924-02 REVISED		33,535	-
FOOD-BASED BIOMARKERS, DIET QUALITY, AND CARDIOMETABOLIC HEALTH	93.847	5R01DK120870-04		524,167	172,493
Gating of Leptin Transport into the Cerebrospinal Fluid at the Choroid Plexus	93.847	1F30DK131642-01		6,459	-
Hemoglobin A1c variability as a risk factor for diabetes complications	93.847	5R01DK114098-04 REVISED		442,540	288,474
Human Gut Microbiome and Incident Diabetes Risk in U.S. Populations	93.847	5R01DK126698-02 REVISED		335,592	167,009
Identifying an implementation strategy to maximize the public health nutrition impact of the Child and Adult Care Food Program	93.847	5K01DK125278-02		117,124	-
Identifying targetable apoptotic vulnerabilities for the treatment of AL amyloidosis	93.847	5R01DK125263-03		500,401	-
Investigating the role of PHD3 in lipid homeostasis	93.847	5R01DK127278-02		399,226	-
Investigation of the role of TMED9 in the accumulation of a mutant protein in MUC1 Kidney Disease (MKD)	93.847	5F30DK127546-02		37,622	-
Lifestyle Interventions, Metabolites, Microbiome, and Diabetes Risk	93.847	5R01DK127601-02 REVISED		239,217	50,512
Lipid droplets and transcriptional regulation of metabolism	93.847	5R01DK124913-03 REVISED		306,280	-
Lipid-dependent regulation of human Th17 cell function	93.847	5R01DK106351-06		5,803	-
Mapping protein communication between organs in homeostasis and disease	93.847	5R01DK121409-04		1,516,053	1,129,655
Microbiota regulation of intestinal eosinophils	93.847	5F31DK121375-03 REVISED		30,362	-
Microgial Iron Metabolism and Its Regulation by Cannabinoids	93.847	5R01DK064750-12REVISED		53,123	-
Molecular Mechanisms of Arrestin-Domain Containing Proteins in Metabolism	93.847	5R01DK126688-02 (REVISED)		552,093	-
Molecular mechanisms of sensory transduction in the gut	93.847	5R00DK115879-04		7,532	-
Molecular pathways underlying organ-specific targeting by the vagus nerve	93.847	5F32DK117798-03 REVISED		31,778	-
Neuronal pathways regulating metabolic adaptation	93.847	5K01DK123197-02 REVISED		43,944	-
Nociceptor neuron regulation of gastrointestinal barrier protection and host defense	93.847	5R01DK127257-02 REVISED		640,525	-
Post-Transcriptional Regulatory Mechanisms of Fetal Hemoglobin Repression	93.847	5F31DK122637-02 REVISED		13,950	-
PTH resistance and marrow adipogenesis	93.847	5R01DK112374-04		199,597	13,404
Regulation of beige adipogenesis	93.847	5F31DK125004-02		31,925	-
Regulation of Fructose Transport by Thioredoxin-Interacting Protein	93.847	5R01DK107396-05		(953)	-
Regulation of Intestinal Innate Immunity by Speckled Protein 140	93.847	1F31DK127518-01A1		29,100	-
Robust methods for missing data in electronic health records-based studies	93.847	5R01DK128150-02REVISED		328,429	81,665
Role of Adipokine FABP4 in Glucoregulation and Counter Regulatory Responses	93.847	5R01DK123458-03REVISED		607,340	-
Saliva and Plasma Metabolomic Signatures of Diabetes Progression in a Hispanic Cohort□	93.847	5R01DK120560-03REVISED		543,313	218,924
Training Grant in Academic Nutrition	93.847	5T32DK007703-25 REVISED		(5,102)	-
Training Grant in Academic Nutrition	93.847	5T32DK007703-27		305,267	-
Training Program in Molecular Metabolism	93.847	5T32DK128781-02 REVISED		104,219	-
Transcriptomic Identification of Vagal Motor Neurons That Differentially Regulate Gastric Function	93.847	5F31DK122620-02 REVISED		18,256	-
Vitamin D Receptor Regulation of Liver Organogenesis and Disease	93.847	5F31DK122619-02		32,206	-
Total for Assistance Listing Number 93.847				**13,150,680**	**3,247,740**
A Facility to Generate Connectomics Information	93.853	5U24NS109102-04		1,342,019	-

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A new model system for adult neurogenesis	93.853	1R21NS127312-01A1		2,242	-
A quantitative framework for understanding endosomal trafficking networks in Alzheimer's disease	93.853	5R01NS110395-04		491,692	-
Action and interaction of ionotropic and metabotropic neurotransmission	93.853	4R37NS046579-18 REVISED		392,719	-
Architecture and function of striatal dopamine release machinery	93.853	5R01NS103484-04 REVISED		(30,658)	-
Architecture and function of striatal dopamine signaling machinery	93.853	2R01NS103484-05A1		223,120	-
Area postrema neurons that mediate nausea-associated behaviors	93.853	1R01NS122767-01A1		130,761	-
BDNF shapes the functional maturation of cortical interneurons	93.853	5F31NS110120-03 REVISED		16,017	-
Biomarkers and risk factors for prodromal Parkinson's disease and its progression	93.853	1R01NS126260-01		17,276	-
Cerebellar Outputs Through an Unconventional Nucleus	93.853	5K99NS110978-02 REVISED		105,969	-
Characterization of MeCP2-dependent gene regulation with temporal and mechanistic precision	93.853	5K99NS112415-02 REVISED		36,776	-
Characterizing a spectrum of mosaic variation in the population and across neurological disorders	93.853	5F31NS113414-03		32,306	-
Characterizing Population Differences between Clinical Trial and Real World Populations	93.853	5K99NS114850-02 REVISED		120,249	-
Contextual Representation of Tactile Information in Mouse Primary Somatosensory Cortex	93.853	5K99NS119739-02 REVISED		109,006	-
Controlling the spatial extent of light-based monitoring and manipulation of neural activity in vivo	93.853	1UF1NS108177-01 REVISED		218,454	153,166
Development, Validation, and Application of a Stroke Policy Simulation Model	93.853	5R01NS104143-04		482,991	235,378
Dissecting the role of the direct and indirect pathways in moment-to-moment action selection	93.853	5F31NS113385-03		32,120	-
Distributional reinforcement learning in the brain	93.853	1R01NS116753-01 REVISED		719,346	-
Distributional value coding and reinforcement learning in the brain	93.853	5F31NS124095-02		37,398	-
Dynamics of cellular brain metabolism using mass spectrometry imaging	93.853	1R01NS126248-01		110,559	12,306
Effects of abnormal early experience on IT circuitry	93.853	1R01NS123778-01		224,410	-
Electrical Stimulation of Immediate Early Genes	93.853	5R01NS028829-33 REVISED		648,890	-
Elucidating cutaneous mechanosensory circuits, from development to disease	93.853	5R35NS097344-05		868,284	-
Elucidating mechanisms of ATXN2 interaction with TDP-43 in human motor neuron models of Amyotrophic Lateral Sclerosis	93.853	5F31NS122138-02 REVISED		33,449	-
Epigenetic Regulation of Cortical Neuronal Lineage Progression	93.853	5R01NS102228-05 REVISED		67,085	28,968
Functional analysis of whole-brain dynamics in learning	93.853	5R01NS115484-03 (REVISED)		461,631	288,398
Gasdermin-Driven Cell Death and Immune Activation in Parkinson's Disease	93.853	5F31NS122292-02 REVISED		40,343	-
Genetic and neural mechanisms underlying emerging social behavior in zebrafish	93.853	1R01NS124017-01		494,568	-
HMS/BCH Center for Neuroscience Research	93.853	5P30NS072030-07 REVISED		262,601	-
Identifying and Correcting Dementia-Associated Changes in the Blood-Brain Barrier	93.853	1R01NS117407-01		649,822	-
Investigating a role for dopamine in organizing behavioral sequencing	93.853	1F31NS122155-01A1 REVISED		14,579	-
Ion Channel Pharmacology for Pain and Epilepsy	93.853	1R35NS127216-01		39,407	-
Mammalian circadian clock: genetics of PERIOD complex composition and structure.	93.853	5R01NS095977-05		16,813	-
Mapping serotonergic neuron subtypes protective for seizure-induced neurological and neurobehavioral changes	93.853	5F31NS108406-03 REVISED		6,861	-
Mechanisms and functions of synapses and circuits	93.853	5R35NS097284-06 REVISED		885,865	-
Mechanisms of seizure resistance in a mouse genetic model with altered metabolism	93.853	5R01NS102586-05 REVISED		288,776	-
Mechanisms of Vesicle Docking and Priming for Striatal Dopamine Release	93.853	5F31NS105159-03 REVISED		2,110	-
Mechanisms Regulating the Specification and Differentiation of Unique Types of Cholinergic Neurons During Development	93.853	3F32NS120936-01S1		63,721	-
Mechanisms underlying neuronal enhancer specification during postnatal CNS development	93.853	5R01NS115965-03 REVISED		714,714	-
Mechanosensory feature extraction for directed motor control	93.853	5R01NS101157-05		134,668	-
Megaplexed Neuronal Visualization Using Combinatorial Labeling and Iterative Staining	93.853	5R01NS112716-02		90,835	-
Metabolic coupling of neuronal ion transport	93.853	5F32NS116105-03 REVISED		68,366	-
Metabolomics and risk of Parkinson's Disease	93.853	3R01NS089619-05S1		(1,976)	-
miRNA Control of Synaptic Stability and Structural Plasticity	93.853	5F99NS115341-02 (REVISED)		22,108	-
Modulation of calcium-mediated plasticity signals in dendritic spines	93.853	5F31NS113353-03		29,967	-
Molecular and functional characterization of the cells and circuits underlying the fever response	93.853	5K99NS114107-02 (REVISED)		57,384	-
Molecular and genetic dissection of brain circuits controlling fever	93.853	5R01NS112399-03 (REVISED)		476,463	-
Molecular Controls over Neurogenesis, Subtype Development, and Diversity of Cortical Output Projection Neurons	93.853	5R01NS045523-16 (REVISED)		259,185	-
Molecular Development and Diversity of Callosal Projection Neurons	93.853	5R01NS104055-03		496,118	-
Molecular Dissection of Active Zone Functions in Neurotransmitter Release	93.853	5R01NS083898-09		503,782	-
Molecular mechanisms of neuron motility and axon guidance	93.853	5R01NS069913-10		25,926	-
molecular mechanisms of the blood brain barrier function and regulation	93.853	5R35NS116820-03		1,042,995	-
Molecular principles of neuronal maturation and integration in the adult and aging brain	93.853	5R01NS103758-05		540,685	197,362
Motion Sequencing for All: pipelining, distribution and training to enable broad adoption of a next-generation platform for behavioral and neurobehavioral analysis	93.853	5U24NS109520-03		463,001	-

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Multiple timescales of motor planning and execution in mouse cortex	93.853	5F31NS108450-02 REVISED		2,110	-
Neural and computational mechanisms underlying the assembly of motor skills	93.853	3K99NS112597-02S2		82,052	-
Neural circuits underlying the acquisition and control of motor skills	93.853	2R01NS099323-06A1		592	-
Neural circuits underlying the acquisition and control of motor skills	93.853	5R01NS099323-05		75,656	-
Neural correlates of Sleep Homeostasis	93.853	1R01NS119227-01A1 REVISED		234,627	-
Novel molecular genetic tool for large-scale labeling and modulating activity of neurons associated with particular physiological processes and behaviors	93.853	3R21NS106406-01A1S1 REVISED		20,526	-
Novel Regulation of Postsynaptic Assembly in Drosophila	93.853	1R21NS119932-01		302,875	-
Novel Targets that Modulate Multiple Adult Models of ALS in Drosophila	93.853	1R21NS123207-01		287,257	-
Parietal cortex networks for sensorimotor processing during navigation	93.853	5R01NS089521-08		499,682	-
Peripheral activity-dependent and molecular mechanisms that control somatosensory system development	93.853	1K99NS124993-01		42,921	-
Principles of multi-whisker stimulus integration in rodent somatosensory cortex	93.853	5K00NS105186-05		78,432	-
Prospective study of vitamin D and MS risk in African Americans	93.853	5R01NS103891-03Revised		231,085	16,669
Regulation of PINK1 and PARKIN-dependent mitophagy	93.853	5R01NS083524-18		593,330	-
Sensorimotor processing, decision making, and internal states: towards a realistic multiscale circuit model of the larval zebrafish brain	93.853	5U19NS104653-05		3,823,033	772,438
Sexual Dimorphism Among Glia in the Nervous System	93.853	5F31NS122139-02		39,551	-
Single-cell computation in auditory brainstem and its impact on cortical coding and behavior	93.853	3R01NS118402-01S1		708,256	377,238
Specification of Neuronal Enhancers during Postnatal Development	93.853	5F32NS112455-03		22,142	-
State-dependent interaction of antiepileptic drugs with voltage-dependent sodium channels and differential regulation of excitatory and inhibitory central neurons	93.853	5R01NS110860-04 REVISED		250,994	-
Structural variation in neuronal circuits as a basis for functional and behavioral individuality	93.853	1R01NS121874-01		904,955	-
Structure and function of the mouse parafasicular and entopeduncular nuclei	93.853	5R01NS103226-05		302,920	84,763
Studying perceptual decision-making across cortex by combining population imaging, connectomics, and computational modeling	93.853	5R01NS108410-04		802,288	131,113
Systematic and functional analysis of alternative mRNA splicing in an in vivo model of learning	93.853	1R21NS121825-01A1		40,265	-
Systems-level and in situ transcriptomics deconstruction of neural circuits underlying sensorimotor transformation in an innate behavior	93.853	1R01NS116593-01 REVISED		1,652,576	-
The Development and Integration of Early Born SST-Expressing	93.853	5R01NS081297-10		588,675	-
The diversity of dopamine neurons: from connectivity and activity to functions	93.853	5R01NS108740-04 (REVISED)		344,855	-
The encoding of uncertainty in the Drosophila compass system	93.853	1R34NS123819-01		160,364	-
The Impact of Telestroke on Patterns of Care and Long-Term Outcomes	93.853	5R01NS111952-04 REVISED		750,599	327,002
The role of sciatic nerve inflammation in diabetic neuropathy	93.853	1F31NS127357-01 REVISED		2,196	-
Towards a unified framework for dopamine signaling in the striatum	93.853	5U19NS113201-03		3,799,781	612,073
Two-photon all-optical electrophysiology in behaving mice	93.853	1RF1NS126043-01		195,235	-
Voltage-Dependent Ion Channels Controlling Firing Patterns of Central Neurons	93.853	5R01NS036855-25 REVISED		261,634	-
Total for Assistance Listing Number 93.853				**31,685,262**	**3,236,874**
Regulation of HLA-C in Human Trophoblasts and its Impact on Preterm Birth	93.855	5R21AI138019-02		(1,990)	-
Structural Basis for Translation Initiation in Leishmania Major	93.855	5R21AI156087-02		218,336	-
Using genetics and multi-scale imaging to understand the mechanisms underlying mycobacteriophage host choice	93.855	5R21AI156772-02		149,812	75,993
A clinical trial to evaluate the impact of broadly neutralizing antibody VRC01 on HIV viral reservoir and maintenance of suppression in a cohort of early-treated children in Botswana	93.855	5U01AI135940-05REVISED		1,419,222	947,562
A genetic template for generating universally protective responses to influenza	93.855	5F31AI138368-02 REVISED		2,110	-
Accompanying HIV-positive adolescents through the transition into adult care: a feasibility study	93.855	5R21AI143365-02		1,655	-
Acquisition, maintenance, and transmission of antibiotic resistance in Neisseria gonorrhoeae	93.855	5F32AI145157-03		67,091	-
Bacterial Determinants of Treatment Response in Mycobacteria Tuberculosis	93.855	5U19AI142793-04		1,972,697	991,487
Bacteriology PhD Training Program	93.855	5T32AI132120-05		349,535	-
Biostatistical Methods for Infectious Diseases Study Design	93.855	1F31AI147745-01 REVISED		(1,202)	-
Biostatistics/Epidemiology Training Grants in AIDS	93.855	5T32AI007358-34 REVISED		524,455	-
Botswana-Harvard T.H. Chan School of Public Health AIDS Initiative Partnership CTU	93.855	5UM1AI069456-16 REVISED		1,484,135	1,192,476
Bridging Statistical Inference and Mechanistic Network Models for HIV/AIDS	93.855	5R01AI138901-04		456,476	-
Cell envelope synthesis and antibiotic resistance in Staphylococcus aureus	93.855	5F32AI150002-03 REVISED		72,532	-
Cell surface biogenesis in Streptococcus pneumoniae	93.855	5R01AI139083-04		700,437	-
Characterizing a Serine-Threonine Phosphatase Essential for Asexual Replication in Plasmodium falciparum	93.855	1F31AI157041-01A1 REVISED		19,100	-
Characterizing the Genomic Basis of Immune-Mediated Resilience Against Tuberculosis in an Admixed Peruvian Population	93.855	1F30AI157385-01A1		33,753	-
CONTROL AND ACTIVATION OF THE TUMOR NECROSIS FACTOR RECEPTORS	93.855	5R01AI150709-03		826,556	391,786
Cytotoxic T Cell Mediated Immunity to Chlamydia	93.855	3R01AI039558-25S1		1,075,232	-

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Cytotoxic T Cell Mediated Immunity to Chlamydia	93.855	5R01AI039558-24		(67,636)	-
Deep sequencing of pathogens to precisely define transmission networks using rare variants	93.855	5R01AI128344-05		652,532	16,175
Defining Features of Bacterial Control in M. tuberculosis Granulomas Using Single-cell mRNA Sequencing	93.855	5F30AI143160-03		48,883	-
Defining functional domains of a P. aeruginosa efflux pump using periplasmic nanobodies	93.855	5R21AI153471-02 REVISED		59,778	-
Defining regulators of immunity to acute infection using CRISPR screens	93.855	3U19AI133524-05S1		1,991,889	1,159,681
Detection of transrenal Mycobacterium tuberculosis DNA in urine	93.855	5R03AI153554-02		137,898	-
Determining the interactions between mosquito oogenesis and Plasmodium falciparum survival and transmission	93.855	5R01AI153404-03		670,949	-
Developing comparative chemical genomics and genetic validation tools for Babesia spp.	93.855	5R21AI153945-02		178,916	-
Discovery and characterization of new bacterial cell wall targets and inhibitors to treat resistant infections	93.855	5R01AI148752-03		793,783	-
Discovery through chemical synthesis of antibiotics effective against modern bacterial pathogens	93.855	1R01AI168228-01		186,798	-
Dynamic Strategies for the clinical management of HIV disease	93.855	5R37AI102634-10		546,966	23,407
Early Infant Treatment	93.855	4U01AI114235-06 REVISED		165,261	135,901
Elucidating ligand-receptor interactions required for Plasmodium vivax blood-stage infection	93.855	5R01AI140751-05		399,980	-
Elucidating the Structural Requirements for Next-Gen Glycoconjugate Vaccines	93.855	5R01AI148273-03		518,344	-
Epidemiology of Infectious Diseases	93.855	2T32AI007535-21A1		25,253	-
Epidemiology of Infectious Diseases	93.855	5T32AI007535-20REVISED		2,214	-
Epitope focusing using structure-based immunogen design approaches	93.855	1F30AI160908-01		23,296	-
Expansion of research and mentoring to improve birth outcomes and treatment outcomes among HIV-affected children in Botswana	93.855	5K24AI131924-05		152,828	8,000
Exploiting Fc-engineering to dissect mechanisms of anti-microbial action of M. tuberculosis-specific antibodies	93.855	5F31AI150171-02		25,475	-
Exploring metabolic resistance to small molecule inhibitors in Trypanosoma cruzi	93.855	5R21AI146815-02		75,903	-
Exploring the potential to improve azole efficacy against Trypanosoma cruzi by targeting glutamine metabolism	93.855	5R21AI166974-02		168,861	-
Exploring the roles of acquired immunity and functional constraint in sculpting malaria antigenic diversity in a longitudinal cohort	93.855	5R01AI141544-04		676,378	17,170
Follicular helper T cells as drivers of epitope spreading	93.855	1F30AI160909-01		33,674	-
Functional analysis of epigenetic regulators of malaria blood-stage proliferation and transmission	93.855	5R01AI138551-05		368,569	-
Genetic Analysis of Toxinogenesis in Vibrio Cholerae	93.855	5R37AI018045-42		526,887	-
Genetically-encoded fluorescent RNA sensors for measuring transport of antibiotics into the cytoplasm of Gram-negative pathogens and development of efflux pump inhibitors	93.855	5R01AI136789-05		816,303	591,145
Genomics approaches to elucidating pathways to antibiotic resistance in Neisseria gonorrhoeae	93.855	5R01AI132606-05		295,807	-
Geospatial methods to estimate tuberculosis transmission to children	93.855	1K01AI151083-01A1		99,219	-
Harvard University Center for AIDS Research	93.855	5P30AI060354-18(REVISED)		4,161,894	2,741,210
Hepatic survival and population dynamics of extraintestinal pathogenic Escherichia coli	93.855	5F31AI156949-02		38,351	-
Human adaptation and transmissibility of Mycobacterium tuberculosis genetic lineages. A genomic epidemiology study to guide TB control	93.855	5R21AI154089-02		196,512	17,256
Human Cytomegalovirus Nuclear Egress: Molecular Mechanisms and Drug Targeting	93.855	5R01AI026077-32 REVISED		362,836	-
Identification and analysis of compensatory mutations that support the evolution of antibiotic resistance in Neisseria gonorrhoeae	93.855	5R01AI153521-03		904,848	575,327
Identification and characterization of a comprehensive set of factors required for sporulation and germination in Bacillus anthracis	93.855	1R21AI171308-01		2,225	-
Illuminating the immune system's genomic dark matter: functionally annotating the hidden translatome	93.855	1DP2AI169979-01		369,496	-
ImmGen: Gene Expression and Regulation in Immune Cells	93.855	5R24AI072073-15		1,650,677	228,946
Incorporation of a histone variant into viral chromatin to promote herpes simplex virus replication	93.855	5F31AI145062-03		32,913	-
Infant blood epigenome and risks of IgE sensitization, obesity, and asthma: MARC-35/43 cohorts	93.855	5R01AI148338-02		591,834	467,289
Infectious cell entry pathway of human-infecting thogotoviruses	93.855	5F31AI154710-02 REVISED		31,043	-
Integrating protein structure and genomic data to predict antibiotic resistance in Mycobacterium tuberculosis	93.855	5F32AI161793-02		61,220	-
Interferon-induced IFITM recruitment of ZMPSTE24 blocks viral endocytic entry	93.855	5R01AI121288-04		(170)	-
Intravascular Immune Surveillance by Anti-viral T Cells	93.855	5R01AI155865-02		659,868	-
Investigating bacterial contributions to TB treatment response: a focus on in-host pathogen dynamics	93.855	5R01AI155765-02		664,976	370,358
Investigating Cell-Wall Synthesis in Mycobacterium abscessus	93.855	5F31AI149932-02		29,824	-
Investigating the Integrator Complex's Role in Regulating Inflammatory Transcription	93.855	1F31AI160672-01A1 REVISED		16,361	-
Investigating the regulation of outer membrane homeostasis in Pseudomonas aeruginosa	93.855	1F32AI164630-01		52,460	-
Malaria Genomic Epidemiology for Identifying Sources of Malaria Infection and Transmission	93.855	5R21AI141843-02Revised		63,235	-
Malaria transmission blocking through mosquito contact with treated surfaces	93.855	5R01AI148646-03		693,128	-
Mechanisms of cell entry of Lymphocytic Choriomeningitis Virus.	93.855	5F31AI154700-02 REVISED		14,517	-
Mechanisms of macrolide synergy in Mycobacterium tuberculosis	93.855	1F31AI167560-01 REVISED		16,176	-
Mechanisms regulating vimentin-dependent invasion of the brain by Listeria monocytogenes	93.855	5R01AI146102-04		435,275	107,625
Methods to Advance the HIV Prevention Research Agenda	93.855	5R37AI051164-17REVISED		56,143	22,074
Modeling the Role of PrEP in Getting to Zero	93.855	1R56AI149736-01A1REVISED		400,852	12,880

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Molecular basis of antimalarial drug resistance in Plasmodium vivax	93.855	1R01AI168163-01		316,150	-
Molecular Basis of Viral Infectivity	93.855	5T32AI007245-39		515,985	-
Molecular biology of trichomonasviruses	93.855	5R01AI132445-05		517,816	-
Molecular Mechanism of NLRP1 and CARD8 Inflammasome Regulation by DPP9	93.855	1F31AI152267-01A1 REVISED		12,997	-
Novel Genetic Mechanism of Artemisinin Resistance for Malaria	93.855	5R01AI099105-08REVISED		480,809	-
Nuclear Sensing of Herpesviral DNA	93.855	5R01AI106934-08		351,756	-
Optimal targeting for individual and population-level TB prevention	93.855	5R01AI146555-03		463,156	68,022
Outer Membrane Biogenesis: New Antibiotic Targets	93.855	5R01AI081059-14		477,127	-
Pain and Neuro-immune Signaling in S. pyogenes pathogenesis	93.855	5R01AI130019-05		686,071	193,240
Peptidoglycan Biogenesis in Escherichia Coli	93.855	5R01AI083365-13		517,990	48,774
Proline homeostasis: a novel mediator of drug tolerance in Plasmodium falciparum	93.855	5R01AI143723-03		678,462	357,264
Release of Extracellular DNA during Biofilm Formation in Staphylococcus aureus	93.855	5R01AI139011-05		658,620	-
RNA polymerase and oxidative stress mediate ceftriaxone resistance in Neisseria gonorrhoeae	93.855	5F30AI160911-02 REVISED		43,362	-
SDMC - IMPAACT Leadership Group	93.855	5UM1AI068616-16 REVISED		12,196,014	5,840,047
Small molecule-induced degradation of dengue proteins as an antiviral strategy	93.855	1R01AI148632-01A1 REVISED		(12,948)	-
Social Epidemiology of COVID-19	93.855	5K08AI139361-04		178,091	-
Statistical and Data Management Center (SDMC), AIDS Clinical Trials Group	93.855	3UM1AI068634-14S1REVISED		(795)	-
Statistical and Data Management Center (SDMC), AIDS Clinical Trials Group	93.855	5UM1AI068634-16REVISED		18,185,167	7,636,038
Strengthening evidence on optimal multidrug-resistant tuberculosis treatment regimens through improved epidemiologic methods	93.855	5R01AI146095-03		751,375	231,352
Structural Basis of Immune Cell Receptor Function	93.855	5R01AI037581-25		195,250	-
Structural studies of herpesvirus DNA polymerases	93.855	5R21AI141940-02		27,514	-
Studies on the Biological Mechanisms of Antibiotics	93.855	5R01AI149778-19		756,960	-
T Cell Costimulatory Pathways: Functions and Interactions	93.855	5P01AI056299-18		2,394,111	1,680,515
T regulatory cell subsets at the microbial interface: determinism and function	93.855	5R01AI125603-05		482,450	-
Targeting Membrane Transport Steps in Cell Envelope Assembly	93.855	5R01AI153358-03		1,005,177	-
Targeting steroid hormone signaling in Anopheles mosquitoes for malaria control	93.855	5R01AI124165-05REVISED		366,644	-
Targeting the Mitochondrion of P. falciparum	93.855	5R01AI093716-09		381,096	-
The Graduate Program in Tropical Infectious Diseases (GPiTID)	93.855	5T32AI049928-19		229,379	-
The molecular mechanism of Aire	93.855	5R01AI088204-10		596,066	-
The physiological activation and consequences of Toxin-Antitoxin systems in Salmonella	93.855	5R01AI155552-02		732,699	-
Treg cell diversity and homeostatic control	93.855	5R01AI150686-03		616,709	-
Understanding the Regulation and Biological Roles of Peptidoglycan Hydrolases in Staphylococcus aureus	93.855	5F30AI156972-02 REVISED		38,240	-
Using agent-based modeling to estimate the effectiveness of the Miami Getting to Zero HIV campaign	93.855	5K01AI138863-05REVISED		107,767	-
Validating a potential interaction between error-prone polymerases and SSB as a therapeutic target for Mycobacterium tuberculosis	93.855	5R03AI159062-02		91,532	-
Validating the Flavivirus Envelope Protein as an Antiviral Target	93.855	5R01AI146152-02 REVISED		73,197	73,197
Viral and host mechanisms that tilt the HSV lytic/latent balance	93.855	5P01AI098681-08		2,156,431	783,862
Zika Virus in Pregnancy in Nigeria	93.855	5R21AI137840-02 REVISED		98,008	-
Total for Assistance Listing Number 93.855				**77,817,879**	**27,006,059**
Mechanistic Analysis of the Ubiquitin-Proteasome System	93.859	5R35GM127032-05 REVISED		443,308	-
A system for long-term high-resolution 3D tracking of movement kinematics in freely behaving animals	93.859	5R01GM136972-02 (REVISED)		554,849	128,445
Advanced Tools for Reconstructing Population History	93.859	5R01GM100233-08		(808)	-
Advancing Multiplexed Isobaric Tag-based Strategies for Proteome Profiling	93.859	5R01GM132129-03		360,420	-
Aggression in Drosophila: circuitry involved; learning and memory accompanying aggression; and establishing the circuitry of high-level aggression in the brain	93.859	2R35GM118137-06		208,736	-
Aggression in Drosophila: circuitry involved; learning and memory accompanying aggression; and establishing the circuitry of high-level aggression in the brain	93.859	5R35GM118137-05 REVISED		(14)	-
Analysis of conserved eukaryotic transcription elongation factors	93.859	5R01GM135251-02 REVISED		596,841	-
Analysis of the Essential Transcription Factors Spt5 and Spn1/Iws1	93.859	5R01GM120038-04		10,284	-
Anion Abstraction From Hypervalent Silanes: Enantioselective Synthesis of Compounds Bearing Carbon and Silicon Stereogenic Centers	93.859	1F32GM143919-01A1 (REVISED)		3,443	-
Assembly and Maintenance of the Bacterial Cell Envelope	93.859	1F32GM146400-01 REVISED		15,909	-
Asymmetric Nucleophilic Aromatic Substitution Enabled by Hydrogen-Bonding Catalysis	93.859	5F32GM136042-03 (REVISED)		67,468	-
Biophysical foundations of evolutionary dynamics	93.859	5R35GM139571-02		863,147	-
Biophysical mechanisms of proteomic and fitness effects of synonymous substitutions	93.859	5R01GM124044-04		(2,893)	-

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Biophysics of Nuclear Formation and Micronucleation	93.859	5F32GM131585-03		71,394	-
Broadly Applicable, Small Molecule Catalysts for Stereoselective and Site-Selective Glycosylation Reactions	93.859	5R01GM132571-04 (REVISED)		358,639	-
Cell and Chemical Biology of Microtubules	93.859	5R35GM131753-04		746,312	-
Cell Envelope Homeostasis in Bacillus subtilis	93.859	5R01GM127399-04 REVISED		463,416	-
Characterization of silencer element-associated chromatin	93.859	1F31GM145107-01 REVISED		16,732	-
Characterization of the TBCEL-dependent Tubulin Degradation Mechanism	93.859	1F31GM142156-01		34,045	-
Chiral Complexes Designed to Catalyzed Organic Reactions	93.859	5R01GM043214-32 (REVISED)		804,004	-
Chromosome Dynamics in Bacillus Subtills	93.859	5R01GM086466-12		323,096	-
Chromosome organization and function in time and space: meiosis, mitosis and E.coli	93.859	5R35GM136322-03		1,173,890	1,817
Complementary Activation of Hydroxylamine Derivatives by Hydrogen-Bond Donor Catalysts to Enable Enantioselective Nitrogen-Atom Transfer Processes	93.859	5F32GM137576-03 (REVISED)		66,062	-
Controlling Radicals via Sulfonium Activation and Anion Binding Catalysis	93.859	5F32GM133068-03		66,078	-
Deciphering the logic of glycolipid signaling at the host-microbiome interface	93.859	5R00GM130964-04 REVISED		206,616	-
Decoding chromosome structure with multiplexed super-resolution microscopy	93.859	5R01GM124401-04		407,696	-
Decoding ribosome-triggered quality control mechanisms	93.859	1DP2GM137415-01		617,883	-
Deep learning to design immune-evading viral vectors for gene therapy	93.859	1F32GM141007-01A1		18,180	-
Defining OGT's Essential Functions to Guide Therapeutic Approaches	93.859	5R01GM094263-10 REVISED		652,666	-
Determine the mechanism of recognition of ubiquitin configurations by the 26S proteasome	93.859	5R01GM134064-03		383,143	-
Determining the source of missing heritability	93.859	5R01GM120122-05		117,916	-
Dissecting the establishment and regulation of human pluripotency	93.859	5P01GM099117-10		1,825,755	1,209,652
Diversity in Biomedical Sciences Via Personalized Research and Education Programs for Post-Baccalaureates	93.859	5R25GM109436-05		45,905	-
DNA-corralled nanodiscs for study of large membrane proteins and their complexes	93.859	5R01GM131401-04		237,077	11,449
Drosophila Transgenic RNAi Resource Project	93.859	5R01GM084947-12 REVISED		433,990	-
Dynamic mechanisms of transcriptional coactivator function in Notch signaling	93.859	1K99GM144750-01		41,109	-
Dynamic regulatory mechanisms of robust pattern formation in the neural tube	93.859	5R01GM107733-08		380,459	-
Dynamics of Cellular Senescence in Single Cells	93.859	5R01GM116864-04 REVISED		5,733	-
Dynamics of Signaling Pathways: Mechanism and Function	93.859	5R01GM083303-13		22,696	-
Dynamics, Regulation and Function of p53 in Single Cells	93.859	5R35GM139572-02 REVISED		720,508	-
Elucidating physiology of dormant bacteria to combat antibiotic persistence	93.859	5R35GM137895-02		292,839	-
Elucidating the Functional Role of the Actin-related Proteins, ACTL6A and ACTL6B, in ATP-Dependent Chromatin Remodeling	93.859	1F31GM143896-01 (REVISED)		18,876	-
Epigenetic Inheritance of Heterochromatin	93.859	2R01GM072805-17		127,101	-
Epigenetic Inheritance of Heterochromatin	93.859	5R01GM072805-16 REVISED		73,822	-
Evolutionary Tradeoffs in Antibiotic Resistance	93.859	5R35GM133700-04		507,199	-
Feedback Control of the Cell Cycle	93.859	3R01GM043987-30S1		533,480	-
Function and Regulation of TRAIP at Replisome-Blocking DNA Lesions	93.859	5K99GM138763-02		72,816	-
Functional genomics resources for the Drosophila and broader research communities	93.859	5P41GM132087-04		1,117,737	-
Furshpan and Potter Native American High School Summer Program	93.859	5R25GM129830-04		239,138	-
Genetics and Genomics PhD Training Grant	93.859	3T32GM096911-10S1 REVISED		26,291	-
Global control of co-transcriptional splicing	93.859	5R01GM136794-02 REVISED		603,369	-
Harnessing intrinsic cell clocks to control growth and regeneration	93.859	1F32GM140779-01A1		36,661	-
Harvard Chemical Biology Graduate Program	93.859	5T32GM095450-10		(44)	-
Harvard Systems Biology Graduate Program	93.859	5T32GM135014-03 (REVISED)		297,891	-
High Resolution Analysis of Transcription-Splicing Coupling	93.859	5R01GM117333-04		(5,746)	-
High-throughput disulfide and FRET scanning to reveal protein conformational ensembles in vitro and in vivo	93.859	1K99GM141459-01		74,634	-
High-throughput optimization of genetically-encoded fluorescent biosensors	93.859	2R01GM124038-05		173,394	-
High-throughput optimization of genetically-encoded fluorescent biosensors	93.859	5R01GM124038-04 REVISED		28,190	-
Human microbiome metabolites in health and disease	93.859	5R35GM128618-05		398,437	-
Identifying genetic pathways and cellular sources for neural regeneration in adult animals	93.859	5F31GM134633-02		34,933	-
Identifying the mechanisms of mechanosensing by the bacterial flagellar motor	93.859	5K99GM134124-02		82,936	-
Identifying the sequences and factors that govern the fate of elongating RNAPII	93.859	5R01GM139960-02		397,068	-
Illuminating molecular mechanisms of cellular functions by single-molecule and super-resolution imaging	93.859	5R35GM122487-05		176,564	-
Information Integration and Energy Expenditure in Eukaryotic Gene Regulation	93.859	2R01GM122928-05		418,874	-
Information Integration and Energy Expenditure in Eukaryotic Gene Regulation	93.859	5R01GM122928-04 REVISED		925	-
Information Processing by Post-translational Modification	93.859	5R01GM105375-08		388,149	64,899
Interdisciplinary training: Statistical Genetics/Genomics and Computational Biology	93.859	5T32GM135117-03		433,526	-

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Joint Program in Molecules, Cells, and Organisms	93.859	5T32GM135143-03 (REVISED)		665,698	-
Limits and trade-offs of feedback control	93.859	5R01GM081563-09		(170)	-
Lipotoxic Protective Response of the Endoplasmic Reticulum	93.859	5R01GM141050-02REVISED		337,205	-
Mapping Structure-Activity Relationships of Chemical Inhibitors via Genome- Editing	93.859	1DP2GM137494-01		671,684	-
Maximizing Investigator's Research Award	93.859	5R35GM127136-05 (REVISED)		617,487	-
Measuring and modeling the dynamics of patterning in human stem cells	93.859	5R01GM131105-04 (REVISED)		375,149	-
Mechanism of Divalent Metal Transport by NRamp-Family Transporters	93.859	5R01GM120996-04 REVISED		(9,573)	-
Mechanism of Divalent Metal Transport by Nramp-Family Transporters	93.859	5R01GM120996-06 (REVISED)		420,843	-
Mechanism of yeast gene regulation	93.859	5R35GM131801-04		805,731	-
Mechanisms of Lipid Droplet Formation	93.859	2R01GM124348-05		337,295	-
Mechanisms of Lipid Droplet Protein Targeting	93.859	5R01GM097194-12REVISED		326,230	-
Mechanoregulation of Ciliary Motility	93.859	5R01GM141109-02		291,264	-
Medical Scientist Training Program	93.859	3T32GM007753-43S3		2,759,593	-
Microbial Adaptation and the Statistics of Epistasis and Pleiotropy	93.859	2R01GM104239-10		20,469	-
Microbial Adaptation and the Statistics of Epistasis and Pleiotropy	93.859	5R01GM104239-09		417,762	-
MIDAS Center for Communicable Disease Dynamics	93.859	5U54GM088558-10REV		30,335	-
Mitonuclear coordination of gene expression across complex cellular states using mitoribosome profiling	93.859	5F32GM139244-02		65,160	-
Molecular Biophysics Training Grant	93.859	5T32GM008313-34 REVISED		586,509	-
Molecular Chaperones and Protein Degradation	93.859	5R01GM051923-24 REVISED		165,693	-
Molecular Genetic Analysis of Extracellular RNAs in C. elegans	93.859	5R01GM089795-12		166,232	-
Molecular mechanisms by which mild elevation of mitochondrial superoxide extends lifespan	93.859	5R01GM121756-04 REVISED		209,064	-
Molecular Mechanisms of Integrative Signal Transduction	93.859	5R35GM142697-02		228,479	-
Molecular Mechanisms of Lipopolysaccharide Transport Driven by ABC Transporters	93.859	5R01GM122797-05		288,836	-
Molecular mechanisms of sigma receptor signaling	93.859	5R01GM119185-04		(6,165)	-
Molecular, Cellular and Developmental Dynamics PhD Program	93.859	3T32GM007226-46S1		1,023,004	-
mRNA Capping Enzyme	93.859	5R01GM056663-24 REVISED		477,012	14,235
New approaches to measuring and containing the spatial spread of human pathogens	93.859	5R35GM124715-05		360,803	-
New Sample Multiplexing Technologies to Identify Chemical Probes and Illuminate Ubiquitin Biology	93.859	5R01GM067945-19 REVISED		583,756	-
Next Generation Solution NMR Techniques for GPCR Structure, Dynamics and Function	93.859	5R01GM129026-04		400,609	-
Noise, memory, and adaptation in the flagellum system in E.coli.	93.859	5R01GM134275-02		164,914	-
Nuclear-mitochondrial co-regulation during mitochondrial biogenesis	93.859	5R01GM123002-04		(43,864)	-
Polynuclear iron complexes as functional mimics of the nitrogenase FeMo-cofactor	93.859	5R01GM098395-09		210,689	-
Predictive biophysical models of evolution	93.859	5R01GM068670-16 REVISED		(80)	-
Prions in the bacterial domain of life	93.859	5R35GM136247-03 REVISED		586,826	-
Probing the specificity and activity of the metazoan Integrator complex	93.859	5R01GM134539-04		673,332	395,469
Program in Genetics and Genomics PhD Training Grant	93.859	5T32GM141745-02		559,287	-
Protein Transport Across Membranes	93.859	5R01GM052586-28 REVISED		542,846	-
Reconstitution of heterochromatin and gene silencing in vivo	93.859	5K99GM137045-02 REVISED		79,395	-
Regulation of translesion synthesis by the bacterial replisome	93.859	5R01GM114065-07		313,167	-
RNA Processing Machines in Biology and Disease	93.859	2R35GM122524-06		183,782	-
RNA Processing Machines in Biology and Disease	93.859	5R35GM122524-05		623,990	-
Robust, Generalizable, and Fair Machine Learning Models for Biomedicine	93.859	1R35GM142879-01		305,002	-
Selective Oxidation of Primary C-H Bonds Using Late-Transition-Metal-Oxo Catalysts	93.859	1F32GM145065-01 (Revised)		21,084	-
Sending and receiving Hedgehog and Wnt signals	93.859	2R01GM122920-05		15,798	-
Sending and receiving Hedgehog signals	93.859	5R01GM122920-04 REVISED		170,431	-
Single-molecule protein identification and single-cell proteomics	93.859	1K99GM140211-01A1 REVISED		93,898	-
Small regulatory RNA functions in the nucleus	93.859	5R01GM088289-13		446,951	-
Spatiotemporal Regulation of Liquid-like Condensates in the Germline	93.859	5R01GM132286-04 REVISED		561,836	-
Strategic Molecular Activations for the Selective Synthesis of 2-Deoxy-Beta-Glycosides, and for the Synthesis of Novel Donor-Acceptor Stenhouse Adducts	93.859	1K99GM140070-01 (REVISED)		47,255	-
Structural and Functional Roles of the Membrane-Related Components of Single-Pass Membrane Proteins	93.859	5R35GM140887-02 REVISED		583,229	-
Structure of Sphingosine 1-phosphate Receptors	93.859	5F32GM136092-02 REVISED		35,020	-
Structure-Function Studies of Ribonucleotide Reductase	93.859	5R01GM047274-30 (REVISED)		476,928	-
Substrate recognition and processing by the proteasome	93.859	5R01GM043601-27 REVISED		68,345	-

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Synaptonemal complex assembly and function in meiosis	93.859	3R01GM072551-16S1		456,275	47,142
Systematic elucidation of allele specific proteome at Imprint Control Regions	93.859	5R01GM135377-03		315,124	-
Technologies for visualizing the genome in situ	93.859	5R01GM123289-04 REVISED		(10,163)	-
The 3D architecture of the mitochondrial nucleoid and its role in organelle regulation	93.859	5F32GM130028-03 REVISED		54,209	-
The biosynthesis of N–N bond-containing natural products	93.859	5R01GM132564-03 (REVISED)		292,822	-
The genetics and genomics of reinforcement	93.859	5R35GM142742-02		318,563	-
The Molecular Mechanisms of Spore Germination	93.859	3F32GM130003-03S1		48,372	-
The origin, the function and the phenotypic impact of human alleles	93.859	5R35GM127131-06		429,078	-
The RNA polymerase II transcription complex	93.859	5R01GM046498-29 REVISED		27,064	1,380
The RNA polymerase II transcription initiation complex	93.859	5R01GM046498-31		295,944	-
Training in Pharmacological Sciences	93.859	5T32GM132089-04 REVISED		428,046	-
Transcriptional Activator Complex of the Mammalian Circadian Clock	93.859	5R01GM129275-03		357,319	-
Transcriptome-Scale,Condition-Specific Regulation of mRNA Isoform Stability Via the 3'UTR	93.859	5F32GM140555-02 REVISED		66,908	-
Transducing Hedgehog signals across the plasma membrane	93.859	5R01GM135262-03		319,345	-
Trapping reactive intermediates and their application towards catalysis	93.859	1R01GM145752-01		62,567	-
Understanding the link between sleep deprivation and oxidative stress	93.859	5R01GM138872-02		532,203	-
Unraveling the neural basis of female aggression and dementia-related aggression: a systems biology approach.	93.859	5K99GM141449-02		77,008	-
Using a new regenerative model system to elucidate mechanisms for stem cell regulation	93.859	5R35GM128817-05		513,054	-
Visualizing DNA break repair: single-molecule studies of non-homologous end joining	93.859	5R01GM115487-07		382,430	-
Total for Assistance Listing Number 93.859				**44,212,973**	**1,874,488**
16th International Conference on Limb Development and Regeneration	93.865	1R13HD104440-01		3,877	3,877
A population-based online study of the transition of young adults with perinatal HIV infection to adult clinical care	93.865	5R01HD089853-05REV		193,131	9,634
Angiotensin receptor blocking antibody fragments as next-generation therapeutics for preeclampsia	93.865	5R21HD101596-02		129,663	-
Apoptotic dysregulation in male infertility	93.865	7F32HD102088-02 REVISED		34,484	-
Botswana Birth Outcomes Surveillance Extension	93.865	5R01HD095766-04		664,087	544,871
Closing Research Gaps in Antiretroviral Treatment for Pregnant Women and Infants Living with HIV	93.865	1P01HD107670-01REV		426,261	278,678
Comparative Safety of Non-Insulin Agents in Pregnant Women with Pregestational Diabetes	93.865	5R01HD097778-04		631,897	417,627
Culling the human genome of disease variants using ultraconserved elements	93.865	5R01HD091797-05 REVISED		75,231	23,270
Descending engagement of brainstem neuronal circuits that govern orofacial motor behaviors	93.865	5K99HD096512-02 REVISED		16,801	-
Determining lineage decisions and gene regulatory networks governing the generation of key progenitor cell types during early human brain development	93.865	5R01HD100036-03		440,871	-
Development and function of a neural circuit underlying sex-specificity of social behaviors	93.865	5K99HD092542-02 REVISED		1,264	-
Development of a Modular Soft Exosuit Platform Suitable for Community-Based Neurorehabilitation	93.865	5R01HD088619-06		336,583	93,245
Development of children's language comprehension using ERPs during natural listening	93.865	5R03HD097629-02 REVISED		49,495	-
Developmental mechanisms of posterior axis termination in vertebrates	93.865	5F31HD104316-02 REVISED		39,115	-
Dissecting the mechanism of epigenetic spreading by targeted degradation of architectural proteins	93.865	5F31HD100109-02 REVISED		6,947	-
Does neurotransmitter plasticity of para-serotonergic neurons augment autoresuscitation following perinatal stress and buffer SIDS risk	93.865	5R01HD100823-02		491,171	293,977
Elucidating the Role of Metabolism in Regulating the Vertebrate Segmentation Clock	93.865	5F31HD100033-02 REVISED		5,420	-
Engaging and Supporting Fathers: A Parenting Intervention to Improve Early Child Development in Tanzania	93.865	1K99HD105984-01		106,488	-
Enhancing Assisted Reproductive Technologies with Deep Learning and Data Visualization	93.865	1R01HD104969-01		494,599	-
Examining distinct and shared mechanisms underlying arithmetic and reading development through behavioral and neural measures: a longitudinal investigation	93.865	5R01HD103358-02		286,705	-
Health Outcomes around Pregnancy and Exposure to HIV/ARV (HOPE): Extending the Reach of PHACS to Examine Women's Health	93.865	5R01HD101351-02 REVISED		1,133,106	438,343
IDENTIFYING ROADBLOCKS TO LIMB REGENERATION	93.865	5R01HD095494-04		568,296	-
Identifying the role of dynamic ECM-derived forces in zebrafish semicircular canal morphogenesis	93.865	3K99HD098918-02S1 REVISED		86,489	-
Integration of Mechanical Forces and Signaling in the Morphogenesis of the Gut	93.865	5R01HD089934-05		159,107	-
Intergenerational impact of maternal trauma history on preschoolers' behavioral health outcomes: Assessing links with caregiving sensitivity and DNA methylation	93.865	5R01HD102342-02		469,714	217,862
Language Input as a Mechanism Underlying Socioeconomic Disparities in Neurocognitive Development	93.865	1K99HD103873-01 (REVISED)		82,422	-
Long-term health consequences of birth by cesarean section	93.865	5R01HD093761-05		766,834	457,830
Mapping the signaling landscape of vertebrate development at single cell resolution	93.865	5R01HD096755-05		523,580	-
Maternal Exposure to Childhood Abuse and Disparities in Offspring Neurodevelopment: Identifying Mechanisms	93.865	5R01HD094725-03REVISED		616,703	337,137
Mechanisms modulating cell identity in regenerative mammalian epithelia	93.865	5R00HD101021-04 (REVISED)		139,721	-
Metabolic control of global gene expression during the Maternal-to-Zygotic Transition	93.865	3F32HD095590-03S2 REVISED		72,012	-

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Methods for High-Dimensional Statistical Inference and Individualized Risk Prediction under Semi-Competing Risks	93.865	5F31HD102159-02		35,380	-
mHealth-Community Health Worker tool for comprehensive post-cesarean follow-up in rural Rwanda	93.865	1R21HD103052-01A1		105,140	49,227
Microcircuits underlying murine parental behavior	93.865	5R01HD082131-08		301,045	-
Pediatric HIV/AIDS Cohort Study (PHACS) 2020	93.865	5P01HD103133-03		16,945,297	13,193,001
Pediatric HIV/AIDS Cohort Study (PHACS) Data and Operations Center	93.865	5U01HD052102-15 REVISED		1,738,584	1,324,314
Predictive coding in typical speech perception and dyslexia	93.865	5F31HD100101-02 REVISED		14,005	-
Proteomics of Cell Signaling in Embryogenesis	93.865	5R01HD091846-09		562,499	-
Systems Analysis of cell type differentiation in Xenopus development	93.865	5R01HD073104-10		666,659	-
The Development and Nature of the Processes that Underlie the Representation of Center-embedded, Recursive Structures	93.865	5F32HD101208-03		67,335	-
The neurodevelopmental mechanisms linking environmental experience and executive function	93.865	5K99HD099203-02 (REVISED)		107,986	-
The reprogramming of limb progenitor cells	93.865	5R01HD032443-25		209,367	-
The Role of Hypothalamic Pituitary - Adrenal Axis Dysregulation in Preterm Birth	93.865	5R21HD102822-02		230,453	58,489
The role of neurovascular interactions in the development and regulation of the blood-brain barrier	93.865	5K99HD103911-02		91,953	-
The Training Program in Reproductive, Perinatal, and Pediatric Life Course Epidemiology	93.865	5T32HD104612-02		168,053	-
Trial of Vitamin D in Maternal HIV Progression and Child Health	93.865	5R01HD083113-05 REVISED		102,882	-
Total for Assistance Listing Number 93.865				**30,398,712**	**17,741,382**
(R37 Merit Extension) SIRT1 as a regulator of health and lifespan of mammals	93.866	5R37AG028730-15		308,326	-
A National Analysis of the Extent and Value of Medicare Advantage Physician Networks	93.866	5R01AG068122-02		355,408	67,652
A novel method to identify regulators of biological aging based on high-throughput sequencing of epigenetic clocks	93.866	1F99AG073499-01		16,183	-
A Research Mentoring Program in Geriatric Rehabilitative Care	93.866	5K24AG069176-08		121,122	10,884
Aging Memory	93.866	3R01AG008441-30S1 REVISED		270,253	-
Alteration of sleep and cortical parvalbumin interneurons in mouse model of Alzheimer's disease	93.866	5K01AG068366-02		126,308	-
Cell Non-autonomous Regulation of Aging via Neuronal TORC1	93.866	5R01AG059595-05		504,435	-
Characterizing the landscape of cell-type specific changes associated with Alzheimer's disease before death with single-cell genomics	93.866	5F30AG069446-02		38,052	-
Circulating Plasma Metabolites, Lifestyle Factors, and Mortality Risk	93.866	5R21AG070375-02		169,906	-
Cognitive Function, Alzheimer's Disease and Related Disorders in the HAALSI Cohort	93.866	5R01AG054066-05		750,184	365,218
Comparing hospitalization rates, outcomes, and treatment intensity for elderly patients across OECD countries	93.866	5R01AG058878-03		459,831	166,217
Controlling oscillations to treat Alzheimers disease targeting the basal forebrain parvalbumin system	93.866	5K99AG066819-02		100,699	-
Deciding about Dialysis: Improving Decision-Making Among Older Adults with ESRD	93.866	3K23AG049088-05S1		106,066	-
Development of a Predictive Frailty Clock and Longitudinal Investigation of its Epigenetic Determinants	93.866	1K99AG070102-01A1		99,868	-
Direct and Indirect Effects of GDF11 in the Aging Central Nervous System	93.866	5R01AG072086-03		706,483	-
Disability among Older Low-Skilled Workers	93.866	5R01AG056239-05		134,233	56,873
Effects of Job Quality in the Service Sector on Health-Related Outcomes Across the Life Course	93.866	5R01AG066898-02 REVISED		750,498	100,673
Elucidating SHIP1 in microglia in health and disease	93.866	5F31AG063398-03 REVISED		33,707	-
Elucidating the role of SORL1 as an APOE receptor in human astrocytes	93.866	5F31AG063399-02		30,053	-
Epidemiologic, imaging and pathological studies of the role of blood pressure variability in dementia etiology	93.866	1K99AG071742-01		90,009	-
Epigenetic Dysregulation as a Driver of Skeletal Muscle Aging	93.866	5F32AG069363-02		36,805	-
Epigenetic Reprogramming to Counteract Neuronal Aging and Degeneration	93.866	5K99AG068303-02		102,815	-
Exploration of MRI measures of neurodegeneration within individuals over short intervals	93.866	5R01AG067420-03		557,118	7,489
Frailty, Statins, and Cardiovascular Disease Burden in Older Adults	93.866	5R03AG060169-02 REVISED		17,087	6,004
Gene Therapy for Alzheimer's Disease	93.866	5R21AG059157-02		(1,350)	-
Health and Aging in Africa: Longitudinal Studies of an INDEPTH Community	93.866	5P01AG041710-08 REVISED		1,957,467	1,022,653
Health and Human Capital over the Life Course	93.866	5R01AG056238-05		182,739	47,205
Human Capital of Disabled Workers	93.866	5R01AG046290-06		10,038	10,038
Impact of social cohesion on functional recovery after earthquake and tsunami	93.866	5R01AG042463-09 REVISED		284,852	87,250
Improving Medicare in an Era of Change	93.866	5P01AG032952-13		3,144,604	510,460
Improving the quality of care provided through bundled payments for patients with Alzheimer's Disease or Other Forms of Dementia or Frailty	93.866	5R01AG060935-03REVISED		513,559	86,748
In vivo Structure-Function relationships of GDF11 and GDF8	93.866	1R56AG062468-01A1		(52,161)	-
Investigating GDF11 and MSTN as candidate circulating geronic factors	93.866	5R01AG057428-04 (REVISED)		197,857	-
MD-PhD Training Program in Aging and the Social/Behavioral Sciences	93.866	5T32AG051108-05 REVISED		1,240	-
MD-PhD Training Program in Aging and the Social/Behavioral Sciences	93.866	5T32AG051108-07		128,943	-
Mechanisms of Aging Regulation by Neuronal mTORC1 in C. elegans	93.866	1F31AG076296-01 REVISED		11,857	-

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Mechanisms of Intermittent Fasting and Longevity in C. elegans	93.866	5F31AG066458-03REV		32,540	-
Mechanisms of stem cell aging that contribute to clonal outgrowth in head and neck tissues	93.866	5F32AG071208-02 REVISED		66,092	-
Mechanisms Specific to the Beneficial Effects of Dietary Restriction	93.866	5R01AG044346-08		379,655	-
Molecular mechanisms linking epigenetic changes to longevity	93.866	5K99AG065508-02		110,060	-
Multifunctional tough adhesive hydrogels to recruit, expand, and deliver tendoncells during aging and injury	93.866	3K99AG065495-02S1		111,781	-
Muscle regulatory T cells in exercise and aging	93.866	5F32AG072874-02		71,820	-
National Cohort Studies of Alzheimer's Disease, Related Dementias and Air Pollution	93.866	3R01AG066793-02S1REVISED		682,610	62,444
Neurobehavioral phenotyping of AD model mice using Motion Sequencing	93.866	1RF1AG073625-01		566,915	-
Neurodegenerative diseases and the role of green space: A deep learning assessment	93.866	5K99AG066949-02Rev		40,999	-
Neuronal Circuit Maintenance in Healthy Aging	93.866	3K99AG064042-02S1		70,408	-
Novel Age-Dependent DNA Modifications	93.866	5R01AG063341-05		570,115	328,704
Nuclear transport as a molecular and cellular vulnerability in AD	93.866	1R21AG072516-01		157,241	50,043
Optimism and Exceptional Longevity	93.866	5R01AG053273-04REVISED		149,445	105,257
Post-Acute Care Referral and Outcomes for Patients with Alzheimer's Disease and Related Dementias	93.866	1R56AG062544-01A1 REVISED		43,527	-
Private Medicare Plans and Health Outcomes for Older Adults	93.866	1K01AG073583-01		84,414	-
Proteomics profiling and risk of dementia	93.866	5K01AG066817-02REVISED		17,802	-
Regulation and function of Growth Differentiation Factor 11 during development and aging	93.866	5R01AG048917-05 (REVISED)		232,870	23,824
Regulation of cortical circuit formation by subcellular compartmentalization of mRNA translation	93.866	5F32AG067661-02		68,045	-
REST and Neural Network Dysfunction in Alzheimer's Disease	93.866	1R56AG069042-01 REVISED		(454)	-
Reverse Engineering of Cell Senescence	93.866	1R01AG073341-01A1		67,245	-
Reverse Engineering of Cell Senescence	93.866	1R56AG073341-01 REVISED		346,621	-
Reversing Loss of Metabolic Homeostasis to Ameliorate Alzheimer's Disease Pathogenicity	93.866	5R01AG067106-03		385,951	-
Role of epigenetic decay in cell senescence and aging	93.866	5R01AG019719-15 REVISED		706,276	-
Slow-wave activity as a modifier of the progression of neurodegeneration in Alzheimer's disease	93.866	1RF1AG061774-01 REVISED		789,381	286,900
Targeting REST in Alzheimer's Disease	93.866	5R01AG069042-02		833,258	17,536
Targeting RNA homeostasis to promote healthy aging	93.866	5R01AG051954-04REVISED		163,115	-
The Center for the Global Demography of Aging	93.866	3P30AG024409-14S1 REVISED		262,651	89,319
The Changing Landscape of Post-Acute Care and Health Outcomes for Older Adults	93.866	3K23AG058806-04S1REVISED		181,520	-
The Longitudinal Aging Study in India	93.866	5R01AG042778-05REV		308,506	66,837
The role of mitochondrial dysfunction in age-related disease: a human genetic approach	93.866	1F30AG074507-01		19,030	-
The Role of Nuclear Transport Dynamics in Metformin's Geroprotective Effects	93.866	5R36AG072073-02 REVISED		33,031	-
The Use of Telemedicine in the Care of Nursing Home Residents with Alzheimer Disease and Related Dementias During and After the COVID-19 Pandemic	93.866	1R01AG075507-01		27,488	-
Training in the Molecular Biology of Neurodegeneration and Alzheimer's Disease	93.866	5T32AG000222-30		825,302	-
Ubiquitin-mediated proteolysis and cell cycle control	93.866	5R01AG011085-29		479,562	251,305
Uncovering the Human Secretome	93.866	5DP1AG058605-05		1,225,411	-
Use of prescription opioids following surgery and associated adverse patient outcomes in older adults	93.866	5R56AG059620-02		679,146	217,856
Total for Assistance Listing Number 93.866				**23,054,473**	**4,045,389**
A novel mechanism for synapse localization in the retina	93.867	5R21EY032392-02 REVISED		268,243	-
AAV Induced Toxicity in the Eye	93.867	5R01EY029348-04		502,794	-
Characterizing and Remediating Recollection-Specific Face Recognition Deficits in Developmental Prosopagnosia	93.867	5R21EY031000-02		146,898	10,940
Characterizing training-related neuroplasticity in developmental prosopagnosia	93.867	5R01EY026057-04		(465)	-
Cognitive and Neural Representations of Reachable Environments	93.867	5R21EY031867-02		195,883	-
CORE GRANT FOR VISION RESEARCH	93.867	5P30EY012196-25		814,093	215,576
Cortico-Cortical Feedback	93.867	5R01EY011379-22 REVISED		61,670	-
Determinants of type-dependent retinal ganglion cell resilience: potential targets for neuroprotection and axon regeneration	93.867	3K99EY029360-02S1 REVISED		(4,003)	-
Determination of Cone Photoreceptor Fate	93.867	5R01EY029771-04 REVISED		396,936	-
Development of domains in inferotemporal cortex	93.867	5R01EY025670-06		358,561	23,726
Elucidating the molecular and cellular mechanisms underlying cone survival in the peripheral retina in mouse models of Retinitis Pigmentosa	93.867	5K99EY032110-02		109,525	-
Elucidation of cellular reprogramming processes that drive lens regeneration in axolotl as a basis for future therapeutic approaches	93.867	5K99EY029361-02		40,165	-
HIGH THROUGHPUT SINGLE CELL TRANSCRIPTOMIC APPROACH TO IDENTIFY SUSCEPTIBLE CELL TYPES AND GENE EXPRESSION CHANGES IN HUMAN GLAUCOMA	93.867	5R21EY032219-02 (REVISED)		301,547	-
Investigation of the Mechanisms of Cone Degeneration in Retinitis Pigmentosa	93.867	3K99EY030951-02S1		99,409	-

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Optical interrogation of laminar microcircuit computations in mouse primary visual cortex	93.867	5F31EY031562-02 REVISED		10,636	-
Protein ticker-tapes for brain-wide neural recordings	93.867	1R21EY033669-01		78,649	-
Research Training in Visual Neuroscience	93.867	5T32EY007110-34		96,243	-
Reverse Correlation Mapping in Face Patches	93.867	5R01EY016187-15 REVISED		251,667	-
Structure and Interactions of Conformational Intermediates in gamma-D Crystallin Aggregation, and Their Targeting for Cataract Prevention	93.867	5R01EY030444-03		332,369	-
Ultrastructural Analysis of a Form of Macular Degeneration - Macular Telangiectasia	93.867	5R21EY030255-02		191,450	-
Total for Assistance Listing Number 93.867				**4,252,270**	**250,242**
Biases introduced by filtering electronic health records for patients with complete data	93.879	5R01LM013345-02		351,680	46,790
BIC TRAIN - Biomedical Informatics COVID-19 Training	93.879	5T15LM007092-30 REVISED		1,147,907	-
Methods for generalizing inferences from cluster randomized controlled trials to target populations	93.879	1R01LM013616-01A1		30,082	-
Semi-supervised Approaches to Denoising Electronic Health Records Data for Risk Prediction	93.879	5R01LM013614-02		167,767	52,538
Statistical and Quantitative Training in Big Data Health Science	93.879	5T32LM012411-05		13,542	-
Total for Assistance Listing Number 93.879				**1,710,978**	**99,328**
Academic Units for Primary Care Training and Enhancement	93.884	6 UH1HP29962 05 03		156,896	31,423
Primary Care Training and Enhancement Program	93.884	4 T0BHP29997 05 02		254,766	105,725
Total for Assistance Listing Number 93.884				**411,662**	**137,148**
Dietary Patterns and Risk of Cardiovascular Disease	93.897	5R01HL060712-19		572,800	354,344
Total for Assistance Listing Number 93.897				**572,800**	**354,344**
Ryan White HIV/AIDS 2020	93.924	6 T22HA45124 01 02		9,359	-
Total for Assistance Listing Number 93.924				**9,359**	**-**
2/2-Air Pollution and Health GeoHealth Hub Research and Capacity Building-US	93.989	5U2RTW010108-05REVISED		31,606	-
Ethiopia Global Infectious Diseases Training Program	93.989	5D43TW011386-03		276,018	150,783
Identifying genetic determinants of Rotavirus Vaccine Failure in Malawian Children	93.989	5K01TW010853-05		176,487	34,942
Launching Future Leaders in Global Health (LAUNCH) Research Training Program	93.989	2D43TW010543-06 REVISED		3,727	-
Partnership for Global Health Research Training Program	93.989	5D43TW010543-05 REVISED		1,549,550	186,010
Telemedicine to improve the diagnosis of surgical site infections post-cesarean delivery in rural Rwanda	93.989	3R21TW011229-02S1 REVISED		13,630	13,630
Training in HIV/AIDS Prevention and Treatment Research in Botswana	93.989	5D43TW009610-10		210,103	123,699
Training Tanzanian Researchers for HIV/AIDS Implementation Science	93.989	2D43TW009775-06 REVISED		148,949	104,384
Total for Assistance Listing Number 93.989				**2,410,070**	**613,448**
A Systems Approach to Measuring and Modeling Toxic Responses	93.RD	HHSF223201400052C		(15,134)	-
Harvard School of Public Health (HSPH)/United States Population Longitudinal Data and Specialized Analytic Support: Research on energy drinks/other dietary intakes/health outcomes over time	93.RD	75F40121C00195		67,449	-
Human Organ Chips for Radiation Countermeasure Development	93.RD	75F40119C10098		1,848,136	159,132
Identifying Information Needs and communication Channels for researching at-risk populations during Emergencies	93.RD	75D30118C03566		112,095	-
Immune Mechanisms of Protection against Mycobacterium tuberculosis Center (IMPAc-TB)	93.RD	75N93019C00071		9,795,632	8,322,862
Inter-professional Case-based Pain Medicine Curriculum for Students of Dentistry, Medicine, Pharmacy, Psychology, and Nursing in Boston, MA	93.RD	HHSN271201500075C		(26,576)	-
Total for Assistance Listing Number 93.RD				**11,781,602**	**8,481,994**
Total for Department of Health and Human Services Direct Award R&D Cluster				**403,178,578**	**104,319,429**
EPA					
Disparities in Exposure and Health Effects of Multiple Environmental Stressors Across the Life Course	66.509	83615601		23,305	22,138
Improving chemical mechanisms for regional/global models in support of US air quality management: application to the GEOS-Chem model	66.509	84001401		189,875	-
Regional Air Pollution Mixtures: The Past and Future Impacts of Emission Controls and Climate Change on Air Quality and Health	66.509	83587201		697,433	377,303
Total for Assistance Listing Number 66.509				**910,613**	**399,441**
Total for EPA Direct Award R&D Cluster				**910,613**	**399,441**
Institute of Museum and Library Services					
Software Citation Implementation: Action Plan Development	45.312	LG-246387-OLS-20		36,207	-
Total for Assistance Listing Number 45.312				**36,207**	**-**
Total for Institute of Museum and Library Services Direct Award R&D Cluster				**36,207**	**-**
Library of Congress					
Teaching Language and Literacy as an Act of Resistance	42.010	GA21C0096		31,317	-
Total for Assistance Listing Number 42.010				**31,317**	**-**

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Total for Library of Congress Direct Award R&D Cluster				**31,317**	**-**
NASA					
A Year in the Whirlpool	43.001	HST-GO-14704.001-A		13,205	-
Rapid Observations of Short-Duration Gamma-Ray Bursts: Accurate Positions Hold the Key to the Progenitor Population (Proposal No. 21500089)	43.001	GO0-21050X		6,363	-
20-TESS20-0011: Legacy Light Curves of a Volume-Complete Sample of the Nearby Mid-To-Late M Dwarfs with TESS	43.001	80NSSC22K0165		69,999	-
21-XRP21-0010; MINERVA: A Dedicated, Global, Precise Radial Velocity Machine for Follow-up Observations of Transiting Planets V	43.001	80NSSC22K0233		38,342	22,688
A comprehensive state-of-science GEOS-Chem capability for atmospheric chemistry in the GEOS Earth System Model (ESM) and Data Assimilation System (DAS) at GMAO	43.001	80NSSC17K0134		261,053	-
A First Opportunity to Test Models of Atmospheric Escape for a Terrestrial Exoplanet	43.001	HST-GO-15704.002-A		29,120	-
A Full Characterisation of the Multiple Population Properties of Young Globular Clusters	43.001	HST-GO-15630.009-A		2,317	-
A Homogeneous, Global Analysis of all Kepler and K2 Planets	43.001	80NSSC19K1014		120,638	-
Accelerated Expansion of the Early and Late Universe: Bridging Observations and Consistent Theories	43.001	80NSSC20K0506		286,988	-
An extreme interacting supernova from a very massive star: probing the immediate and galaxy-scale envirnment of a new pair-instability candidate	43.001	HST-GO-15709.002-A		8,865	-
Application of continuous ground-based remote sensing to analysis of OCO-2/3 XCO2 and SIF data in mosaic landscapes	43.001	80NSSC21K1069		70,416	-
Ca, K, Nd and Mg isotopic heterogeneities in the Solar System	43.001	80NSSC20K0346		297,964	-
Characterization and optimization of CdZnTe low energy threshold for the HREXI SmallSAT Prototype	43.001	80NSSC20K1537		47,128	-
Cold Dark Matter and the GD-1 Stellar Stream	43.001	HST-GO-15930.001-A		12,620	-
Combining Satellite and In Situ Trace Gas Observations to Quantify the Stratospheric Circulation	43.001	80NSSC21K0943		112,489	-
Confirming Extreme Lyman Continuum Emission in a z-equals-3.27 Star-Forming Galaxy	43.001	HST-GO-15414.006-A		34	-
Constraining stable stratification and deep winds inside Saturn with Cassini magnetometer data and dynamo simulations	43.001	80NSSC21K1128		94,157	-
Constraining Terrestrial Biosphere Model Predictions of Current and Future Carbon Fluxes with GEDI Waveform Lidar Measurements of Above-Ground Ecosystem Structure	43.001	80NSSC21K0197		146,543	-
Continued development and application of a prototype system for exploiting satellite data to improve knowledge of methane emission fluxes with focus on North America	43.001	80NSSC21K1057		235,485	-
Continued X-ray Monitoring of a Tidal Disruption Event in an AGN Host Galaxy	43.001	GO0-21105B		7,119	-
Cosmic Storytelling with NASA Data: Tools for Exploring Data Science	43.001	80NSSC21M0002		438,265	36,227
Decoding the Isotopic Fingerprints of Solar System Volatiles: A Laboratory Investigation of Isotopic Fractionation Chemistry in Interstellar Ice Analogs	43.001	80NSSC21K0382		96,878	-
Development and deployment of an Autonomous Biogeochemical Instrument for In Situ Studies (the ABISS)	43.001	NNX17AB31G		276,047	30,540
Discovery and Atmospheric Reconnaissance of the Most Spectroscopically Accessible Temperate Transiting Terrestrial Exoplanets	43.001	80NSSC18K0476		224,090	50,577
Dynamics and Chemistry of the Summer Stratosphere	43.001	80NSSC19K0326		1,740,321	-
High-Cadence Radiative Transfer Modeling on Galactic Scales	43.001	HST-HF2-51475.001-A		80,737	-
HREXI prototype for 4piXIO	43.001	80NSSC22K0246		56,318	-
HREXI prototype for 4piXIO	43.001	NNX17AE62G		94,075	-
Imaging the transition of SN 1987A to SNR 1987A	43.001	HST-GO-15256.002-A		13,671	-
Improved characterization of the tropospheric NO2 background for retrieval and interpretation of NO2 columns from satellites: application to interpret the long-term OMI record over the US in terms of NOx emissions and their trends	43.001	80NSSC20K0930		306,701	-
Improved Understanding of Methane Emissions and Trends in North America and Globally Through a Unified Top-Down and Bottom-Up Approach Exploiting GOSAT and TROPOMI Satellite Data	43.001	80NSSC18K0178		4,740	-
Improved understanding of oxygenated volatile organic compounds (OVOCs) in polluted and remote atmospheres using KORUS-AQ and ATom data: implications for interpreting satellite observations of formaldehyde and glyoxal	43.001	80NSSC21K1443		162,446	-
Isotopic and chemical consequences of different accretion scenarios: Comparing models with observations	43.001	NNX17AE27G		9,542	9,542
Knitting Together the Milky Way: An Integrated Model of the Galaxy's Stars, Gas, and Dust	43.001	80NSSC21K0634		116,134	-
Laboratory Kinetics and Spectroscopic Studies of Halogens and Nitrogen Oxides in Support of the NASA Panel for Data Evaluation	43.001	80NSSC18K1063		143,857	-
Legacy Light Curves of a Volume-Complete Sample of the Nearby Mid-to-Late M Dwarfs with TESS	43.001	80NSSC19K0635		20,097	-
Legacy Light Curves of a Volume-Complete Sample of the Nearby Mid-To-Late M Dwarfs with Tess	43.001	80NSSC19K1726		35,230	-
Legacy Light Curves of a Volume-Complete Sample of the Nearby Mid-To-Late M Dwarfs with Tess Cycle 3	43.001	80NSSC21K0367		40,000	-
Measurements of atmospheric trace species and greenhouse gases (CO2 , CH4 , CO , N2O) from airborne and balloon platforms	43.001	80NSSC21K1200		293,288	-
Metasurfaces for Compact, Next-Generation Polarimetric Remote Sensing of Aerosols and Clouds	43.001	80NSSC20K0318		282,164	-
Miniature Light-weight X-ray Optics for Solar System Exploration	43.001	NNX16AL75G		6,433	6,433
Modeling the Turbulent Evolution of Galaxies over Cosmic Time	43.001	HST-HF2-51445.001-A		111,266	-

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Quantifying and Partitioning the Global Methane Budget Using Satellite and Ground Based Measurements Of CH4 and Tracers of Its Sources and Sinks	43.001	80NSSC20K0009		167,117	-
Radial Velocity Measurements With Harps-N To Uncover The Formation Pathway Of Keystone Planets Around M Dwarfs	43.001	80NSSC22K0166		22,497	-
Rapid Observations of Short-Duration Gamma-Ray Bursts: Accurate Positions Hold the Key to the Progenitor Population	43.001	GO1-22059X		41,946	-
Reassessing Martian dynamo history using high-resolution paleomagnetic imaging and updated orbital magnetometry	43.001	80NSSC22K0135		29,964	-
Shocks Across Simulated Cosmological Environments	43.001	80NSSC18K1111		17,849	-
Testing the Origin of the First Radio Source Associated with a Superluminous Supernova Using Chandra	43.001	GO0-21053X		31,442	-
The 10th International GEOS-Chem Meeting (IGC10)	43.001	80NSSC22K0698		3,070	-
The First X-ray Study of NGC 2243, One of the Most Metal-Poor Galactic Open Star Clusters	43.001	GO7-18083X		19,588	-
The Milky Way in a Bottle: Realizing the promise of Galactic surveys	43.001	80NSSC20K1536		49,925	-
The Physical Origin Of The Rocky/Enveloped Transition Around Mid-To-Late M Dwarfs	43.001	80NSSC22K0296		60,291	-
Understand predictability and improve prediction of atmospheric blocking and associated extreme weathe	43.001	80NSSC17K0267		49,923	-
Using Linear Mixed Effects Modeling to Improve Stability of Total Solar Irradiance Reconstructions	43.001	80NSSC19K1327		48,815	-
Total for Assistance Listing Number 43.001				**6,955,572**	**156,007**
Crowd Innovation Laboratory at Harvard University NASA Open Innovation Research	43.003	NNX16AC77A		31,243	-
Total for Assistance Listing Number 43.003				**31,243**	**-**
Accelerated Computational Design of Multifunctional Polymeric Materials with Machine Learning Dynamics	43.012	80NSSC20K1189		57,246	-
Developing a multi-scale understanding of the kinetics of dehydration and rehydration in a model cellular food system	43.012	80NSSC19K1146		61,221	-
Total for Assistance Listing Number 43.012				**118,467**	**-**
Confirming the Host Star of a Second Planet in the LTT 1445ABC System	43.RD	HST-GO-16503.001-A		12,881	-
The ever-changing face of SN 1987A	43.RD	HST-GO-16265.002-A		10,985	-
Total for Assistance Listing Number 43.RD				**23,866**	**-**
Total for NASA Direct Award R&D Cluster				**7,129,148**	**156,007**
National Endowment for the Arts					
Cambridge Rindge and Latin School Partnership	45.024	1884048-44-21		25,047	-
Total for Assistance Listing Number 45.024				**25,047**	**-**
Total for National Endowment for the Arts Direct Award R&D Cluster				**25,047**	**-**
National Endowment for the Humanities					
Conservation Junior Fellowship Program	45.149	PE-284340-22		332	-
Total for Assistance Listing Number 45.149				**332**	**-**
Sacred Language, Vernacular Difference, and Counter-Imperial Writing from the Arabophone to the Asian-African (19th-20th C.)	45.160	FEL-273298-21		60,000	-
Total for Assistance Listing Number 45.160				**60,000**	**-**
The Amendments Project: Rewriting the U.S. Constitution	45.164	MT-284709-22		36,630	-
Total for Assistance Listing Number 45.164				**36,630**	**-**
Total for National Endowment for the Humanities Direct Award R&D Cluster				**96,962**	**-**
National Science Foundation					
CAREER: First Principles Design of Error-Corrected Solid-State Quantum Repeaters	47.041	ECS-1944085		54,003	-
CAREER: Optimization, Control, and Incentive Design for Power Networks with High Levels of Distributed Energy Resources	47.041	ECCS-1553407		97,438	-
Collaborative Research: Droplet-based selection to improve aflatoxin detoxification	47.041	CBET-2103538		66,002	-
Collaborative Research: Integrated memristor neural networks for in-situ analysis of intracellular neuronal recordings	47.041	ECCS-1915984		108,821	-
Collaborative Research: Programming non-linear waves in compliant mechanical metamaterials	47.041	CMMI-2041440		101,690	-
Collaborative Research: Use of Wearable Sensors to Track Muscle-Tendon Loading during Exosuit Assisted Locomotion	47.041	CBET-2019580		102,268	-
COVID-19: RAPID: Arresting the spread of SARS-CoV-2 on surfaces and in the air using engineered water nanostructures enriched with de novo designed neutralizing peptides	47.041	2031785		40,315	9,077
CPS: Medium: An AI-enabled Cyber-Physical-Biological System for Cardiac Organoid Maturation	47.041	ECCS-2038603		374,946	84,863
CQIS: Coherent Spin-Phonon Interfaces with Diamond Color Centers	47.041	ECCS-1810233		26	-
EAGER: Combining van der Waals heterostructures and superlattices: new approach to 2D tunable optoelectronic devices	47.041	ECCS-2015668		62,893	-
EAGER: Real-Time: Learning, Selection, and Control in Residential Demand Response for Grid Reliability	47.041	ECCS-1839632		51,284	-
EAGER: Robotic Optic Technologies for Adaptive, Dynamic Lighting Applications	47.041	IIP-2133202		34,117	-
EFRI C3 SoRo: Textile Robotics: Integrative Design, Modeling, Manufacture, and Control of Soft Human-Interactive Apparel	47.041	EFMA-1830896		402,046	144,947
EFRI NewLAW: Topological Mechanical Metamaterials Science	47.041	EFMA-1741685		199,885	192,462
FMRG: AI Driven Cybermanufacturing of Quantum Materials Architectures	47.041	CMMI-2036359		187,777	138,044
FW-HTF: Collaborative Research: The Next Mobile Office: Safe and Productive Work in Automated Vehicles	47.041	CMMI-1839870		93,121	-
GOALI: Nano-Machining of Diamond Mirror for High-Power Laser Optics	47.041	CMMI-1825257		14,203	-
I-Corps Teams: Tough Adhesive Hydrogels	47.041	IIP-2040400		29,621	-

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I-Corps: Algorithm-Hardware Co-Design for Large-Scale Machine Learning	47.041	IIP-2137080		26,514	-
I-Corps: Soft Robotic Toolkit for Students and Researchers	47.041	IIP-2121958		18,659	-
Kinetics and stability of redox-active organics for electrochemical systems	47.041	CBET-1914543		56,053	-
NNCI: The Center for Nanoscale System (CNS) at Harvard University	47.041	ECCS-1541959		114,332	-
NNCI: The Center for Nanoscale System (CNS) at Harvard University	47.041	ECCS-2025158		777,224	-
NRI: FND: COLLAB: A Foundational Approach to Muscle Actuators that Lowers Barriers to Muscle-Powered Robotics Research	47.041	CMMI-1830291		72,978	-
NRI: INT: Wearable Robots for the Community: Personalized Assistance using Human-in-the- loop Optimization	47.041	CMMI-1925085		224,034	37,243
Planning IUCRC - Harvard University: Center for Biological Applications of Solid-State Systems (CBASS)	47.041	IIP-1822151		6,352	-
RAISE TAQS: Towards a Quantum Cloud	47.041	ECCS-1839197		80,362	63,873
Total for Assistance Listing Number 47.041				**3,396,964**	**670,509**
Collaborative Research: Developing rural girls' STEM competency and motivation through communicating scientific topics with advanced technology	47.076	DRL-1657017		13,901	-
Total for Assistance Listing Number 47.076				**13,901**	**-**
2020 Waterman Award	47.049	CHE-2038059		400,215	-
2021 Alan T. Waterman Award	47.049	DMS-2140043		48,048	-
A Theory of Learned Representations in Artificial and Natural Neural Networks	47.049	DMS-2134157		36,900	-
Admissible Lagrangians, Fukaya categories, and homological mirror symmetry.	47.049	DMS-1937869		105,113	-
Analysis, Geometry and Mathematical Physics	47.049	DMS-1607871		10,329	-
Arithmetic Geometry and Applications	47.049	DMS-1902158		147,731	-
CAREER: Adapting the fluid projection method to model elasto-plastic materials	47.049	DMS-1753203		105,134	-
CAREER: Beyond Conditional Independence: New Model-Free Targets for High-Dimensional Inference	47.049	DMS-2045981		92,783	-
CAREER: Extreme climate perturbations by meteorite impacts and volcanism on terrestrial planets	47.049	AST-1847120		90,877	-
CAREER: Learning Probabilistic Factor Models	47.049	DMS-1943902		78,784	-
CAREER: Nanobody technology to decipher the essential roles of O-GlcNAc in cells	47.049	CHE-1942574		256,803	-
CAREER: Observing topological magnetoelectric effects by magneto-optics and quantum transport	47.049	DMR-2143177		48,346	-
CAREER: Randomness in Number Theory and Beyond	47.049	DMS-2052036		89,079	-
CAREER: Stochastic effects in the microbial cell cycle: from single-cell level variability to population growth	47.049	PHY-1752024		63,855	-
CAREER: Unbiased Estimation with Faithful Markov Chains for Scalable Statistical Inference	47.049	DMS-1844695		63,603	-
CAS: Collaborative Research: Electronic Structure/Function Relationships in Base Metal Complexes Spanning the Oxo/Oxene and Imide/Nitrene Continuum	47.049	CHE-1954690		146,488	-
CDS and E: AAG: Glupyter: Enabling multi-dimensional linked data visualization with glue in the browser	47.049	AST-1908419		116,960	-
CDSE:Collaborative Research: Development and Application of Machine Learning Classification of Optical Transients	47.049	AST-2108531		40,466	-
Center for Integrated Quantum Materials	47.049	DMR-1231319		4,751,907	2,258,910
Classical and Quantum Aspects of Black Holes, Horizons and Asymptotic Symmetries	47.049	PHY-1707938		7,230	-
Collaborative Research: Bayesian and Semi-Bayesian Methods for Detecting Relationships in High Dimensions	47.049	DMS-2015411		39,333	-
Collaborative Research: DMREF: Design of Superionic Conductors by Tuning Lattice Dynamics	47.049	DMR-2119351		11,396	-
Collaborative Research: Exploring the physics of galaxy clusters with comprehensive cosmological simulations	47.049	AST-1815978		85,661	-
Collaborative Research: Formation of a High Flux Student Research Network (HF-SRN) as a Laboratory for Enhancing Interaction in the PoLS SRN	47.049	PHY-1806818		223,599	-
Collaborative Research: Highly Principled Data Science for Multi-Domain Astronomical Measurements and Analysis	47.049	DMS-1811308		48,862	-
Collaborative Research: MFB: Deciphering the Logic of PTM Crosstalk via Novel Chemical Technology: Histones and Beyond	47.049	2127882		231,566	75,983
Collaborative Research: MINERVA - A dedicated, global, precision radial velocity machine for TESS	47.049	AST-2007811		143,751	10,974
Collaborative Research: Multiscale engineering of active stress in biomaterials	47.049	DMR-2004380		132,135	-
Collaborative Research: Multiscale Modeling of Amorphous Solids - Energy Landscapes to Failure Prediction	47.049	DMR-1909733		133,627	-
Collaborative Research: Novel statistical tools for metagenomics and metabolomics data	47.049	DMS-1903139		89,425	-
Collaborative Research: Pioneering planet formation chemistry with ALMA	47.049	AST-1907832		82,972	-
Collaborative Research: The Heavy Metal Survey: Stellar Metallicities and Chemical Abundance Patterns of Massive Galaxies out to	47.049	AST-1908748		76,968	-
Collaborative: Isotopologue Synthesis and Use for Elucidating Important Chemical Mechanisms of Organic Condensation Reactions in Atmospheric Particles	47.049	CHE-2003368		161,799	-
Completion of Scanning, Data Releases and Optimization of Analysis and Database for DASCH	47.049	AST-1910561		336,583	-
Complex Dynamics and Diophantine Geometry	47.049	DMS-2050037		97,938	-
Complex Dynamics and Moduli Spaces	47.049	DMS-1903764		182,986	-
Conference: Current Developments in Mathematics	47.049	DMS-1933415		7,217	-
DMREF: Collaborative Research: Digital Magnetic Handshake Materials, Structures, and Machines	47.049	DMR-1921619		129,777	-
DMREF: Collaborative Research: The Search for Novel Superconductors in Moire Flat Bands	47.049	DMR-1922172		301,993	-

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DMREF: Hydrogel-actuated cellular soft robotic materials with programmable mechanical properties	47.049	DMR-1922321		199,677	69,106
DMS-EPSRC Collaborative Research: Advancing Statistical Foundations and Frontiers for and from Emerging Astronomical Data Challenges	47.049	DMS-2113615		48,261	-
EAGER-QAC-QCH: Hybrid Quantum-Classical Algorithm for NMR Inference	47.049	CHE-2037687		124,169	-
EAGER: Physics of Living Systems Teacher (PoLST) Network: Increasing Student Conceptual Understanding of High School Physics	47.049	PHY-2016294		127,985	-
EAGER:SUPER: Optically-enhanced superconductivity in hydrogen-based materials	47.049	DMR-2132338		67,504	3,087
Emerging Statistical and Quantitative Issues in Genomic Research in Health Sciences	47.049	DMS-1833416		3,109	-
Exploring the Galaxy: 3-Dimentional Structure and Stellar Streams	47.049	AST-1614941		17,186	-
Fluctuations and Control in Cells	47.049	DMS-1517372		(13,002)	-
Foundations of Data Science Institute	47.049	DMS-2023528		73,056	-
FRG: Collaborative Research: Dimers in Combinatorics and Physics	47.049	DMS-1854316		118,531	-
FRG: Collaborative Research: Geometric and Topological Methods for Analyzing Shapes	47.049	DMS-1760471		28,524	-
Fundamental Physics from Astronomy and Cosmology	47.049	PHY-1915071		208,177	-
Geometric Langlands Correspondence: Further Directions	47.049	DMS-2005475		56,201	-
Heavy binary black holes in the making: constraining the physics of chemically homogeneous evolution using gravitational waves and electro-magnetic surveys of local analogues	47.049	AST-2009131		113,999	-
Hodge Filtration, Singularities, and Complex Birational Geometry	47.049	DMS-2040378		83,938	-
Induced Topological Superconductivity in Two Dimensional Systems	47.049	DMR-1708688		97,739	-
Inference for Functionals in High-Dimensional Regression	47.049	DMS-2113426		33,572	-
Instanton Homology in Low-Dimensional Topology	47.049	DMS-2005310		150,042	-
Institute for Theoretical, Atomic, Molecular and Optical Physics	47.049	PHY-1521560		481,541	409,002
Institute for Theoretical, Atomic, Molecular and Optical Physics (ITAMP)	47.049	PHY-2116679		66,209	-
Interactions of Particles, Fields, and Strings	47.049	PHY-2013858		132,382	-
Interfaces of Combinatorics and Physics	47.049	DMS-1854512		57,538	-
Investigating fundamental chemical and physical processes affecting gas-particle partitioning using levitated droplet-mass spectrometry	47.049	CHE-1808084		101,781	-
Investigating Laser-Activation of Structured Polymer Materials for Drug Delivery	47.049	PHY-1806434		124,256	-
Investigating Tunneling Across Self-Assembled Monolayers Using the Eutectic Galn Junction	47.049	CHE-1808361		139,525	-
Lie theory and Poisson geometry	47.049	DMS-2134169		15,480	-
Local and Global Geometric Langlands Correspondence	47.049	DMS-1707662		10	-
Materials Research Science and Engineering Center	47.049	DMR-1420570		236,668	-
Materials Research Science and Engineering Center	47.049	DMR-2011754		3,063,376	-
Metallic Properties of the Isotopes of Hydrogen	47.049	DMR-1905943		19,151	-
MRI: Acquisition of an Aberration Corrected Low Energy Electron Microscope (AC-LEEM) for High Resolution Spectroscopic imaging of surfaces	47.049	DMR-1828237		457,500	-
MRI: Development of a Scanning 4-Probe Microscope for Discovery and Characterization of Quantum Materials and Devices	47.049	DMR-1828569		(9,137)	-
Multi-Wavelength Observations and Modeling of Magnetic Fields in Ultracool Dwarfs and Giant Exoplanets	47.049	AST-2007411		96,308	-
New Directions in Homology of Moduli Spaces	47.049	DMS-1803766		36,282	-
New Frontiers in Homotopy Theory	47.049	DMS-1810917		109,647	-
New Paradigms of Quantum Criticality	47.049	DMR-2002850		245,024	-
NSF-ANR: Developmental Mechanics Of Brain Evolution	47.049	PHY-2204058		16,271	-
NSF-BSF:Transport, fluctuation, and Nonequilibrium phase transition in atomically thin crystalline van der Waals superconductors	47.049	DMR-1809188		(12,038)	-
NSF-Simons Center for Mathematical and Statistical Analysis of Biology	47.049	DMS-1764269		1,076,848	-
Photoactivation of Stable Bonds for Energy Conversion and Photoredox Catalysis	47.049	CHE-1855531		197,352	-
Physics and Applications of Quantum Nanophotonics Systems	47.049	PHY-2012023		470,815	-
Probabilistic Underpinning of Imprecise Probability and Statistical Learning with Low-Resolution Information	47.049	DMS-1812063		50,496	-
QII-TAQS: Majorana Nanomanipulation for Topological Quantum Computing	47.049	OMA-1936246		352,603	213,459
QuIC-TAQS: Integrated Lithium Niobate Quantum Photonics Platform	47.049	OMA-2137723		114,425	19,737
RAISE-QAC-QSA: Open Quantum Systems on Noisy Intermediate-Scale Quantum Devices	47.049	DMR-2037783		94,874	77,624
Random Matrices, Statistical Applications and Spin Glass Dynamics	47.049	DMS-1855509		86,449	-
Rational development of next-generation shape memory alloys	47.049	DMR-1808162		8,674	-
REU Site: Biomaterials Research Initiative Dedicated to Gateway Experiences	47.049	DMR-1559890		25,197	-
Simulating Spins with an Array of Single Molecules	47.049	PHY-2110225		64,807	-
Spindle Self-Organization and Bioenergetics in Vivo	47.049	PHY-2013874		139,682	-
Studies of Accretion onto Black Holes	47.049	AST-1816420		65,394	-
Synthesis of New Precursors for Vapor Deposition	47.049	1764338		45,580	-

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Synthesizing and harnessing ultracold single molecules for quantum simulations	47.049	PHY-1806595		(1,138)	-
The Evolution of Evolvability in Microbial Populations	47.049	PHY-1914916		239,161	-
The H3 Spectroscopic Survey and the Origin of the Galaxy	47.049	AST-2107253		152,671	-
The HOD Project	47.049	DMS-1953093		100,569	-
Topology, Geometry and Physics	47.049	DMS-2002771		95,008	-
Ultracold Triatomic Molecules	47.049	PHY-2109995		432,083	-
Ultracold Triatomic Molecules: Collisions and Cooling	47.049	PHY-1806571		(651)	-
Understanding the Formation and Utilization of Halogenated Metabolites in Natural Product Biosynthesis	47.049	CHE-2003436		195,993	-
Workshops: Using Physics Education Research to Improve High and Middle School Physics	47.049	PHY-2025683		79,750	-
WoU-MMA: Toward an Understanding of Common Envelope Interactions of Binary Stars	47.049	AST-1909203		156,216	-
Total for Assistance Listing Number 47.049				**20,377,539**	**3,137,882**
"Carbon isotope fractionation in Archaea using the 3HP/4HB pathway: Prospects for paleo-geochemistry and paleo-barometry"	47.050	OCE-1843285		74,979	-
AGS-FIRP Track 3: Methane Emissions Quantification at scales from 20 m to 200 km using the MethaneAIR Imaging Spectrometer on the NSF Gulfstream-V (MAIR-E)	47.050	AGS-2202113		9,189	-
Applying Statistical State Dynamics to Explain Spontaneous Shear/Buoyancy Layering in Stratified Turbulence	47.050	AGS-1640989		40,361	-
Belmont Forum Collaboration: Climate change, pollinator declines and the human diet	47.050	2020681		23,028	-
Belmont Forum Collaborative Research: Arctic Wetlands Ecosystems - Resilience through Restoration and Stewardship	47.050	ICER-2034778		80,320	-
Belmont Forum Collaborative Research: ARMS to reefs: A new tool to restore coral reef biodiversity, fisheries yields, and human health in Madagascar	47.050	ICER-2022717		93,347	-
Belmont Forum Collaborative Research: Governance of Sociotechnical Transformations	47.050	ICER-1856215		33,662	21,622
CAREER: Ecological turnover at the dawn of the Great Ordovician Biodiversification Event - quantifying the Cambro-Ordovician transition through the lens of exceptional preservation	47.050	EAR-2047192		150,818	-
CAREER: Exploring the Earth with high-resolution paleomagnetism	47.050	EAR 1847042		161,310	-
Clumped Oxygen Isotope Signature of Marine Dissolved Oxygen	47.050	OCE-2049298		134,801	-
COLLABORATIVE RESEARCH: A multidimensional approach to understanding microbial carbon cycling beneath the seafloor during cool hydrothermal circulation	47.050	OCE-1635365		121,116	-
Collaborative Research: A Teleconnection between the Tropical Madden-Julian Oscillation and Arctic Sudden Stratospheric Warming Events in Warm Climates	47.050	AGS-1826635		167,023	-
Collaborative Research: An analysis of 150 years of sea surface and subsurface observations to map whole-ocean temperature and detect circulation change	47.050	OCE-2123295		119,614	-
Collaborative Research: Coupled flow-geomechanical models applied to assess earthquake triggering in tectonically active regions - The Los Angeles basin, CA	47.050	EAR-2141382		75,444	-
Collaborative Research: Experimental and theoretical characterization of rapid Jurassic true polar wander	47.050	EAR-1723023		80,722	-
Collaborative Research: Illuminating the Cenozoic Alkenone pCO2 Record	47.050	OCE-2100537		128,480	-
Collaborative Research: Imaging the Beginning of Time from the South Pole: The next Stage of the BICEP Program	47.050	OPP-1638957		1,174,288	-
Collaborative Research: Integrating GEOS-Chem atmospheric chemistry into the NCAR Community Earth System Model (CESM)	47.050	AGS-1914903		100,522	-
Collaborative Research: P2C2--Does Liebig's Law Allow for Capturing More Signal from the Forest	47.050	AGS-1903657		45,515	-
Collaborative Research: Unlocking the Cenozoic/Cretaceous seawater sulfate record via inclusion of 17O in marine barite	47.050	OCE-1946137		36,236	-
Collaborative Research: Unmanned aerial vehicles for emissions and chemistry of volatile organic compounds over the Amazon tropical forest	47.050	AGS-1829025		120,955	-
CoPe: EAGER: Collaborative Research: Development of A Novel, Mobile Coastal Observatory for Quantifying Coastal Carbon Cycling by Professional and Citizen Scientists	47.050	RISE-1940100		27,720	-
CSEDI Collaborative Research: The nature and timing of Earth's accretion	47.050	EAR-2054912		64,012	-
Development of a simple, low-cost device for sample collection and on-site preservation using a common oceanographic deployment platform	47.050	OCE-1924214		71,003	34,318
DISES: Environmental tipping points of cultural identity extinction in integrated human-ecological systems represented by small fishing nations	47.050	ICER-2108452		32,443	3,296
EAGER: MethaneAIR	47.050	AGS-1856426		46,947	-
Evaluating the Impact of Future Volcanic Eruptions on Stratospheric Ozone: Influence of Multicomponent Injenction, Climate Change, Latitude, and Seasonality	47.050	AGS-1764171		74,582	-
Explaining the Surprising Simplicity of Continental Evapotranspiration	47.050	AGS-2129576		24,509	-
Integrating the fossil record with computer simulation to reconstruct posture and locomotor evolution in the ancestors of mammals	47.050	EAR-2122115		122,161	-
NSF/GEO–NERC collaborative research: Dynamics of warm past and future climates	47.050	AGS-1924538		220,004	-
OTREC: Convective Heating Profiles and the Transition from Shallow to Deep Convection over the Tropical East Pacific and Southwest Caribbean	47.050	AGS-1759255		185,792	-

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Petrogenetic Studies of Young Volcanic Rocks	47.050	OCE-1634421		18,702	-
The Tenth (10th) International GEOS-Chem Meeting (IGC10); Saint Louis, Missouri; June 7-10, 2022	47.050	AGS-2218241		10,538	-
Use of Artificial Intelligence towards Automation of Analog Seismogram Digitization	47.050	EAR-1822136		15,902	-
Total for Assistance Listing Number 47.050				**3,886,045**	**59,236**
AF: Large: Collaborative Research: Algebraic Proof Systems, Convexity, and Algorithms	47.070	CCF-1565264		31,881	-
AF: Medium: Algorithmic Complexity in Computation and Biology	47.070	CCF-1509178		147,054	104,626
AF: Medium: Collaborative Research: Exploiting Opportunities in Pseudorandomness	47.070	CCF-1763299		72,098	-
AF: Small: A Computational Lens on Participatory Democracy	47.070	CCF-2007080		150,491	-
AF: Small: Algorithms and Data Structures with Predictions	47.070	CCF-2101140		33,650	-
AF: Small: Learning and Optimization with Strategic Data Sources	47.070	CCF-1718549		(5,954)	-
AF: Small: Streaming Complexity of Constraint Satisfaction Problems	47.070	CCF-2152413		32,133	-
AF:Small: Foundations for Data-driven Algorithmics	47.070	CCF-1816874		234,080	-
CAREER: A Programmable Measurement Architecture for Network Operations	47.070	CNS-1834263		180,236	-
CAREER: Generative Models for Targeted Domain Interpretability with Applications to Healthcare	47.070	IIS-1750358		125,075	-
CAREER: Information-Theoretic Foundations of Fairness in Machine Learning	47.070	CCF-1845852		104,788	-
CAREER: Multi-Agent Decision Making and Optimization using Communication as a Sensor	47.070	CNS-2114733		207,468	-
Causal Inference and Machine Learning Methods	47.070	IIS-1941419		27,617	-
CIF: Medium: Collaborative Research: Information-theoretic Guarantees on Privacy in the Age of Learning	47.070	CCF-1900750		85,472	-
CIF: NeTS: Medium: Collaborative Research: Unifying Data Synchronization	47.070	CCF-1563710		87,540	-
CIF: Small: Exploring and Exploiting the Universality Phenomenon in High-Dimensional Estimation	47.070	CCF-1910410		40,810	-
CNS Core: Medium: Approximation and Randomization in the Programmable Data Plane	47.070	CNS-2107078		53,800	-
Collaborative Research: CHS: Medium: Code demography: Addressing information needs at scale for programming interface users and designers	47.070	IIS-1955699		90,669	-
Collaborative Research: CNS Core: Medium: Cross-Layer Design of Video Analytics for the Internet of Things	47.070	CNS-1955422		40,850	-
Collaborative Research: Computational Photo-Scatterography: Unraveling Scattered Photons for Bio-imaging	47.070	IIS-1730326		95,003	-
Collaborative Research: FMitF: Track I: Usable Synthesis-based End-User Programming with Rich Interaction Modalities	47.070	CCF-2123965		47,652	-
Collaborative Research: III: Medium: Situated Visual Information Spaces	47.070	IIS-2107328		92,351	-
Collaborative Research: MLWiNS: Distributed Learning over Multi-Access Channels: From Bandlimited Coordinate Descent to Gradient Sketching	47.070	CNS-2003111		80,520	-
Collaborative Research: RI: AF: Small: Wisdom of Crowds with Machines in the Loop	47.070	IIS-2007887		121,652	-
Collaborative Research: RI: Small: Post hoc Explanations in the Wild: Exposing Vulnerabilities and Ensuring Robustness	47.070	IIS-2008461		51,964	-
Collaborative Research: Understanding Subatomic-Scale Quantum Matter Data Using Machine Learning Tools	47.070	OAC-1934598		(13,987)	-
COVID-19: Collaborative Research: RAPID: Building a Spatiotemporal Platform for Rapid Response to COVID-19	47.070	CNS-2027540		(1,064)	-
CRCNS US-German Research Proposal: Neural Computations Underlying Mechanical -Flow Sensing in Zebrafish	47.070	IIS-1912293		222,100	-
CSR: Medium: Collaborative Research: Soup: Flexible Storage and Processing for On-Line Applications	47.070	CNS-1704376		16,393	-
CSR: SMALL: Virtualized accelerators for scalable, composable architectures	47.070	CNS-1718160		182,607	-
EAGER: AI-DCL: Collaborative Research: Understanding and Overcoming Biases in STEM Education Using Machine Learning	47.070	IIS-1926925		75,377	-
EAGER: Developing Markets	47.070	CCF-1841550		20,804	-
Elements: FLARE infrastructure for reproducible active learning of Bayesian force fields for ex-machina exascale molecular dynamics	47.070	OAC-2003725		120,722	-
FAI: Foundations of Fair AI in Medicine: Ensuring the Fair Use of Patient Attributes	47.070	IIS-2040880		19,193	-
HCC: Medium: Improving Human-AI Collaboration on Decision-Making Tasks	47.070	IIS-2107391		136,529	-
III: CHS: Medium: Visually Interactive Neural Probabilistic Models of Language	47.070	IIS-1901030		281,733	69,527
Making With Understanding: Using Augmented Reality to Support Peer Teaching in Makerspaces	47.070	IIS-1917716		251,699	-
NCS-FO: Analyzing Synapses, Motifs and Neural Networks for Large-scale Connectomics	47.070	IIS-1835231		114,187	-
NCS-FO: Empowering Data-Driven Hypothesis Generation for Scalable Connectomics Analysis	47.070	IIS-2124179		105,330	-
NRI: FND: Robust Grasping by Integrating Machine Learning with Physical Models	47.070	IIS-1924984		227,175	-
Phase II I/UCRC Harvard: Center for Spatiotemporal Thinking, Computing and Applications (STCA)	47.070	CNS-1841403		93,661	-
QCIS-FF: Quantum Computing and Information Science Faculty Fellow at Harvard University	47.070	CCF-2013303		107,656	-
RI: Medium: End-to-end Computational Sensing	47.070	IIS-1900847		185,942	-
RI: Small: Collaborative Research: Hidden Parameter Markov Decision Processes: Exploiting Structure in Families of Tasks	47.070	IIS-1718306		12,041	-
RI: Small: Depth from Differential Defocus	47.070	IIS-1718012		117,245	-
RI: Small: Human Validation in Batch Reinforcement Learning	47.070	IIS-2007076		129,617	-
SHF:Medium:A Cloudless Universal Translator	47.070	CCF-1704834		244,693	-
TWC: Large: Collaborative: Computing Over Distributed Sensitive Data	47.070	CNS-1565387		15,091	15,091
FAI: A Normative Economic Approach to Fairness in AI	47.070	IIS-2147187		21,429	-

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Total for Assistance Listing Number 47.070				**4,915,073**	**189,244**
Designing and analyzing multi-generational switching in gene circuits for single cell biology	47.074	1615487		(372)	-
1000 species and counting: Harnessing the power of herbarium digitization, crowdsourcing, and phylofloristics to assess and predict phenological responses	47.074	DEB-1754584		93,269	-
BBSRC-NSF/BIO: Integrative analysis and Visualisation of Fly Cell Atlas datasets to enable cross-species comparisons	47.074	DBI-2035515		203,517	-
CAREER: Linking systemic stem cell activation to vertebrate limb regeneration	47.074	IOS-2145925		146,230	-
CAREER: Testing the contributions of selection, gene-flow, and recombination to reinforcement	47.074	DEB-1844906		378,768	-
CAREER: The evolution of gene regulatory networks for regeneration	47.074	IOS-1652104		61,034	-
CNH-L: Social-ecological traps and interactive dynamics of reef fisheries and human health	47.074	1826668		200,948	102,175
CNH-L:Assessing the potential for climate change and forest insects to drive land-use regime shifts	47.074	DEB-1617075		33,942	-
Collaborative Proposal: Redefining the ecological memory of disturbance over multiple temporal and spatial scales in forest ecosystems	47.074	DEB-1945910		116,517	-
Collaborative Research: Convergent evolution and diversification of the crab body plan over 200 million years	47.074	DEB-1856679		124,481	-
Collaborative Research: Digitization TCN: Extending Anthophila research through image and trait digitization (Big-Bee)	47.074	DBI-2101908		75,594	-
Collaborative Research: EDGE FGT: Transformation and Genomic Resources to Advance Diverse, Emerging Model Angiosperms	47.074	IOS-2128195		99,874	-
Collaborative Research: Enabling control of Bacillus subtilis growth using non-standard amino acids	47.074	MCB-2027074		84,810	-
Collaborative Research: Evolving the mammalian forelimb: modeling musculoskeletal transformation in the forerunners of mammals	47.074	DEB-1754459		132,019	-
Collaborative Research: IDBR: TYPE A: Development of Squishy Robot Hands for a Delicate, Effective and Non-Intrusive Approach to Studying Deep Coral Reefs	47.074	DBI-1556164		(10,300)	-
Collaborative Research: LightningBug, An Integrated Pipeline to Overcome The Biodiversity Digitization Gap	47.074	DBI-2104150		6,964	-
Collaborative Research: PurSUiT: Understanding the Neotropical Velvet Worms (Onychophora, Peripatidae, Neopatida), a Cretaceous Radiation of Terrestrial Panarthropods	47.074	DEB-2154245		22,328	-
Collaborative Research: The Opiliones of New Zealand: Revisionary synthesis and application of species delimitation for testing biogeographic hypotheses	47.074	DEB-1754278		8,792	-
Combinatorial Inference: Statistical Uncertainty Assessment for Discrete Structures	47.074	1916211		45,327	-
Creating a Novel Museum-Based Resource for Neuroscience: Mass whole-slide imaging of the R. Glenn Northcutt Collection of Comparative Vertebrate Neuroanatomy and Embryology	47.074	DBI-2122620		195,295	-
CSBR: Natural History: Preserving the genomes of the type specimens in the Museum of Comparative Zoology	47.074	DBI-1946857		80,160	-
Designing a Minimized Genome Cyanobacterial Chassis for Efficient Bioproduction	47.074	MCB-2037995		144,796	-
Digitization TCN: Collaborative Research: Bringing Asia to digital life: mobilizing underrepresented Asian herbarium collections in the US to propel biodiversity discovery	47.074	DBI-2101884		33,049	24,663
Digitization TCN: Collaborative Research: Digitizing endless forms: Facilitating Research on Imperiled Plants with Extreme	47.074	DBI-1802209		184,911	-
Digitization TCN: Collaborative Research: Documenting marine biodiversity through Digitization of Invertebrate collections (DigIn)	47.074	DBI-2001540		44,392	-
Digitization TCN: Collaborative Research: Enhancing Access to Taxonomic and Biogeographical Data to Stem the Tide of Extinction of the Highly Imperiled Pacific Island Land Snails	47.074	DBI-1902188		57,895	-
Digitization TCN: Collaborative Research: Mobilizing Millions of Marine Mollusks of the Eastern Seaboard	47.074	DBI-2001536		39,918	-
Digitization TCN: Collaborative Research: oVert: Open Exploration of Vertebrate Diversity in 3D	47.074	DBI-1702263		28,811	-
Digitization TCN: Collaborative Research: Using Herbarium Data To Document Plant Niches In The High Peaks And High Plains Of The Southern Rockies - Past, Present, And Future	47.074	DBI-1702322		66,554	-
Dimensions US-BIOTA-Sao Paulo: Collaborative Proposal: Traits as predictors of adaptive diversification along the Brazilian Dry Diagonal	47.074	DEB-1831560		32,947	-
Examining the correlated molecular mechanisms of self and heterospecific pollen-pistil recognition	47.074	IOS-1906113		199,741	-
Expanding the functions of a 57 codon recoded E.coli genome	47.074	2123243		231,817	-
Ideas Lab Collaborative Research: Using natural odor stimuli to crack the olfactory code	47.074	IOS-1555914		11,025	-
IntBIO COLLABORATIVE RESEARCH: Deep Time, Development, and Design: Evolution of shark skin teeth from genotype to phenotype to prototype.	47.074	IOS-2128033		57,578	-
Investigating the Rotation of Stator Units of the Bacterial Flagellar Motor	47.074	MCB-2146519		137,635	-
LTER: From Microbes to Macrosystems: Understanding the response of ecological systems to global change drivers and their interactions	47.074	DEB-1832210		1,067,287	260,394
MRI: Development of a Microelectromagnetic, Laser Ablation Instrument for Biomechanics	47.074	DBI-1919834		240,945	-
Remote homology detection with evolutionary profile HMMs	47.074	MCB-2151294		2,553	-
REU Site: A forest full of Big Data: the Harvard Forest Summer Research Program in Ecology 2015-2019	47.074	DBI-1459519		10,370	-
REU Site: Evolution, Ecology, Environment	47.074	DBI-1757780		55,312	-
REU Site: Summer Research Program in Ecology at Harvard Forest	47.074	DBI-1950364		137,056	-

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Revitalizing a field wireless network for research, education and outreach at the Harvard Forest	47.074	DBI-2129580		62,260	-
Sustaining Flybase: The Drosophila genomic and genetic database	47.074	DBI-2039324		330,696	-
Transitions: Spatiotemporal Behaviors of Metabolic Fluxes in Cell Biology	47.074	MCB-2052305		331,917	-
Total for Assistance Listing Number 47.074				**5,608,662**	**387,232**
2022 Cooperative Election Study	47.075	SES-2148907		9,237	-
A Robust and Reliable Resource for Accessing, Sharing, and Analyzing Confidential Geospatial Research Data	47.075	BCS-2025783		134,630	116,519
Bargaining and Network Formation: Equilibrium Medical Provider Networks in Health Care Markets	47.075	SES-1730063		22,008	-
CAREER: Engineering opportunity: Manipulating choice architecture to attenuate social bias	47.075	BCS-1653188		18,889	-
CAREER: Experimental pragmatics and semantics in visual language	47.075	BCS-1844186		26,424	-
CAREER: Global Transport Markets: impact on trade and efficiency	47.075	SES-1847555		117,192	-
CAREER: Psychological and Neurodevelopmental Mechanisms of Social Influence on Adolescent Decision-Making	47.075	BCS-1452530		30,959	-
CAREER: Strategic behavior, beliefs, and interventions in networks	47.075	SES-1847860		12,397	-
CAREER: The AI Revolution and Autocratic Institutions	47.075	SES-2143343		10,113	-
CAREER: The Tuning and Topography of the Ventral Visual Stream	47.075	BCS-1942438		65,358	-
Collaborative Conference Proposal: Support for Conferences and Mentoring of Women and Underrepresented Groups in Political Methodology	47.075	SES-1922190		33,281	-
Collaborative research: Emirical Evidence of the Tax Administration Production Function	47.075	SES-1919073		36,344	-
Collaborative Research: Increasing Tax Compliance: Experimental Evidence from Pakistan	47.075	1559419		55,683	48,608
Collaborative Research: Loopholes as a window into the learning of meaning	47.075	BCS-2118096		30,255	-
COMPCOG: Intuitive Physics without Intuition or Physics: Leveraging Deep Neural Networks to Model Human Physical Reasoning	47.075	BCS-1946308		74,993	-
COVID-19: Collaborative Research: U.S. Institutions after COVID-19: Trust, accountability, and public perceptions	47.075	SES-2116458		59,150	-
COVID-19: RAPID: Collaborative Research: A Comparative Study of Expertise for Policy in the COVID-19 Pandemic	47.075	SES-2028585		2,155	-
COVID-19: RAPID: Collaborative Research: Relationships, social distancing, social media and the spread of COVID-19	47.075	SES-2029792		37,379	-
COVID-19: RAPID: Joint Epidemiological and Macroeconomic Outcomes from Non- Pharmaceutical Interventions in Response to the COVID-19 Pandemic	47.075	SES-2032493		70,835	-
Doctoral Dissertation Improvement Award: The Fit between Producers and Consumers in Traditional Society	47.075	BCS-1905092		(68)	-
Doctoral Dissertation Improvement Grant: The Independent Adaptation Of Subsistence Technologies	47.075	BCS-1824983		5,040	-
Doctoral dissertation research: “Making laboratory practice ‘good’: Negotiating transnational toxicological standards for chemical testing, 1971-2010”	47.075	SES-1754980		1,022	-
Doctoral Dissertation Research: Becoming Part of the City: Place-Belonging in Urbanizing China	47.075	SES-1802612		4,477	-
Doctoral Dissertation Research: Cellular Senescence in Human Age-Related Mortality and Lifespan	47.075	BCS-2116277		22,393	-
Doctoral Dissertation Research: Evaluating Risk and Uncertainty in Urban Infrastructural Planning	47.075	BCS-1917829		4,710	-
Doctoral Dissertation Research: Exploration of Positively Selected Regions of the Human Genome Shaping Pelvis and Scapula	47.075	BCS-1847979		2,883	-
Doctoral Dissertation Research: Prefixal Agreement, Verb Classes, and Serialization	47.075	BCS-2141097		475	-
Doctoral Dissertation Research: The Dynamics of Cultural Training in the U.S. Military	47.075	BCS-1823432		5,639	-
Doctoral Dissertation Research: The Not-So-Inexhaustible Sea: Fisheries Science and Management 1863-present	47.075	SES-2043610		6,679	-
Evaluating the Impacts of Machine Learning Algorithms on Human Decisions	47.075	SES-2051196		147,120	28,800
Fear and the Safety Net: Evidence from Secure Communities	47.075	SES-1849427		23,126	-
Financing the Trans-Atlantic Slave Trade	47.075	SES-2116150		9,751	-
HNDS-I: A global seafood trade network database for sustainable food systems, human health, and nutrition security	47.075	2121239		3,767	-
Measuring and Reducing Algorithmic Discrimination with Quasi-Experimental Data	47.075	SES-2119849		78,958	-
Monetary values of increasing life expectancy: sensitivity to shifts of the survival curve	47.075	1824492		205,657	-
Optimal Public Transportation Networks: Theory and Evidence.	47.075	SES-2049784		115,401	17,292
Our Inner Neandertal: Interrogating Positively Selected Introgressed Variants in Modern Human Genomes for Regulatory Functions	47.075	BCS-2020205		30,935	-
Policing and the Educational Performance of Minority Youth	47.075	SES 1850666		108,041	-
RIDIR: Collaborative Research: Bayesian analytical tools to improve survey estimates for subpopulations and small areas	47.075	SES-1926424		89,607	-
Social Structure Learning	47.075	BCS-2116543		108,960	-
Standard Research Grant: A Comparitive Study of Three Models of Innovation in Their Transnational Implementation	47.075	SES-1457011		60,641	-
The Effects of Sadness Versus Gratitude on Economic Decision Making and Addictive Behavior	47.075	SES-1559511		26,712	-
Urbanization and Economic Growth	47.075	SES-2117534		230,976	-
Workshop: Historical and Social Perspectives on the Life Sciences Concerning Life and Death: Naples, Italy, June 23-30, 2019	47.075	SES-1921617		715	-
FAI: A Normative Economic Approach to Fairness in AI	47.075	IIS-2147187		4,640	-
Total for Assistance Listing Number 47.075				**2,145,539**	**211,219**

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AGEP Research Universities Alliance Model: Advancing Minority Math, Physical Science, Environmental Science, and Engineering PhD Candidates and Postdoctoral Scholars to Faculty	47.076	HRD-2014755		13,923	-
Bringing Team-Based, Project-Based Learning to Scale	47.076	DUE-1504664		7,454	7,454
CAREER:Statistical Modeling of Single Cell States Informative	47.076	DBI-1452964		(20,370)	-
Collaborative Research: A Study of How Pre-College Informal Activities Influence Female Participation in STEM Careers	47.076	DRL-1612375		36,967	-
Collaborative Research: Developing an Online Game to Teach Middle School Students Science Research Practices in the Life	47.076	DRL-1907398		149,177	-
Collaborative Research: Embedding Public Engagement with Science at Long-Term Ecological Research Sites	47.076	DRL-1713307		14,286	-
Collaborative Research: Supporting Teachers to Develop Equitable Mathematics Instruction Through Rubric-Based Coaching	47.076	DRL-2100961		84,923	-
Core Systems for Learning Mathematics	47.076	DRL-1348140		17,501	-
Crowd-Sourced Online Nexus for Developing Assessments of Middle-school Physical Science Disciplinary Core Ideas	47.076	DRL-2101493		269,415	16,952
Effects of ADVANCE in the STEM Disciplines: Faculty Diversity, Women in Leadership, and Institutional Transformation	47.076	DGE-1444586		69,363	32,371
Getting Unstuck: Designing and Evaluating Teacher Resources to Support Conceptual and Creative Fluency with Programming	47.076	DRL-1908110		55,995	-
Graduate Research Fellowship Program	47.076	DGE-1745303		9,987,171	-
MOSART HSPS: Misconceptions Oriented Standards-Based Assessment Resource for Teachers of High School Physical Sciences	47.076	DRL-1621210		133,910	72,006
NCS-FO: Dynamic computational phenotyping of human cognition and brain function	47.076	DRL-2024462		297,739	-
Reconstructing Research in Teacher Education to Provide Usable Knowledge and Support Teacher Education Improvement	47.076	DUE-1920616		287,716	156,116
Researching Pre-College Factors that Lead to Persistence in Computer Science	47.076	DRL-2029256		228,554	42,066
Study of Preservice Teachers' Science Content Knowledge and Pedagogical Content Knowledge	47.076	DUE-2013263		311,179	71,751
The Mathematical Knowledge for Teaching Measures: Refreshing the Item Pool	47.076	DRL-1620914		210,676	-
Total for Assistance Listing Number 47.076				**12,155,579**	**398,716**
Collaborative Research: Bridging the scale gap between local and regional methane and carbon dioxide isotopic fluxes in the Arctic	47.078	OPP-1848620		116,899	-
Total for Assistance Listing Number 47.078				**116,899**	**-**
FW-HTF-P: Future of Work for Strength and Movement Training Professionals	47.083	OIA-2129012		31,764	-
Total for Assistance Listing Number 47.083				**31,764**	**-**
Total for National Science Foundation Direct Award R&D Cluster				**52,647,965**	**5,054,038**
Office of the Director of National Intelligence					
Rapid Tests for Virus Genes that Suppress the Host Antiviral Defenses	12.431	W911NF-17-2-0092		939,017	142,669
Total for Assistance Listing Number 12.431				**939,017**	**142,669**
Rapid Tests for signatures of genetic engineering in biological samples	12.910	N660011824505		578,390	410,821
Total for Assistance Listing Number 12.910				**578,390**	**410,821**
Total for Office of the Director of National Intelligence Direct Award R&D Cluster				**1,517,407**	**553,490**
Total for Reseach and Development Cluster Direct Awards				**536,511,230**	**127,755,896**
Research and Development Cluster (R & D)					
Subaward Received					
Agency for International Development					
Concern Worldwide U.S. Inc - Humanitarian Leadership Program: Developing the Next Generation of Humanitarian Leaders	98.001		NNPHL2-HHI-003	246,627	-
International Medical Corps - Building a Better Response: Strengthening Non-governmental organization Capacity and Engagement in the International Humanitarian Architecture	98.001		104035.100.51	351,225	-
International Rescue Committee - Innovations in SEL Research and Practice	98.001		7200AA19FA00016	30,873	-
National Academy of Sciences - Targeting lipoprotein biogenesis in multi-drug resistant Acinetobacter baumannii for the development of new antibiotics	98.001		2000010561	12,744	-
Population Reference Bureau - MOMENTUM Round 2C	98.001		2020-030AL	666,531	81,248
Tufts University - Feed the Future Innovation Lab for Collaborative Research on Nutrition - Africa	98.001		AID920	41,098	-
Total for Assistance Listing Number 98.001				**1,349,098**	**81,248**
Abt Associates, Inc. - Ethiopia Health Financing Improvement Program	98.RD		51926	26,046	-
Brigham and Women's Hospital, Inc - Global Executive Leadership Initiative	98.RD		123177	266,799	-
Catholic Relief Services Foundation - Climate Monitoring and Health and Agricultural Surveillance: Efforts to Develop a Quantitative Early Warning Forecast System to Predict Food System Failures	98.RD		No Award Number	61,253	-

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Grand Challenges Canada - Visual Response Simulator (ViRS): Predictive Modeling for Humanitarian Epidemiological Response	98.RD		R-HGC-POC-2007-35040	138,092	-
PATH - President's Malaria Initiative	98.RD		AID.574718-01706921-SUB	30,238	-
Regents of the University of California - Davis - Credit for Social Change: Water Access and Improved Farming through Better	98.RD		A20-1825-S012	48,355	19,646
SAR Cellulabs - Closing the Gaps in TB Care Cascade (CGC)	98.RD		72038620CA00012	74,546	-
Total for Assistance Listing Number 98.RD				**645,329**	**19,646**
Total for Agency for International Development Subaward Received R&D Cluster				**1,994,427**	**100,894**
Department of Agriculture					
CRDF Global - Randomised trial of an intervention to increase tuberculosis notifications by private practitioners in Indonesia, plus sequencing and susceptibility sub studies	10.001		DAA3-19-64909-2	4,197	-
Total for Assistance Listing Number 10.001				**4,197**	**-**
Trustees of Boston University - Fragmentation effects on forest productivity across managed ecosystem gradients	10.310		4500002411	10,252	-
Total for Assistance Listing Number 10.310				**10,252**	**-**
Community Outreach and Patient Empowerment - Navajo Fruit and Vegetable Prescription Program	10.331		AVA0417	9,815	-
Total for Assistance Listing Number 10.331				**9,815**	**-**
Total for Department of Agriculture Subaward Received R&D Cluster				**24,264**	**-**
Department of Commerce					
Georgetown University - Formal Privacy Models and Title 13	11.016		AWD7772402-GR205353	75,989	-
Trustees of Boston University - Towards an End-to-End Approach to Formal Privacy for Sample Surveys	11.016		4500003717	196,015	-
Total for Assistance Listing Number 11.016				**272,004**	**-**
Total for Department of Commerce Subaward Received R&D Cluster				**272,004**	**-**
Department of Defense					
Columbia University - Reengineering the Nervous System of a Cnidarian	12.300		1(GG016259)	53,055	-
Cornell University - Event-based Integrated Sensorimotor Planning and Control for Insect-scale Robots	12.300		80480-10878	39,143	-
Dana-Farber Cancer Institute - Nanoswitch Caliper Trains for High-Throughput, High-Resolution Structural Analysis of Complex DNA Nanostructures	12.300		3300401	60,119	-
Drexel University - Biologically derived approaches and prototypes for the control and propulsion of swimming vehicles for riverine environments	12.300		940026	42,433	-
Drexel University - Learning to swim: principles for the neural control and coordination of multiple fins and segmented bodies for effective swimming and maneuvering	12.300		840026	51,719	-
Johns Hopkins University - Navigating in a Complex and Noisy Environment as a Group	12.300		2005184246	38,161	-
Regents of the University of California - A Computational Cognitive Neuroscience Approach to Understanding Event Representation and Episodic Memory	12.300		A17-0260-S004	196,086	-
Regents of the University of California - Berkeley - Carbon-based Hierarchically Integrated Synthetic Electronics (CHISEL)	12.300		9294	98,598	-
San Diego State University Research Foundation - Coral Reef Arks: a cost-effective and high-return tool for restoration and conservation of coral reef resources on DoD submerged lands	12.300		SA0000736	55,583	-
Trustees of Boston University - Fundamental studies on the influence of angular momentum on light-matter interactions	12.300		4500003518	355,057	-
University of Maryland, College Park - SEA-STAR: Soft Echinoderm-Inspired Appendages for Strong Tactile Amphibious Robots	12.300		43637-Z8665002	(11,951)	-
University of Pittsburgh - Topological Qubits based on Graphene Nanoribbons	12.300		AWD00003971 (417688-1)	433,684	-
University of Texas - Austin - Extraordinary Electronic Switching of Thermal Transport	12.300		UTA21-000332	194,499	-
University of Virginia - Bio-Inspired Flexible Propulsors for Fast, Efficient Swimming: What Physics are we missing	12.300		2339490	96,992	-
University of Washington - High Dimensional Causal Model Search	12.300		UWSC11180	168,651	-
Total for Assistance Listing Number 12.300				**1,871,829**	**-**
Brigham and Women's Hospital, Inc - Extremity regeneration of soft tissue injury using growth factor impregnated gels	12.420		115662	(22,424)	-
Children's Hospital Boston - Targeting Kv2 Channels to Prevent Neuronal Apoptosis in ALS	12.420		GENFD0002032026	13,825	-
Henry M. Jackson Fndn for the Advancement of Military Med - Combat Ready Exposure Device (CRED): Validation of a Portable in vivo Exposure Biomarker Device for Lead and Other Heavy Metal Exposures	12.420		5488	32,892	-
Total for Assistance Listing Number 12.420				**24,293**	**-**
Board of Regents of the University of Wisconsin System - OPTION 1: Qubits in Gate-Defined Silicon Quantum Dots	12.431		752K205	221,534	-
California Institute of Technology - Nonlinearity beats Damping: A New Class of Soft Active Metamaterials for Mechanical Logic, Signal Processing, and Autonomous Systems	12.431		S384025	28,813	-
Curators of the University of Missouri - Quantum State Control of Molecular Collision Dynamics	12.431		C00064278-1	177,318	-
Duke University - Evolutionary Mechanics of Impulsive Biological Systems: Guiding Scalable Synthetic Design	12.431		313-0588	(1,002)	-
Duke University - Evolutionary Mechanics of Impulsive Biological Systems: Guiding Scalable Synthetic Design	12.431		313-1037	266,767	-

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Federal Grantor/Pass-through Grantor/Program or Cluster Title	Assistance Listing Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
Massachusetts Institute of Technology - Ab-Initio Solid-State Quantum Materials: Design, Production, and Characterization at the Atomic Scale	12.431		S4667-PO 226099	280,107	-
Massachusetts Institute of Technology - Efficient light-matter interfaces for Rydberg arrays and entanglement in topological quantum networks	12.431		S4963 - PO 420751	142,963	-
Massachusetts Institute of Technology - Multi- Qubit Enhanced Sensing and Metrology	12.431		5710003135	319,809	-
Regents of the University of California - Los Angeles - Dissecting microbiome-gut-brain circuits for microbial modulation of host cognition in response to diet and stress	12.431		0845 G XA622	221,554	-
Regents of the University of California - San Diego - Dynamic Artificial Cells Composed of Synthetic Bioorthogonal Membranes	12.431		26401353-013	96,661	-
Regents of the University of California - Santa Barbara - Exotic Transport Properties and Unique Applications of Intercalated van der Waals Materials	12.431		KK1913	97,739	-
Regents of the University of Michigan - MultiScale Network Games of Collusion and Competition	12.431		SUBK00012224	291,067	-
Regents of the University of Minnesota - MURI: Multiscale Mathematical Modeling and Design Realization of Novel 2D Functional Materials	12.431		A004135001	278,797	-
University of Pittsburgh - Adaptive Self-assembled Systems: Exploiting Multifunctionality for Bottom-up Large-scale Engineering (ASSEMBLE)	12.431		CNVA0056411 (413469-1)	215,122	-
University of Southern California - Closed-Loop Multisensory Brain-Computer Interface for Enhanced Decision Accuracy	12.431		79575749	91,937	-
University of Southern California - Predictive Modeling for Early Identification of Suicidal Thinking in Social Networks Add On: Extensions into Digital versus Face-to-Face Network Connections	12.431		140539196	20,218	-
University of Southern California - Realizing Cyber Inception: Towards a Science of Personalized Deception for Cyber Defense	12.431		123811799	308,392	-
Total for Assistance Listing Number 12.431				**3,057,796**	**-**
Henry M. Jackson Fndn for the Advancement of Military Med - Army Study to Assess Risk and Resilience in Service Members (STARRS 3)	12.750		5732	2,328,334	-
Henry M. Jackson Fndn for the Advancement of Military Med - Identifying Predictors of Treatment Response in Servicemembers with Post traumatic Stress Disorder-Related Sleep Disturbances:Use of Large Datasets to Improve Treatment Selection over the Military Life	12.750		4172	168,078	-
Total for Assistance Listing Number 12.750				**2,496,412**	**-**
Cornell University - Plant-inspired thermal metamaterials with tunable properties	12.800		139783-21204	38,226	-
Cornell University - Plant-mimetic functional materials for thermal management and suppression of freezing	12.800		87230-11088	(3,848)	-
Duke University - Meta-imaging: Sensing, Processing and Computing with Dynamic Metasurfaces	12.800		313-1118	249,532	-
Massachusetts Institute of Technology - Foldable and Adaptive Two-Dimensional Electronics	12.800		5710003988	12,570	-
Massachusetts Institute of Technology - Multiplexed Quantum Repeaters for High-Speed Quantum Networks	12.800		S5090 - PO 473660	197,737	-
Massachusetts Institute of Technology - Prediction, Statistical Quantification and Mitigation of Extreme Events Caused by Exogenous Causes or Intrinsic Instabilities	12.800		S5203	75,366	-
Stanford University - ANSRE: ANalysis and Synthesis of Rare Events	12.800		62455257-159327	267,967	-
University of Maryland, College Park - Photonic Quantum Matter	12.800		42692-Z8183002	167,771	-
University of Texas - Austin - Ultralow power, Ultrafast, Integrated Nano-Optoelectronics	12.800		UTA16-001252	354,587	-
Total for Assistance Listing Number 12.800				**1,359,908**	**-**
Arizona Board of Regents, University of Arizona - Global Reading and Assembly for Semantic, Probabilistic World Models (GRASP)	12.910		431715	254,465	-
Massachusetts Institute of Technology - Many-body atomic clocks based on non-equilibrium correlated quantum matter	12.910		S4759 - PO 278105	(342)	-
Regents of the University of California - Berkeley - Driven Quantum Matter for Metrology (DQM2)	12.910		9965	87,957	-
Regents of the University of California - San Diego - Non-equilibrium Order Parameter Optoelectronics for Quantum Information Processing	12.910		111684807	59,702	-
The Broad Institute - Programmable Cas13 - Based Antiviral Therapeutics and Companion Diagnostics	12.910		5000856-5500001473	354,162	354,162
Total for Assistance Listing Number 12.910				**755,944**	**354,162**
Aliro Technologies, Inc. - More scalable quantum computing through the connection of individual quantum computers into clusters	12.RD		No Award Number	13,596	-
Charles Stark Draper Laboratory, Inc. - SHRIMP is SHort-Range Independent Micro-robotic Platforms	12.RD		SC001-0000001267	136,576	-
Charles Stark Draper Laboratory, Inc. - Thin-film lithium niobate (LN) Y-junction phase-modulator development	12.RD		SC001-0000001245	(3,063)	-
Galois, Inc. - Merged Analysis To prevent Exploits (MATE)	12.RD		2019-004	135,183	-
International Business Machines Corporation - Artificial Mental Models for Machine Common Sense	12.RD		CW3013552	321,751	-
International Business Machines Corporation - Harvard-IBM RFP for DARPA HR001117S0055 (DSSoC)	12.RD		CW2913640	490,598	-
Lincoln Laboratory - 3D Printing for Low-loss RF Components	12.RD		7000445922	11,388	-
Lincoln Laboratory - Cryogenic Lithium Niobate Devices for Scalable Memory-Enabled Quantum Networks	12.RD		7000514813	51,963	-
Lincoln Laboratory - Resilient Perception in Degraded Environments	12.RD		7000496313	145,957	-
Maritime Applied Physics Corporation - Methane Harvesting for Seafloor Generation	12.RD		V03343 -051920	183,437	12,378

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Massachusetts Institute of Technology - Hybrid Encoding for Singed Expressions (HESE) and Direct HESE Analog-to-Digital	12.RD		S5181	11,225	-
Melanoma Research Alliance - Developing and validating a risk prediction model for rare melanomas	12.RD		W81XWH2110819-Harvard01	8,045	-
Radiation Monitoring Devices, Inc. - Atomic Layer Deposition of Highly Conductive Metals - Phase II	12.RD		C19-13	(7,084)	-
RallyPoint Networks, Inc. - Evaluation and Improvement of a Peer-to-Peer Social Support Platform for Military Service Members and Veterans	12.RD		No Award Number	116,015	-
Regents of the University of Michigan - Applications Driving Architectures (ADA) Center	12.RD		3004811120	599,640	-
Stottler Henke Associates, Inc. - Pathogen Classification Tool	12.RD		7872192-01	90,075	-
UES, Inc. - Predicting Fluid Rheology from Printing Process Parameters	12.RD		S-124-020-001	50,421	-
University of Rochester - Giant Nonlinear Response of ENZ Metastructures	12.RD		417359 / URFAO: GR510802	262,641	-
Total for Assistance Listing Number 12.RD				**2,618,364**	**12,378**
Total for Department of Defense Subaward Received R&D Cluster				**12,184,546**	**366,540**
Department of Education					
American Institutes for Research - Building and Sustaining the Capacity of Local Math Coaches to Support College- and Career-Ready Mathematics Instruction	84.305		482000001	66,089	-
Columbia University - Improving low-income students' odds of being on-track and college ready in Chicago Public Schools: The respective roles of child self-regulation and preschool vs. high school intervention	84.305		511146	(1,205)	-
Florida State University - Efficacy of the Core Knowledge Language Arts Listening and Learning Read Aloud Program in Kindergarten through Second Grade Classrooms	84.305		R01972	32,738	-
Northwestern University - Contexts Inside and Outside of School Walls as Predictors of Differential Effectiveness in Preschool Professional Development	84.305		SP0034839-PROJ0009316	(219)	-
Regents of the University of California - Berkeley - Improving methods for policy impact evaluation with group panel data in education research	84.305		10415	56,528	-
SRI International - Initial Efficacy Study of Data Wise	84.305		PO50657	43,546	-
Total for Assistance Listing Number 84.305				**197,477**	**-**
Total for Department of Education Subaward Received R&D Cluster				**197,477**	**-**
Department of Energy					
California Institute of Technology - Hybrid Electro- and Acoustic-Dynamical Systems for Quantum Optical Networks (HEADS-QON)	81.049		S470646	283,572	-
California Institute of Technology - Quantum Communication Channels for Fundamental Physics (QCCFP)	81.049		S490356	94,722	-
Carnegie Mellon University - Van der Waals Reprogrammable Quantum Simulator	81.049		1070142-450783	58,283	-
Dana-Farber Cancer Institute - Optimizing enzymes for plastic upcycling using machine learning design and high throughput	81.049		4805801	38,964	-
Northwestern University - Center for Bio-Inspired Energy Science (CBES)	81.049		SP0027267-PROJ0007138	179,274	-
Northwestern University - Center for Bio Inspired Energy Science	81.049		60038340 HA	214,067	-
Purdue University - Quantum Computing Algorithms and Applications for Coherent and Strongly Correlated Chemical Systems	81.049		14000393-017	8,708	-
Regents of the University of California - Los Angeles - Molecules Functionalized with Cycling Centers for Quantum Information Science	81.049		1000 G WB867	(16,281)	-
Stanford University - Controlled synthesis of solid-state quantum emitter arrays for quantum computing and simulation	81.049		62267247-151086	356,617	-
Stanford University - Photonics at Thermodynamic Limits	81.049		61961562-136555	130,584	-
University of Texas - Arlington - QPix: Achieving kiloton scale pixelated readout for Liquid Argon Time Projection Chambers	81.049		2019GC5293	80,818	-
Total for Assistance Listing Number 81.049				**1,429,328**	**-**
Princeton University - Membrane Dehumidification as Facade-integrated Building Screens for Latent Cooling	81.086		SUB0000465	77,654	-
Total for Assistance Listing Number 81.086				**77,654**	**-**
Trustees of Boston University - A New Risk Assessment and Management Paradigm (NewRAMP) in Electricity Markets	81.135		4500003690	128,956	-
Total for Assistance Listing Number 81.135				**128,956**	**-**
Brookhaven National Laboratory - Co-design Center for Quantum Advantage (C2QA)	81.RD		390035	623,491	-
Brookhaven National Laboratory - Dynamics and Control of Magnetic and Charge Order in Complex Oxides	81.RD		411807	3,224	-
Iowa State University - EFRC: Center for the Advancement of Topological Semimetals	81.RD		SC-19-488	384,304	-
Lawrence Berkeley National Lab - Operation of the Harvard Forest Core Site in the AmeriFlux Network Management Project (ANMP)	81.RD		7549117	231,107	-
Lawrence Berkeley National Lab - Quantum Systems Accelerator	81.RD		7568717	1,490,782	-
Lawrence Livermore National Laboratory - Shape Changing of Responsive Elastometer Structures (SCoRES)	81.RD		B650176	15,051	-
Massachusetts Institute of Technology - Micro-mechanically guided high-throughput alloy design exploration towards metastability-induced hydrogen embrittlement resistance Technical	81.RD		S5045	84,403	-
Oak Ridge National Laboratory - Quantum Science Center	81.RD		4000187220	676,184	-

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Oak Ridge National Laboratory - Understanding and Controlling Entangled and Correlated Quantum States in Confined Solid-state Systems Created via Atomic Scale Manipulation	81.RD		4000192823	15,257	-
Pacific Northwest National Laboratory - SODALITE (DARPA RTML) collaboration	81.RD		488872	5,505	-
Stanford Linear Accelerator Center - Maintaining International Leadership of BES Research in a Globalized World	81.RD		206122	13,431	-
University of Maryland, College Park - New Environmental-Thermal Barrier Coatings for Ultrahigh Temperature Alloys	81.RD		98476-Z7130202	124,469	-
Total for Assistance Listing Number 81.RD				**3,667,208**	**-**
Total for Department of Energy Subaward Received R&D Cluster				**5,303,146**	**-**
Department of Homeland Security					
Rand Corporation - EMI Thought Leadership and Executive Crisis Leadership Project	97.RD		SCON-00000422	227,323	-
Total for Assistance Listing Number 97.RD				**227,323**	**-**
Total for Department of Homeland Security Subaward Received R&D Cluster				**227,323**	**-**
Department of Housing & Urban Development					
The German Marshall Fund of the United States - Shared Housing: What can the United States learn from the Federal Republic of Germany's Shared Multigenerational Housing Model	14.506		No Award Number	28,115	-
Total for Assistance Listing Number 14.506				**28,115**	**-**
George Washington University - The impact of housing assistance on residential environmental exposures	14.906		20-M01	30,210	-
Total for Assistance Listing Number 14.906				**30,210**	**-**
Total for Department of Housing & Urban Development Subaward Received R&D Cluster				**58,325**	**-**
Department of Justice					
University of Massachusetts - Lowell - Research and Evaluation on Prevention and Mitigation of Domestic Pathways to Terrorism	16.560		S51000000040709	1,113	-
Total for Assistance Listing Number 16.560				**1,113**	**-**
Total for Department of Justice Subaward Received R&D Cluster				**1,113**	**-**
Department of State					
New America Foundation - A blockchain-based indexing system for factories	19.345		SLMAQM18GR2203	(1,286)	-
Total for Assistance Listing Number 19.345				**(1,286)**	**-**
CRDF Global - Training to Disrupt People's Republic of China's Acquisition of WMD Applicable Technology from African STEM Institutions	19.RD		PO20-01110	25,768	-
George Mason University - Membership in the Spatiotemporal Innovation Center in services in support of COVID Mitigation Mapping Events and Research.	19.RD		E2053291	66,977	-
Trust for University Innovation in Vietnam - Open Policy Dialogue and Academic Collaboration with Fulbright University Vietnam	19.RD		100006-3099-1	495,845	-
Total for Assistance Listing Number 19.RD				**588,590**	**-**
Total for Department of State Subaward Received R&D Cluster				**587,304**	**-**
Department of the Interior					
University of Southern California - SCEC5 USGS Research Collaboration at Harvard University	15.807		SCON-00002289	59,759	-
Total for Assistance Listing Number 15.807				**59,759**	**-**
Total for Department of the Interior Subaward Received R&D Cluster				**59,759**	**-**
Department of Health and Human Services					
Silent Spring Institute - Assessment of PFAS exposures and health effects in two Massachusetts communities with PFAS drinking water contamination	93.070		7101-HSPH-Y1	203,925	-
Total for Assistance Listing Number 93.070				**203,925**	**-**
University of Southern California - Evaluating the impact of e-cigarette social media marketing on e-cigarette use among underage youth	93.077		SCON-00002406	8,436	-
Total for Assistance Listing Number 93.077				**8,436**	**-**
Stanford University - Prevention Policy Modeling Lab	93.084		62380390-148206	511,851	-
University of Utah - Modeling and Simulation to Support Epidemiological Decision-Making in Healthcare Settings	93.084		10056438-01	30,240	-
Total for Assistance Listing Number 93.084				**542,091**	**-**
Charles River Analytics Inc. - ART Provider and Patient Resource to Improve Communication about Outcomes and Treatment	93.103		SC2023001	13,251	-
Harvard Pilgrim Health Care - Sentinel Initiative	93.103		WO2008	22,183	-
Total for Assistance Listing Number 93.103				**35,434**	**-**
University of Oklahoma - TeamBirth Oklahoma (OPQIC Project)	93.110		RS20210327-01	254,589	-
Total for Assistance Listing Number 93.110				**254,589**	**-**
Beth Israel Deaconess Medical Center - A Randomized Controlled Trial of Home Air Purification for Eosinophilic COPD	93.113		1062311	21,542	-
Beth Israel Deaconess Medical Center - Maternal organophosphate pesticide exposure, low birth weight and placental injury	93.113		1060906	11,412	-
Board of Trustees of the University of Illinois - Phthalate and Hot Flashes in Women	93.113		086885-16438	87,416	-

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Federal Grantor/Pass-through Grantor/Program or Cluster Title	Assistance Listing Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
Boston University School of Public Health - Development and testing of response surface methods for investigating the epidemiology of exposure to mixtures	93.113		4500002635	151,058	-
Boston University School of Public Health - Evidence to improve heat warning effectiveness in reducing morbidity and mortality	93.113		4500003573	40,625	-
Brigham and Women's Hospital, Inc - Early Life Exposure to the Natural Built and Social Environments and Incident Hypertension	93.113		121157	138,884	-
Brigham and Women's Hospital, Inc - The effects of environmental exposures on semen quality and the sperm epigenome	93.113		118582	101,999	-
Children's Hospital Boston - Arsenic related cystic fibrosis (administrative supplement)	93.113		GENFD0001797027	11,334	-
Children's Hospital Boston - Arsenic-related cystic fibrosis.	93.113		GENFD0002016483	8,589	-
Children's Hospital Boston - Examining tissue-specific DNA methylation after prenatal exposure to arsenic among infants with spina	93.113		GENFD0002048061	29,170	-
Children's Hospital Boston - Indoor Air Quality and Respiratory Morbidity in School-Aged Children with Bronchopulmonary Dysplasia	93.113		GENFD0002127389	97,710	-
Columbia University - Air Pollution and Pregnancy Loss	93.113		3(GG017459-01)	151,019	-
Columbia University - Circulating microRNAs in Extracellular Vesicles, Air Particulate Pollution, and Lung Function in an Aging Cohort	93.113		1(GG010691-01)	48,249	-
Columbia University - Effect of Early-Life Exposure to Metal Mixtures on Lung Function and Mitochondrial DNA in Children	93.113		3(GG015212-01)	19,162	-
Columbia University - Integrating air pollution prediction models: Uncertainty quantification and propagation in health studies	93.113		1(GG014961-01)	136,146	-
Drexel University - Examining dietary modifiers of associations between air pollution and autism-related traits	93.113		900159	88,592	-
Emory University - Climate Penalty: Climate-driven Increases in Ozone and PM2.5 Levels and Mortality	93.113		A504190	34,345	-
Emory University - the 5-Year Effects of a 500-day Liquefied Petroleum Gas Cooking Intervention: Continued Follow Up of Participants from the Household Air Pollution Intervention Network (HAPIN) trial	93.113		A588513	12,371	-
Icahn School of Medicine at Mount Sinai - Developmental exposure to perfluoroalkyl substances and cardiometabolic outcomes in adulthood: Potential links via the plasma metabolome	93.113		0255-C831-4609	4,951	-
Icahn School of Medicine at Mount Sinai - Methods for data integration and risk assessment for environmental mixtures	93.113		0255-A401-4609	77,254	-
Icahn School of Medicine at Mount Sinai - Prenatal metal mixtures and neurodevelopment: Role of placental extracellular microRNAs	93.113		0255-B981-4609	190,155	-
Icahn School of Medicine at Mount Sinai - Stress-Chemical Interactions and Neurobehavior in School Age Children	93.113		0255-5545-4609	78,817	-
Mount Sinai Medical Center - Novel Biomarker to Identify Critical Windows of Susceptibility to Metal Mixtures: Resubmission	93.113		0255-1871-4609	8,165	-
New York University Langone Medical Center - Brain Influences of Phthalates and Bisphenols in Adolescents	93.113		20-A0-00-1005266	6,752	-
Rutgers, The State University of New Jersey - Ambient Air Pollution, Weather, and Placental Abruption (APWA)	93.113		2101	6,036	-
University of Southern California - The role of air pollution in emotional neurodevelopment and risk for psychiatric disorders	93.113		138940130	31,995	-
University of Southern California - Urban air pollution and neurobehavioral trajectories in the ABCD study	93.113		138940268	35,689	-
University of Texas - Causal Inference with Interference for Evaluating Air Quality Policies	93.113		UTA19-000141	38,990	-
University of Utah - The Influence of Multiple Exposures on Suicide Risk	93.113		10057452-01	102,106	-
Wayne State University - Paternal preconception phthalates and reproductive health - potential mediation through sperm DNA	93.113		WSU22055	50,581	-
Yale University - Statistical Methods to Account for Exposure Uncertainty in Environmental Epidemiology	93.113		GR104702 (CON-80001508)	335,390	-
Total for Assistance Listing Number 93.113				**2,156,504**	**-**
Kaiser Foundation Research Institute - Particulate Air Pollution, Cardiovascular Events, and Susceptibility Factors (PACES)	93.117		RNG209805-HSPH-01	30,949	-
Total for Assistance Listing Number 93.117				**30,949**	**-**
Regents of the University of California - Los Angeles - Personalized Digital Behavior Change Interventions to Promote Oral Health	93.121		1350 G YC882	15,829	-
Regents of the University of Michigan - Michigan-Pittsburgh-Wyss Regenerative Medicine Resource Center: Advancing Dental, Oral, and Craniofacial Regeneration to Clinical Trial Initiation	93.121		SUBK00011418	294,565	-
Regents of the University of Michigan - Michigan-Pittsburgh-Wyss Regenerative Medicine Resource Center: Advancing Dental, Oral, and Craniofacial Regeneration to Clinical Trial Initiation	93.121		SUBK00014058	73,448	-
Regents of the University of Michigan - Michigan-Pittsburgh-Wyss Resource Center: Supporting Regenerative Medicine in Dental Oral and Craniofacial Technologies	93.121		3004400289	6,612	-
The Forsyth Institute - Regulatory B Cells in the Amelioration of Immune-Mediated Periodontal Disease	93.121		HSDM025255-2750	45,181	-
University of South Florida - The Oral Microbiome in Type 1 Diabetes and Sub-Clinical Cardiovascular Disease	93.121		6403-1081-00-A	19,908	-
Virginia Commonwealth University - Epigenetic Regulation of Periodontal Inflammation	93.121		FP00010440 SA003	16,509	-
Total for Assistance Listing Number 93.121				**472,052**	**-**
Henry M. Jackson Fndn for the Advancement of Military Med - : Firearm Behavioral Practices and Suicide Risk in U.S. Army Soldiers and Veterans	93.136		5485	42,556	-
Regents of the University of Minnesota - Anti-Bullying Laws and Youth Violence in the United States: A Longitudinal Evaluation of Efficacy and Implementation	93.136		P006360104	21,162	-
Total for Assistance Listing Number 93.136				**63,718**	**-**
University of Rhode Island - Impacts of geochemistry and transport on PFAS exposures from drinking water and fish	93.143		0006745-11317	223,668	-
University of Rhode Island - Sources, Transport, Exposure and Effects of Perfluoroalkyl Substances (STEEP) Center	93.143		0006660-11117	19,829	-

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University of Rhode Island - Sources, Transport, Exposure and Effects of Perfluoroalkyl Substances (STEEP) Center	93.143		0006746-11217	251,189	184,281
Total for Assistance Listing Number 93.143				**494,686**	**184,281**
Brigham and Women's Hospital, Inc - Integrated pathogenicity assessment of clinically actionable genetic variants	93.172		120308	452,015	-
Brigham and Women's Hospital, Inc - Network tools to Understand Sex- and Gender-Specific Drivers of Disease	93.172		125975	20,186	-
Brigham and Women's Hospital, Inc - Predicting the impact of genetic variants, genes and pathways on human disease	93.172		126094	137,992	-
California Institute of Technology - Alliance Central: A platform for sustainable development of next generation genome knowledgebases	93.172		S454486	438,440	-
Columbia University - Single-Molecule Electronic Nucleic Acid Sequencing-by-Synthesis Using Novel Tagged Nucleotides and Nanopore Constructs	93.172		1(GG015773)	103,139	-
Johns Hopkins University - Direct nanopore detection of modified RNA to probe structure and dynamics	93.172		2004249613	273,231	-
Lawrence Berkeley National Lab - Systematic, Genome-Scale Functional Characterization of Conserved smORFs	93.172		7374618	(2,661)	-
Regents of the University of California - Los Angeles - Integrative approaches for mapping the genetic risk of complex traits	93.172		1625GUE724	46,317	-
Stanford University - ELSI.hub: National Center for ELSI Resources and Analysis	93.172		62424230-139696	61,361	-
The Broad Institute - A Foundational Resource of Functional Elements, TF footprints and Gene Regulatory Interactions	93.172		5001225-5500001653	224,000	-
The Feinstein Institute for Medical Research - Polygenic Embryo Screening: Towards Informed Decision-Making	93.172		AWD00001403-Harvard	93,502	-
University of Massachusetts Medical School - Predictive Modeling of the Functional and Phenotypic Impacts of Genetic Variants	93.172		SUB00000066	109,333	-
Total for Assistance Listing Number 93.172				**1,956,855**	**-**
Brandeis University - Towards molecular mechanisms of invertebrate Gustatory Receptors	93.173		GR403926	84,202	-
Brigham and Women's Hospital, Inc - Risk Factors for Hearing Loss	93.173		119711	(520)	-
Massachusetts Eye and Ear Infirmary - Cochlear Synaptopathy: Prevalence, Diagnosis and Functional Consequences	93.173		530045	82,573	-
Massachusetts General Hospital - Enhanced gene delivery for CNS and Sensory Disorders	93.173		234217	57,111	-
San Diego State University Research Foundation - The Association of Perinatal HIV Infection and Hearing Loss in Children of Cape Town, South Africa	93.173		SA0000594	22,252	-
Total for Assistance Listing Number 93.173				**245,618**	**-**
Carnegie Mellon University - Delphi Influenza Forecasting Center of Excellence	93.185		1090628-425284	9,635	-
Total for Assistance Listing Number 93.185				**9,635**	**-**
Brigham and Women's Hospital, Inc - Contribution of phytochemicals to gut symbiont colonization and synthesis of immunomodulatory sphingolipids	93.213		120907	28,522	-
Emory University - Mechanistic studies on analgesic effects of terpene enriched extracts from hops	93.213		A395377	5,024	-
Total for Assistance Listing Number 93.213				**33,546**	**-**
Brigham and Women's Hospital, Inc - Identifying Cascades of Low-Value Care and the Organizational Practices that Prevent them	93.226		117961	12,600	-
Children's Hospital Boston - Improving Child Health and Healthcare through Dissemination and Implementation of Pediatric Quality Measures	93.226		GENFD0002121570	15,710	-
Massachusetts General Hospital - Medicaid Payment Policy and Access to Care for Dual-Eligible Beneficiaries	93.226		229188	(19,917)	-
National Bureau of Economic Research - Measuring the Clinical and Economic Outcomes Associated with Delivery Systems	93.226		41610.05.33.00- HMS1	729,749	-
Regents of the University of Minnesota - Medical reversals: De-implementing ineffective and unsafe treatments	93.226		P006920953	843	-
Trustees of Dartmouth College - Accelarating the Use of Evidence-based Innovation in Healthcare Systems	93.226		R1472	35,522	-
University of Chicago - Effects of Ambulance, Transport Distance, and Hospital Destination on Health Outcomes of Out of Hospital Medical Emergencies	93.226		FP066242	(4,481)	-
Yale University - Consumer Assessment of Healthcare Providers and Systems (CAHPS V)	93.226		CON-80003354 (GR114883)	133,633	-
Total for Assistance Listing Number 93.226				**903,659**	**-**
Beth Israel Deaconess Medical Center - Mechanisms of arousal in sleep apnea	93.233		1063783	104,163	-
Brigham and Women's Hospital, Inc - The role of irregular sleep schedules as a ubiquitous marker of chronic circadian disruption in cardiometabolic disease development	93.233		125756	31,264	-
Total for Assistance Listing Number 93.233				**135,427**	**-**
Allen Institute for Brain Science - A comprehensive whole-brain atlas of cell types in the mouse	93.242		2017-0570	627,949	-
Baylor College of Medicine - Brainshare: Sharing Data in BRAIN Initiative Studies	93.242		7000001675	9,740	-
Baylor College of Medicine - Neuroethics of aDBS Systems Targeting Neuropsychiatric and Movement Disorders	93.242		7000001555	75,165	-
Baylor College of Medicine - Polygenic Risk Scores in Child and Adolescent Psychiatry: Ethical, Clinical, and Legal Implications	93.242		7000001461	106,593	-
Beth Israel Deaconess Medical Center - A Psychobiological Follow-up Study of Transition from Prodrome to Early Psychosis	93.242		1029400	40,549	-
Brigham and Women's Hospital, Inc - In-utero exposure to psychotropic medications and the risk of neurodevelopmental disorders	93.242		119487	34,342	-
Brigham and Women's Hospital, Inc - Rare and common variants in complex disease	93.242		117943	39,067	-
Cambridge Health Alliance - ALACRITY for Early Screening and Treatment of High Risk Youth (E-SToRY) - Methods Core	93.242		HMS 3354-Methods	30,387	-

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Cambridge Health Alliance - ALACRITY for Early Screening and Treatment of High Risk Youth (E-SToRY)- R34-2	93.242		HMS 3354-R34-2	10,854	-
Cambridge Health Alliance - Medicaid Value Based Payment Models and Healthcare Equity for Adults with Serious Mental Illnesses	93.242		3304-1- HMS	54,063	-
Children's Hospital Boston - Admin Core: Complement regulation and critical periods in diverse CNS cell types	93.242		GENFD0002067977	26,059	-
Children's Hospital Boston - Complement regulation and critical periods in diverse CNS cell types	93.242		GENFD0002068127	446,363	-
Children's Hospital Boston - Molecular Codes for the Establishment of Functionally Segregated Dopaminergic Circuits	93.242		GENFD0002188598	347,578	-
Children's Hospital Boston - Neural-immune mechanisms and synaptic connectivity in psychiatric illness	93.242		GENFD0002067978	95,445	-
Children's Hospital Boston - Novel epigenetic mechanisms in neuronal development and cognitive function	93.242		GENFD0002188667	114,384	-
Children's Hospital Boston - Research Support Core: Complement regulation and critical periods in diverse CNS cell types	93.242		GENFD0002068128	144,581	-
Cold Spring Harbor Laboratory - A Comprehensive Center for Mouse Brain Cell Atlas	93.242		64580521 / 64580529	2,501,187	-
Dartmouth-Hitchcock Medical Center - Peer Support and Mobile Technology Targeting Cardiometabolic Risk Reduction in Young Adults with SMI	93.242		GC10036-02-05	27,895	-
Harvard Pilgrim Health Care - Sex-specific heterogeneity in genetic association studies of depression	93.242		AH000857	6,752	-
London School of Hygiene and Tropical Medicine - IMPlementation of evidence based facility and community interventions to reduce the treatment gap for depRESSion (IMPRESS)	93.242		2006-0816EPH - EPPHZT42	(27,059)	-
Luxel Corporation - Grid-Tape: A High-Throughput Platform for Brain Connectomics and Nanoscale Structural Analysis	93.242		20124	20,078	-
Massachusetts General Hospital - Data-driven subtyping in major depressive disorder	93.242		238763	321,003	-
Massachusetts General Hospital - Fostering diversity in the next generation of HIV researchers to improve the HIV continuum of care.	93.242		237315	69,207	-
Massachusetts General Hospital - Sex Differences in Major Depression: Impact of Prenatal Stress-Immune and Autonomic	93.242		236501	31,161	-
Massachusetts Institute of Technology - A Molecular and Cellular Atlas of the Marmoset Brain	93.242		S4495 PO 671662	482,728	97,177
Massachusetts Institute of Technology - Multiplexed Nanoscale Protein Mapping Through Expansion Microscopy and Immuno-SABER	93.242		S5212	463,619	-
Michigan State University - Genetic Influences on Infant Brain Development: Understanding the Developmental Origins of Mental Illness	93.242		RC112665F	4,305	-
National Institute of Psychiatry Ramon de la Fuente Muniz - Computerized detection and internet-based treatment of common mental disorders among college students in two Latin American LMICs	93.242		150285	321,798	-
Purdue University - High-throughput, ultra-high resolution, multiplexed single molecule nanscopy and functional characterization of impaired neural circuits in mouse models of autism	93.242		11001055-012	261,968	-
Regents of the University of California - Irvine - Understanding neural circuits for associative memory in the lateral entorhinal cortex	93.242		2019-3822	9,443	-
Regents of the University of California - Los Angeles - Joint Genomic and Statistical Analyses of Schizophrenia and Bipolar to Decipher Genetic Susceptibility	93.242		2000GVR227	186,167	-
Regents of the University of California - San Diego - Psychiatric Genomics Consortium for PTSD	93.242		123557538	76,502	-
Regents of the University of California - San Francisco - Exploring the Impact of Organizational Readiness and Inner Setting on Implementation of HIV Programming in South African Health Clinics	93.242		12340sc	(125)	-
Regents of the University of Michigan - Development of a scalable strategy for reconstructing cell-type determined connectome of the mammalian brain	93.242		SUBK0002615	293,885	-
Rutgers University - New Brunswick - Real-time Intervention for Reducing Suicide Risk	93.242		942	(2,676)	-
San Diego State University - Enhanced Linkage to HIV Care and Treatment following Home-Based HIV testing in Rural Uganda	93.242		SA0000486	1,928	-
Stanford University - Sex hormones and post-traumatic stress disorder (PTSD)	93.242		62477243-141397	57,412	-
The Broad Institute - Genetic neuroscience: How human genes and alleles shape neuronal phenotypes	93.242		5000485-5500001075	285,706	-
The Broad Institute - Genetic neuroscience: How human genes and alleles shape neuronal phenotypes	93.242		5000485-5500001103	276,679	-
The Broad Institute - Psychosis Genetics Research in Africa: Building Capacity by Investing in People	93.242		5000703-5500001338	158,596	-
The Broad Institute - Statistical methods to localize disease heritability and identify biological mechanisms	93.242		5000747-5500001474	228,405	-
The Broad Institute - Statistical methods to localize disease heritability and identify biological mechanisms	93.242		5001510-5500001234	74,366	-
The McLean Hospital Corporation - Dysregulation of Appetitive and Aversive Amygdala Circuits in Bipolar Disorder	93.242		401677	92,667	-
The McLean Hospital Corporation - Laboratory for Early Psychosis Research (LEAP) - Methods Core	93.242		401567	104,238	-
The McLean Hospital Corporation - Laboratory for Early Psychosis Research (LEAP) - Project 3	93.242		401659	31,946	-
The McLean Hospital Corporation - Laboratory for Early Psychosis Research (LEAP) – Admin Core	93.242		401568	14,320	-
The McLean Hospital Corporation - Predicting the onset of depression in at-risk adolescents from endophenotype profiles	93.242		401500	12,493	-
Trustees of Boston University - SCH: INT: Collaborative Research: Passive sensing of social isolation and loneliness: A digital phenotyping approach	93.242		4500003257	80,691	-
Trustees of Boston University - Using Causal Inference and Machine Learning Methods to Predict Cognitive Behavioral Treatment Response	93.242		4500003098	62,950	-
University of California, San Diego - Toward a human adult brain cell atlas with single-cell technologies	93.242		111911793 (S9002169)	281,443	-
University of Maryland, Baltimore - Internal Dynamics of the Postsynaptic Density	93.242		F301577-3	75,803	-
University of Maryland, College Park - Effects of Early Psychosocial deprivation on mental health in early adulthood	93.242		85120-Z0264204	27,754	-

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University of North Carolina - Chapel Hill - Do dimensions of adversity differentially predict neural development and psychopathology in young children	93.242		5112038	105,689	-
University of North Carolina - Chapel Hill - Longitudinal Assessment of Post-traumatic Syndromes	93.242		5119130	4,479	-
University of Pittsburgh Medical Center - Imaging the Suicidal Mind using Neurosemantics Signatures of Suicidal State	93.242		CNVA00059460 (131200-2)	21,240	-
University of Rochester - Neurocircuitry of OCD: Effects of Modulation - Core C and Project 3	93.242		416629-G/ UR FAO GR510948	(2,733)	-
University of Washington - HIV self-testing and PrEP to increase testing and prevention uptake among male partners and improve postpartum ART use in PMTCT B+ programs in Uganda	93.242		UWSC10153	95,458	-
University of Washington - Integrated PrEP and ART delivered in Ugandan public health clinics to improve HIV and ART outcomes for HIV serodiscordant couples	93.242		UWSC10102	95,332	-
Washington University - Mapping the Human Connectome During Typical Development	93.242		WU-19-438	211,227	-
Yale University - Biopsychosocial mechanisms underlying internalizing psychopathology in a prospective, population-based cohort of sexual minority young adults	93.242		CON-80003007 (GR112951)	199,620	-
Total for Assistance Listing Number 93.242				**9,848,666**	**97,177**
RTI International - Mental Disorders Prevalence Study (MDPS)	93.243		7-312-0217186-65732L	64,087	-
Total for Assistance Listing Number 93.243				**64,087**	**-**
University of North Carolina - Greensboro - Alcohol consumption and related comorbid conditions: health state utilities for economic evaluation	93.273		20200506.1	29,062	-
Washington University - Alcohol, Gut Dysbiosis, Endotoxemia, and Colorectal Cancer □	93.273		WU-20-396	27,894	-
Total for Assistance Listing Number 93.273				**56,956**	**-**
San Diego State University Research Foundation - Administrative Core of the CIFASD (U24)	93.273		D8574-02-SA604-A4-53253T-7802	40,136	-
Total for Assistance Listing Number 93.273				**40,136**	**-**
Brigham and Women's Hospital, Inc - The Comparative Effectiveness and Safety of Pharmacotherapies for the Treatment of Opioid Use Disorder in Pregnancy	93.279		123125	46,654	-
Brigham and Women's Hospital, Inc - The Impact of Prescription Opioid Use on Pregnancy Outcomes	93.279		117817	3,964	-
Johns Hopkins University - Consumer-Directed Health Plans and Substance Use Disorder Treatment	93.279		2004055395	138,784	-
Massachusetts General Hospital - The Impact of Medicaid Plans on Access to and Quality of SUD Treatment	93.279		232747	18,656	2,159
Regents of the University of California - San Diego - The Healthy Brain and Child Development National Consortium Administrative	93.279		KR704935	8,126	-
Regents of the University of Michigan - Center for Methodologies for Adapting and Personalizing Prevention, Treatment and Recovery Services for SUD and HIV (MAPS)	93.279		SUBK00013920	195,822	-
The Pennsylvania State University - NIDA Innovative Methods for Constructing Just-In-Time Adaptive Interventions	93.279		5692-HU-DHHS-9838	9,318	-
Trustees of Dartmouth College - Stemming the Tide: The Role of Payment and Delivery System Reform in Combating the Opioid Epidemic	93.279		R1468	175,853	-
Total for Assistance Listing Number 93.279				**597,177**	**2,159**
Aptitude Medical Systems, Inc. - Topical Delivery of Therapeutic Aptamer	93.286		No Award Number	(12,389)	-
Columbia University - Multi-tissue platform for modeling systemic pathologies	93.286		4(GG015644-06)	79,996	-
Massachusetts General Hospital - Connectome 2.0: Developing the next generation human MRI scanner for bridging studies of the micro-meso-and macro-connectome	93.286		233327	45,033	-
Massachusetts General Hospital - Vascularized kidney organoids on chip for efficacy and toxicity testing of somatic genome editing	93.286		238776	161,738	-
The University of Memphis - mHealth Resource Center for Discovery, Optimization, and Translations (mDOT)	93.286		A21-0019-S006-A02	96,487	-
Total for Assistance Listing Number 93.286				**370,865**	**-**
Boston College - Targeting Health Disparities through Housing Redevelopment: A Natural Experiment of Housing Quality, Stability, and Economic Integration	93.307		5111871-02	12,175	-
Brigham and Women's Hospital, Inc - Enhanced measurement and causal modeling of sleep electrophysiology to better understand sleep disparities	93.307		122194	25,710	-
Columbia University - Impact of Social Cohesion and Social Capital in PrEP Uptake and Adherence Among Transwomen of Color	93.307		2(GG014329-01)	18,534	-
Harvard Pilgrim Health Care - Sexual orientation-related disparities in obstetrical and perinatal health	93.307		AH000827	43,101	-
Massachusetts General Hospital - Medicare Policy Effects on Mental Health Disparities	93.307		230084	12,762	-
Massachusetts General Hospital - Racial disparities in police use of deadly force as a cause of racial disparities in sleep health across the life course	93.307		236743	4,904	-
Rand Corporation - Improving Minority Health by Monitoring Medicaid Quality, Disparities and Value	93.307		SCON-00000365	420,352	-

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Regents of the University of California - Irvine - Culturally Adapted Multilevel Decision Support Navigation Trial to Reduce Colorectal Cancer Disparity Among At-Risk Asian American Primary Care Patients	93.307		2021-1451	45,889	-
Regents of the University of California - Irvine - Sleep and health disparities among Asian Americans: roles of stressors and protective factors	93.307		2021-1498	71,866	-
Regents of the University of California - Los Angeles - The Impact of Surgeon Factors and Education/Training on Disparities in Surgical Care	93.307		1557 G ZA069	7,331	-
Regents of the University of California - San Francisco - Reducing Oral Health Disparities in Children: Assessing the Multilevel Impact of a Standardized	93.307		11566sc	67,949	-
University of South Florida - Epigenomic Predictors of PTSD and Traumatic Stress in an African American Cohort	93.307		6408-1117-00-C	6,698	-
University of South Florida - Epigenomic Predictors of PTSD and Traumatic Stress in an African American Cohort	93.307		6408-1149-00-A	37,825	-
Yale University - Environmental Health Disparities in an Older Population	93.307		GR101389 (CON-80001010)	30,773	-
Total for Assistance Listing Number 93.307				**805,869**	**-**
Board of Regents of the University of Wisconsin System - Children's Respiratory and Environmental Workgroup (CREW)	93.310		1627	338,254	-
Brandeis University - Ubiquitin-independent targeted protein degradation	93.310		GR404054	8,380	-
Brigham and Women's Hospital, Inc - Multi-omic approaches to mechanisms of vitamin D, environmental influences, and the microbiome on asthma	93.310		119919	13,847	-
Carnegie Mellon University - Flexible Hybrid Cloud Infrastructure for Seamless Management of HuBMAP Resources	93.310		1090580- 443689	6,571	-
Carnegie Mellon University - Multiscale Analyses of 4D Nucleome Structure and Function by Comprehensive Multimodal Data	93.310		1090661-437142	86,785	-
COVID-19: Brown University - Improved Testing for COVID-19 in Skilled Nursing Facilities: IMPACT-C	93.310		1721	123,931	-
Harvard Pilgrim Health Care - Common and distinct early environmental influences on cardiometabolic and respiratory health: Mechanisms and methods	93.310		PH000615F	227,585	-
Icahn School of Medicine at Mount Sinai - ECHO Consortium on Perinatal Programming of Neurodevelopment	93.310		0255-2299-4609	22,024	-
Johns Hopkins University - Quantification and prediction of treatment efficacy for HIV cure strategies	93.310		2005165124	56,054	-
Massachusetts General Hospital - Designer probiotics for the treatment of intestinal infection and inflammation	93.310		229595	36,248	-
Massachusetts General Hospital - Interactive Data Portals and Robust Analytic Tools to Wrap PASC Cohorts (iDRAW)	93.310		239079	2,733,380	-
National Alliance Against Disparities in Patient Health - AIM-AHEAD	93.310		RF00250-2022-0048	1,349,366	-
Regents of the University of California - Irvine - Making antibody generation rapid, scalable, and democratic through machine learning and continuous evolution	93.310		2020-1392	1,434,519	-
Regents of the University of California - San Diego - KULMAP: Human Kidney, urinary tract and lung mapping center	93.310		117273558 (S9002339)	275,131	-
Scripps Research Institute - Technology to Empower Changes in Health (TECH) Network Participant Technologies Center - S4S YR4	93.310		5-54464	825,392	314,668
UC San Diego School of Medicine - Center for Integrated Multi-modal and Multi-scale Nucleome Research	93.310		704234	411,369	-
University of California, San Diego - Center for Integrated Multi-modal and Multi-scale Nucleome Research	93.310		704233	98,189	-
University of Massachusetts Medical School - Center for 3D Structure and Physics of the Genome	93.310		OSP33133-01	227,167	-
University of Massachusetts Medical School - Constructing multi-omics regulatory networks for functional variant annotation	93.310		OSP33015-00	14,122	-
University of North Carolina - Chapel Hill - Illuminating Function of the Understudied Druggable Kinome	93.310		5122375	457,833	-
University of Pittsburgh - Cellular Senescence Network (SenNet) Consortium Organization and Data Coordinating Center (CODCC)□	93.310		AWD00004814 (136877-5)	12,711	-
Total for Assistance Listing Number 93.310				**8,758,858**	**314,668**
Brigham and Women's Hospital, Inc - Kidney Microphysiological Analysis Platforms (MAP) to Optimize Function and Model Disease	93.350		122148	161,005	-
Children's Hospital Boston - Instrumenting the Delivery System for a Genomics Research Information Commons	93.350		GENFD0002072988	368,144	-
Children's Hospital Boston - Tissue chips for precision treatment of catecholaminergic polymorphic ventricular tachycardia (UG3)	93.350		GENFD0002151032	216,070	-
Massachusetts Institute of Technology - Cartilage-Bone-Synovium MPS: Musculoskeletal Disease Biology in Space	93.350		S4428 PO 453162	(76,562)	-
University of Pittsburgh Medical Center - ACT Supplement	93.350		AWD00000243 (134445-2)	(435)	-
Total for Assistance Listing Number 93.350				**668,222**	**-**
Brigham and Women's Hospital, Inc - A Community Zebrafish Resource for Modeling GWAS Biology	93.351		119850	206,655	-
Total for Assistance Listing Number 93.351				**206,655**	**-**
Beckman Research Institute of City of Hope - Technology-Enabled Activation of Skin Cancer Screening for Hematopoietic Cell Transplantation Survivors and their Primary Care Providers	93.353		62014.2008301.669301	105,949	-
Dana-Farber Cancer Institute - The Cellular Geography of Therapeutic Resistance in Cancer	93.353		1206304	146,449	-
Oregon Health and Science University - Omic and Multidimensional Spatial Atlas of Metastatic Breast and Prostate Cancers	93.353		1013337 HARVARD	464,677	-
Regents of the University of California - Davis - University of California Minority Patient-Derived Xenograft (PDX) Development and Trial Center UCaMP) to Reduce Cancer Health Disparities	93.353		A19-0791-S008	57,094	-

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Total for Assistance Listing Number 93.353				**774,169**	**-**
Dana-Farber Cancer Institute - Passive Data to Improve Outcomes in Advanced Cancer	93.361		1169302	7,274	-
Washington University School of Medicine - Rural-Urban Disparities in Spillover Effects of COVID-19	93.361		WU-22-0477	5,883	-
Total for Assistance Listing Number 93.361				**13,157**	**-**
Baylor College of Medicine - Integrative analysis of lung cancer etiology and risk	93.393		7000001378	126,282	-
Baylor College of Medicine - Integrative Analysis of Lung Cancer Etiology and Risk	93.393		7000001397	94,169	-
Brigham and Women's Hospital, Inc - Accelerating Transdisciplinary Epidemiology of Colorectal Cancer	93.393		121840	125,344	-
Brigham and Women's Hospital, Inc - Comprehensive characterization of prostate stromal gene expression and association with lethal prostate cancer	93.393		118830	43,841	-
Brigham and Women's Hospital, Inc - Helicobacter Infection and Liver Cancer Risk among African Americans and Whites in the United States	93.393		125785	81,531	-
Brigham and Women's Hospital, Inc - Multidisciplinary Study of Folate Intake and Colorectal Cancer	93.393		125945	16,806	-
Columbia University - Breast Cancer Family Cohort	93.393		6(GG013725-07)	12,550	-
Columbia University - Comparative modeling of gastric cancer disparities and prevention in the US and globally	93.393		5-GG015389-01	46,529	-
Dana-Farber Cancer Institute - A functional genomic approach to identification and interpretation of germline-tumor genetic interactions	93.393		1201305	49,435	-
Dana-Farber Cancer Institute - Adapting and evaluating a brief advice tobacco intervention in high-reach, low-resource settings in India	93.393		1311503	69,998	-
Dana-Farber Cancer Institute - Individualizing Surveillance Mammography for Older Breast Cancer Survivors	93.393		1170602	(940)	-
Dimagi, Inc - COOPE: A Digital Health System to Facilitate Financial Navigation of Out-of-Pocket Cancer Costs	93.393		No Award Number	1,678	-
Eastern Virginia Medical School - Using Differences in Perceived Legitimacy and Resident Compliance to Promote Fair and Effective Implementation of Smoke Free Housing	93.393		S100601-1	47,831	-
Health Research, Inc. - Consortium on Methods Evaluating Tobacco (COMET): Filter Ventilation and Product Standards	93.393		289-01	61,848	-
Indiana University - Integrative functional characterization of genetic loci for cutaneous basal cell carcinoma	93.393		8766	48,987	-
Lawrence Berkeley National Lab - Structural Cell Biology of DNA Repair Machines	93.393		7337766	26,677	-
Lawrence Berkeley National Lab - Structural Cell Biology of DNA Repair Machines	93.393		7615189	37,127	-
Memorial Sloan Kettering Cancer Center - The Impact of DNA Damage Repair Abnormalities in Prostate Cancer	93.393		C21948835	157,504	-
Ohio State University - Pro-inflammatory and Hyper-insulinemic Dietary Patterns and Colorectal Cancer Risk: Role of the Metabolome	93.393		60075663	3,264	-
Regents of the University of Michigan - New Statistical Methods for Modelling Cancer Outcomes	93.393		SUBK00012669	9,948	-
Regents of the University of Minnesota - Role of RBBP4/p300 in recovery from therapy induced DNA damage in glioblastoma	93.393		HAR-273993-01	45,202	-
Region Hovedstaden - Prenatal Exposure to Endocrine Disrupting Chemicals and Risk of Testicular Cancer	93.393		A236816	59,303	-
Research Foundation of CUNY (City University of New York) - Exploiting public metagenomic data to uncover cancer/microbiome relationships	93.393		CM00005126	196,428	-
St. Jude Children's Research Hospital - Role of the SWI/SNF complex in tumor suppression	93.393		112260100-8023859	78,817	-
St. Jude Children's Research Hospital - The Function of Snf5 (SMARCB1), an Epigenetic Tumor Suppressor	93.393		11226118A-8049245	73,949	-
Stanford University - Evaluation of genetic, clinical, and environmental risk factors to establish effective screening strategies for second primary lung cancer	93.393		61958611-130956	2,901	-
University of Pennsylvania - PROJECT RESIST: Increasing Resistance to Tobacco Marketing Among Young Adult Sexual Minority Women Using Inoculation Message Approaches	93.393		580371	89,025	-
University of Southern California - Leveraging Diversity in Cancer Epidemiology Cohorts and Novel Methods to Improve Polygenic Risk Scores	93.393		SCON-00002171	39,051	-
University of Texas - Dallas - A Bayesian Meta-Analysis Approach for Estimation of Penetrance and its Application to PALB2 gene for Breast Cancer Risk	93.393		1907701	4,745	-
University of Washington - Leveraging cross-cancer shared heritability to better understand the genetic architecture of cancer	93.393		UWSC11959	163,778	-
Vanderbilt University Medical Center - Effects of Expanded Coverage on Access, Health Care and Health in the South	93.393		VUMC56386	69,214	-
Weill Medical College of Cornell University - Prediagnostic exposures, germline genetics, and triple negative breast cancer mutational and immune profiles	93.393		204253-4	75,144	-
Total for Assistance Listing Number 93.393				**1,957,966**	**-**
Dana-Farber Cancer Institute - Circulating Biomarker Consortium for Pancreatic Cancer Early Detection	93.394		1283205	(4,421)	-
Fred Hutchinson Cancer Center - Statistical Methods for Prospective Evaluation of Biomarkers	93.394		1110275	68,092	-
RareCyte, Inc. - Rapid highly multi-plexed immuno-profiling of solid tumors by SpectralEdge imaging	93.394		2R44CA224503-02SUB	332,608	-
University of Massachusetts Medical School - Weight Management Counseling in Medical School: A Randomized Controlled Trial	93.394		OSP2016161	9,275	-
Total for Assistance Listing Number 93.394				**405,554**	**-**
Brigham and Women's Hospital, Inc - Evaluation of an implantable microdevice for rapid cancer drug screening directly in T cell lymphoma patients	93.395		123466	215,809	-
Brigham and Women's Hospital, Inc - Project 2: Combining Immune Checkpoint Blockade with T cell Activation	93.395		124415	244,293	-

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Dana-Farber Cancer Institute - NOVEL RANDOMIZED CONTROLLED TRIALS OF VITAMIN D SUPPLEMENTATION IN PATIENTS WITH COLORECTAL CANCER: IMPACT ON SURVIVAL AND BIOLOGY	93.395		1299505	19,844	-
Massachusetts General Hospital - Abbreviated Targeted Therapy to Improve Anti-PD-1 Inhibitor Efficacy in Melanoma	93.395		232616	171,813	-
Massachusetts General Hospital - Strategies to Overcome Immune Resistance in Head and Neck Cancers	93.395		235469	21,582	-
Massachusetts General Hospital - Transcriptional mechanisms and melanoma - Project 2	93.395		235351	260,149	-
Regents of the University of Michigan - Novel use of mHealth data to identify states of vulnerability and receptivity to JITAIs	93.395		SUBK00008226	58,965	-
Total for Assistance Listing Number 93.395				**992,455**	**-**
Brigham and Women's Hospital, Inc - Identifying new therapeutic avenues to selectively target tumors with uncontrolled mTORC1	93.396		120102	223,304	-
Brigham and Women's Hospital, Inc - Molecular Pathogenesis of the Hamartoma Syndromes P01 Project 1: Identifying new therapeutic avenues to selectively target tumors with uncontrolled mTORC1 activation	93.396		120102	146,656	-
Dana-Farber Cancer Institute - Developing Informatics Technologies to Model Cancer Gene Regulation	93.396		1170704	110,061	-
Georgetown University - Conditionally Reprogrammed Cell Model for Castration-Resistant Prostate Cancer (CRPC)	93.396		424081GR413642-HMS	5,606	-
Massachusetts General Hospital - Designer EcN for treatment of solid tumors	93.396		240531	6,328	-
Massachusetts General Hospital - Prebiotic effect of eicosapentaenoic acid treatment for colorectal cancer	93.396		236707	145,881	-
Massachusetts General Hospital - Reverse transciptase inhibitor effects on the mobillome of colon cancer	93.396		234829	75,335	-
Regents of the University of California - Davis - Biological implications of breast cancer protective variants in Latin American women with high Indigenous American ancestry	93.396		A21-2136-S001	12,164	-
University of Pittsburgh - Pathogenesis of Cancer - Role of EGF Receptor Endocytosis	93.396		AWD00001291 (133630-1)	48,486	-
University of Texas Southwestern Medical Center - Imaging mechanisms of metastatic colonization in situ.	93.396		221201	91,640	-
Total for Assistance Listing Number 93.396				**865,461**	**-**
Beth Israel Deaconess Medical Center - DF/HCC Kidney Cancer SPORE: Development Research Project Identification and Validation of Immune Targets to Augment PD-1/VEGFR2 Directed Therapy	93.397		1063009	113,794	-
Beth Israel Deaconess Medical Center - Discovery and Characterization of Immune Targets to Enhance PD-1/VEGFR2 Directed	93.397		1063874	61,772	-
Dana-Farber Cancer Institute - 2/2 The UMB-DF/HCC U54 Comprehensive Partnership for Cancer Disparities Research	93.397		1217810	13,179	-
Dana-Farber Cancer Institute - 2/2 The UMB-DF/HCC U54 Comprehensive Partnership for Cancer Disparities Research	93.397		1217811	50,973	-
Dana-Farber Cancer Institute - 2/2 The UMB-DF/HCC U54 Comprehensive Partnership for Cancer Disparities Research	93.397		1323711	71,589	-
Dana-Farber Cancer Institute - A National Evaluation of Cancer Centers' Use of Evidence-Based Interventions in Community Outreach and Engagement	93.397		1311058	101,810	-
Dana-Farber Cancer Institute - Cancer Center Support Grant	93.397		HSPH-56	158,165	-
Dana-Farber Cancer Institute - Cancer Center Support Grant	93.397		HSPH-57	176,138	-
Dana-Farber Cancer Institute - Dana Farber/ Harvard Cancer Center SPORE in Gastrointestinal Cancer	93.397		1132213	33,088	-
Dana-Farber Cancer Institute - Dana-Farber/Harvard Cancer Center Ovarian Cancer SPORE Grant	93.397		1316302	132,930	-
Dana-Farber Cancer Institute - Dana-Farber/Harvard Cancer Center SPORE in Breast Cancer	93.397		1230008	9,496	-
Dana-Farber Cancer Institute - Dana-Farber/Harvard Cancer Center Support Grant	93.397		HMS-56	326,194	-
Dana-Farber Cancer Institute - Dana-Farber/Harvard Cancer Center Support Grant	93.397		HMS-57	456,325	-
Dana-Farber Cancer Institute - DF/HCC SPORE in Gastrointestinal Cancer	93.397		1132413	102,960	-
Dana-Farber Cancer Institute - Diet-induced Expansion of Mucispirillum Elicits Colon Cancer Immunity	93.397		1138813	54,143	-
Dana-Farber Cancer Institute - New measures and professional development opportunities to promote evidence-based cancer prevention and control in underserved communities	93.397		1189711	56,345	-
Dana-Farber Cancer Institute - Rapid Cycle Quality Improvement (RCQI) Approaches for Developing the Capacity of Community-Based Organizations to Address COVID-19 and Cancer Disparities in Latinx Communities	93.397		1189810	11,160	-
Dana-Farber Cancer Institute - SPORE in Myeloid Malignancies	93.397		1171705	29,338	-
Dana-Farber Cancer Institute - Understanding Integration in Oncology Care and Impact on Quality and Outcomes	93.397		1311657	27,445	-
Total for Assistance Listing Number 93.397				**1,986,844**	**-**
Association of State and Territorial Health Officials - "Technical Assistance for State, Territorial, and Federal Risk Communication During Public Health Emergencies: COVID-19 (Part 2),"	93.421		00-FE-2700-04-00	647,402	390,623
COVID-19: Stanford University - COVID-19 Policy Modeling and Forecasting for Public Health Decision Making	93.421		62578358-197900	155,198	-
Total for Assistance Listing Number 93.421				**802,600**	**390,623**
Rehabilitation Institute of Chicago - Collaborative Machines Enhancing Therapies (COMET)	93.433		7247	436	-
Syracuse University - Employment Policy Research and Resource Center (EPRRC)	93.433		31838-05703-S01	173,265	-
Total for Assistance Listing Number 93.433				**173,701**	**-**
Massachusetts General Hospital - MA/Region 1 Partnership for Regional Health Disaster Response	93.817		240099	117,594	-
Nebraska Medicine - Nebraska-Region 7 Partnership for Regional Health Disaster Response	93.817		GR1003054-1123	63,377	-

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Total for Assistance Listing Number 93.817				**180,971**	**-**
Beth Israel Deaconess Medical Center - Altered Cell-Cell Coupling in Arrhythmogenic Cardiomyopathy	93.837		1060872	147,223	-
Brigham and Women's Hospital, Inc - Boston Biomedical Innovation Center	93.837		114756	22,666	-
Brigham and Women's Hospital, Inc - Cardiac exosomes in myocardial ischemic injury	93.837		123168	7,649	-
Brigham and Women's Hospital, Inc - Genomics of Post-op Atrial Fibrillation After Cardiac Surgery	93.837		125218	42,522	-
Brigham and Women's Hospital, Inc - Risk Factors of CVD in Women	93.837		120938	27,771	-
Brigham and Women's Hospital, Inc - Using Metabolomics to Understand CVD Risk in Women with a History of Preterm Delivery	93.837		125858	48,224	-
Children's Hospital Boston - Computational Prioritization of Coding and Non-Coding Variants in Congenital Heart Disease	93.837		GENFD0002090155	12,604	-
Children's Hospital Boston - Pathogenesis of Dyslipidemia and Atherosclerosis in the Diabetic State	93.837		GENFD0002063183	16,224	-
Cincinnati Children's Hospital Medical Center - Administrative Coordinating Center: Cardiovascular Development and Pediatric Cardiac Genomics Consortia.	93.837		138275	(2,084)	-
Columbia University - Phosphorylation-dependent regulation of calcium channels by macromolecular complexes	93.837		1(GG015807-01)	62,369	-
Duke University - Mechanisms of Maladaptation in Heart Failure	93.837		A032119	51,546	-
Harvard Pilgrim Health Care - Built Environment Assessment through Computer visiON (BEACON): Applying Deep Learning to Street-Level and Satellite Images to Estimate Built Environment Effects on Cardiovascular Health	93.837		AH000766	33,389	-
Icahn School of Medicine at Mount Sinai - Influence of prenatal air pollutant and stress exposures on sleep outcomes in urban preschool-aged children	93.837		0255-C313-4609	15,858	-
Massachusetts General Hospital - Clonal hematopoiesis of indeterminate potential and HIV in the REPRIEVE trial	93.837		237407	16,683	-
Massachusetts General Hospital - Identifying novel cardiopulmonary disease intervention targets among people with HIV in rural sub-Saharan Africa	93.837		232954	7,956	-
Massachusetts General Hospital - Mechanisms of Cardiac Dysfunction in HIV and the Effect of Statins	93.837		230744	348	-
Massachusetts General Hospital - REPRIEVE CCC	93.837		236575	312,115	-
Regents of the University of California - San Francisco - Predicting and preventing drug metabolism by the human gut microbiome	93.837		13030sc	14,938	-
Stanford University - Precision Medicine by Harmonizing Real World Evidence and RCT Data	93.837		62356619-44738	96,453	-
The Broad Institute - Cardiovascular disease, metabolic syndrome, microbes and metabolites in FHS	93.837		5001356-5500001682	19,896	-
Tufts University - Cost-Effectiveness of Health System and State-Level Strategies to Improve Diet and Reduce Cardiometabolic	93.837		NH0001	24,820	-
University at Buffalo (State University of New York) - Cardiac Toxicity in Perinatally HIV-Infected Adolescents and Young Adults, a Longitudinal Study	93.837		R1186469	23,732	-
University of Massachusetts Medical School - Pediatric Practice-based Obesity Intervention to Support Families: FITLINE	93.837		OSP2017060	(252)	-
Washington University School of Medicine - Statistical Methods to understand dietary exposure patterns among understudied	93.837		WU-21-366-MOD-1	3,273	-
Washington University School of Medicine - The Impact of Bundled Payments for Cardiopulmonary Disease on High-Risk Populations	93.837		WU-20-85-MOD-3	387,013	-
Total for Assistance Listing Number 93.837				**1,392,936**	**-**
Brigham and Women's Hospital, Inc - Genetic and Genomic Characterization of the Occurrence and Progression of Interstitial Lung Abnormalities	93.838		117432	11,020	-
Brigham and Women's Hospital, Inc - Genetic Epidemiology of COPD (2 of 2)	93.838		117868	334,732	35,254
Brigham and Women's Hospital, Inc - Interstitial Lung Abnormalities: Defining the Phenotype, Causes, and Consequenses	93.838		120957	151,453	-
Brigham and Women's Hospital, Inc - Systems Biology of Airway Disease	93.838		115975	33,692	-
Brigham and Women's Hospital, Inc - Therapeutic modulation of zinc for lung injury and mechanobiology	93.838		121004	27,382	-
Brigham and Women's Hospital, Inc - Wood Smoke and Chronic Mucous Hypersecretion	93.838		122957	84,320	-
Children's Hospital Boston - Cell-cell interactions governing lung epithelial progenitor cells	93.838		GENFD0002164432	91,334	-
Children's Hospital Boston - Environmental Risk Factors for Pediatric Sleep Disordered Breathing	93.838		GENFD0001858748	41,947	-
COPD Foundation - Network Management Core (NEMO) for the Pulmonary Trials Cooperative (PTC) – INSIGHT Study	93.838		001-Amend5	4,406	-
Emory University - Household air pollution and health: a multi-country LPG intervention trial	93.838		A345848	37,012	-
Mayo Clinic - Reverse Engineering the Alveolus: From cellular to micro environment spedification	93.838		THE-298358/PO-68741193	35,316	-
Regents of the University of California - San Diego - Genomics and Pharmacogenomics of Symptoms in Asthma	93.838		KR705129	62,401	-
University of Pennsylvania - CEBPD - Medicated Mechanisms of Glucocorticoid Insensitivity in Severe Asthma	93.838		571226	34,151	-
Weill Medical College of Cornell University - Distinct and Overlapping Pathways of Fibrosis and Emphysema in Cigarette Smokers	93.838		204296-6	23,058	-
Total for Assistance Listing Number 93.838				**972,224**	**35,254**
Children's Hospital Boston - Bone Marrow Spatial Transcriptomics to Enhance In Vitro Platelet Production	93.839		GENFD0002094490	10,953	-
Children's Hospital Boston - Cytoskeletal Mechanisms of Platelet Formation	93.839		GENFD0002060689	4,837	-
Massachusetts General Hospital - Functional dissection of clonal hematopoiesis	93.839		230441	359,517	-

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University of Maryland, College Park - Relationship of ambient air pollution exposures with vaso-occlusive pain crises in sickle cell disease	93.839		66027-Z0155201	(4,230)	-
University of Massachusetts Medical School - Novel Growth Factor Regulators of Early Erythropoieisis	93.839		OSP2018073	243,318	-
University of Pennsylvania - Vascular delivery of nanocarriers by erythrocytes	93.839		574882	169,311	-
Total for Assistance Listing Number 93.839				**783,706**	**-**
University of Massachusetts Medical School - PR-OUTLOOK: PR Young Adults Stress, Contextual, Behavioral and Cardiometabolic	93.840		OSP29967-02	3,810	-
Total for Assistance Listing Number 93.840				**3,810**	**-**
Brigham and Women's Hospital, Inc - Acid-Base Status as a Novel Risk Factor for Fractures	93.846		121220	44,133	-
Brigham and Women's Hospital, Inc - Development of enthesopathy in the mouse model of X-linked hypophosphatemia	93.846		124725	40,099	-
Brigham and Women's Hospital, Inc - Studying exceptional treatment non-responders and genetics to predict treatment response in rheumatoid arthritis	93.846		125580	31,674	-
Brigham and Women's Hospital, Inc - VERITY: Value and Evidence in Rheumatology using bioInformaTics, and advanced analytics	93.846		118064	40,222	-
Children's Hospital Boston - Cfp1 Action in Cartilage Development	93.846		GENFD0002068011	(5,615)	-
Children's Hospital Boston - Defining the human articular chondrocyte lineage	93.846		GENFD0002003828	31,706	-
Massachusetts General Hospital - Investigating the direct reprogramming of fibroblasts into skeletal muscle progenitors	93.846		237246	47,983	-
Massachusetts General Hospital - Posttranscriptional control of epidermal progenitors senescence	93.846		234150	160,561	-
Regents of the University of California - San Diego - Leveraging comparative genomics to elucidate the genetic determinants of limb skeletal proportion	93.846		121580600(S9002390)	55,913	-
Total for Assistance Listing Number 93.846				**446,676**	**-**
Albert Einstein College of Medicine - Metabolomics signatures underlying diet, lifestyle and gut microbiota for diabetes	93.847		311433	181,001	-
Beth Israel Deaconess Medical Center - Generation of a Cellular Atlas of Adipose Tissue in Mouse and Man	93.847		1060496	376,642	-
Beth Israel Deaconess Medical Center - Leveraging the Rich Genetic Diversity of Vagal Motor Neurons to Decode Brain-to-Gut Communication	93.847		1061842	257,844	-
Boston College - Empowerment as a mechanism for change in childhood obesity prevention	93.847		5108631-4	13	-
Boston Medical Center - Boston Obesity Nutrition Research Center	93.847		6750	105,106	-
Boston Nutrition Obesity Research Center - Chronic Inflammation and Obesity: Genetic Susceptibility and the Role of Diet	93.847		7072	(195)	-
Boston Nutrition Obesity Research Center - Metabolomics profiles' 10-year changes linking diet, obesity, and genetics to subsequent T2D risk	93.847		01-HSPH-02075	14,680	-
Brigham and Women's Hospital, Inc - A microbiome-dependent bile acid metabolite improves type 2 diabetes	93.847		124675	333,328	-
Brigham and Women's Hospital, Inc - Circulating plasma metabolites, diet, and risk of type 2 diabetes	93.847		118780	73,896	-
Brigham and Women's Hospital, Inc - Health effects of substituting sugar-sweetened beverages with non-caloric beverages in adults with overweight and obesity	93.847		123666	10,720	-
Brigham and Women's Hospital, Inc - Novel Pathways for Kidney Stone Formation	93.847		120966	(7,487)	-
Brown University - Asprosin, Body Weight, and Risk of Type 2 Diabetes in Men and Women	93.847		1627	154,341	-
Buck Institute for Research on Aging - The B Cell Insulin Receptor in Health and in Insulin Resistance	93.847		SA48002-HU	12,535	-
Children's Hospital Boston - Assessing the relationship between environmental enteric dysfunction and poor growth via a newly developed 11-plex array	93.847		GENFD0001888578	6,117	-
Children's Hospital Boston - Integrated Epithelial and Muscosal Biology	93.847		GENFD0002063533	30,496	-
Children's Hospital Boston - Mechanism of action for the epithelial-specific ER stress sensor IRE1β in regulating intestinal homeostasis and host defense	93.847		GENFD0002162240	34,134	-
Children's Hospital Boston - Molecular Circuits in the Hematopoietic Stem Cell Niche	93.847		GENFD0002214910	366,867	-
Children's Hospital Boston - The neuropilin 2 axis in smooth muscle contractility	93.847		GENFD0001688159	(77)	-
Duke University - Microbial regulation of host nutrient metabolism	93.847		303000251	20,527	-
Harvard Pilgrim Health Care - New Insights into the Federal Calorie Labeling Law	93.847		PH000668D	139,492	-
Jaeb Center for Health Research Foundation, Inc - MD-PSCH Clinical Acceptance of the Artificial Pancreas: The International Diabetes Closed Loop (iDCL) Trial	93.847		DCLP4	(1,198)	-
Joslin Diabetes Center - Can technology improve self-care in youth with type-1 diabetes	93.847		P30DK036836-31 Dassau Harvard	17,209	17,209
Massachusetts General Hospital - A Prospective Study of Lifestyle, the Gut Microbiome, and Diverticulitis	93.847		235385	124,502	-
Massachusetts General Hospital - Center for the Study of Inflammatory Bowel Disease at Massachusetts General Hospital	93.847		238644	18,844	-
Massachusetts General Hospital - Identification of immunometabolic alterations in adipo-pulmonary axis to treat obesity related asthma	93.847		231091	4,588	-
Massachusetts General Hospital - Psychological, cognitive, and genetic factors in a behavioral intervention to prevent weight gain	93.847		231761	(2)	-
Massachusetts General Hospital - The role of macrophages in disease tolerance	93.847		238644	2,207	-

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Northeastern University - Investigating the role of natural and engineered curli fibers in mediating interactions with the gut epithelium	93.847		500702-78050	126,446	-
Rand Corporation - Robust Statistical Methods to Identify and Use Surrogate Markers in Diabetes	93.847		SCON-00000161	18,169	-
The Broad Institute - A comprehensive platform for novel therapy development from the microbiome	93.847		5000472-5500001054	890,823	-
Tulane University - Nutrigenetics and Nutrigenomics for Precision Weight-Loss Diet Interventions	93.847		TUL-HSC-556076-17-18	60,213	-
Tulane University - Nutrigenetics and Nutrigenomics for Precision Weight-Loss Diet Interventions	93.847		TUL-HSC-560241-21/22	10,478	-
Tulane University - Obesity Genes, Energy Regulation in Response to Weight-Loss Diets	93.847		TUL-HSC-556619-18/19	59,568	-
Tulane University - Weight-Loss Diet Intervention on Cardiometabolic Factors of Gut Microbiota	93.847		TUL-HSC-558086-19-20	49,901	-
University of Alabama - Effect of Pitavastatin on Kidney Function in HIV-infected Persons	93.847		000509533-SC005	51,284	-
University of Kansas Medical Center - Role of claudin-2 in calcium homeostasis and kidney stone disease	93.847		ZAY00030-GR12396	26,243	-
University of Massachusetts Medical School - Humanized Mouse Avatars for T1D	93.847		OSP30522-03	136,892	-
Yale University - Data and Biostatistics Core : Amazon Center of Excellence in Malaria Research	93.847		CON-80003595 (GR115961)	70,693	-
Yale University - On-body ecosystem for automated insulin delivery in type 1 diabetes	93.847		GR100945 (CON-80000948)	68,221	-
Total for Assistance Listing Number 93.847				**3,845,061**	**17,209**
Beth Israel Deaconess Medical Center - The functional neuroanatomy of the human physiological stress response	93.853		1061570	11,198	-
Brigham and Women's Hospital, Inc - Cell and Molecular Consequences of Alzheimer's Disease Genetic Variants on BBB Integrity and Function	93.853		124009	276,912	-
Brigham and Women's Hospital, Inc - Identification of Presenilin downstream targets in neuronal survival	93.853		116846	214,048	-
Brigham and Women's Hospital, Inc - α-synuclein membrane vs. cyotosol excess: two different pathways to synucleinopathy	93.853		125138	62,425	-
California Institute of Technology - A Brain Circuit Program for Understanding the Sensorimotor Basis of Behavior	93.853		S397744	366,105	246,965
California Institute of Technology - Comprehensive Analysis of a Decision Circuit	93.853		S447071	345,681	-
California Institute of Technology - Neural representation of mating partners by male C. elegans	93.853		S447423	181,186	-
Children's Hospital Boston - Cell Identity Determination In Human Brain: Somatic mutation and cell lineage	93.853		GENFD0002145556	163,665	-
Columbia University - CRCNS: Refining computational models of motor sequence learning and execution	93.853		1(GG012952-01)	196,143	-
Columbia University - Project 2 - Neural Basis of Motor Pattern Loops	93.853		1(GG012999-05)	36,021	-
Lawrence Berkeley National Lab - Chemical Fingerprinting: cell-type specific DNA repair in the brain	93.853		7527795	75,735	-
Massachusetts General Hospital - A computational approach for quantifying motor behaviors in spinocerebellar ataxias to improve early detection of motor signs and precisely estimate disease severity and disease change	93.853		238666	198,584	-
Massachusetts General Hospital - Cortical-Basal Ganglia Speech Networks	93.853		237602	12,175	-
Massachusetts General Hospital - Simultaneous functional MRI and Micro-Magnetic Nervous System Stimulation	93.853		238936	44,893	-
New York University - Mechanisms of synaptic dopamine signaling in the control of behavior	93.853		20-A0-00-1004068	218,336	-
New York University Langone Medical Center - Project 3: Cracking the Olfactory Code	93.853		19-A0-00-1002081	161,566	-
New York University Langone Medical Center - Project 4: Cracking the Olfactory Code	93.853		19-A0-00-1002081	338,513	-
New York University School of Medicine - Development and Function of 5HT3aR-Expressing Cortical GABAergic Interneurons (Project	93.853		18-A1-00-008334	191,545	-
NF Bio, Inc - Salmonella typhimurium-based Bacteriotherapy for Orphan Benign Tumors: Neurofibromatosis Type II (NF2)	93.853		NFB002JM	11,909	-
Regents of the University of California - Berkeley - Specifying the constraints on cerebellar dependent sensorimotor adaptation (R35)	93.853		10431	(34,461)	-
Regents of the University of California - San Diego - Next generation all-optical toolkits for functional analysis of neuropeptide dynamics in neural circuits	93.853		122333935	300,472	-
Stanford University - Automated Phenotyping in Epilepsy	93.853		62389164-143494	148,080	-
Stanford University - Project 3- Neural Basis of Sensory-Guided Actions	93.853		61745076-130506	126,376	-
The Feinstein Institute for Medical Research - Comparative Effectiveness of Imaging Strategies in Acute Ischemic Stroke Based on Patient Profiles	93.853		AWD00001281-Harvard College	11,030	-
Tufts Medical Center - Discovery of the Biomarker Signature for Neuropathic Corneal Pain	93.853		5017155-SERV	35,641	-
University of Massachusetts - Amherst - A 5-dimensional connectomics approach to the neural basis of behavior	93.853		19-010728 C03 Revised	26,092	-
University of Massachusetts - Lowell - The Gut Microbiome In Parkinson Disease	93.853		S51110000036435	14,794	-
University of Miami - Clinical Research in ALS and related disorders for Therapeutic Development (CReATe)	93.853		OS00000671	(1,386)	-
University of North Carolina - Bcl-xL-regulated apoptosis in cerebellar development and medulloblastoma treatment	93.853		5110620	18,989	-

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University of Pittsburgh - Integrating EHR and Genomics to Predict Multiple Sclerosis Drug Response	93.853		AWD00002658 (135057-1)	109,499	-
University of Rochester - U19 Data Science Core	93.853		417832-G / UR FAO GR511106	446,948	-
University of Rochester - U19 Project A (theory project)	93.853		417833G / UR FAO GR511107	249,423	-
Total for Assistance Listing Number 93.853				**4,558,137**	**246,965**
Beth Israel Deaconess Medical Center - Ad26 Based Therapeutic Vaccines for HIV	93.855		1064175	39,183	-
Beth Israel Deaconess Medical Center - Combined Immunologic Approaches to Cure HIV-1	93.855		1062516	2,420	-
Beth Israel Deaconess Medical Center - Viral dynamics of rebound and control following early treatment of HIV/SIV	93.855		1062673	(6,254)	-
Board of Regents of the University of Wisconsin System - Novel antimicrobials targeting MDR pathogens from animal microbial	93.855		1268	79,758	-
Board of Regents of the University of Wisconsin System - Novel antimicrobials targeting MDR pathogens from animal microbial	93.855		1269	764,413	-
Brandeis University - The molecular and cellular basis of short-range host cue sensing in mosquito vectors	93.855		GR404067	115,444	-
Brandeis University - Unraveling the polymodal behavior of sensory transduction receptors	93.855		403164	50,589	-
Brigham and Women's Hospital, Inc - Acquired HIV drug resistance among Nigerian children failing first-line ART: Implications for second-line dolutegravir use	93.855		125980	6,858	-
Brigham and Women's Hospital, Inc - Brush cell sensing of aeroallergen-elicited stress signals promotes epithelial cell activation	93.855		125040	22,337	-
Brigham and Women's Hospital, Inc - Core A: Metabolic factors that control the spectrum of human tuberculosis [TBRU]	93.855		111846	25,801	-
Brigham and Women's Hospital, Inc - Core B: Metabolic factors that control the spectrum of human tuberculosis [TBRU]	93.855		111896	28,132	-
Brigham and Women's Hospital, Inc - Project 1: Metabolic Factors that control the spectrum of Human Tuberculosis [TBRU]	93.855		111899	938	-
Brigham and Women's Hospital, Inc - Project 3: Metabolic factors that control the spectrum of human tuberculosis [TBRU]	93.855		111903	17,896	-
Brigham and Women's Hospital, Inc - The Structural Basis of Homo- and Heterodimerization of Two Chemokine Receptors: Implications in HIV-1 Cell Entry	93.855		126003	16,393	-
Children's Hospital Boston - Decidual NK response to infection	93.855		GENFD0002193900	398,155	-
Children's Hospital Boston - Immunobiology of Influenza Virus-related Critical Illness in Young Hosts	93.855		GENFD0002065776	53,260	-
Children's Hospital Boston - School Inner-City Asthma Intervention Study	93.855		GENFD0001578883	13,576	-
Children's Hospital Boston - Structural Basis of Coreceptor Recognition by HIV-1 Envelope Spike	93.855		GENFD0002176483	80,944	-
Children's Hospital Boston - Structure-function analysis of infection- and vaccine-induced B-cell repertoires	93.855		GENFD0002050878	153,814	-
Children's Hospital Boston - Structure-function studies of the membrane-interacting domains of HIV-1 Env spike	93.855		GENFD0001822009	(80)	-
Children's Hospital Boston - Structure-function studies of the membrane-interacting domains of HIV-1 Env spike	93.855		GENFD0002049816	352,695	-
COVID-19: FHI Development 360 - CoVPN 3008: Multi-Center, Randomized, Efficacy Study of COVID-19 mRNA	93.855		PO21002249	142,475	127,600
COVID-19: Johns Hopkins University - Pharmacokinetics and Safety of Remdesivir for Treatment of COVID-19 in Pregnant Women in the US	93.855		2004846184	108,086	-
Dana-Farber Cancer Institute - Biology and structure of pMHC receptors functioning as mechanosensors in the ab T-cell lineage	93.855		1313503	223,734	-
Dana-Farber Cancer Institute - Identification of Metabolic and Immune Deficits in the Aged Population and Their Restoration to Achieve Youthful Anti-Influenza Vaccine Responsiveness	93.855		1288601	72,776	-
Emory University - Deep spatial immune profiling of granulomas and M. tuberculosis adaptation to disease and treatment	93.855		A595775	17,445	-
Emory University - Resetting immune homeostasis: a non-invasive approach towards HIV eradication	93.855		A567110	47,408	-
COVID-19: FHI Development 360 - CoVPN 5001: A prospective study of acute immune responses to SARSCoV-2 infection	93.855		PO20002344	49,896	49,896
FHI Development 360 - HPTN 084	93.855		PO21002345	26,700	26,700
FHI Development 360 - Intimate Partner Violence, Social Support, and Substance Use among Black men who have sex with men (BMSM) in the United States	93.855		PO21000817	6,916	-
Global Alliance for TB Drug Development - Discovery of inhibitors that target the Mtb ClpP1P2 protease	93.855		2115	298,636	-
Harvard Pilgrim Health Care - Network modeling and robust estimation of the intraclass correlation coefficient to inform the design and analysis of cluster randomized trials for infectious diseases	93.855		AH000680	8,258	-
Health Research, Inc. - Latitudinal Landscape Genomics and Ecology of Anopheles darlingi	93.855		6511-01	26,923	-
Johns Hopkins University - Johns Hopkins University Kampala-Nanning Clinical Trial Unit	93.855		UM1AI069530	14,791	-
Johns Hopkins University - Pediatric Adolescent Virus Eradiation (PAVE) Martin Delaney Collaboratory	93.855		2005379996	6,981	-
Massachusetts Eye and Ear Infirmary - Compounds and Strategies for Treating MRSA and VRE	93.855		530539	131,242	-
Massachusetts Eye and Ear Infirmary - Subproject: Compounds and pathways for antibacterial combinations	93.855		531043	254,945	-
Massachusetts General Hospital - Assessing measures to eliminate transmission of cholera in Haiti	93.855		232975	47,930	-
Massachusetts General Hospital - Cost Effectiveness of Preventing HIV Complications	93.855		236800	65,202	-
Massachusetts General Hospital - Novel Methods to Inform HIV/TB Clinical Trial Development	93.855		237011	42,802	-
Massachusetts General Hospital - Optimizing HIV Care in Less Developed Countries	93.855		233034	59,561	-

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Northeastern University - A general mechanism of persister formation	93.855		500637-78050	229,578	-
Oklahoma Medical Research Foundation - Disease and Race Specific Single-cell Epigenetic Mechanisms in Human SLE	93.855		0340-01	75,000	-
Regents of the University of California - Los Angeles - A5404- Leadership and Operations Center (LOC), AIDS Clinical Trials Group (ACTG)	93.855		1560GZA068	125,166	-
Regents of the University of California - Los Angeles - A5405 : A5405/ACTIV2b- Leadership and Operations Center (LOC), AIDS Clinical Trials Group (ACTG)	93.855		1560GZB035	65,034	-
Regents of the University of California - Los Angeles - Leadership and Operations Center (LOC), AIDS Clinical Trials Group (ACTG)	93.855		1560GYC332	362,677	-
Regents of the University of California - Los Angeles - Leadership and Operations Center (LOC), AIDS Clinical Trials Group (ACTG)	93.855		1560GYC333	81,251	-
Regents of the University of California - San Diego - Center for AIDS Research, Biostatistics and Modeling (BAM) Core	93.855		104237211-004	40,344	-
Regents of the University of California - San Diego - Revealing Reservoirs during Rebound (R3)	93.855		93420631	76,252	-
Regents of the University of California - San Francisco - Duration Randomized Anti-MDR-TB and Tailored Intervention Clinical Trial	93.855		12461sc	20,989	-
Rutgers, The State University of New Jersey - Feasibility of Novel Diagnostics for TB in Endemic Countries (FEND for TB)	93.855		1996	112,295	-
Texas A&M Research Foundation - Structure-based Discovery of Critical Vulnerabilities of Mycobacteria	93.855		M1803704	167,551	-
The Broad Institute - A general, virus-free platform to rapidly map SARS-CoV-2 drug resistance	93.855		5001097-5500001698	29,240	-
The Broad Institute - Advancing Genomic Technologies to Combat Infectious Disease: Mapping Dynamics within Single Cells, Individual Hosts, and Global Populations	93.855		5000561-5500001281	11,150	-
The Broad Institute - Advancing Genomic Technologies to Combat Infectious Disease: Mapping Dynamics within Single Cells, Individual Hosts, and Global Populations	93.855		5000567-5500001280	336,246	-
The Broad Institute - Innovative technologies to transform antibiotic discovery	93.855		5001138-5500001346	74,733	-
Tufts Cummings School of Veterinary Medicine - Myeloid-Derived Suppressor Cells in Tuberculosis Granuloma Structure and Function	93.855		103539-00001	81,862	-
Tufts University - Single-cell factors of tuberculosis drug tolerance during adaptation to environmental stressors	93.855		103346	84,192	-
University of California, San Diego - Automation and Evaluation of Real-Time Transmission Network-Based HIV Prevention Services in New York City	93.855		99689314	53,627	-
University of California, San Diego - Impact of reproductive aging on HIV persistence and inflammation	93.855		KR704633	19,490	-
University of California, San Diego - Leaving, Coming, and Staying HIV Obligate Microenvironments (HOME)	93.855		KR705293	1,013	-
University of California, San Diego - Primary Infection Resource Consortium (PIRC)	93.855		93599352	19,233	-
University of Cambridge - Large-scale systematic prioritisation of Plasmodium vivax blood stage vaccine antigens	93.855		R01AI137154-SPH	70,859	-
University of Maryland, Baltimore - A Genomics Based Investigation of the Determinants of Polymicrobial Infectious Disease Outcomes	93.855		1400685A	95,159	-
University of Massachusetts Medical School - Systems Genetics of Tuberculosis	93.855		OSP2018035	240,864	-
University of Massachusetts Medical School - Tuberculosis and T cell recognition	93.855		OSP2016182	97,270	-
University of Miami - Immune correlates of LTBI in HIV-exposed infants	93.855		OS00000564	29,914	-
University of Pennsylvania - NEXT GENERATION MISSING DATA METHODS IN HIV RESEARCH	93.855		574360	136,208	-
University of Pittsburgh - Conditionally replicating BCG for alternative vaccination routes	93.855		CNVA00062617 (132386-1)	197,966	-
University of Pittsburgh - Influence of SIV replication on TB progression and immunity	93.855		CNVA00056912 (131728-1)	114,311	-
University of Pittsburgh - Manipulation of innate immunity by Polyomavirus T antigens	93.855		AWD00002474 (134727-1)	130,784	-
University of Pittsburgh - Project 1: Synergies among Inhibitory Receptors in Tolerance Cancer and Antiviral Immunity	93.855		AWD00002849 (135387-2)	476,610	-
University of Pittsburgh Medical Center - Understanding use of direct to consumer telemedicine for pediatric acute respiratory infections	93.855		AWD00002531 (134810-1)	22,214	-
University of Washington - Malaria Evolution in South Asia	93.855		UWSC9952	259,073	-
Weill Medical College of Cornell University - Conditionally replicating Mycobacterium tuberculosis vaccines	93.855		214394	370,369	-
Weill Medical College of Cornell University - Pathway Analysis in Tuberculosis (Project 3)	93.855		222851-3	218,557	-
Weill Medical College of Cornell University - Pathway Analysis in Tuberculosis (Project 4)	93.855		222851-5	282,472	-
Western University of Health Sciences - Identifying schistosomiasis resistance genes of snail vectors in hotspot transmission zones: Translating from laboratory models to the field.	93.855		20150-Steinauer-HTHCHAN	14,755	-
Yale University - Costimulatory Mechanisms of Autoimmunity (Composite)	93.855		GR100959 (CON-80001032)	494,118	-
Yale University - Enhancing surveillance systems to slow the spread of antimicrobial-resistant gonorrhea in the United States	93.855		GR109897(CON-80002440)	52,430	-
Yale University - Integrating genomic and spatial approaches for targeted control of HIV-associated tuberculosis epidemics	93.855		CON-80002721(GR110925)	18,599	-

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Yale University - Structural analysis of inner membrane platform in the type 2 secretion system	93.855		GR111608 (CON-80002811)	9,569	-
Total for Assistance Listing Number 93.855				**9,268,003**	**204,196**
Baylor College of Medicine - A Comprehensive Resource for Manipulating the Drosophila Genome	93.859		7000000999	(32,215)	-
Brandeis University - Molecular and cellular determinants of Drosophila larva thermotaxis	93.859		403758	223,200	-
Brigham and Women's Hospital, Inc - Bayesian multivariate 3D spatial modeling for microbiome image analysis	93.859		125494	15,286	-
Icahn School of Medicine at Mount Sinai - Towards an integrated map of causal connections for common, complex diseases	93.859		0255-4051-4609	38,385	-
Northwestern University - Regulation and Function of Intermediate Filaments in Cell Mechanics	93.859		60051124 HU	415,508	-
Northwestern University - SCISIPBIO: Understanding and Assembling Dream Teams to Conduct Clinical and Translational Science.	93.859		60055246 HU	148,161	-
Regents of the University of Michigan - Accounting for Hidden Bias in Vaccine Studies: A Negative Control Framework	93.859		SUBK00012743	3,634	-
Regents of the University of Michigan - The Center for HIV RNA Studies (CRNA)	93.859		3004633964	283,068	-
Rosalind Franklin University of Medicine and Science - Structure and mechanism of the mitochondrial ATP synthase and Batten Disease gene product, Cln3p	93.859		212160 Mueller	8,715	-
The Jackson Laboratory - Teaching the Genome Generation: Cultivating High School Genomics through Pre-service Teacher Education	93.859		210367-0423-02	5,499	-
Trustees of Boston University - Integrative Approaches for Probing Cell Mechanotransduction in Health and Disease	93.859		4500003926	117,884	-
University of Georgia - Collaborative Research: Statistical Approaches for Deciphering the Regulatory Role of Small RNAs on Alternative Splicing	93.859		SUB00001241	2,853	-
Wellesley College - Optical Tools to Study Purinergic Signaling	93.859		SA26581	4,030	-
Total for Assistance Listing Number 93.859				**1,234,008**	**-**
Arizona State University - Innovative Family Prevention with Latino Siblings in Disadvantaged Settings	93.865		ASUB00000124	43,784	-
Boston College - Paternal influence on children’s weight outcomes	93.865		5108651-4	34,688	-
Brigham and Women's Hospital, Inc - Active Surveillance of the Safety of Antipsychotic Medications in Pregnancy	93.865		125323	38,575	-
Brigham and Women's Hospital, Inc - An individualized approach to promote nurturing care in low and middle income countries: A hybrid effectiveness/implementation trial of the Guide for Monitoring Child Development.	93.865		125594	33,848	-
Brigham and Women's Hospital, Inc - Birth Control to Improve Birth Spacing (BIBS)	93.865		125698	16,574	-
Brigham and Women's Hospital, Inc - Causes and consequences of mitochondrial dysfunction in oocytes and cumulus cells	93.865		117986	382,187	-
Brigham and Women's Hospital, Inc - Mechanics of Vertebrate Embryo Elongation	93.865		119812	85,803	-
Brigham and Women's Hospital, Inc - Mechanistic pathways of the effects of human-animal interaction on depression and psychosocial stress	93.865		123005	103,202	-
Brigham and Women's Hospital, Inc - TRANSLATING NEW INSIGHTS FROM AXOLOTL LIMB REGENERATION INTO MICE	93.865		120755	57,315	-
Brown University - Effect of Increased Payment for Immediate Postpartum Long-Acting Reversible Contraception on birth spacing and health outcomes: Evidence from South Carolina's Medicaid Policy Change	93.865		1598	20,487	-
Children's Hospital Boston - Examining neural mechanisms of developmental dyslexia from infancy to school-age	93.865		GENFD0001970225	339,525	-
Children's Hospital Boston - Examining neural mechanisms of developmental dyslexia from infancy to school-age	93.865		GENFD0002064075	85,814	-
Children's Hospital Boston - Healthcare Transitions and the Health of Adolescents and Young Adults with Intellectual or Developmental Disabilities	93.865		GENFD0002078929	50,296	-
Children's Hospital Boston - Healthcare Transitions and the Health of Adolescents and Young Adults with Intellectual or Developmental Disabilities	93.865		GENFD0002079521	44,364	-
Children's Hospital Corporation - The Hippocampus and Brainstem in the Sudden Infant Death Syndrome	93.865		GENFD0002012950	44,991	-
Emory University - Spatial Uncertainty in Small Area Population Inference from Survey and Administrative Data	93.865		A110121	137,679	-
Harvard Pilgrim Health Care - A lifecourse approach to women’s cardiometabolic and bone health: from fertility to perimenopause.	93.865		PH000730A	52,802	-
Harvard Pilgrim Health Care - Pre- and Peri- Natal Predictors of Childhood Health and Obesity	93.865		AH000630	39,215	-
Institut de Recherche pour le Developpement - Antiviral prophylaxis and infant vaccination to prevent perinatal hepatitis B infection.	93.865		307848/03	27,394	-
Johns Hopkins School of Public Health - Evaluating a Healthy Default Kids' Beverage Ordinance	93.865		2004546640	81,833	-
Johns Hopkins University - ‘’Determining Bone Loss and Bone Mineral Density Recovery following Repeat Pregnancy/Lactation among HIV Infected women on ART.’’	93.865		2004010614	15,963	-
Johns Hopkins University - Inter-generational Link of Cardio-Metabolic Risk: Integrate Multi-OMICs with Birth Cohort	93.865		2004406421	154,398	-
Johns Hopkins University - Preterm Birth, Maternal and Cord Blood Metabolome, and Child Metabolic Risk	93.865		2003250340	19,834	-
Massachusetts General Hospital - Adolescent Medicine Trials Network for HIV/AIDS Intervention (ATN) Coordinating Center	93.865		240255	52,953	-
Massachusetts General Hospital - FLOURISH – Following Longitudinal Outcomes to Understand, Report, Intervene and Sustain Health of Infants, Children and Adolescents who are HIV Exposed Uninfected	93.865		237245	3,993	-
Massachusetts General Hospital - Innovation across the spectrum of pediatric HIV care	93.865		235202	37,263	-
Massachusetts General Hospital - Long-term Impact of Fertility Treatments (LIFT) Study	93.865		231263	131,592	-

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Massachusetts General Hospital - Maternal obesity and inflammation as drivers of maternal morbidity in COVID-19	93.865		237358	1,676	-
Michigan State University - COVID-19 vaccination and menstrual health (Infertility History and Chronic Disease Profile)	93.865		RC113047A	162,660	-
Michigan State University - Infertility history and chronic disease profile	93.865		RC110679Harvard	49,061	-
New York University - Play and Learning Across a Year (PLAY)	93.865		F0998-35	1,469	-
Regents of the University of Michigan - Adolescent Medicine Trials Network for HIV/AIDS Interventions (ATN) Coordinating Center	93.865		SUBK00013937	11,513	-
Regents of the University of Michigan - FAMILY WELL-BEING RESEARCH NETWORK ("FAM-NET"): Measuring Family Well-Being across the Lifespan	93.865		SUBK00013014	145,984	-
Stellenbosch University, Faculty of Medicine and Health Sciences - Children HIV Exposed Uninfected Research to Inform Survival and Health	93.865		S006905-01	19,857	-
The Broad Institute - Dissecting the role of FMRP in RNA processing using hPSC models	93.865		5000765-5500001555	246,066	-
The Pennsylvania State University - Residential characteristics and child health and well-being	93.865		S001409-DHHS	12,950	-
Trustees of Boston University - HPV vaccination efficacy for cervical cancer prevention in young women with perinatal HIV infection	93.865		4500003130	(2,226)	-
Tulane University - Disparities in Recovery from Hurrican Katrina: NOLA@10	93.865		TUL-HSC-557488-19/20	8,617	(75)
University of Illinois at Urbana - Champaign - RNA Pol II pausing is critical for spermatogenesis and fertility	93.865		092758-17182	84,806	-
Total for Assistance Listing Number 93.865				**2,878,805**	**(75)**
Brigham and Women's Hospital, Inc - Advancing Geriatrics Infrastructure and Network Growth (AGING) Initiative	93.866		123647	13,200	-
Brigham and Women's Hospital, Inc - Boston OAIC: A Translational Approach to Function Promoting Anabolic Therapies	93.866		115900	(608)	-
Brigham and Women's Hospital, Inc - Boston OAIC: A Translational Approach to Function Promoting Anabolic Therapies	93.866		126169	9,312	-
Brigham and Women's Hospital, Inc - Center for Stress and Neural Regulation of Reproductive Aging Health Outcomes	93.866		123406	38,858	-
Brown University - Delirium, Dementia and the Vulnerable Brain: An integrated Approach (Project 4: Defining Phenotype of Complicated Delirium)	93.866		1317	3,962	-
Brown University - Parent-child separation and cardiometabolic risk factors and outcomes in adulthood: A systematic review of main effects, potential mediators, and modifiers in human studies	93.866		1779	19,935	-
Brown University - Which Post Acute Care Setting is best for Patients' Outcomes	93.866		1165	8,120	-
Columbia University - Short and long-term consequences of wildfires for Alzheimer's disease and related dementias	93.866		1(GG017519-01)	92,091	-
Columbia University - The Effect of De-Prescribing Antipsychotics on Clinical Quality for People with Alzheimer's Disease and Dementia	93.866		1(GG013824-01)	29,414	-
Dana-Farber Cancer Institute - Defining the Landscape and Mechanisms of Protein Redox Regulation during Aging	93.866		1318301	46,893	-
Emory University - Air Pollution and Alzheimer's Disease and Related Dementias: A National Study	93.866		A570268	34,334	-
Indiana University - Cumulative socioeconomic exposures, cash transfer interventions, and later-life cognitive decline and dementia risk in a low-income region of South Africa	93.866		8731-HU	95,298	-
Massachusetts General Hospital - Alzheimer's Disease and Related Dementia Care within the Medicare Program	93.866		233402	195,539	-
Massachusetts General Hospital - Harnessing Diverse BioInformatic Approaches to Repurpose Drugs for Alzheimer's Disease	93.866		233405	273,745	-
Massachusetts General Hospital - Impact of the COVID-19 Pandemic on Patients with and Without Alzheimer's Disease Related Dementias	93.866		239802	90,267	-
Massachusetts General Hospital - Longitudinal impact of chronic pain and its management on patient-centered outcomes in older adults	93.866		239631	15,425	-
Massachusetts General Hospital - Prospective Study of the Gut Microbiome in Aging.	93.866		237523	742,639	-
Massachusetts General Hospital - The CHARMED model: a multimorbidity simulation model for people aging with HIV	93.866		238631	141,478	-
Massachusetts General Hospital - Vascular Pathology in Early and Asymptomatic Cerebral Amyloid Angiopathy	93.866		238954	21,879	-
National Bureau of Economic Research - Improving Health Outcomes for an Aging Population	93.866		4135G.30.12.HMS	131,150	-
National Bureau of Economic Research - Improving Health Outcomes for an Aging Population	93.866		4135G.30.16.HKS	129,011	-
National Bureau of Economic Research - Public Policy and the Future of the Long Term Care Workforce	93.866		41860.HMS	126,708	-
National Bureau of Economic Research - Socioeconomic Status, Mortality, and Morbidity in Older Americans	93.866		41810.Harvard	58,668	-
National Opinion Research Center - National Social Life and Aging Project: Wave 4	93.866		G160MONK1	68,524	-
Northwestern University - Proteostasis in Aging and Neurodegenerative Disease (Core C)	93.866		60052292 HARVARD	119,970	-
Northwestern University - Proteostasis in Aging and Neurodegenerative Disease (Project 2)	93.866		60059773 HARV	536,474	-
Ohio State University - Neuroimaging and Molecular Markers of AD and Neurodegenerative Disease after Concussion.	93.866		SPC-1000003927/GR114054	26,288	-
Regents of the University of California - San Francisco - Advancing Psychosocial and Biobehavioral Approaches to Improve Emotional Well-Being	93.866		12669sc	22,115	-
Regents of the University of California - San Francisco - Closing the gap between observational research and randomized trials for prevention of Alzheimer's Disease and dementia	93.866		11206sc	98,864	-
Regents of the University of California - The Impact of physician and health system factors on the quality of care for persons with Alzheimer's disease and related dementias at the end of life	93.866		1557 G YA572	21,322	-

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Regents of the University of New Mexico - Biodemography of Aging in Wild Chimpanzees	93.866		045446-87D7	(63)	-
Rush University Medical Center - A Novel Epigenetic Clock for Brain Aging	93.866		20012006-Sub01	99,825	-
Rush University Medical Center - MIND Diet Intervention to Prevent Alzheimers Disease	93.866		15052004-Sub01	169,972	-
Rush University Medical Center - The Alzheimer's Gut Microbiome Project	93.866		18091006-Sub01	29,200	-
Rutgers, The State University of New Jersey - Disease Outcomes iN Older adults under extreme Heat, AiR pollution and Medication use (DO-NO-HARM)	93.866		1299	54,517	-
Stanford University - Link between epigenetic and fat metabolism	93.866		61396029-122992	74,642	-
Syracuse University - Educational Attainment, Geography, and U.S. Adult Mortality Risk	93.866		29218-04806-S04	17,506	-
Trustees of Dartmouth College - Causes and Consequences of Healthcare Efficiency	93.866		R1341	67,398	-
Trustees of Dartmouth College - Causes and Consequences of Healthcare Efficiency - Project 3	93.866		R1033	69,195	-
Trustees of Dartmouth College - Causes and Consequences of Healthcare Efficiency - Project 4	93.866		R1034	8,589	-
University of Colorado Denver - Pitavastatin to REduce Physical Function Impairment and FRailty in HIV (PREPARE)	93.866		FY17.830.002	41,010	-
University of Massachusetts - Amherst - Development and Application of a Metabolomic Profile of Chronic Distress to Diseases of	93.866		18-010151 B05	109,205	-
University of Miami - Sleep in Neurocognitive Aging and Alzheimer's Research (SANAR)	93.866		OS00000739	32,496	-
University of Pennsylvania - Novel Designs and Methods to Remove Hidden Confounding Bias in Health Sciences	93.866		579679	30,174	-
University of Southern California - Dietary Restriction, GH-IGF-1 and Mechanisms of Differential Cellular Protection	93.866		101993163	(5,979)	-
University of Southern California - Harmonized Diagnostic Assessment of Dementia (DAD) for Longitudinal Aging Study of India (LASI)	93.866		137887989	28,537	-
University of Southern California - Harmonized Diagnostic Assessment of Dementia (DAD) for Longitudinal Aging Study of India (LASI)-Genomic study	93.866		135974887	35,880	-
University of Washington - Vulnerability and Resiliency in the Aging Adult Brain Connectome (AABC)	93.866		WU-22-0361-Mod-1	31,546	-
University of Wisconsin - Integrative Pathways to Health and Illness Project 1 - Psychosocial Contributors	93.866		782	31,410	-
Massachusetts General Hospital - Comparative Safety of Seizure Prophylaxis within the Medicare Program	93.866		239682	5,064	-
Total for Assistance Listing Number 93.866				**4,140,999**	**-**
Children's Hospital Corporation - CRISPR screening for novel regulators of retinal ganglion cell survival and axon regeneration	93.867		GENFD0002202703	7,091	-
Massachusetts Eye and Ear Infirmary - Metabolomics a novel tool for investigating the pathogenesis of Age-related Macular	93.867		530812	71,997	-
Massachusetts General Hospital - Lithium Niobate on Insolator (LNOI) Photonic Circuit Lasers for High-Speed, Widefield OCT	93.867		237203	118,131	-
Oregon Health and Science University - Aggregation of Deamidated Crystallins as a Major Cause of Cataracts	93.867		1019270 HARVARD	12,695	-
Total for Assistance Listing Number 93.867				**209,914**	**-**
Children's Hospital Boston - International Bioethics Research Traiing (IBRTI - Central Asia Network)	93.989		GENFD0002120243	11,068	-
College of Medicine of the University of Lagos - Building Research And Innovation in Nigeria's Science - (BRAINS)	93.989		Harvard-TW010134	38,425	-
University of Jos - Support of Training and Mentoring in Nigeria for Academics [STAMINA]	93.989		UJHVD-STAMINA-Y5	(10,644)	-
Total for Assistance Listing Number 93.989				**38,849**	**-**
Abt Associates, Inc. - Evaluation of the Oncology Care Model	93.RD		46244	471,078	-
Brigham and Women's Hospital, Inc - Developing the Capability of Using National Medicaid data for FDA Post-Marketing Surveillance to Assess Medication Safety During Pregnancy	93.RD		118120	(1,561)	-
Children's Hospital Boston - Adjuvant Discovery Program (DHHS Federal Contract Subcontract)	93.RD		GENFD0002172273	98,987	-
Harvard Pilgrim Health Care - Improving Public Health Responses to Emerging Health Threats: Accelerating Mathematical Modeling Development	93.RD		200-2016-91779/75D30121F0003	321,486	-
International Consulting Associates - FDA Medical Data Enterprise – Development AI Tool	93.RD		ICA-SK-21-200-HA001	268,842	-
Rand Corporation - Implementation of the Medicare PDP and MA Plan Disenrollment Reasons Survey	93.RD		PO-000002373	89,476	-
Saint Vincent College - National Center for Parent, Family, and Community Engagement (NCPFCE)	93.RD		No Award Number	30,000	-
Stanford University - Molecular mechanism of mitochondrial ion transport	93.RD		62411169-165937	110,850	-
The Broad Institute - Human Tumor Atlas Pilot Project (HTAPP)	93.RD		5101211-5500001184	5,259	-
University of North Carolina - Bringing Covid Data to the BioData Catalyst Ecosystem	93.RD		5120206	594,200	-
University of North Carolina - Chapel Hill - NHLBI Data STAGE Coordinating Center	93.RD		5123050	33,730	-
University of North Texas Health Science Center - AIM-AHEAD Research Fellowship	93.RD		RF00250-SUB00067	15,233	-
Westat Corporation - NICHD International and Domestic Pediatric and Maternal HIV and Other High Priority Infectious Diseases Data Coordinating Center	93.RD		6579-S42	27,235	-
Total for Assistance Listing Number 93.RD				**2,064,815**	**-**
Total for Department of Health and Human Services Subaward Received R&D Cluster				**68,955,436**	**1,492,457**

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EPA					
Health Effects Institute - Assessing Adverse Health Effects of Long-Term Exposure to Low Levels of Ambient Air Pollution	66.511		4953-RFA14-3/16-4-4	308,000	-
Total for Assistance Listing Number 66.511				**308,000**	**-**
Yale University - Australian Wildfires and Perinatal Health Risks	66.RD		CON-80003395 (GR114907)	73,386	-
Total for Assistance Listing Number 66.RD				**73,386**	**-**
Total for EPA Subaward Received R&D Cluster				**381,386**	**-**
Millennium Challenge Corporation					
Massachusetts Institute of Technology - The J-PAL and EPoD Employment Lab	85.RD		S5123-001	552,678	22,896
Total for Assistance Listing Number 85.RD				**552,678**	**22,896**
Total for Millennium Challenge Corporation Subaward Received R&D Cluster				**552,678**	**22,896**
NASA					
California Institute of Technology - Global Mapping at High-Resolution of Glacial Units on Mars: Calculating Constraints on the Long-Term Evolution of the Martian Climate	43.001		S482775	14,335	-
Georgetown University - Agnostic Biosignatures for Extant Life	43.001		AWD7773186-GR205803	87,344	-
Regents of the University of California - Santa Cruz - Moderately volatile elements as a probe of planetary accretion	43.001		A21-0492-S001	85,656	-
Smithsonian Astrophysical Observatory - Participation in Advancing Miniature Lightweight X-ray Optics for Solar System Exploration	43.001		SV1-11015	33,112	-
University Corporation for Atmospheric Research - The Solar Imaging Metasurface Polarimeter	43.001		SUBAWD002891	77,586	-
University of Hawaii - Thermal and Alteration History of the CV Parent Asteroid	43.001		MA1658	69,489	-
University of Illinois at Urbana - Champaign - The Reading Time Machine: Transforming Astrophysical Literature into Actionable Data	43.001		103937-18452	30,286	-
University of Southern California - Source-differentiated air quality system to safeguard the respiratory health of US military personnel deployed in Southwest Asia, Djibouti, and Afghanistan	43.001		117990936	145,555	-
University of Texas - Austin - Evolution of Mercury's Core Dynamo	43.001		UTA19-000492	53,712	-
University of Washington - The Virtual Planetary Laboratory: Advancing the Search for Life Beyond the Solar System	43.001		UWSC10439	24,551	-
Washington University - Development of the High Performance Version of GEOS-Chem (GCHP) to enable broad community access to high-resolution atmospheric composition modeling and chemical data assimilation	43.001		WU-20-334-MOD-4	188,221	-
Woods Hole Oceanographic Institution - Exploring Ocean Worlds: Ocean System Science to Support the Search for Life	43.001		23142700	236,670	-
Total for Assistance Listing Number 43.001				**1,046,517**	**-**
Massachusetts Institute of Technology - Autonomous Robot Swarms for Lunar Orbit Servicing and Space Asset Assembly	43.012		S5274	81,341	-
Purdue University - Resilient ExtraTerrestrial Habitats institute (RETHi)	43.012		12000295-027	639,409	-
Total for Assistance Listing Number 43.012				**720,750**	**-**
Arizona Board of Regents, University of Arizona - JWST Near Infrared Camera (NIRCam)	43.RD		152977	162,626	-
Smithsonian Astrophysical Observatory - Participation in Tropospheric Emissions: Monitoring of Pollution (TEMPO) Program	43.RD		SV3-83020	32,718	-
Southwest Research Institute - Juno Project	43.RD		NO. 699042X	217,040	-
Trustees of Boston University - Calibration and validation of XCO2 and SIF for urban targets	43.RD		4500003755	56,774	-
Total for Assistance Listing Number 43.RD				**469,158**	**-**
Total for NASA Subaward Received R&D Cluster				**2,236,425**	**-**
National Endowment for the Humanities					
iCivics, Inc. - Educating for American Democracy	45.162		No Award Number	1,609	-
Total for Assistance Listing Number 45.162				**1,609**	**-**
Total for National Endowment for the Humanities Subaward Received R&D Cluster				**1,609**	**-**
National Science Foundation					
Aliro Technologies, Inc. - Optimized Quantum Algorithms for Noisy-Quantum Devices	47.041		No Award Number	58,663	-
Arizona Board of Regents, University of Arizona - NSF Engineering Research Center for Quantum Networks (CQN)	47.041		606947	718,331	-
Florida State University - Understanding the interrelationships among floods, building characteristics, mold growth and occupants' asthma symptoms in submerged residential buildings in the aftermath of Hurricane Ida	47.041		R000002966	27,745	-
Massachusetts Institute of Technology - DMREF: Computational Design of Next-generation Nanoscale DNA-based Materials	47.041		74850	127,236	-
Massachusetts Institute of Technology - EFRI ACQUIRE: Scalable Quantum Networks with Error-Corrected Semiconductor Qubits	47.041		5710004174	(1,704)	-
Massachusetts Institute of Technology - EFRI C3 SoRo: Soft, Strong, and Safe Configurable Robots for Diverse Manipulation Tasks	47.041		S4649 - PO 217699	216,188	-
Purdue University - FMRG: Cyber Privacy-Preserving Tiny Machine Learning Edge Analytics to Enable AI-Commons for Secure Manufacturing	47.041		10001927-018	167,782	-
Stanford University - RAISE TAQS: Engineering high quality, practical qubits in diamond	47.041		62035117-137164	28,830	-
Trustees of Boston University - Nanosystems Engineering Research Center for Directed Multiscale Assembly of Cellular Metamaterials with Nanoscale Precision: CELL-MET	47.041		4500004142	154,832	-

Harvard University
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Federal Grantor/Pass-through Grantor/Program or Cluster Title	Assistance Listing Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
Trustees of Boston University - Nanosystems Engineering Research Center for Directed Multiscale Assembly of Cellular Metamaterials with Nanoscale Precision: CELL-MET	47.041		4500004143	129,121	-
University of Illinois at Urbana - Champaign - EFRI C3 SoRo: An integrated approach towards the computational design, fabrication and understanding of bio-hybrid soft architectures capable of adaptive behavior	47.041		093088-17158	28,062	-
University of Rhode Island - NCS-FO: SOUND: Understanding the Functional Neural Dynamics Underpinning Auditory Processing Dysfunctions through a Multiscale Recording-Stimulation Framework	47.041		0008544/11122020	25,098	-
University of Washington - AI Institute in Dynamic Systems	47.041		UWSC13223	37,425	-
Total for Assistance Listing Number 47.041				**1,717,609**	**-**
University of Colorado at Boulder - QLCI-CI: Enhanced Sensing and DIstribution Using Quantum States	47.048		1559522	422,754	-
Total for Assistance Listing Number 47.048				**422,754**	**-**
Clemson University - EAGER-QAC-QSA: Quantum Algorithms for Correlated Electron-Phonon System	47.049		2222-206-2014111	44,327	-
Massachusetts Institute of Technology - AI Institute: The Center for Artificial Intelligence and Fundamental Interactions	47.049		S5206, PO 560825	643,532	-
Massachusetts Institute of Technology - Characterizing and Utilizing 2D van der Wals Materials with Superconducting Qubits	47.049		S4874 - PO 382989	130,686	-
Massachusetts Institute of Technology - NSF PFC Center for Ultracold Atoms Renewal	47.049		S4528 - PO 128237	1,374,736	-
Navajo Technical University - PREM VENTURES	47.049		NTU-42770-21	6,554	-
Navajo Technical University - VENTURES - Vision for Excellence at Navajo Technical University in Research and Education in STEM	47.049		42766-00-1174	89,733	-
Purdue University - RAISE-TAQS: Multifunctional Hybrid Quantum Systems for Spin-Based Quantum Control and Metrology	47.049		10001431-011	72,688	-
Stanford University - MSIP: Innovation to Achieve the Full Science Reach of the BICEP Array Stage 3 CMB Polarization Experiment	47.049		61941274-134448	789,064	-
University of Chicago - ACME III: Advanced Cold Molecule Electron Electric Dipole Moment Search	47.049		AWD102289 (SUB00000526)	325,207	-
University of Chicago - QLCI-CI NSF Quantum Leap Challenge Institute for Quantum Sensing in Biophysics and Bioenginering	47.049		AWD102417 (SUB00000579)	79,607	-
University of Notre Dame - QuIC - TAQS: Deterministically Placed Nuclear Spin Quantum Memories for Entanglement Distribution	47.049		204276HU	5,914	-
University of Oregon - QuIC-TAQS: Implementation of a Neutral-Atom- Photonic-Cluster State	47.049		2014Y0A	15,351	-
Yale University - ACME III: Advanced Cold Molecule Electron Electric Dipole Moment Search	47.049		GR107173(CON-80001858)	4,367	-
Total for Assistance Listing Number 47.049				**3,581,766**	**-**
California Institute of Technology - MRI: Development of a 150 GHz Receiver for the BICEP Array CMB Polarimeter	47.050		S386502	36,317	-
Georgia Institute of Technology/Georgia Tech Research Corporation - Collaborative Research: ICECAP (Ice Age Chemistry and Proxies) Phase 4: Investigating aerosol transport, forcing, and climate feedbacks during the Common and last glacial eras	47.050		AWD-002731-G1	12,992	-
University of Washington - CAREER: Dynamics of surface rupturing thrust earthquakes	47.050		UWSC13013	69,680	-
Total for Assistance Listing Number 47.050				**118,989**	**-**
Boston University School of Public Health - SCH: INT: Distributed Analytics for Enhancing Fertility in Families	47.070		4500003418	15,356	-
Colorado School of Mines - HDR Institute: Center for Data-Driven Dynamical Design	47.070		402052-5802	16,315	-
Columbia University - BD Hubs: NORTHEAST: The Northeast Big Data Innovation Hub	47.070		25(GG014586-02)	6,939	-
Computing Research Association - Computing Innovation Fellows 2020 Project	47.070		CIF2020-HU-37	126,461	-
Computing Research Association - Computing Innovation Fellows 2020 Project	47.070		CIF2020-HU-52	31,615	-
Computing Research Association - Computing Innovation Fellows 2021 Project	47.070		2021CIF-Harvard-06	105,384	-
Internet2 - CI CoE: Demo Pilot: Advancing Research Computing and Data: Strategic Tools, Practices, and Professional Development	47.070		1048-A	41,096	-
Johns Hopkins University - Collaborative Research: CNS Core: Medium: Cross-Layer Design of Video Analytics for the Internet of	47.070		2005122791	16,325	-
Massachusetts Institute of Technology - A Center for Brains, Minds, and Machines: The Science and the Technology of Intelligence	47.070		S3409	516,971	114,709
Trustees of Boston University - CIF21 DIBBs: EI: North East Storage Exchange,	47.070		4500002550	220,928	-
University of Delaware - NRI: INT: COLLAB: Anthropomorphic Robotic Ankle Prosthesis with Programmable Materials	47.070		57023	90,298	-
Total for Assistance Listing Number 47.070				**1,187,688**	**114,709**
Cornell University - MCA: Effects of unsteady wind and surface morphology on plant transpiration	47.074		138711-21065	12,887	-
Northern Arizona University - Collaborative Proposal: MSB-FRA: Improved Understanding of Feedbacks between Ecosystem Phenology and the Weather-Climate Nexus at Local-to-Continental Scales	47.074		1003392-01	6,847	-
Regents of the University of California - Davis - VISABLI, an RCN-UBE for Visualizations, Interactive Simulations, and Animations for Biology Learning and Instruction	47.074		A19-0888-S001	40,838	-
Regents of the University of California - Santa Barbara - IDBR TYPE A: Definitive Chemical Analysis of Microbial Volatile Mixtures via Microwave Spectroscopy	47.074		KK1874	(3,570)	-
Simmons University - Unraveling the developmental genetics that underlie anuran limb initiation	47.074		S400036HMS	33,749	-

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Federal Grantor/Pass-through Grantor/Program or Cluster Title	Assistance Listing Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
Texas A and M University - Digitization TCN: Collaborative: American Crossroads: Digitizing the vascular flora of the south-central United States	47.074		M1903686	4,035	-
Yale University - NEURONEX: The fabric of the primate neocortex and the origin of mental representations. From transcriptomics to single neurons and neuronal networks.	47.074		GR110627 (CON-80002601)	156,607	-
Total for Assistance Listing Number 47.074				**251,393**	**-**
American Political Science Association - Women, Power, and Networks: The Gendered Politics of Economic Empowerment	47.075		No Award Number	8,100	-
New Jersey Institute of Technology - New Jersey Institute of Technology Campus Alignment Review of Ethics	47.075		997623-2021-22	14,703	-
Northeastern University - CRISP Type 2: Interdependent Network-based Quantification of Infrastructure Resilience (INQUIRE)	47.075		502536-78051	62,492	-
Regents of the University of California - Irvine - Multidimensionality of Race and Social Networks	47.075		2019-3781	3,533	-
Tufts University - 2020 Cooperative Congressional Election Study	47.075		SF0085	50,256	-
Total for Assistance Listing Number 47.075				**139,084**	**-**
Georgia Research Alliance - AI Institute for Adult Learning and Online Education (ALOE)	47.076		2112532-Harvard University	426	-
North Carolina State University - Using Animated Contrasting Cases to Improve Procedural and Conceptual Knowledge in Geometry	47.076		2019-1219-01	28,515	-
Smithsonian Astrophysical Observatory - Participation in YouthAstroNet: Research on the scale-up of innovative technology experiences in astronomy and science imaging – Scaling, Expanding, and Iterating Innovations (SEI)	47.076		SV1-11010	112,087	-
Total for Assistance Listing Number 47.076				**141,028**	**-**
University of Washington - NSFGEO-NERC: Collaborative Research: A new mechanistic framework for modeling rift processes in Antarctic ice shelves validated through improved strain-rate and seismic observations	47.078		UWSC13050	80,201	-
Total for Assistance Listing Number 47.078				**80,201**	**-**
Arizona Board of Regents, University of Arizona - PIRE: Black-Hole Astrophysics in the Era of Distributed Resources and Expertise	47.079		438295	113,340	-
Columbia University - Columbia University MRSEC on Precision-Assembled Quantum Materials	47.079		2(GG015783-06)	101,498	-
CRDF Global - Are TB neighborhoods a high risk population for active intervention	47.079		OISE-9531011	9,870	-
University of Chicago - PIRE: International Partnership for Cirrus Studies	47.079		FP065300-A	166,815	-
Total for Assistance Listing Number 47.079				**391,523**	**-**
Columbia University - Towards Life with a Reduced Protein Alphabet	47.RD		1(GG016822-01)	40,115	-
Smithsonian Astrophysical Observatory - The Spectrum Laboratory: Toward Authentic Inquiry for All	47.RD		SV8-88015	21,763	-
University of Utah - Functional analyses of the vocal central pattern generators of African clawed frogs	47.RD		10053591	68,153	-
Total for Assistance Listing Number 47.RD				**130,031**	**-**
Total for National Science Foundation Subaward Received R&D Cluster				**8,162,066**	**114,709**
Office of the Director of National Intelligence					
Charles Stark Draper Laboratory, Inc. - Draper Team Felix Proposal	12.RD		SC001-0000001214	304,494	-
Georgia Institute of Technology/Georgia Tech Research Corporation - ROBUST AUTONOMY IN UAVs ON A CONVERGENT DIGITAL-ANALOG FERROELECTRONICS	12.RD		AWD-003001-S1	68,378	-
Oak Ridge Institute For Science And Education - On-Chip Optical Downconversion for Quantum Radar	12.RD		SAWD-WD-00851	35,614	-
The Broad Institute - Molecular Encoding Technologies for Archiving	12.RD		5012031-5500001336	1,386,644	-
Total for Assistance Listing Number 12.RD				**1,795,130**	**-**
Total for Office of the Director of National Intelligence Subaward Received R&D Cluster				**1,795,130**	**-**
Social Security Administration					
Board of Regents of the University of Wisconsin System - An Exploratory Study of Community-Based Aging: Resources and Resilience of Older Adults During Covid-19	96.007		1946	59,956	-
National Bureau of Economic Research - Applying Disability Determination Methods from the Netherlands in the US	96.007		51460.03:R-DRCNB21-08-HMS	28,993	-
National Bureau of Economic Research - The Effect of Health Insurance Affordability on the Employment of People with Disabilities	96.007		51460.03:R-DRCNB21-13-HMS	16,624	-
National Bureau of Economic Research - Understanding Variation in Occupational Requirements	96.007		51460.03:R-DRCNB21-07-HMS	12,936	-
University of Wisconsin-Madison - Spending on Health Among Older Adults Before and After Mortgage Payoff	96.007		1148	16,491	-
Total for Assistance Listing Number 96.007				**135,000**	**-**
Total for Social Security Administration Subaward Received R&D Cluster				**135,000**	**-**
Total for Reseach and Development Cluster Subaward Received				**103,129,418**	**2,097,496**
Total for Reseach and Development Cluster				**639,640,648**	**129,853,392**

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Federal Grantor/Pass-through Grantor/Program or Cluster Title	Assistance Listing Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
Student Financial Assistance Cluster					
Direct Award					
Department of Education					
Federal SEOG Grant 2021-2022	84.007	P007A211874		2,940,929	-
Total for Assistance Listing Number 84.007				**2,940,929**	**-**
Federal Work-Study Program (On Campus)	84.033	P033A211874		809,787	-
Federal Work-Study Program (Off Campus)	84.033	P033A211874		1,039,664	-
Total for Assistance Listing Number 84.033				**1,849,451**	**-**
Federal Perkins Loans Outstanding Loans as of July 1, 2021	84.038			19,614,996	-
Federal Perkins Loans New Loans Issued During 2021-2022	84.038			-	-
Federal Perkins Loans Administrative Cost Allowance	84.038			-	-
Total for Assistance Listing Number 84.038				**19,614,996**	**-**
Federal Pell Grant 2020-2021	84.063	P063P200187		3,728	-
Federal Pell Grant 2021-2022	84.063	P063P210187		7,452,342	-
Total for Assistance Listing Number 84.063				**7,456,070**	**-**
Federal Direct Student Loans 2020-2021	84.268			219,359	-
Federal Direct Student Loans 2021-2022	84.268			102,874,814	-
Total for Assistance Listing Number 84.268				**103,094,173**	**-**
Total for Department of Education Direct Award Student Financial Assistance				**134,955,619**	**-**
Department of Health and Human Services					
Health Professions Student Loans, Primary Care Loans and Loans for Disadvantaged Students (HPSL/PCL/LDS) Outstanding Loans as of July 1, 2021	93.342			12,140,742	-
New Loans Issued During 2021-2022 - HPSL	93.342	4 E11HP27293 02 00		471,000	-
New Loans Issued During 2021-2022 - LDS	93.342	4E31HP27253 02 00		940,976	-
HPSL/PCL/LDS Administrative Cost Allowance	93.342			-	-
Total for Assistance Listing Number 93.342				**13,552,718**	**-**
Total for Department of Health and Human Services Direct Award Student Financial Assistance				**13,552,718**	**-**
Total for Student Financial Assistance Direct Award				**148,508,337**	**-**
Total for Student Financial Assistance Cluster				**148,508,337**	**-**
Head Start Cluster					
Direct Award					
Department of Health and Human Services					
A Bioecological Approach to Understanding the Predictors and Consequences of Absenteeism in Head Start	93.600	90YR0126-01-00		18,003	-
Total for Assistance Listing Number 93.600				**18,003**	**-**
Total for Head Start Cluster				**18,003**	**-**
Other Programs					
Direct Award					
Department of Education					
Foreign Language and Area Studies (FLAS): Davis Center for Russian and Eurasian Studies	84.015	P015B180078		383,303	-
Foreign Languages and Area Studies (FLAS) - Center for African Studies	84.015	P015B180138-21		243,399	-
National Resource Centers: Center for African Studies	84.015	P015A180138		217,093	-
National Resource Centers: Davis Center for Russian and Eurasian Studies	84.015	P015A180078 - 21		264,059	-
Total for Assistance Listing Number 84.015				**1,107,854**	**-**
Total for Department of Education Direct Award Other Programs				**1,107,854**	**-**
Department of Energy					
ATLAS NSW Front-end Electronics Commissioning and Maintenance	81.U01	394993		183,392	-
Total for Assistance Listing Number 81.U01				**183,392**	**-**
IC Fellowship (Loren Alegria) Research Advisor Stipend, Travel, and Lab Allowance	81.U02	No Award Number		(859)	-
Total for Assistance Listing Number 81.U02				**(859)**	**-**
Total for Department of Energy Direct Award Other Programs				**182,533**	**-**
Department of Homeland Security					
Blue Campaign Program Evaluation and Violence Prevention	97.108	21STFRG00012-01-01		372,994	-
Evaluation of the Greater Boston Countering Violent Extremism (CVE) Pilot Program	97.108	15STFRG00005-01-03		511	-
Total for Assistance Listing Number 97.108				**373,505**	**-**
Total for Department of Homeland Security Direct Award Other Programs				**373,505**	**-**

Harvard University
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Federal Grantor/Pass-through Grantor/Program or Cluster Title	Assistance Listing Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
Department of Housing & Urban Development					
Achieving Excellence in Community Development	14.U01	No Award Number		83,651	-
Total for Assistance Listing Number 14.U01				**83,651**	**-**
THE EDWARD M. GRAMLICH FELLOWSHIP IN COMMUNITY AND ECONOMIC DEVELOPMENT SUMMER FELLOWSHIP PROGRAM - Summer 2021	14.U02	No Award Number		27,000	-
Total for Assistance Listing Number 14.U02				**27,000**	**-**
Total for Department of Housing & Urban Development Direct Award Other Programs				**110,651**	**-**
Department of State					
Recollections of Service: An Oral History Project	19.040	SVM70020GR0039		10,502	-
Total for Assistance Listing Number 19.040				**10,502**	**-**
Total for Department of State Direct Award Other Programs				**10,502**	**-**
Department of the Treasury					
Low Income Taxpayers Clinic	21.008	21-LITC0393-03-00		50,483	-
Low Income Taxpayers Clinic	21.008	22-LITC0551-01-02		51,168	-
Total for Assistance Listing Number 21.008				**101,651**	**-**
Total for Department of the Treasury Direct Award Other Programs				**101,651**	**-**
Department of Health and Human Services					
COVID-19: American Rescue Plan Act for National Training	93.129	1U3FCS41787 01 00		5,323	-
Equitable Care For Elders	93.129	5U30CS30788 06 00		504,715	-
Equitable Care For Elders	93.129	6 U30CS30788 03 03		(10,209)	-
Total for Assistance Listing Number 93.129				**499,829**	**-**
COVID-19: Provider Relief Fund and American Rescue Plan	93.498	No Award Number		578,339	-
Total for Assistance Listing Number 93.498				**578,339**	**-**
Total for Department of Health and Human Services Direct Award Other Programs				**1,078,168**	**-**
Institute of Museum and Library Services					
Hear Me Out: Expanding Hispanic engagement through collaboration	45.301	MA-245652-OMS-20		62,135	-
Marshall Family Archives Digitization Project	45.301	MA-245387-OMS-20		141,636	-
Next generation sample curation of a Historic Meteorite Collection	45.301	MA-30-19-0516-19		29,316	-
Opening Up Digital Collections: Learning Resources for Middle School	45.301	MA-10-18-0311-18		40,363	-
Total for Assistance Listing Number 45.301				**273,450**	**-**
Total for Institute of Museum and Library Services Direct Award Other Programs				**273,450**	**-**
NASA					
The 9th International GEOS-Chem Meeting (IGC9)	43.001	80NSSC19K0410		1,004	-
Total for Assistance Listing Number 43.001				**1,004**	**-**
Total for NASA Direct Award Other Programs				**1,004**	**-**
National Endowment for the Humanities					
Imperiia: An Information Ecosystem for Russian History	45.169	HAA-266553-19		630	-
Mapping Color in History (MCH)	45.169	HAA-269007-20		12,827	12,827
Total for Assistance Listing Number 45.169				**13,457**	**12,827**
Total for National Endowment for the Humanities Direct Award Other Programs				**13,457**	**12,827**
Total for Other Programs Direct Awards				**3,252,775**	**12,827**
Other Programs					
Subaward Received					
Department of Education					
Tennessee Department of Education - Setting Students Up for Success: Research, Evaluation, and Guidance on College Going Interventions	84.372		33145-02720	1,038	-
Total for Assistance Listing Number 84.372				**1,038**	**-**
United Way Massachusetts Bay, Inc. (UWMB) - BoSTEM Initiative with MEDscience	84.411		No Award Number	18,276	-
Total for Assistance Listing Number 84.411				**18,276**	**-**
Total for Department of Education Subaward Received Other Programs				**19,314**	**-**

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Federal Grantor/Pass-through Grantor/Program or Cluster Title	Assistance Listing Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
Department of Justice					
Brockton Public Schools - SAVE (Solutions to Averting Violence in Education)	16.U01		BJA-2020-17313	44,560	-
Total for Assistance Listing Number 16.U01				**44,560**	**-**
Total for Department of Justice Subaward Received Other Programs				**44,560**	**-**
Department of Health and Human Services					
AIDS Prevention Initiative in Nigeria, Ltd/Gte. - Engaging Indigenous Organizations to Sustain and Enhance Comprehensive Clinical Services for the Prevention, Care and Treatment of HIV/AIDS in Nigeria under PEPFAR	93.067		GH17 1753	413,381	-
Total for Assistance Listing Number 93.067				**413,381**	**-**
Total for Department of Health and Human Services Subaward Received Other Programs				**413,381**	**-**
Total for Other Programs Subaward Received				**477,255**	**-**
Total for Other Programs				**3,730,030**	**12,827**
Total Expenditures of Federal Awards				**$ 791,897,018**	**$ 129,866,219**

Harvard University
Notes to Schedule of Expenditures of Federal Awards
Year Ended June 30, 2022

1. Basis of Presentation and Summary of Significant Accounting Policies

The accompanying Schedule of Expenditures of Federal Awards (the "Schedule") summarizes the expenditures of Harvard University (the "University") under programs of the federal government for the year ended June 30, 2022. The information in this Schedule is presented in accordance with the Title 2 U.S. *Code of Federal Regulations Part 200, Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards* (Uniform Guidance). Therefore, some amounts presented in this Schedule may differ from amounts presented in, or used in the preparation of, the basic financial statements of the University. Negative amounts represent adjustments or credits to amounts reported as expenditures in prior years in the normal course of business. Assistance Listing Numbers and pass-through numbers are provided when available.

For purposes of the Schedule, Federal awards include all grants, contracts and similar agreements entered into directly between the University and agencies and departments of the Federal government and all subawards to the University by nonfederal or organizations pursuant to Federal grants, contracts and similar agreements.

Expenditures reported in the Schedule are reported on the accrual basis of accounting. Such expenditures are recognized following the cost principles contained in the Uniform Guidance, as applicable, wherein certain types of expenditures are not allowable or are limited to reimbursement.

2. Facilities and Administrative Costs

The University applies its predetermined approved facilities and administrative rate when charging indirect costs to federal awards rather than the 10% de minimis cost rate as described in Section 200.414 of the Uniform Guidance. The University recovers facilities and administrative costs associated with sponsored agreements pursuant to separate arrangements negotiated with the University's Federal cognizant agency by each of the Medical School, School of Public Health, and the University Area. Predetermined federal indirect cost rates have been established for the University Area, the Medical School (including the School of Dental Medicine), and the T.H. Chan School of Public Health through fiscal year 2024.

3. Federal Student Loan Programs

The Federal student loan programs listed below are administered directly by the University and balances and transactions relating to these programs are included in the University's consolidated financial statements. Loans outstanding at the beginning of the year, the administrative cost allowance and loans made during the year are included in the federal expenditures presented in the Schedule. The balance of loans outstanding at June 30, 2022 consist of:

	Assistance Listing #:		Amount
Perkins	84.038	$	14,020,129
HPSL/LDS/PCL	93.342		12,669,675
Total Federal Student Loans		**$**	**26,689,804**

Loans made by the University to eligible students under the Federal student loan programs and Federally guaranteed loans issued to students during the year ended June 30, 2022 are summarized as follows:

	Assistance Listing #:		Amount
Perkins	84.038	$	-
Net Direct Subsidized Stafford	84.268		1,342,924
Net Direct Unsubsidized Stafford	84.268		63,048,944
Net Direct PLUS	84.268		3,678,380
Net Direct Grad PLUS	84.268		35,023,925
HPSL/LDS/PCL	93.342		1,411,976
Total		**$**	**104,506,149**

Part II
Reports on Internal Control and Compliance

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 Joint Committee on Inspection of the Governing Boards of Harvard University

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 Harvard University and its subsidiaries (the "University"), which comprise the consolidated balance sheet as of June 30, 2022 and the related consolidated statements of changes in net assets with general operating account detail, changes in net assets of the endowment and of cash flows for the year then ended, including the related notes (collectively referred to as the "consolidated financial statements"), and have issued our report thereon dated October 12, 2022.

Report on Internal Control Over Financial Reporting

In planning and performing our audit of the consolidated 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 consolidated 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 consolidated 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 or significant deficiencies may exist that were not identified.

Report on Compliance and Other Matters

As part of obtaining reasonable assurance about whether the University's consolidated 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 consolidated 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

Boston, Massachusetts
October 12, 2022

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

To the Joint Committee on Inspection of the Governing Boards of Harvard University

Report on Compliance for Each Major Federal Program

Opinion on Each Major Federal Program

We have audited Harvard University's (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 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

PricewaterhouseCoopers, LLP, 101 Seaport Blvd Boston, MA 02210
T: (617) 530 5000, F:(617) 530 5001, www.pwc.com

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.

Boston, Massachusetts
December 15, 2022

Part III
Audit Findings and Questioned Costs

Harvard University
Schedule of Findings and Questioned Costs
Year Ended June 30, 2022

I. Summary of Auditors' Results

Financial statements

Type of audit report issued	Unmodified
Internal control over financial reporting:	
▪ Material weaknesses identified?	No
▪ Significant deficiency(ies) identified that are not considered to be material weaknesses?	None reported
▪ Noncompliance which is material to the financial statements noted?	No

Federal awards

Internal control over major programs:	
▪ Material weaknesses identified?	No
▪ Significant deficiency(ies) identified that are not considered to be material weaknesses?	None reported
Type of auditor's 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)?	No

Identification of major programs

Assistance Listing Number	**Name of Federal Program or Cluster**
Various	Research and Development Cluster

Dollar threshold to distinguish between Type A and Type B programs	$ 3,000,000
Auditee qualifies as a low-risk auditee?	Yes

II. Financial Statement Findings

None noted.

III. Findings and Questioned Costs for Federal Awards

None noted.

Harvard University
Summary of Status of Prior Audit Findings
Year Ended June 30, 2022

There are no findings from prior years that require an update in this report.