



NORTHWESTERN UNIVERSITY

Single Audit Report

Year ended August 31, 2022

NORTHWESTERN UNIVERSITY

Single Audit Report

Year ended August 31, 2022

Table of Contents

	Page
Independent Auditors' Report	1
Consolidated Financial Statements:	
Consolidated Statements of Financial Position	3
Consolidated Statements of Activities	4
Consolidated Statements of Cash Flows	6
Notes to Consolidated Financial Statements	7
Supplementary Schedule of Expenditures of Federal Awards	32
Notes to Supplementary Schedule of Expenditures of Federal Awards	87
Independent Auditors' Report on Internal Control Over Financial Reporting and on Compliance and Other Matters Based on an Audit of Financial Statements Performed in Accordance with <i>Government Auditing Standards</i>	89
Independent Auditors' Report on Compliance for Each Major Federal Program; Report on Internal Control Over Compliance; and Report on Supplementary Schedule of Expenditures of Federal Awards Required by the Uniform Guidance	91
Schedule of Findings and Questioned Costs	94



KPMG LLP
Aon Center
Suite 5500
200 E. Randolph Street
Chicago, IL 60601-6436

Independent Auditors' Report

The Board of Trustees
Northwestern University:

Report on the Audit of the Consolidated Financial Statements

Opinion

We have audited the consolidated financial statements of Northwestern University (the University), which comprise the consolidated statements of financial position as of August 31, 2022 and 2021, the related consolidated statements of activities and cash flows for the years then ended, and the related notes to the consolidated financial statements.

In our opinion, the accompanying consolidated financial statements present fairly, in all material respects, the financial position of the University as of August 31, 2022 and 2021, and the changes in its net assets and its cash flows for the years then ended in accordance with U.S. generally accepted accounting principles.

Basis for Opinion

We conducted our audits in accordance with auditing standards generally accepted in the United States of America (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.

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 U.S. generally accepted accounting principles, 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 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 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.

Other Information Included in the Financial Report

Management is responsible for the other information included in the Northwestern 2022 Financial Report. The other information comprises the Northwestern University Highlight Report Fiscal Year 2022 but does not include the consolidated financial statements and our auditors' report thereon. Our opinion on the consolidated financial statements does not cover the other information, and we do not express an opinion or any form of assurance thereon.

In connection with our audit of the consolidated financial statements, our responsibility is to read the other information and consider whether a material inconsistency exists between the other information and the consolidated financial statements, or the other information otherwise appears to be materially misstated. If, based on the work performed, we conclude that an uncorrected material misstatement of the other information exists, we are required to describe it in our report.

Supplementary Information

Our audits were conducted for the purpose of forming an opinion on the consolidated financial statements as a whole. The accompanying supplementary schedule of financial responsibility data as of and for the year ended August 31, 2022 is presented for purposes of additional analysis as required by the U.S. Department of Education 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 supplementary schedule of financial responsibility data is fairly stated, in all material respects, in relation to the consolidated financial statements as a whole.

Other Reporting Required by *Government Auditing Standards*

In accordance with *Government Auditing Standards*, we have also issued our report dated December 16, 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. 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 the University's 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.

KPMG LLP

Chicago, Illinois
December 16, 2022

Consolidated Statements of Financial Position

As of August 31, 2022 and 2021

<i>(in thousands of dollars)</i>	2022	2021
Assets		
Cash and cash equivalents	\$372,337	\$285,059
Accounts receivable, <i>net</i>	275,580	218,147
Contributions receivable, <i>net</i>	206,677	259,037
Notes receivable, <i>net</i>	131,870	136,111
Investments	14,383,550	15,143,205
Right-of-use assets—operating, <i>net</i>	142,653	159,206
Land, buildings, and equipment, <i>net</i>	3,120,855	3,177,018
Total assets	18,633,522	19,377,783
Liabilities		
Accounts payable and accrued liabilities	217,086	206,908
Deferred revenue	292,267	205,750
Deposits payable and actuarial liability of annuities payable	191,533	199,041
Lease liabilities—operating	149,019	165,623
Bonds, notes, and other debt payable, <i>net</i>	2,432,759	2,538,133
Total liabilities	3,282,664	3,315,455
Net assets		
Without donor restrictions	9,413,091	9,863,772
With donor restrictions	5,937,767	6,198,556
Total net assets	15,350,858	16,062,328
Total liabilities and net assets	\$18,633,522	\$19,377,783

See Notes to the Consolidated Financial Statements, beginning on page 7.

Consolidated Statements of Activities

For the fiscal years ended August 31, 2022 and 2021

(in thousands of dollars)

2022

2021

Net assets without donor restrictions

Operating revenues

Net tuition and fees (net of aid \$558,947 in 2022 and \$520,805 in 2021)	\$740,877	\$659,916
Auxiliary services	108,327	40,528
Grants and contracts	828,525	752,376
Private gifts	270,909	232,369
Investment return designated for operations	436,784	421,626
Sales and services	217,826	156,004
Professional fees	53,960	48,537
Net assets released from restrictions	228,717	248,035
Total operating revenues	2,885,925	2,559,391

Operating expenses

Salaries, wages, and benefits	1,556,945	1,477,348
Services, supplies, maintenance, and other	895,136	717,159
Depreciation	204,358	185,918
Interest on indebtedness	90,737	91,163
Total operating expenses	2,747,176	2,471,588
Excess of operating revenues over expenses	\$138,749	\$87,803

Consolidated Statements of Activities continued on next page.

See Notes to the Consolidated Financial Statements, beginning on page 7.

Consolidated Statements of Activities (continued)

For the fiscal years ended August 31, 2022 and 2021

<i>(in thousands of dollars)</i>	2022	2021
Nonoperating revenues and expenses		
Investment (loss) return, reduced by operating distribution	(621,639)	2,023,088
Change in value of derivative instruments	8,269	5,158
Net assets reclassified	16,652	(30,005)
Other nonoperating revenue (expenses), net	7,288	(4,594)
Excess (deficit) of nonoperating revenues over expenses	(589,430)	1,993,647
Change in net assets without donor restrictions	(450,681)	2,081,450
Net assets with donor restrictions		
Private gifts with donor restrictions and grants for buildings and equipment	10,100	250
Private gifts with donor restrictions	115,091	169,233
Net gain on annuity obligation	3,034	12,536
Investment (loss) return with donor restrictions	(143,645)	1,555,308
Net assets reclassified	(16,652)	30,005
Net assets released from restrictions	(228,717)	(248,035)
Change in net assets with donor restrictions	(260,789)	1,519,297
Change in total net assets	(711,470)	3,600,747
Beginning net assets	16,062,328	12,461,581
Ending net assets	\$15,350,858	\$16,062,328

See Notes to the Consolidated Financial Statements, beginning on page 7.

Consolidated Statements of Cash Flows

For the fiscal years ended August 31, 2022 and 2021

<i>(in thousands of dollars)</i>	2022	2021
Cash flows from operating activities		
Change in net assets	(\$711,470)	\$3,600,747
Adjustments to reconcile change in net assets to net cash used in operating activities		
Depreciation	204,358	185,918
Losses on disposals, retirements, and sales of buildings and equipment, <i>net</i>	4,574	3,454
Accretion of debt issuance costs, premiums, and discounts, <i>net</i>	(584)	(453)
Realized and unrealized (gains) losses on investments, <i>net</i>	354,100	(3,973,382)
Gifts of contributed securities	(43,446)	(58,582)
Proceeds from sale of unrestricted contributed securities	19,950	48,212
Change in value of derivative instruments	(8,269)	(5,158)
Restricted contributions received for long-term investment and capital projects	(118,748)	(112,724)
<i>Changes in assets and liabilities</i>		
Accounts receivable	(60,945)	(1,253)
Contributions receivable	29,584	14,736
Reduction in the carrying amount of the right-of-use assets—operating	16,553	21,639
Accounts payable and accrued liabilities	8,710	(1,483)
Deferred revenue	86,517	73,086
Deposits payable and actuarial liability of annuities payable	8,981	(26,919)
Lease liabilities—operating	(16,604)	(20,315)
Net cash used in operating activities	(226,739)	(252,477)
Cash flows from investing activities		
Purchases of investments	(2,623,339)	(2,545,240)
Proceeds from sales of investments	3,021,023	2,975,480
Acquisitions of land, buildings, and equipment	(146,871)	(121,957)
Proceeds from sale of land, buildings, or equipment	3,839	4,103
Student loans disbursed	(25,179)	(21,506)
Principal collected on student loans	30,035	31,723
Other	(615)	(251)
Net cash provided by investing activities	257,893	322,352
Cash flows from financing activities		
Proceeds from issuance of notes, bonds, and other debt payable	—	100,000
Principal payments on notes, bonds, and other debt payable	(104,790)	(393,450)
Proceeds from sale of restricted contributed securities	18,390	10,370
Restricted contributions received for long-term investment and capital projects	141,524	116,822
Net cash (used in) provided by financing activities	55,124	(166,258)
(Decrease) increase in cash and cash equivalents	87,278	(96,383)
Cash and cash equivalents at beginning of year	285,059	381,442
Cash and cash equivalents at end of year	\$372,337	\$285,059
Supplemental disclosure of cash flow information		
Change in accrued liabilities for construction in progress	\$9,653	(\$10,246)
Cash paid for interest	91,343	91,549

See Notes to the Consolidated Financial Statements, beginning on page 7.

Notes to the Consolidated Financial Statements

For the fiscal years ended August 31, 2022 and 2021

1. Summary of Significant Accounting Policies

University Activities

Northwestern University (Northwestern or the University) is a major private research university with more than 23,000 students enrolled in 12 colleges and schools on two lakefront campuses in Evanston and Chicago and an international campus in Doha, Qatar.

Northwestern's mission is to provide the highest-quality education for its students, to develop innovative programs in research, and to sustain an academic community that embraces these enterprises.

Basis of Accounting

General

The University maintains its accounts and prepares its consolidated financial statements on the accrual basis of accounting in conformity with US generally accepted accounting principles (GAAP). The Financial Accounting Standards Board (FASB) Accounting Standards Codification (ASC) is the source of authoritative GAAP. The University prepares its consolidated financial statements in accordance with the Not-for-Profit Entities Topic of the FASB ASC. The accompanying consolidated financial statements include all wholly owned subsidiaries. All significant inter-entity transactions and accounts have been eliminated in consolidation.

Net Asset Classifications

Net assets and related changes therein are classified into two categories based on the existence or absence of donor-imposed restrictions.

The category *Net Assets without Donor Restrictions* describes funds that have no donor-imposed

restrictions. All revenues, expenses, gains, and losses that are not restricted by donors are included in this classification. Certain net assets without donor restrictions are institution-designated for specific uses under the internal operating budget.

The category *Net Assets with Donor Restrictions* describes funds subject to donor-imposed restrictions that will be met either by actions of the University, the passage of time, or may be perpetual in nature. These net assets include gifts for which donor-imposed restrictions have not been met in the year of receipt (these may include future capital projects), as well as trust activity and pledges receivable. Net assets with perpetual restrictions consist of donor-restricted endowment funds, contributions receivable for such funds, and certain trusts. For further discussion of the classification of donor-restricted endowment funds and disclosures about both donor-restricted and institution-designated endowment funds, see notes 4 and 10, respectively.

Revenue from donor-restricted sources is reclassified as an increase to net assets without donor restrictions when the circumstances of the restrictions have been fulfilled or the restrictions expire. Donor-restricted contributions whose restrictions are met within the same fiscal year in which they are received are reported as revenue without donor restrictions. All expenses are reported in net assets without donor restrictions. Absent explicit donor stipulations indicating otherwise, the University reports expiration of donor restrictions on long-lived assets as net assets without donor restrictions when the assets are placed in service.

Net assets as of August 31 are as follows:

	2022		
	Without donor restrictions	With donor restrictions	Total net assets
<i>(in thousands of dollars)</i>			
Nature of specific net assets			
Teaching, research, and program support	\$3,188,523	\$3,815,249	\$7,003,772
Student financial aid	838,033	1,121,571	1,959,604
Capital and operations	1,235,834	680,640	1,916,474
Endowment net assets subtotal	5,262,390	5,617,460	10,879,850
Pledges	—	206,677	206,677
Unexpended gifts	—	24,899	24,899
Annuity and other split-interest agreements	—	54,917	54,917
Student loan funds	63,113	33,814	96,927
Operating and plant	4,087,588	—	4,087,588
Total	\$9,413,091	\$5,937,767	\$15,350,858

(in thousands of dollars)

2021

Nature of specific net assets	Without donor restrictions	With donor restrictions	Total net assets
Teaching, research, and program support	\$3,380,552	\$3,937,558	\$7,318,110
Student financial aid	886,967	1,144,384	2,031,351
Capital and operations	1,294,610	717,111	2,011,721
Endowment net assets subtotal	5,562,129	5,799,053	11,361,182
Pledges	—	259,037	259,037
Unexpended gifts	—	31,260	31,260
Annuity and other split-interest agreements	—	66,946	66,946
Student loan funds	63,392	42,260	105,652
Operating and plant	4,238,251	—	4,238,251
Total	\$9,863,772	\$6,198,556	\$16,062,328

Operating Activities

Operating activities in the consolidated statements of activities reflect all transactions increasing or decreasing net assets without donor restrictions, and excludes private gifts and grants for buildings and equipment; restricted private gifts; investment return net of operating distributions; gains (losses) from annuity obligations and derivative instruments; and certain other nonrecurring items.

Fair Value Measurements

The University makes fair value measurements and related disclosures thereon as required by the Fair Value Measurements and Disclosures Topic of the FASB ASC. For further discussion, see note 4.

Cash and Cash Equivalents

Cash reflects currency and deposits or other accounts with financial institutions that may be deposited or withdrawn without restriction or penalty. Cash equivalents represent short-term and highly liquid investments with original maturities of three months or less. Cash and cash equivalents that are held for investment purposes are classified as investments on the consolidated statements of financial position and excluded from cash and cash equivalents on the consolidated statements of cash flows, as these funds are not used for operating needs. For further discussion, see note 4.

Contributions

Contributions received, including unconditional promises to give (contributions receivable), are recognized by the University as revenues at their fair values at the date of gift. Private gifts, including unconditional promises to give, are recognized as revenues in the period received. Conditional promises to give

are not recognized until all barriers to entitlement of the assets are overcome and the promisor's rights of return or release have elapsed.

Investments

Investments in financial instruments are recorded at fair value. The University values its investments using a hierarchy of valuation inputs based on the extent to which the inputs are observable in the marketplace. Observable inputs reflect market data obtained from sources independent of the reporting entity, whereas unobservable inputs reflect the entity's own assumptions about how market participants would value an asset or a liability based on the best information available. Valuation techniques used to measure fair value must maximize the use of observable inputs and minimize the use of unobservable inputs.

The following describes the fair value hierarchy and the primary valuation methodologies used by the University for assets and liabilities measured at fair value on a recurring basis:

Level 1: Quoted prices in active markets for identical assets or liabilities. Market-price data are generally obtained from relevant exchanges or dealer markets.

Level 2: Inputs other than Level 1 that are observable either directly or indirectly, such as quoted prices in markets that are not active, or other inputs that are observable or can be corroborated by observable market data for substantially all of the same terms of the assets or liabilities. Inputs may be obtained from various sources, including market participants, dealers, and brokers.

Level 3: Unobservable inputs that are supported by little or no market activity and are significant to the fair value of the assets or liabilities.

An investment's categorization within the valuation hierarchy is based on the lowest level of input significant to the fair value measurement. The categorization of an investment is based on its pricing transparency and liquidity and does not necessarily correspond to the University's perceived risk of that investment. As a practical expedient as permitted under GAAP, the reported net asset value (NAV) of investments with external managers is used to estimate their fair value. Such investments, for which NAV is used as a practical expedient, are not categorized in and are shown separately from the valuation hierarchy. For further discussion, see note 4.

Equity securities with readily determinable fair values are valued at the last sale price (if quotations are readily available) or at the closing bid price in the principal market in which such securities are normally traded (if no sale price is available). The fair values for these securities are primarily classified as Level 1 because the securities have observable market inputs. Most fixed income securities and debt securities are valued based on dealer-supplied valuations; since these securities have significant other observable inputs, they are classified as Level 2.

The estimated fair values of equity securities without readily determinable fair values and of other generally less liquid investments are based on valuation information received on the relevant entities and may include last sale information or independent appraisals of value. In addition, standard valuation techniques, including discounted cash flow models or valuation multiples based on comparable investments, may be used. Because the fair values for these assets are based predominantly on unobservable inputs, they are classified as Level 3.

Investments in certain real assets and other investments are recorded at acquisition or construction cost or, if received as a contribution, at fair value as of donation date. The University periodically assesses these assets for impairment by comparing their expected future cash flows with their carrying values. An impairment loss is recognized for the difference between estimated fair value and carrying value. In management's opinion, no impairment of investments held at cost existed as of August 31, 2022 and 2021. For further discussion of such investments, see note 4.

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

Investment income is recorded on the accrual basis, and purchases and sales of investment securities are reflected on a trade-date basis.

Derivative Financial Instruments

The University enters into swap agreements to hedge future interest rate movements. It may also add various interest rate options to hedge the overall portfolio and use interest rate swap agreements to hedge variable interest rate exposures. Interest rate swaps are valued using observable inputs, such as quotations received from the counterparty, dealers, or brokers, whenever they are available and considered reliable. If and when models are used, the value of interest rate swaps depends on the contractual terms of and specific risks inherent in the instrument, as well as the availability and reliability of observable inputs. Such inputs include market prices for reference securities, yield curves, credit curves, measures of volatility, and prepayment rates as well as correlations of such inputs. Due to significant other observable inputs, interest rate swaps are classified as Level 2. For further discussion, see note 4.

Accounts and Notes Receivable

Accounts receivable are recorded at net realizable value. Those generally expected to be collected within one year are carried without an allowance. Accounts receivable deemed to be uncollectible are written off at that time.

Notes receivable are recorded at net realizable value and are predominantly student loans with varying maturities. Notes receivable deemed to be uncollectible are written off.

Contributions Receivable

Contributions receivable that represent unconditional promises to give are recognized at fair value as contributions with donor restrictions in the period

such promises are made by donors. The amount will be recognized as revenue in the periods in which the conditions are fulfilled. Contributions are discounted at a risk-adjusted rate commensurate with the duration of the donor's payment plan. Amortization of the discounts is recorded as additional contribution revenue. Allowance is made for uncollectible contributions based on management's expectations regarding collection of outstanding promises to give and past collection experience. As of August 31, 2022, there was a conditional promise to give totaling \$385 million. This gift, with donor restrictions, is conditioned upon the completion of a new building. There were no significant conditional promises to give as of August 31, 2021.

Leases

The University has entered into a variety of operating leases for real estate. On the consolidated statements of financial position, operating leases as a lessee are included in right-of-use assets—operating, net, and lease liabilities—operating. Right-of-use assets represent the University's right to use an underlying asset for the lease term. Lease obligations represent the University's liability to make lease payments arising from the lease. The obligations associated with these leases have been recognized at their respective commencement dates as a liability in the consolidated statements of financial position based on future lease payments, discounted by an appropriate incremental borrowing rate. The incremental borrowing rate is based on the estimated interest rate for borrowing over a term similar to that of the lease payments available at the commencement of the lease. The credit quality of the University and current prevailing market conditions were factors used to determine the incremental borrowing rate.

Lease terms may include options to extend or terminate certain leases. The value of a lease is reflected in the valuation if it is reasonably certain management will exercise an option to extend or terminate a lease.

Land, Buildings, and Equipment

Land, buildings, and equipment are recorded at cost or, if received as gifts, at fair value at the date of gift. Significant renewals and replacements are capitalized. The cost of repairs and maintenance is expensed as incurred. Purchases of library books and works of art are also expensed.

Depreciation is calculated using the straight-line method over the useful lives of equipment, which are estimated to be 3 to 20 years; of buildings, building improvements, and land improvements, which are estimated to be 10 to 40 years; and of leasehold improvements, which are estimated to be the shorter of the useful life or the lease term.

Charitable Remainder Trusts

Charitable remainder trusts are classified as net assets with donor restrictions and recognized at fair value.

Annuities Payable

Annuities payable consist of annuity payments currently due and the actuarial amount of annuities payable. The actuarial amount of annuities payable is the present value of the aggregate liability for annuity payments over the expected lives of the beneficiaries.

Self-Insurance Reserves

The University maintains a self-insurance program for general liability, professional liability, automobile liability, property damage, educators' liability, cyber liability, and certain employee and student insurance coverages. This program is supplemented with commercial excess insurance above the University's self-insurance retention. The reserves for self-insurance, postemployment benefits, and post-retirement medical and life insurance benefits are based on actuarial studies and management estimates. See notes 11 and 13 for additional discussion.

Revenue Recognition

Revenues from tuition and fees are reflected net of reductions from institutional student aid and are recognized as the services are provided over the academic year, including pro-rata adjustments for educational programs crossing over fiscal years. Institutional student aid includes amounts funded by endowment earnings, gifts, and other sources and reduces the published price of tuition for students receiving such aid. Fiscal year 2023 noncancelable fall-quarter tuition and fees, billed and received in fiscal year 2022, are reported as deferred revenue in fiscal year 2022. Fiscal year 2022 noncancelable fall-quarter tuition and fees, billed and received in fiscal year 2021, are reported as deferred revenue in fiscal year 2021. (For further discussion of deferred revenues, see note 7.) Of the \$740.9 million and \$659.9 million in revenue

recognized for the years ended August 31, 2022 and 2021, respectively, \$699.3 million and \$633.9 million, respectively, was from academic credit programs, and \$41.6 million and \$26 million, respectively, was from nonacademic credit programs.

Revenues from auxiliary services, such as residence and food services, represent fees for goods and services furnished to University students, faculty, and staff; these revenues are recognized in the fiscal year in which the goods and services are provided. Of the \$108.3 million and \$40.5 million in revenue recognized for the years ended August 31, 2022 and 2021, respectively, \$99.4 million and \$40.3 million, respectively, was from room and board, while the remaining revenue was from other miscellaneous residence and food services.

Grants and contracts revenue is received from federal and other sponsors. It may represent either an exchange transaction for an equivalent benefit in return or a nonexchange transaction in which the resources provided are for the benefit of the University, the funding organization's mission, or the public at large. Revenues from exchange transactions are recognized as performance obligations are satisfied, which in most cases are as related costs are incurred. Revenues from nonexchange transactions are recognized as revenue when qualifying expenditures are incurred and applicable conditions and restrictions under the agreements are met. Conditional awards from federal sponsors outstanding as of August 31, 2022 and 2021, were \$715.2 million and \$743.4 million, respectively.

Sales and services revenues represent fees for services and goods provided to external parties in the course of educational activities, revenues from the provision of physical plant services and goods to external institutions contiguous to the University campuses, and trademark and royalty revenues arising from licensing of innovative technologies, copyrights, and other intellectual property. These revenues are recognized in the fiscal year in which goods and services are provided.

Professional fees arise from faculty and department services provided to external institutions such as hospitals. Revenues are recognized in the fiscal year in which the services are provided.

Income Taxes

The Internal Revenue Service has determined that the University is exempt from income taxes under Section 501(c)(3) of the US Internal Revenue Code, except with regard to unrelated business taxable income (UBTI), which is taxed at corporate income tax rates. The University files federal and various state and local tax returns. The statute of limitations on the University's federal tax returns remains open for fiscal years 2019 through 2021.

The University had no uncertain tax positions in fiscal year 2022 or fiscal year 2021.

The University is subject to excise taxes on executive compensation, net investment income, and the calculation of UBTI. For the years ended August 31, 2022 and 2021, the University is subject to the federal excise tax of 1.4 percent.

Uses of Estimates in the Preparation of the Consolidated Financial Statements

The preparation of the consolidated financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities; the disclosure of contingent assets and liabilities at the date of the consolidated financial statements; and the reported amounts of revenues and expenses during the relevant period. Actual results could differ from those estimates.

Newly Adopted Accounting Pronouncements

In August 2018, the FASB issued Accounting Standards Update (ASU) 2018-14, *Disclosure Framework—Changes to the Disclosure Requirements for Defined Benefit Plans*. This ASU amends ASC 715 to add, remove, and clarify disclosure requirements related to defined benefit pension and other postretirement plans. For the University, the ASU removed the disclosure requirements for the effects of a one-percentage-point change on the assumed healthcare costs and the effect of this change in rates on service cost, interest cost, and the benefit obligation for postretirement healthcare benefits. The University adopted the new standard effective August 31, 2022, and the adoption did not impact its consolidated financial statements, except for the removal of the disclosure requirements mentioned above.

In August 2018, the FASB issued 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 this new accounting standard on September 1, 2021, on a prospective basis. The adoption of this ASU did not have a material impact on the University’s consolidated financial statements.

Recent Accounting Pronouncements

In June 2016, the FASB issued ASU 2016-13, *Financial Instruments—Credit Losses*, which amends the Board’s guidance on impairment of financial instruments. The University is currently evaluating the impact of the standard, which is effective for the University in fiscal year 2024.

Current Environment

The University continued to manage through the coronavirus pandemic in fiscal year 2022.

The US Congress passed the Coronavirus Aid, Relief, and Economic Security Act on March 27, 2020, the Coronavirus Response and Relief Supplemental Appropriations Act (CRRSAA) on December 21, 2020, and the American Rescue Plan Act (ARPA) on March 11, 2021, which provided economic assistance for certain businesses and individuals. The University drew down funding under the CRRSAA and the ARPA Acts’ provisions in fiscal year 2022 only. The total amount of Student Funds drawn down and disbursed directly to students as Emergency Financial Aid Grants was \$15.3 million. The total amount of Institutional Funds drawn down and spent on campus safety and operations costs was \$4.5 million.

Reclassifications

Certain prior-year amounts have been reclassified to conform to the current-year presentation.

2. Accounts Receivable and Notes Receivable

Accounts receivable as of August 31 are summarized on the consolidated statements of financial position as follows:

<i>(in thousands of dollars)</i>	2022	2021
Research and other sponsored programs support	\$169,193	\$125,633
Student receivables	37,460	15,568
Other receivables	69,521	77,573
Accounts receivable subtotal	276,174	218,774
Less allowances for student uncollectible amounts	(594)	(627)
Total accounts receivable, net	\$275,580	\$218,147

Notes receivable as of August 31 are summarized on the consolidated statements of financial position as follows:

<i>(in thousands of dollars)</i>	2022	2021
Notes receivable	\$134,170	\$138,384
Less allowances for student uncollectible amounts	(2,300)	(2,273)
Total notes receivable, net	\$131,870	\$136,111

3. Contributions Receivable

Contributions receivable as of August 31 are summarized on the consolidated statements of financial position as follows:

<i>(in thousands of dollars)</i>	2022	2021
Unconditional promises expected to be collected in		
Less than one year	\$48,825	\$105,127
One to five years	101,958	92,615
More than five years	85,416	86,375
Contributions receivable subtotal	236,199	284,117
Less unamortized discounts	(26,237)	(24,168)
Less allowances for uncollectible amounts	(3,285)	(912)
Total contributions receivable, net	\$206,677	\$259,037

Contributions receivable are discounted at rates ranging from 0.28 to 3.5 percent. There are two unconditional promises that make up 56 percent and 53 percent of the total contributions receivable balance as of August 31, 2022 and 2021, respectively.

4. Investments

The University's investments are overseen by the Investments Committee of the Board of Trustees. Guided by the policies established by the Investment Committee, the University's Investment Office or external equity investment managers, external and internal fixed income and cash managers, and various limited partnership managers direct the investment of endowment and trust assets, certain working capital,

expendable funds with donor restrictions temporarily invested, and commercial real estate.

Substantially all of these assets are merged into an internally managed long-term investment pool on a market value basis. Each holder of units in the investment pool subscribes to or disposes of units on the basis of the market value per unit at the beginning of each month.

Fair Value Disclosures

The following tables show the estimated fair value of investments, charitable trusts, and derivatives, grouped by the valuation hierarchy as defined in note 1, as of August 31:

(in thousands of dollars)

2022

	Quoted prices in active markets (Level 1)	Significant other observable inputs (Level 2)	Significant unobservable inputs (Level 3)	NAV as Practical Expedient (NAV)	Total fair value
Cash and cash equivalents	\$482,738	—	—	—	482,738
Public equity	372,126	—	\$147	\$3,481,797	3,854,070
Private equity	38,685	\$ 321	15,203	1,503,206	1,557,415
Fixed income	93,869	830,898	—	—	924,767
Absolute return	—	—	—	2,064,494	2,064,494
Venture capital	1,127	—	3,904	3,219,881	3,224,912
Real assets	67,174	15,350	665	2,101,351	2,184,540
Other investments	45,542	300	26,923	—	72,765
Subtotal investment assets at fair value	1,101,261	846,869	46,842	12,370,729	14,365,701^(a)
Interest rate swaps	—	(2,591)	—	—	(2,591)
Total	\$1,101,261	\$844,278	\$46,842	\$12,370,729	\$14,363,110

^(a) Investments held at cost totaling \$28,935 thousand should be added to the subtotal investment assets at fair value, and beneficial interest in charitable remainder trusts totaling \$11,086 thousand should be subtracted from the subtotal investment assets at fair value to reconcile to total investment assets of \$14,383,550 thousand as of August 31, 2022.

(in thousands of dollars)

2021

	Quoted prices in active markets (Level 1)	Significant other observable inputs (Level 2)	Significant unobservable inputs (Level 3)	NAV as Practical Expedient (NAV)	Total fair value
Cash and cash equivalents	\$597,651	—	—	—	\$597,651
Public equity	672,403	\$94	\$178	\$3,621,885	4,294,560
Private equity	—	321	10,203	1,569,438	1,579,962
Fixed income	106,039	730,662	—	—	836,701
Absolute return	—	—	—	2,190,692	2,190,692
Venture capital	—	—	4,859	3,618,959	3,623,818
Real assets	123,089	15,089	665	1,791,722	1,930,565
Other investments	50,684	454	29,765	—	80,903
Subtotal investment assets at fair value	1,549,866	746,620	45,670	12,792,696	15,134,852^(a)
Interest rate swaps	—	(10,860)	—	—	(10,860)
Total	\$1,549,866	\$735,760	\$45,670	\$12,792,696	\$15,123,992

^(a) Investments held at cost totaling \$22,952 thousand should be added to the subtotal investment assets at fair value, and beneficial interest in charitable remainder trusts totaling \$14,599 thousand should be subtracted from the subtotal investment assets at fair value to reconcile to total investment assets of \$15,143,205 thousand as of August 31, 2021.

Investments reported as NAV as Practical Expedient consist primarily of the University's ownership in partnership investments (principally limited partnership interests in long-only equity and credit, hedge funds, private equity, real estate, and other similar funds). As a practical expedient, when quoted market prices are not available, the estimated fair values of these investments are generally based on reported partners' capital or NAV provided by the associated external investment managers. In cases where the

practical expedient threshold is not met, such as an investment report not being in compliance with GAAP, or where a statement of partners' capital is not provided, the investment is reported as Level 3. Since a range of possible values exists for these partnership investments, the estimated values may be materially different from the values that would have been used had a ready market for these partnership investments existed.

The following tables summarize changes in the investments and derivatives classified by the University in Level 3 of the fair value hierarchy for the fiscal years ended August 31, 2022 and 2021:

<i>(in thousands of dollars)</i>	2021					2022
	Fair value	Purchases	Sales and settlements	Realized and unrealized gains (losses)	Transfers into and out of Level 3	Fair value
Public equity	\$178	—	—	(\$31)	—	\$147
Private equity	10,203	\$5,000	—	—	—	15,203
Venture capital	4,859	—	(\$1,250)	295	—	3,904
Real assets	665	—	—	—	—	665
Other investments	29,765	—	—	(2,842)	—	26,923
Total investments	\$45,670	\$5,000	(\$1,250)	(\$2,578)	—	\$46,842

<i>(in thousands of dollars)</i>	2020					2021
	Fair value	Purchases	Sales and settlements	Realized and unrealized gains (losses)	Transfers into and out of Level 3	Fair value
Public equity	\$67	\$164	—	(\$53)	—	\$178
Private equity	203	10,000	—	—	—	10,203
Venture capital	6,292	667	(\$1,550)	(528)	(\$22)	4,859
Real assets	2,440	—	(1,775)	—	—	665
Other investments	25,644	—	—	4,121	—	29,765
Total investments	\$34,646	\$10,831	(\$3,325)	\$3,540	(\$22)	\$45,670

In fiscal year 2022, there were no transfers into or out of Level 3. In fiscal year 2021, one investment was transferred out of Level 3 as the company successfully completed an initial public offering; the investment is now classified as Level 1.

As of August 31, 2022 and 2021, investments held at cost included real estate totaling \$19.4 million. Investments held at cost also included property co-ownerships, mortgages, and other investments totaling \$3.3 million and \$3.6 million as of August 31, 2022 and 2021, respectively.

The next table presents funding obligations and redemption terms of investments by asset class. The University is required under certain partnership agreements to advance additional funding up to specified levels over a period of several years. These uncalled commitments have fixed expiration dates and other termination clauses. At August 31, 2022, the University was committed to making future capital contributions of \$2.9 billion, primarily in the next five years, as detailed in the table. Certain agreements also contain notice periods, lock-ups, and gates that limit the University's ability to initiate redemptions.

(in thousands of dollars)

	Fair value	Remaining life	Uncalled commitments	Redemption terms	Redemption restrictions
Public equity	\$3,854,070	No limit	\$128,212	Daily to greater than annually, with 1- to 180-day notice periods	Lock-up provisions ranging from none to 5 years; side pockets on many funds
Private equity	\$1,557,415	No limit to 12 years	\$1,083,880	Partnerships ineligible for redemption; equity securities daily, with 1-day notice	Private partnerships not redeemable; equity securities have no lock-up provisions
Fixed income	\$924,767	No limit	—	Daily	No lock-up provisions
Absolute return	\$2,064,494	No limit	\$390,744	Daily to greater than annually, with 1- to 120-day notice periods; private partnerships ineligible for redemption	Lock-up provisions ranging from none to 3 years; side pockets on many funds; one partnership not redeemable
Venture capital	\$3,224,912	No limit to 12 years	\$552,470	Partnerships ineligible for redemption; equity securities daily, with 1-day notice	Private partnerships not redeemable; equity securities have no lock-up provisions
Real assets	\$2,184,540	No limit to 14 years	\$744,670	Partnerships ineligible for redemption; commodity and equity funds weekly to quarterly, with 1- to 60-day notice periods	Drawdown partnerships not redeemable; no restriction on commodity and equity funds

Cash and cash equivalents for investment purposes include bank accounts holding cash and money market funds consisting of short-term US Treasury securities. Cash equivalents are highly liquid and are carried at amortized cost, which approximates fair value.

The University's public equity categories include investments in US equity, international equity, and long-short equity strategies via separately managed accounts, partnerships, and commingled funds. US equity strategies include large-, mid-, and small-cap public equities.

International equities include developed market (ex-US public equities) and emerging market strategies. Seven investments in public equity may not be redeemed over the next year.

Fixed income strategies include US government securities, agency securities, inflation-linked bonds (TIPS), corporate bonds, global bonds, and short-term cash investments.

The absolute return portfolio is weighted toward uncorrelated strategies, diversifying event-driven or hedged tactical credit strategies, and distressed debt funds. One investment in this portfolio may not be redeemed over the next year due to lock-up provisions.

As of August 31, 2022, the remaining investments have either full or partial liquidity over the next year, with the exception of those having side pockets. As of August 31, 2022 and 2021, the University posted \$0 million and \$52.3 million, respectively, of Treasury bonds and public equity as a source of collateral for an alternative investment strategy.

The private equity portfolio includes investments in global buyout, including large cap, middle market, and growth equity. Venture capital includes investments in early stage and late stage fund vehicles. The real assets portfolio includes the University's investments in energy, timber, real estate, and public investments in certain commodity and equity funds.

Lives of the specific funds could vary significantly, depending on the investment decisions of the external fund managers, changes in the University's portfolio, and other circumstances. Furthermore, the University's obligation to fund these commitments may be waived by the fund managers for a variety of reasons, including changes in the market environment and/or investment strategy.

Investment Return

Investment return designated for operations is defined as the investment payout, according to the spending guideline for the Long-Term Balanced Pool, and the actual investment income for all other investments. Gross investment income from specific investments held at cost totaled \$17.7 million and \$14.8 million for the fiscal years ended August 31, 2022 and 2021, respectively. Investment expenses related to specific investments held at cost totaled \$4.7 million and \$4.1 million for the fiscal years ended August 31, 2022 and 2021, respectively. All other investment returns are categorized as nonoperating.

Certain direct expenses paid by the University for investment management and custody services have been netted against investment earnings.

Derivative Financial Instruments

The University has entered into hedging transactions via interest rate swaps and has maintained those positions since fiscal year 2008.

The University continued its use of uncollateralized variable-to-fixed-rate interest rate swaps during fiscal year 2022 and has maintained those positions since fiscal year 2008. The University manages its exposure to interest rate risk by using highly rated counterparties and on a net basis had obligations to counterparties as of August 31, 2022 and 2021, as disclosed in the following tables. As a result, the University has limited its interest rate risk associated with \$125 million in variable-rate debt (IFA-Series 2008 bonds).

The University regularly reviews the use of derivative financial instruments by each of the managers of alternative investment funds in which it participates. While these outside managers generally use such instruments for hedging purposes, derivative financial instruments are employed for trading purposes by numerous independent asset managers of the University.

The tables below summarize the derivative financial instruments held by the University as of August 31:

(in thousands of dollars) 2022

	Notional amount	Assets	Liabilities	Fiscal year net gain	Interest rate range	Maturity date
Debt-related derivatives						
Interest rate swaps	\$125,002	—	(\$2,591)	\$8,269	4.12–4.38%	08/31/23
Total derivative financial instruments	\$125,002	—	(\$2,591)	\$8,269	4.12–4.38%	08/31/23

(in thousands of dollars) 2021

	Notional amount	Assets	Liabilities	Fiscal year net gain	Interest rate range	Maturity date
Debt-related derivatives						
Interest rate swaps	\$125,002	—	(\$10,860)	\$5,158	4.12–4.38%	08/31/23
Total derivative financial instruments	\$125,002	—	(\$10,860)	\$5,158	4.12–4.38%	08/31/23

5. Land, Buildings, and Equipment

Land, buildings, and equipment as of August 31 consisted of the following:

<i>(in thousands of dollars)</i>	2022	2021
Land	\$29,986	\$31,036
Construction-in-progress	75,399	30,832
Buildings and leasehold improvements	4,721,191	4,667,413
Equipment	746,311	718,130
Accumulated depreciation	(2,452,032)	(2,270,393)
Total land, buildings, and equipment, net	\$3,120,855	\$3,177,018

Included in construction-in-progress costs are building and leasehold improvement capitalizations. Building costs are funded by bonds, gifts (received or pledged), grants, and funds without donor restrictions.

Under the University's interest capitalization policy, actual interest costs incurred during the period of construction of an asset for University use are capitalized until that asset is substantially completed and ready for use. The capitalized cost is reflected in the asset's total cost and depreciated over the asset's useful life. Assets qualifying for interest capitalization may include buildings and major equipment.

6. Leases

University as Lessee

At August 31, 2022, the net operating right-of-use assets and corresponding operating lease liabilities associated with future lease payments on the consolidated statements of financial position were \$142.7 million and \$149 million, respectively. At August 31, the University did not recognize any finance leases. Other lease information is summarized below.

<i>(in thousands of dollars)</i>	2022	2021
Cash paid for amounts included in the measurement of lease liabilities:		
Operating cash flows from operating leases	\$24,252	\$22,856
Right-of-use assets obtained in exchange for new operating lease liabilities	\$4,632	\$569
Weighted average remaining lease term	11 years	12 years
Weighted average discount rate	1.52%	1.51%

There were no additions to the carrying amount of right-of-use assets resulting from lease modifications or reassessments in fiscal years 2022 and 2021.

Lease Cost

The components of lease expense—included in services, supplies, maintenance, and other—for the fiscal years ended August 31 are as shown in the following table:

<i>(in thousands of dollars)</i>	2022	2021
Operating lease expense	\$24,648	\$24,180
Variable lease expense	494	535
Less sublease income	(3,461)	(4,553)
Total lease expense	\$21,681	\$20,162

Future Lease Payments

Shown below are the lease payments expected to be paid for each fiscal year ending August 31:

<i>(in thousands of dollars)</i>	
2023	\$21,211
2024	18,009
2025	18,193
2026	17,894
2027	17,345
2028 and thereafter	67,595
Total future lease payments	160,247
Less present value discount	(11,228)
Lease liabilities—operating	\$149,019

University as Lessor

The University is entitled as lessor under its operating leases to receive rental income. Operating leases consist primarily of leases for the use of real property and have terms expiring through fiscal year 2040. The future minimum rental revenues associated with these leases through fiscal year 2040 are \$27.7 million.

7. Deferred Revenue

Deferred revenue as of August 31 is summarized on the consolidated statements of financial position as follows:

<i>(in thousands of dollars)</i>	2022	2021
Tuition and housing	\$162,474	\$86,444
Sponsored contracts (exchange)	104,797	81,386
Conditional contributions and grants	12,773	21,079
Other deferred revenue	12,223	16,841
Total deferred revenue	\$292,267	\$205,750

8. Deposits Payable and Actuarial Liability of Annuities Payable

Deposits payable and actuarial liability of annuities payable as of August 31 are summarized on the consolidated statements of financial position as follows:

<i>(in thousands of dollars)</i>	2022	2021
Agency deposits	\$164,880	\$169,600
Actuarial liability of annuities	16,349	19,213
Student tuition and room and board	8,468	7,643
Other deposits payable	1,836	2,585
Total deposits payable and actuarial liability of annuities payable	\$191,533	\$199,041

9. Bonds, Notes, and Other Debt Payable

Bonds, notes, and other debt payable as of August 31 are summarized on the consolidated statements of financial position as follows:

<i>(in thousands of dollars)</i>	Interest rate mode	Fiscal year maturity	Interest rate ^(a)	2022	2021
Illinois Finance Authority (IFA)–Series 2004	Variable	2035	1.45%	\$135,800	\$135,800
IFA–Series 2008	Variable	2047	1.47%	125,000	125,000
Taxable–Series 2012	Fixed	2040–2048	4.20%	200,000	200,000
Taxable–Series 2013	Fixed	2034–2045	4.64%	547,915	552,705
Taxable–Series 2015	Fixed	2035–2049	3.80%	500,000	500,000
IFA–Series 2015	Fixed	2023–2029	2.96%	128,545	128,545
Taxable–Series 2017	Fixed	2048–2058	3.71%	500,000	500,000
Taxable–Series 2020	Fixed	2050–2051	2.64%	300,000	300,000
Commercial paper (\$300,000 available)	Variable	NA	NA	—	100,000
Bonds, notes, and other debt payable subtotal				2,437,260	2,542,050
Unamortized issuance costs, premiums, and discounts, <i>net</i>				(4,501)	(3,917)
Total bonds, notes, and other debt payable, <i>net</i>				\$2,432,759	\$2,538,133

^(a) Weighted average interest rate at August 31, 2022

Total obligations including bonds, notes, and other debt payable at August 31, 2022, are scheduled to mature through August 31 of each period as noted in the table below. The schedule has been prepared based on the contractual maturities of the debt outstanding at August 31, 2022. Accordingly, if remarketings of variable-rate debt offerings fail in future periods, debt repayments may become more accelerated than presented here. The potential failed remarketings coincide with the interest rate reset dates and amounts noted above.

(in thousands of dollars)

2023	\$6,660
2024	7,710
2025	10,240
2026	10,750
2027	29,840
2028 and thereafter	2,372,060
Total	\$2,437,260

10. Endowments

Donor-restricted endowment funds are subject to Illinois's enacted version of the Uniform Prudent Management of Institutional Funds Act (UPMIFA). The University interprets UPMIFA as requiring that the fair value of the original donor-restricted endowment gift be preserved as of the gift date unless there are explicit donor stipulations to the contrary. Therefore, the University classifies the following as part of net assets with donor restrictions: the original value of gifts donated to the permanent endowment, the original value of subsequent gifts, and accumulations to the permanent endowment made in accordance with the applicable donor gift instrument at the time the accumulation was added to the fund. The remaining portion of the donor-restricted endowment fund is classified as net assets with donor restrictions until those amounts are appropriated for University expenditure in a manner consistent with UPMIFA's standard of prudence. In accordance with UPMIFA, the University considers the following factors in determining whether to appropriate or accumulate donor-restricted endowment funds:

- The duration and preservation of the endowment fund
- The purposes of the institution and of the endowment fund
- General economic conditions
- Possible effects of inflation or deflation
- Expected total return from income and appreciation of investments
- Other resources of the institution
- The institutional investment policy

The University's endowment consists of about 2,900 individual donor-restricted endowment funds and about 1,000 funds it designates to function as endowments. The net assets associated with endowment funds, including funds designated by the University to function as endowments, are classified and reported based on whether there are donor-imposed restrictions. Institution-designated endowment funds include quasi-endowments established by specific Board of Trustees approval as well as endowments created by management under general guidelines and policies approved by the Board of Trustees.

The following tables present the endowment net asset composition by type of fund at fair value as of August 31:

<i>(in thousands of dollars)</i>	With donor restrictions				2022
	Without donor restrictions	Funds held in perpetuity	Accumulated gains (losses)	Total	
Institution-designated endowment funds	\$5,262,391				\$5,262,391
With donor restrictions					
Underwater funds		\$96,539	(\$4,574)	\$91,965	91,965
All other funds		1,962,766	3,562,729	5,525,495	5,525,495
Endowment net assets, end of year	\$5,262,391	\$2,059,304	\$3,558,155	\$5,617,460	\$10,879,850

<i>(in thousands of dollars)</i>	With donor restrictions				2021
	Without donor restrictions	Funds held in perpetuity	Accumulated gains (losses)	Total	
Institution-designated endowment funds	\$5,562,129				\$5,562,129
With donor restrictions					
Underwater funds		\$400	(\$28)	\$372	372
All other funds		1,893,812	3,904,869	5,798,681	5,798,681
Endowment net assets, end of year	\$5,562,129	\$1,894,212	\$3,904,841	\$5,799,053	\$11,361,182

Underwater Endowment Funds

The University monitors endowment funds to identify those for which historical cost was more than fair value. Associated unrealized losses of \$4.6 million and \$0.03 million as of August 31, 2022 and 2021, respectively, are recorded in the net assets with donor restrictions classification; subsequent gains increase net assets with donor restrictions.

Investment and Spending Policies

The University's endowment is primarily invested in the Long-Term Balanced Pool. The Investments Committee of the Board of Trustees annually reviews the asset allocation policy for the pool.

The principal objective for the Long-Term Balanced Pool is to preserve purchasing power and to provide a growing stream of income to fund University programs. On average, the pool seeks to achieve an annual total rate of return (i.e., actual income plus appreciation) equal to inflation plus actual spending. This objective of preserving purchasing power emphasizes the need for a long-term perspective in formulating both spending and investment policies.

The Board of Trustees has adopted a guideline for the annual spending rate from the University's Long-Term Balanced Pool. The calculation blends market and spending elements for the total annual spending rate.

The market element is an amount equal to 4.35 percent of the market value of a unit in the pool, averaged for the 12 months ended October 31 of the prior fiscal year. It is weighted at 30 percent in determining the total. The spending element is an amount equal to the current fiscal year's spending amount increased by 1.5 percent plus the actual rate of inflation. It is weighted at 70 percent in determining the total.

If investment income received is not sufficient to support the total-return objective, the balance is provided from realized and unrealized gains. If the income received is in excess of the objective, the balance is reinvested in the Long-Term Balanced Pool on behalf of the unit holders.

The University's policy is to reinvest the current income of all other investment pools.

Changes in Endowment Net Assets

The following tables represent changes in endowment net assets for the fiscal years ended August 31:

(in thousands of dollars) 2022

	Without donor restrictions	With donor restrictions	Total
Endowment net assets, beginning of year	\$5,562,129	\$5,799,053	\$11,361,182
Interest and dividends, net of expenses	(28,802)	(27,062)	(55,864)
Net depreciation, realized and unrealized	(116,426)	(109,390)	(225,817)
Total investment loss	(145,228)	(136,452)	(281,680)
Contributions	—	130,194	130,194
Appropriation of endowment assets for expenditure	(190,612)	(204,791)	(395,403)
Other changes			
Transfers to create institutional funds	56,659	—	56,659
Transfers of institutional funds per donor requirement	—	32,375	32,375
Spending of institution-designated endowment fund	(14,729)	—	(14,729)
Other reclassifications	(5,829)	(2,919)	(8,748)
Endowment net assets, end of year	\$5,262,391	\$5,617,460	\$10,879,850

(in thousands of dollars) 2021

	Without donor restrictions	With donor restrictions	Total
Endowment net assets, beginning of year	\$4,216,889	\$4,267,817	\$8,484,706
Interest and dividends, net of expenses	(4,439)	(4,568)	(9,007)
Net appreciation, realized and unrealized	1,515,797	1,560,019	3,075,816
Total investment return	1,511,358	1,555,451	3,066,809
Contributions	—	123,724	123,724
Appropriation of endowment assets for expenditure	(185,220)	(193,475)	(378,695)
Other changes			
Transfers to create institutional funds	66,730	—	66,730
Transfers of institutional funds per donor requirement	—	19,583	19,583
Spending of institution-designated endowment fund	(15,427)	—	(15,427)
Other reclassifications	(32,201)	25,953	(6,248)
Endowment net assets, end of year	\$5,562,129	\$5,799,053	\$11,361,182

11. Postretirement and Postemployment Benefit Plans

The University maintains two contributory retirement plans for its eligible faculty and staff. The plans offer employees two investment company options, Teachers Insurance and Annuity Association (TIAA) and College Retirement Equities Fund (CREF), and certain mutual funds offered by Fidelity Investments. Participating employee and University contributions are immediately vested. The University contributed \$85.5 million and \$58.7 million to the two plans in 2022 and 2021, respectively.

The University currently sponsors a healthcare plan permitting retirees to continue participation on a “pay-all” basis; it has no liability for participants past age 65. The retiree contribution is based on the average per-capita cost of coverage for the plan’s entire group of active employees and retirees rather than the per-capita cost for retirees only. Retirees are also eligible to participate in certain tuition reimbursement plans and may receive a payment for sick days accumulated at retirement. Certain postemployment benefit plans are also sponsored.

The University recognizes an asset or a liability in the consolidated statements of financial position for

the plans’ overfunded or underfunded status. The asset or liability is the difference between the fair value of plan assets and the related benefit obligation, defined as the projected benefit obligation for post-employment benefit programs and the accumulated postretirement benefit obligation (APBO) for post-retirement benefit programs, such as a retiree health-care plan. In the consolidated statements of activities, the University recognizes actuarial gains or losses and prior service costs or credits that arise during the period but are not components of net periodic benefit cost. The University measures plan assets and obligations as of the date of its fiscal year end and makes specified disclosures for the upcoming fiscal year.

The accrued cost for postemployment benefits was \$7.8 million and \$8.1 million at August 31, 2022 and 2021, respectively, and is included in accounts payable and accrued liabilities on the consolidated statements of financial position.

The University funds the plan on a pay-as-you-go basis. The following table sets forth key amounts for the postretirement plan for the fiscal years ended August 31:

<i>(in thousands of dollars)</i>	2022	2021
Benefit obligation	\$16,396	\$23,156
Benefits paid	3,127	3,300
Employer contributions	2,068	2,457
Contributions from participants	1,059	843
Net periodic postretirement benefit cost	2,065	1,843
Fair value of plan assets	—	—

Service costs included in net periodic post-retirement benefit cost above totaled \$1.1 million as of August 31, 2022 and 2021.

The changes in other than periodic benefit cost included in net assets without donor restrictions on the consolidated statements of activities totaled net losses of \$33 thousand and \$6.8 million as of August 31, 2022 and 2021, respectively, for a decrease of \$6.8 million due to net losses during the fiscal year.

The APBO was \$16.4 million and \$23.2 million at August 31, 2022 and 2021, respectively, and is included

in accounts payable and accrued liabilities on the consolidated statements of financial position.

The following tables present key actuarial assumptions used in determining APBO as of August 31, 2022 and 2021. For both fiscal years 2022 and 2021, the ultimate healthcare cost trend rate was 5 percent, and the year when the trend rate will reach the ultimate trend rate was 2031.

Additional assumptions used to determine benefit obligations for the fiscal years ended August 31 were as follows:

	2022	2021
Weighted average settlement (discount) rate	4.3%	2.3%
Weighted average rate of increase in future compensation levels	3.0%	2.5%
Healthcare cost trend rate	7.0%	6.0%

The assumptions used to determine net periodic benefit cost for the fiscal years ended August 31:

	2022	2021
Discount rate	2.3%	2.2%
Weighted average rate of increase in future compensation levels	2.5%	2.0%
Healthcare cost trend rate	5.0%	6.25%

Estimated future benefit payments reflecting anticipated service, as appropriate, are expected to be paid as shown below for the fiscal years ended August 31:

(in thousands of dollars)

2023	\$1,073
2024	976
2025	1,038
2026	1,078
2027	1,144
2028–2032	6,318
Total	\$11,627

The University offers a deferred compensation plan under Internal Revenue Code 457(b) to a select group of management and highly compensated employees. The University does not contribute to this deferred compensation plan. The University has recorded both an asset and a liability related to the deferred compensation plan that totaled \$117.7 million and \$134.2 million as of August 31, 2022 and 2021, respectively; these are included in investments and deposits payable and actuarial liability of annuities payable on the consolidated statements of financial position.

12. Related Parties

Members of the University's Board of Trustees, senior management, and faculty may on occasion be associated either directly or indirectly with entities doing business with the University. The University bylaws and conflict of interest policies establish guidelines for disclosure and regulation of such activities as circumstances warrant. When such associations exist, measures are taken, in the best interests of the University, to mitigate any actual or perceived conflict. Transactions with related parties may include investment management, common membership in investment partnerships or other investment vehicles, and the purchase of goods or services.

The University maintains several clinical and education affiliation agreements with other organizations. Revenues and expenses from these agreements are accounted for in the operating activities section of the consolidated statement of activities. The most significant agreements are with Northwestern Medical Group (NMG) and Northwestern Memorial Healthcare Corporation (NMHC). NMG is a not-for-profit, multi-specialty physician organization committed to providing clinical care to patients and to supporting the research and academic endeavors of Northwestern's Feinberg School of Medicine (Feinberg). NMG is governed by a board of directors, and its physicians are full-time faculty members or researchers at Feinberg. It is a subsidiary of NMHC, the not-for-profit parent corporation of Northwestern Memorial Hospital (NMH), which is the primary teaching hospital of Feinberg. Under terms of agreements effective in fiscal year 2014 between the University, NMG, and NMHC, the University receives recurring contributions from NMHC to support the Feinberg research and education programs, basic and applied biomedical research facilities and programs, and research and educational support services.

13. Self-Insurance Reserves and Other Contingencies

Reserves for losses under the University's self-insurance program, aggregating \$14.9 million and \$12.2 million at August 31, 2022 and 2021, respectively, include reserves for probable known losses and for losses incurred but not yet reported. The reserves are presented on a discounted basis. The discount rate was 6.55 percent in fiscal years 2022 and 2021. Self-insurance reserves are based on estimates of historical loss experience, and while management believes that the reserves are adequate, the ultimate liabilities may be more or less than the amounts provided. These reserves are included in accounts payable and accrued liabilities on the consolidated statements of financial position.

From time to time, various claims and suits generally incidental to the conduct of normal business are pending or may arise against the University. It is the opinion of management of the University, after taking into account insurance coverage, that any losses from the resolution of pending litigation should not have a material effect on the University's financial position or results of operations.

All funds expended in connection with government grants and contracts are subject to audit by government agencies. While any ultimate liability from audits of government grants and contracts by government agencies cannot be determined at present, management believes that it should not have a material effect on the University's consolidated financial position or results of operations.

14. Grants and Contracts

Grants and contracts for the fiscal years ended August 31 are summarized on the consolidated statements of activities as follows:

<i>(in thousands of dollars)</i>	2022	2021
Federal grants	\$653,671	\$585,764
Private grants and contracts	169,621	162,496
State grants	5,233	4,116
Total grants and contracts	\$828,525	\$752,376

Indirect cost recovery on federal grants and contracts is based on an institutional rate negotiated with its cognizant federal agency, the United States Department of Health and Human Services.

15. Liquidity and Availability

Financial assets and resources available within one year of August 31 for general expenditure are as follows:

<i>(in thousands of dollars)</i>	2022	2021
Financial assets		
Cash and cash equivalents	\$372,337	\$285,059
Accounts receivable, net	264,493	196,318
Notes receivable	28,570	38,081
Contributions receivable	24,096	46,091
Endowment payout made available for operations	666,000	515,300
Financial assets available within one year	1,355,496	1,080,849
Liquidity resources		
Commercial paper	300,000	200,000
Bank lines of credit	625,000	725,000
Total financial assets and liquidity resources available within one year for general expenditure	\$2,280,496	\$2,005,849

The University manages liquidity by structuring its financial assets to be available as its operating expenses, liabilities, and other obligations come due. Working capital funds, which are generated through the temporary differences between operating receipts and disbursements, are held in a variety of money market instruments or are invested in the Long-Term Balanced Pool. The income from investing them is used for general operating purposes.

In addition, the University may place commercial paper under a \$300 million Taxable Commercial Paper Note. Under this agreement, no outstanding borrowings existed as of August 31, 2022, and outstanding borrowings of \$100 million existed as of August 31,

2021. The University also may draw \$625 million in standby lines of credit to supplement working capital requirements. Under this agreement, no outstanding borrowings existed as of August 31, 2022 and 2021.

Lastly, the University holds institution-designated endowments of \$5,262 million and \$5,562 million as of August 31, 2022 and 2021, respectively. Although the University does not intend to spend from its institution-designated endowment funds—other than amounts appropriated for spending through its annual budget approval and appropriation process—amounts from its institution-designated endowment could be made available if necessary, subject to liquidity of the underlying investments.

16. Functional Classification of Expenses

Expenses by functional categories reflect salaries, wages, benefits, goods, and services used for those specific purposes. The University has allocated functional expenses for depreciation, interest on indebtedness, and certain other expenses related to operation and maintenance of plant to other functional categories based on the functional use of space on the University's campuses.

<i>(in thousands of dollars)</i>				<i>2022</i>
	Academic	Research	Support	Total
Salaries, wages, and benefits	\$953,253	\$329,092	\$274,600	\$1,556,945
Services, supplies, maintenance, and other	621,709	220,951	52,476	895,136
Depreciation	138,941	48,837	16,580	204,358
Interest on indebtedness	61,692	21,683	7,362	90,737
Total	\$1,775,595	\$620,563	\$351,018	\$2,747,176

<i>(in thousands of dollars)</i>				<i>2021</i>
	Academic	Research	Support	Total
Salaries, wages, and benefits	\$920,387	\$309,515	\$247,446	\$1,477,348
Services, supplies, maintenance, and other	471,688	203,054	42,417	717,159
Depreciation	125,805	46,162	13,951	185,918
Interest on indebtedness	61,687	22,635	6,841	91,163
Total	\$1,579,567	\$581,366	\$310,655	\$2,471,588

17. Subsequent Events

The University has evaluated subsequent events in accordance with the FASB ASC Subsequent Event Topic through December 16, 2022, the date when the consolidated financial statements were issued. The University did not identify any events to be disclosed.

18. Financial Responsibility Standards

The University participates in federal Title IV student financial assistance programs that require it to meet fiscal responsibility standards based on criteria the US Department of Education (ED) has set forth in 34 CFR 668.171. The criteria include the ED's annual calculation of a financial responsibility composite score, as further outlined in 34 CFR 668.172, using audited consolidated financial statements submitted via the ED's eZ-Audit system. The composite score has been and will continue to be based on three ratios: primary reserve, equity, and net income. These ratios use University financial data (see next table) which are not otherwise presented in the consolidated financial statements or other notes to the consolidated financial statements, as of and for the year ended August 31, 2022.

Total long-term debt consists of (1) pre-implementation debt, defined as the amounts reported in the last consolidated financial statements the University submitted to the ED prior to July 1, 2020 (the University's consolidated financial statements for the fiscal year ended August 31, 2019), less any payments or other reductions after August 31, 2019, and not to exceed land, buildings, and equipment, net; and (2) post-implementation debt, defined as debt used to obtain land, buildings, and equipment, net, after the fiscal year ended August 31, 2019, less any payments or other reductions. Required disclosures for post-implementation debt include issue date, term, nature of capitalized amounts, and amounts capitalized. The University did not have any post-implementation debt as of August 31, 2022.

(in thousands of dollars)

Required input per standards	Ratio(s) uses	Input amount	Related consolidated financial statement amount not used as input on supplementary schedule
Land, buildings, and equipment, net—pre-implementation	Primary reserve	\$ 2,701,342	
Land, buildings, and equipment, net—post-implementation without outstanding debt for original purchase	Primary reserve	344,114	
Construction-in-progress—reconciling item from Note 5	Primary reserve	75,399	
Total land, buildings, and equipment, net			\$ 3,120,855
Long-term debt, net—for long-term purposes—pre-implementation	Primary reserve	2,134,186	
Debt, net—not used for purchase of land, buildings, and equipment			298,573
Total bonds, notes, and other debt payable, net			2,432,759
Net periodic postretirement benefit cost			2,065
Less: service costs			(1,114)
Net periodic benefit cost other than service cost (nonoperating)	Primary reserve	951	
Annuity and other split-interest agreements with donor restrictions	Primary reserve	23,432	
Annuity and other split-interest agreements with donor restrictions: restricted in perpetuity			31,485
Total annuity and other split-interest agreements			54,917
Endowment funds held in perpetuity			2,059,304
Endowment pledges			59,102
Annuity and other split-interest agreements			31,485
Student loan funds			33,814
Total net assets with donor restrictions: restricted in perpetuity	Primary reserve	2,183,705	
Term endowments with donor restrictions	Primary reserve	9,354	
Loss on sale of fixed assets in nonoperating	Primary reserve	(2,093)	
Gifts and grants restricted for land, buildings, and equipment			1,185
Loss on postretirement obligations			8,196
Total other nonoperating expenses, net			7,288
<i>Inputs directly from the Consolidated Statements of Activities:</i>			
Total operating revenues			2,885,925
Plus: change in value of derivative instruments			8,269
Less: investment return designated for operations			(436,784)
Total revenues and gains without donor restrictions	Net income	2,457,410	

Supplementary Schedule of Financial Responsibility Data

As of and for the year ended August 31, 2022

(in thousands of dollars)

Financial element	Location in consolidated financial statements or related notes	Amount used as ratio input
<i>Primary reserve ratio</i>		
<i>Numerator: expendable net assets</i>		
Net assets without donor restrictions	Consolidated Statements of Financial Position	\$9,413,091
Net assets with donor restrictions	Consolidated Statements of Financial Position	5,937,767
Land, buildings, and equipment, net—pre-implementation	Note 18, Financial Responsibility Standards	2,701,342
Land, buildings, and equipment, net—post-implementation without outstanding debt for original purchase	Note 18, Financial Responsibility Standards	344,114
Construction-in-progress	Note 5, Land, Buildings, and Equipment	75,399
Right-of-use assets—operating, net	Consolidated Statements of Financial Position	142,653
Accrued cost for postemployment benefits	Note 11, Postretirement and Postemployment Benefit Plans	7,828
Long-term debt, net—for long-term purposes—pre-implementation	Note 18, Financial Responsibility Standards	2,134,186
Lease liabilities—operating	Consolidated Statements of Financial Position	149,019
Annuity and other split-interest agreements	Note 18, Financial Responsibility Standards	23,432
Term endowments with donor restrictions	Note 18, Financial Responsibility Standards	9,354
Net assets with donor restrictions: restricted in perpetuity	Note 18, Financial Responsibility Standards	2,183,705
<i>Denominator: total expenses and losses without donor restrictions</i>		
Total expenses without donor restrictions (operating)	Consolidated Statements of Activities	2,747,176
Net periodic benefit cost other than service cost (nonoperating)	Note 18, Financial Responsibility Standards	951
Loss on sale of fixed assets in nonoperating	Note 18, Financial Responsibility Standards	(2,093)
<i>Equity ratio</i>		
<i>Numerator: modified net assets</i>		
Net assets without donor restrictions	Consolidated Statements of Financial Position	9,413,091
Net assets with donor restrictions	Consolidated Statements of Financial Position	5,937,767
<i>Denominator: modified assets</i>		
Total assets	Consolidated Statements of Financial Position	18,633,522
<i>Net income ratio</i>		
<i>Numerator: change in net assets without donor restrictions</i>		
Change in net assets without donor restrictions	Consolidated Statements of Activities	(450,681)
<i>Denominator: total revenues and gains without donor restrictions</i>		
Total revenues and gains without donor restrictions, excluding net investment return	Note 18, Financial Responsibility Standards	2,458,594

See accompanying independent auditors' report.

NORTHWESTERN UNIVERSITY
 Supplementary Schedule of Expenditures of Federal Awards
 Year ended August 31, 2022

Cluster title/Federal grantor/Subagency/Project title	Pass-through entity	Assistance listing number	Sponsor award number	Federal expenditures	Passed-through to subrecipients
Research and Development Cluster:					
Department of Agriculture:					
Developing Mathematical Models for the Formation of New Collaborations at Conferences	188	10.001	27675/58-3022-0-005	\$ 117,588	—
The Effect of the Opioid Crisis on the Farm Sector: Implications from the Rural Economy	251	10.310	SUB00001814//2019-67023-29347	(6,619)	—
National Institute of Food and Agriculture:					
The Family Check-Up 4 Health: A Family-Centered Health Maintenance Approach to Improve Nutrition and Prevent Obesity in Early Childhood	21	10.310	ASUB22-03//2018-68001-27550	28,106	—
A defensible, next generation approach to quantifying and characterizing land use change		10.312	2018-10008-28530	271,888	161,421
Department of Agriculture Total				410,963	161,421
Department of Commerce:					
National Institute of Standards and Technology:					
Development of Levitated, Macroscopically Delocalized Atom Interferometers for a New Measurement of Newton's Constant G		11.609	60NANB19D168 AMD 2	39,342	—
Advanced Materials Center for Excellence: Center for Hierarchical Materials Design (CHiMaD)		11.609	appr70NANB19H005 Amrd 2	3,792,532	962,276
Department of Commerce Total				3,831,874	962,276
Department of Defense:					
Scientific Autonomous Reasoning Agent (SARA) integrating Materials Theory, Experiment and Computation	60	12.800	80776-11044//FA9550-18-1-0136	175,480	—
Rational design and implementation of novel polymer adsorbents for selective uptake of per- and polyfluoroalkyl substances from groundwater	60	12.RD	82296-11070 AMD 2//W312HQ18C052	17,445	—
Air Force Office of Scientific Research:					
Foreign Military Training: Building Effective Armed Forces in Weak States		12.630	FA9550-20-1-0277 P00003	89,414	—
Development of a Targeted Intravascular Therapy to Stop Non-Compressible Torso Hemorrhage Human Fix a Flat	245	12.800	013840-00002//FA8650-21-2-6K01	605,096	—
MUR: Unraveling the Biology, Chemistry and Nanoscience of Natural and Synthetic Melanins	241	12.800	104170196 //FA9550-18-1-0142// P00004	321,106	—
Stochastic Self-Consistent Clustering Theory for Composite Performance Prediction: from extreme value microstructure attributes to design of interphase for toughness	71	12.800	313-0866-05//FA9550-18-1-0381	370,515	—
Engineering bacterial transcription factors to sense human performance biomarkers		12.800	FA2386-21-1-4078	216,766	—
A 4D Nanoprinter for Making and Manipulating Macroscopic Materials		12.800	FA9550-16-1-0150-P00007	166,343	102,219
PECASE: Multi-dimensional Vibrational-Electronic Spectroscopy to Probe Electronic-to-Vibrational Energy Transfer in Hybrid Nanomaterials		12.800	FA9550-16-1-0379-P00004	142,521	—
Soft Chemical Approaches to the Synthesis of Metastable Materials		12.800	FA9550-17-1-0247-P00004	149,319	—
Reconfigurable Matter from Programmable Atom Equivalents		12.800	FA9550-17-1-0348-P00004	1,263,150	—
Molecular Ion Quantum Control		12.800	FA9550-17-1-0352-P00004	177,278	—
Merging reactivity and properties: photocontrolled synthesis of π -conjugated polymers		12.800	FA9550-18-1-0159 P00002	55,952	—
Soft Materials for Flexible, Stretchable Hybrid Electronics		12.800	FA9550-18-1-0320-P00002	(10,277)	—
Rotation, Shift and Scale Invariant Ultrafast Automatic Image Recognition Using an Opto-Electronic Correlator		12.800	FA9550-18-1-0359-P00003	111,336	—
Investigation of Experimental and Theoretical Challenges for Developing Superluminal Sensors		12.800	FA9550-18-1-0401 P00003	175,460	—
Composite Soft Materials with Decentralized and Distributed Actuation		12.800	FA9550-18-1-0493	(21,639)	—
Composite Soft Materials with Decentralized and Distributed Actuation		12.800	FA9550-18-1-0493	25,338	25,338
A Biophysical Approach to Uncover the Role of Cell Membrane Mechanics in Sensing Mechanical Force		12.800	FA9550-19-1-0039 P00004	120,839	—
Low-dimensional materials for high-efficiency/high-power nonlinear optical applications at infrared		12.800	FA9550-19-1-0243-P00001	206,507	72,277
Fundamental Dynamics, Predictability, and Uncertainty of Scientific Discovery & Advance		12.800	FA9550-19-1-0354 P00005	806,926	452,976
COVID-19: Fundamental Dynamics, Predictability, and Uncertainty of Scientific Discovery & Advance		12.800	FA9550-19-1-0354 P00005	162,318	—
Fundamental Study of p-Type Doping in MOCVD-Grown Ga2O3		12.800	FA9550-19-1-0410	151,473	—
Reasoning for Social Autonomous Agents		12.800	FA9550-20-1-0091 P0002	420,509	—
Phonon Propagation in Biological Structures and Implications on Phononic Tunability of Synthetic Materials		12.800	FA9550-20-1-0258 P00002	170,715	—
Expanding functionality and enhancing documentation of scQubits, an open-source Python package for superconducting qubits		12.800	FA9550-20-1-0271	14,256	—
Manipulation of Intra-Manifold Excitonic Energy Redistribution in Colloidal Semiconductor Nanoplatelets: Toward High-Temperature Quantum Emitters		12.800	FA9550-20-1-0364 P00003	171,170	—
Laser and Spatial Light Modulators for Ultrafast Automatic Image Recognition Using an Opto-Electronic Correlator		12.800	FA9550-21-1-0137	122,919	—
Determining the Absolute Molecular Weights of Pi-Conjugated Polymers for Mechanically Flexible and Stretchable Electronics		12.800	FA9550-22-1-0158	134,169	—
Robotic Architected Materials with Distributed Sensorimotor Capabilities via Free-form Electrochemical Composites		12.800	FA9550-22-1-0218	65,274	—
Stabilization of Silica Bubbles in Ultra High Temperature Ceramic Nanocomposites		12.800	FA9550-22-1-0221	14,496	—
Closed and Open Architecture Colloidal Crystals with Properties by Design		12.800	FA9550-22-1-0300	40,762	—
Hierarchical Assembly of Spider Silk Proteins: Exploring Structural Biology of Biomaterials from the Atomic to the Mesoscale	198	12.800	SA0000752 // FA9550-20-1-0103	155,347	—
Machine Learning for Physics-based Systems: Optimal Approximations, Architectures, and Training	288	12.800	UTA20-001225 //FA9550-21-1-0084	83,615	—
				6,669,559	652,810
Air Force Research Laboratory:					
Center of Excellence for Advanced Bioprintable Nanomaterials (C-ABN)		12.800	FA8650-15-2-5518 P00014/P00015/P00016	(589)	—
AFRL RESCU Cloud: Secure and Verifiable SQL for the Zero-Trust Cloud		12.800	FA8750-22-2-0156-P00003	169,591	—
Optimization of Ink-Printed, 2D-Materials for Selective, Wearable, Environmental Sensors	227	12.800	S-193-001-001/NB18-21-19//FA86501825402	304,555	—
				473,557	—
VeriGOOD-ML: Verilog Generator (Open-source), Optimized for Designs for Machine Learning	269	12.910	A008043202//FA8650-20-2-7009 Amd No. 4	123,117	—
High-speed Low-noise Short-wavelength Infrared Type-II Superlattice Heterojunction Phototransistor		12.910	FA8650-18-1-7810 P00002	32,015	—
Normalizing Timing of Rhythms Across Internal Networks of Circadian Clocks (NTRAIN)		12.910	FA8650-21-2-7119 P00004	6,204,423	4,204,048
				6,359,555	4,204,048
Ptychography-based Rapid Imaging of Nano-Structures with Multi-layer Assemblies (PRISMA)					
Two-Photon Absorption Cross-Section Enhancements	284	12.RD	No. 86101156 Amd 1 // FA8650-17-C-9112	(24)	—
	227	12.RD	S-114-006-007//FA8650-16-D-5403 / D.O. 0006, FA865	34,390	—
Army:					
Beta-Blockers for the Prevention of Acute Exacerbations of COPD	234	12.420	000507860-SC008-A08//W81XWH-15-1-0705	(65,604)	—
A pilot clinical trial to assess the effect of transfemoral socket design on hip muscle function	255	12.420	17748//W81XWH1910507	71,615	—
CRISPR-Cas9 Gene Therapy for ALS Enhanced by TJ-Targeted Barrier Modulation	289	12.420	2008590//W81XWH2110219	77,036	—
Targeting Balance Confidence as a Strategy to Increase Integration and Improve Outcomes in Users of Lower-limb Prostheses	194	12.420	322801NWU//W81XWH-17-1-0697	482	—
Women's-Specific Footwear with Prosthetic Feet	100	12.420	4182//W81XWH-17-2-0072 / PO 930293	26	—

NORTHWESTERN UNIVERSITY
Supplementary Schedule of Expenditures of Federal Awards
Year ended August 31, 2022

Cluster title/Federal grantor/Subagency/Project title	Pass-through entity	Assistance listing number	Sponsor award number	Federal expenditures	Passed-through to subrecipients
A New Humanized Mouse Model For The Study of Peripheral Neuropathies		12.420	W81XWH2210386	\$ 3,296	—
New PROTACs Targeting Tissue Transglutaminase in Ovarian Cancer		12.420	W81XWH2210470	9,051	—
Multi-institutional Phase 2/3 Trial of Fresh Frozen Plasma (FFP) in Patients with Moderate to Severe Traumatic Brain Injury (TBI)		12.420	W81XWH2211106	24,463	—
Transient implantable nerve stimulator for enhancing regeneration across long segmental peripheral nerve defects	311	12.420	WU-19-170-MOD-2//W81XWH1810170	14,858	—
Developing a MALDI/PET Early Warning Imaging System for Lethal Prostate Cancer	311	12.420	WU-20-307-MOD-2//W81XWH1910795	80,577	—
				13,522,831	1,412,488
SCAN: Socio-Cultural Attitudinal Networks	264	12.431	104773-Z8424106//W911NF1610342	170,636	—
Developing Quantum Nano-Wire (non-tunnel-junction) Based Superconducting Qubits	246	12.431	1562164 // W911NF-22-1-0050	1,140	—
Specifically Triggerable Multi – Scale Responses in Organized Assemblies	265	12.431	16-008956-E-04 // W911NF-15-1-0568	46,813	—
Generation, manipulation, control, and applications of entanglement in a large network	235	12.431	641796//W911NF2110325	170,411	—
Self-assembly of Hybrid Synthetic Organelles	241	12.431	703559//W911NF-13-1-0383	124,336	—
Center for Advanced 2D Organic Networks	60	12.431	76091-11011//W911NF-15-1-0447	10,856	—
Plasma Driven Solution Electrochemistry	269	12.431	A008178002//W911NF2010105 P00004	162,704	—
Formal Foundations of Algorithmic Matter and Emergent Computation	90	12.431	AWD-000084-G2//W911NF1910233	130,377	—
Predicting and Controlling the Response of Particulate Systems Through Grain-Scale Engineering	37	12.431	S428657-06//W911NF1910245	172,596	—
Realizing High-Fidelity Gates in Protected Qubits	178	12.431	SUB0000289//W911NF1910016	179,526	—
Endosymbiotic control and enhancement of leafhopper brochosomes	288	12.431	UTA20-000832//W911NF2010195 AMD 02	113,380	—
Ab initio design of noncentrosymmetric metals: crystal engineering in oxide heterostructures. f. Research Area 6: Physics		12.431	W911NF-15-1-0017 P00009	3,992	—
Engineering the translation apparatus for the synthesis of electronically active sequence-defined polymers		12.431	W911NF-16-1-0372 P00015	609,326	527,780
7.4 Reactive Chemical Systems: Assembly and Dynamics of Soft Matter Observed by Liquid Cell TEM		12.431	W911NF-17-1-0326 P00009	141,534	34,434
II.A.1.b.i.2: Engineering Nanocellulose Materials for High Ballistic Impact Performance		12.431	W911NF-17-1-0430 P00007	96,432	—
Selective Laser Melting of Ni-based superalloys with combined precipitation- and oxide-dispersion-strengthening		12.431	W911NF-18-1-0129/P00006	24,250	24,250
Stimuli-Responsive Control of Protein-Based Molecular Structure		12.431	W911NF-18-1-0200 P00007	545,274	160,893
MOCVD growth of LWIR InAs/InAsSb Type-II superlattices for focal plane array applications		12.431	W911NF1810402-P00004	62,455	—
Ultra-low Energy Receivers based on Electron-Injection Detectors on a CMOS Unified Photonic Integration Platform		12.431	W911NF1810429 P00006	(9,060)	—
Failure Probability and Safety Gain of Super-Strong Biomimetic Nacreous Materials		12.431	W911NF1910039 P00007	74,991	—
Mechanisms of Extracellular Matrix-Mediated Electrochemical Signaling		12.431	W911NF-19-1-0136-P00004	119,000	—
The impact of organizational strategy on performance of in vitro biosynthesis reactions		12.431	W911NF-19-1-0298 P00002	247,451	—
II.A.1.b.iii.3: Coupling Magnetic and Ferroelectric Phenomena in Designed 2D Thio- and Selenophosphate Crystals		12.431	W911NF1910335-P00003	127,107	—
II.A.1.a.i.4: Towards Design Rules for the Synthesis of Functional Metal-Organic Frameworks in Aqueous Media at Ambient Temperature for Targeted Applications		12.431	W911NF1910340/P00005	144,012	—
Sensitivity and Non-Normality in Network Control and Failure Propagation		12.431	W911NF1910383 P0005	77,770	—
Tribological and Manufacturing Technologies for Unmanned Aerial Systems		12.431	W911NF1920029	23,758	—
3D Mesosstructures as Active Interfaces to Individual Neurons in 3D Neural Networks		12.431	W911NF-19-2-0169 P00008	325,401	—
II.A.1.b.iii.1 Molecular Triplet Qubits		12.431	W911NF2010088	(2,741)	—
SR SEQUESTRATION AND MINERALIZATION IN ACANTHAREA		12.431	W911NF2010137 P00002	170,441	—
COVID-19: Improving Veterans Referrals by Optimizing Network Design in Response to COVID-19		12.431	W911NF2010202	18,966	—
Development of Metal-Organic Framework@Fiber-based Solid State Catalyst for Degradation of Chemical Warfare Agents: A.1.a.i.4		12.431	W911NF2020136 P00003	72,041	—
Enhancing Material Development and Manufacturing Technologies of Lightweight Alloys and Tribological Performances for Unmanned Aerial Systems		12.431	W911NF2020292	1,571,517	—
High-throughput Synthesis of Metal-Organic Frameworks		12.431	W911NF-21-1-0020	97,938	—
Unlocking the Cryo-Domain: Bio-Cryo-Tomography from Micro to Atomic Scale		12.431	W911NF2110052	506,236	—
Thermal cycling effects on the properties of coarse-grained soils: numerical and experimental investigation		12.431	W911NF2110059	(902)	—
Deciphering the role of endogenous neurotransmitters in bacterial biofilms		12.431	W911NF-21-1-0291-P00001	111,931	—
Building Constitutive Relationships in Responsive Thermosets: A Multi-scale Experimental and Simulation Effort		12.431	W911NF2120085	240,730	—
CCE-SchMVR-2: High-Power-Density and Energy-Efficient Engine and Drivetrain Technologies (Integrating Materials and Manufacturing Development of Lightweight Alloys and Tribological solutions for UAS)		12.431	W911NF2120199	182,647	—
				6,865,272	747,357
DoD Center of Excellence in Advanced Quantum Sensing (CoE-AQS)	67	12.630	21-155HEH // W911NF202076	320,513	—
Rate Effects in the Deformation of Microscale Metallic Samples – Experiments and Simulations	126	12.630	PO #2004091092//W911NF1220022	15,893	—
The Signatures of Success in Human-Agent Teams		12.630	W911NF1920140-P00005	588,024	186,954
				924,430	186,954
Operator 4.0 via Fatigue and Motion Analyses in a Human Digital Twin Enabled Framework for Smart Manufacturing	228	12.RD	19-13-05//W15QKN-19-3-0003	279,131	—
MTEC-17-08-MT-0340; The Effects of Complete and Partial Resuscitative Endovascular Balloon Occlusion of the Aorta (REBOA) with Pharmacologic Treatment in Swine Models of Hemorrhagic Shock, Traumatic Brain Injury, and Complex Vascular Injuries.	2	12.RD	2021-590//W81XWH-19-9-0009	235,723	—
Fieldable Ultrasound Treatment to Enhance Inflammatory-Proliferative Phase Transition and Reduce Wound Healing Time.	85	12.RD	401171213//W81XWH-15-9-0001	23,347	—
Add-on – Rational Design and Implementation of Novel Polymer Adsorbents for Selective Uptake of Per- and Polyfluoroalkyl Substances from Groundwater	60	12.RD	92944-20641//W912HQ2DP0026 Amnd #2	62,964	—
RFQ for Silver Bullet Program	162	12.RD	PO 5300002770 // W911NF-17-C-0024	3,447	—
Modeling of Concrete Failure Under Blast and Fragment Loading – SBIR Phase II Enhancement	78	12.RD	PO, No. 16085	(139,033)	—
AlGaIn for Solar-Blind Avalanche Photo Detectors	164	12.RD	ST19C-003//W912CG-20-C-0009	243,192	—
BA150793: Dose Optimization of Valproic Acid in a Swine Model of Traumatic Brain Injury, Hemorrhage, and Poly Trauma, with the Initiation of a Clinical Trial.	268	12.RD	SUBK00015247//W81XWH-17-C-0246	1,066,042	—
Drinking Water Treatment Residuals as Material for in-situ Capping of Metal Contaminated Sediments	251	12.RD	UFDSP00012338//W912HQ18C0039	73,685	—
Cell-free Biomaterials Institute	280	12.RD	W52P1J-21-9-3023/CS-21-0701	1,122,448	—
CHIPS		12.RD	W81XWH2190014//FY2022-18520-SVC	4,928	—
Assistant Secretary of Defense for Health Affairs:					
Top Down Proteomics of Laser Capture Microdissected Samples for the Cancer Moonshot	100	12.750	4834//HU00011820032	(271,188)	—
Top Down Proteomics of Laser Capture Microdissected Samples for the Cancer Moonshot – Supplement	100	12.750	5674 Amnd 2//HU00012120002	471,752	—
				200,564	—

Defense Advanced Research Projects Agency:

NORTHWESTERN UNIVERSITY
 Supplementary Schedule of Expenditures of Federal Awards
 Year ended August 31, 2022

Cluster title/Federal grantor/Subagency/Project title	Pass-through entity	Assistance listing number	Sponsor award number	Federal expenditures	Passed-through to subrecipients
TRAUMAS: Treatment and recovery augmented with electrical and ultrasound-mediated actuation and sensing	56	12.910	2(GG015670)/D20AC00004-04	\$ 148,175	—
Self-Assembled Morphogenic Metal Coatings	126	12.910	2005560827/HR00112220033	75,852	—
Information Storage and Processing Using Time-Ordered Strings of Molecules, and Molecular Processes	94	12.910	Agmt No. 130368-5111189	119,528	—
REPAIR: Regenerative Electronic Patch through Advanced Intelligent Regulation	280	12.910	AWD00001593(416052-2) AMD2/D20AC00002	246,706	—
				590,261	—
SIELD: A Statistical Machine Learning Framework for Diversity Enabled Ensemble Robustness		12.RD	HR00111990074-P00003	(996)	—
SIELD: A Statistical Machine Learning Framework for Diversity Enabled Ensemble Robustness		12.RD	HR00111990074-P00003	628	628
Wizkit: Wide-Scale Zero-Knowledge Interpreter Toolkit	211	12.RD	HR0002230C0087//Wang AGMT 3/8/21	127,366	—
SPADE: Strategic Probabilistic Attitudinal Diplomacy Engine		12.RD	No. HR00112290059 P00005	196,306	—
SCHNEIDER – System for Counterfactual Human Network Evaluation of Individual Differences, Errors, and Residuals	203	12.RD	SCHNEIDER-Northwestern-01//HR00111990062	16	—
Defense Logistics Agency: Integration of ICME Tools in Casting Design and Process Optimization for Intelligent Manufacturing	14	12.RD	AGMT 1/3/19/SP4701-17-D-1134	65,354	—
Defense Threat Reduction Agency: An integrated multi-scale camouflaging platform for cloaking immunogenicity and evading non-specific clearance of therapeutic proteins	60	12.351	90425-20126 // HDTRA12010004	100,878	—
A novel toolbox for rapid, on demand, in vitro glycoprotein synthesis		12.351	HDTRA1-15-1-0052	22,624	6,224
Highly Stable and Bifunctional Bio-Inspired Catalytic MOFs for Destruction of Chemical Threats		12.351	HDTRA11810003-P00005	222,946	—
Topology-Enhanced Diffusion of Chemical Warfare Agents in Metal-Organic Frameworks for Detoxification		12.351	HDTRA11910007-P00006	414,492	—
Novel Reactive, Porous, and Processable Polymers for Chem-Bio Defense		12.351	HDTRA1-19-1-0010 Amnd P00005	639,278	—
Machine learning-guided design of modular, protein-based medical countermeasures		12.351	HDTRA12110038 P00001	585,657	166,040
Interaction with Ionizing Radiation with Matter, University Research Alliance (IIRM-URA)	176	12.351	SA21-09 AMD 04/HDTRA12020002	212,819	—
				2,198,694	172,264
Intelligence Advanced Research Projects: COVID-19: AMISS (Advanced Misinformation Influence Sentinel System)	168	12.RD	GR121952/2020-20102000001	18,483	—
GRAIL: Generative Range and Altitude Identity Learning	284	12.RD	No. SCON-00002884/No. 2022-21102100007	45,325	—
Navy: A CyberOctopus that Learns, Evolves, and Adapts	256	12.300	095643-17467/N00014-19-1-2373 Amd. 5	147,735	—
The microbiome and responsiveness to stress: Countermeasure strategies for improving resilience to sleep and circadian disruption.	246	12.300	1553361 Amd7 //N000014-15-1-2809	(3,777)	—
From Percolation to Passivation (P2P): Multiscale Prediction and Interrogation of Surface and Oxidation Phenomena in Multi-Principal Element Alloys (MPEAs)	126	12.300	2004734071//N00014-20-1-2368 Amd. #1	365,101	—
Integrated Harvesting and Storage of Oxygen from Seawater Using Efficient Bipolar Membrane Electrolysis, Impurity Tolerant Electrocatalysts, and Desig	278	12.300	234640C/N00014-20-1-2517	179,108	—
Mesoscopic quantum science and metrology with levitated mechanical systems	281	12.300	417315/URFAO: GR510772 AMD. 8 // N00014-18-1-2370	105,290	—
Development of Lightweight, Power-Efficient, Soft Electronic Sensor Systems for Next-Generation Oceanographic Measurements	248	12.300	438651/N00014-21-1-2342	10,398	—
Dynamic Allocation of Autonomy for Limited-Bandwidth Human-Robot Teams Based on Measures of Trust in the Human	186	12.300	Agmt 05/13/19 // N00014-16-1-2247	73,816	—
Generating Documents that are Consistent with a Knowledge Base	87	12.300	E2045224/N00014-18-1-2670 Amd #3	476,864	—
A Distributed Laboratory for Automated Document Generation Using Large-Scale Computational Methods	87	12.300	E2050992/N00014-20-1-2407	276,959	—
Understanding Atomic Scale Structure in Four Dimensions to Design and Control Mesoscale Morphologies for Oxidation Resistant Alloys		12.300	N00014-16-1-2280-P00011	439,889	145,779
Multi-Dimensional Control in Laterally-Confined-Atomically-Thin Nanostructures		12.300	N00014-16-1-3055	(287)	—
Integrated Optics for Single-Photon Nonlinear Interactions		12.300	N00014-17-1-2409 P00006	12,385	9,449
Surface and Interface Engineering of van der Waals Nanoelectronic Heterostructures		12.300	N00014-17-1-2993 P00004	(5,430)	—
Hierarchical Nanoscale Metamaterials		12.300	N00014-17-1-3023 P00005	124,655	—
Plasmonic-Dielectric Metamaterials for Enhanced Spectroscopy and Controlled Chemistry		12.300	N00014-17-1-3024 P00005	1,319,153	—
Cognitive Expertise by Repetition Enhanced Simulation-based (CERES) Training		12.300	N00014-18-1-2316 P00006	9,674	—
Screening For and Preclinical Evaluation of Drugs for Hearing Loss		12.300	N00014-18-1-2508 P00005	314,653	—
Optimizing Nanoscale Coherent Precipitates in Aluminum Alloys by Microalloying with Tungsten		12.300	N00014-18-1-2550 A00002	(455)	—
High-Strength High-Toughness 10%Ni Naval Steels		12.300	N00014-18-1-2594 P00005	73,977	—
Multiscale Fabrication via Multiphoton Direct Laser Writing		12.300	N00014-18-1-2651 P00002	(5)	—
The Phase Field Method: Towards a Tool for Materials Design		12.300	N00014-18-1-2787 A00001	73,371	—
Three-dimensional tomographic and electrochemical characterization of Li-ion battery performance and safety		12.300	N00014-19-1-2135 P00001	116,252	—
A New Method for Compact, High-Performance Atom Interferometric Sensors		12.300	N00014-19-1-2181 P00004	81,541	—
Theoretical Foundations and Scalable Algorithms for Mixed-Integer Convex Optimization with System Choice		12.300	N00014-19-1-2321 P00001	160,784	44,463
Building Adaptive, Dependable, and Secure Systems with a Cross-Layer Weakly-Hard Paradigm		12.300	N00014-19-1-2496 P00004	129,678	104,226
Manufacturing Process Compiler – A Foundation for New Process Generation		12.300	N00014-19-1-2642-P00003	363,795	—
Development of Lightweight, Power-Efficient, Soft Electronic Sensor Systems for Next-Generation Oceanographic Measurements	270	12.300	N00014-19-1-2688 // C00066003-2	(119)	—
Disruptive Durable All-Polymer Solar Cells (FY2019-000119-AS)		12.300	N00014-20-1-2116-P00002	171,932	—
Hard Isotropic Solids from Soft Two-Dimensional Sheets		12.300	N00014-20-1-2190	(3,895)	—
Integrated Computational Materials Engineering of Functional Materials Using Phase Field Methods		12.300	N00014-20-1-2327	130,013	—
Towards Intelligent Agents that Learn by Multimodal Communication		12.300	N00014-20-1-2447-P00002	141,788	—
COVID-19: Retrofitting stainless steel with a self-sanitizing surface layer		12.300	N00014-20-1-2685/P00001	59,001	—
Design of 1D/2D/3D perovskite composites for enhancing the stability of high efficiency solar cells		12.300	N00014-20-1-2725 P00003	98,673	—
3D assembly of bidirectional bioelectronic scaffolds towards accelerated tissue repair		12.300	N00014-20-1-2777	184,048	—
Automated Mental Health Assessment (AMHA) to Predict Destructive Behaviors		12.300	N00014-21-1-2216 P00002	311,377	—
Direct Laser Writing of In-Fiber Ring Resonator Acoustic Emission Sensors for Structural Health Monitoring 20-00000919		12.300	N00014-21-1-2233 P00001	108,227	—
Collective Coupling in Hybrid Plasmon Lattice-Exciton Materials		12.300	N00014-21-1-2289 P00001	134,590	—
Fundamental Principles of Phase Transformations, Strength and Toughness in High-Strength 10 wt.% Ni Steels for US Naval Applications		12.300	N00014-21-1-2398 P00001	204,195	—
Multi-scale Metamorphic Manufacturing (MMM): Double-Sided Incremental Forming for Functional Metal Plates with Multi-scale Riblet Textures		12.300	N00014-21-1-2484 P00001	77,896	—
Stochastic Constrained Optimization		12.300	N00014-21-1-2675 P00001, P00002	139,666	—
Surface and Interface Engineering of Borophene Nanoelectronic Materials		12.300	N00014-21-1-2679 P00002	192,598	—
ACTIVE LEARNING SENSOR-OBJECT MODELS IN HIGHLY VARIABLE ENVIRONMENTS		12.300	N00014-21-1-2706 P00001	121,769	—
Additive manufacturing of ultra-strong precipitation-hardened aluminum alloys for high and ambient temperature applications		12.300	N00014-21-1-2782 P00001	54,694	—
Phase Field Fracture Simulation Assessment		12.300	N00014-21-1-2784 P00001	403,310	270,101
Femtosecond Fiber Laser Engine for Multiscale Multiphoton 3D Direct Laser Writing		12.300	N00014-21-1-2874	79,633	—

NORTHWESTERN UNIVERSITY
 Supplementary Schedule of Expenditures of Federal Awards
 Year ended August 31, 2022

Cluster title/Federal grantor/Subagency/Project title	Pass- through entity	Assistance listing number	Sponsor award number	Federal expenditures	Passed- through to subrecipients
Towards the exploitability escalation for software vulnerabilities		12.300	N00014-22-1-2158/P00001	\$ 63,254	—
Cognitive Expertise by Repetition-Enhanced Simulation-based (CERES 2) Training continuation		12.300	N00014-22-1-2162	146,260	—
Disorder-Promoted Synchronization. 21-00000008		12.300	N00014-22-1-2200 P00003	21,414	—
Self-Sensing, Optoelectronic Artificial Muscle Tissues for Energy Efficient Locomotion in Soft Machines		12.300	N00014-22-1-2447	67,048	—
Generalized Submodular Optimization: Theory, Algorithms, and Computation (21-000000918)		12.300	N00014-22-1-2602	37,523	—
				7,800,019	574,018
Multi-Modal Sensing Enabled Closed-Loop Transcutaneous Vagal Nerve Stimulation for Musculoskeletal Injury and Disorders	90	12.910	AWD-102572-G 1//N660011924002	32,144	—
Improved Infrared Imaging with Variable Resolution Achieved via Post-Processing	171	12.RD	18110801-01//N6833519C0027 MOD 003	28,368	—
Planar Type-II Superlattice Photodetectors for High Operating Temperature MWIR	164	12.RD	LETTER – 07/27/2021//N6833521C0650	50,713	—
Catastrophic Optical Damage Mitigation in Quantum Cascade Lasers by Facet Disorder	309	12.RD	N6893619C0041 P00002	18,794	—
				49,479,822	7,950,567
Department of Defense Total					
Department of Education:					
Fulbright-Hays Doctoral Dissertation Research Abroad		84.022	P022A190047	6,358	—
Fulbright Hays DDRA De Leon		84.022	P022A200036-1	32,600	—
				38,958	—
Institute of Education Sciences:					
Evaluation of an Intervention to Improve Academic Outcomes for Low-Income Urban Youth through Instruction in Effective Coping Supported by Mentoring Relationships	68	84.305	501600SG2205//R305A210263	52,175	—
Moving Beyond the Average: Building a Comprehensive Model of Classroom Quality that Incorporates Children's Individual Experiences	274	84.305	5117878//R305A200308	15,867	—
Sense-Making in the Disciplines: Supporting Reading and Argumentation in Literature and History		84.305	R305A180463-21	169,756	55,439
Multidisciplinary Program in Educational Sciences		84.305	R305B140042 – 17 Mod 4	(600)	—
An RCT Institute for Established Researchers		84.305	R305B170016	(2,701)	—
A Summer RCT Institute for Established Researchers		84.305	R305B200029-22-3	169,110	—
Multidisciplinary Program in Educational Sciences		84.305	R305B200037-3	797,473	—
Further Development of Effect Size Estimators for Single-Case Designs: Extensions to Trend and Diverse Outcome Metrics		84.305	R305D170041 – 19	197,814	—
A User-Friendly Tool for Designing Cluster Randomized Trials with Power and Relevance		84.305	R305D180002-19	360,996	6,228
What We Have Learned in 20 Years of IES Randomized Trials		84.305	R305U200005 – 21	398,892	—
Exploring the Spatial Alignment Hypothesis in STEM Learning Environments	316	84.305	S-00014999 // R305A170165	61,153	—
				2,219,935	61,667
Rethinking Accessibility Using NAEP Process Data: Exploring Universal Design and Accommodations	15	84.324	051760001 MOD No. 01//R324P210002	24,939	—
Training-Induced Language and Literacy Improvement in Children with Cochlear Implants	82	84.324	R01834 // R324A160193	335,909	—
				360,848	—
				2,619,741	61,667
Department of Education Total					
Department of Energy:					
Quantum Materials for Energy Efficient Neuromorphic Computing (Q-MEEN-C)	241	81.049	112383860//DE-SC0019273	115,127	—
Enhancing the Performance of Plasma-facing Materials Through Solute-stabilized Nanostructured Tungsten Alloys	210	81.049	1142453/2/79383 // DESC0017899	36,607	—
Surfactants at Air-Aqueous Interfaces for Lanthanide Recovery	279	81.049	583468//DE-SC0022240	53,039	—
Nanoporous Materials Genome: Methods and Software to Optimize Gas Storage, Separations, and Catalysis	269	81.049	A003127002 Amd 11//DE-SC0008688	92,040	—
EFRC/UMN: Inorganometallic Catalysts	269	81.049	A04527502//DE-SC0012702 Amd #10	413,599	—
Development of LiInP2Se6 for Ultra-High Resolution Neutron Imaging	285	81.049	A19-0447-S002 // DE-SC0019446	9,453	—
Quantum Wrapper Networking for Entanglement Management and Control in Transparent Optical Quantum Networks	237	81.049	A22-1495-S001//DE-SC0022336	110,980	—
Tailoring the Selective Transport Pathway of Rare Earth Elements in Solid Ionic Channels Guided by In Situ Characterization and Predictive Modeling	244	81.049	AWD102447 (SUB00000607)//DE-SC0022231	175,407	—
Flexoelectricity and New Phenomena		81.049	DE-FG02-01ER45945-0020	305	—
Institute for Environmental Catalysis		81.049	DE-FG02-03ER15457-0020	1,614,303	—
Antiferromagnetism and Superconductivity		81.049	DE-FG02-05ER46249-0016	17,662	—
Epitaxial Multifunctional Oxide Heterostructures		81.049	DE-FG02-08ER46346-0015	77,388	—
Coordination-Chemistry-Derived Materials Featuring Nanoscale Porosity and Selective Chemical Separation Capabilities		81.049	DE-FG02-08ER15967/0015	68,159	—
Electrostatic Driven Self-Assembly Design of Functional Nanostructures		81.049	DE-FG02-08ER46539-0013	171,560	—
Fundamental Studies of Light-Induced Charge Transfer, Energy Transfer, and Energy Conversion with Supramolecular Systems		81.049	DE-FG02-87ER13808 Mod 0040	217,302	—
Approaches to Integrated Photochemical Systems for Solar Energy Conversion		81.049	DE-FG02-99ER14999-0023	355,630	—
Center for Bio-Inspired Energy Science (CBES)		81.049	DE-SC000989 0011	2,576,877	770,704
CENTER FOR LIGHT ENERGY ACTIVATED REDOX PROCESSES (LEAP) (Formerly ANSER)		81.049	DE-SC001059 Amd 0010	(54)	—
Surface Plasmon Enhanced Chemistry		81.049	DE-SC0004752-0013	191,034	—
Bose-Einstein Condensation of Magnons and Potential Device Applications		81.049	DE-SC0014424-0005	61,694	—
Design of Next Generation Thermoelectrics		81.049	DE-SC0014520-0006	471,955	—
Research in the Energy, Cosmic and Intensity Frontiers and Theoretical Physics at Northwestern University		81.049	DE-SC0015910 0005	1,092,003	—
Missing links in biological methane and ammonia oxidation		81.049	DE-SC0016284 0005	272,049	—
Properties, Electrochemical Activity, and Stability of Solid Oxide Cell Materials Under Extreme Conditions		81.049	DE-SC0016965-0005	109,368	—
Geophysical Feedbacks between Fluid-Assisted Sediment Fracture, Compaction and Faulting		81.049	DE-SC0017815-0005	154,638	—
Electrolyte-Mediated Assembly of Like-Charged Colloids		81.049	DE-SC0018093	36,692	—
Establishing a Clostridia foundry for biosystems design by integrating computational modeling, systems-level analyses, and cell-free engineering technologies		81.049	DE-SC0018249-P0004	1,248,206	350,040
Employing bacterial microcompartments to create privileged redox pools for biofuel production		81.049	DE-SC0019337 0002	185,805	—
Biosynthesis of bioprivileged, linear molecules via novel carboligase reactions		81.049	DE-SC0019339/0003	227,339	—
Towards the Mechanism of N2 Fixation by Nitrogenase		81.049	DE-SC0019342/0002	210,569	—
Creating and Interfacing Designer Chemical Qubits		81.049	DE-SC0019356-0004	794,757	266,302
PROTEUS: Machine Learning Driven Resilience for Extreme-scale Systems		81.049	DE-SC0019358//18SC503797	241,291	—
Systems for Transducing Entanglement between Photons and Electron Spins		81.049	DE-SC0020168 0002	428,852	233,310
Permanent Magnets Featuring Heavy Main Group Elements for Magnetic Anisotropy		81.049	DE-SC0020176 0003	(1,180)	—
Switchable Quantum Buffer for Transparent Optical Quantum Network		81.049	DE-SC0020537//Kumar AGMT 6/16/21	139,558	—
Supramolecular Dynamics in Self-Assembling Materials	177	81.049	DE-SC0020884-0003	308,179	—

NORTHWESTERN UNIVERSITY
Supplementary Schedule of Expenditures of Federal Awards
Year ended August 31, 2022

Cluster title/Federal grantor/Subagency/Project title	Pass-through entity	Assistance listing number	Sponsor award number	Federal expenditures	Passed-through to subrecipients
Understanding functional dynamics on the nano scale through an integrated experimental-computational framework		81.049	DE-SC0020885-0002	\$ 47,236	—
Toward Selective Photocatalytic Conversion of Methane to Methanol by a Colloidal Quantum Dot: Spatio-Temporal Reaction Control and in Situ Methanol Protection Schemes		81.049	DE-SC0021169 0002	126,347	—
Catalytic Kinetics and Mechanisms in Phosphorus Recycling from Ribonucleotide Structures by Iron Oxide Minerals		81.049	DE-SC0021172 002	92,685	—
Center for Molecular Quantum Transduction (CMQT)		81.049	DE-SC0021314 0002	3,312,765	1,588,399
RAPIDS2: A SciDAC Institute for Computer Science, Data, and Artificial Intelligence		81.049	DE-SC0021399-0002	86,129	—
Multiphot high-pressure fluid cell (MHPFC) for photon and electron beams	5	81.049	DE-SC0021481//Espinosa AGMT 4/19/21	26,057	—
Scattering Amplitudes and QFT Insight		81.049	DE-SC0021485	90,993	—
Structure-Property Relationships in Porous Electrodes for Electrochemical Energy Storage		81.049	DE-SC0022119-0001	182,009	—
Engineering bacterial microcompartments in Clostridium autoethanogenum to overcome bottlenecks in sustainable production of synthetic rubber		81.049	DE-SC0022180-0001	74,581	—
Quantitative Analysis of Metabolic Segregation of Lignin Deconstruction and Catabolism in Outer Membrane Vesicles of Soil Pseudomonas species		81.049	DE-SC0022181-0001	120,922	—
Low-Valent Actinide Complexes Featuring Tunable Carborane-Based Ligands		81.049	DE-SC0022204/0002	30,172	—
X-CELLENT: X-Compiler Extending LLVM for Enhanced Natural Translation		81.049	DE-SC0022288-0001	101,933	—
Spatio-Temporal Dynamics of CO2 Capture by Sorbents: Multimodal, In-Situ and Operando Measurements		81.049	DE-SC0022332 0001	676,628	44,115
Redesigning Polymers to Leverage A Circular Economy (RePLACE)	55	81.049	G-64020-02//DE-SC0022290	66,598	—
Hybrid Metal Halides: Advancing Optoelectronic Materials	243	81.049	KK2107//DE-SC0012541	106,359	—
High Efficiency Semiconductors for Nuclear Material Accounting	183	81.049	RMD C21-15//DE-SC0020039	168,650	—
LiInP2Se6, a new semiconductor detector material for high resolution neutron imaging	183	81.049	RMD C21-29//DE-SC0021554	19,119	—
LiInP2Se6, a New Semiconductor Detector Material for High Resolution Neutron Imaging	183	81.049	RMD C22-19//DE-SC0021554	27,203	—
Biological Imaging Using Entangled Photons	268	81.049	SUBK00015295-1//DE-SC0022118	126,592	—
				17,761,171	3,252,870
Artificial Intelligence (AI) – Assisted Hybrid Renewable Energy, Nutrient, and Water Recovery from Municipal Wastewater	244	81.086	AWD102571 (SUB00000611//DE-EE0009505	79,952	—
Theory-Guided Design and Discovery of Materials for Reversible Methane and Hydrogen Storage		81.086	DE-EE0008816-P0002	156,824	—
Crossing the Finish Line: Integration of Data-Driven Process Control for Maximization of Energy and Resource Efficiency in Advanced Water Resource Recovery Facilities	312	81.086	DE-EE0009508//5143	61,316	—
Securing Grid-interactive Efficient Buildings (GEB) through Cyber Defense and Resilient System (CYDRES)	216	81.086	M2001973-02//DE-EE0009150	35,786	—
A Digitally Informed Approach to Enhanced Heat Recovery through Additive Manufacturing of “Adaptive Thermoelectric Modules” for Energy Conversion Plat	3	81.086	PO 200136011//DE-EE0009104	33,696	—
Novel Organosulfur-Based Electrolytes for Safe Operation of High Voltage Li-Ion Batteries Over a Wide Operating Temperature	86	81.086	PO 4301480253//DE-EE0009644	88,010	—
				455,584	—
Role of Fluid and Temperature in Fracture Mechanics and Coupled THMC Processes for Enhanced Geothermal Systems	181	81.087	14000614-021//10039612-PURDUE-5-2557	34,228	—
Reprocessing and Upcycling of Mixed Polyurethane Waste Streams	212	81.087	20-01-RR-4071//DE-EE0007897	122,512	—
Identifying Performance Advantaged Biobased Chemicals Utilizing Bioprivileged Molecules	119	81.087	401-20-25A AMD 3//DE-EE0008492/003	116,774	—
Development of Instruments and Techniques that Can Assess Tire Life and Increase Re-Manufacturing of Commercial Vehicle Tires	147	81.087	AGMT 3/29/22//DE-EE0007897	18,613	—
CHARACTERIZATION AND ACCELERATED LIFE TESTING OF A NEW SOLID OXIDE ELECTROLYSIS CELL		81.087	DE-EE0008079-0004	50,133	—
Engineered reversal of the β-oxidation cycle in clostridia for the synthesis of fuels and chemicals		81.087	DE-EE0008354-0002	194,336	154,347
Efficient Reversible Operation and Stability of Novel Solid Oxide Cells		81.087	DE-EE0008437-0005	212,080	107,821
Resin: Responsible Innovation for Highly Recyclable Plastics		81.087	DE-EE0008928 Mod No. 0005	462,848	—
A Dynamic Technoeconomic Systems Modeling Framework for U.S. Fiber Recycling	212	81.087	SA-19-25//DE-EE0007897	50,772	39,049
Integrated biochemical and electrochemical technologies (IBET) to convert organic wastes to biopower via North American research and educational partnerships	268	81.087	SUBK00013108 AMD 1//DE-EE0009284	125,969	—
				1,388,265	301,217
Novel Algae Technology to Utilize CO2 for Value Added Products	99	81.089	DE-FE0031710	11,244	—
Versatile Reversible Solid Oxide Cell System for Hydrogen and Electricity Production	159	81.089	DE-FE0031986//Barnett 2/18/22	200,668	—
Transformational SOFC Architecture (TSA)	84	81.089	F720161001s1 // DE-FE0027584	(74)	—
				211,838	—
High-performance nanostructured thermoelectric materials and generators for in-pile power harvesting	276	81.121	203464NU//NE0008812 02	(326)	—
Uranium Recovery from Used Nuclear Fuel Using Metal Sulfides		81.121	DE-NE0009173-0001	50,909	—
				50,583	—
Argonne Joint Appointment – Poepfelmeier	226	81.RD	10/26/2020	67,899	—
Accelerated Discovery of Compositionally Complex Alloys for Direct Thermal Energy Conversion	208	81.RD	197455//DE-AC02-76SF00515-MOD02	270,438	—
Study of electrode microstructural evolution on solid oxide electrolysis cells at high temperatures for HydroGEN SuperNode	25	81.RD	219484//DE-AC07-05ID14517 004	34,729	—
Growth and Integration of Two-Dimensional Transition Metal Dichalcogenides for Logic and Memory	151	81.RD	2207198//DE-NA0003525	164,737	—
DOE NQI Center: Co-design Center for Quantum Advantage	34	81.RD	390039//DE-SC0012704	135,760	—
Structure and Properties of Al-Ce-based eutectic alloys created by Laser Powder-Bed fusion	300	81.RD	4000179340//DE-AC05-00OR22725	28,104	—
Compressive Creep Behavior of Cast Al-Cu-Mn-Zr Alloys	300	81.RD	4000182026 Mod# 4//DE-AC05-00OR22725	77,176	—
Rational Design and Development of Crystalline and Amorphous Metal Sulfides for the Sequestration of Perchnetate from Simulated Nuclear Waste Streams and Tank Waste	123	81.RD	634D74-NWU//TOA 0000456322	50,063	—
Illinois-Express Quantum Network (IEQNET)	80	81.RD	664603 MOD 3//DE-AC02-07CH11359	249,171	—
QuantISED research at Fermilab	80	81.RD	667512//DE-AC02-07CH11359 MOD 2	59,649	—
Support for Eric Viklund	80	81.RD	669754//DE-AC02-07CH11359 Mod. 2	69,899	—
(SQMS Prime) Superconducting Quantum Materials & Systems	80	81.RD	674560//DE-AC02-07CH11359	2,920,859	—
Graduate Student Support: Tae-Yoon Kim	80	81.RD	675487//DE-AC02-07CH11359	43,850	—
Joint Appointment of Vedran Brdar	80	81.RD	675731	54,952	—
Research on potential of 3D printing superconductor for SCU applications	80	81.RD	677927//DE-AC02-07CH11359	75,652	—
Accelerator Real-time Edge AI for Distributed Systems (READS)	80	81.RD	678041 Mod. 1//DE-AC02-07CH11359	68,578	—
Post-Doctoral Fellow Support: Robert C. Regan	80	81.RD	678534//DE-AC02-07CH11359	48,591	—
Neutrino Theory Network	80	81.RD	679023//DE-AC02-07CH11359	89,573	—
A Design Methodology for ASICs in Cryogenic Operation	80	81.RD	679396//DE-AC02-07CH11359	39,302	—
Development of the Quantum Science Center Underground Test Stand (QUIET)	80	81.RD	679677//DE-AC02-07CH11359	83,931	—
Cosmic Physics Center Fellowship Award	80	81.RD	682374//Contract No. DE-AC02-07CH11359	10,502	—
Graduate Student Support: Geev Nahal Gelehpordsari	80	81.RD	682432//DE-AC02-07CH11359	59,649	—

NORTHWESTERN UNIVERSITY
 Supplementary Schedule of Expenditures of Federal Awards
 Year ended August 31, 2022

Cluster title/Federal grantor/Subagency/Project title	Pass- through entity	Assistance listing number	Sponsor award number	Federal expenditures	Passed- through to subrecipients
Support of the Cryogenic System Installation for SuperCDMS Operations	80	81.RD	682757 // DE-AC02-07CH11358	\$ 25,000	—
Multi-Node Entanglement Swapping Demonstrator	80	81.RD	687755//DE-AC02-07CH11359	17,893	—
LUX-ZEPLIN (LZ) Experiment Support and Operations	239	81.RD	7579174//DE-AC02-05CH11231	9,136	—
Effects of Ultrafast and Coherent Electronic and Nuclear Motions in Photochemical Processes	226	81.RD	8F-30078-M0007//DE-AC02-06CH11357	113,783	—
Joint Center for Energy Storage Research	226	81.RD	8F-30158 // DE-AC02-06CH11357 M0009	266,896	—
Center for Electrolyte-Electrode Interface Science (CEEIS)	226	81.RD	8J-30009//8J-30009-0009A-0009E	(1,289)	—
Image Analysis for Materials Characterization	226	81.RD	8J-30009-0016A Rev. 0016H	43,139	—
Biofuels for enhanced fuel economy	226	81.RD	8J-30009-0019A Rev No. 0019D	102,467	—
High-performance I/O Research, Development, and Deployment for DataLib	226	81.RD	8J-30009-0020A	54,079	—
COVID-19: Tunable, Robust, Foul-resistant, Hybrid Hydrophobic-Hydrophilic (TuRF) Metasurfaces for High Temperature Heat Exchange Operations	226	81.RD	8J-30009-0021C	263,648	—
Creation and exploration of artificial skyrmions in thin films	226	81.RD	8J-30009-0022A-0022c	45,901	—
Development of ML/DL Models for Monitoring Avian Activities around Solar Energy Facilities	226	81.RD	8J-30009-0025A Rev. 0025D	24,554	—
Exploring Machine Learning-based Approaches to Auto-tuning Distributed Memory Communication	226	81.RD	8J-30009-0027C	139,018	—
Threadwork: A Transformative Co-Design Approach to Materials and Computer Architecture Research	226	81.RD	8J-30009-0032A REV NO. 0032C	62,610	—
National Quantum Information Science Research Centers	226	81.RD	8J-30009-0033A	173,070	—
Advanced Materials for Energy-Water Systems (AMEWS)	226	81.RD	Agmt 08/01/22 // 8J-30009-0008A-Revision 0008F	118,138	—
Advanced Materials for Energy-Water Systems (AMEWS)	226	81.RD	Agmt 09/15/21 // 8J-30009-0007A-0007E	18,589	—
Argonne joint appointment funding-Shu Xu	226	81.RD	Agmt 1/6/2022 ANL-JA-9629	74,476	—
ANL joint appointment funding for Wei-Keng Liao	226	81.RD	Agmt 2/5/20 (Increment Dated 09/02/20)	255,659	—
ANL joint appointment funding-Alok Choudhary-data libraries	226	81.RD	Agmt 2/5/2020	19,250	—
Argonne joint appointment funding for Joseph Swantek	226	81.RD	Agmt 5/4/2022	42,535	—
Joint appointment-funding for Hacksung Kim	226	81.RD	AGMT 8/24/22	74,346	—
Argonne Joint Appointment – Low	226	81.RD	Agmt 9/1/21	116,221	—
Argonne joint appointment funding for Joshua Paul	226	81.RD	Agmt# 01/13/21 (Form ID: ANL-JA-9622)	53,654	—
Sri Bala Gorugantu Argonne joint appointment funding	226	81.RD	AGMT# 01/26/22	39,610	—
Joint appointment-Pyosang Kim Argonne funding	226	81.RD	Agmt# 12/23/21	133,762	—
Argonne joint appointment funding for Sai Phani Kumar Vangala	226	81.RD	ANL-JA-8364	39,218	—
Joint Appointment – Yinsheng Huang	226	81.RD	ANL-JA-9204	39,544	—
Argonne joint appointment funding for Sabyasachi Das	226	81.RD	ANL-JA-9267	41,842	—
Joint Appointment – Mingqi Xiao	226	81.RD	ANL-JA-9348	35,949	—
Joint appointment funding for Michael Mara	226	81.RD	EDSR Agmt 12/23/21	106,927	—
Argonne Joint Appointment – Kanatzidis	226	81.RD	EDSR Agmt. 08/20/14	262,104	—
Joint Appointment Agreement – Petriello	226	81.RD	EDSR Agmt. 08/26/14	132,769	—
Two-Dimensional Electronic Materials	102	81.RD	N000399602//DE-NA0002839	34,048	—
Additive Manufacturing of Thermoelectric Materials	25	81.RD	No. 258628 AMND NO. 2//DE-AC07-05ID14517	25,426	—
Support for Ivan Martinez-Soler	80	81.RD	NO. 651257	7,451	—
Support for Yuber Perez-Gonzalez	80	81.RD	NO. 651835	7,844	—
SFA-Secure Biosystems Design: Rapid Design and Engineering of Smart and Secure Microbiological Systems	226	81.RD	No. 8J-30009 0029C-Rev No. 0029D	627,799	—
Development of Hi-Z X-ray Detector	226	81.RD	NO. 8J-30009-0031B	117,528	—
Measurement of electrostatic potentials at grain boundaries in oxides	226	81.RD	NO. 8J-30009-0034A	15,166	—
SFA-Secure Biosystems Design: Intrinsic Control for Genome and Transcriptome Editing in Communities	151	81.RD	PO 2223937//DE-NA0003525	240,298	—
Implementing polarizable force fields in the LAMMPS molecular dynamics package on GPUs	151	81.RD	PO# 2293509//DE-NA0003525	10,005	—
Resistive Memory Development	151	81.RD	PO# 2330357 Rev.1//DE-NA0003525	44,766	—
REMADE: Material Characterizations and Sorting Specifications That Can Allow the Development of Advanced Tire Constructions with High Incorporation of Recovered Rubber Materials	147	81.RD	REMADE-18-02//DE-EE0007897	11,134	—
Institute for Cooperative Catalysis in Upcycling of Polymers (iCOUP)	120	81.RD	SC-20-534 Mod 5//DE-AC02-07CH11358	294,537	—
Synthesis and Analysis of Performance-Advantaged Bioproducts (PABPs)	8	81.RD	SUB-2021-10692 Mod 1//DE-AC36-08GO28308	5,723	—
Structure and Properties of Al-Ce-based eutectic alloys created by Laser Powder-Bed Fusion	300	81.RD	Task Order 4000184857//DE-AC05-00OR22725	71,062	—
Pre-optimized cell free lysates for rapid prototyping of genes and pathways	288	81.RD	UTA18-000419//7399340//DE-AC02-05CH11231	5,133	—
Rational Synthesis of Superconductors and Superconductivity and Magnetism	226	81.RD	WO 8J-30009-0028A-0028C	80,728	—
CSP Real-time Operations Optimization Software	8	81.RD	XCE-9-92207-01//DE-AC36-08GO28308 Mod. 3	145,983	33,770
Advanced Research Projects Agency-Energy:					
Additive Manufacturing of Ultrahigh Temperature Refractory Metal Alloys	298	81.135	000001327//DE-AR0001431	137,053	—
Hybrid Interior-Point/Active-Set PSCOPF Algorithms Exploiting Power System Characteristics	135	81.135	543891-78001//DE-AR0001073	73,243	—
An Iterative Approach for Solving the SCOPF Problem Applying LP, SOCP and NLP Subproblems		81.135	DE-AR0001077-003	128,304	122,912
Adaptive Discovery and Mixed-Variable Optimization of Next Generation Synthesizable Microelectronic Materials		81.135	DE-AR0001209-001	632,416	222,274
Selective Hydrogenolysis of Pre-Consumer Polyolefins to Premium Synthetic Lubricants		81.135	DE-AR0001361	268	—
LOCOMOTIVES: Lowering CO2 – Models to Optimize Train Infrastructure, Vehicles, and Energy Storage		81.135	DE-AR0001469	148,562	—
Regrowth and Selective Area Growth of GaN for Vertical Power Electronics	318	81.135	GR101471 CON-8000 1218//DE-AR000087 Mod 0003	—	—
Self-Assembling Cell-Free Systems for Scalable Bioconversion	297	81.135	UWSC13104//DE-AR0001514	44,812	—
				1,164,658	345,186
National Nuclear Security Administration:					
Chicago-DOE Alliance Center – A Center of Excellence for High Pressure Science and Technology	255	81.112	18046//DE-NA00003975 Mod 0005	56,774	—
Actinide Center for Excellence	276	81.112	203186NU AMD 4//DE-NA00003763	135,124	—
				191,898	—
Advanced Grid Modeling Project on Optimized Resilience for Distribution and Transmission Systems	222	81.RD	6656//89233218CNA000001	28,779	—
				30,644,969	3,933,043
			Department of Energy Total	30,644,969	3,933,043

NORTHWESTERN UNIVERSITY
 Supplementary Schedule of Expenditures of Federal Awards
 Year ended August 31, 2022

Cluster title/Federal grantor/Subagency/Project title	Pass- through entity	Assistance listing number	Sponsor award number	Federal expenditures	Passed- through to subrecipients
Department of Health and Human Services:					
Administration for Children and Families:					
The Northwestern University Two-Generation Child and Family Outcomes Study of CAP Tulsa's CareerAdvance® Program	57	93.093	Agmt 1/6/2020	\$ 25,707	—
Florida's Office of Early Learning Sunshine Portal Project	251	93.434	SUB00002383-02//P0177546/90TP0068-01-00	82,405	—
Administration for Community Living:					
Timing of transcranial direct current stimulation (tDCS) combined with speech and language therapy (SLT): An Intervention Development study for Aphasia	186	93.433	7267//90/FRE0020-02-00	715	—
Rehabilitation Research Training Center (RRTC) on employment for people with Physical Disabilities	186	93.433	80413//90/RTTEM0001-01-00	25,402	—
Collaborative Machines Enhancing Therapies (COMET)	186	93.433	82258//90/REG00005	66,678	—
Rehabilitation Science for Basic Scientists and Engineers: An Advanced Training Program	93.433	90AR5031-05-01		72,563	872
Advanced Rehabilitation Research Training (ARRT) Program – Employment	93.433	90AREM0003-02-00		80,241	—
Advanced Rehabilitation Research and Training (ARRT) Program: Northwestern University Advanced Rehabilitation Research Training Application	93.433	90ARHF0003-03-00		21,483	—
Advanced Rehabilitation Research and Training (ARRT) Program: Northwestern University Advanced Rehabilitation Research Training Application	93.433	90ARHF0003-04-00		271,876	—
Advanced Rehabilitation Research Training: Interventions for Neurologic Communication Disorders	93.433	90ARHF0007-01-00		19,229	17,618
Northwestern University Policy Research Fellowship	93.433	90ARPO0001-04-00		(22,429)	—
Northwestern University Policy Research Fellowship	93.433	90ARPO0001-05-00		32,146	—
Enhancing Community Living and Increasing Participation through Self Efficacy (Eclipse)	186	93.433	90RTCP0005-01-00	24,958	—
Enhancing Community Living and Increasing Participation through Self Efficacy (Eclipse)	186	93.433	90RTCP0005-01-00//CL9664	23,995	—
Multi-site Clinical Trial of Hypoxia in Incomplete SCI	186	93.433	cc81478 6323//90SIMS0001-05-00	66,558	—
Sensor Technology Applied to Rehabilitation in Stroke – STARS	186	93.433	cc82285//90REG00010-03-00	21,619	—
Sensor Technology Applied to Rehabilitation in Stroke	186	93.433	cc82288 8161//90REG00010 -01-01	73,271	—
				<u>778,305</u>	<u>18,490</u>
Agency for Healthcare Research and Quality:					
The University of Chicago and Northwestern University Predoctoral Health Services Research Program	244	93.225	AWD0037911 (5213438601-4)//5T32HS000084-24 AMD 4	115,342	—
Promoting safe care transitions: Simulation-based mastery learning to improve communication in times of diagnostic uncertainty	221	93.226	080-31050-S27501//5R18HS025651-02	2,244	—
Improving Safe Antibiotic Prescribing in Telehealth: A Randomized Trial	284	93.226	110597268 // 5R01HS026506-04	26,122	—
Identify, Teach and Treat (IT2): Automating clinical decision pathways for the care of women		93.226	1U18HS028744-01	288,387	—
NIH NRSA Postdoc Fellowship for BONA KO: An Alternative Approach to Understanding the Drivers of High-Performance End-of-life Care Delivery in the Intensive Care Unit		93.226	5F32HS027724-02	74,370	—
A Chicago Center of Excellence in Learning Health Systems Research Training (ACCELERAT)		93.226	5K12HS028385-05	731,640	328,084
COVID-19: A Chicago Center of Excellence in Learning Health Systems Research Training (ACCELERAT)		93.226	5K12HS028385-05	36,306	36,306
Evaluating the Implementation of a Multi-Component Quality Collaborative		93.226	5R01HS024516-05	19,401	—
The Value of Children's Hospitals-Are Increased Costs Justified by Improved Outcomes or Driven by Internal and External Economic Forces?		93.226	5R01HS024712-05	22,545	22,545
Preventing Wrong-Drug and Wrong-Patient Errors with Indication Alerts in CPOE Systems		93.226	5R01HS024945-05	189,193	85,405
A Randomized Controlled Trial of Geriatric Emergency Department Innovations		93.226	5R01HS026489-04	300,127	66,057
A Cluster-Randomized Trial of the Northwestern Embedded Emergency Department Physical Therapy (NEED-PT) Protocol for Acute Low Back Pain		93.226	5R01HS027426-03	412,816	—
Implementation of Digital Mental Health Tools in Ambulatory Care Coordination		93.226	5R01HS028003-02	145,881	—
Redesigning Systems to Improve Quality for Hospitalized Patients		93.226	5R18HS026649-05	343,312	55,592
Implementation and Testing of a Diabetes Discharge Intervention to Improve Safety During Transitions of Care		93.226	5R18HS026143-03	228,211	17,686
Expansion, Implementation & Evaluation of Electronic Health Record-Integrated Patient-Reported Symptom Screening in a Comprehensive Cancer Center		93.226	5R18HS026170-03 REVISED	207,487	47,182
Prevent Diabetes Mellitus (PreDM) Clinical Decision Support Intervention in Community Health Centers		93.226	5R18HS026172-03	29,954	—
Intervention in Small Primary care practices to Implement Reduction in unhealthy alcohol use (INSPIRE)		93.226	5R18HS027088-03	516,166	215,826
Preventing Opioid Misuse through Safe Opioid Use Agreements between Patients and Surgical Providers (PROMISE ME)		93.226	5R18HS027331-02	1,109	—
Targeted Healthcare Engineering for Systems Interventions in Stroke (THESIS)	244	93.226	AWD100490 (SUB00000216)//5R18HS027264-03	86,849	—
Enhancing Stroke Prehospital and Emergency Evaluation and Delivery (E-SPEED) study	244	93.226	AWD100573 (SUB00000238)//5R18HS025359-05	43,043	—
Healthy Hearts in Michigan (H2M)	11	93.226	SC-21-003//5U18HS027954-02	446,126	—
COVID-19: The Role of Telehealth in COVID-19 Response	284	93.226	SCON-0002221 // 1R01HS028127-01	19,850	—
Safely Improving Emergency Diagnostic Testing through Clinical Safe Harbors	302	93.226	VUMC73418 AMD 4//5R18HS025931-04	10,878	—
				<u>4,182,017</u>	<u>874,683</u>
Centers for Disease Control and Prevention:					
A novel innate immunity risk factor for amyotrophic lateral sclerosis		93.061	5 R01TS000294-03-00	291,695	—
Developing and Disseminating Programs to Build Sustainable Lupus Awareness, Knowledge, Skills, and Partnerships	13	93.068	AGMT 1-31-22//5NU58DP006908-02-00	22,445	—
Community Counts: Public Health Surveillance for Bleeding Disorders (Region #V-West, HTC #553)	93	93.080	ATHN2015001-VW-3//5NU27DD001155-05-00	(16,412)	—
Public Health Surveillance for the Prevention of Complications of Bleeding Disorders	93	93.080	ATHN2020CDC-VW-553-01//NU27DD000020-01-0	31,797	—
				<u>15,385</u>	—
Identifying host biomarkers that determine susceptibility to colonization with an emerging fungal pathogen Candida auris.	121	93.084	JCVI-21-005 02//1U54CK000603-01-00	50,101	—
Microbiome of Driveline Exit Sites	121	93.084	JCVI-21-006 Mod 2//U54CK000603-01-01	14,365	—
				<u>64,466</u>	—
Firearm Involvement in Adolescent Children of Formerly Incarcerated Parents: A Prospective Intergenerational Study of Resilience Within Families		93.136	5 R01CE003271-03-00	379,636	—
Chicago Center for Youth Violence Prevention	244	93.136	FP061138 (5201068601-5)//5U01CE002712-07	6,597	—
				<u>386,233</u>	—
Midwest TXXT: Scale up of an Evidence-based Intervention to Promote HIV Medication Adherence	20	93.943	901638-NU//1U01PS005214-01-00	14,457	—
Effects of Medicaid Coverage and State-Level Delivery Approaches on Healthcare Quality, Outcomes, and Costs for Adults with Diabetes		93.945	5 U18DP006524-02-00	317,686	47,494

NORTHWESTERN UNIVERSITY
 Supplementary Schedule of Expenditures of Federal Awards
 Year ended August 31, 2022

Cluster title/Federal grantor/Subagency/Project title	Pass- through entity	Assistance listing number	Sponsor award number	Federal expenditures	Passed- through to subrecipients
Effect of ACA Medicaid Expansion on Diabetes: Diagnosis, Treatment, Patient Compliance, and Health Outcomes		93.945	6 U18DP006120-04-02	\$ 42,989	31,654
Assessing the Burden of Diabetes By Type in Children, Adolescents and Young Adults (DICAYA) – 2020 Component A (#90164)	20	93.945	901641 // U18DP006693	2,978	—
Assessing the Burden of Diabetes By Type in Children, Adolescents and Young Adults (DICAYA) – 2020 Component B* (#901642)	20	93.945	901642 // U18DP006694	2,978	—
				366,631	79,148
CDC Intergovernmental Personnel Agreement		93.RD	21-IPA-2108989	32,701	—
CDC Intergovernmental Personnel Agreement		93.RD	21-IPA-2108990	43,787	—
IPA for Practical approaches to population-wide real-time EHR registries for Parkinson's disease		93.RD	21IPA2108991	33,549	—
Intergovernmental Personnel Act IPA for Debra Duquetta		93.RD	21IPA2109977 MOD1	1,465	—
Group A Streptococcus Molecular Epidemiology and Ecology	20	93.RD	A20-0013-S001 Amnd 02//75D30119C06841	19,634	—
COVID-19: Understanding SARS-CoV-2 Related Multisystem Inflammatory Syndrome in Adults (MIS-A Study)	184	93.RD	AGMT – 10/18/2021	89,635	—
The HIV Outpatient Study (HOPS) Activity to Abstract Data from Persons Receiving Ambulatory Care for HIV Infection in the United States	44	93.RD	Agmt# 02-09-22 Amnd 1//75D30120C08752	113,367	—
COVID-19: Presymptomatic Early Warning System for COVID-19 Infection	90	93.RD	AWD-001493-G1//75D30120C09558	147,257	—
Food and Drug Administration:					
Final Qualification Package for DDT COA #000079: PROMIS Physical Function in Oncology		93.103	1U01FD006875-01	27,486	—
Development of a context of use and PROMIS Physical Function outcome assessment for patients with sarcopenia		93.103	1U01FD006887-01	20,128	—
Northwestern University Clinical Outcome Assessment Team (NUCOAT)		93.103	5UG3FD006794-03	854,309	42,481
Northwestern University Clinical Outcome Assessment Team (NUCOAT)		93.103	5UH3FD006794-03	51	—
Qualification Plan Preparation to Support DDT COA #000123 PROMIS Physical Function Short Form for Individuals with Multiple Sclerosis: Development of a Qualification Plan for the PROMIS Short Form v2.1--Physical Function-Multiple Sclerosis 15a (DDT COA #	62	93.103	DDT COA #000123-01//1 U01 FD006999-01	31,736	—
A double blind, randomized, vehicle controlled, crossover study with an open-label long-term extension, to evaluate the safety and efficacy of topical naloxone hydrochloride lotion, 0.5%, for the relief of pruritus in patients with the mycosis fungoides	75	93.103	No.EL-1007-01-01//R01FD005396	2,909	—
Preparing a clinical outcomes assessment set for nephrotic syndrome [Prepare-NS]	268	93.103	SUBR00014282 Amd2 // 1UG3FD007308-01	109,414	—
				1,046,033	42,481
Evaluation of a Global Item for Side Effect Bother		93.RD	75F40121C00162	60,179	—
Health Resources and Services Administration:					
Awareness and Access to Care for Children and Youth with Epilepsy	20	93.110	901579 – NU//6 H98MC332370300	19,850	—
Hemophilia Treatment Center (HRSA Award)	93	93.110	Agmt. Signed 10-15-21 // H30MC24052	16,428	—
				36,278	—
Ryan White HIV/AIDS Program Implementation Program for HIV Clinical Quality Improvement	96	93.145	5740-05//5U28HA37644-02-00	9,998	—
Teaching Health Center Graduate Medical Education Program		93.530	1 T9CHP42255-01-00	240,000	240,000
Affordable Care Act Teaching Health Center (THC) Graduate Medical Education (GME) Payment Program		93.530	2 T9HP21542-10-00	1,248,961	1,063,628
Teaching Health Center Graduate Medical Education Program		93.530	2 T9CHP42255-02-00	1,813,524	—
Affordable Care Act Teaching Health Center (THC) Graduate Medical Education (GME) Payment Program		93.530	6T91HP21542-09-04	1,025,829	869,879
				4,328,314	2,173,507
Academic Units for Primary Care Training and Enhancement		93.884	6UH1HP29963-05-01	238,796	88,526
Geriatrics Workforce Enhancement Program: Collaborative Action Team training for Community Health — Older adult Network (CATCH-ON)	195	93.969	15012901-Sub13//6 U1QHP28715-05-01	3,150	—
National Institutes of Health:					
Effects of Flame Retardants on brain function and attentional deficits in school-age children – brain imaging, neurobehavioral, and gut microbiome studies in a longitudinal birth cohort	56	93.113	1(GG013015-01)//5R01ES027845-05	92,015	—
Environmental Obesogens and Weight Change in the POUNDS LOST Trial	94	93.113	111308-5113944//5R01ES022981-07	15,378	—
Mechanisms of Cadmium Induced Dysglycemia and Type 2 Diabetes Mellitus		93.113	5R01ES027011-05	284,900	—
Environmental Arsenic in the Subtype Specification of Breast Cancer		93.113	5R01ES028149-05	237,848	—
Discovery of conserved molecular mechanisms underlying population-wide variation in toxin responses		93.113	5R01ES029930-04	626,702	245,303
Investigating Environmental Risk Factors for Breast Cancer Using Adductomics		93.113	5R01ES031809-02	685,148	—
PCOS and androgen-related disease modeling and drug testing in Multi-organ Integrated Microfluidic Reproductive Platform		93.113	5UH3ES029073-05	854,845	323,477
Role of alveolar macrophages in particulate matter-induced cardiopulmonary disease	244	93.113	AWD058473-03-PR//5R01ES015024-14	50,710	—
Particulate Air Pollutants and Autism Risk: Exposure Characteristics, Indicators of Susceptibility, and Mechanistic Pathways	128	93.113	RNG114259-NW // 5R01ES029963-04	50,666	—
				2,898,212	568,780
Enamel atlas: systems-level amelogenesis tools at multiple scales	242	93.121	11549sc//5UG3DE028872-02	(6,841)	—
Enamel atlas: systems-level amelogenesis tools at multiple scales	242	93.121	13003sc//4UH3DE028872-03 REVISED	325,361	—
Impacting The Oral HPV Continuum: Prevention, Screening, and Early Detection	126	93.121	200334876//5R35DE026631-04	7	—
Identifying Sox family transcription factor partners and targets essential for neural crest formation		93.121	5F32DE029113-03	67,521	—
Role of translational fidelity in cellular physiology of oral streptococci	259	93.121	AWD-0002569//1R01DE031455-01A1	6,976	—
Multi-Tissue Craniofacial Engineering using 3D-BMP9-Notch-Synergized Graphene Citrate Composite Scaffolds	244	93.121	AWD101989 (SUB00000493) AMD 1//5R01DE030480-02	225,905	—
				618,929	—
A novel technology to assess chronic toxicity in genetically diverse nematode populations	152	93.142	1001//1R43E5032516-01	60,317	—
Creating Comprehensive Maps of Worm and Fly Transcription Factor Binding Site	297	93.172	11524//5UA1HG007355-08	439,427	—
Molecular and cellular characterization of essential human genes.		93.172	1UM1HG012649-01	47,029	—
Mapping the 3D architecture of native human replisomes	197	93.172	32221-213-415 AMD2//5R01GH10658-04	56,094	—
NORTH CAROLINA CLINICAL GENOMIC EVALUATION BY NEXT-GEN EXOME SEQUENCING 2	274	93.172	5117472//3U01HG006487-08	229,988	—
Visualization, modeling and validation of chromatin interaction data		93.172	5R01HG009906-06	261,984	—
Computational methods to identify neo-TADs and enhancer-hijacking in rearranged genomes		93.172	5R01HG011207-02	553,538	41,002
Maximizing Quantitative Structural Information from High-Throughput RNA Structure Probing		93.172	5R03HG011113-02	45,749	—
Use of a Machine Learning Approach to Impute Gene Expression in African Americans		93.172	5R21HG011695-02	172,803	—
Northwestern Genomic Risk Assessment and Management Program		93.172	5U01HG011169-03	959,272	—

NORTHWESTERN UNIVERSITY
 Supplementary Schedule of Expenditures of Federal Awards
 Year ended August 31, 2022

Cluster title/Federal grantor/Subagency/Project title	Pass- through entity	Assistance listing number	Sponsor award number	Federal expenditures	Passed- through to subrecipients
COVID-19: Northwestern Genomic Risk Assessment and Management Program		93.172	5U01HG011169-03	\$ 222,504	—
Production Center for Mapping Regulatory Regions of the Human Genome	207	93.172	62295506-1242177/SUM1HG009442-03	85,300	—
Elucidating the phenome-wide impact of sex and gender on disease	302	93.172	VUMC95892/1R01HG011405-01A1	64,317	—
WashU-Northwestern Genomic Variation and Function Data and Administrative Coordinating Center	311	93.172	WU-22-0138//1U24HG012070-01	186,027	—
				<u>3,324,032</u>	<u>41,002</u>
Hearing Protection in Cisplatin Chemotherapy		93.173	1R01DC019434-01A1 REVISED	80,581	—
Optimizing Outcomes through Sequencing Parent-Mediated Interventions for Young Children with Autism		93.173	1R01DC020457-01	4,868	—
Understanding the Benefits of Optical Nerve Stimulators for Neural Interfaces		93.173	1R56DC017492-01A1	(21,459)	—
Maximizing and predicting sentence processing treatment outcomes in aphasia		93.173	1R56DC019157-01A1	608,766	—
Outer and Inner Hair Cell Development		93.173	2R01DC015903-06	68,164	—
Outer and Inner Hair Cell Development		93.173	3R01DC015903-05S1	158,699	—
Spatiotemporal Mechanisms of Olfactory Processing in the Human Brain		93.173	579297//5-R01-DC-018075-03	14,869	—
Assessing the Human Cochlea using Stimulus Frequency Otoacoustic Emissions (SFOAEs)	279	93.173	5F32DC017352-03	58	—
Evaluating Human Cochlear Aging Using Otoacoustic Emissions (OAEs)		93.173	5F32DC019557-02 REVISED	102,477	—
Investigating the relationship between directional microphones, compression, and working memory in realistic spatial conditions		93.173	5K01DC018324-02	96,965	—
Development of Afferent and Efferent Innervation in the Inner Ear		93.173	5K01DC018352-03	109,722	—
Data Science Applications in Communication and Swallowing Disorders		93.173	5K24DC012801-09	173,699	—
Neurolinguistic Investigations of Aphasia and Recovery		93.173	5R01DC001948-24	99,682	—
Acoustic and Perceptual Effects of WDRC Amplification		93.173	5R01DC006014-16	153,628	77,026
Language in Primary Progressive Aphasia		93.173	5R01DC008552-15	451,057	—
A Family-Genetic Study of Language in Autism		93.173	5R01DC010191-11	348,554	65,147
Characterizing Variability in Hearing Aid Outcomes Among Older Adults		93.173	5R01DC012289-10	326,293	91,563
The role of parent phenotype in parent-mediated language interventions for autism		93.173	5R01DC014709-05	(1,885)	—
Principles of olfactory reward processing in the human brain		93.173	5R01DC015426-05	5,869	2,495
Principles of olfactory reward processing in the human brain		93.173	5R01DC015426-07	567,697	—
The When to Worry about Language Study (W2W-L): Joint consideration of developmental patterning and neural substrates for enhancing early identification of language impairment		93.173	5R01DC016273-05 REVISED	570,353	124,935
COVID-19: The When to Worry about Language Study (W2W-L): Joint consideration of developmental patterning and neural substrates for enhancing early identification of language impairment		93.173	5R01DC016273-05 REVISED	95,965	—
The function of respiratory-linked local field potential oscillations in human olfactory and limbic brain regions		93.173	5R01DC016364-05	279,089	6,986
Type-2 inflammation mediates olfactory loss in Chronic Rhinosinusitis: mechanisms and therapeutic opportunities		93.173	5R01DC016645-05	638,659	—
Early Communication Intervention for Toddlers with Hearing Loss		93.173	5R01DC016877-04S1	748,030	30,375
Molecular Mechanisms of Tonotopy Development in the Brain Stem		93.173	5R01DC017167-04	301,872	—
Defining the pathological mechanisms of hereditary hearing loss		93.173	5R01DC017482-04 REVISED	367,042	—
Characterizing the primary olfactory subregions of the human amygdala		93.173	5R01DC018539-02	398,932	—
Opto-Electrical Cochlear Implants		93.173	5R01DC018666-02	336,379	40,691
Mechanisms of Trace Amine-associated Receptor Gene Choice		93.173	5R01DC018738-03	554,088	—
Transdifferentiation in the Cochlea		93.173	5R01DC019834-02	777,933	—
Novel Computational Analysis of Prosody in ASD and the Broad Autism Phenotype		93.173	5R03DC018644-02	43,138	—
Connectome-guided high-definition tDCS for the treatment of tinnitus		93.173	5R21DC015880-04	98,958	—
Auditory input to cerebellar unipolar brush cells		93.173	5R21DC016759-02	(222)	—
Parent-toddler EEG neural synchrony as a window into social communication deficits in autism		93.173	5R21DC017210-02	54,419	—
Phase 2 Development of a Spoken Language Biomarker of Cognitive Impairment in Parkinson's Disease		93.173	5R21DC017255-03	126,915	28,321
Spoken Language Processing as an Early Marker of Language Impairment in Bilingual Children		93.173	5R21DC018357-03 REVISED	209,717	—
Mechanisms of Naturally-occurring Odor Valence Modulation		93.173	5R21DC018905-02 REVISED	100,090	—
Mechanisms of accented speech recognition in native and non-native listeners: Biological insights		93.173	5R21DC019448-02	130,064	—
Defining Trajectories of Cognitive-Communicative and Quality of Life Outcomes following Stroke	186	93.173	82910//R01DC017174	18,169	—
Supplement to Defining Trajectories of Cognitive- Communicative and Quality of Life Outcomes following Stroke	186	93.173	82915 AMD 1/3R01DC017174-02S1	33,261	—
Modulating Stimuli Intensity to Improve Clinical Outcomes in Aphasia Treatment	186	93.173	cc82912//R01DC016979	38,547	—
Hyperglycemia, Hearing Loss and Vestibular Dysfunction: The CARDIA Study	269	93.173	P007560702//R01DC017613	52,227	—
Role of Subthalamic nucleus in Speech and Movement among people with Parkinson's as Revealed by Intraoperative Recordings and Deep Brain Stimulation	257	93.173	S01816-01//5R01DC017718-02	37,768	—
Maximizing outcomes for preschoolers with developmental language disorders: testing the effects of a sequentially targeted naturalistic intervention	301	93.173	UNIV60403//5U01DC017135-04	507,494	—
Auditory-Motor Control of Voice in Individuals with Essential Vocal Tremor	288	93.173	UTA19-001014-03//1R21DC017001-01A1	1,644	—
Excitability and Excitotoxicity in Type-I Cochlear Afferents: Synapse Structure and Function	311	93.173	WU-22-0420//2R01DC014712-06	3,479	—
				<u>9,872,214</u>	<u>467,539</u>
FOREST (Fostering Optimal Regulation of Emotion for prevention of Secondary Trauma): Implementation and evaluation of a burnout prevention program for staff in gun violence prevention programs		93.213	1R21AT011863-01	129,262	—
Mass Spectrometric Studies of Thiol-template Biosynthesis		93.213	5R01AT009143-17	117,972	—
Creating and Optimizing Mindfulness Measures to Enhance and Normalize Clinical Evaluation (COMMENCE)		93.213	5R01AT009539-05	312,410	18,144
SCH: INT: Collaborative Research: Development and analysis of new mathematical and statistical models for chronic pain		93.213	5R01AT010413-04	609,564	378,468
A Mindfulness-Based e-Health Intervention to Improve Medication Adherence among Breast Cancer Survivors		93.213	5R34AT009447-03 REVISED	46,571	—
Mind-Body Approach to Improve Health-Related Quality of Life for People with Narcolepsy		93.213	5R34AT009551-02	197,553	—
Positive Affect Regulation as Adjuvant to Integrative Therapies for Chronic Pain: Development of the LARKSPUR Clinic-Based Intervention		93.213	5R34AT009685-03 REVISION	129,580	78,218
				<u>1,542,912</u>	<u>474,830</u>
Developing an intervention targeting sleep disturbances among minority bereaved individuals		93.233	5K01HL149987-03	168,629	—
Strengthening circadian signals to enhance cardiometabolic function		93.233	5R01HL140580-05	656,394	—
Leveraging a Unique existing Cohort to elucidate the Link between sleep and cardio-metabolic disease		93.233	5R01HL141881-04	521,527	167,264
Determinants and Cardiovascular Consequences of Disparities in Sleep and Circadian Rhythms between Black and White Adults		93.233	5R01HL152442-03	988,661	303,649
Training Grant in Circadian and Sleep Research		93.233	5T32HL007909-23 REVISED	476,308	—
				<u>2,811,519</u>	<u>470,913</u>

NORTHWESTERN UNIVERSITY
Supplementary Schedule of Expenditures of Federal Awards

Year ended August 31, 2022

Cluster title/Federal grantor/Subagency/Project title	Pass-through entity	Assistance listing number	Sponsor award number	Federal expenditures	Passed-through to subrecipients
Harm avoidance and incompleteness as dimensional endophenotypes in anxiety and OC spectrum disorders	35	93.242	0001242/3R01MH110449-05S1	\$ 58,900	—
Novel Methods for Evaluation and Implementation of Behavioral Intervention Technologies for Depression	56	93.242	1(GG008480-01)/5R01MH1094696-04	(8,354)	—
Molecular mechanisms of target-specific synapse formation	295	93.242	10055251-01/2R56MH105426-06	1,306	—
Molecular mechanisms of target-specific synapse formation	295	93.242	10057900-01/1R01MH125943-01	34,210	—
Social Processing Deficits in Remitted Adolescent Depression	189	93.242	147186/5R01MH119771-02	234,315	—
Transdiagnostic brain-behavior profiling to enhance cognitive behavioral therapy response	255	93.242	17565-03/5R01MH112705-05	18,906	—
Linking VA and non-VA data to study the risk of suicide in chronic pain patients	125	93.242	192372/5R01MH1219071-02	131,470	—
Characterizing phosphorylation-dependent regulation of metabotropic glutamate receptors by middle-down mass spectrometry		93.242	1F31MH129114-01 REVISED	26,786	—
mHealth for suicide prevention: Design, development, and feasibility of a scalable SMS-based safety planning intervention		93.242	1K08MH128640-01A1	20,276	—
Role of myeloid cells in CNS and systemic reservoirs and rebound		93.242	1R01MH125778-01A1	330,189	—
Effectiveness and implementation of text messaging to improve HIV testing in sexual and gender minority adolescents		93.242	1R01MH129207-01	100,841	—
Effectors of presynaptic cAMP dependent potentiation at mossy fiber synapses		93.242	1R01MH130428-01	16,361	—
Targeting Postsynaptic Small G-protein Regulators		93.242	1R01MH130838-01	37,546	—
Structural Connectivity of Positive and Negative Emotions: Secondary Analysis of the Human Connectome Project through the RDoC Lens		93.242	1R03MH119529-01A1 REVISED	47,712	—
Digital Mental Health Intervention for Nonsuicidal Self-Injury in Young Adults		93.242	1R34MH128410-01	32,568	—
Training Program in Translational Science, HIV, and Sexual and Gender Minority Health		93.242	1T32MH130325-01	12,256	—
Integrated Reward-Inflammation Model of First Onset of Major Depression in Adolescence	215	93.242	267148-NWU//1R01MH123473-01A1	57,584	—
Integrated Reward-Circadian Rhythm Model of First Onset of Bipolar Spectrum Disorders in Adolescence	215	93.242	267715-NWU//1R01MH126911-01	34,881	—
Postsynaptic roles of ankyrins		93.242	2R01MH107182-06A1	129,384	—
Small GTPase signaling in dendrites and spines		93.242	2R56MH071316-16	115,599	—
Screening, Tracking and Treatment for Anxiety and Depression in Community Colleges	240	93.242	3814 G LA104//1P50MH126337-01A1	4,227	—
How Early-Life Experiences Create Individual Variation in Dopamine Circuit Architecture: Understanding Risk for Psychiatric Disease		93.242	3DP2MH122401-01S1	583,609	—
F32 for Shruti Dave in support of: Optimizing noninvasive modulation of prediction and episodic memory networks via cerebellar stimulation		93.242	3F32MH118718-03S1	35,787	—
Expanding College Student Mental Health with Stress Management Mobile Technologies		93.242	3K08MH112878-04S1	71,769	—
Generating an Earlier Science of When to Worry: A Neurodevelopmental, Transactional Approach to Characterizing Irritability Patterns Beginning in Infancy		93.242	3R01MH107652-05S1	175,089	—
Mechanisms regulating lncRNA short and long range signaling		93.242	3R01MH111267-05S1	400,920	—
Effectiveness of a Targeted Brief Intervention for Recent Suicide Attempt Survivors	281	93.242	417659-G/UR FAO GR511006//R01 MH119264-04	29,775	—
Simulated Clinician Assessment for Cognitive Behavioral Therapy Skills	202	93.242	5065-NU//5R01MH112625-02	31,924	—
Hippocampal Mechanisms of Stress-Induced Generalization of Negative Memories		93.242	5F30MH122130-03	43,313	—
60059064 NRSA F30 for Radhika Rawat: Neurogenesis, BMP signaling, and mechanisms of Ketamine's antidepressant effects		93.242	5F30MH124269-02	58,097	—
Cumulative environmental risk exposure in youth at clinical high-risk for psychosis		93.242	5F31MH119776-03	35,477	—
Neurocorrelates of alterations in facial expressivity in youth at clinical high-risk for psychosis		93.242	5F31MH121018-02 REVISED	765	—
The Neural Mechanisms of Motor Dysfunction in Clinical High-Risk Youth.		93.242	5F31MH123121-02 REVISED	35,988	—
NRSA Predoc Fellowship for Sarah Lurie: The Role of Hippocampal Theta Phase in Human Memory Encoding		93.242	5F31MH125577-02	44,736	—
NRSA Postdoc Fellowship for K. Blum in support of: Determining the role of muscle afferent signals in cortical proprioceptive representation		93.242	5F32MH120893-03	44,087	—
Technology-Enabled Prevention Service for At-Risk Youth		93.242	5K01MH121854-03	151,118	—
Adaptive Messaging to Support Depression Self-Management		93.242	5K01MH125172-02	139,074	—
The role of context in sleep-related memory reactivation in humans		93.242	5K99MH122663-02	90,690	—
60059499 K99 for Elif Tunc-Ozcan in support of: Neural activity and circuitry-mediated hippocampal stress responses		93.242	5K99MH125016-02	123,350	—
Technology Enabled Services for Coordinated Care of Depression in Healthcare Settings		93.242	5P50MH119029-23	944,415	85,891
CAUSAL MECHANISMS OF DISTRIBUTED BRAIN NETWORK FUNCTION DURING EPISODIC MEMORY RETRIEVAL		93.242	5R00MH117226-05	250,950	—
Modeling a Neural Circuit for Flexible Control of Innate Behaviors		93.242	5R00MH117264-04	247,736	—
Mechanisms Underlying Large-Scale Coordination of Cortical Activity during Perceptual Decisions		93.242	5R00MH120047-04	218,727	—
A Family-Genetic Study of Autism and Fragile X Syndrome		93.242	5R01MH091131-09	1,195,137	224,817
Synaptic and dendritic dysfunction in psychiatric disorders		93.242	5R01MH097216-10	394,785	50,533
The role of glutamate receptors in compulsive and perseverative behavior		93.242	5R01MH099114-10	631,624	—
Behavioral relevance of active dendritic mechanisms of integration and plasticity		93.242	5R01MH101297-09 REVISED	685,344	—
Age-Related Histone Modification Effect on Antipsychotic Action		93.242	5R01MH109466-05	76,886	—
Molecular, anatomic, and functional characterization of midbrain dopamine neuron subtypes		93.242	5R01MH110556-05	384,159	—
LiveWell: A Mobile Intervention for Bipolar Disorder		93.242	5R01MH110626-04	78,867	—
LifeSense: Transforming Behavioral Assessment of Depression Using Personal Sensing Technology		93.242	5R01MH111610-04	818,892	88,882
2/3 Community psychosis risk screening: An instrument development study		93.242	5R01MH112545-05	135,768	—
New Tools to Study Neurosteroid Estrogens		93.242	5R01MH113189-05	337,155	—
BMP Signaling and Neurogenesis in Major Depressive Order		93.242	5R01MH114923-04	336,498	—
Development of Sub 100 nm Resolution X-ray Nanotomography of Centimeter-Sized Tissues		93.242	5R01MH115265-04	227,613	—
Neurohypophysial regulation of midbrain dopamine systems.		93.242	5R01MH117111-05	279,212	—
Synthesis of Trials to Prevent Suicide Risk Behavior in Sexual and Gender Minorities		93.242	5R01MH117598-04	424,737	234,809
A pragmatic trial of two strategies for implementing an effective eHealth HIV prevention program		93.242	5R01MH118213-05	1,226,491	207,807
Sources and functional consequences of individual differences in human functional brain networks related to controlled behavior		93.242	5R01MH118370-04	645,159	—
An examination of psychomotor disturbance in current and remitted MDD: An RDoC Study		93.242	5R01MH118741-04	730,767	71,242
Central Amygdala Glutamatergic Circuits in Fear Learning and Extinction		93.242	5R01MH119817-05	230,583	—
2/5 CAPER Computerized assessment of psychosis risk		93.242	5R01MH120088-03 REVISED	332,811	—
Optimizing prediction of preschool psychopathology from brain: behavior markers of emotion dysregulation from birth: A computational, developmental cognitive neuroscience approach		93.242	5R01MH121877-03	1,249,837	251,403
A Stepped Wedge Hybrid Type II Trial of an Online Positive Affect Intervention: Blending Implementation and Effectiveness to Improve HIV Continuum Outcomes in Ryan White Clinics in Chicago		93.242	5R01MH124632-03	686,745	237,500
Title: Neurobiology of seizure generalization during electroconvulsive therapy for major depression		93.242	5R03MH121769-02 REVISED	50,471	—
Mouse models for live-cell imaging of endogenous Evf2 lncRNA		93.242	5R03MH126145-02	33,656	—
High-Risk Psychosis Youth and Caregivers: Emotion in Interaction		93.242	5R21MH115231-02	70,750	—
Exploring Melipaladines as New Serotonin Receptor Antagonists		93.242	5R21MH115301-02	(1,817)	—
Using Speech Acoustics to Reveal Motor Disruptions in Psychosis		93.242	5R21MH119677-02	104,193	23,356
Post-Graduate Research Training Aligned with the NIMH Strategic Plan		93.242	5R25MH115856-04	303,640	—
Digital Mental Health Service for Non-Treatment Seeking Young Adults		93.242	5R34MH124960-02	89,071	—
Training Program in Neurobiology of Information Storage		93.242	5T32MH067564-20	214,549	—
Multidisciplinary Training Program in Digital Mental Health		93.242	5T32MH115882-05	269,493	—

NORTHWESTERN UNIVERSITY

Supplementary Schedule of Expenditures of Federal Awards

Year ended August 31, 2022

Cluster title/Federal grantor/Subagency/Project title	Pass-through entity	Assistance listing number	Sponsor award number	Federal expenditures	Passed-through to subrecipients
Northwestern University Mental Health, Earlier: Transdiagnostic, Transdisciplinary, Translational Training Program in Neurodevelopmental Mechanisms of Psychopathology	113	93.242	5T32MH126368-02	\$ 172,250	—
Developing an app-based behavioral intervention to help depressed individuals return to work	113	93.242	60061119/1R42MH127971	84,745	—
THE IMPACT OF PUBERTAL SUPPRESSION ON ADOLESCENT NEURAL AND MENTAL HEALTH TRAJECTORIES	190	93.242	700258-0422-00/1R01MH123746-01A1	8,401	—
Optical Dissection of the Neural Circuitry Controlling Sensorimotor Gating		93.242	7K01MH113132-04	(1,488)	—
Opioid-BNST interactions in the regulation of trauma-induced anxiety states		93.242	7K08MH126166-03	61,470	—
2-Arachidonylglycerol signaling in anxiety, depression, and stress adaptation		93.242	7R01MH107435-07	440,442	—
Central Amygdala Glutamatergic Circuits in Fear Learning and Extinction		93.242	7R01MH119817-04	2,455	—
Academic-Community EPINET (AC-EPINET): Mitigating Barriers to Care	112	93.242	8821-NU//1R01MH120588-01A	99,060	—
DART2.0: comprehensive cell type-specific behavioral neuropharmacology	71	93.242	A03-0696/1RF1MH117055	189,162	—
Developing Insulin-like growth factor binding protein 2 (IGFBP2) peptide fragment-based therapeutics to treat functional and behavioral deficits in Ph	6	93.242	Agmt 7/28/21 // 1R41MH121140-01	(3,130)	—
Synaptic Protein Networks, Genetic Risk, and Spine Loss in Schizophrenia	280	93.242	AWD00000863 (133093-1)//5R01MH118497-03	138,311	—
Implementation and Dissemination of Evidence-Based Interventions to Improve PrEP Care Continuum Outcomes Among Women in a Community Health Clinic	244	93.242	AWD102381 (SUB00000565) // 1R01MH128051-01	15,180	—
ProNET: Psychosis-Risk Outcomes Network	318	93.242	CON-80003051 (GR113107)//3U01MH124639-02S1	338,295	—
Systematic Functional Interpretation of Regulatory Variants in Schizophrenia	163	93.242	EH15-150-S15R01MH106575-05	(169)	—
Biopsychosocial mechanisms underlying internalizing psychopathology in a prospective, population-based cohort of sexual minority young adults	318	93.242	GR105700 (CON-80001711)Amd 3//5R01MH118245-04	37,392	—
HARM-A: A neurobiological predictor of comorbidity and stress reactivity in anxiety disorders	218	93.242	M2102399/5R01MH125083-02	42,963	—
Integrating a suite of mental health apps for depression in a healthcare setting	1	93.242	NU_Mohr-Year 3/00028727/2R44MH114725-03	39,133	—
Scaling a Parenting EBI for Latinx Youth Mental Health in Primary Care	267	93.242	OS00000743/1R01MH124718-01A1	80,278	—
Altered auditory networks in HIV-induced central nervous system dysfunction	65	93.242	R1072/5R01NS108809-05	67,614	—
Genetic Influences on Infant Brain Development: Understanding the Developmental Origins of Mental Illness	148	93.242	RC1126650 // 1R01MH123716-01A1	17,114	—
Transformation of the stress response into motor behavior by the external globus pallidus	292	93.242	SA0000539 // 5R01MH112768-05	76,095	—
Prodromal Inventory for Negative Symptoms (PINS): A Development and Validation Study	252	93.242	SUB00001927/5R01MH116039-04	198,804	—
Mapping Dimensional Aspects of Biobehavioral Threat Reactivity in Young, Violence-Exposed Children: Linkages to Fear, Distress, and Disruptive Behavior	249	93.242	UCHC7-152365739-A3//1U01MH113390	15,873	—
Targeting negative affect through mindfulness training in youth at risk for internalizing problems	301	93.242	UNIV61518/5R61MH119270-02	202,026	—
Early Life Adversity, Biological Embedding, and Risk for Developmental Precursors of Mental Disorders	311	93.242	WU-19-11-MOD-4//5R01MH113883-04	82,755	—
				19,841,876	1,476,240
COVID-19: Role of Alcohol Disparities in HIV Risk among Sexual Minority Youth		93.273	3R01AA024409-05S1	42,973	42,587
COVID-19: Role of Alcohol Disparities in HIV Risk among Sexual Minority Youth		93.273	3R01AA024409-05S2	366,235	138,355
Deep brain live imaging of cAMP and protein kinase A activities underlying synaptic- and circuit-level mechanisms during learned behaviors		93.273	4R00AA027740-02	126,216	—
Efficacy of Couples-Based HIV Prevention in Vulnerable Young Men		93.273	5R01AA024065-05	466,679	47,969
Role of Alcohol Disparities in HIV Risk among Sexual Minority Youth		93.273	5R01AA024409-05	129,035	—
Intersectional Approaches to Population-Level Health Research: Role of HIV Risk and Mental Health in Alcohol Use Disparities among Diverse Sexual Minority Youth		93.273	5R01AA029044-02	314,751	11,952
Project Recognize: Improving Measurement of Alcohol Use and Other Disparities by Sex, Sexual Orientation, and Gender Identity through Community Engagement		93.273	5R01AA029076-02	405,994	57,263
Endocannabinoid Mechanisms in the Pathophysiology of Alcohol Use Disorders		93.273	7R01AA026186-06	101,508	—
				1,952,391	296,126
IND-Enabling Pre-Clinical Studies to Accelerate the Clinical Development of a Humanized Anti-Cocaine Monoclonal Antibody	245	93.279	012490-00005/5U01DA050330-03	17,319	—
The Neuroproteomics and Neurometabolomics Center on Cell-Cell Signaling	256	93.279	096739-17681//2P30DA018310-16 Amd. 2	193,762	—
Collaborating Consortium of Cohorts Producing NIDA Opportunities (C3PNO)	240	93.279	1935 G XA461-04//5U24DA044554-05	69,929	—
COVID-19: Collaborating Consortium of Cohorts Producing NIDA Opportunities (C3PNO)	240	93.279	1935 G YA102/3U24DA044554-05S1	32,505	—
A New Approach to Integrating Primary and Secondary HIV Prevention in Young Male Couples		93.279	1DP2DA04271-01	23,136	—
Chronic Pain Modulation of Mesolimbic Dopamine Signaling for Natural and Opiate Rewards (NRSA Predoc Fellowship for Gabriela C. Lopez, MS.)		93.279	1F31DA056200-01	13,284	—
Center for Dissemination and Implementation At Stanford (C-DIAS)	207	93.279	1P50DA054072-01A1//62968986-199049	7,397	—
Leveraging data syntheses to identify optimal and robust strategies for HIV elimination among substance-using MSM		93.279	1R01DA055502-01	84,991	—
Autophagic regulation of cocaine abuse		93.279	1R01DA06720-01	937	—
2/2 Optimizing access, engagement and assessment to elucidate prenatal influences on neurodevelopment: The Brains Begin Before Birth(B4)		93.279	1R34DA050266-01 REVISED	112,321	75,792
COVID-19: 2/2 Optimizing access, engagement and assessment to elucidate prenatal influences on neurodevelopment: The Brains Begin Before Birth(B4)		93.279	1R34DA050266-01 REVISED	42,926	—
Reduced complexity mapping of oxycodone self-administration and stress responsiveness in rats	286	93.279	21-3867-NUW Amd 1//5R01DA048017-02	76,928	—
Wake Forest NCORP Research Base	310	93.279	360-32491-11000000084//3UG1CA189824-08S1	89,355	—
Interferon-modulated vaccines against HIV		93.279	3DP2DA051912-01S1	844,011	—
Developing and Testing a Social Network Data Capture Tool to Improve Partner Services		93.279	3R34DA052216-03S1	215,097	12,898
FP: Wake Forest NCORP Research Base	310	93.279	487-32491-11000000084//3UG1CA189824-07S1	32,697	—
Contribution of the Virome to HIV/AIDS pathogenesis		93.279	5DP1DA048493-05	878,696	10,267
The design, synthesis, and evaluation of natural product-inspired small molecules targeting the 5-HT2C receptor as novel therapeutics for opioid use disorder		93.279	5F30DA050445-03 REVISED	64,092	—
Understanding Substance Use Risk among Sexual Minority Women		93.279	5K01DA046716-03 REVISED	4,571	—
Center for Prevention Implementation Methodology for Drug Use and HIV (Ce-PIM)		93.279	5P30DA027828-10	583,288	219,820
COVID-19: Center for Prevention Implementation Methodology for Drug Use and HIV (Ce-PIM)		93.279	5P30DA027828-10	75,476	8,809
Center for chronic pain and drug abuse		93.279	5P50DA04121-05	2,035,395	136,565
New inactivators of GABA Aminotransferase for Addiction and Epilepsy		93.279	5R01DA030604-10	25,925	—
Drug Abuse and Related Health Disparities: An Intergenerational Longitudinal Study of Offspring of Delinquent Youth (Northwestern Offspring Project)		93.279	5R01DA042082-05	601,615	—
netCanvas: Development, Hardening, and Dissemination of a Software Suite for the Collection of Complex Network and Contextual Data in HIV and Drug Research		93.279	5R01DA042711-05	276,129	10,805
Eliciting Mechanisms of Pregnancy's Protective Effect on Drug Abuse Using Integrated Data Analysis		93.279	5R01DA050700-02	498,407	69,860
Multilevel Influences on HIV and Substance Use in a YMSM cohort		93.279	5U01DA036939-07	2,108,788	—
COVID-19: Multilevel Influences on HIV and Substance Use in a YMSM cohort		93.279	5U01DA036939-07	60,240	—
9/24- Healthy Brain and Child Development National Consortium		93.279	5U01DA055355-02	581,149	—
Stagewise Implementation To Target – Medications for Addiction Treatment (SITT-MAT)	207	93.279	62756859-181406//1R01DA052975-01A1	31,376	—
Implementing contingency management in opioid treatment centers across New England: A hybrid type 3 trial		93.279	7R01DA046941-05	19,541	—
Assessing the impact of opioid prescription duration limits		93.279	7R21DA050047-02	97,192	23,070
Improving Outcomes of Adolescents in Residential Substance use Treatment via a Technology-Assisted Parenting Intervention		93.279	7R37DA052918-02	25,428	—
Robust modeling of within- and across-area population dynamics through the development of a practical recurrent neural network toolkit	77	93.279	A580885/1RF1DA055667-01	58,895	—
Examining the Quality of Opioid Use Disorder Treatment in a Medicaid Research Network	280	93.279	AWD00000066 (132578-11)/5R01DA048029-03	12,346	—
JCOIN 024	244	93.279	AWD100228 (SUB00000487)/1U2CDA050098-01 REVISED	29,821	—

NORTHWESTERN UNIVERSITY
 Supplementary Schedule of Expenditures of Federal Awards
 Year ended August 31, 2022

Cluster title/Federal grantor/Subagency/Project title	Pass- through entity	Assistance listing number	Sponsor award number	Federal expenditures	Passed- through to subrecipients
The Healthy Brain and Child Development National Consortium Administrative Core	241	93.279	KR 705056 // 1 U24 DA055325-01	\$ 8,108	—
Optimizing PrEP Adherence in Sexual Minority Men who Use Stimulants	267	93.279	OS00000283/5R01DA051848-03	33,522	—
Sensitivity to Unpredictable Threat and Smoking Lapse Behavior	253	93.279	R-19-0063/R21DA045285	(56)	—
Supporting Treatment Adherence for Resilience and Thriving (START): A mHealth intervention to improve ART adherence for HIV-positive stimulant-using	267	93.279	SPC-001373/FR01DA049843-02	43,863	—
Neuroscience, Immunology, Social Adversity and the Roots of Addictive Behaviors: Toward a New Framework for Drug Use Etiology and Prevention	252	93.279	SUB00002412-2A-Amend 3/1P50DA051361-01	381,678	—
Stress and Opioid Misuse Risk: The Role of Endogenous Opioid and Endocannabinoid Mechanisms	302	93.279	VUMC10071/1R01DA050334-01A1	7,970	—
Development of an implantable closed-loop system for delivery of naloxone for the prevention of opioid-related overdose deaths	311	93.279	WU-20-178/1UG3DA050303-01	(67,824)	—
Development of an implantable closed-loop system for delivery of naloxone for the prevention of opioid-related overdose deaths	311	93.279	WU-22-0220/4UH3DA050303-03	1,287,933	—
				<u>11,620,059</u>	<u>567,886</u>
COVID-19: Rapid Diagnostics of SARS-CoV-2/COVID-19 of Asymptomatic People Wanting to Return to Work or School	53	93.286	1400-SUB/3U54HL119810-07S1	28,489	—
Enabling Technology for a Biomimetic Artificial Retinal Chemical Synapse Chip	255	93.286	17495//SR21EB028069-02	52,185	—
Valency and distance co-optimized peptide bound PEG-b-PPS Filomicelles hydrogel depot for anti-integrin therapeutics	255	93.286	18850//1R03EB032602-01	3,474	—
Application of machine learning for fast prediction of MRI-induced RF heating in patients with implanted conductive leads	93.286	93.286	1R03EB032943-01	10,450	—
BehaviorSight: Privacy enhancing wearable system to detect health risk behaviors in real-time.	93.286	93.286	1R21EB030305-01	246,601	—
Regenerative Engineering Training Program (RE-Training)	93.286	93.286	3T32EB031527-02S1	88,478	—
COVID-19: The Center for Innovation in Point-of-Care Technologies for HIV/AIDS at Northwestern University (C-THAN) RADx Supplemental Request	93.286	93.286	3U54EB027049-02S1 REVISED	1,554,965	859,308
The Center for Innovation in Point-of-Care Technologies for HIV/AIDS at Northwestern University (C-THAN)	93.286	93.286	3U54EB027049-05S1	1,207,390	597,415
An Enzyme Self-Amplification System for Ultrasensitive Detection of Biomarkers at the Point of Care	93.286	93.286	5F32EB031608-02	66,876	—
Developing a virtual placenta biobank	93.286	93.286	5K08EB030120-03	157,208	—
Patient-adjustable MRI technology for high-resolution imaging of deep brain stimulation	93.286	93.286	5R00EB021320-04	107,966	—
Image-Guided Transcatheter Delivery of Natural Killer Cell Therapy Augmented with IFN-Gamma Eluting Microspheres	93.286	93.286	5R01EB026207-04	219,697	—
Design-driven engineering of robust mammalian sense-and-respond functions	93.286	93.286	5R01EB026510-04	328,116	—
Developing a SMART scaffold for bladder augmentation	93.286	93.286	5R01EB026572-04	650,984	269,049
Reconfigurable MRI technology for safe and high-resolution imaging of deep brain stimulation at 3T	93.286	93.286	5R01EB030324-02	406,884	—
A universal multi-drug encapsulation and delivery system employing supramolecular nanogels that self-assemble via dynamic sulfone bonding	93.286	93.286	5R01EB030629-02	339,867	—
Enabling Non-Invasive Cell Tracking for Patient-Specific Vascular Endothelial Cells	93.286	93.286	5R03EB027998-02	24,970	—
Assessing RF heating of deep brain stimulation implants in high-field open-bore MRI systems	93.286	93.286	5R03EB029587-02	42,668	—
Rapid Pediatric Cardiovascular MRI without Contrast Agent or Anesthesia	93.286	93.286	5R21EB024315-02 REVISED	12,803	—
Next-Generation Cardiovascular MRI powered by Artificial Intelligence	93.286	93.286	5R21EB030806-02 REVISED	211,787	—
Interdisciplinary Graduate Education in Movement and Rehabilitation Sciences	93.286	93.286	5T32EB009406-12	62,664	—
Graduate Training Program for Magnetic Resonance Imaging	93.286	93.286	5T32EB025766-04	221,043	—
Human and Machine Learning for Customized Control of Assistive Robots	186	93.286	7185 cc 81301 Amend 3//1R01EB024058	172,545	—
Enabling Next Generation Machine Learning for Large Scale Image Analysis	192	93.286	NIH_Northwestern_1//1R41EB032722-01	43,901	—
COVID-19: RADx Clinical Studies Core	266	93.286	OSP/WPM33765-NW//3U54HL143541-02S2	1,981,371	581,087
Bioresorbable RF Coils for Post-Surgical Monitoring by MRI	301	93.286	UNIV61946//SR21EB027881-02	76,166	—
				<u>8,319,568</u>	<u>2,306,859</u>
Understanding health disparities in Pakistani, Bangladeshi and Asian Indian immigrants: the role of socio-cultural context, acculturation and resilience resources	242	93.307	13067sc // 5R01MD016071-02	253,127	—
2021 National LGBTQ Health Conference: Bridging Research and Practice	93.307	93.307	1R13MD015672-01	25,782	—
Racial disparities in police use of deadly force as a cause of racial disparities in sleep health across the life course	138	93.307	236743 Amend 02//5U01MD014023-03	11,016	—
ELLAS: Environment, Leiomyomas, Latinas and Adiposity Study	268	93.307	3004650350//5R01MD011570-05	4,084	—
Developing and Pilot Testing Peer Ambassador Stories for Increasing HIV-Prevention and Behavioral Health Treatment Uptake among Latino MSM	267	93.307	3K23MD015690-02S1/ OS00000839	8,785	—
Reducing Assessment Barriers for Patients with Low Literacy	93.307	93.307	5R01MD010440-05	384,840	45,115
Understanding socioeconomic disparities in perinatal risk: The role of epigenetic and transcriptional regulation in the placenta	93.307	93.307	5R01MD011749-05	1,479,994	1,155,160
Effectiveness and Implementation of a Mindfulness Intervention for Depressive Symptoms Among Low-income, Racial/Ethnic Minority Adults in a Federally Qualified Health Center	93.307	93.307	5R01MD012236-05	591,039	—
Characterizing PrEP Adherence and Patterns of Use in a Diverse Community Cohort of Young Men	93.307	93.307	5R01MD013609-04	341,219	—
Collateral Consequences of Parents Incarcerations for Their Adolescent Children: A Prospective Longitudinal Study	93.307	93.307	5R01MD014020-04	630,665	—
COVID-19: Collateral Consequences of Parents Incarcerations for Their Adolescent Children: A Prospective Longitudinal Study	93.307	93.307	5R01MD014020-04	97,738	—
The OPTIMIZE Study: Optimizing Patient Navigation for Perinatal Care	93.307	93.307	5R01MD014068-04	661,136	430,109
Simulation Modeling to Understand and Address HIV Disparities in Racial, Ethnic, and Sexual Minority Populations	93.307	93.307	5R01MD014703-03 REVISED	507,914	—
Enhancing Perinatal Care Support to Improve Maternal Mortality Disparities	93.307	93.307	5R01MD016280-02	217,288	61,459
African-American Social Support Effectiveness Treatment- Partners Alleviating Perinatal Depression (ASSET-PPD)	93.307	93.307	5R21MD014798-02	145,504	7,924
Northwestern University Minority Health and Health Disparities Research Training (NU-MHRT)	93.307	93.307	5T37MD014248-04	252,499	—
A Pragmatic Trial of An Adaptive eHealth HIV Prevention Program for Diverse Adolescent MSM	93.307	93.307	5U01MD011281-05	887,854	197,171
African American Cardiovascular pharmacogenetic CONsoRTium (ACCOuNT): discovery and translation	26	93.307	5U54MD010723-05	243,290	200,703
Unraveling Racial Disparities in Portal Hypertension: A Clinical, Spectroscopic and SNP Approach	26	93.307	MD013631-02//7R21MD013631-03	95,316	—
VietAmerican Health Pilot Study	275	93.307	RF00219-2021-0066//1R21MD013542-01A1	14,875	—
				<u>6,853,965</u>	<u>2,368,472</u>
Impact of Culturally Aware Mentoring Interventions on Research Mentors and Graduate Training Programs	298	93.310	0000011415//5U01GM132372-03	60,020	—
Enhanced Grant Writing Coaching Groups for a Diverse Biomedical Workforce	295	93.310	10050224-03//5U01GM132366-03	37,856	—
Identifying Mechanisms Governing T Cell Diversity	93.310	93.310	1DP2A136599-01	561,614	—
Cell-free DNA sequencing approaches to define the genetic etiology of unexplained epilepsy	93.310	93.310	1DP2NS111506-01 REVISED	504,607	—
Nutrition Precision Health for All of Us (Chicago Center)	93.310	93.310	1UG1HD107697-01	114,810	—
Data Center for Acute to Chronic Pain Biosignatures	126	93.310	2004904875//5U54DA049110-02	234	—
COVID-19: RADx-UP Coordination and Data Collection Center	71	93.310	303000056 // 4U24MD016258-02	47,557	—
Genetic mapping of visual circuits	93.310	93.310	3DP2EY027983-01 S1	(2,675)	—
Mechanisms of Genome Organization in Brain Development and Behavior	93.310	93.310	5U01DA053691-03	461,892	—
Renewable and Specific Affinity Reagents for Mapping Proteoforms in Human Tissues	93.310	93.310	5UH3CA246635-03	381,385	—
The 4D nucleome of muscle regeneration in ischemia-induced tissue damage and repair	71	93.310	A034155-01//1U01-HL156064-01	62,229	—
The 4D nucleome of muscle regeneration in ischemia-induced tissue damage and repair	71	93.310	A035307//5U01-HL156064-02	20,971	—
COVID-19: Community network driven COVID-19 testing among most vulnerable populations in the Central United States	244	93.310	AWD101615 (SUB00000363)//3UG1DA050066-03S1	150,014	—

NORTHWESTERN UNIVERSITY
Supplementary Schedule of Expenditures of Federal Awards
Year ended August 31, 2022

Cluster title/Federal grantor/Subagency/Project title	Pass-through entity	Assistance listing number	Sponsor award number	Federal expenditures	Passed-through to subrecipients
COVID-19: SCENTinel: A Rapid Smell Test for COVID-19 Surveillance	149	93.310	NIH073A01DALTO/4U01DC019578-02	\$ 183,861	—
A streamlined platform for phosphoproteome mapping of human tissues	174	93.310	No. 546717, Mod. 1//1UG3CA256967-01	79,535	—
The role of nucleoli in human genome organization in normal and disease states	266	93.310	OSP33101-00//5U01CA260699-02	362,928	—
Center for 3D Structure and Physics of the Genome	266	93.310	OSP33133-04//SUM1HG011536-02	172,885	—
Center for 3D Structure and Physics of the Genome	266	93.310	OSP33133-05//1UM1HG011536-01	71,248	—
Evaluating diverse technologies for detecting and validating senescent cells in vivo	36	93.310	SA16036-NU//1UG3CA268105-01	105,405	—
Biospecimen Core for Procurement of Human Somatic and Reproductive Tissues for Senescent Cell Mapping	36	93.310	SA60001-NU//1U54AG075932-01	65,570	—
Genetics and quantum chemistry as tools for unknown metabolite identification	252	93.310	SUB00001824/U2CES030167	67,356	—
				3,509,100	—
Translating Scientific Evidence into Practice using Digital Medicine and Electronic Patient Reported Outcomes	104	93.350	0255-D512-4609 Amnd 2//5U01TR002997-03	35,807	—
Gut microbiome and steroid hormones	195	93.350	19030404-Sub01//1R21TR003105	2,651	—
12th International Copper Meeting: Bridging Clinical and Fundamental Science		93.350	1R13TR003484-01	5,000	—
Informing Ethical Translation of Xenotransplantation Clinical Trials	95	93.350	410 // 1R01TR003844-01	114,357	—
Northwestern University Clinical and Translational Science Institute (NUCATS)		93.350	5KL2TR001424-08	1,115,485	278,161
Northwestern University Clinical and Translational Science Institute (NUCATS)		93.350	5TL1TR001423-08	493,892	94,894
Improving Patient Reported Outcomes Data for Research through Seamless Integration of the PROMIS Toolkit into EHR Workflows		93.350	5U01TR001806-04	31,904	26,216
CRITICAL: Collaborative Resource for Intensive care Translational science, Informatics, Comprehensive Analytics, and Learning		93.350	5U01TR003528-02	838,055	410,731
Northwestern University Clinical and Translational Science Institute		93.350	SUL1TR001422-08	6,006,616	507,317
COVID-19: Northwestern University Clinical and Translational Science Institute		93.350	SUL1TR001422-08	65,708	—
COVID-19: Outcomes Following COVID-19 Infection among Hospitalized Infants	71	93.350	A03-3768-1//3U24TR001608-05S2	14,350	—
COVID-19: Clinical and Translational Science Award – Trans-NIH Research Support (Sub award)	142	93.350	AGMT Black B/16/22//3UL1TR001436-07S1	224,931	—
COVID-19: Epidemiological and clinical characterization of genomic variation in SARS-CoV-2	244	93.350	AWD065282 (SUB00000309) // 3UL1TR002389-04S2	(471)	—
Advancing Standardized Clinical Outcome Tools for Duchenne Muscular Dystrophy	306	93.350	FP00014097_SA001 // 1R21TR004007-01A1	8,540	—
A National Center for Digital Health Informatics Innovation	247	93.350	FY22.1126.009//7U24TR002306-05	115,790	—
				9,072,515	1,317,319
Analyzing and Interpreting Clinician and Patient Adverse Event Data to Better Understand Tolerability in ECOG-ACRIN Studies	64	93.353	1204004//5U01CA233169-04 AMD 04	93,520	—
Structure and Function of the SS18-SSX-containing mSWI/SNF (BAF) Complex Unveiling New Paths Toward Therapeutic Targeting	64	93.353	1205703//1U54CA231638-01 REV	53,761	—
Structure and Function of the SS18-SSX-containing mSWI/SNF (BAF) Complex Unveiling New Paths Toward Therapeutic Targeting	64	93.353	1205704//1U54CA231638-01 REVISED	378,748	—
Structure and Function of the SS18-SSX-containing mSWI/SNF (BAF) Complex Unveiling New Paths Toward Therapeutic Targeting	64	93.353	1U54CA231638-01 REV//	45,153	—
Implementation and Evaluation of an Expanded Bilingual Electronic Symptom Management Program across a Multi-site, Fully integrated Comprehensive Cancer Center		93.353	3UM1CA233035-01S1	1,372,165	329,658
Using Information Technology to Improve Outcomes for Children Living with Cancer		93.353	5U01CA246612-04	386,881	50,156
Minimally Invasive Colorectal Cancer Risk Stratification with Nanocytology (Institution change)	26	93.353	7R33CA225323-02//Backman AGMT 9/14/21	131,294	—
Accelerating Colorectal Cancer Screening and Follow-up through Implementation Science in Chicago (ACCSIS-Chicago)	244	93.353	AWD069107-01-PR (SUB00000212)//5UH3CA233229-04	36,564	—
				2,498,088	379,814
COVID-19: Transcending COVID-19 barriers to pain care in rural America: Pragmatic comparative effectiveness trial of evidence-based, on-demand, digital behavioral treatments for chronic pain	42	93.361	0001896810 // 1R01NR019947	44,620	—
A Community-Developed, Culturally-Based PC Consult Program Delivered via Tele-health for African American and White Rural Southern Elders with Life Limiting Illness	234	93.361	000521619-SC001//5R01NR017181-03	13,441	—
Pain Response Evaluation of a Combined Intervention to Cope Effectively (PRECICE)	310	93.361	349-5581108503391-10000116454/ 1UG3NR019196-01	3,290	—
Testing the Efficacy of a Couple-focused, Tailored mHealth Intervention for Symptom Self-Management among Men with Prostate Cancer and their Partners	274	93.361	5114999//5R01NR016990-05	17,968	—
EHR-based Universal Medication Schedule to Improve Adherence to Complex Regimens		93.361	5R01NR015444-05	253,563	137,316
Building a causal pathway framework to identify interventions to eliminate racial/ethnic disparities in severe maternal morbidity	207	93.361	62736588-206060 // 1R01NR020335-01	15,785	—
				348,667	137,316
Mitigating Long-term Treatment-related Morbidity in Childhood Cancer Survivors	234	93.393	000519160-003//5R35CA220502-04	12,364	—
Disease Beliefs and Cognition: Effect on Diabetes Management in Older Breast Cancer Survivors	104	93.393	0255-3801-4609 Amnd 8//5R01CA214491-05	128,213	—
Patient-Centered Reminders to Inform, Motivate, and Engage Colorectal Cancer Screening Adherence in Rural Communities: The PRIME-CRC Trial	136	93.393	21-08-003 AMD 1//5R01CA240496-02	71,703	—
PROMIS AYA/Optimizing Health Related Quality of Life Measurement in Adolescent and Young Adult Oncology: A PROMISing Solution	310	93.393	276-100730-114162//5R01CA218398-04	125,677	—
Mutations of Chromatin and its Modifying Machinery in Malignancies		93.393	2R35CA197569-08A1	23,945	—
Improving Emergency Care and Outcomes of Immune-related Adverse Events: The Immune-related Emergency Disposition Index (IREDI)	293	93.393	300192293 // 1R01CA267856-01	16,546	—
Using MOST to EMPOWER: Optimizing an emotion regulation intervention to enhance well-being among young adult cancer survivors	310	93.393	412-100730-550033//5R01CA242849-03	78,041	—
Testing Novel Pharmacogenetic and Adherence Optimization Treatments to Improve the Effectiveness of Smoking Cessation Treatments for Smokers with HIV	279	93.393	578028//5R01CA243914-03	270,423	—
K00 for Deanna Tiek in support of: Novel relationships of splicing factors in temozolomide-resistant glioblastoma		93.393	5K00CA234799-05	93,848	—
Regulation of Human Papillomavirus Gene Expression		93.393	5R01CA059655-29	292,195	—
HPV and the DNA Damage Response		93.393	5R01CA142861-10	189,050	—
Patient Navigation 2.0: Addressing the Challenge of Scaling Navigation through Checklist-based Implementation		93.393	5R01CA163830-09	606,394	50,487
Progesterone Signaling and Blockade in Human Breast Tumorigenesis and Prevention		93.393	5R01CA192124-05	11,411	—
Reducing the Effects of Active Surveillance Stress, Uncertainty and Rumination thru Engagement in Mindfulness Education (REASSURE ME)		93.393	5R01CA193331-06	274,136	136,648
The inhibitory network between EZH2 and PARG1 in triple-negative breast cancer		93.393	5R01CA208257-07	326,753	—
Transcriptional Elongation Control in Development and Disease		93.393	5R01CA214035-19	(49,810)	—
Evaluating the protective effect of a tissue selective estrogen complex (TSEC) in women with newly diagnosed ductal carcinoma in situ		93.393	5R01CA218436-05	481,558	262,587
Genomic Prediction of Doxorubicin-Induced Cardiotoxicity		93.393	5R01CA220002-05	314,036	—
Translating buccal nanocytology for lung cancer screening into clinical practice		93.393	5R01CA225002-05	462,400	173,665
Role of NF90 in Prostate Cancer		93.393	5R01CA227918-05	299,153	—
Determinants of transdermal drug delivery to the normal and the irradiated breast		93.393	5R01CA235647-04 REVISED	396,716	25,534
Targeting Posttranslational Modifications in Breast Carcinogenesis		93.393	5R01CA250110-02	(11,131)	—
Small molecule probes of MYC stability and function in tumorigenesis		93.393	5R01CA257258-02 REVISED	513,903	—
Predicting and Preventing Chemotherapy-Induced Cardiotoxicity in African American Children		93.393	5R01CA261898-02	378,152	28,228
Optimization of a mHealth Physical Activity Promotion Intervention with Mindful Awareness for Adolescent and Young Adult Cancer Survivors		93.393	5R01CA262357-02	433,620	—
Feasibility of OncoMed to Improve Self-Management and Adherence to Oral Anticancer Medications		93.393	5R21CA226671-02	18,999	—
Evaluating Patient-Reported Outcomes Monitoring in Routine Care of Patients with Chronic Myeloid Leukemia for Increasing Adherence and Clinical Response to TherapY: The EMPATHY Pilot Study		93.393	5R21CA203067-02	70,804	35,439

NORTHWESTERN UNIVERSITY
 Supplementary Schedule of Expenditures of Federal Awards
 Year ended August 31, 2022

Cluster title/Federal grantor/Subagency/Project title	Pass- through entity	Assistance listing number	Sponsor award number	Federal expenditures	Passed- through to subrecipients
Mutations of Chromatin and its Modifying Machineries in Malignancies		93.393	5R35CA197569-07	\$ 918,291	—
Technology Facilitated Behavioral Intervention for Depression among Diverse Patients in Ambulatory Oncology		93.393	5R37CA255875-02	652,358	134,554
Surgical Multispecialty Access to Research in Residency Training (SMART)		93.393	5R38CA245095-02	207,856	—
Informatics Tools for Quantitative Digital Pathology Profiling and Integrated Prognostic Modeling		93.393	5U01CA220401-04	374,066	258,361
Improving PRO Interpretation at the Individual Level for Patients with Cancer using Conversational Agents and Data Visualization	29	93.393	6176-NWU-01 // 1R01CA271145-01	30,197	—
Structural Cell Biology of DNA Repair Machines	239	93.393	7336107 Mod. 4 // 5P01CA092584-20	(8,554)	—
Subcontract: Targeting Posttranslational Modifications in Breast Carcinogenesis	77	93.393	A662277//TR01CA250110-03REVISED	2,922	—
CXCR4 as a target for colon cancer chemoprevention	244	93.393	AWD100181 (SUB000000877)//5R01CA240710-03	(7,323)	—
Evaluating a mobile application to reduce distress in breast cancer survivors using an adaptive design	296	93.393	GB10933.P0#2333666//1R37CA248434-01A1	42,835	—
Structural Cell Biology of DNA Repair Machines	239	93.393	NO. 7615718-01//2P01CA092584-21	99,340	—
Biomarkers to Improve Targeting of Breast Cancer Prevention in Women with Atypical Hyperplasia	140	93.393	NWUNWU-263646-03/PO#67830342//5R01CA237607-03	64,909	—
Methylation biomarkers for magnesium deficiency and colon neoplasia prevention	301	93.393	VUMC 57993//5R01CA202936-05	24,816	—
				8,230,812	1,105,503
Multi-site adaptive trial of a technology-based, EHR-integrated physical activity intervention in breast and endometrial cancer survivors	298	93.394	000000266//1R37CA225877-01A1 Amd. No. 2	113,800	—
Predicting Pancreatic Ductal Adenocarcinoma (PDAC) through Artificial Intelligence Analysis of Pre-diagnostic CT Images	42	93.394	0001993178//1R01CA260955-01	61,449	—
Optimization of a remote intervention to improve nutrition and physical activity in colorectal cancer survivors	242	93.394	125886c // 5R37CA248774-02	32,418	—
Incorporating Biomarkers of Prognosis and Cardiovascular Disease Risk in the Fit2Thrive Physical Activity Promotion Intervention for Breast Cancer Survivors		93.394	1R21CA219028-01A1	206	—
COVID19: Production of protein array for serum antibody screening		93.394	3P30CA060553-25S5	114,545	—
Infection-Associated Cancer Research Training Program in Mali		93.394	5D43CA260658-02	156,510	88,445
Biophotonics to Couple Pancreatic with Upper GI Screening via Ultrathin Endoscopy		93.394	5R01CA183101-05	158,796	124,138
Risk-stratification of Prostate Cancers via Field Carcinogenesis Nanocytology		93.394	5R01CA200064-05	496,586	255,474
Systemic RNA interference to reactivate p53 tumor suppression		93.394	5R01CA208783-04	(96,217)	—
Tumor immune and glycan biomarkers for progressive prostate cancer		93.394	5R01CA212409-05	438,236	193,348
Catheter-Directed Image-Guided Delivery of Cytostatic and Cytotoxic Combination Therapy to Liver Tumors		93.394	5R01CA218659-05	230,806	32,886
Radiologist-Centered Artificial Intelligence (RCAI) for Lung Cancer Screening and Diagnosis		93.394	5R01CA240639-03	430,527	83,173
A Multilevel Physical Activity Intervention for South Asian Women and Girls		93.394	5R01CA242520-04	620,671	183,493
Novel IL-12 Gene Delivery Vehicles for Transformation of Solid Tumors		93.394	5R01CA244872-03 REVISED	481,478	—
Cyst-X: Interpretable Deep Learning Based Risk Stratification of Pancreatic Cystic Tumors		93.394	5R01CA246704-03	353,029	103,230
Technology-Supported Physical Activity Intervention for Metastatic Breast Cancer Survivors:Fit2ThriveMB		93.394	5R21CA239130-02	55,336	—
Microvasculature in Colon Field Carcinogenesis (Institution change)	26	93.394	700001387//5R01CA224911-05	132,055	—
Development of microfluidic enabled CRISPR-Cas9 functional genetic screening technologies for target discovery in cancer immunotherapy		93.394	7R01CA260170-02	71,427	—
Multi-site adaptive trial of a technology-based, EHR-integrated physical activity intervention in breast and endometrial cancer survivors	298	93.394	893K546 AMD 5//1R37CA225877-01A1	355,453	—
Improved whole-brain spectroscopic MRI for radiation therapy planning	77	93.394	A659518//9U01CA264039-04A1	8,412	—
Development of 5hmC and 5mC biomarkers in cell-free circulating DNA for sensitive colon cancer detection and prognosis	244	93.394	FP064995//5U01CA217078-05	130,087	—
Epigenetic markers of circulating cell-free DNA and treatment outcome in multiple myeloma	244	93.394	FP066297-02-PR-B // 5R01CA223662-04	172,102	—
Impact of ecological park restoration on health in low income neighborhoods: A natural experiment	148	93.394	RC110102NWU//5R01CA239187-03	60,676	—
Targeted MRI contrast agents for differential diagnosis of prostate cancer	41	93.394	RESS11975//5R01CA211762-05	15,759	—
Real-time volumetric specimen imager for 3D intra-operative lumpectomy margin assessment	52	93.394	S01 // 5R44CA206801-05	112,876	—
				4,707,023	1,064,187
Early Therapeutics and Rare Cancer Vice Chair Role	172	93.395	1013080_NORTHWESTERN//5U10CA180888-09 AMD 4	19,460	—
SWOG Network Group Operations Center of the NCTN	172	93.395	1013080_SWOG_Northwestern//U10CA180888	5,945	—
S1602 BIQSFP: A Randomized Trial to Evaluate the Influence of BCG Strain Differences and T Cell Priming with Intradermal BCG Before Intravesical Therapy for					
BCG-Naive High-Grade Non-Muscle Invasive Bladder Cancer	172	93.395	1013080-005_Northwestern//3U10CA180888-06S1	14,753	—
Alliance for Clinical Trials in Oncology (Alliance Executive Officer)	31	93.395	120870//5U10CA180821-09	118,911	—
Alliance Operations – Administrative Core	31	93.395	120870//5U10CA180821-09	77,622	—
Optimizing pre-analytic sample handling for high throughput TCR sequencing in cutaneous T cell lymphoma	31	93.395	123941//5U01CA253190-02	5,955	—
Lineage Plasticity, due to Disruption of MnSOD Biology, drives resistance to Ionizing Radiation / Androgen Deprivation Therapy	292	93.395	169448/169447//1R01CA257148-01	15,845	—
A Testing Program to Identify Novel Agents for Treatment of Pediatric and AYA High-Risk Sarcoma, Kidney and Liver Cancer	292	93.395	170091/169735//1U01CA263981-01	10,659	—
Evaluation of Transperineal Biopsy under Local Anesthesia, a Novel approach to Decrease Post-Biopsy Infections and Improve Cancer Detection	125	93.395	194621-2 //194621-2 // 5R01CA241758-02	77,136	—
Innovative Research for Cancer Nanotechnology (IRCN) for Enhancing Melanoma-specific Immune Responses by the Rational Design of Spherical Nucleic Acids		93.395	1R01CA257926-01A1	103,504	—
Investigating Rational Combination Therapies for Triple-Negative Breast Cancer		93.395	1R01CA258833-01A1	229,015	—
Co-targeting BET Bromodomain Proteins and MNK Kinases in Pancreatic Cancer		93.395	1R01CA265997-01	178,421	—
Nano-therapeutics Reprogramming of Immunosuppressive Myeloid Cells Potentiate Radiotherapy for Glioblastoma		93.395	1R01CA266487-01A1	13,350	—
Phenotypic marker-guided development of selective antimetastasis therapeutic leads		93.395	1R01CA269967-01	20,322	—
Web-based Pain Coping Skills Training to Improve Pain and Poor Adherence caused by Aromatase Inhibitor-Associated Arthralgia In Breast Cancer Survivors					
(SKIP-Arthralgia): A Randomized Controlled Trial		93.395	1R01CA271220-01	53,636	—
A Novel ULK1 Pathway as a New Therapeutic Target in Melanoma		93.395	1R21CA245447-01A1	133,193	—
North American Star Consortium	230	93.395	410019075//2U01CA186644-06	160,770	—
Modulation of Microglia and T Cell Interactions in Malignant Glioma		93.395	5R01CA120613-14	152,208	—
Separating autoimmunity and anti-tumor immunity		93.395	5R01CA191317-05	8,348	—
NKG2D superagonist co-stimulation to enhance adaptive immunotherapy of cancer		93.395	5R01CA208246-05	156,229	—
Identifying the Drivers and Targeting Chemo Resistance in Ovarian Cancer		93.395	5R01CA211648-05	8,220	—
Retrospective NCI Phantom-Monte Carlo Dosimetry for Late Effects in Wilms Tumor		93.395	5R01CA219013-05	85,879	29,283
Radiation induced cancer risk reduction as a function of dose protraction: interspecies comparison		93.395	5R01CA221150-05	314,716	—
Giving and receiving: A reciprocal support writing intervention to reduce symptoms during stem cell transplant		93.395	5R01CA223963-04	771,615	272,718
Targeting Lipid Unsaturation in Ovarian Cancer Stem Cells		93.395	5R01CA224275-05	525,553	189,092
Reducing Cancer Transcriptional Heterogeneity through Regulation of Chromatin Structure		93.395	5R01CA228272-05 REVISED	479,618	55,550
Yttrium-90 radiation lobectomy: Dose optimization and prediction of FLR hypertrophy to enable resection of HCC		93.395	5R01CA233878-03	290,089	63,804
Blood-brain barrier disruption with implantable ultrasound to enhance paclitaxel delivery: A Phase 1-2 clinical trial in recurrent glioblastoma		93.395	5R01CA245989-03	479,984	—
Using Prostate Health Index and MRI in Combination for Cost-effectively Detecting High-Grade Prostate Cancer in Minorities		93.395	5R01CA249973-03	593,044	137,434
Bioinspired chemical probe approach targeting telomerase reverse transcriptase		93.395	5R01CA254047-03	395,033	12,227
Omi/hnRNP Amino transferase Inactivation, a New Approach for Treatment of Cancers		93.395	5R01CA260250-02	369,228	4,478

NORTHWESTERN UNIVERSITY
 Supplementary Schedule of Expenditures of Federal Awards
 Year ended August 31, 2022

Cluster title/Federal grantor/Subagency/Project title	Pass-through entity	Assistance listing number	Sponsor award number	Federal expenditures	Passed-through to subrecipients
Training Swallowing Initiation during Expiration: Impact on Safety and Efficiency Following Treatment for Oropharyngeal Head and Neck Cancer		93.395	5R01CA262502-02	\$ 268,621	—
Rapid evaluation of immunotherapy regimens in ex vivo human pancreatic tumor slice cultures.		93.395	5R21CA255291-02	261,793	—
Therapeutic Targeting of Malignant Glioma Stem Cells		93.395	5R35CA197725-08	737,850	—
A biomarker-driven strategy to guide the use of radiotherapy in non-small cell lung cancer		93.395	5R37CA222294-05	390,280	—
Development of B-cell-based vaccine for Glioblastoma		93.395	5R37CA258426-02 REVISED	426,982	—
Northwestern University Lead Academic Participating Site		93.395	5UG1CA233320-04	942,755	—
In vivo Drug Testing of Pediatric CNS Tumors Using Patient Derived Orthotopic Xenograft Models	20	93.395	901640-Northwestern/2U01CA199288-06	41,271	—
Acceptance and Commitment Therapy for Fatigue Interference in Metastatic Breast Cancer	112	93.395	9121_NW/5R01CA230542-04	27,418	—
NRG Oncology Foundation, Inc: Member Institution Purchased Service Agreement (PSA)	166	93.395	Agmt Signed 9/5/14	2,500	—
Radiation Oncology Chair of the Children's Oncology Group	180	93.395	AR03222 // U10CA180886	36,924	—
Institutional Membership-Alliance for Clinical Trials in Oncology	7	93.395	Fully executed 11/13/13	110,737	—
Radiation Oncology Chair of the Children's Oncology Group	48	93.395	PO#20190831/2U10CA180886	(6,741)	—
PSMA-targeted AuNPs for MR guided radiotherapy and radiosensitization	41	93.395	RES516065/5R01CA260847-02 REVISED	69,368	—
ECOG-ACRIN Master Services Agreement 2020 U10 NCTN	74	93.395	U10CA180820-06-IL036	36,898	—
ECOG-ACRIN Deputy Chair of Policy and Implementation	74	93.395	U10CA180820-06-NWU1A/U10CA180820-06, U10CA180820-	68,129	—
ECOG-ACRIN Master Agreement 2020-NCORP funding	74	93.395	UG1 CA189828-06-IL036	36,857	—
				9,319,703	764,585
Pre-clinical development of a novel class of immunotherapeutic antibody for metastatic prostate cancer	38	93.396	1001NU/1R44CA247503-02	5,391	—
Leveraging doxorubicin immune-modulation, blood-brain barrier opening, and personalized medicine for effective immunotherapy in glioblastoma. A mechanistic and pharmacokinetic trial.	242	93.396	13167sc/1U19CA264338-01	328,900	—
Targeting posttranslational modifications of B7-H4 in carcinogenesis and therapy		93.396	1R01CA258765-01	(6,587)	—
Targeting posttranslational modifications of CD73 in TNBCs		93.396	1R01CA258857-01	(2,772)	—
Genome-wide mapping and characterization of exons in human cancer		93.396	1R01CA259388-01A1	3,611	—
Mechanisms of Lymphomagenesis of Skin Resident Gamma Delta T cells		93.396	1R01CA260064-01A1	152,653	—
Novel immune suppressive activities of Fas/CD95 in triple negative breast cancer		93.396	1R01CA267815-01A1	23,772	—
Society for Basic Urologic Research 2021 Annual Meeting: Molecular Mechanisms of Urological Diseases and Treatment Resistance		93.396	1R13CA268280-01	5,000	—
Chemically produced neural progenitors loaded with ferumoxide-protamine sulfate for visualization of gliomas	43	93.396	1R43 CA228726-01A1	5,912	—
Renewal: HPV and the DNA Damage Response		93.396	2R01CA142861-11A1	35,352	—
Transcriptional Control of Cellular Survival and Proliferation in KSHV-transformed B Cells		93.396	3R01CA247619-03S1	462,573	—
Tumor suppressive functions of TET proteins in B cell malignancies: role of G-quadruplex structures		93.396	4R00CA248835-03	101,380	—
Targeting interplay between KLF4 and PRMT5 in carcinogenesis		93.396	5R01CA202963-05	(191)	—
Dissect regulation of RNA translation in human cancers		93.396	5R00CA207865-05	51,012	—
Mechanism and therapeutic potential of macrophage regulation in glioblastoma		93.396	5R00CA240896-04	205,133	—
Signal Transduction of Type 1 Interferons in Malignant Cells		93.396	5R01CA077816-22	441,175	—
Targeting Novel Protein Complexes for the Treatment of Acute Myeloid Leukemia		93.396	5R01CA121192-14	334,370	—
Integrating Epigenomic and Nuclear Receptor Signaling in Castrate Resistant Prostate Cancer		93.396	5R01CA196270-05	(1,085)	—
Interplay between ER and TGF-β in carcinogenesis		93.396	5R01CA202948-06	(4,879)	—
Target MIC shedding to revive anti-tumor immunity		93.396	5R01CA204021-07	212,125	—
The role of GPSM3 in tumor-promoting emergency myelopoiesis		93.396	5R01CA208354-05	206,248	—
Identification and targeting of mechanisms specific to glioma stem cells in glioblastoma		93.396	5R01CA214928-05	346,671	7,946
MnSOD Acetylation Promotes Cancer Stem Cell Phenotypes in Breast Cancer		93.396	5R01CA216882-05	448,536	—
Galpha13 and pancreatic cancer progression		93.396	5R01CA217907-05	478,299	—
Targeting Musashi-2 (MSI2) regulation of VEGFR2/VEGF-A in lung cancer		93.396	5R01CA218802-05	403,435	20,571
WEE1 inhibition and tumor immunity		93.396	5R01CA222963-05	284,620	—
Role of Desmoglein 1 in Keratinocyte-Melanocyte Communication and Melanoma		93.396	5R01CA228196-04 REVISED	375,925	14,630
Genetic mechanisms underlying sexual dimorphism in cancer and response to therapy		93.396	5R01CA229618-05	693,433	211,091
Targeting a Treg deubiquitinase in antitumor immune therapy		93.396	5R01CA232347-05	353,979	—
How Circulating Melanoma Cells Usurp the Leukocyte Transmigration Mechanism for Successful Metastasis		93.396	5R01CA236904-04	582,186	—
Understanding Progesterone Receptor action in Obesity for Endometrial Cancer Prevention		93.396	5R01CA243249-04	452,777	111,836
Molecular mechanisms underlying circulating tumor cell aggregation		93.396	5R01CA245699-03S1	416,512	—
Modeling the Glioblastoma Microenvironment to Uncover Progression Mechanisms and Therapeutic Targets		93.396	5R01CA247905-03	525,057	—
Therapeutic targeting of demethylation-deubiquitination axis in acute leukemia		93.396	5R01CA248770-02	(1,864)	—
The distinct role of cysteinyl leukotriene receptor for myeloid-derived suppressive cells		93.396	5R01CA250101-03	499,225	—
Reactive Oxygen Species in the Initiation, Survival and Racial Disparity of Uterine Leiomyoma		93.396	5R01CA254367-03	420,408	—
A non-canonical role for EZH2 in rRNA methylation		93.396	5R01CA256741-02	302,867	—
Comprehensive analyses of HOXB13-regulated transcriptional programs critical for prostate cancer progression		93.396	5R01CA257446-02 REVISED	374,915	—
A deubiquitination module controls Treg adaptation to tumor microenvironment		93.396	5R01CA257520-02 REVISED	413,968	—
KSHV-induced oncogenic changes in a primary human lymphatic endothelial cell model of Kaposi's Sarcoma		93.396	5R21CA265574-02	172,533	—
DISE - a natural cancer surveillance mechanism - a new road to cancer therapy		93.396	5R35CA197450-07	731,784	—
Mitochondrial metabolism and ROS regulate cancer		93.396	5R35CA197532-07	924,973	—
Bioinformatic Analysis of Next Generation Sequencing Data from Cancer Cells		93.396	5R50CA221848-05	171,068	—
Stinging the Glioma Immune Landscape		93.396	7R01NS120547-02	303,378	20,135
Matching panels of in vivo and in vitro model system of pediatric brain tumors	20	93.396	901599-NU AMD 1/5U01CA217613-02	27,771	—
				12,261,559	386,209
Northwestern University Center for Chromatin Nanolabeling in Cancer (NU-CCNIC)		93.397	1U54CA268084-01	428,836	—
Adapting Colorectal Cancer Screening Education Material for Two-Spirit, LGBTQIA, and Urban Native Americans	96	93.397	3P30CA016056-44S3	10,215	—
Spatio-Temporal Organization of Chromatin and Information Transfer in Cancer		93.397	3U54CA193419-05S1	477,099	34,349
The Northwestern University Cancer Health Equity Research SPORE (NU-CHERS)		93.397	5P20CA233304-03	685,813	—
The Robert H. Lurie Comprehensive Cancer Center		93.397	5P30CA060553-28	6,434,595	5,964
SPORE in Prostate Cancer		93.397	5P50CA180995-05	(11,328)	—
SPORE in Prostate Cancer		93.397	5P50CA180995-05	171,376	171,376
SPORE in Prostate Cancer		93.397	5P50CA180995-07	1,467,946	57,090

NORTHWESTERN UNIVERSITY
Supplementary Schedule of Expenditures of Federal Awards
Year ended August 31, 2022

Cluster title/Federal grantor/Subagency/Project title	Pass- through entity	Assistance listing number	Sponsor award number	Federal expenditures	Passed- through to subrecipients
SPORE for Translational Approaches to Brain Cancer		93.397	5P50CA221747-05	\$ 2,469,022	—
Nucleic Acid-Based Nanoconstructs for the Treatment of Cancer		93.397	5U54CA199091-05	(83,895)	—
1/3: The Chicago Cancer Health Equity Collaborative (ChicagoCHEC)		93.397	5U54CA203000-08	1,233,371	—
Epigenomic Biomarkers of HIV-Associated Cancers in Nigeria		93.397	5U54CA221205-05	600,845	158,554
				13,883,897	427,333
Elucidating transcriptional and epigenetic regulators of aggressive cutaneous T cell lymphoma		93.398	1F31CA268839-01	21,329	—
Mechanisms and therapeutic implications of temozolomide resistance in glioblastoma		93.398	1F32CA264883-01A1	12,143	—
Improving sleep in gynecologic cancer survivors		93.398	1K08CA247973-01A1	(6)	—
Carcinogenesis Training Program		93.398	2T32CA009560-36	37,204	—
Mechanisms of Translation Regulation by N4-acetylcytidine in Cancer Cells		93.398	4R00CA245035-03	234,728	—
Discovery of Small Molecule-Mediated Protein Degradation Pathways in Human Cancer		93.398	4R00CA248715-03	134,719	—
NIH NRSA Predoc Fellowship for Michael Raymond Drumm, AB.: Tissue factor regulation of receptor tyrosine kinases in glioblastoma		93.398	5F30CA243288-03	45,496	—
Elucidation of a structural rationale for the binding of Myc by small molecule inhibitors		93.398	5F30CA250196-03 REVISED	58,384	—
Investigating Mechanisms of Cancer Redox Homeostasis with Metabolic CRISPR-Based Screens		93.398	5F30CA250236-03	45,172	—
Mechanistic Basis of Resistance to Chemohormonal Treatment in Prostate Cancer		93.398	5F30CA250248-03	54,174	—
Development of Rationally Designed Cancer Vaccines using Protein-Like Polymers (PLPs)		93.398	5F30CA257519-02	37,639	—
Elucidating the Role of C16orf72 in the Cellular Stress Response Network		93.398	5F30CA264513-02	39,613	—
Dissecting mechanisms by which PD1 deletions drive aggressive cutaneous T cell lymphoma		93.398	5F30CA265107-02	29,940	—
The function of Ubiquitin-Specific Peptidase 22 (USP22) on T regulatory cell function, NRSA for Elena Montauti		93.398	5F31CA220801-04 REVISED	338	—
The design, synthesis, and characterization of potent and selective MEK7 inhibitors as targeted therapies for T-cell acute lymphoblastic leukemia		93.398	5F31CA228431-04 REVISED	38,648	—
Bioresponsive MR probes for imaging pancreatic cancer		93.398	5F31CA235997-04 REVISED	49,389	—
Irreversible Inhibition of Cerebellar Gli Transcription Factors by Cobalt (III) Complexes		93.398	5F31CA236175-04 REVISED	43,290	—
Development of Gd(III)-P(II) MR Probes for Tandem Detection & Chemotherapy		93.398	5F31CA239426-03 REVISED	16,007	—
A patient-specific hiPSC model of breast cancer to identify genetic determinants of subclonal response and resistance to PARP inhibitors		93.398	5F31CA247395-02	41,094	—
Synthesis, and Evaluation of Potent and Selective MEK4 Inhibitors as a Targeted Therapeutic for Metastatic Pancreatic Ductal Adenocarcinoma		93.398	5F31CA250353-02 REVISED	35,833	—
Ovarian Inflammation as a Mechanism for Ovarian Cancer – NRSA in support of Shweta Satish Dipali		93.398	5F31CA257300-02	46,957	—
Characterizing the role of SRCAP in Epidermal Homeostasis and Squamous Cell Carcinoma		93.398	5F31CA261114-02 REVISED	45,270	—
Top-down proteomic characterization of MEK/ERK in MAPK-driven cancers		93.398	5F32CA246894-02	52,488	—
Exosomal CD44 in the metastasis of triple negative breast cancer		93.398	5F32CA257345-02	39,716	—
Improving adherence to posttreatment follow-up care for rural lung cancer survivors through a community-clinical survivorship care team model		93.398	5K01CA262342-02	118,047	—
Development of a Novel Statewide Learning Collaborative to Increase Lung Cancer Guideline Adherence and Improve Cancer Care Delivery		93.398	5K07CA216330-05	148,835	—
A molecular informed therapy for Diffuse Intrinsic Pontine Gliomas (DIPG)		93.398	5K99CA234434-02	(2,206)	—
Carcinogenesis Training Program		93.398	5T32CA009560-35	343,971	—
Training Program in Signal Transduction and Cancer		93.398	5T32CA070085-25	192,945	—
Behavioral and Psychosocial Research Training in Cancer Prevention and Control		93.398	5T32CA193193-08	426,548	—
Collaborative Northwestern Surgical Oncology Research Training (CONSORT)		93.398	5T32CA247801-02	319,437	—
				2,747,142	—
SWOG NCORP Accrual Site	172	93.399	1014562_SWOG_Northwestern//2UG1CA189974-06	49,720	—
COVID-19: ECOG-ACRIN NCORP Research Base – CT	74	93.399	5UG1CA189828-07-NWU3//5UG1CA189828-07	97,482	30,073
Northwestern Cancer Prevention Consortium		93.399	5UG1CA242643-04	818,526	81,416
NRG Oncology NCORP Research Base	166	93.399	8/1(20)NCORP-CELLA-GY7//2UG1CA89867-07	17,852	—
Alliance Clinical Services Agreement for NCORP Trials-Federally Funded Payments	9	93.399	IL036/UG1CA189823	36,500	—
NCI Community Oncology Research Program (NCORP) Research Bases (UG1)	74	93.399	UG1CA189828-06-NWU1//2UG1CA189828-06 REVISED, 5UG1	179,240	—
ECOG-ACRIN NCORP Research Base: Cancer Care Delivery Research (CCDR)	74	93.399	UG1CA189828-06-NWU2//2UG1CA189828-06 REVISED, 5UG1	38,235	—
ECOG-ACRIN NCORP Research Base – CT – Pilot Study	74	93.399	UG1CA189828-07-NWU4//5UG1CA189828-07	21,164	—
ECOG-ACRIN NCORP Research Base-Clinical Trials-NWU6	74	93.399	UG1CA189828-07-NWU6//5UG1CA189828-08	38,034	—
ECOG-ACRIN NCORP Research Base-CCDR-NWU7	74	93.399	UG1CA189828-07-NWU7 Amend 1//5UG1CA189828-08	27,294	—
				1,324,047	111,489
Young Adult and Midlife Transitions in Physical Activity and Sedentary Behavior with Heart Failure Risk and Progression: Coronary Artery Risk Development in Young Adults (CARDIA)	234	93.837	000528250-SC001//5R01HL149796-01A2	186,386	—
Comprehensive Home-based Self-Management Support for COPD Patients	104	93.837	0255-C061-4609 // 5R34HL143747-03	12,203	—
AAA Geometric Surrogates – Geometric Surrogates for Clinical Management of Abdominal Aortic Aneurysms	291	93.837	1000001715/5R01HL121293-04	(13,782)	—
Risk Assessment of Cerebral Aneurysm Growth with 4D flow MRI	181	93.837	11001052-014//2R01HL115267-06A1	85,580	—
PRE-DETERMINE: Biologic Markers and MRI SCD Cohort Study	31	93.837	116706//R01HL091069	37,986	—
Machine Learning for the Automated Identification and Tracking of Rare Myocardial Diseases	31	93.837	120816//R01HL140731-04	276,707	—
Leveraging a Natural Experiment to Estimate the Effects of School Racial Segregation on Cardiovascular Risk Factors among Youth and Young Adults	242	93.837	12245sc AMD 2//R01HL151638	15,255	—
A first-in-class therapeutic to block ischemia/reperfusion injury following acute myocardial infarction	53	93.837	1225-SUB//U54HL119810-07	(995)	—
Cardiac Exosomes in myocardial Ischemic injury	31	93.837	123168 // 5R01HL150401-03	49,074	—
Intersection of Material Need Insecurities and Health Outcomes among People Living with HIV	242	93.837	12480sc Amend 01//SR01HL155226-02	13,915	—
Genomics of Post-Operative Atrial Fibrillation after Cardiac Surgery	31	93.837	125218//R01HL149998-02	48,237	—
Proteomics of Cardiovascular Risk: The Multiethnic Study of Atherosclerosis	242	93.837	129175C//R01HL159081-01	52,712	—
Metabolic deficits and mechanisms for heart failure in South Asians	242	93.837	129975C//R01HL149809-01A1	260,951	—
Impact of Disparities Affecting Survival among Advanced Heart Failure Patients and Transplant Recipients	53	93.837	1353-SUB//R01HL141892-04	4,657	—
The role of p21-activated Kinase (Pak1) in Atrial Fibrillation	195	93.837	14091801-Sub01//5R01HL128330-04	(22,091)	—
Cholesterol Regulation of Endothelial K ⁺ Channels	255	93.837	18591//2R01HL173965-14A1	30,574	—
Coronary Artery Calcium and its Association with Protective/Risk Factors and Epigenetic Patterns in Diverse US Hispanic/Latino Adults	255	93.837	18741 // R01HL152692-01A1	85,566	—
High-Definition Conformal Electronics for VIT/VF	88	93.837	19-S13-02//R01HL141470-03	66,009	—
Utilizing Patient-Specific hiPSC-CMs to Investigate Pediatric Calmodulinopathy (NRSA Predoc Fellowship for Katherine A. Fetterman, BA.)		93.837	1F31HL156596-02	40,103	—
Elucidating the Mechanisms by which Macrophages and their TAM Receptors Promote Cardiac Regeneration F31for Connor W Lantz		93.837	1F31HL158200-01A1 REVISED	19,147	—
A Mixed-Methods Evaluation of mHealth Weight Management for Racial/Ethnic Minorities		93.837	1F31HL162555-01A1	9,466	—
Non-contrast 3D T1p Mapping for Myocardial Fibrosis Quantification of Pediatric Cardiomyopathy Patients		93.837	1K99HL161469-01	35,907	—

NORTHWESTERN UNIVERSITY
 Supplementary Schedule of Expenditures of Federal Awards
 Year ended August 31, 2022

Cluster title/Federal grantor/Subagency/Project title	Pass-through entity	Assistance listing number	Sponsor award number	Federal expenditures	Passed-through to subrecipients
Role of mRNA-binding protein tristetraprolin in cardiac mRNA regulation and the development of heart failure		93.837	1R01HL155953-01A1	\$ 54,712	—
New roles of endothelial regrowth in ischemic tissue recovery and regeneration		93.837	1R01HL159976-01A1	198,822	—
Defining cellular mechanisms of chronic graft failure in transplanted hearts with single cell multi-omics		93.837	1R01HL160552-01	144,259	—
PRegnancy OuTcomes and subclinical Cardiovascular disease sTudy; (PROTECT)		93.837	1R01HL161514-01	147,269	816
Mitochondrial respiration as a regulator of lymphatic cell fate and therapeutic lymphangiogenesis		93.837	1R01HL162800-01A1	54,764	—
New Frontiers in Cardiovascular Research and Therapy		93.837	1R13HL160042-01	24,000	—
New and Disruptive Therapeutic Approaches to Target Fundamental Molecular Mechanisms Underlying Atrial Fibrillation		93.837	1R35HL161249-01	398,203	—
Optimizing the Implementation of a Population Panel Management Intervention in Safety-Net Clinics for Childhood Hypertension		93.837	1R56HL148192-01	181,406	56,025
Blood Pressure as a Modifiable Risk Factor for Cardiovascular Events in Liver Transplant Recipients		93.837	1R56HL155093-01	195,593	—
HeartShare DeCODE-HF: Data translation center to Combine Omics, Deep phenotyping, and Electronic health records for Heart Failure subtypes and treatment targets		93.837	1U54HL160273-01	762,257	—
2-Generation Interventions to Improve Cardiovascular Health in Indiana and Illinois Through Home Visiting (2-NOURISH)		93.837	1UG3HL163121-01	29,195	—
Interplay of Myocardial Fibrosis and Cardiac TTR Amyloidosis in Age-Related Cardiac Remodeling in MESA	126	93.837	2005511387 // 1R01HL159987-01A1	5,244	—
Effect of Hospital-Cardiologist Integration on Clinical Practice, Healthcare Quality, and Medicare Spending	88	93.837	20-M38 AMD3//5R01HL153154-03	219,957	—
Decrypting Variants of Uncertain Significance in Long-QT Syndrome		93.837	2R01HL122010-09	28,829	—
Implementing an evidence-based mHealth healthy diet and physical activity intervention: Make Better Choices 2 for rural Appalachians	260	93.837	3200004756-23-020//5R01HL152714-03	177,903	—
Pathogenesis of Heart Failure with Preserved Ejection Fraction in Chronic Kidney Disease		93.837	3K23HL150236-02S1	137,285	—
Decrypting Variants of Uncertain Significance in Long-QT Syndrome		93.837	3R01HL122010-08S1	1,136,598	621,209
Cardiomyopathy Genomes Project		93.837	3R01HL128075-08	497,288	106,902
An Interpersonal Relationships Intervention for Improving Cardiovascular Health in Youth		93.837	3R01HL136676-05S1	336,800	50,626
COVID-19: Administrative Supplement to Real-time Wideband Cardiac MRI for Patients with a Cardiac Implantable Electronic Device		93.837	3R01HL151079-01S1	91,467	—
Mitochondrial DNA, Nuclear DNA Methylation, and Cardiometabolic Disease Traits	30	93.837	4500004054 // 1R01HL55569-01A1	38,552	—
Racial/Ethnic Disparities in Heart Failure: A Cross-cohort collaboration	131	93.837	5001732-02-NORTH//5R01HL150170-02	93,381	—
Cook County Clinical Research Site (CC_CRS) of the MACS/WIHS Combined Cohort Study (MW_CCS)	98	93.837	50811-324-NWU//5U01HL146245-03 AMD 04	67,990	—
Metabolic pathways to cardiovascular disease: A multi-omics approach	274	93.837	5116709/5R01HL143885-03	23,569	—
Efficacy of Potassium Nitrate in Heart Failure with Preserved Ejection Fraction	279	93.837	574598 Amond 6//5R01HL121510-05	79,014	—
Early Psychosocial Intervention and Child and Parent Cardiovascular Disease Risk	175	93.837	5875-NU-DHHS-7809 AMD 4//HL137809	102,519	—
4D Flow MRI-based assessment of atrial fibrillation (NIH NRSA Predoc Fellowship for Liliana Ma, AB.)		93.837	5F30HL137279-04	4,136	—
4D Flow MRI for characterization of brain arteriovenous malformations		93.837	5F30HL140910-04	35,302	—
Defining regulatory regions for cardiomyopathy genes (NRSA, Predoc Fellowship for Anthony M. Gacita, BS.)		93.837	5F30HL142187-04	47,241	—
Evaluation of Aortic Hemodynamics and Compliance in Aortic Stenosis		93.837	5F30HL145995-04	46,969	—
Skin-like, stretchable, and wearable sensors for monitoring QT interval and hemodynamic variables in Atrial Fibrillation (Fellowship award for Andreas Tzvelis)		93.837	5F30HL157066-02 REVISED	30,485	—
Regulation of Cardiac Metabolism and Heart Failure by Tristetraprolin (NIH NRSA Predoc Fellowship for Adam de Jesus, BA.)		93.837	5F31HL132552-05	7,827	—
Alternative Mechanisms of Monocyte Transendothelial Migration in Inflammation (NRSA Predoc Fellowship for Margarette Clevenger)		93.837	5F31HL147413-03	52,908	—
Youth Exposure to Violence and Pulmonary and Cardiovascular Health: Meta- and Primary-Analytic Approaches to Understanding Mediators and Moderators.		93.837	5F31HL147509-03 REVISED	42,965	—
NRSA Predoc Fellowship for Emily Pinheiro: A Patient-Specific hiPSC Model of Nilotinib-Induced Peripheral Artery Disease Pharmacogenomics		93.837	5F31HL151160-03	38,692	—
Social Determinants of Health and Novel Prediction of Cardiovascular Health from Young Adulthood to Middle Age in the CARDIA Study		93.837	5F31HL151178-02	(4,349)	—
NIH NRSA Predoc Fellowship for Mallory Filipp; MerTK as a new target to understand and ameliorate HFpEF (Fellow-Mallory Filipp)		93.837	5F31HL156408-02 REVISED	40,872	—
Micropatterned surfaces for modeling muscular dystrophy-associated cardiomyopathy (NRSA Postdoc Fellowship for Dominic Edward Fullenkamp)		93.837	5F32HL154712-02S1	10,996	—
Predicting risk of cardiotoxicity among young and emerging adult breast cancer patients from treatment to survivorship		93.837	5K01HL152009-03	144,821	—
Modulation of Macrophage Function through Alternative Splicing in Cardiometabolic Diseases		93.837	5K08HL135348-04	(148)	—
Associations Among Apolipoprotein A1 Structural Variants and High-Density Lipoprotein Function		93.837	5K23HL133601-04	(37)	—
Implementation science to improve cardiovascular outcomes among liver transplant recipients		93.837	5K23HL136891-04	2,454	—
Electronic Health Record Nudges to Improve Quality of Care in Heart Failure		93.837	5K23HL155970-02	142,720	—
MASALA-2C: Multi-level Assessment of the South Asian Life-course of Atherosclerosis (2nd Generation Offspring Study)		93.837	5K23HL157766-02	121,038	—
Mentored patient-oriented research of novel mechanisms for cardiovascular disease in patients with chronic kidney disease		93.837	5K24HL150235-03	122,882	—
A Fully Biodegradable, Implantable, Wireless, Battery-free, Miniaturized Cardiac Pacemaker with Closed-loop System for Neonatal and Pediatric Patients		93.837	5K99HL155844-02	111,508	—
PAI-1 and Vascular Senescence		93.837	5R01HL051387-25	289,752	64,706
Sarcoglycan in Myopathy and Muscle Membrane Stability		93.837	5R01HL061322-23	313,390	—
Prox1 in Mammalian Lymphangiogenesis		93.837	5R01HL073402-19	19,686	—
Determinants, Trajectories, and Consequences of Abnormal Cardiac Mechanics		93.837	5R01HL107577-08	82,098	—
Functional Cardiovascular 4D MRI in Congenital Heart Disease		93.837	5R01HL115828-09	398,434	53,867
Precision MRI of Left Atrial Fibrosis for Patients with Atrial Fibrillation		93.837	5R01HL116895-07 REVISED	338,141	28,736
Comprehensive Cardiac Structure-Function Analysis in Heart Transplantation		93.837	5R01HL117888-07	495,904	28,496
Efferocytosis-Directed Inflammation Resolution and Repair in the Hypoxic Heart		93.837	5R01HL122309-08 REVISED	793,742	—
Childhood Origins of CHD Disparities: Neural & Immune Pathways		93.837	5R01HL122328-04 REVISED	(6,024)	—
Pathophysiological Significance of Atrial Fibrillation Electrogram Patterns		93.837	5R01HL125861-05	146,066	129,264
TELmisartan plus Exercise to improve functioning in PAD: The TELEX Trial		93.837	5R01HL126117-05	74,207	—
Mechanical circulatory support: Measures of adjustment and quality of life		93.837	5R01HL130502-05	138,473	5,202
Improve PAD PERFORMANCE with METformin. The PERMET Trial		93.837	5R01HL131771-05	382,839	50,032
Community Translation of the South Asian Healthy Lifestyle Intervention (SAHELI)		93.837	5R01HL132978-05	280,685	81,446
Metabolic Pathways Underlying the Contrasting Sodium-BP and DASH/OmniHeart-BP Relationships		93.837	5R01HL135486-04	205,293	91,923
Methods to Improve Personalized Cardiovascular Disease Prevention Across the Life Course		93.837	5R01HL136942-04	167,255	84,736
Rapid Real-Time Cardiovascular MRI for Detecting Coronary Artery Disease		93.837	5R01HL138578-03	50,765	—
Mechanistic insights into the deleterious effects of SIRT2 in the heart under stress conditions		93.837	5R01HL138982-04	280,412	—
TAM-Kinases in Transplant		93.837	5R01HL139812-04	444,172	277,686
Oxidative stress contributes to atrial fibrillation by causing remodeling of the autonomic nervous system		93.837	5R01HL140061-04 REVISED	235,864	—
Mechanistic insights into the role of mitochondrial iron in doxorubicin-induced cardiomyopathy using human induced pluripotent stem cells		93.837	5R01HL140927-03 Revised	342,613	—
Regulating fibrosis and growth through latent TGFbeta binding proteins		93.837	5R01HL140938-04	248,185	—
Mechanistic insights into HIV-mediated heart failure with preserved ejection fraction		93.837	5R01HL140973-04	545,473	—
Low-Profile 3D-Printed Radiopaque Bioresorbable Vascular Scaffolds		93.837	5R01HL141933-04	632,999	41,573
Spontaneous cardiac fibrosis in PAI-1-deficient mice and men: A rare mutation informs a common molecular pathophysiology		93.837	5R01HL142761-04 Revised	1,325,593	—
Molecular mechanisms of Foxo-mediated angiogenesis		93.837	5R01HL144129-04	392,289	—
Epigenetic Determinants of Lipoproteins Across the Early Adult Life Course		93.837	5R01HL146844-03 Revised	519,435	—
Pathogenesis of lung injury mediated by lung-restricted antibodies		93.837	5R01HL147290-04	783,556	100,014
Role of Spleen educated monocytes in mediating ischemia-reperfusion injury following lung transplant		93.837	5R01HL147575-04	679,429	—

NORTHWESTERN UNIVERSITY
 Supplementary Schedule of Expenditures of Federal Awards
 Year ended August 31, 2022

Cluster title/Federal grantor/Subagency/Project title	Pass- through entity	Assistance listing number	Sponsor award number	Federal expenditures	Passed- through to subrecipients
The role of airway epithelial CRAC channels in allergic lung inflammation		93.838	5F31HL151170-03	\$ 34,353	—
Determinants of age-related regulatory T cell function during influenza A virus-induced lung injury.		93.838	5F32HL151127-02	(4,332)	—
Mitochondrial metabolic regulation of lung epithelium: alveolar generation and regeneration		93.838	5K08HL143138-04	170,800	—
Single-Cell Transcriptomic Analysis to Identify Drivers of Pulmonary Fibrosis		93.838	5K08HL146943-02	(892)	—
Mechanisms of regulatory T-cell mediated endothelial repair following viral pneumonia in aged hosts		93.838	5K08HL159356-02	174,243	—
Pathophysiology of Acute Lung Injury		93.838	5P01HL071643-15	(144,744)	—
Mechanisms of Recovery from Viral Pneumonia		93.838	5P01HL154998-02	2,448,715	—
Transitions from Impaired Respiratory Health to Lung Disease		93.838	5R01HL122477-08	2,922,302	545,810
Hypercapnia and Suppression of Anti-viral Host Defense		93.838	5R01HL131745-03	(159)	—
Macrophage Modulation of Lung Fibrosis		93.838	5R01HL134375-04 REVISED	(40,677)	—
Wnt-beta-catenin cross interactions in alveolar macrophages and epithelial cells in persistence of SSc-ILD		93.838	5R01HL134800-04 revised	279,054	—
Donor nonclassical monocytes initiate lung injury following transplantation		93.838	5R01HL145478-04	888,106	—
Role of hypercapnia on the lung airways		93.838	5R01HL147070-04 REVISED	487,343	—
Regulation of airway epithelial cell-mediated inflammation by CRAC channels		93.838	5R01HL149385-04	355,909	17,708
Mechanisms of regulatory T cell-mediated recovery from severe influenza A virus infection		93.838	5R01HL149883-03 Revised	454,458	—
Lung transplant injury drives chronic lung allograft dysfunction via recruitment of monocyte-derived alveolar macrophages		93.838	5R01HL153312-03	593,105	—
Targeting linear ubiquitination to attenuate inflammation and promote repair after IAV infection		93.838	5R01HL154686-02	(3,936)	—
Patterns of Cardiopulmonary health across the life course		93.838	5R01HL159250-02	334,074	22,266
Training Program In Lung Sciences		93.838	5T32HL076139-14	(4,628)	—
Training Program In Lung Sciences		93.838	5T32HL076139-19	487,219	—
The American Lung Association (ALA) Lung Health Cohort		93.838	5U01HL146408-04	1,459,285	1,228,042
The Role of Placental Maternal Vascular Underperfusion in Neonatal Pulmonary Hypertension	241	93.838	705214/7R01HL139798-06	10,655	—
The Role of Placental Maternal Vascular Underperfusion in Neonatal Pulmonary Hypertension	20	93.838	A18-0219-S001-A02 – NU//5R01HL139798-05	1,503	—
Pulmonary Complications in a Birth Cohort after a Randomized Trial of Exposure to AntenatalCorticosteroids: the ALPS Follow-Up Study	88	93.838	Agmt 6/7/17//5R01HL098354-08	2,686	—
Losartan Effects on Emphysema Progression Trial (LEEP)	16	93.838	ALA-ACRC LEEP 6/1/2021 // 5U01HL128954-04	7,292	—
A novel data science and network analysis approach to quantifying facilitators and barriers of low tidal volume ventilation in an international consortium of medical centers	163	93.838	EHR17-325-S7//5R01HL140362-04	109,895	—
COVID-19: RECOVER-EHR-PCORnet Research Program	48	93.838	EHR-02-21 // OT2HL161847-01	104,362	—
Azithromycin and the Airway Microbiome In Asthma	244	93.838	FP064389-02 // 5R34HL136991-02	10,063	—
Chicago Metropolitan Asthma Consortium for severe/exacerbation-prone asthma	244	93.838	FP066077-A // 5U01HL139125-04	60,751	—
Third Coast HIV-related Cardiovascular and Sleep Disorders K12 Career Development Program (TC-CSK12)	244	93.838	FP068767-01 // SK12HL143959-03	141,118	—
Resolution of Diffuse Inflammatory Lung Injury in Neonatal Mice	48	93.838	GRT-00000547/PO No. 20203251//5R01HL114800-08	58,483	—
Pulmonary Complications in a Birth Cohort after a Randomized Trial of Exposure to Antenatal Corticosteroids: the ALPS Follow-Up Study	88	93.838	S-ALP1920-CF28//5R01HL098354-08	14,856	—
Role of TGFβ/BMP Antagonism in Regeneration of the AlveolarEpithelium After Lung Injury	268	93.838	SUBK00011547 Amnd 1//5R01HL147920-02	11,579	—
PAD2 and CitH3 in Pathogenesis of Sepsis-induced ALI	268	93.838	SUBK00014340/1R01HL155116-01A1	39,701	—
Mechanisms of Alveolar Homeostasis, Injury, Regeneration, and Fibrosis	268	93.838	SUBK00014970/1R35HL160770-01	3,970	—
				<u>12,358,592</u>	<u>1,813,826</u>
An ultra-low-input RNase footprinting assay to quantify cytosolic and mitochondrial translation simultaneously		93.839	1R01HL161389-01	138,049	—
Understanding thrombosis formation in myeloproliferative diseases		93.839	579931//5R01HL148014-03 AMD 2	75,690	—
Defining the Role of IQGAP1 in Leukocyte Transmigration in vitro and in vivo	279	93.839	5F30HL134202-05 REVISED	(176)	—
Tailored Adaptation of the AHRQ VTE QI Guide to Local Hospital Context.		93.839	5K08HL145139-04	176,109	—
Timeliness of Management of Trauma Related Hemorrhage and Trauma Related Coagulopathy		93.839	5K23HL157832-02	208,118	—
The roles of mDia2 in hematopoietic stem and progenitor cell engraftment and migration		93.839	5R01HL148012-03 REVISED	417,645	44,258
MOLECULAR MECHANISMS UNDERLYING CLONAL EXPANSION OF HEMATOPOIETIC STEM CELLS		93.839	5R01HL150624-04	582,796	—
The role of Pleckstrin-2 as a functional node in myeloid proliferation		93.839	5R01HL150729-08	497,267	35,967
Transendothelial Migration of Leukocytes: Developing New Paradigms in Health and Disease		93.839	5R35HL155652-02 REVISED	911,168	—
Leveraging the Microbiome, Local Admixture, and Machine Learning to Optimize Anticoagulant Pharmacogenomics in Medically Underserved Patients	235	93.839	638586 AMD//5R01HL158686-02	61,084	—
Vascular-Targeting Genomic and Genetic Strategies for Acute Chest Syndrome	112	93.839	7910_NW//5R01HL111656-08	8,797	—
Immunobiology of Transfusion	296	93.839	GB10756.169831//5P01HL132819-05	50,721	—
1/2 CATHETER-DIRECTED THERAPY FOR CHRONIC DVT(C-TRACT TRIAL)	311	93.839	WU-18-261//UG3HL138325	2,803	—
				<u>3,130,031</u>	<u>80,225</u>
Development and Validation of an Observational Rating System for Individual Tailoring in Family-Based Pediatric Obesity Interventions		93.840	1F31HL160534-01	20,629	—
The International Seminar on Cardiovascular Epidemiology and Prevention, 2020		93.840	1R13HL154583-01	16,856	—
Implementation and scale-up science of salt reduction policies in Nigeria	232	93.840	1UG3HL152381-01_NU_001//1UG3HL152381-01	170,536	—
Mentoring in community engaged implementation research to reduce cardiovascular disparities		93.840	5K24HL155897-02	124,722	—
Transforming Hypertension Management in Nigeria		93.840	5R01HL144708-03	344,932	287,615
A mixed methods study to identify and refine implementation strategies to increase use of cardiac rehabilitation for patients with heart failure		93.840	5R01HL146884-04	649,585	314,852
Community Intervention to Reduce Cardiovascular Disease in Chicago (CIRCL-Chicago)		93.840	5UG3HL154297-03	706,352	297,809
				<u>2,033,612</u>	<u>900,276</u>
Characterization of the lupus nephritis microRNome	234	93.846	000518393-002-A05//5R01AR073850-04	18,065	—
Molecular Pathways of Pain Generation in Osteoarthritis	195	93.846	10012005-Sub04//2R01AR060364-09A1	75,859	—
Osteoarthritis Progression And Sensory Pathway Alterations	195	93.846	12052504-Sub05//5R01AR064251-08 AMD 5	184,470	—
Knee Arthroplasty AcTivity (KaAT) Trial	31	93.846	124057//1U56AR075288-01A1	11,501	—
Regulation of T helper cell functions by aryl hydrocarbon receptor	31	93.846	125457//5R01AR078769-02	67,789	—
The Role of Mechanosensation Pathways in Osteoarthritis Joint Damage and Pain	195	93.846	19050702-Sub01//5R01AR077019-02	4,439	—
Mechanoregulation of the epidermal immune response: the role of desmoglein 1		93.846	1F32AR078645-01A1	59,125	—
Leveraging Community-Academic Partnerships and Social Networks to Disseminate Vaccine-Related Information and Increase Vaccine Uptake Among Black Individuals with Rheumatic Diseases		93.846	1R01AR080089-01A1	48,881	—
Investigate MOF regulated epigenetic mechanisms of skin development		93.846	1R01AR081103-01	95,669	—
Macrophage Heterogeneity in Rheumatoid Arthritis		93.846	1R01AR080513-01	130,620	—
Investigating immunophenotypic and transcriptional heterogeneity as biomarkers of pain centralization in rheumatoid arthritis		93.846	1R21AR080351-01	73,913	—
Identification of therapeutic small molecules for treatment of skin fibrosis by modulating epidermal pro-inflammatory signaling		93.846	1R21AR081475-01	11,116	—

NORTHWESTERN UNIVERSITY
 Supplementary Schedule of Expenditures of Federal Awards
 Year ended August 31, 2022

Cluster title/Federal grantor/Subagency/Project title	Pass-through entity	Assistance listing number	Sponsor award number	Federal expenditures	Passed-through to subrecipients
Metaorganismal TMAO pathway driving scleroderma pathogenesis: novel gene-environment interaction paradigm and therapeutic target		93.846	1R61AR076821-01 REVISED	\$ (46)	—
An In Silico, Medical Record-based Model for Understanding the Initiation of Autoimmune Events (IMMUNE)		93.846	1R61AR076824-01 REVISED	17,735	—
Chicago Center for Translational Research in Musculoskeletal Pain	195	93.846	20032404-Sub01 //1P30AR079206-01	170,681	—
SKOAP – A Sequenced-Strategy for Improving Outcomes in Patients with Knee Osteoarthritis Pain	126	93.846	2004852077//4UH3AR077360-02	98,344	—
Replacing Sedentary Time using an Innovative mHealth Intervention among Total Knee Replacement Patients	282	93.846	20-4064//1R21AR074780-01A1	(11,681)	—
Replacing Sedentary Time using an Innovative mHealth Intervention among Total Knee Replacement Patients	282	93.846	21-4358//5R21AR074780-03	29,497	—
Cadherin Clusters and actin filaments		93.846	2R01AR070166-06A1	277,425	—
Breaking down barriers: defining the role of EphA2 in building epidermal tight junctions in atopic dermatitis		93.846	3K01AR072773-03S1	79,545	—
New Directions in Biology and Disease of Skeletal Muscle		93.846	3R13AR078066-01S1	19,562	—
Evolving Adaptive and Effector Mechanisms from Pre-RA Through Established Disease	247	93.846	3UH2AR067681-05S3	457,658	—
Dose-specific Responsiveness of Glucocorticoid Receptor-driven Transcription in Skeletal Muscle (Predoc Fellowship for Isabella M. Salamone)		93.846	5F31AR073655-03	33,690	—
Quantifying the Biomechanical and Neural Factors Contributing to Shoulder Instability		93.846	5F31AR074288-03	(1,998)	—
Muscle-Tendon Structure and Function Following Chronic Limb-Shortening Imposed by Proximal Row Carpectomy		93.846	5F31AR076920-02 REVISED	(2,089)	—
Assessing contributions of muscular imbalance to shoulder osteoarthritis		93.846	5F31AR077426-03	37,952	—
Epidermal polarization: the desmosomal cadherin desmoglein 1 regulates tissue mechanics and barrier function		93.846	5K01AR075087-03	76,250	—
Core Center for Clinical Research at Northwestern University		93.846	5P30AR072579-05	660,038	9,081
Northwestern University Skin Disease Research Center Resource-based Center		93.846	5P30AR075049-03	671,041	—
Regulators of Epidermal Gene Expression		93.846	5R00AR065480-04	(220)	—
Function of Desmoglein 1/Pemphigus Follicle Antigen		93.846	5R01AR041836-29	344,016	—
Desmoplakin Assembly and Function in Epidermis		93.846	5R01AR043380-27	485,370	—
Inter-junctional signaling in epithelial junctional complex		93.846	5R01AR044016-24	293,909	—
CNS Pain Mechanisms in Early Rheumatoid Arthritis: Implications for the Acute to Chronic Pain Transition		93.846	5R01AR064850-09	675,401	385,468
Genetic Analysis of MicroRNA Functions in Skin Stem Cells In Vivo		93.846	5R01AR066703-09 REVISED	433,110	—
Glycosphingolipids Mediate Diabetic Wound Healing Impairment		93.846	5R01AR068375-05	(228)	—
Inflammatory arthritis: mechanistic insights into initiation and progression		93.846	5R01AR070025-05	275,085	—
Cadherin clusters and actin filaments		93.846	5R01AR070166-05	86,877	—
Lupus Intervention Fatigue Trial (LIFT)		93.846	5R01AR071091-05	612,608	118,744
Noninvasive tools for assessing muscle structure and function		93.846	5R01AR071162-05	263,296	137,217
Transcriptional regulation of skin stem cells and their niche		93.846	5R01AR071435-06	176,975	—
Supramolecular nanofibers for recombinant growth factor-free spine fusion		93.846	5R01AR072721-05	226,869	81,454
The molecular basis of Interleukin-31 driven itch		93.846	5R01AR073279-04	367,013	—
Brain Pathophysiology of Osteoarthritis Pain		93.846	5R01AR074274-04	776,994	—
Damage-Associated Molecular Patterns Driving Fibrosis Progression in Scleroderma		93.846	5R01AR074997-02	(104)	—
Epidermal Gene Regulation by Transcription Elongation and Termination		93.846	5R01AR075015-03	393,754	—
Synovial Macrophage Transcriptional Signatures for Predicting Therapeutic Efficacy		93.846	5R01AR075423-04	380,058	—
Neuron-Keratinocyte Communication in the Epidermis in Normal and Diabetic Wound Healing		93.846	5R01AR077691-03	695,959	—
Social Determinants and Timeliness of Total Knee Replacement: A National Perspective		93.846	5R01AR078342-02	369,861	80,631
Transcriptional Signature of Macrophages in SSC		93.846	5R21AR074902-02	(829)	—
Post Graduate Program in Cutaneous Biology		93.846	5T32AR060710-10	160,744	—
Translation of novel and repurposed drugs to address the acute and late effects of mustard exposure		93.846	5U01AR071168-05	543,356	5,117
Barrier Damage and The Immune Cascade: Northwestern University CounterACT Center of Excellence (NUCCX) *Admin Core A*		93.846	5U54AR079795-02	1,865,816	—
MicroRNA-mediated regulation in mammalian skin		93.846	7R01AR059697-11	89,107	—
The pregnancy transcriptome in rheumatoid arthritis		93.846	7R01AR073111-05	4,925	—
Pathogenic Wnt-beta catenin target genes in macrophages and fibrosis	318	93.846	GR106866CON-80001829) Amnd 2//5R01AR073270-02	417,260	—
ELLIPSS: ELucidating the Landscape of Immunomodulators in Psoriatic Skin and Synovium	281	93.846	SUB00000303/UR FAQ-GR532320//1UC2AR081029-01	6,217	—
Failed Regeneration in the Muscular Dystrophies: Inflammation, Fibrosis and Fat	251	93.846	SUB00001921//U54AR052646	(16,371)	—
Failed Regeneration in the Muscular Dystrophies: Inflammation, Fibrosis and Fat	251	93.846	SUB00002441//U54AR052646	(370)	—
Understanding and Improving Therapies for the Muscular Dystrophies	251	93.846	SUB00002813//2P50AR052646-16A1	7,907	—
Understanding and Improving Therapies for the Muscular Dystrophies	251	93.846	SUB00002815//2P50AR052646-16A1	296,270	—
Metaorganismal TMAO pathway driving scleroderma pathogenesis: novel gene-environment interaction paradigm and therapeutic target	268	93.846	SUBK00015632//7R61AR076821-02	108,674	—
Postdoctoral Rheumatology Training		93.846	T32AR007611-20	182,897	—
				13,917,307	817,712
Advancing Multiparametric Kidney Functional Magnetic Resonance Imaging to Identify Kidney Histopathologic Lesions	29	93.847	01_NWU_05439//5U2CDK114886-4	3,647	—
Evaluating Affective and Unified Behavioral Approaches to Reducing Diabetes Distress and Improving Glycemic Control	242	93.847	120299c//5R01DK121241-02	1,618	—
Phosphate Binder Therapy and Chronic Kidney Disease in Children	240	93.847	1652 G YA008//5U01DK122013-03	143,648	—
Mechanisms of diabetes from acute pancreatitis in African Americans and Hispanics	255	93.847	18174//U01DK127378-01 AMD 1	28,334	—
Biomechanical Mechanisms Underlying Pathologic Hepatic Stellate Cell Behavior in Liver Fibrosis		93.847	1F30DK129002-01A1	9,064	—
Role of FGF23 and Phosphate in Chronic Kidney Disease		93.847	1R01DK131046-01	424,875	—
Natural history, risk prediction and cost of cirrhosis in insured Americans.		93.847	1R01DK131164-01	165,713	—
Adaption, Implementation and Testing of a Telehealth Diabetes Discharge Intervention to Improve Transitions of Care		93.847	1R01DK131469-01	116,236	—
Macrophages and attenuation of inflammation resolution in APOL1 nephropathy		93.847	1R01DK131521-01	119,428	—
The role of DMP1 in FGF23-induced hypophosphatemia		93.847	1R01DK132342-01	251,652	—
Harnessing hypoxia responses to treat postischemic kidney injury and inflammation		93.847	1R01DK132672-01	293	—
A Micro-Randomized Trial to Optimize Just-in-Time Adaptive Intervention for Binge Eating & Weight-related Behaviors		93.847	1R01DK133300-01	1,726	—
Functional analysis of Claudin-2 in pancreatic ductal cells in health and disease		93.847	1R56DK124493-01	(503)	—
Expanding live donor kidney transplantation through advocacy training and social media	126	93.847	2003447902//5R01DK1119662-05	25,861	—
Wake Forest Collaborative Application for an APOLLO Clinical Center	310	93.847	287-32841-10000119551 // 5U01DK116040-04	30,176	—
Targeting Hypervigilance and Autonomic Arousal: the Psycho-physiologic Model of GERD		93.847	2R01DK092217-09	85,896	—
10/22 Limited Competition for the Continuation of the Diabetes Prevention Program Outcomes Study (DPPOS) – Clinical Center		93.847	2U01DK048380-28 REVISED	169,321	—
Dissecting the role of dynamic epigenome prompting pathways leading to kidney allograft fibrosis	263	93.847	3001055//R01DK122682-02	25,943	—
SenseWhy: Overeating in Obesity Through the Lens of Passive Sensing		93.847	3K25DK113242-04S1	208,774	—
Endothelial PHD2/HIF Axis in Ischemic Kidney Injury and Inflammation		93.847	3R01DK115850-05S1	422,733	—
NRSA Training Core		93.847	3TL1DK132769-02S1	151,963	—
Glycemic Profile of Pregnancy Consortium Biostatistics Research Center		93.847	3U01DK123759-02S1	1,646,617	923,312

NORTHWESTERN UNIVERSITY
 Supplementary Schedule of Expenditures of Federal Awards
 Year ended August 31, 2022

Cluster title/Federal grantor/Subagency/Project title	Pass-through entity	Assistance listing number	Sponsor award number	Federal expenditures	Passed-through to subrecipients
Exploring the Pathogenic Mechanisms of Batten's disease MFSDB mutations using patient iPSC derived neurons		93.853	1R21NS125847-01A1	\$ 66,743	—
Cysteine Depletion-induced Ferroptosis as a Therapeutic Vulnerability in Glioblastoma Temozolomide Resistance		93.853	1R21NS126810-01	29,213	—
Brainstem circuits of corticospinal neurons		93.853	1R34NS116713-01	218,660	—
Bidirectional circuits of locus ceruleus and motor cortex neurons		93.853	1R34NS127119-01	27,717	—
Understanding pathophysiological mechanisms underlying neurodegeneration		93.853	1R56NS108639-01A1	683	—
Mechanisms of cAMP dependent potentiation of mossy fiber synapses		93.853	1R56NS118888-01	(10,800)	—
Dementia Risk Prediction Pooling Project		93.853	1R61NS120245-01	523,104	72,455
Examining the role of glycosphingolipids in the progression and heterogeneity of synucleinopathies		93.853	1RF1NS109157-01 REVISED	419,543	—
Chicago Stroke Trials Consortium		93.853	1U24NS107233-01 REVISED	(435)	—
Chicago Stroke Trials Consortium		93.853	1U24NS107233-01 REVISED	(750)	(750)
Whole-brain recording into nucleic acids using template-independent polymerases		93.853	1U1NS107697-01	—	—
Whole-brain recording into nucleic acids using template-independent polymerases		93.853	1U1NS107697-01	7,182	7,182
Development of anti-LTBP4 as a biologic to treat Neuromuscular Diseases		93.853	1UG3NS127383-01	9,184	—
Hippocampal neural dynamics driving affiliation and attachment	240	93.853	2000 G YK444 // 1UF1NS122124-01 Revised	148,157	—
Training in Neurotherapeutics Discovery and Development for Academic Scientists	237	93.853	201602366-02/A17-0080-S002 Ammd 4//5R25NS099170-02	14,765	—
Examining the role of phosphatidylethanolamine and autophagic disruption in Lewy Body Dementias and Parkinson's disease	136	93.853	22-08-001//1R56NS114272-01A1	181,648	—
AT-HOME-PD	138	93.853	23297//5U01NS107009-04	52,313	—
Resilience, Dysregulation, and Rescue of Basal Ganglia Indirect Pathway Function in Progressive Parkinsonism		93.853	2R01NS041280-21A1	219,302	—
The role of a-synuclein accumulation in lysosomal hydrolase trafficking and function		93.853	2R01NS092823-06	2,656	—
Cellular Plasticity and equilibrium in GBM Progression		93.853	2R01NS096376-06A1	30,437	—
Mouse model studies of TMEM230-linked Parkinson's disease		93.853	2R01NS099623-06	212,344	—
Dopaminergic and Muscarinic Signaling in the Striatum		93.853	2R37NS034696-24 REVISED	790,216	—
Investigation of Pallidal Neurons in Motor Inhibition		93.853	2R56NS069777-11	151,101	—
Adhesion molecules and developmental epilepsy disorders		93.853	2R56NS100785-05A1	18,937	—
Cerebral Small Vessels in Motor and Cognitive Decline: Neuroimaging Signatures of Vulnerability & Resilience		93.853	2RF1NS085002-06	10,645	—
Fgl2 neutralizing therapy for inducing tumor specific brain resident immune memory against CNS tumor relapse	293	93.853	3001813107//1R01NS122857-01	73,210	—
Imaging excitatory synaptic input to hippocampal dendritic segments during spatial navigation.		93.853	3F32NS116023-02S1	38,044	—
Measuring Electrical Activity from the Human Brain to Predict Memory Formation and Behavior Across the Lifespan		93.853	3R00NS115918-03S1	140,275	—
LRRK2-mediated molecular and synaptic events in the striatum		93.853	3R01NS097901-05S1	163,250	—
A wireless, closed-loop neural probe for optogenetics, pharmacology and neurochemical monitoring	248	93.853	431257//RF1NS118287	384,741	—
The influence of 3D printed prostheses on neural activation patterns of the primary motor cortex in children with unilateral congenital upper-limb red	271	93.853	44-1014-1005-202//5R01NS114282-02	944	—
Online education for high school students to reduce HIV and related sexual behavior risk	30	93.853	45003971//1R21HD105482-01	37,625	—
A novel blood-CSF adaptive immune response in Alzheimer's disease		93.853	4R00NS112458-03	174,965	—
The role of ATP13A2/PARK9 in secretion of exosomes and alpha synuclein		93.853	4R37NS096241-05	6,608	—
Functional Annotation of a Comprehensive Set of SCN2A Variants	33	93.853	5001370-5500001215//5R21NS110355-02	1,307	—
StretchfMRI: a new technique to study the brainstem correlates of long-latency responses	30	93.853	56808 AMD 1//R21NS111310	3,308	—
The Use of Eye Movement Testing to Detect Neurocognitive Change Associated with Subconcussive Impacts	250	93.853	5F31NS106840-02 REVISED	566	—
NIH NRSA Predoctoral Fellowship Award for Michael Iorga: Intraoperative Functional Mapping Using Infrared Thermography		93.853	5F31NS115362-03 REVISED	25,836	—
A Predictive Model for Assessment of CSF Flow Through Ventricular Shunts		93.853	5F31NS115422-03	39,301	—
Providing proprioceptive information through biomimetic multi-electrode stimulation patterns		93.853	5F31NS115478-02	30,149	—
A subtype-specific ablation of dopamine neurons to mimic human Parkinson's disease		93.853	5F31NS115524-03	48,757	—
Effects of oxaliplatin-based chemotherapy on proprioception in cancer survivors		93.853	5F31NS118852-02	42,252	—
Trigeminal Nerve Stimulation in Chronic Hemiparetic Stroke		93.853	5F31NS120500-02	43,438	—
EEG Correlates of Inhibitory Control During STN Deep Brain Stimulation		93.853	5F31NS120695-02	46,006	—
Feedback loops of the vestibulocerebellum		93.853	5F31NS120738-02 REVISED	30,736	—
NRSA in support of Maria Milagros Pereira Luppi: The role of transcription factor SOX6 in midbrain dopamine neuron lineage and molecular diversity		93.853	5F31NS122481-02	44,003	—
Characterization of a Novel Ataxia Fellowship (NRSA Predoc Fellowship for Alexander Telenson, MS.)		93.853	5F31NS122495-02	41,162	—
Identification of Biomarkers Reflecting Homeostatic Sleep Drive		93.853	5F32NS110183-03	(120)	—
Cerebellar Modulation of Innate Defending Behaviors		93.853	5K99NS119783-02	139,707	—
Molecular mechanisms underlying mitochondria-lysosome membrane contact sites in neuronal function and neurodegeneration		93.853	5R00NS109252-04	358,197	—
Targeting the Integrated Stress Response to Protect Oligodendrocyte Lineage Cells		93.853	5R01NS034939-22	457,179	—
Myoferlin in muscle membrane fusion and repair		93.853	5R01NS047726-17	152,183	—
A primate model of an intra-cortically controlled FES prosthesis for grasp		93.853	5R01NS053603-15	683,993	—
Combined Approach to the Genetic Basis of Epilepsy		93.853	5R01NS053792-17	(1)	—
Store-Operated Channels in the Nervous System		93.853	5R01NS057499-13 REVISED	(7,477)	—
Store-operated channels in the nervous system		93.853	5R01NS057499-15	271,272	—
The Loss of Independent Joint Control of the Upper Limb in Spastic Hemiparetic CP		93.853	5R01NS058674-09 REVISED	383,433	—
Synaptic Circuit Organization of Motor Cortex		93.853	5R01NS061963-15	403,797	—
Cajal-Retzius cells and neuronal signaling in postnatal cortical networks		93.853	5R01NS064135-13	336,333	—
ZFP24 Control of the myelination program of oligodendrocytes		93.853	5R01NS067550-08	424,232	—
GABAergic Signaling in the External Globus Pallidus		93.853	5R01NS069777-10	168,576	—
The Role of Lysosomal Glucocerebrosidase in Synucleinopathies		93.853	5R01NS076054-10	(234,310)	—
Understanding the Cellular Basis of Movement Disorders		93.853	5R01NS082351-09	514,770	—
Genetic Modifiers of Childhood Epilepsy		93.853	5R01NS084959-08	757,410	—
Concordance of TDP-43 Inclusions with Cortical Atrophy and Clinical Phenotype		93.853	5R01NS085770-08	654,597	221,919
Neurogenetic Approaches to Study Directed Behavior in Drosophila		93.853	5R01NS086859-09	485,321	—
Mechanisms Underlying Tau45-230-Induced Neuronal Degeneration		93.853	5R01NS090993-05	(495)	—
Functional Segregation Within the Whisker-Barrel Neuraxis		93.853	5R01NS091439-5	29,608	—
The role of a-synuclein accumulation in lysosomal hydrolase trafficking and function		93.853	5R01NS092823-05	(71)	—
Effect of Unilateral and Bilateral STN Stimulation on Eye-Hand Coordination		93.853	5R01NS092950-05	199,673	—
Coding properties of Vibrissal-Responsive Trigeminal Ganglion Neurons		93.853	5R01NS093585-05	99,499	—
Glioblastoma Phenotype Modulation Through miRNA Control of Wnt Signaling		93.853	5R01NS093843-05	(405)	—
Biomimetic Somatosensory Feedback through Intracortical microstimulation		93.853	5R01NS095251-05	277,252	146,993
Autophagy Regulation of Glioblastoma Tumorigenesis and Responses to Therapy		93.853	5R01NS095634-05	(2,425)	—
Radiation + Temozolomide Induced Mutation and Malignant Progression of GBM		93.853	5R01NS095642-05	47,333	—

NORTHWESTERN UNIVERSITY
 Supplementary Schedule of Expenditures of Federal Awards
 Year ended August 31, 2022

Cluster title/Federal grantor/Subagency/Project title	Pass-through entity	Assistance listing number	Sponsor award number	Federal expenditures	Passed-through to subrecipients
Microcircuits of the Subiculum and Epilepsy		93.853	5R01NS096092-05	\$ 345,499	—
Cellular plasticity and equilibrium in GBM progression		93.853	5R01NS096376-05	86,434	12,440
AMPK, metabolism and ALS		93.853	5R01NS096746-06	(16,570)	—
AMPK, metabolism and ALS		93.853	5R01NS096746-06	18,865	18,865
IDO1 and immunotolerance in glioblastoma.		93.853	5R01NS097851-05	(10,902)	—
IDO1 and Immunotolerance in Glioblastoma		93.853	5R01NS097851-07	512,377	—
The Human Motor Output Map		93.853	5R01NS098509-05	112,588	45,499
The role of amyloid precursor protein in HIV-1 replication and associated neurodegeneration		93.853	5R01NS099064-05	246,383	—
A wearable myoelectric computer interface to reduce muscle co-activation in acute and chronic stroke		93.853	5R01NS099210-05	156,371	19,545
Regulation of CD4+ T cell-mediated Demyelination Following Oligo Ablation		93.853	5R01NS099334-05	370,770	—
Mouse model studies of TMEM230-linked Parkinson's disease		93.853	5R01NS099623-05	(376)	—
Mouse model studies of TMEM230-linked Parkinson's disease		93.853	5R01NS099623-05	30,334	30,334
Investigation of ALS caused by mutant CHCHD10		93.853	5R01NS099638-05	329,300	48,556
Postsynaptic functions of neuronal adhesion molecules: focus on Cntnap2		93.853	5R01NS100785-04	(2,651)	—
Subcortical auditory processing in sports-related concussions and contact/collision sports		93.853	5R01NS102600-05	542,056	—
Tissue Factor as a Key Determinant of IDH1 Mutant versus IDH1 Wild-type Glioma Thrombosis and Malignancy		93.853	5R01NS102669-05	325,185	—
Determining How Defective Nucleo-Cytoplasmic Trafficking Leads To Neurodegeneration In C9orf72-Related ALS And FTD		93.853	5R01NS104219-05	236,732	53,944
Cellular and Molecular Role of CXCR4 signaling in Painful Diabetic Neuropathy		93.853	5R01NS104295-05	201,175	—
Deciphering the Roles of Kainate Receptors in Developing CNS Circuits		93.853	5R01NS105052-05	542,625	—
Contralesional Corticobulbospinal Structural and Functional Changes Post Stroke: Biomarkers for the upper limb flexion synergy		93.853	5R01NS105759-04	388,857	566
Genetic Approaches to Optimize CAR T cells for Glioblastoma Therapy		93.853	5R01NS106379-05	402,791	126,226
Molecular Mechanisms Integrating Circadian Timing and Photic Signaling		93.853	5R01NS106955-05 REVISED	324,758	—
The Role of Mitochondria in TDP-43 Proteinopathy		93.853	5R01NS107396-07	219	—
Mechanisms of striatal structural and functional plasticity.		93.853	5R01NS107539-05	251,328	—
Reversible mRNA methylation in oligodendrocyte development and CNS myelination		93.853	5R01NS109372-05	330,309	—
Mechanisms of electrical stimulation of a canonical motor microcircuit		93.853	5R01NS109552-05	545,228	—
Role of Host Cell Factors in Newborn Herpes Simplex Virus (HSV) Encephalitis		93.853	5R01NS110631-04	254,709	—
MAPK as target of glioma immunoeediting by CD8 T-cells, and predictor of response to immunotherapy		93.853	5R01NS110703-03 REVISED	250,769	—
Hemostasis, Hematoma Expansion, and Outcomes After Intracerebral Hemorrhage		93.853	5R01NS110779-04	484,448	114,141
Motoneuron mortality in neurodegenerative diseases induced by homeostatic dysregulation of excitability		93.853	5R01NS110953-04	504,692	258,497
Modulation of the prefrontal cortical network in neuropathic pain		93.853	5R01NS112292-03	621,748	18,615
Optimizing the restoration and rehabilitation of function using cortically controlled FES following SCI		93.853	5R01NS112535-04	378,275	105,958
Role of purine metabolism in chemoresistance		93.853	5R01NS112856-04	325,771	—
Combining myoelectric training with sleep-based memory reactivation to improve motor recovery after stroke		93.853	5R01NS112942-04	786,080	—
SLFN5: A Novel Therapeutic Target for Glioblastoma		93.853	5R01NS113352-04	370,083	—
Development of Novel MNK Inhibitors for Treating Glioblastoma		93.853	5R01NS113425-04	505,361	—
Cellular mechanisms of hippocampal network neuroplasticity generated by brain stimulation		93.853	5R01NS113804-04	1,090,387	228,449
Neuronal excitability and copy number variation disorders		93.853	5R01NS114977-03	1,061,799	63,810
Role of Protein Methylation in Cell Mitosis and Glioblastoma		93.853	5R01NS115403-03	454,964	16,253
Glutamate receptor signaling pathways in the circuit integration of adult-born neurons		93.853	5R01NS115471-03	601,390	32,929
Regulation of synaptic plasticity and cognitive functions by store-operated Orai1 channels		93.853	5R01NS115508-03	507,068	11,880
Real-Time Tracking of Gene Therapy by Bioactivated MR contrast Probes		93.853	5R01NS115571-03	490,507	260,273
Arginine Metabolism Regulates Myeloid Immune Suppression in Glioblastoma		93.853	5R01NS115955-03 REVISED	373,559	—
High-resolution Infrared Thermal Imaging (ITI) for Simultaneous Functional Mapping of the Entire Craniotomy in Awake Patients		93.853	5R01NS116190-02 REVISED	272,522	—
Models of rodent facial musculature for the study of active tactile sensing		93.853	5R01NS116277-03	291,587	—
Interaction between Tissue Factor, Junctional Adhesion Molecule-A, and Integrin B1 to drive self-renewal in glioblastoma		93.853	5R01NS117104-03 REVISED	265,609	76,976
Immune-modifying nanoparticles for the treatment of traumatic brain injury		93.853	5R01NS117476-03	461,433	—
Neuronal roles of Parkinsons Disease Vps13C in regulating autophagy and calcium dynamics		93.853	5R01NS117750-03	403,552	—
Targeting IDH mutations to improve seizure control in glioma patients		93.853	5R01NS118039-03	586,847	—
Mechanisms of gene regulation and RNA processing in synucleinopathies		93.853	5R01NS118824-03	546,190	—
Development of a novel therapeutic strategy for treatment of SOD1-linked ALS by CRISPR/Cas9-mediated SOD1 promoter editing		93.853	5R01NS118928-03	294,779	—
Developmental underpinnings of substantia nigra vulnerability		93.853	5R01NS119690-02	363,426	—
The role of the cortex and brainstem in motor preparation for proximal and distal upper extremity movements		93.853	5R01NS120226-02	241,204	—
Determinants of Basal Ganglia Pathology in Parkinson's Disease		93.853	5R01NS121174-02	668,134	—
Understanding the Behavior of Novel IL13Ralpha2-directed T cell Engager for GBM		93.853	5R01NS122395-02	321,731	20,608
Dopamine, Synaptic Plasticity and Striatal Ensemble Dynamics Underlying Motor Learning		93.853	5R01NS122840-02	443,616	—
RAO23 Control of ALS phenotypes		93.853	5R01NS122908-02	473,198	—
Newly Inactivated GABA Aminotransferase for Epilepsy and Neuropathic Pain		93.853	5R01NS123057-02	303,998	17,539
Mechanisms of Genome Architecture Regulation in Motor Learning		93.853	5R01NS123285-02	568,244	—
A Novel approach to therapy in ALS and ALS/Dementia using new insights from ALS5/SPG11		93.853	5R21NS109917-02	(3,491)	—
The Role of Aortic-Carotid Hemodynamics and Aberrant Flow in HIV Cerebral Injury		93.853	5R21NS122511-02	114,119	—
Characterized Adult Primary Human Microglia Cells for Research		93.853	5R24NS104160-04	213,428	—
Research Education Program for Trainees in Neurology		93.853	5R25NS070695-13	171,375	—
Synaptic Coding in the Cerebellar Corticonuclear Circuit		93.853	5R35NS116854-03	572,147	—
Mechanistic Analysis of Genetic Modifiers in Parkinson's Disease		93.853	5R35NS122257-02	756,222	—
Synaptic Transmission, Plasticity, and Integration in the Subthalamic Nucleus		93.853	5R37NS041280-20	54,638	—
General Motor Control Mechanisms and Disease Training Program		93.853	5T32NS041234-20	280,345	—
TRAINING PROGRAM IN THE NEUROSCIENCE OF HUMAN COGNITION		93.853	5T32NS047987-15	291,476	—
Clinical Coordination Center for STEADY-PD3		93.853	5U01NS080818-04	436,145	334,033
Study in Parkinson Disease of Exercise Phase 3 Clinical Trial: SPARX3		93.853	5U01NS113851-02	2,218,634	937,923
Clinical Research Sites for the Network of Excellence in Neuroscience Clinical Trials (NEXT Sites)		93.853	5U24NS107213-05	304,339	—
Channelopathy-Associated Epilepsy Research Center		93.853	5U45NS108874-05	1,216,546	675,980
MyCog – Rapid detection of cognitive impairment in everyday clinical settings		93.853	5U45NS108874-05	1,242,870	—
Maternal Outcomes and Neurodevelopmental Effects of Antiepileptic Drugs (MONEAD) II	207	93.853	61869966-125439/5U01NS038455-20	132,740	—
Perfusion imaging to identify posterior circulation candidates for thrombectomy (PRECISE)	207	93.853	62747531-193654/1R01NS121720-01	1,866	—

NORTHWESTERN UNIVERSITY
 Supplementary Schedule of Expenditures of Federal Awards
 Year ended August 31, 2022

Cluster title/Federal grantor/Subagency/Project title	Pass-through entity	Assistance listing number	Sponsor award number	Federal expenditures	Passed-through to subrecipients
Epigenetic Regulation of Nerve Injury	298	93.853	761K946//5R01NS100510-05	\$ 29,495	—
Alpha-synuclein biomarkers in Parkinson disease		93.853	7K08NS093127-06	140,434	—
Role of Inflammation in Progressive Multifocal Leukoencephalopathy		93.853	7R01NS047029-16	4,052	—
An Intracellular Brain-Computer Interface Model for High-Efficiency Development of Closed-Loop Neural Decoding Algorithms.	81	93.853	800010796-01UG/000153//R01NS109257	92,844	—
Safety and Cognitive Effects of Acute Intermittent Hypoxia-Induced Neuroplasticity in TBI	186	93.853	80255-02//1R21NS114815	121,616	—
Targeting Transcriptional Elongation in Pediatric Glioma	20	93.853	901657-NU//1R01NS126513-01	3,063	—
From Neural Control of Movement to Treatments for Spinal Cord Injury	186	93.853	9833//1R35NS122336-01	87,259	—
Perinatal Arterial Stroke (PAS): A Phase III Multi-site Trial of I-ACQUIRE	20	93.853	Agmt 3/3/20//1U01NS106655-01A1	10,258	—
MACC/EPIC-Net as a Hub for the HEAL Initiative EPIC-Net	142	93.853	AGMT 5/20/21// 1U24NS115679-01 REVISED	7,439	—
NN108: Topiramate as a disease altering therapy for Cryptogenic Sensory Peripheral Neuropathy (CSPN)	138	93.853	Agmt Signed 02/27/12//U01NS095388	20,277	—
Clinical Trial Readiness for SCA1 and SCA3	145	93.853	AGMT00004439AM1//5U01NS104326-04	10,706	—
MR Imaging of Bioscaffold-Induced Neural Progenitor Migration	280	93.853	AWD00004190 (136332-1)//1R01NS122768-02	83,919	—
Predicting Stroke Risk in Intracranial Atherosclerotic Disease with Novel High Resolution, Functional and Molecular MRI Techniques	244	93.853	AWD101460 (SUB00000411)//5R01NS114632-02	203,252	—
The Interplay between Kinematic and Force Representations in Motor and Somatosensory Cortices during Reaching, Grasping, and Object Transport	244	93.853	AWD102733 (SUB00000633)//1R01NS125270-01	69,367	—
Role of interneurons in brain tissue oxygen regulation	163	93.853	EH17-251-S1//5R01NS107383-04	54,938	—
Probing Somatosensory Representations in the Cuneate Nucleus of Awake Primates	244	93.853	FP060211//5R01NS095162-02	(12,679)	—
Cell Type Specific Genetic Manipulation to Dissect Cholinergic Interneuron Function and Plasticity in a Symptomatic Model of DYT1 Dystonia	294	93.853	GMO210305 PO 0000002283 02//5R01NS110853-02	56,476	—
et	142	93.853	MCW Signed 05/17/22//5U24NS100648-05	3,920	—
(CREST-2) Trial: Carotid Revascularization and Medical Management for Asymptomatic Carotid Stenosis Trial	141	93.853	NWU-224063-03//5U01NS080168-07	(63,884)	—
LRP4 signaling in neuromuscular junction formation	41	93.853	SPN pending RES51337//2R01NS082007-09	(653)	—
Molecular and cellular dissection of the pathogenesis of herpes simplex encephalitis with iPSC-derived CNS and PNS cells	193	93.853	SUB00000183 // 5R01NS072381-11	145,747	—
Web-based Automated Imaging Differentiation of Parkinsonism	251	93.853	SUB00002638//U01NS119562	2,480	—
Multiparameter Variant Prediction (MVP) in Epilepsy	268	93.853	SUBK00011889//1 U54 NS117170-01	144,581	—
NN110 - A Dose Selection Trial of Light Therapy for Impaired Sleep in Parkinson's Disease	138	93.853	U01NS114001	25,164	—
Neuroimaging Biomarkers in Parkinsonism: Differentiating Subtypes and Tracking Disease Progression	251	93.853	UFDS00011947//U01NS102038	(102)	—
Revealing neural circuits underlying zebrafish behavior using mesoscopic light field microscopy	311	93.853	WU-22-0102//1R34NS123913-01	39,646	—
				<u>45,827,378</u>	<u>3,977,638</u>
COVID-19: ACTG A5401 Protocol Funds (PF): Adaptive Platform Treatment Trial for Outpatients with COVID-19 ("A5401")	240	93.855	(A5401) 1560 B WA693 // 3UM1A1068636-14S2	(35,163)	—
Fecal Microbiota Transplant for C. Difficile Infection in Solid Organ Transplant Recipients	298	93.855	000001731//5U01AI125053-04	32,693	—
COVID-19: CoVPN Site Preparedness & CoVPN 3006	83	93.855	0001060752 // 3UM1A1068614-14S1	13,980	—
COVID-19: CoVPN 3006 Protocol Funding (Fixed-Price)	83	93.855	0001062455 Amnd 3//3 UM1 A1068614-15S1	22,357	—
ZIP Immunology Consensus Substudy	104	93.855	0255-8661-4609//5U19A1118610-03	(2,854)	—
Fluomics: The Next Generation	104	93.855	0255-A135-4609-04 // 5U19A1135972-05	148,079	—
Dengue Human Immunology Project Consortium (DHIPC) Core B	104	93.855	0255-C164-4609//5U19A1118610-07	328,092	—
Novel Therapies to Modulate the Inflammatory Alloresponse in Renal Grafts (CTOT-21)	242	93.855	11156sc // U01AI113362	(24)	—
Applying precision Medicine to optimize desensitization with novel, bIOlogics or cellular theRAPies in highly sensiTized kidney transplant patEnts (AMELIORATE)	242	93.855	13136SC//2U01AI113362-08	30,864	—
QCRG Pandemic Response Program	242	93.855	13650sc//1U19AI171110-01	16,964	—
COVID-19 CoVPN Protocol 3003/Janssen	240	93.855	1560 B YB245 AMD 5 // 5UM1A1068636-16	65,749	—
ACTG UCLA Protocol Funds	240	93.855	1560 B YB245//2UM1A1068636-15	186,371	—
COVID-19: ACTG CoVPN Startup Fund	240	93.855	1560 B YB245-06//UM1A1068636	157,667	—
ACTG Taiwo AEC Committee Support	240	93.855	1560 G YB311 // 2UM1A1068636-15	1,960	—
AIDS Clinical Trials Group for Research on Therapeutics for HIV and Related Infections [ACTG LOC: TSG-Sci Comm-DMC]	240	93.855	1560 G YB416//2UM1A1068636-15	32,344	—
ACTG A5322 Protocol Vice Chair Support	240	93.855	1560 G YB96//2UM1A1068636-15	993	—
ACTG A5322 Protocol Co-Chair Support	240	93.855	1560 G YB697//2UM1A1068636-15	3,313	—
ACTG A5357 Protocol Co-Chair Support	240	93.855	1560 G YB703 Amnd 2//5UM1A1068636-16	4,021	—
AIDS Clinical Trials Group for Research on Therapeutics for HIV and Related Infections [ACTG LOC: Chair A5382]	240	93.855	1560 G YB704 Amnd 2 // 2UM1A1068636-16	24,108	—
AIDS Clinical Trials Group for Research on Therapeutics for HIV and Related Infections [ACTG LOC: Chair A5392]	240	93.855	1560 G YB725 Amnd 2//5UM1A1068636-16	10,956	—
AIDS Clinical Trials Group for Research on Therapeutics for HIV and Related Infections [ACTG CF TSG CR]	240	93.855	1560 G ZB055//5UM1A1068636-16	4,163	—
AIDS Clinical Trials Group for Research on Therapeutics for HIV and Related Infections [ACTG LOC: Chair Support]	240	93.855	1560 G ZB235//2UM1A1068636-15	4,417	—
Intervention to Reduce Early Peanut Allergy in Children (IREACH)	20	93.855	19-0148-S001//5U01AI138907-03	483,141	—
Combining Bacterial Glycosylation Tools and Nanotechnology to Optimize Siglec Ligands for the Treatment of Allergy and Anaphylaxis	93.855	93.855	1F31AI165279-01	28,883	—
Multi-Scale Evaluation and Mitigation of Toxicities Following Internal Radionuclide Contamination	93.855	93.855	1P01AI165380-01	201,543	—
The Relationship Between Brain Macrophages and Cognitive Dysfunction in Systemic Lupus Erythematosus	93.855	93.855	1R01AI170938-01	19,711	—
HIV immune environment impact on pre-eclampsia	93.855	93.855	1R03AI170156-01A1	12,853	—
Lakeside Conference on Protein Toxins and Effectors 2021	93.855	93.855	1R13AI154685-01A1	5,795	—
Elucidating a novel regulator of inflammation: the TLR4-Inhibitory Complex (TIC)	93.855	93.855	1R21AI131179-01A1	6,446	—
Stenotrophomonas Maltophilia Type IV Secretion: Modulator of Both Host-Cell Apoptosis and Interbacterial Killing	93.855	93.855	1R21AI139595-01A1	95,297	—
The Role of Social, Economic and Environmental Factors in Food Allergy Disparities	93.855	93.855	1R21AI159662-01A1	65,033	—
Targeting Ischemia/Reperfusion Stress to Inhibit Cytomegalovirus Reactivation After Lung Transplant	93.855	93.855	1R21AI163876-01A1	80,566	—
Novel Short ACE2 variant for Delayed Graft Function	93.855	93.855	1R21AI166940-01	164,334	—
Differentiating clinical characteristics between two subtypes of antiphosphatidylethanolamine	93.855	93.855	1R21AI171491-01	27,380	—
TGFBR1 Blockade as Novel Release and Kill HIV Strategy	93.855	93.855	1R56AI157822-01A1	536,890	238,132
HOPE in Action: A clinical trial of HIV-to-HIV deceased donor kidney transplantation	126	93.855	2003649393 Amnd 4//5U01AI134591-05 Revised	10,835	—
HOPE in Action: A Clinical Trial of HIV-to-HIV Liver Transplantation	126	93.855	2004130714//5U01AI138897-03	4,363	—
NEW HORIZONS IN THE PREVENTION AND TREATMENT OF FOOD ALLERGY - SUNBEAM	126	93.855	2004789504//5UM2A1130836-05	271,516	102,746
Modulation of Lung Immune Responses to Viral Infection	122	93.855	210310-0223-23//5U19AI142733-04	8,461	—
Partnering and Programming for a BIPOC SGM Runway to HIV Research	88	93.855	21-M107//5P30AI117970-07	75,621	—
Regulation of SAMHD1 antiviral activity.	4	93.855	2R01A1150455-08//311789 AMND 3	21,897	—
Vibrio MARTX toxin effectors in signaling and pathogenesis	93.855	93.855	2R01AI092825-11	439,102	—
Population Analysis of Pseudomonas aeruginosa Virulence	93.855	93.855	2R01AI118257-07	331,989	—
Poxvirus manipulation of the host cell protein synthesis machinery	93.855	93.855	2R01AI127456-06 REVISED	339,572	27,529
Food Allergy Management and Outcomes Related to Racial/Ethnic Differences from Infancy through Adolescence: The FORWARD Study	93.855	93.855	2R01AI130346-06	174,144	—
Consortium of Eosinophilic Gastrointestinal Disease Researchers	50	93.855	309362(admin)//5U54AI117804-08	16,884	—
Consortium of Eosinophilic Gastrointestinal Disease Researchers, 309363	50	93.855	309363 Amnd 2//5U54AI117804-08	47,364	—

NORTHWESTERN UNIVERSITY

Supplementary Schedule of Expenditures of Federal Awards

Year ended August 31, 2022

Cluster title/Federal grantor/Subagency/Project title	Pass-through entity	Assistance listing number	Sponsor award number	Federal expenditures	Passed-through to subrecipients
Consortium of Eosinophilic Gastrointestinal Disease Researchers (CEGIR)	50	93.855	309364 (CT2) Amdnd 2//5U54A117804-08	\$ 87,217	—
Consortium of Eosinophilic Gastrointestinal Disease Researchers – Pilot Core	50	93.855	309365 Amdnd 3//5U54A117804-08	18,820	—
Neotropic herpesvirus envelopment and microtubule-mediated transport	4	93.855	310227//5R01A1125244-06	70,412	—
HIV Vaccine Research and Design (HIVRAD) Program (Project 1)	262	93.855	330183-01//5P01A1048240-16	221,493	—
COVID-19: FORWARD-COVID 19 Supplement		93.855	3R01A1130348-04S1 Revised	64,368	—
COVID-19: Identification of the Initial Targets of Transmission		93.855	3R37A1094595-10S1	134,705	8,854
COVID-19: CPAT-ISR: A randomized study to evaluate antibody response to an additional dose of SARS-CoV-2 vaccination with and without immunosuppression reduction in kidney and liver transplant recipients	126	93.855	3U01A1138897-04S1	9,315	—
COVID-19: Assessing SARS-CoV-2 Variant Evolution in Patients		93.855	3U19A1135964-04S2 REVISED	502,760	—
COVID-19: Expansion of SARS-CoV-2 Testing Supplement, Chicago Clinical Trials Unit		93.855	3UM1A1069471-14S1	60,898	—
Identification of the Initial Targets of Transmission		93.855	4R37A1094595-11	112,227	—
Rapid Access to Antibiotic Biosynthesis Machinery Using Synthetic Biology	33	93.855	5001138-5500001350-02//5U19A1142780-03	425,576	—
Influenza virus receptors on human airway epithelial cells	201	93.855	5-54319//2 R01 AI114730-07	115,142	—
Innate Immune Surveillance of HIV-1 During Transmission and Systemic Infection	201	93.855	5-54728//7R01AI127302-06	20,791	—
NRSA Predoctoral Fellowship Award for Nina Calantone: Role of mTOR in inflammatory monocytes in HIV infection		93.855	5F30A1131937-04	(6,706)	—
An Age-Dependent Role of the Inflammation in the Pathogenesis of HSV Encephalitis		93.855	5F30A1150049-03 REVISED	27,267	—
Role of molecular drivers in memory group 1 CD1-restricted T cell differentiation and Mycobacterium tuberculosis infection		93.855	5F30A1157314-02	43,317	—
RACK1-mediated control of mRNA selectivity by poxviruses (NRSA Predoc Fellowship for Madeline Grace Rollins, BA)		93.855	5F31A1152548-02	14,786	—
Cellular and Molecular Mechanisms of the Pathogenesis of Aspirin Exacerbated Respiratory Disease		93.855	5K23A1141694-04	171,495	—
Patient-Oriented Research on Pseudomonas aeruginosa		93.855	5K24A1104831-08	103,846	612
Small host GTPases: Direct targets of Vibrio vulnificus MARTX toxin effectors		93.855	5K99A1167819-02	100,701	—
Pathogenesis of Rebound HIV Infection After Antiretroviral Therapy		93.855	5P01A1131346-05	1,464,276	489,794
Chronic Rhinosinusitis Integrative Studies Program 2 (CRISP2)		93.855	5P01A1145818-03	1,601,024	343,253
Third Coast Center for AIDS Research		93.855	5P30A1117943-05	(1,043)	—
Third Coast Center for AIDS Research		93.855	5P30A1117943-05	851	851
Third Coast Center for AIDS Research		93.855	5P30A1117943-05	3,357,601	736,423
ALPHA-HERPESVIRUS TRANSPORT IN AXONS		93.855	5R01A1056346-18	297,581	—
The Role of Group 1 CD1-restricted T Cells in Infectious Disease		93.855	5R01A1057460-16	107,547	—
Molecular mechanism of V. vulnificus MARTX toxin in pathogenesis and food safety		93.855	5R01A1092825-10	75,741	—
Accessory Virulence Factors of Pseudomonas aeruginosa		93.855	5R01A1118257-05	5,205	—
Harnessing MUC16-IgG Interactions to Enhance HIV Vaccine Function		93.855	5R01A1125171-05	122,327	(714)
The role of IL-27/Lag3 axis in regulating Foxp3+ regulatory T cell function		93.855	5R01A1125247-06	273,083	—
REDD1 dissociates the therapeutic and adverse effects of glucocorticoids in skin		93.855	5R01A1125366-05	244,306	—
Poxvirus manipulation of the host cell protein synthesis machinery		93.855	5R01A1127456-05	154,970	—
Hormones in allergic disease		93.855	5R01A1127783-05	167,543	—
Distinct mast cell responses in male and female SJL mice underlie sex dimorphic EAE susceptibility		93.855	5R01A1128292-05	373,672	—
Food Allergy Outcomes Related to White and African American Racial Differences (FORWARD)		93.855	5R01A1130348-05	1,136,611	639,447
Macrophage Redox State in Sterilizing and Injurious Inflammation		93.855	5R01A1131267-05	390,857	—
Autoantibody mediated pathogenesis in chronic rhinosinusitis with nasal polyps: mechanisms and consequences		93.855	5R01A1134952-05	423,917	—
Immune mechanisms regulating allergy		93.855	5R01A1136942-06	106,907	—
Initiators, biomarkers and mechanisms of epithelial dysfunction and immune pathogenesis in chronic rhinosinusitis and aspirin exacerbated respiratory disease (AERD)		93.855	5R01A1137174-05	511,079	—
Structure and Function of EBV Protein Complexes that Trigger Epithelial Cell Entry		93.855	5R01A1137267-05	418,517	224,791
Siderophores of Legionella pneumophila		93.855	5R01A1139054-04	347,307	—
The role of non-classical MHC class I molecules in immune responses to Mycobacterium tuberculosis infection		93.855	5R01A1141083-05	651,180	—
Nuclear rotation and cellular reorganization during Cytomegalovirus infection		93.855	5R01A1141470-04	473,198	—
Modulating endothelial cell immunometabolism and mitochondrial morphology/implications for organ transplantation		93.855	5R01A1142079-05	152,523	—
Design and characterization of biomimetic nanobiomaterials to elicit CD1-restricted T cell responses during sub-unit vaccination		93.855	5R01A1145345-04	603,436	—
Targeting the functions of the gonococcal Type IV pilus		93.855	5R01A1146073-03	422,245	—
Characterizing Mucosal Changes in the FRT Leading to Increased HIV Acquisition		93.855	5R01A1146087-03	314,450	103,263
Foxp3+ regulatory T cell-dependent treatment of allergic inflammation by glucocorticoids		93.855	5R01A1147498-05	523,491	43,103
Mitochondria regulate adaptive immunity		93.855	5R01A1148190-04	470,033	—
Mechanism of Herpes Simplex Virus (HSV) Induced Membrane Fusion		93.855	5R01A1148478-03	620,491	124,575
Virus-host interactions governing alpha-herpesvirus genome delivery and neuroinvasion		93.855	5R01A1148780-02	339,797	55,969
The role of FEZ1 in early HIV-1 infection		93.855	5R01A1150559-09	437,434	—
Evolution and consequences of multidrug resistant ribosome		93.855	5R01A1150986-03	450,756	—
Functionally Defining HIV-Host Interactions During the Early HIV-1 Lifecycle		93.855	5R01A1150998-03	1,490,633	986,041
Discovery of novel benzimidazole resistance mechanisms		93.855	5R01A1153086-03	490,353	268,195
Vascular endothelial cells and macrophages coordinate neutrophil trafficking in inflammation		93.855	5R01A1153668-02	337,624	—
Transcriptional Regulators in Aging Macrophages		93.855	5R01A1163742-02	241,555	—
Deciphering the Role of CPSF6 in HIV Infection		93.855	5R01A1165236-02	384,314	—
Critical Role for KLF2 in Regulation of PD-1 Expression in T cells		93.855	5R03A1159591-02	25,907	—
Defining the Siderophore of Stenotrophomonas maltophilia, an Emerging, Multi-Drug Resistant Pathogen		93.855	5R21A1125968-02 REVISED	(7,042)	—
Reassessing Legionella pneumophila Recognition during Intracellular Infection of Human Macrophages		93.855	5R21A1137458-02	14,067	—
Leveraging immunostimulatory pathways that enhance BCG vaccination for the rational design of synthetic neonatal vaccine formulations		93.855	5R21A1137932-02	68,393	63,275
Metabolic and Immune Consequences of Antibiotic-Related Microbiome Alterations during TB Treatment		93.855	5R21A1148033-02	65,239	38,114
Mechanisms and Modifiers of Zika Virus Innate Immune Evasion		93.855	5R21A1148949-02	165,021	—
An unbiased screen to identify Neisseria gonorrhoeae genes important for survival to neutrophil killing mechanisms		93.855	5R21A1148981-02	130,427	—
Vibrio vulnificus toxin-receptor interactions		93.855	5R21A1149061-02	143,082	—
6mer seed toxicity and AIDS		93.855	5R21A1150910-02	162,415	—
Defining the Effector T cell KLF2 Transcriptome		93.855	5R21A1151333-02	81,373	—
Regulation of Neuroinflammation via Tolerance Induced by PLG Nanoparticles Encapsulating Aquaporin 4 Epitopes		93.855	5R21A1151438-02	11,378	—
Dynamics of Pseudomonas aeruginosa During Bacteremia		93.855	5R21A1153953-02	155,077	—
Dynamic interactions within alpha-herpesvirus virions and their impact on infection		93.855	5R21A1154104-02	183,179	—
Exploiting Siglec-6 for targeted anti-allergy drug delivery into human mast cells		93.855	5R21A1159586-02	233,343	—
Identification of the immunomodulatory mechanisms of nanocarrier-enhanced costimulation blockade in an allogeneic portal vein islet transplantation model		93.855	5R21A1159795-02	78,803	—

NORTHWESTERN UNIVERSITY
 Supplementary Schedule of Expenditures of Federal Awards
 Year ended August 31, 2022

Cluster title/Federal grantor/Subagency/Project title	Pass-through entity	Assistance listing number	Sponsor award number	Federal expenditures	Passed-through to subrecipients
COVID-19: Assessing the Risk of SARS-CoV-2 Remdesivir Resistance		93.855	5R21AI163912-02	\$ 221,388	—
High-Risk Clones of Pseudomonas aeruginosa		93.855	5R21AI164254-02	110,501	—
Regulation of HPV Replication		93.855	5R21AI165941-02	110,040	—
Ordered gene knockout libraries for Neisseria gonorrhoeae		93.855	5R24AI155395-02	371,253	—
Mechanisms of Gonococcal Pili Antigenic and Phase Variation		93.855	5R37AI033493-29	512,193	—
Identification of the Initial Targets of Transmission		93.855	5R37AI094595-10	593,328	197,607
Immunology and Molecular Pathogenesis Training Program		93.855	5T32AI007476-25	356,722	39,571
Northwestern University Allergy and Immunology Research (NUAIR) Program		93.855	5T32AI083216-13	158,096	25,596
Northwestern University Infectious Diseases Education and Science (NuiDeas)		93.855	5T32AI095207-10	207,678	30,440
Effectiveness of Relationship Education for Reducing HIV Incidence in Men Who Have Sex with Men		93.855	5U01AI156874-02	759,717	—
Utility of Biomarkers of Rejection and Kidney Injury in Tailoring Liver Transplant Immunosuppression		93.855	5U01AI163081-02	431,816	159,509
Successful Clinical Response in Pneumonia Therapy (SCRIPT) Systems Biology Center		93.855	5U19AI135964-05 REVISED	2,086,871	44,226
COVID-19: Successful Clinical Response in Pneumonia Therapy (SCRIPT) Systems Biology Center		93.855	5U19AI135964-05 REVISED	108,608	—
Using siglecs and their ligands to treat allergic diseases SALTAD		93.855	5U19AI136443-05	2,001,623	1,444,929
Chicago Clinical Trials Unit		93.855	5UM1AI069471-16 Revised	1,044,541	41,748
Sustained Long Acting Prevention Against HIV Program Operation		93.855	5UM1AI120184-04	2,603,956	457,815
Innate Immune Surveillance of HIV-1 During Transmission and Systemic Infection	199	93.855	6088-12935-NWU// 5 R01 AI127302-05	16,444	—
[U19] Integrated Genomics of Mucosal Infections: Viral Diversity and Pathogenicity in Mucosal Respiratory and Gastrointestinal Disease	26	93.855	7000000881//5U19AI144297-03	4,454	—
A novel multifunctional role of diverse substrate binding and import by the Haemophilus Sap transporter	190	93.855	700191-0223-00//5R01AI139519-04	81,683	—
lncRNA Control of Airway Epithelial Cell Responses to Type 2 Inflammation		93.855	7R01AI141609-05	82,930	—
Long Non-Coding RNAs in Allergy		93.855	7R01AI153344-02 REVISED	120,794	—
Development and characterization of a nanocarrier for enhanced delivery of benznidazole during acute and chronic T. cruzi infection		93.855	7R21AI144529-02	19,188	—
Mechanisms for Initiation of Food Allergy Early in Life	112	93.855	8575//5R01AI153239-02	2,482	—
Macrophage Immune Modulation to Improve Outcome in Obstructive Cholestasis	20	93.855	901605-NU (Green)//1R21AI153747-01	14,888	—
Macrophage Immune Modulation to Improve Outcome in Obstructive Cholestasis	20	93.855	901605-NU (Winter)//5R21AI153747-02	15,969	—
Identifying the Breadth of Antibody Responses to Clostridioides difficile Infection	20	93.855	901606-Northwestern//5R03AI149000-02	3,225	—
Identifying Specific Antigenic Targets of Kawasaki Disease	20	93.855	901622//5R01AI150719-02	14,493	—
Soy Isoflavones for Inner City Infants at Risk for Asthma (SIRA)	20	93.855	901635-NU FMM//1U01AI160018-02	17,865	—
Soy Isoflavones for Inner City Infants at Risk for Asthma (SIRA)	20	93.855	901635-NU-DCC (Kim) Amd 1//1U01AI160018-02	42,375	—
Impact of CCR5 Blockade in HIV+ Kidney Transplant Recipients	242	93.855	9254sc Amend 6//5U01AI118594-06	40,138	—
EpiModel 2.0: Integrated Network Models for HIV/STI Prevention Science	77	93.855	A011168//5R01AI138783-03	107,419	—
Modeling concurrent cytomegalovirus infection and transplantation tolerance	71	93.855	A031106//5R01AI114824-05	8,110	—
Bridging Antibody Fc-mediated Antiviral Functions Across Humans and Nonhuman Primates	71	93.855	A033429//5P01AI120756-05	10,178	—
Impact of Antibody Effector Function Diversity on Antiviral Activity In Situ	71	93.855	A035460//1P01AI162242-01	69,840	—
Rapid discovery of millions of intact biosynthetic gene pathways for natural product compounds treating infectious diseases from the majority of un-sequenced filamentous fungi with a novel FAC-NGS tool	114	93.855	Agmt 5/9/22//1R44AI140943-02	110,278	—
Targeting Inflammation and Alloimmunity in Heart Transplant Recipients with Tocilizumab	138	93.855	AGMT 8/11/20//5U01AI136816-02	55,606	—
Dissecting How Xenobiotics Act as Adjuvants for Oral Allergic Sensitization	318	93.855	CON-80003656 (GR116267)//5R01AI162645-02	6,763	—
Next-Generation Physiological-based Partner Service Models for Combined HIV Prevention	244	93.855	FP066835-A (520888601-6) // 5R01AI136056-05	100,792	—
Immune Tolerance Network – Prime Award No.: 5UM1AI109565-07 FAIN: UM1AI109565	27	93.855	FY201TN371//5UM1AI109565-08	19,762	—
Protocol ITN056ST: Evaluation of Donor Specific Immune Senescence and Exhaustion as Biomarkers of Operational Tolerance Following Liver Transplantation in Adults	27	93.855	FY21TN158//5UM1AI109565-08 AMD 14	1,823	—
COVID-19: Systemic Allergic Reactions to SARS-COV-2 Vaccination (SARS Vaccination)	27	93.855	FY21TN447-03//3UM1AI109565-08S1	67,765	—
Mucosal mechanisms of altered HIV susceptibility in adolescents	269	93.855	N00806602//R01AI128782	70,001	—
Allergen Loaded Nanoparticles for Food Allergy Tolerance	268	93.855	SUBK00012728//5R01AI156678-02	236,547	—
COVID-19: ACTG A5401 Protocol PF Fund	240	93.855	Taiwo AGMT 4/20/21//2UM1AI068636-15	107,422	—
The Role of Lipid-specific T cells in Mediating Protection Against M. Tuberculosis	297	93.855	UWSC12062//5R01AI146072-02	152,707	—
Comparison of High vs. Standard Dose Influenza Vaccines in Adult Solid Organ Transplant Recipients	302	93.855	VUMC85656//5U01AI152967-02	16,800	—
Viral and Host Determinants of Infant and Childhood Allergy and Asthma	302	93.855	VUMC94252 Amd 1//5U19AI095227-13	190,101	—
				41,692,143	6,935,694
An Automated Proteoform Characterization Control System	179	93.859	1 R43 GM136046-01A1//Kelleher AGMT 9/28/21	23,000	—
Center for the Structural Biology of Cellular Host Elements in Egress, Trafficking, and Assembly of HIV (CHEETAH Center)	295	93.859	10044932-10//5P50AI150464-15	205,464	—
Micromechanical basis of meiotic chromosome condensation and architecture	256	93.859	101111-18038//1R01GM135549-01A1 Amd. #1	78,224	—
Cell Penetration Profiling for Biotherapeutics	224	93.859	102184-00001//2R01GM127585-05	12,911	—
Team Dynamics, Networks, and Assembly (Team DNA)	240	93.859	1295 G TA411//5R01GM112938-05	2,295	—
Team Dynamics, Networks, & Assembly (Team DNA)	240	93.859	1295 G UA135//5R01GM112938-05	11,708	—
Information Processing by Post-Translational Modification	94	93.859	153447-5111019-0005 AMD3//5R01GM105375-08	58,577	—
Optical nanosensor for 3D force sensing in intact tissues of live animals	246	93.859	1560378//1R21GM140347-01 Amd #1	68,451	—
High-throughput discovery of protein energy landscapes in natural and designed proteomes		93.859	1DP2GM140927-01	552,929	—
The dynamic architecture of living cells: Uncovering intra-organellar events at nanoscale levels		93.859	1DP2GM146322-01	308,956	—
The Functions of Mitochondrial Membrane Contact Sites in Space and Time		93.859	1F32GM145160-01 REVISED	40,663	—
Resource for Quantitative Elemental Mapping for the Life Sciences		93.859	1P41GM135018-01	(149)	—
Resource for Quantitative Elemental Mapping for the Life Sciences		93.859	1P41GM135018-01	(109)	(109)
Role of Membrane Trafficking in Epithelial Homeostasis		93.859	1R01GM141233-01A1	174,076	—
Structure and Mechanism of Eukaryotic Transcription Regulation		93.859	1R01GM144559-01A1	30,780	—
Role of BAP1/ASXL3 complex in transcriptional regulation and development		93.859	1R35GM146979-01	10,413	—
HiDef BB: Commercialization and scaled production of defined, robust, and cost-effective media for iPSCs	66	93.859	1R44GM140750-01A1//Burridge AGMT 8/26/21	85,999	—
Medical Scientist Training Program		93.859	1T32GM144295-01	151,838	—
Activities of nucleoprotein complexes visualized in single-molecule experiments		93.859	2R01GM105847-05A1	55,944	—
Biological Transition Metals		93.859	2R01GM111097-50	313,069	—
Molecular Regulation of Radial Intercalation		93.859	2R01GM113922-05	157,932	—
Investigating the molecular mechanism and function of mitochondrial tethering		93.859	2R01GM120303-06	120,844	—
Northwestern University Postbaccalaureate Research Education Program		93.859	2R25GM121221-06	59,765	—
High throughput interrogation of non-coding variants and 3D genome organization		93.859	2R35GM124820-06	28,908	—
Accessing the Silent Majority: Induction of Gene Expression in Fungal Artificial Chromosomes for Natural Product Discovery		93.859	3F32GM134679-03S1	65,471	—

NORTHWESTERN UNIVERSITY
 Supplementary Schedule of Expenditures of Federal Awards
 Year ended August 31, 2022

Cluster title/Federal grantor/Subagency/Project title	Pass-through entity	Assistance listing number	Sponsor award number	Federal expenditures	Passed-through to subrecipients
The Interplay of Electric Potential and Morphology of Biomembranes		93.859	3R01GM140461-03S1	\$ 314,929	—
Structural and biophysical studies of proteins, nucleic acids, and their complexes		93.859	3R35GM118108-05S1	209,378	—
Medical Scientist Training Program		93.859	3T32GM008152-35S1	1,390,345	—
Postdoctoral Pathways – Broadening Access to Career Advancement	30	93.859	450002877/5R25GM121257-05	102,857	—
Electrocatalysis for the synthesis of chiral and PET imaging pharmaceuticals		93.859	4R00GM140249-02	548	—
Analysis of lamin-chromatin interactions and their regulation of chromosome organization and gene expression	40	93.859	5-10742-01/5R01GM106023-08	977	—
Tissue-Based Metal Imaging Tools and Their Application Towards Spatiotemporal Mapping of Zinc Fluxes in Ovaries		93.859	5F32GM139401-03	72,184	—
Structural and functional characterization of putative Cu importer CopD		93.859	5F32GM140573-02	67,353	—
A Biosynthetic Strategy to Manufacture Less Toxic Amphotericins		93.859	5F32GM142211-02 REVISED	64,192	—
Violence Exposure and Cardiovascular Risk in Adolescence		93.859	5F32HL146005-03	30,283	—
Regulation and Function of Intermediate Filaments in Cell Mechanics		93.859	5P01GM096971-09	1,771,838	845,354
National Resource for Translational and Developmental Proteomics		93.859	5P41GM108569-08	1,367,577	—
Metalloregulation by MerR and Fur Protein Families		93.859	5R01GM038784-31 REVISED	141,356	—
Molecular Mechanisms of Basolateral Targeting in Polarized Epithelial Cells		93.859	5R01GM070736-13 REVISED	96	—
DNA zip codes and the spatial organization of the yeast genome		93.859	5R01GM080484-12	(2,480)	—
Developmental Dynamics of Ciliated Epithelia		93.859	5R01GM089970-13	317,569	—
Cryo ptychography combined with x-ray fluorescence analysis of metals in cells		93.859	5R01GM104530-08	15,690	3,966
Biological Transition Metals		93.859	5R01GM111097-49 REVISED	206,018	—
Assembly and epigenetic inheritance of the human centromere		93.859	5R01GM111907-09	323,220	—
Molecular Regulation of Radial Intercalation		93.859	5R01GM113922-04	13,217	—
Algorithms for Glyco-Proteofom Detection		93.859	5R01GM115739-06	228,453	—
Capturing Transient Protein and Nucleic Acid Structures During Their Functions on Multiple Spatial and Temporal Scales		93.859	5R01GM115761-08	491,889	—
Neural Crest Ontogeny and the Control of Stem Cell Attributes		93.859	5R01GM116538-04	(156)	—
Defining the molecular and cellular mechanism of epigenetic transcriptional memory		93.859	5R01GM118712-04	(670)	—
Investigating the molecular mechanism of mitochondrial tethering		93.859	5R01GM120303-05	114,257	—
RNA Ligation Pathways in Mammalian Unfolded Protein Response		93.859	5R01GM120307-04	60,496	—
Regulation and function of bacterial 100S ribosome		93.859	5R01GM121359-05	360,109	—
Specific inhibition of transcription factors with Cobalt-Schiff Base Complexes		93.859	5R01GM121518-04	143,007	—
New Methods and Strategies for the Concise Synthesis of Bioactive Polycyclic Molecules		93.859	5R01GM124089-04	102,050	—
Regulation of chromosome segregation during oocyte meiosis		93.859	5R01GM124354-05 REVISED	285,971	—
Social signals that regulate C. elegans development		93.859	5R01GM126125-03	291,238	—
Prion-mediated protein aggregation/co-aggregation and cellular consequence		93.859	5R01GM126318-05	288,058	—
Cadherin-catenin regulation in dividing epithelial cells		93.859	5R01GM129312-04	357,974	—
Cell signaling in regeneration and tissue scaling		93.859	5R01GM129339-04 REVISED	266,011	—
The role of monocyte and microglia interaction in the evolution of traumatic brain injury-induced neurodegeneration		93.859	5R01GM130662-04	752,026	—
Enhancement of neural regeneration		93.859	5R01GM130835-04	356,614	—
Functional Roles of Nascent RNA Structure in Regulating and Coordinating Gene Expression		93.859	5R01GM130901-03 REVISED	224,926	—
Continuous Probing of Nanoconstruct-Cell Interactions at Biologically Relevant Time Scales		93.859	5R01GM131421-04	208,224	—
Development of Photoreversible 4D Cell Culture Technologies		93.859	5R01GM132677-03	355,023	96,377
Molecular mechanisms controlling kinetochore-microtubule attachments during mitosis		93.859	5R01GM135391-03	475,607	—
Regulation of de novo purine synthesis by the MAPK/ERK pathway		93.859	5R01GM135587-03	338,935	—
Structure and Mechanism of Non-Homologous End Joining		93.859	5R01GM135651-03 REVISED	607,997	51,880
Cytokinesis staging mechanisms		93.859	5R01GM137133-03	165,813	—
SCISIP/BIO: Understanding and Assembling Dream Teams to Conduct Clinical and Translational Science		93.859	5R01GM137410-03	287,342	122,561
Intrinsic-contrast super-resolution imaging of DNA at 2-nm resolution		93.859	5R01GM139151-03	283,487	—
Quantitative analysis of metabotropic glutamate receptor activation and modulation		93.859	5R01GM140272-03	412,645	—
Development of spectroscopic Single-Molecule Localization Microscopy		93.859	5R01GM140478-02 REVISED	293,815	25,339
Regulation mechanisms of ABC transporters		93.859	5R01GM140584-03	527,209	—
Control of RNA methylation by growth signals through the mTORC1 pathway		93.859	5R01GM143334-02	421,667	—
Histone chaperone networks for new and evicted histones		93.859	5R01GM143638-02	292,870	—
A Microfluidic Device for Temporal Live-Cell Analysis of Intracellular Biomolecules		93.859	5R21GM132709-02	157,035	—
Bright and switchable fluorophores for highly multiplexed super-resolution microscopy towards molecular interaction imaging		93.859	5R21GM141675-02	145,476	—
Developing cell-penetrating miniproteins as a new class of therapeutics		93.859	5R21GM143560-02	276,578	—
Dictyostelium Community Resource		93.859	5R24GM137770-03	828,318	—
Mentoring for Success: Developing Fundamental Skills for Biomedical Research		93.859	5R25GM079300-13	8,343	—
Northwestern University Interdepartmental Neuroscience Postbaccalaureate Research Education Program		93.859	5R25GM121231-05	234,765	—
Metalloenzymes and metal homeostasis		93.859	5R35GM118035-07 REVISED	724,598	—
Non-coding RNAs and their mechanisms and functions		93.859	5R35GM118144-07 REVISED	197,120	—
Integrated Empirical and Translational Research to Diversify the Scientific Workforce		93.859	5R35GM118184-07	665,293	19,469
Impact of genetic variants on gene regulation and 3D genome organization in human diseases		93.859	5R35GM124820-05	325,937	—
The Roles of Enhancer RNAs in the Regulation of Gene Expression		93.859	5R35GM128900-05	423,807	—
Microtubule motors, cytoskeletal organization and cell polarity		93.859	5R35GM131752-04	554,623	—
Selective inhibition of nitric oxide synthase for multiple indications		93.859	5R35GM131788-04	472,525	68,139
The molecular mechanisms and functional significance of gene positioning		93.859	5R35GM136419-03	594,170	—
New Cooperative Catalysis Concepts for Asymmetric Synthesis		93.859	5R35GM136440-03	580,308	—
Characterizing functional translation in putative 'noncoding' regions of a genome		93.859	5R35GM138192-03	493,158	—
Single Cell Mosaic Mutation Atlas of Human Organ		93.859	5R35GM142539-03	535,896	—
Cellular and Molecular Basis of Disease Training Program		93.859	5T32GM008061-40	828,517	—
Molecular Biophysics Training Program at Northwestern University		93.859	5T32GM008382-28	54,501	—
Biotechnology Predoctoral Training Program		93.859	5T32GM008449-29	467,075	—
Chemistry of Life Processes Predoctoral Training Program		93.859	5T32GM105538-10 Revised	286,406	—
Molecular Biophysics Training Program at Northwestern University		93.859	5T32GM140995-02 REVISED	387,290	—
Physical Genomics and Engineering Training Program		93.859	5T32GM142604-02	246,669	—
Dynamics and allostery in protein-RNA regulation	168	93.859	6060542/R01GM120923	15,083	—
Computational approaches to delineate non-canonical splicing events		93.859	7R35GM142441-03	97,500	—

NORTHWESTERN UNIVERSITY
 Supplementary Schedule of Expenditures of Federal Awards
 Year ended August 31, 2022

Cluster title/Federal grantor/Subagency/Project title	Pass-through entity	Assistance listing number	Sponsor award number	Federal expenditures	Passed-through to subrecipients
COVID-19: SampleStream: A Radically Simplified Platform for Protein Sample Preparation	115	93.859	Agmt 2/2/2021//Contract No. 3 R44 GM121130-03S1	\$ 51,179	—
Establishing the market-readiness of an in vivo technology for assessing drug toxicity-induced tissue damage	72	93.859	NW-0221//1R41GM140538-01 Amrd 1	52,040	—
Resource for Quantitative Elemental Mapping for the Life Sciences	148	93.859	RC113087NWU-01 Amrd 2//P41GM135018	853,107	—
Mechanobiology of Vimentin Intermediate Filaments in 3D Collective Cell Migration	139	93.859	SS271, PO# 560195//R01GM140108-01	56,036	—
Orthogonal Ubiquitin Transfer to Profile E3 Substrate Specificity	91	93.859	SP00014037-01//3R01GM104498-07S2	34,830	—
Orthogonal Ubiquitin Transfer to Profile E3 Substrate Specificity	91	93.859	SP0013463-01//5R01GM104498-09	67,200	—
100K spontaneous mutations: the foundation for an evolutionary systems biology of C. elegans	251	93.859	UFDSPO0012271 AMD 3//R01GM127433	1,397	—
				29,205,903	1,232,976
New Evidence on Conception and Pregnancy Loss in the U.S	298	93.865	000000695//R01HD102207-01	10,017	—
Intimate Partner Violence in Sexual Minority Female Adolescents and Young Adults	245	93.865	010314-006//5R01HD086170-05	66,838	—
Development of a standardized measure of social-communication abilities for children with neurodevelopmental disorders	242	93.865	10364sc//5R01HD093012-04	67,717	—
Molecular basis of altered drug metabolism during pregnancy	181	93.865	11001136-002//R01HD089455-05	455,710	—
Pediatric HIV/AIDS Cohort Study (PHACS): 2020	94	93.865	117267-0107-5115573//SP01HD103133-02	97,509	—
Pediatric HIV/AIDS Cohort Study (PHACS) 2020	94	93.865	117267-0182-5119269//SP01HD103133-02	18,196	—
Health Outcomes around Pregnancy and Exposure to HIV/ARV (HOPE):	240	93.865	117270-5112849//5R01HD101351-02	36,343	—
Cortical Interneuron Dysfunction in Fragile X Syndrome	94	93.865	1580 G LA313//R01HD108370-01	31,303	—
Cortical Priming to Optimize Gait Rehabilitation Post Stroke	255	93.865	18583 // 5R01HD075777-07	20,432	—
Universal strengths-based parenting support in pediatric health care for families with very young children following the Flint Water Crisis	158	93.865	18-A1-00-1001408//5R01HD096909-04	12,936	—
Examining the Effects of a Two-Generation Education Intervention on Children's Developmental Outcomes and Family Processes Using Diverse Methodological Approaches		93.865	1F32HD106691-01	38,360	—
COVID-19: Bridging gaps in healthcare services for new families due to COVID-19		93.865	1R01HD105499-01	454,072	357,548
ENDEAVOR TO STOP NAUSEA/VOMITING ASSOCIATED WITH PREGNANCY (E-SNAP)		93.865	1R21HD105101-01A1	32,414	—
Improving the Pelvic Health of Women and Girls Through the Use of a Digital Coaching Platform	187	93.865	1R41HD097845-01A1/1R41HD097845-01A1-S1	(3,077)	—
SBIR from Wearifi Inc	314	93.865	1R43HD101189//XU AGMT 8//19/21	64,521	—
Pathways linking Early Adversity and Support to Behavioral and Physical Health	276	93.865	203344NU//R01HD091235-03	9,055	—
Quantification of Shoulder Pathology and Manual Wheelchair Propulsion in Children and Adults with Spinal Cord Injury using Advanced Biomechanical Modeling and Diagnostic Imaging	299	93.865	203405427//R01HD098698 AMD 2	19,159	—
Pathophysiology and Rehabilitation of Neural Dysfunction		93.865	2132HD007418-31	79,053	—
School-age Outcome After In Utero ZIKV Infection in Children Without Congenital Zika Syndrome	49	93.865	30006103-03//5R01HD102445-02	10,707	—
Multi-level factors affecting postpartum sterilization	274	93.865	512228//5R01HD09127-04	35,330	—
Infant attention in the context of language		93.865	5F32HD096590-03 REVISED	(80)	—
Maternal psychological stress, adverse birth outcomes, and the role of inflammatory mediators in the placenta		93.865	5F32HD100776-03	59,690	—
Cerebral organoid models of CHD2-associated intellectual and developmental disabilities (NRSA Postdoc Fellowship for Kay-marie Lamar, PhD.)		93.865	5F32HD101280-03	71,591	—
Intergenerational health impacts of interpersonal and community-based violence: From childbirth to childbearing		93.865	5F32HD102152-03 Revised	69,712	—
Developmental origins and downstream consequences of abstract verbal reference		93.865	5F32HD104408-02	64,738	—
Effect of Injury Severity and Location on Spasms Post SCI		93.865	5K01HD084672-05	(3,558)	—
Research Career Development in Obstetrics and Gynecology		93.865	5K12HD050121-18	322,204	—
Interdisciplinary Engineering Career Development Center in Movement and Rehabilitation Sciences		93.865	5K12HD073945-10	788,030	710,367
Upper-Extremity Torque Perceptual Impairments in Chronic Hemiparetic Stroke		93.865	5K25HD096116-05	129,903	—
Uterine Leiomyoma Research Center Program		93.865	5P01HD057877-10 REVISED	(12,967)	—
Northwestern Uterine Leiomyoma Research Center		93.865	5P50HD098580-04	1,774,031	492,058
Cognitive Architecture of Bilingual Language Processing		93.865	5R01HD059858-10	311,347	—
Linking language and cognition in infancy: Entry points and developmental change		93.865	5R01HD083310-05	132,167	—
PEID Screen: Pediatric Sepsis EHR Registry, Clinical Outcomes, and Predictive Model		93.865	5R01HD087363-05 REVISED	390,573	390,573
Integrative Genomics: Epigenomics and Bioinformatics Analyses of Human Uterine Fibroids		93.865	5R01HD089552-05	343,374	16,045
Bilateral Priming Plus Task Specific Training for Severe Upper Limb Hemiparesis		93.865	5R01HD091492-05	185,485	126,532
Understanding Diverging Profiles of Academic and Physical Health Outcomes in African American Youth		93.865	5R01HD093718-04 Revised	478,606	145,588
Homeostatic to reactive hyaluronan matrices in ovarian reproductive aging		93.865	5R01HD093726-05	378,879	183,453
Firearm Involvement Among Parents and Their Adolescent Children: A Prospective Longitudinal Study of At-Risk Youth		93.865	5R01HD093935-05	593,880	—
Effects of device-assisted practice of activities of daily living in a close-to-normal pattern on upper extremity motor recovery in individuals with moderate to severe stroke		93.865	5R01HD095187-04	373,805	—
PROgressive Abduction LoadIng therapy (PRALINE): A Phase IIb Stroke Rehabilitation Trial with Longitudinal Tracking		93.865	5R01HD096071-04	508,033	192,446
Effects of a Prenatal Depression Preventive Intervention on Parenting and Young Children's Self-Regulation and Functioning (EPIC)		93.865	5R01HD097215-04	754,407	22,273
Patient navigation to improve outcomes among low-income women in the postpartum period		93.865	5R01HD098178-04	750,805	11,301
Clinical Trial of Enhancing Recovery in Children Undergoing Surgery – ENRICH-US		93.865	5R01HD099344-04	473,462	141,592
3/4: Pre-IVF treatment with a GnRH antagonist in women with endometriosis – A prospective double blind placebo controlled trial (PREGNANT)		93.865	5R01HD100318-04	193,652	—
AMH signaling pathway variation in PCOS		93.865	5R01HD100630-03 Revised	631,623	42,831
Defining epigenetic mechanisms for embryonic patterning		93.865	5R01HD101563-02 REVISED	256,464	—
Oocyte genomic instability as a driver of the aging ovarian innate immune response		93.865	5R01HD105752-02	278,055	78,041
The Effects of Injury Timing on Neural Microstructural Complexity and Motor Impairments in Cerebral Palsy		93.865	5R01HD094615-02	43,768	—
Oncofertility Consortium Annual Conference		93.865	5R13HD083248-11	332	—
Development of a Portable Synergy Resistant EMG-driven FES Device for Intuitive Control of Grasp and Release During Functional Arm Activities Following Stroke		93.865	5R21HD094073-02	1,866	—
SweetMama: Leveraging technology for diabetes education and support to low-income pregnant women		93.865	5R21HD094271-02	16,491	—
Extremely Long Lived Proteins and Female Reproductive Aging		93.865	5R21HD098498-02	80,234	53,700
Determination of the Recruitment of Indirect Motor Pathways in Chronic Hemiparetic Stroke		93.865	5R21HD099710-02	85,494	57,883
Early origins of health disparities: Chronic inflammation		93.865	5R21HD101757-02	170,532	—
Safety Assessment of Perioperative Pain Medications for Children (SAPPhire)		93.865	5R21HD104078-02	97,207	—
Role of m6A modification in Alpha 1-antitrypsin deficiency induces liver disease		93.865	5R21HD104904-02	189,744	—
Language development in bilingual preschoolers: A cross-linguistic and cross-cultural comparison		93.865	5R21HD106759-02	87,140	—
Endometriosis and Retinoids		93.865	5R37HD038691-20	3,925	—
Pathophysiology and Rehabilitation of Neural Dysfunction		93.865	5T32HD007418-30	163,782	—
Northwestern Center for Reproductive Science Predoctoral Training Program in Reproductive Science, Medicine, and Technology		93.865	5T32HD094699-04	186,178	—
Research Training in Sensorimotor Neurorehabilitation		93.865	5T32HD101395-02	242,672	—
Optimizing Medication Management for Mothers with Depression during Pregnancy (OPTI-MOM)		93.865	5U54HD095601-05	(12,779)	—
Maternal-Fetal Medicine Units Network – The Northwestern Study Center		93.865	5UG1HD040512-23	336,005	41,330
Intensive Combination Approach to Rollback the Epidemic (ICARE) in Nigerian Adolescents		93.865	5UG3HD098920-02	(11,547)	—

NORTHWESTERN UNIVERSITY

Supplementary Schedule of Expenditures of Federal Awards

Year ended August 31, 2022

Cluster title/Federal grantor/Subagency/Project title	Pass-through entity	Assistance listing number	Sponsor award number	Federal expenditures	Passed-through to subrecipients
Intensive Combination Approach to Rollback the Epidemic (iCARE) in Nigerian Adolescents		93.865	5UH3HD096920-05	\$ 1,606,732	1,013,436
Intuitive Control of a Hybrid Prosthetic Leg During Ambulation	186	93.865	7186//SR01HD079428-07	28,759	—
Locomotor function following transcatheter electrical spinal cord stimulation in individuals with hemiplegic stroke	186	93.865	80428.NU.Y101//R01HD106015	26,772	—
Center for Smart Use of Technology to Assess Rehabilitation	186	93.865	8963J/P2CHD101899	43,758	—
Intensive Rehabilitation Research Grant Writing Workshops in the United States	144	93.865	A00-3512-S001//5R25HD074546-11	13,399	—
Cord Blood Adductomics in Bronchopulmonary Dysplasia	20	93.865	A20-0046-S001 NU//R21HD100831-02	2,276	—
A Cognitive Test Battery for Intellectual Disabilities	237	93.865	A20-1951-S003//R01HD076189	79,601	—
Preterm human milk composition in conditions of maternal overweight and obesity and effects of milk constituents on preterm infant body composition	20	93.865	A21-0107-S001//5R21HD102778-02	26,601	—
MFMU Network Capitation Agreement	88	93.865	Agmt 4/25/14/U10HD036801	633	—
SIESTA (Sleep of Inpatients: Empower Staff to Act) for Acute Stroke Rehabilitation	244	93.865	AWD100824 (SUB00002246)//R01HD097786-02	47,688	—
Accelerating Nerve Regeneration with Therapeutic Electrical Stimulation and Botulinum Toxin	186	93.865	cc 82347 // R03HD101090-01A1	19,132	—
Large scale genome sequencing and integrative analyses to define genomic predictors of recurrent pregnancy loss	318	93.865	CON-80003728 (GR116814)//5R01HD105267-02	1,691	—
Psychosocial Intervention, Maternal Inflammation, and Birth Outcomes: Centering vs Routine Prenatal Care (PIINC)	163	93.865	EH17-256-S2-1//5R01HD092446-05	48,767	—
Viral pathogenesis of chronic inflammatory lesions of placenta	163	93.865	EH21-007-S1//R01HD103762-01A1	10,172	—
COVID-19: The Impact of structural racism and discrimination on perinatal health during the COVID-19 pandemic	163	93.865	EH21-184-S1//3R01HD092446-04S1	222,971	—
FSH Glycoforms and Ovarian Signaling	247	93.865	FY22.1115.001//SR01HD103384-02	138,221	—
Cord Blood Adductomics in Bronchopulmonary Dysplasia	241	93.865	KR 705246 // TR21HD100831-03	10,107	—
Novel Pediatric Neurocognitive Screening Using Central Auditory Tests	65	93.865	R1064.ILM//SR01HD095277-03	37,617	—
Long-term effects of Zika virus infection on sound processing in the brain	65	93.865	R1297//2R21DC017603-02	10,665	—
Developmental, Contextual, and Psychosocial Predictors of Weathering and Health among Rural African Americans in their Fourth Decade of Life	252	93.865	SUB00002073//SR01HD030588-26	162,075	—
MFMU Network Capitation Agreement	88	93.865	U24HD036801//AGMT 10/18/21	479,405	216,729
Gestational Diabetes and Pharmacotherapy (GAP)- A Randomized Controlled Trail Investigating Timing of Pharmacotherapy Initiation for Patients with Gestational Diabetes	142	93.865	YEE 1/17/23//R01HD108194-01	827	—
				16,553,419	4,293,726
Research on Epigenetics, Weathering, Aging, & Residential Disadvantage (REWARD) Study	298	93.866	0000000505//R01AG061080-01A1-02	6,185	—
Integrative Pathways to Health and Illness	298	93.866	0000000784//U19AG051426-01A1	14,487	—
Best Case/Worst Case: A Multisite Randomized Clinical Trial of ScenarioPlanning for Patients with End-Stage Kidney Disease	298	93.866	0000002086 // SR01AG065365-03	3,294	—
Natural Language Processing and Automated Speech Recognition to Identify Older Adults with Cognitive Impairment	104	93.866	0255-D461-4609 // SR01AG066471-02	115,463	—
Blood mitochondrial DNA biomarkers of midlife cognitive decline and adverse brain imaging changes – A longitudinal investigation in the CARDIA population-based cohort study.	56	93.866	1(C017449-01) // R01AG069120-01	34,975	7,562
Long-term Outcomes of Knee OA in the OAI Cohort	242	93.866	104775c//SR01AG050469-05 AMD 04	15,947	—
Glucose homeostasis and the risk of Alzheimer's disease and Alzheimer's disease related dementias in the Multi-Ethnic Study of Atherosclerosis	310	93.866	1100-45116-1-1000000260 // 1RF1AG070881-01A1	8,162	—
Structural characterization of Aβ strain variation in AD mouse models	284	93.866	110365091.AMD.3//SR01AG061865-04	237,159	—
The Subclinical Vascular Contributions to Alzheimer's Disease: The Multi-Ethnic Study of Atherosclerosis (MESA) Multisite Study of AD	310	93.866	111-55811085033664-1000051083//SR01AG058969-05	286,899	—
Predicting post-transplant mortality and global functional health based on pre-transplant functional status in liver transplantation	242	93.866	1179sc//SR01AG059183-04	47,808	—
Anti-Amyloid Treatment in Asymptomatic Alzheimer's Disease (A4) Open-Label Extension Study	284	93.866	120151062//R01AG063689-01/via BWH Subaward #12133	87,614	—
Application of Economics and Social Psychology to Improve Opioid Prescribing Safety (AESOPS)	284	93.866	124931788.Amnd.3 // SR33AG057395-05	84,940	—
Longitudinal Relationships Among Sleep, Cognition and Alzheimer's Disease Biomarkers: Discerning Causal Associations, Mediators, and Susceptibility	31	93.866	125298//SR01AG070867-02	36,879	—
The A3 Study: Ante-Amyloid prevention of Alzheimer's disease	284	93.866	131741339//SR01AG054029-02	2,825	—
Combination anti-amyloid therapy for preclinical Alzheimer's disease (A45)	284	93.866	131741549//R01AG061848-01	2,825	—
Global Alzheimer's Platform Trial-Ready Cohort for Preclinical/Prodromal Alzheimer's Disease (TRC-PAD Fixed Price CTA)	284	93.866	135242420 // R01AG053798-01A1	11,046	—
Global Alzheimer's Platform Trial-Ready Cohort for Preclinical/Prodromal Alzheimer's Disease (TRC-PAD)	284	93.866	135871077//SR01AG053798-05	39,825	—
Alzheimer's Disease Neuroimaging Initiative (ADNI3) Diversity Taskforce Project	284	93.866	137206820//U19AG024904-12	220,855	—
A Dynamic Environmental Exposure Approach to Study Behaviors in Mid-Life	255	93.866	17784//SR01AG062180-03	48,627	—
Pathologic Substrates of Neuropsychiatric Symptoms in Apathic Dementia		93.866	1F31AG076318-01 REVISED	12,918	—
Defining native proteoform landscape for amyloid-beta in Alzheimer's disease		93.866	R01AG063903-01	534,637	—
BEEF root juice to reverse functional impairment in PAD: The BEEF PAD Trial		93.866	R01AG073257-01A1	2,722	—
COVID-19: Long-Term Impact of the COVID-19 Pandemic on Self-Management of Chronic Conditions: The C3 Study		93.866	R01AG075043-01	59,027	—
Hepatocyte growth factor to Improve Functioning in PAD: the HI-PAD Study		93.866	1R21AG056903-01	27,598	—
Molecular Targets of Aging-Triggered Memory Decline in a Stress-Reactive Rat Strain		93.866	1R21AG062968-01A1	97,495	3,904
Functional investigation of the role of TYR mutations and neuromelanin in Parkinson's disease		93.866	1R21AG064470-01A1	43,463	—
Understanding the impact of stress reactivity on racial/ethnic disparities in cognitive function.		93.866	1R21AG069435-01	143,308	—
Microglia mediate cognitive dysfunction in elderly survivors of pneumonia		93.866	1R21AG075423-01	114,679	—
Development of a novel anti-neuroinflammatory experimental therapeutic for epilepsy and Alzheimer's risk	111	93.866	1R44AG071062-01A1//Kearney AGMT 11/2/21	75,747	—
Mitochondrial Stress Response in FUS proteinopathy and related dementia		93.866	1R56AG061327-01A1 REVISED	271,069	2,595
Regulation of Peripheral Proteostasis		93.866	1RF1AG057296-01	1,075,068	—
Molecular and cellular mechanisms of the UNC5C netrin receptor in Alzheimer's disease pathogenesis		93.866	1RF1AG057727-01A1 REVISED	984,386	—
Sex Differences in Central Stress Response and Alzheimer's Disease Neuropathology		93.866	1RF1AG057884-01	570,034	—
The Role of RNA Binding Networks in Tauopathy and Related Dementia		93.866	1RF1AG068140-01	359,247	—
Exploring the origins of myelin abnormalities in normal ageing and in vascular dementia		93.866	1RF1AG072080-01	676,032	—
GMP Production and Extended Toxicology of an Oral Formulation Drug for Alzheimer's Disease		93.866	1U01AG076480-01	21,489	—
Leveraging the 24-hour Movement Paradigm to Preserve Cognitive Function and Prevent Alzheimer's Disease: The Multi-Ethnic Study of Atherosclerosis (MESA) 24H-ACT Study	56	93.866	2(GG0115353-03)//R01AG071032-02	31,897	—
The role of human blood and brain 5-hydroxymethylcytosine in linking vascular risk factors to dementia	195	93.866	20112002-Sub02 // 1RF1AG074549-01	87,783	—
Chicago Asian Resource Center for Minority Aging Research (RCMAR)	196	93.866	2164//5P30AG059304-04	36,084	—
Microbiome-mediated therapies for aging and healthspan in marmosets	220	93.866	22-04848.401//SR01AG065546-03	27,531	—
Physical Activity and Weight Loss to Improve Function and Pain after Total Knee Replacement	282	93.866	22-4568 // R01AG070004-01A1	22,756	—
Cell-specific genomic features of Alzheimer's disease progression (Supplement)	71	93.866	2833397//3RF1AG054474-01S1	47,592	—
Exceptional Cognitive Aging: Neuropsychologic, Anatomic and Pathologic Correlates		93.866	2R56AG045571-06	81,537	67,268
BACE1 as a Therapeutic Target for Alzheimer's Disease		93.866	2RF1AG022580-16 REVISED	488,901	—
Predoctoral and Postdoctoral Training Program in Aging and Dementia		93.866	2T32AG020506-21	132,672	—
First-in-human SAD & MAD trials for MW151, a novel Alzheimer's disease drug candidate that attenuates proinflammatory cytokine dysregulation	260	93.866	3200002345-19-178//R01AG061898-03	292,565	—
Novel Gastrocnemius Muscle Characteristics in Peripheral Artery Disease Patients Associated with Impaired Functional Performance	260	93.866	3200003801-21-236//SR01AG066724-02	57,587	—
Genetic Epidemiology of Caffeine and Cognitive Decline		93.866	3K01AG063477-05S1	113,947	—
COVID-19: Genetic Epidemiology of Caffeine and Cognitive Decline		93.866	3K01AG053477-05S1	33,573	—

NORTHWESTERN UNIVERSITY
 Supplementary Schedule of Expenditures of Federal Awards
 Year ended August 31, 2022

Cluster title/Federal grantor/Subagency/Project title	Pass-through entity	Assistance listing number	Sponsor award number	Federal expenditures	Passed-through to subrecipients
Integrative Multi-Scale Systems Analysis of Gene-Expression-Driven Aging Morbidity		93.866	3K99AG068544-02S1	\$ 111,787	—
Alterations of Sleep and Circadian Timing in Aging		93.866	3P01AG011412-22S1	1,826,666	394,729
Disordered Proteostasis as a Driver of Disease in the Aging Lung		93.866	3P01AG049665-08	1,708,465	189,568
COVID-19: Disordered Proteostasis as a Driver of Disease in the Aging Lung		93.866	3P01AG049665-08	128,335	—
Sustaining quality of life of the aged: Heart transplant or mechanical support?		93.866	3R01AG047416-05S1	68,187	5,201
MRI of Left Atrial Hemodynamic Disorders in Atrial Fibrillation		93.866	3R21AG055954-02S1	36,761	—
Emotion, Aging, and Decision Making		93.866	501668SG2231/2R01AG043533-06A1	32,976	—
Life Course Process of Alzheimer's Disease: Sex Difference and Biosocial Mechanisms	68	93.866	5113263/5R01AG057800-03	280,470	—
Center On Alpha-synuclein Strains In Alzheimer Disease & Related Dementias	274	93.866	52577/01/UL19AG062418-03	92,624	—
Connectomic Imaging in Familial and Sporadic Frontotemporal Degeneration	279	93.866	577121/5U01AG052943-04 REVISED	(8,660)	—
CARDIA Year 35 Brain MRI Renewal	279	93.866	578134/5R01AG062819-02	144,841	—
Modeling Ovarian Aging Phenotype in Mechanically Tuned 3D Matrices (NIH NRSA Predoc Fellowship for Emma Gargus, BS.)		93.866	5F30AG058387-04	30,924	—
NRSA in support of Michael Fernandopulle: Mechanisms of autophagic dysfunction in progranulin-related neurodegeneration		93.866	5F30AG060722-04 Revised	25,320	—
NRSA in support of Wesley Peng: Regulation of neuronal calcium transfer between mitochondria and lysosomes in health and neurodegeneration.		93.866	5F30AG06333-04	41,465	—
Determining the neural and biomechanical contributions to age-dependent impairments in balance control		93.866	5F31AG068412-02 REVISED	34,813	—
Alzheimer's Disease Characterization via a Novel Native Mass Spectrometry Platform		93.866	5F31AG068456-03	42,013	—
Dysfunction of microglial proteostasis drives neuroinflammation and cognitive decline following pneumonia		93.866	5F31AG071225-02 Revised	40,459	—
Management of Complex Medication Regimens among Older Adults with Alzheimer's Disease and Related Dementias and their Caregivers		93.866	5K01AG070107-02	110,970	—
Aging, Immunosenescence and glioblastoma		93.866	5K02AG68617-03	145,167	—
Investigating the role of neuroinflammation in Limbic-predominant age related TDP43 encephalopathy		93.866	5K08AG065463-03	183,093	—
Well-being as a Protective Factor against Cognitive Decline and Dementia Risk		93.866	5K99AG071838-02	63,050	—
Disordered Proteostasis as a Driver of Disease in the Aging Lung		93.866	5P01AG049665-04	(10,468)	—
Proteostasis in Aging and Neurodegenerative Disease		93.866	5P01AG054407-05	3,392,394	3,113,539
Alzheimer's Disease Core Center		93.866	5P30AG013854-25	388,705	—
The Claude D. Pepper Older Americans Independence Center (OAIC) at Northwestern University		93.866	5P30AG059988-03	1,372,154	8,999
Northwestern Alzheimer's Disease Research Center		93.866	5P30AG072977-02	2,736,914	—
Personality and Well-being Trajectories in Adulthood		93.866	5R01AG0118436-20	293,492	84,546
Molecular Neuropathology and Mechanisms of BACE1 Elevation in Alzheimer's Disease		93.866	5R01AG030142-10	17,379	—
LiTCog IV: Health Literacy and Cognitive Function Among Older Adults		93.866	5R01AG030611-15	695,509	18,145
COVID-19: LiTCog IV: Health Literacy and Cognitive Function Among Older Adults		93.866	5R01AG030611-15	483,820	—
A Universal Medication Schedule to Promote Adherence to Complex Drug Regimens		93.866	5R01AG046352-05	48	—
Noninvasive Stimulation to Improve Hippocampal-Dependent Memory in Older Adults		93.866	5R01AG049002-06	69,059	—
Stellate Ganglion Blockade for the Management of Vasomotor Symptoms		93.866	5R01AG049924-05	552,240	174,187
Role of BMP Signaling in the Aging Brain		93.866	5R01AG054429-05	116,739	—
PREDICT-ADFTD: Multimodal Imaging Prediction of AD/FTD and Differential Diagnosis		93.866	5R01AG055121-04 REVISED	(9,682)	—
Communication Bridge: A person-centered Internet-based intervention for individuals with primary progressive aphasia		93.866	5R01AG055425-04	784,306	270,443
Determinants of neurodegenerative decline in the aphasic variant of Alzheimer's disease		93.866	5R01AG056258-10 REVISED	719,580	—
INTERmittent pneumatic ComprESSION for Disability rEversal in PAD: the INTERCEDE Trial		93.866	5R01AG057693-05	607,028	61,278
LEAF 2.0: Randomized trial of a technology-based positive emotion intervention for informal caregivers of individuals with Alzheimer's disease		93.866	5R01AG058613-05	869,158	280,503
Decision Making and Implementation of Aging-in-Place/Long Term Care Plans among Older Adults		93.866	5R01AG058777-04 Revised	525,930	—
An Epidemiologic Study of Disparities in Sleep and Cognition in Older Adults (DISCO)		93.866	5R01AG059291-04	1,027,842	128,054
Lifecourse determinants and outcomes of epigenetic age acceleration across two generations		93.866	5R01AG061006-04	460,377	156,180
Novel Protein Aggregation Inhibitors and Upper Motor Neuron Stabilizers for ALS and other Neurodegenerative Diseases		93.866	5R01AG061708-04	689,272	—
The role of activity induced exosome signaling in synaptic pathology of Alzheimer's Disease		93.866	5R01AG061787-05	624,937	—
Molecular Mechanisms Underlying Behavioral and Psychological Symptoms in Alzheimers Disease		93.866	5R01AG062249-05	498,996	170,198
Clinical, Neuroanatomic, and Pathologic Signatures of FTLD-tau in Dementia Phenotypes		93.866	5R01AG062566-03 REVISED	421,333	—
Genetic modifiers of the Mediterranean-DASH diet Intervention for Neurodegenerative Delay (MIND) response		93.866	5R01AG065398-03	196,770	2,505
Bioenergetic Mechanisms Underlying Circadian Dietary Intervention		93.866	5R01AG065988-04	336,574	—
Contributions of stress reactivity to risk of Alzheimer's disease and related dementia's in a community-based cohort		93.866	5R01AG067557-02	855,610	69,850
Personality and Non-Cognitive Factors in the Prediction and Moderation of Risk of Dementia Progression and Physical Health		93.866	5R01AG067622-04	364,075	—
Cognitive SuperAging: A model to explore resilience and resistance to aging and Alzheimers disease		93.866	5R01AG067781-03 REVISED	997,442	133,008
Negotiation Training to Optimize Caregiver Communication in Alzheimer's Disease		93.866	5R01AG068421-03	602,337	—
COCOA flavanols to improve walking performance in PAD: the COCOA-PAD II Trial		93.866	5R01AG068458-02S1	587,135	124,260
Reconstructing the temporal landscape of gene regulation in aging		93.866	5R01AG068579-03	530,124	—
Exploring the modulation of synaptic/extrasynaptic NMDAR balance as a novel therapeutic strategy in Alzheimer's disease and other neurodegenerations		93.866	5R01AG068286-02	22,581	—
ToolBox Detect: Low Cost Detection of Cognitive Decline in Primary Care Settings		93.866	5R01AG068762-03	629,230	14,975
LIVOPT - Liver cirrhosis - Optimizing Prediction of Patient Outcomes		93.866	5R01AG067019-02	261,324	—
Health Literacy and Cognitive Function among Middle-Aged Adults: The MidCog Study		93.866	5R01AG070212-02	403,492	—
Development and Validation of a Telehealth Strategy for Routine Detection of Cognitive Impairment in Primary Care: The MyCog Mobile Assessment		93.866	5R01AG074245-02	237,614	—
Longitudinal Trajectories of Physical and Cognitive Function among Persons Aging with HIV		93.866	5R03AG067980-02	78,082	—
A PILOT STUDY OF PREHABILITATION DURING THE NEOADJUVANT WINDOW OF OPPORTUNITY IN OLDER WOMEN WITH OVARIAN CANCER (FIT4SURGERY)		93.866	5R03AG074031-02	168,994	—
Physiological role of naturally occurring amyloid beta oligomers		93.866	5R21AG060203-02	(281)	—
Epigenetic regulation of the Klotho / Miz 1 axis in smoking-induced emphysema.		93.866	5R21AG060211-02	10,423	6,597
A test of the calcium hypothesis of Alzheimers disease		93.866	5R21AG060267-02	48,493	—
Highly Functional Organic Core Templated High-Density Lipoproteins to Reverse Vascular Disease		93.866	5R21AG062999-02	13,755	—
Unacylated Ghrelin to Improve Functioning in PAD: the GIFT Trial		93.866	5R21AG063076-02	106,647	17,929
APelin, EXercise, and mobility in Peripheral Artery Disease, the APEX-PAD Study		93.866	5R21AG065705-02	114,496	—
Behavioral Economics Applications to Geriatrics Leveraging EHRs (BEAGLE)		93.866	5R33AG057383-05	619,164	154,784
The Impact of Race on Quality of Life of the Aged after Heart Transplant or Destination Therapy Mechanical Support		93.866	5R36AG073531-02	54,451	—
Slow Outward Currents and Learning In Aging Hippocampus		93.866	5R37AG008796-28	98,748	—
C. elegans Model for Neurodegenerative Diseases of Aging		93.866	5R37AG026647-15	(15,389)	—
Boston Early Adversity and Mortality Study (BEAMS): Linking administrative data to long-term longitudinal studies		93.866	5RF1AG064006-02	824,240	490,102
Predocloral and postdoctoral training program in aging and dementia		93.866	5T32AG020506-20	314,747	—
Precinical development of a novel small molecule inhibitor of Alzheimer's disease-related cognitive impairment		93.866	5U01AG066722-03	1,859,515	493,821
Study to Uncover Pathways to Exceptional Cognitive Resilience in Aging (SUPERAGING)		93.866	5U19AG073153-02	597,144	54,379

NORTHWESTERN UNIVERSITY
 Supplementary Schedule of Expenditures of Federal Awards
 Year ended August 31, 2022

Cluster title/Federal grantor/Subagency/Project title	Pass-through entity	Assistance listing number	Sponsor award number	Federal expenditures	Passed-through to subrecipients
ARMADA: Advancing Reliable Measurement in Alzheimer's Disease and cognitive Aging.		93.866	5U2CAG057441-03	\$ 2,604,346	1,208,356
The Mobile Toolbox for Monitoring Cognitive Function		93.866	5U2CAG060426-05	3,872,275	2,385,389
Alzheimer's Disease Cooperative Study – A4	284	93.866	75689162/U19AG010483-25R	(4,237)	—
Early Onset AD Consortium – the LEAD Study (LEADS)	112	93.866	7861_NW/U5U01AG057195-04	69,333	—
Alzheimer's Disease Neuroimaging Initiative (ADNI3)	284	93.866	79634993 AMD 5/WEI2015-01/U19AG024904	158,869	—
Long-Term Nicotine Treatment of Mild Cognitive Impairment	284	93.866	81622655/6R01AG047992-02	2,408	—
The role of personality in cognitive aging and dementia	210	93.866	83945/1152237-2 // 5R01AG06093304	41,924	—
Claude D Pepper Older Americans Independence Centers (OAIC) Coordinating Center Program Research Program Funding Announcement (RFA)	310	93.866	885-55811085033664-10000117742 // 5U24AG059624-04	25,850	—
LEVERAGING NEUROIMAGING BIOMARKERS TO UNDERSTAND THE ROLE OF SOCIAL NETWORKS IN ALZHEIMER'S DISEASE	112	93.866	8890/5R01AG0507739-03	2,737	—
Contribution of Longitudinal Neighborhood Determinants to Cognitive Health and Dementia Disparities within a Multi-Ethnic Cohort	70	93.866	900142/5R01AG072634-02	27,990	—
ASYMMETRIC NEURODEGENERATION AND LANGUAGE IN PRIMARY PROGRESSIVE APHASIA		93.866	9R01AG077444-16	239,148	—
Functional Limitations and Disability Among Middle-Aged Adults	71	93.866	A033130/5R01AG062502-03	88,848	—
PRagmatic Evaluation of eVENTs And Benefits of Lipid-lowering in oldEr Adults (PREVENTABLE) – Data Coordinating Center	71	93.866	A03-3869-01/5U19AG065188-02	1,654	—
Royal/ Translational Research Center to Promote Context-Specific Caregiving of Community-Dwelling Persons Living with Alzheimer's Diseases or Related Disorders: FTD Tele-Savvy: Adapting and Testing an Evidence-based Psychoeducation Program for Caregivers	77	93.866	A261128//SP30AG064200-02 REVISED	2,489	—
Preparation for End-of-Life Decision Making in Mild Alzheimer's Disease	77	93.866	A529888/5R01AG057714-05	27,151	—
COVID-19: Continuous Monitoring of COVID-19 Symptomatology for Elderly Patients in Long Term Care Facilities Using Advanced, Soft, and Flexible Sensors Mounted on the Suprasternal Notch	205	93.866	AGMT 4/1/2021/R41AG060203	19,668	—
Personality and Health: A Longitudinal Study	173	93.866	AGMT 6/30/22 // 5R01AG020048-24	9,296	—
Cardiovascular and HIV/AIDS Effects on Brain Structure/Function and Cognition	280	93.866	CNVA00050794/128001-6//5R01AG0348529-10	111,236	—
Building the Geriatric Emergency Care Applied Research (GEAR) Network	318	93.866	CON-80002943 (GR112405)/7R33AG058926-04	165,287	—
NIA AD/ADRD Health Care Systems Research Collaboratory	318	93.866	CON-80003408 (GR115121) // 3U54AG063546-02S4	4,037	—
Geriatric Emergency care Applied Research network 2.0 – Advancing Dementia Care (GEAR 2.0 ADC)	318	93.866	GR113862 (CON-80002701)/1R61AG069822-01 REVISED	165,931	—
PREDICT-ADFTD: Multimodal Imaging Prediction of AD/FTD and Differential Diagnosis	168	93.866	GR123789 / SPC-100005389/R01AG055121	30,540	—
Collaborative Care for the Older Injured Patient: A Trauma Medical Home	112	93.866	IN4688176NW//5R01AG052493-05	3,809	—
Amyloid beta oligomer induction of Alzheimer's disease in nonhuman primates	307	93.866	Klein AGMT 5/20/21/9R44AG067832-02	45,943	—
ARTFL LEFFTDS Longitudinal Frontotemporal Lobar Degeneration (ALLFTD)	140	93.866	NOR-263134-01/PO #67509301// 5U19AG063911-02	71,196	—
Optimization of small molecule SERCA2b activators to inhibit neuron loss in Alzheimer's disease	153	93.866	NW-0521//2R42AG062001-02A1	365,432	—
ARTFL LEFFTDS Longitudinal Frontotemporal Lobar Degeneration (ALLFTD)--Fixed Price	140	93.866	NWU-283134-01/5U19AG063911-03	8,612	—
Trial of Parkinson's And Zoledronic Acid (TOPAZ)	213	93.866	P-163_PO2800007864/R01AG059417	9,743	—
The Effect of High Intensity Walking on Frailty	51	93.866	R01AG060162/AGMT 12/17/2020	15,516	—
SAGE LEAF: Reducing Burden in Alzheimer's Disease Caregivers through Positive Emotion Regulation and Virtual Support	32	93.866	R43AG0605080-SB1/R43AG0605080	35,243	—
Synaptic substrates of age-dependent memory deficits		93.866	RF1AG017139-15	49,658	—
Tailored Non-Pharmacotherapy Services for Chronic Pain: Testing Scalable and Pragmatic Approaches	128	93.866	RNG210311-BUDG01-NU-00//UG3AG067493-01 REVISED	(5,618)	—
Tailored Non-Pharmacotherapy Services for Chronic Pain: Testing Scalable and Pragmatic Approaches	128	93.866	RNG210885-NORTHWESTERN/SUH3AG067493-03	20,175	—
Using the PROMIS Cognition Item Bank for Early Detection of Cognitive Decline in Primary Care	185	93.866	SCON-00000397-01/R61AG069776	51,798	—
Long-Term Nicotine Treatment of Mild Cognitive Impairment	284	93.866	SCON-0003468//2R56AG047992-07A1	279	—
First-in-human study of MW151, a novel drug targeting neuroinflammation	111	93.866	SP0047505, 10/31/18/4R44AG060846-02 REVISED	(1,859)	—
Production and quality analysis of clinical drug for a novel CNS protein kinase inhibitor therapeutic candidate	154	93.866	STTR/4R42AG062095	18,214	—
Epigenetic regulation of the Klotho / Miz 1 axis in smoking-induced emphysema.	268	93.866	SUBK00014621/7R21AG060211-03	30,301	—
Surface based deep learning to define HIV-related brain aging. Included investigators	297	93.866	UWSC12801/5R33AG067069-02	49,334	—
National Alzheimer's Coordinating Center (NACC)	297	93.866	UWSC12990/5U24AG072122-02 REVISED	19,107	—
National Alzheimer's Coordinating Center	297	93.866	UWSC7729/3U01AG016976-20SA	(5,648)	—
High dimensional mediation analysis for DNA methylation markers mediating cardiovascular health metrics and cardiovascular diseases	311	93.866	WU-19-384-MOD-1//5R21AG0603370-02	11,429	—
Innovative Analytical Methods for DNA Methylation Age	311	93.866	WU-22-0335 // 1R21AG068955-01A1	48,801	—
Lifecourse CVD Risk and Midlife Cognitive Trajectories and Brain Aging: Implications for Alzheimer's and Dementia Prevention	161	93.866	YAF2194-04 AMD3/5R01AG063887-04	64,831	—
				49,747,360	10,292,854
Re-engineering Connectivity in the Drosophila Brain		93.867	1R21EY031849-01	111,769	—
ADAlumumab Vs. conventional ImmunoSupprESSION for uveitis (ADVISE) Trial	126	93.867	2004591747-02//5UG1EY028091-04	2,647	—
Mechanisms of neurovascular coupling in the retina and their dysfunction in diabetes		93.867	5F30EY031565-03	45,037	—
Functional Divergence at the Mouse Type 6 Bipolar Cell Terminal		93.867	5F31EY030344-03	29,918	—
Intrinsic electrical properties shape feature selectivity in a novel retinal ganglion cell		93.867	5F31EY030737-03	31,725	—
NIH NRSA PreDoc Fellowship for Andrew Jo: Intersectional Genetic Dissection of Inner Retinal Circuits		93.867	5F31EY031985-03	40,478	—
The role of beta2-adrenergic receptor and interleukin-6 signaling in macrophage-driven choroidal neovascularization		93.867	5K08EY030923-03	218,909	—
The Role of Vimentin Cytoskeleton in the Mechanobiology of Schlemm's Canal Endothelium.		93.867	5K99EY032547-02	106,057	—
Function of Basal Synapses at Mammalian Photoreceptors		93.867	5R01EY012141-24	191,332	—
Signal Processing in the Inner Retina		93.867	5R01EY018204-12	504,499	—
The Role of MicroRNAs in Corneal Epithelial Homeostasis		93.867	5R01EY019493-13	330,596	—
The Mechanical Basis of Primary Open Angle Glaucoma		93.867	5R01EY019896-10	31,252	31,252
Neural Mechanisms of Fixation Choice While Searching Natural Scenes		93.867	5R01EY021579-07	(60,224)	—
Neural Mechanisms of Fixation Choice While Searching Natural Scenes		93.867	5R01EY021579-07	(3,965)	(3,965)
Activation of the Angiotensin-Tie2/TEK Pathway to Treat Ocular Hypertension and Glaucoma		93.867	5R01EY025799-07	672,118	—
Investigating oxygen metabolism in diabetic retinopathy		93.867	5R01EY026078-05	187,765	52,473
Mechanisms underlying the formation of the cornea and ocular surface epithelium		93.867	5R01EY028304-04	246,539	—
The Roles of Autophagy in Limbal/Corneal Epithelia.		93.867	5R01EY028560-05	364,717	—
Investigating nanoscale neuronal damages in early glaucoma towards clinical optical detection		93.867	5R01EY029121-04	460,011	273,573
Spatially resolved measurements of retinal metabolism		93.867	5R01EY029306-03	277,930	—
Exploring the angiogenesis-to-fibrosis transition in ischemic retinopathies		93.867	5R01EY030121-03	328,418	—
Cell types and functional circuitry in the mouse retina		93.867	5R01EY030169-04	325,972	—
Non-canonical GABAergic Pathways in the Visual System		93.867	5R01EY030565-03	846,979	—
Synapses as Independent Computational Units in the Excitatory Pathways of the Retina		93.867	5R01EY031029-03	330,976	—
Functional consequences of heterotypic retinal ganglion cell coupling		93.867	5R01EY031329-03	380,006	—
Monitoring the hemodynamic response to therapy in diabetic retinopathy		93.867	5R01EY031815-03	284,582	73,759
The role of Angiotensin-TEK signaling in polypoidal choroidal vasculopathy		93.867	5R01EY032609-02	266,033	—

NORTHWESTERN UNIVERSITY
 Supplementary Schedule of Expenditures of Federal Awards
 Year ended August 31, 2022

Cluster title/Federal grantor/Subagency/Project title	Pass-through entity	Assistance listing number	Sponsor award number	Federal expenditures	Passed-through to subrecipients
Single-cell RNA sequencing reveals novel regulatory pathways in maintaining limbic epithelial stem cell homeostasis		93.867	5R01EY032922-02	\$ 198,938	—
Ultra-fast Scalable OCT Systems based on a New Photon Detector		93.867	5R21EY029516-02	(946)	—
Reconstructing positional information in the eye from scRNA-seq and relating it to signal transduction		93.867	5R21EY032233-02 REVISED	137,568	—
Multidisciplinary Visual Sciences Training Program		93.867	5T32EY025202-08	95,182	—
Clinical glaucoma management enabled by visible-light OCT		93.867	5U01EY033001-02	485,778	241,733
Dynamic Tracer Kinetic Model to Detect Preclinical Diabetic Retinopathy (DR)	110	93.867	A22-0007-S002 Mod 1 // 1R01EY032222-01A1	86,364	—
DRCR Retina Network Chair Emeritus – Diabetic Retinopathy Clinical Research Network	124	93.867	Agmt 12/3/19	79,401	—
CLARIFYING THE OPTIMAL APPLICATION OF SLT THERAPY (COAST)	280	93.867	AWD00002935 (136658-2)//5UG1EY031651-02	68,860	—
Microvasculature in Colon Field Carcinogenesis: Clinical-Biological Implications	29	93.867	BMC ID 6610-01//R01CA224911-02	234	—
Diabetic Retinopathy Clinical Research Network 2019-2023 Master Agreement	124	93.867	DRCR Site 61: JCHR-Site DRCR Addendum AF	6,573	—
Data-Driven Biomechanical Simulation of Eye Movement and Strabismus	87	93.867	E2048123 (AMD 3) // 5R01EY029715-03	32,865	—
ER stress and diabetic retinopathy	209	93.867	R1217228//5R01EY01994912	110,309	—
				7,863,202	668,825
Developing novel deep-learning based methods for deciphering non-coding gene regulatory code	210	93.879	1R01LM01372201 // 1170742/2/92468 AMD1	17,893	—
Bayesian Generative Methods for Extracting and Modeling Relations in EHR Narratives		93.879	1R21LM012618-02	(1,413)	(1,413)
Network Models for Metabolomics	265	93.879	21-015788 A01//5R01LM013444-03	103,450	—
Guiding humans to create better labeled datasets for machine learning in biomedical research		93.879	3R01LM013523-02S1	352,457	217,936
Enhancing clinical trials participation through library partnerships		93.879	5G08LM012688-03	250	—
Health For All: Advancing Library-Academic Medical Center Partnerships to Navigate Wellness and Scale Preventive Services Access		93.879	5G08LM013188-03	208,505	—
Modeling the Incompleteness and Biases of Health Data		93.879	5R01LM013337-03	432,504	147,671
A FAIR Public Repository for Experimentally Verified Proteoforms		93.879	5R21LM013097-02	(113)	—
Predoctoral Training Program in Biomedical Data Driven Discovery (BD3)		93.879	5T32LM012203-05 REVISED	(133,256)	—
Network of the National Library of Medicine Evaluation Center		93.879	5U24LM013751-02	695,646	—
NNLM All of Us Community Engagement Center Extension "NEC Evaluation"	257	93.879	S02842-01//3UG4LM012346-05S1	49,909	—
				1,725,832	364,194
Fogarty Global Health Training Fellowship Program	94	93.989	116559-5101817//5D43TW010543-05 REVISED	22,467	—
Northwestern/Nigeria Research Training Program in HIV and Malignancies (NN-HAM)		93.989	5D43TW009575-09	283,916	128,416
Expanded Multidisciplinary NeuroAIDS Research Training to Improve HIV Outcomes in Nigeria		93.989	5D43TW009608-10	273,508	186,585
Building the Next Generation of Researchers in TB/HIV Diagnostics in Mali (B-NextGen)		93.989	5D43TW010350-07	254,281	113,548
Building capacity for patient-centered outcomes research to improve the quality and impact of HIV care in Tanzania		93.989	5D43TW010946-04	344,920	122,626
Cardiovascular Research Training in Nigeria (CaRTIN)		93.989	5D43TW011976-02	96,271	61,198
Global Hypomethylation Biomarkers for Cervical Cancer Screening in Women Living with HIV in LMICs		93.989	5R21TW012092-02	72,381	—
University of Ibadan MEPI Junior Faculty Research Training Program (UI-MEPI-J)	254	93.989	7/225/29/NU-02//D43TW010140-05	35,544	—
Integrating Hypertension & Cardiovascular Disease Care into existing HIV Services Package in Botswana	236	93.989	Agmt 8/5/2021//5UG3HL154499-02	11,397	—
HIV and Mycobacterial Disease in Mali		93.989	5D43TW010350-05	(1,092)	—
Building Research And Innovation in Nigeria's Science – (BRAINS)	261	93.989	SP0031902-60041063//5D43TW010134-05	2,378	—
Support of Training and Mentoring in Nigeria for Academics (STAMINA)	258	93.989	UJ-STAMINA-NW04//D43TW010130-04	584	—
				1,396,555	612,373
Pharmacokinetics and Safety of Commonly Used Drugs in Lactating Women and Breastfed Infants	71	93.RD	2335518//HHSN-275201000003I	890	—
ImageDePHI: Image De-identification for the Acceleration of Cancer Research	132	93.RD	75N91020C0024//K003187-00-S02	(10,318)	—
Multi-Ethnic Study of Atherosclerosis – Field Center		93.RD	75N92020D00004//75N92020F00001-P00002	458,506	—
Multi-Ethnic Study of Atherosclerosis (MESA) Exam 7 – Task Area B		93.RD	75N92020D00004-75N92021F00001	229,244	—
Centers for Research on Structural Biology of Infectious Diseases		93.RD	75N93022C00035	400	—
Pilot Testing, Refinement, and Validating of the NBT, and Preparation for Norming Study (NIH Infant and Toddler Toolbox: TO 2)		93.RD	75N94019D00005 P00002	1,176,039	161,680
NIH Infant and Toddler Toolbox Task Order 3		93.RD	75N94019D00005-75N94021F00001	1,114,990	210,391
NU NCI20C06 – Phase II Trial of the Immune Checkpoint Inhibitor Nivolumab in Patients with Recurrent Select Rare CNS Cancers	143	93.RD	75N98020D00098	10,716	—
Phase Ib 9cUAB30 in Early Stage Breast Cancer to Evaluate Biologic Effect	298	93.RD	Agmt 000001301//Task Order HHSN26100009	13,303	—
IPA for Michael Bass		93.RD	Agmt 10/10/20	17,817	—
AMD Ryan Initiative Study (ARIS) LONGITUDINAL STUDY OF EARLY AMD AND RETICULAR PSEUDODRUSEN	76	93.RD	Agmt 7/7/21 Mod 1//HHSN263201700001C	2,764	—
A randomized, double-blind, placebo-controlled study of 4-hydroxymoxifen topical gel in women with mammographically dense breasts -fixed pricing	293	93.RD	HHSN2612012000034I-T011-4	156	—
Cancer Prevention Agent Development Program: Early Phase Clinical Research		93.RD	HHSN2612012000035I 75N91019F00130 P00004	421,079	—
Cancer Prevention Agent Development Program: Early Phase Clinical Research		93.RD	HHSN2612012000035I//HHSN26100014 P00005	533,800	399,068
CARDIA Task Area B – Cohort Limited Exam (Year 35)		93.RD	HHSN268201800003I 75N92020F00001	349,451	—
Coronary Artery Risk Development in Young Adults (CARDIA) Study – Chicago Field Center		93.RD	HHSN268201800003I-P0004	615,516	16,756
Phase II Multi-Center, Prospective, Randomized, Double-Blind Study of Nitazoxanide in Acute and Chronic Norovirus in Hematopoietic Stem Cell and Solid Organ Transplant Recipients		93.RD	HHSN272201600016C	438,391	267,176
Structural Genomics Centers for Infectious Diseases		93.RD	HHSN272201700006C-14 P00017	4,978,190	3,778,975
Intergovernmental Personnel Act/IPA Assignment Agreement		93.RD	IPA AGMT Signed 9/14/21	25,155	—
COVID-19: A Federated COVID-Rich ICU Database	139	93.RD	5S207, POW54331	113,659	—
Longitudinal Associations of Individual-, Interpersonal-, and Institutional-Level Assets with Cardiovascular Health		93.RD	Task Order 75N92021F00152 Contract HHSN26820180000	87,623	—
Office of the Assistant Secretary for Health:					
Re-Entry Community Linkages (RE-LINK)		93.137	5 CPIMP161134-05-00	9,784	—
Office of the Assistant Secretary for Preparedness and Response (ASPR):					
COVID-19: Advanced, Bio-Integrated, and Cloud-Enabled Sensors for Early Diagnosis of Respiratory Infections in the Home Setting.	205	93.RD	AGMT 5/19/21//75A50119C00043	91,633	—
Office of the Director, National Institutes of Health:					
ECHO Consortium on Perinatal Programming of Neurodevelopment	104	93.310	0255-2298-4609//5UH3OD023337-04	32,822	—
The role of steady state broadly neutralizing antibody tissue levels in preventing distal site SHIV replication	195	93.310	19110106-Sub02//TK01OD024882-06	10,457	—
ECHO PRO Research Resource: A Developmentally based Measurement Science Framework for Assessing Environmental Exposure and Child Health		93.310	1U24OD023319-01 REVISED	(2,078)	(2,078)
Infrastructure: Illinois Precision Medicine Consortium (IPMC)		93.310	30T2OD028557-01S5	12,357,962	8,629,654
Biochemical Basis of Chromatin Folding and Chromosome Condensation		93.310	5DP5OD024587-05	17,210	—
ECHO PRO Research Resource: A Developmentally based Measurement Science Framework for Assessing Environmental Exposure and Child Health		93.310	5U24OD023319-05	3,646,872	449,729

NORTHWESTERN UNIVERSITY
 Supplementary Schedule of Expenditures of Federal Awards
 Year ended August 31, 2022

Cluster title/Federal grantor/Subagency/Project title	Pass- through entity	Assistance listing number	Sponsor award number	Federal expenditures	Passed- through to subrecipients
TOP2A effects on transcription in gliomas: implications for personalized therapy		93.310	7DP5OD021356-05	\$ 11,359	—
Comparing Harmonization Methods in ECHO	71	93.310	A03-5269 // 5U2COD023375-06	92,043	—
All of Us Participant Technology Systems Center (OT2)	304	93.310	AGMT – 09/24/2021//3OT2OD030043-01S4	29,768	—
Promoting Color Brave Conversations in Families: A Public Health Strategy to Advance Racial Equity	225	93.310	TUL-HSC-559715-21&22//1U01OD033242-01	40,517	—
				<u>16,236,932</u>	<u>9,077,305</u>
PAGES (Progressing through the Ages: Global Climate Change, Evolution, and Societal Well-being)	256	93.351	076638-15799//5R25GM129196-05	(19)	—
Acquisition of an MD3-UP microdiffractometer for macromolecular crystallography		93.351	1S10OD028566-01	265,924	—
Acquisition of an Eiger2 X 16M pixel array detector for macromolecular crystallography		93.351	1S10OD028680-01	1,236,000	—
Understanding the mechanism(s) of systemic antibody delivery, distribution, and localization to mucosal sites in the in vivo macaque model		93.351	3K01OD026571-03S1	308,276	158,578
Animal Models for SCN2A Neurodevelopmental Disorders		93.351	5R21OD025330-02	52,863	—
Tandem Genetically Encoded Voltage and Calcium Indicator Mice for Optical Physiology of Excitable Cells		93.351	5R21OD025345-02 REVISED	85,953	—
				<u>1,948,997</u>	<u>158,578</u>
Data and Research Support Center: Precision Medicine Initiative Cohort Program Coordinating Center (U2C)	302	93.910	VUMC60724//5U2COD023196-05	157,880	—
Substance Abuse and Mental Health Services					
Center for Child Trauma Assessment, Services and Interventions		93.243	5H79SM085084-02	352,339	—
Implementing Agent Based Models to reduce overdose deaths	283	93.788	5820-1336-00-A//1H79T1083343 (SOR-CARE-39)	87,214	—
			Department of Health and Human Services Total	<u>468,266,471</u>	<u>71,347,230</u>
Department of Homeland Security:					
COVID-19: Value-focused Robust Optimization for Disaster Response	21	97.061	ASUB00000364//17STQAC00001-01-02	66,370	—
Federal Emergency Management Agency					
Coastal Probabilistic Hazard Analysis – Year 2	274	97.RD	5120708//HSHQDC-16-A-B0011	27,119	—
			Department of Homeland Security Total	<u>93,489</u>	<u>—</u>
Department of Justice:					
National Institute of Justice:					
Firearm involvement of parents and their adolescent children: A prospective intergenerational study of high-risk youth		16.560	2017-IJ-CX-0019	70,008	—
Delinquent and Criminal Behaviors of Parents and Their Adolescent Children: A Prospective Intergenerational Study of Children of Former Juvenile Offenders		16.560	2020-MU-MU-0001	131,131	—
Improving Employment & Reducing Recidivism Among Prison Offenders via Virtual Reality Job Interview Training	268	16.560	SUBK00009850//2019-MU-MU-0004 – AMD 02	4,038	—
				<u>205,175</u>	<u>—</u>
Evaluating a Cognitive Behavioral Approach for Improving Life Outcomes of Underserved Young Women: A Randomized Experiment in Chicago	244	16.726	FP064531-01-SP//2016-JU-FX-0002	8,207	—
Office on Violence Against Women:					
Testing the effectiveness of a domestic violence intervention at reducing recidivism		16.026	2020-SI-AX-0009	170,285	—
			Department of Justice Total	<u>383,667</u>	<u>—</u>
Department of State:					
Innovative Approaches to Evaluating Citizen-Led Rule of Law Initiatives in Ukraine		19.345	SLMAQM19GR2131	385	—
Future Innovations in Embassy Planning, Design, Construction & Operation	133	19.RD	19AQMM19D0063	42,813	—
			Department of State Total	<u>43,198</u>	<u>—</u>
Department of the Interior:					
National Park Service:					
Constraining the Mammoth Cave Nitrogen Cycle with a Combined Sequencing-Isotope Approach	156	15.931	P0020895//P20AC00630	9,521	—
United States Geological Survey:					
Probabilistic Seismic Hazard Map testing in Nepal: A cooperative agreement between the USGS and Northwestern University		15.808	G19AC00104-02	60,410	—
IPA Agreement		15.RD	Stein AGMT 7/16/21	10,762	—
			Department of the Interior Total	<u>80,693</u>	<u>—</u>
Department of the Treasury:					
COVID-19: Surveillance of Pathogens in Sewage in Oklahoma City in 2022	277	21.027	2022-63 // Agr signed 03/01/2022	12,121	—
			Department of the Treasury Total	<u>12,121</u>	<u>—</u>
Department of Transportation:					
Tier I Center on TELEMOBILITY		20.701	69A3552047139	434,531	253,488
Federal Aviation Administration:					
Evaluating the Potential of Urban Air Mobility Service to Airports	170	20.RD	Mahmassani AGMT 12/16/20	2,000	—
Federal Highway Administration:					
Optimizing Bridge Abutment Slope Protection at Stream Crossing	317	20.RD	0092-21-02	68,732	—
Third Generation Simulation (TGSim) Data: A Closer Look at the Impacts of Automated Driving Systems on Human Behavior	256	20.RD	102471-18316//693JJ321C000002	32,337	—
			Department of Transportation Total	<u>537,600</u>	<u>253,488</u>
Department of Veterans Affairs:					
Edward Hines, Jr. VA Hospital:					
Amplify Gait to Improve Locomotor Engagement in Spinal Cord Injury (AGILE SCI Trial)		64.RD	36C24E21D0007 P00001	34,482	—
VA IPA agreement for Shamail Dusanee		64.RD	IPA AGMT Signed 11-17-2021	17,090	—
Intergovernmental Personnel Act (IPA) Assignment Agreement for Elizabeth Bisch Platt		64.RD	IPA AGMT. Signed 05/13/21 (578/151)	24,150	—
Development of ultrasound imaging phantoms appropriate for quantification of muscle (Cheng Sun, Effort)		64.RD	IPA AGMT. Signed 07/07/2021	10,584	—
Intergovernmental Personnel Act (IPA) Assignment Agreement for Erin Lindsay Reedy (FY2021-22)		64.RD	IPA AGMT. Signed 07/27/2021 (578/151)	60,022	—
Intergovernmental Personnel Act (IPA) Assignment Agreement for Jungwha (Julia) Lee, Sponsored by Dr. Bonnie Martin-Harris		64.RD	IPA AGMT. Signed 08/07/2021 (578/151)	9,156	—
Intergovernmental Personnel Act (IPA) Assignment Agreement for Heather Henderson		64.RD	IPA AGMT. Signed 09/01/2021	6,496	—
Intergovernmental Personnel Act (IPA) Assignment Agreement for Abigail Barbara Day		64.RD	IPA AGMT. Signed 09/04/20 (578/151)	1,593	—

NORTHWESTERN UNIVERSITY
 Supplementary Schedule of Expenditures of Federal Awards
 Year ended August 31, 2022

Cluster title/Federal grantor/Subagency/Project title	Pass-through entity	Assistance listing number	Sponsor award number	Federal expenditures	Passed-through to subrecipients
IPA For Todd Parrish: Neural Target Identification for Functional Disability Associated with Alcohol Related Characteristics Among Veterans with Co-occurring AUD+mTBI		64.RD	IPA AGMT. Signed 12/01/2020 (578/151)	\$ 11,579	—
Development of ultrasound imaging phantoms appropriate for quantification of muscle fascicle architecture and mechanical properties (Eric Perreault, Effort)		64.RD	IPA AGMT. Signed 7/12/22	15,011	—
Jesse Brown VA Medical Center:					
FY2020-21 VA IPA for Christina Spaulding		64.018	IPA Agmt 04/05/2021	68,590	—
Intergovernmental Personnel Act (IPA) Assignment Agreement for Paul Cheresch		64.018	IPA AGMT Signed 04/05/2021	43,830	—
Intergovernmental Personnel Act (IPA) Assignment Agreement for Saul Soberanes		64.018	IPA AGMT. Signed 06/15/2021	52,796	—
Intergovernmental Personnel Act (IPA) Assignment Agreement for Elisa J. Gordon (NU Supervisor: David Bentrem)		64.018	IPA Agmt. Signed 08/03/2021	7,860	—
Intergovernmental Personnel Act (IPA) Assignment Agreement for Ziyun Lu (537/151)		64.018	IPA AGMT. Signed 08/03/2021 (537/151)	61,364	—
Intergovernmental Personnel Act (IPA) Assignment Agreement for Mengjia Kang		64.018	IPA AGMT. Signed 08/03/2021 (YR4)	22,615	—
				<u>257,055</u>	—
Intergovernmental Personnel Act (IPA) Assignment Agreement in support of Bin Liu		64.RD	Agmt 08/10/22	80,847	—
VA IPA for Francis Suh FY22		64.RD	AGMT Eklund 8/10/22	23,773	—
VA IPA for Nida Mubin 07/01/22-09/30/22		64.RD	AGMT Munshi 7/14/22	11,620	—
Intergovernmental Personnel Act (IPA) Assignment Agreement for Horacio Cardenas (FY21-22)		64.RD	IPA AGMT. Signed 01/10/2022	34,032	—
FY2021 Intergovernmental Personnel Act (IPA) Assignment Agreement for ZASU MARIE KLUG		64.RD	IPA AGMT. Signed 01/28/2021	13,495	—
Dr. Marcelo Bonini VA-IPA 1101BX004268		64.RD	IPA AGMT. Signed 03/04/2021	11,613	—
Intergovernmental Personnel Act (IPA) Assignment Agreement for Zasu Marie Klug (FY2021-22)		64.RD	IPA AGMT. Signed 05/07/2021 (537/151)	42,009	—
Intergovernmental Personnel Act (IPA) Assignment Agreement for Ryan Caldwell FY21 IPA		64.RD	IPA AGMT. Signed 07/17/2021	21,885	—
Intergovernmental Personnel Act (IPA) Assignment Agreement for Michael Cavanaugh		64.RD	IPA AGMT. Signed 07/28/20	479	—
Intergovernmental Personnel Act (IPA) Assignment Agreement for Yanni Yu (FY2020-21)		64.RD	IPA AGMT. Signed 08/10/2020	6,558	—
Intergovernmental Personnel Act (IPA) Assignment Agreement for Hao Wang		64.RD	IPA AGMT. Signed 08/26/22	90,595	—
Intergovernmental Personnel Act (IPA) Assignment Agreement in Support of Weiqi Huang		64.RD	IPA Agmt. Signed 08/26/22	97,252	—
Intergovernmental Personnel Act (IPA) Assignment Agreement for Julie Johnson (Supervisor: David Bentrem)		64.RD	IPA AGMT. Signed 09/03/2021	7,827	—
Intergovernmental Personnel Act (IPA) Assignment Agreement for Yasuhiro Omura		64.RD	IPA AGMT. Signed 09/12/2022	49,424	—
Intergovernmental Personnel Act (IPA) Assignment Agreement for Yaqi Zhang		64.RD	IPA AGMT. Signed 09/17/2021	51,820	—
Intergovernmental Personnel Act (IPA) Assignment Agreement for Yinu Wang		64.RD	IPA AGMT. Signed 09/17/2021	76,563	—
Intergovernmental Personnel Act (IPA) Assignment Agreement for Zasu Marie Klug		64.RD	IPA AGMT. Signed 09/30/2020	4,199	—
Intergovernmental Personnel Act (IPA) Assignment Agreement for Aneta Baran (FY2021-22)		64.RD	IPA AGMT. Signed 12/13/2021	47,326	—
Intergovernmental Personnel Act (IPA) Assignment Agreement for Stefania Fatone, Sponsored by Dr. Steven Gard		64.RD	IPA AGMT. Signed 7/07/2021 (537/151)	1,940	—
Intergovernmental Personnel Act (IPA) Assignment Agreement for Linda India (FY2019-20)		64.RD	IPA AGMT. Signed 8/07/2020	320	—
VA IPA Agreement for Christopher Futtner for FY21		64.RD	IPA AGMT. Signed 8/10/22	78,809	—
VA IPA FY20 for Elspeth Beauchamp		64.RD	IPA AGMT. Signed 8/26/22	38,351	—
VA IPA: Jun Qian (2022-2023)		64.RD	Meeks 7/14/22	35,727	—
VA IPA: Mairah Khan (2022-2023)		64.RD	Meeks 7/14/22	21,872	—
VA Connecticut Healthcare System:					
FY2021-22 IPA Assignment Agreement for Lori Post: IPA for Tracking Guns among Veterans		64.RD	IPA AGMT. Signed 04/07/2021	17,039	—
VA Sierra Pacific Network:					
Intergovernmental Personnel Act (IPA) Assignment Agreement for Benjamin Schalet		64.018	IPA AGMT. Signed 09/29/2021 (Y4)	14,183	—
VA Palo Alto IPA for Ben Schalet		64.RD	IPA AGMT 03/31/22	7,807	—
			Department of Veterans Affairs Total	<u>1,334,683</u>	—
Environmental Protection Agency:					
Approaches to Reduce Nutrient Loadings for Harmful Algal Blooms Management	312	66.509	Wells AGMT 12/15/20/84008601	28,091	—
			Environmental Protection Agency Total	<u>28,091</u>	—
National Aeronautics and Space Administration:					
A simulation pipeline for the study of kilonovae light curves and r-process nucleosynthesis in compact binary mergers	273	43.001	18042-02//80NSSC18K0565	75,200	—
Testing the Predictions of RAT Theory in Star Forming Clouds	305	43.001	530105Northwestern//SOFIA Grant 09_0535 AMND No. 1	71,513	—
The Balloon-Borne Large Aperture Telescope for Polarization – BLASTPol	279	43.001	573659 // 80NSSC18K0481-05	(22,785)	—
The Balloon-Borne Large Aperture Telescope for Polarization – BLASTPol	279	43.001	583489//80NSSC21K2082	130,624	—
Biosignature Preservation in Sulfate-Dominated Hypersaline Environments	89	43.001	AWD7774162-GR206675//80NSSC20K0849	31,634	—
Biologic and Resource Analog Investigations in Low Light Environments (BRAILLE)	28	43.001	BMSSA-006 // 80NSSC17M0054	(7,120)	—
The Wide-Angle Outflow of SGRB 210726A	204	43.001	DD1-22131X/NAS8-03060	22,370	—
Tracking the X-ray Emission of the Remarkable SGRB 211106A	204	43.001	DD1-22132X/NAS8-03060	22,420	—
X-ray Observations of Rapid, Luminous and Blue Stellar Explosions	204	43.001	G09-20054A//NAS8-03060	17,681	—
Continued X-ray Monitoring of a Tidal Disruption Event in an AGN Host Galaxy	204	43.001	G00-21105A//NAS8-03060	21,120	—
The Late-time X-ray Behavior of Short Gamma-ray Bursts: Implications for Energetics and Rates	204	43.001	G01-22043X-1//NAS8-03060	52,343	—
Toward an FRB Progenitor: Elucidating the FRB-AGN Connection with Chandra	204	43.001	G02-23068X//NAS8-03060	52,519	—
Multi-Scale Modeling of AGN Outbursts & Feedback in M87	204	43.001	TM1-22005X//NAS8-03060	35,350	—
				<u>503,469</u>	—
Project FUSION: Facilitating Unified Systems of Interdependent Organizational Networks	252	43.003	SUB00001667//80NSSC18K0511	83,708	—
Multiple Undergraduate Research Projects	256	43.008	099286-17921//80NSSC20M0046 01	78,995	—
Air-Carbon Boundary Layer Chemistry for Hypersonic Ablation.	246	43.012	1561377//80NSSC21K1574	37,769	—
Controllable Combustion of Metal Fuels for Space Power Systems	290	43.012	226120450A//80NSSC20K0293	87,317	—
				<u>125,086</u>	—
Extended Short Wave Infrared Focal Plane Array for Versatile Imaging Systems	164	43.RD	80NSSC21C0313	28,861	—
Testing a new physical model for the formation of galactic disks and its implications for star formation variability, ISM kinematics and galactic winds	206	43.RD	HST-AR-16124.001-A AMND #1//NAS5- 26555	36,276	—
Using the full power of the HST Archive to Address the Red Supergiant Problem	206	43.RD	HST-AR-16136.006-A Amnd 4//NAS5-26555	65,208	—
VLA & HST Monitoring of Sgr A* in July 2019 with Spitzer and Chandra	206	43.RD	HST-GO- 15667.001-A//NAS5-26555-01	11,436	—
Late-time monitoring of GW170817 across the electromagnetic spectrum	206	43.RD	HST-GO-15606.006-A//NAS5-26555	10,974	—

NORTHWESTERN UNIVERSITY
 Supplementary Schedule of Expenditures of Federal Awards
 Year ended August 31, 2022

Cluster title/Federal grantor/Subagency/Project title	Pass- through entity	Assistance listing number	Sponsor award number	Federal expenditures	Passed- through to subrecipients
1000 Days of GW170817: A Deep Multi-Band View of the First Neutron Star Merger with HST	206	43.RD	HST-GO-15886.007-A/NASS-26555	\$ 17,972	—
Scylla: A Pure-parallel, Multi-headed Attack on Dust Evolution and Star Formation in ULLYSES Galaxies	206	43.RD	HST-GO-15891.009-A/NASS-26555	2,064	—
Measuring the Star Formation Efficiency of Molecular Clouds in the Small Magellanic Cloud	206	43.RD	HST-GO-15912.001-A/NASS-26555	46,432	—
Fine-Tuned Search for Kilonova Emission in a Short Gamma-Ray Burst: Implications for the Progenitors, GW Sources, and r-Process Nucleosynthesis	206	43.RD	HST-GO-16303.005-A/NASS-26555	15,183	—
Connecting the Smoke to the Fire: Mapping Andromeda's Inner Circumgalactic Medium	206	43.RD	HST-GO-16730.016-A/NASS-26555	8,392	—
Quantifying the Diversity of Relativistic Transients with Radio Observations	206	43.RD	HST-HF2-51403.001-A Amend 2/NASS5-26555	1,571	—
Stellar Afterlives and Black Hole Cataclysms: Learning about Stars, Galaxies, and the Cosmic Expansion with Gravitational Waves	206	43.RD	HST-HF2-51455.001-A Amend 1/NASS5-26555	110,529	—
The study of hyper-accreting black holes and the origin of gold in the Universe	206	43.RD	HST-HF2-51487.001-A AMND#1/NASS5-26555	101,529	—
Cycle 7: Joint HAWC+ALMA Investigation of Young Protostars in Ophiuchus	229	43.RD	NNA17BF53C/SOF 07-0147 Mod 01	20,053	5,616
NASA Ames Research Center:					
Effects of Partial Gravity on Multi-system Mammalian Physiology: Microbiome and Related Systems		43.007	80NSSC20K1519 P00003	76,055	—
Effects of Spaceflight on Gastrointestinal Microbiota in Mice: Mechanisms and Impact on Multi-System Physiology		43.007	NNX15AL05G 000015	60,622	6,104
				<u>136,677</u>	<u>6,104</u>
NASA George C. Marshall Space Flight Center:					
The Columnar to Equiaxed Transition and Dendrite Fragmentation		43.003	NNX17AD48G-000011	111,921	—
Microstructure Evolution in Freeze-Cast Materials		43.007	80NSSC18K0196-P00011	132,427	—
NASA Goddard Space Flight Center:					
The Strontium Isotope Composition of Neoproterozoic Carbonates: Implications for the Carbon Cycle and the Evolution of the Biosphere		43.001	80NSSC17K0245 P00003	33,786	—
The Physics, Observational Signatures, and Consequences of AGN-Driven Galactic Winds		43.001	80NSSC18K1096 P00004	41,145	—
Biofilms in the Deep Subsurface: Implications for Planetary Habitability		43.001	80NSSC18K1267	10,811	—
Tools for Modeling Selection Biases and for Advanced Astrophysical Interpretation of LISA Observations		43.001	80NSSC19K0323-P00002	82,904	—
Exploring and Investigating the Physics of Time-Domain Multi-Messenger Astronomy across the Electromagnetic Spectrum & Beyond (FINESST 2019 A Hajela)		43.001	80NSSC19K1422-P00004	52,295	—
Habitability and Observational Prospects of Rocky Exoplanets Evaluated with 3D Chemistry-Climate Models		43.001	80NSSC19K1523-P00002	20,469	—
Mapping Extreme Mass Loss from Massive Stars with Fermi and the VLA		43.001	80NSSC19K1715	5,209	—
Multi-messenger Constraints on Close Binary Evolution in the Milky Way		43.001	80NSSC20K0504 – P00001, P00002	90,725	—
Magneto-Rotational Instability in the Sun? Global Radiation-MHD Simulations of the Near-Surface Shear Layer		43.001	80NSSC20K1280 P00001	467,722	248,165
XMM-Newton Observations of Jets in Short Gamma-ray Bursts		43.001	80NSSC21K0818	64,075	—
Preparing LISA for Intermediate-Mass Black Hole Science		43.001	80NSSC21K1722 P00002	106,717	—
Relativistic Simulations of Accreting Neutron Stars		43.001	80NSSC21K1746	116,040	—
Simulating neutron star merger remnant outflows and their electromagnetic signatures		43.001	80NSSC21K1851	44,953	—
COVID-19: Supernova Remnant Observations with Micro-X COVID Extension		43.001	80NSSC21K1856	432,002	—
A Search for the first X-ray counterpart to an extragalactic FRB		43.001	80NSSC22K0221	35,213	—
A SWIFT Response to Thermonuclear Explosions		43.001	80NSSC22K0541	23,461	—
				<u>1,627,527</u>	<u>248,165</u>
Efficient and Scalable Fabrication of Solid Oxide Fuel Cells via 3D-Printing		43.012	80NSSC17K0192-P00006	(415)	—
Defect engineering for more reliable and efficient p-type thermoelectric materials		43.012	80NSSC20K1192-P00001	31,876	—
Self-Organized Nanostructured Bonds through Transient Liquid Phase Dealloying		43.012	80NSSC21K1810	180,359	—
				<u>211,820</u>	<u>—</u>
NASA John F. Kennedy Space Center:					
Evaluation of International Space Station Bacteria for Disinfectant Resistance	130	43.RD	PO: SMS0000637	(1,202)	—
NASA Lyndon B. Johnson Space Center:					
SCALE: Shared Cognitive Architectures for Long-term Exploration		43.003	80NSSC18K0221-P00008	(2)	—
Team Task Switching in Astronaut Crews on the International Space Station: Integrating Multiteam Membership, Multiteam Systems, multi-tasking, & Multidimensional		43.003	80NSSC18K0276 – P00011 and P00012	155,773	—
Networks to Monitor & Enable Functional Work Shifts in Astronaut Crews		43.003	80NSSC21K0925 P00002	105,120	—
Composing Teams with TEAMSTaR: Tool for Evaluating And Mitigating Space Team Risk		43.003	NNX15AM32e-000022	48,122	—
CREWS: Crew Recommender for Effective Work in Space				<u>309,013</u>	<u>—</u>
				<u>3,795,921</u>	<u>259,885</u>
National Aeronautics and Space Administration Total					
				<u>3,795,921</u>	<u>259,885</u>
National Foundation of the Arts and Humanities:					
Institute of Museum and Library Services:					
Getting to know their data doubles: An inquiry into student perceptions of privacy issues associated with academic library participation in learning analytics	112	45.312	IN-4370124-NU // LG-96-18-0044-18	8,036	—
National Endowment for the Humanities:					
Metal Soap Protrusions on Georgia O'Keeffe's Paintings: Establishing a New Quantitative Imaging Paradigm for Linking Scientific Research and Preservation		45.149	PR-258900-18	2,807	—
				<u>10,843</u>	<u>—</u>
National Foundation of the Arts and Humanities Total					
				<u>10,843</u>	<u>—</u>
National Science Foundation:					
CBET-EPSRC A Game-Changing Approach for Tunable Membrane Development: Novel Covalent Organic Framework Active Layers Supported by Solvent Resistant Materials	256	47.041	087147-16468-01//CBET-1706219	(45,442)	—
EFRI C3 SoRo: An integrated approach towards computational design, fabrication and understanding of bio-hybrid soft architectures capable of adaptive behavior	256	47.041	093088-175159/EFMA-1830881-03	87,592	—
Engineering Research Center for Innovative and Strategic Transformation of Alkane Resources – C1STAR	181	47.041	10001437-044 AMD 7 // 1647722-EEC	625,670	—
Novel force sensors for in vivo live animal applications	246	47.041	1562737//PO 1001767264//CBET-2029559	7,589	—
EAGER ISN: Unraveling illicit supply chains with a citizen science approach	276	47.041	203496NU/CMMI-1842369	73,496	—
DMFER: Collaborative Research: A Data-Centric Approach for Accelerating the Design of Future Nanostructured Polymers and Composites Systems	71	47.041	333-2389 AMD 5//1818574	115,164	—
RAISE--eQUIP: Single-Chip, WaI--Plug Photon Pair Source and CMOS Quantum Systems on Chip	30	47.041	4500002864/ECCS-1842692	21,350	—
RoL: RAISE: DESYN-C3: A platform for Modular Pseudo-Organelles for Compartmentalization and Control of Pseudo-Cell Processes		47.041	4CBET-1844336	287,778	—
EFRI CEE: Engineered Retinal Epigenomics	284	47.041	600132226948 AMD No. 1//EFMA-1933394	196,249	—
NRI: INT: Co-Robot Controllers for Human-Like Physical Interaction and Improved Motor Learning	186	47.041	8913 cc 82089 // 2024488	109,788	—
EFRI C3 SoRo: Strong Soft Robots—Multiscale Burrowing & Inverse Design	269	47.041	A007037602 AMD 1 // EFMA-1830950	28,074	—

NORTHWESTERN UNIVERSITY
 Supplementary Schedule of Expenditures of Federal Awards
 Year ended August 31, 2022

Cluster title/Federal grantor/Subagency/Project title	Pass-through entity	Assistance listing number	Sponsor award number	Federal expenditures	Passed-through to subrecipients
Multi-functional, scalable graphene-based protective coatings for high energy density lithium-ion cathodes	308	47.041	AGMT 2-25-22//IP-2036267	\$ 45,182	—
Scalable Manufacturing of Supramolecular Polymers for Regenerative Medicine	18	47.041	AGMT 4/22/22//IP-2151711	12,934	—
A novel wound dressing for infection control and tissue regeneration	101	47.041	Award 10/4/2019//IP-1660301	22	—
NNCI Conference Support	90	47.041	AWD-100868-GS/ECCS-1626153	9,115	—
SNM: Scalable Nanomanufacturing of Graphene-based Real-time Water Sensors through Customized Inkjet Printing	244	47.041	AWD101315 (SUB00000317)/2039268	111,655	—
FMRG: Manufacturing Advanced Electronics through Printing Using Bio-based and Locally Identified Chemicals (MADE-PUBLIC)	244	47.041	AWD101466 (SUB00000407)-1 // 2037026	355,303	—
Collaborative Research: DMREF: GOALI: Discovering Materials for CO2 Capture in the Presence of Water via Integrated Experiment, Modeling, and Theory		47.041	CBET 2119433	297,648	—
NRI: Task-Based Assistance for Software-Enabled Biomedical Devices		47.041	CBET-1637764	(2,062)	—
Collaborative Research: Electrorotational fluid instabilities		47.041	CBET-1704996	(1,708)	—
Engineering a secretion-based, high-liter protein production process in bacteria		47.041	CBET-1706125	(798)	—
Spectroscopic photon localization microscopy for super-resolution molecular imaging		47.041	CBET-1706642 001	44,892	—
GOALI: Advanced biomanufacturing with inducible feedback promoters		47.041	CBET-1803747	172,539	—
Investigating the impact of tumor heterogeneity on sustained low dosage immunotherapy via a peritumoral immunotheranostic hydrogel		47.041	CBET-1806007	(3,353)	—
From the Nuclear Pore Complex to Smart Artificial Nanochannels		47.041	CBET-1833214	88,069	—
GOALI: Charge Interactions in Transport of Mixed Solutes in Nanofiltration Membranes		47.041	CBET-1840816	93,798	—
RoL: EAGER: DESYN-C3 Moving information across synthetic membranes via engineered sensors		47.041	CBET-1844219	30,841	—
Convergence: RAISE: Systems Approaches for Vulnerability Evaluation and Urban Resilience (SAVEUR)		47.041	CBET-1848683	250,307	14,439
COVID-19: Convergence: RAISE: Systems Approaches for Vulnerability Evaluation and Urban Resilience (SAVEUR)		47.041	CBET-1848683	29,973	22,019
Collaborative Research: Towards a Generalized Microkinetic Description of Lignin Liquefaction		47.041	CBET-1926412	89,667	—
GOALI: Flow driven segregation at the particle level		47.041	CBET-1929265	71,980	—
Conference: Concepts for Advancing Sustainable Urban Systems (SUS) Research Networks: SUSPIRE: Sustainable Urban Systems: Predictive, Interconnected, Resilient and Evolving		47.041	CBET-1929942	4,115	—
Collaborative Research: Cell-free glycoprotein synthesis technology for point-of-care vaccine biomanufacturing		47.041	CBET-1936789-001	53,091	—
Structural Health Monitoring of Biofilms for Sustainable Reactive Nitrogen Management		47.041	CBET-1937290	51,826	—
Elucidating and Computing Metabolic Networks for Co-Valorization of Cellulose and Lignin Derivatives		47.041	CBET-2022854	145,431	—
ECO-CBET: Collaborative Research: Towards a Circular Nitrogen Bioeconomy: Tandem Bio- and Chemocatalysis for Sustainable Nitrogen Recovery and Nitrous Oxide Mitigation		47.041	CBET-2033793	147,898	—
CAREER: Metabolomics-Enabled Approaches to Advance Characterization of Organic Matter Trapping in Natural and Engineered Matrices		47.041	CBET-2041669	128,786	—
CAREER: Redefining 'antimicrobial' in the context of microbe-chemical interactions indoors		47.041	CBET-2043156-002	88,745	—
Collaborative Research: Engineering MS2 Capsid Assembly Using Systematic Fitness Landscapes		47.041	CBET-2043973	61,957	—
CAREER: Design Rules for Electrical Transport in Suspensions of Conductive Particles		47.041	CBET-2047365	94,776	—
Electrohydrodynamic interactions of drops		47.041	CBET-2126498	16,426	—
Addressing Rigor and Reproducibility in Heterogeneous, Thermal Catalysis		47.041	CBET-2152559	51,071	—
Collaborative Research: Innovation in Sustainable Mass Timber Building Systems		47.041	CMMI 1762757	17,718	—
Strong and Multifunctional Geopolymer Composites: A Multi-Scale Study		47.041	CMMI 1829101 002	29,604	—
LEAP-HI: Catalyzing Resilient Urban Infrastructure Systems: Integrating the Natural and Built Environments		47.041	CMMI 1854827	366,293	99,849
CAREER: The mechanics of subsurface urban heat islands		47.041	CMMI 2046586	114,535	—
Collaborative Research: AI-Driven Multi-Scale Design of Materials under Processing Constraints		47.041	CMMI 2053929	81,779	—
COVID-19: NSF RAPID – Tracking and deconstructing Covid 19 vaccine distribution as an extreme logistics event		47.041	CMMI 2114778	48,245	—
Dynamic Matching Problems with Application to Kidney Allocation		47.041	CMMI 2137286	48,808	—
Magnetically Controlled- Laser Induced Plasma Micro-Machining (MC-LIPMM)		47.041	CMMI-1563244	(453)	—
Green Simulation: A Methodology for Reusing the Output of Past Computer Simulation Experiments		47.041	CMMI-1634982	(76)	—
Collaborative Research: Concurrent Design of Quasi-Random Nanostructured Material Systems (NMS) and Nanofabrication Processes using Spectral Density Function		47.041	CMMI-1662435	46,852	—
On-demand Generation of Diamond-like-carbon Layers for Efficient Lubrication of Mechanical Systems		47.041	CMMI-1662606	12,085	—
Exploiting Network Structure in Routing Problems: Applications to School Bus Routing		47.041	CMMI-1727744-002	52,942	—
Data-driven multiscale damage and failure prediction		47.041	CMMI-1762035-001	22,178	—
Equitable and Efficient Scarce Resource Allocation using Stochastic Fractional Optimization		47.041	CMMI-1763035	126,994	—
Collaborative Research: GOALI: Modeling and optimizing patient-flow dynamics in hospitals and hospital networks		47.041	CMMI-1763100	66,255	—
Decision-Flow Queueing Networks for Analysis of Knowledge-Based Service Operations Systems		47.041	CMMI-1826353	31,686	—
CAREER: Modeling Soil-Machine Interaction for Advances in Civil Construction and Terrestrial Robotics		47.041	CMMI-1846817	112,455	—
CAREER: Transformative mobility analysis: Mixed Methods framework		47.041	CMMI-1847537	26,816	—
Convergence: RAISE: Auto-regulatory Scaffolds for Directed Evolution of Non-living Functional Materials		47.041	CMMI-1848613	81,100	20,023
Asset Allocation: A Statistical Learning Approach		47.041	CMMI-1916616	60,576	—
Rethink ride-hail: from understanding limits to reaching full potential		47.041	CMMI-1922665-004	157,685	—
Multi-Scale Multi-Material Printing of 3D Bead Arrays via Self-Focused Electrohydrodynamic Jets		47.041	CMMI-1934350	43,854	—
Manipulating Nanoparticle-Modified Melt Pool Dynamics in Additive Manufacturing		47.041	CMMI-1934367-003	258,140	—
An Atomistic Experimental Investigation of Fracture in Transitional Metal Dichalcogenides		47.041	CMMI-1952406	150,853	—
Collaborative Research: A Hierarchical Multidimensional Network-based Approach for Multi-Competitor Product Design		47.041	CMMI-2005661-0001	96,985	—
Service Systems with Dependencies: Theory and Applications		47.041	CMMI-2006350	39,712	—
Freeze-Cast Manufacturing of Stable Iron-Alloy Foams for Energy Conversion and Storage		47.041	CMMI-2015641	124,040	—
NRI: INT: Robotic Shepherding for Flow Control in Uncertain Dynamic Environments		47.041	CMMI-2024774	292,811	—
Photonic Moiré Nanostructures for Scalable Fabrication of Quantum Structures		47.041	CMMI-2028773	90,501	—
New Kind of Experiment and Theory to Determine the Effect of Crack-Parallel Stresses on Fracture of Concrete and Similar Materials		47.041	CMMI-2029641 001	123,952	—
EAGER: Investigating the Hinge Mechanics of the Spike Protein to Understand the Coronavirus Infection Mechanism		47.041	CMMI-2034584	(332)	—
Linking Matrix Composition with Spatially Resolved Mechanical Properties in Polymicrobial Biofilms		47.041	CMMI-2100447	46,733	—
Micro-Casting of Titanium Alloys in Self-boiling Molds		47.041	CMMI-2132252	7,009	—
Policy-Robust Processing Networks: Characterization and Design		47.041	CMMI-2139566	66,039	—
CAREER: Catastrophic Rare Events: Theory of Heavy Tails and Applications		47.041	CMMI-2146530	12,807	—
NNCI: Soft and Hybrid Nanotechnology Experimental (SHyNE) Resource		47.041	ECCS 2025633 AMD 002	1,161,604	—
CAREER: Principled Deep Reinforcement Learning for Societal Systems		47.041	ECCS 2048075	124,271	—
NNCI: Soft and Hybrid Nanotechnology Experimental (SHyNE) Resource		47.041	ECCS-1542205	(60,545)	—
NCS-FO: How Ecology Induces Cognition: Paleontology, Machine Learning, and Neuroscience		47.041	ECCS-1835389	279,459	—
CPS: Medium: Information based Control of Cyber-Physical Systems operating in uncertain environments		47.041	ECCS-1837515	252,480	—
Anti-ferromagnetic Electric-field-controlled Memory Devices		47.041	ECCS-1853879	210,849	—
NSF-BSF: CCSS: Resistance Tomography with 2D Sensor Membranes		47.041	ECCS-1912694	178,787	—

NORTHWESTERN UNIVERSITY
 Supplementary Schedule of Expenditures of Federal Awards
 Year ended August 31, 2022

Cluster title/Federal grantor/Subagency/Project title	Pass-through entity	Assistance listing number	Sponsor award number	Federal expenditures	Passed-through to subrecipients
BioNet: a distributed network of bioelectronic devices for closed-loop control of physiological processes		47.041	ECCS-2023849	\$ 276,308	153,701
Collaborative Research: SWIFT: LARGE: Dynamics and Security Aware Predictive Spectrum Sharing with Active and Passive Users		47.041	ECCS-2030251	77,439	—
COVID-19: RAPID: Collaborative Research: Data Analytics for Mechano-acoustic and Physiological Monitoring of COVID19 Symptoms		47.041	ECCS-2031495	(8,144)	—
Room temperature high-power terahertz semiconductor laser with high-quality beam shape and stable spectral emission		47.041	ECCS-2149908	65,337	—
REU SITE: RESEARCH EXPERIENCE FOR UNDERGRADUATES IN NANOSCALE SCIENCE AND ENGINEERING PROPOSAL		47.041	EEC-1757618	260,601	—
Planning Grant: Engineering Research Center for Democratizing Manufacturing Accessibility for Designers (DEMAND)		47.041	EEC-1840621	(66)	—
RET Site: Collaborative Research: Research Experiences for Teachers across the National Nanotechnology Coordinated Infrastructure		47.041	EEC-1953437	27,403	—
EFRI CEE: Macrogenomic engineering via modulation of chromatin nanoenvironment		47.041	EFMA-1830961-005	551,784	3,321
EFRI-CEE: Epigenetic Cell Reprogramming In Situ: A Novel Tool for Regenerative Engineering		47.041	EFMA-1830968-007	417,162	—
Magnetic microrollers as a platform for active transport	157	47.041	F0276-01 // CBET-1706562 AMD 02	(53)	—
EFRI CEE: Epigenomic Regulation Over Multiple Length Scales: Understanding Chromatin Modifications Through Label Free Imaging and Multi-Scale Modeling	244	47.041	FP068540-01-PR AMD 3//1830969	383,734	—
I-Corps: Automated DNA testing device based on a nanopore genetic sequencer with a graphene nanoribbon		47.041	IIP 2135324	49,999	—
Partnership for development of high-performance magnetic memory technology		47.041	IIP-1919109	109,259	43,151
Integrating Human and Machine Learning for Enabling Co-Adaptive Body-Machine Interfaces	186	47.041	Subaward 9531 // 2054406	76,061	—
CAREER: Prediction of multiscale emergent dynamics in decentralized cell populations	297	47.041	UWSC12093-01/CBET-2025760	35,621	—
				11,393,865	356,503
Core-shell Plasmonic Nanoparticle Lattices	188	47.049	#27464/CHE-2039044	(604)	—
Multi-Messenger Signatures of Massive Black Hole Binaries (Cottrell Fellowships Award)	188	47.049	#27985	75,000	—
Unveiling the Obscured Formation of Stars and Galaxies: Large-Scale Legacy Surveys with a New Three Color High Resolution Imaging Polarimeter on a 50-m Telescope	265	47.049	17-009589 D Amd. 3/AST-1636621	3,654	—
PREM: UTA/NU Partnership for Functional Materials	287	47.049	2021GC0406/2122128	22,872	—
SII-Center: SpectrumX – The National Center for Spectrum Innovation	276	47.049	204303NU AMND 1 // 2132700	215,829	—
Center for the Chemistry of Molecularly Optimized Networks	71	47.049	333-2440// CHE-1832256	17,505	—
CCI Phase I: NSF Center for Synthesizing Coherence	71	47.049	333-2555//CHE-1925690	180,279	—
NSF Center for Molecularly Optimized Networks	71	47.049	333-2766//CHE-2116298-001	377,304	—
Student Observing Support Program	22	47.049	367148 // 1519126	3,407	—
CCI Phase I: Center for Sustainable Separations of Metals	279	47.049	577550//1925708	133,469	—
U.S. CMS Upgrades for the High-Luminosity Large Hadron Collider	60	47.049	79433-20666-05//PHY-1946735	168,843	—
Center for Sustainable Polymers	269	47.049	A008060101//CHE-1901635 Amd.3	130,287	—
Center for Sustainable Polymers	269	47.049	A008060102-03//CHE-1901635	85,346	—
NSF Center for Sustainable Polymers: Quantitative framework for cost and sustainability evaluation of emerging sustainable polymers	269	47.049	A008060113 AMD2//CHE-1901635	82,365	—
Student Observing Support Program	22	47.049	Aqmt 3/17/21 //AST-1519126	378	—
Accretion and Star Formation Induced by the Galactic Center Supermassive Black Hole Sgr A*		47.049	AST-1517246 002	25,361	—
CAREER: The Physics of Stellar Feedback and Star Formation Regulation in Galaxies		47.049	AST-1652522	28,049	—
Collaborative Research:CDS&E: Mining Physically Predictive Cosmological Simulations		47.049	AST-1715216	63,605	—
REU Site: Preparing a Diverse Workforce through Interdisciplinary Astrophysics Research		47.049	AST-1757792-002	57,793	—
Unfolding the Dynamic and Colorful Lives of Compact Object Mergers		47.049	AST-1814782	97,468	—
Collaborative Research: Misaligned Short GRBs from Structured Jets in the Dawn of Gravitational Wave Astronomy		47.049	AST-1815304	46,437	—
WoU-MMA, Collaborative Research: Searches After Gravitational Waves Using Arizona's Observatories		47.049	AST-1909358	61,467	—
Collaborative Research: Impacts of massive BH formation and evolution pathways on GW sources		47.049	AST-1910209	26,968	—
Collaborative Research: WoU-MMA: Multi-scale and multi-messenger modeling of jets in active galactic nuclei		47.049	AST-1911080	20,317	—
WoU-MMA: Luminous Supermassive Black Hole Accretion Systems as High-Energy Neutrino Factories		47.049	AST-2009884	212,200	—
CAREER: Navigating the Environments of the Universe's Fastest Transients		47.049	AST-2047919 AMD 000	167,642	—
A Self-Consistent Bayesian Investigation of Star Cluster Binary Populations		47.049	AST-2107738	28,039	—
Collaborative Research: CDS&E: Constraining the uncertain physics of galaxy formation: cosmic rays, black holes, and beyond		47.049	AST-2108230	13,989	—
Gravitational Wave Sources from Dense Star Clusters		47.049	AST-2108624	165,987	—
REU Site: Preparing a Diverse Workforce through Interdisciplinary Astrophysics Research		47.049	AST-2149425	82,039	—
Materials Research and Science Engineering Center – Renewal 02	244	47.049	AWD101244 (SUB00000356)-2/2011854	164,480	—
ACME III: Advanced Cold Molecule Electron Dipole Moment Search	244	47.049	AWD102289 (SUB00000527)/2136573	554,363	—
Collaborative Research: Electronic Coherence Effects in Multichromophore Systems Probed by Two-Dimensional Electronic Spectroscopy		47.049	CHE 1955806	119,977	—
New Lewis Bases for Chemical Catalysis		47.049	CHE-1665141	6,486	—
Voltage-dependent interfacial structure and properties of room temperature ionic liquids: operando X-ray studies		47.049	CHE-1665255	52,140	—
Allosterically Regulated Supramolecular Capsules and Receptors Assembled via the WLA		47.049	CHE-1709888-001	135,597	—
Donor-Acceptor Energy Transfer in the Presence of Photonic and Plasmonic Structures		47.049	CHE-1760537	20,681	—
Plasmon-Driven Chemistry as Revealed by Ultrafast SERS, Single Molecule SERS, and Electrochemical TERS		47.049	CHE-1807278	3,066	—
Correlative Tools for in Situ Analysis of Single Nanoparticles and their Ligands		47.049	CHE-1808502	161,995	—
Transient Physicochemical Properties of Nanomaterials		47.049	CHE-1808990	86,195	—
CAREER: Photocontrolled Dynamic Covalent Crosslinkers for Light-Responsive Polymer Networks		47.049	CHE-1847946	141,449	—
Synthetic, Mechanistic, and Catalytic Studies of Electrocyclic d- and f-Element Complexes		47.049	DMR-150519 001	160,038	—
Hyperpolarized Multi-Spin Systems as Qubits for Quantum Information Science		47.049	CHE-1900422	199,385	—
Studying the Processes of Assembly and Stimuli-Responsive Morphological Transformations in Solvated Macromolecular Nano-Assemblies		47.049	CHE-1905270	293,034	41,701
Collaborative Research: Isotopologue Synthesis and Use for Elucidating Important Chemical Mechanisms of Organic Condensation Reactions in Atmospheric Particles		47.049	CHE-2003359	62,715	—
Donor-acceptor energy transfer involving classical and quantum light in the presence of photonic and plasmonic structures		47.049	CHE-2055565	135,991	—
Spatial Organization of Ions in Supramolecular Nanostructures		47.049	CHE-2102662	251,010	—
Quantum control of nanochemistry		47.049	CHE-2108612	59,504	—
CAS-MNP: Molecular Probing Surface Reactivity Dynamics of Native versus Photo-Oxidized Microplastics and Nanoplastics in Environmental Aqueous Media		47.049	CHE-2109097	82,463	—
EAAGER: ADAPT: Optimizing chemical reaction networks with AI		47.049	CHE-2141385	129,480	—
CAREER: Investigating Strong Electron-Phonon Interactions in Semiconducting Crystals Using Reciprocal-Space Quantum-Classical Modeling		47.049	CHE-2145433	36,465	—
Electrostatics and Structure at Electrode/Electrolyte Interfaces from Nonlinear Optics		47.049	CHE-2153191	75,040	—
Photogenerated Multi-Spin Systems as Qubits for Quantum Information Science		47.049	CHE-2154627-001	41,562	—
Ink-based additive manufacturing of high-entropy alloys from oxide and hydride powders		47.049	DMR 2004769	131,527	—
MRI: Acquisition of a NanoRaman Atomic Force Microscopy (AFM) System for Multi-Property Measurements in Electronic and Other Materials		47.049	DMR 2117727	455,000	—
Collaborative Research: High-Throughput Quantification of Solid State Electrochemistry for Next Generation Energy Technologies		47.049	DMR-1505103	26,640	—
Oxide Surfaces: From Bulk to Nanoparticles		47.049	DMR-1507101 003	(1)	—
Shape and Dimensional Precision in Polymeric Nanostructures		47.049	DMR-1508731	(61)	—

NORTHWESTERN UNIVERSITY
 Supplementary Schedule of Expenditures of Federal Awards
 Year ended August 31, 2022

Cluster title/Federal grantor/Subagency/Project title	Pass-through entity	Assistance listing number	Sponsor award number	Federal expenditures	Passed-through to subrecipients
DMREF: Collaborative Research: Tackling disorder and ensemble broadening in materials made of semiconductor nanostructures		47.049	DMR-1629383	\$ (1,204)	—
MRSEC: Center for Multifunctional Materials		47.049	DMR-1720139-007	2,829,838	78,972
DMREF: Collaborative Research: Synthesis, Characterization, and Modeling of Complex Amorphous Semiconductors for Future Device Applications		47.049	DMR-1729016	331,467	131,628
DMREF: Collaborative Research: Structure Genome of Metal-Insulator Transitions		47.049	DMR-1729303	10,960	—
DMREF: Collaborative Research: Accelerating Thermoelectric Materials Discovery via Dopability Predictions		47.049	DMR-1729487-001	68,592	—
CAREER: Understanding the Role of Structure on Ionic/Electronic Properties in Polymeric Mixed Conductors		47.049	DMR-1751308-004	108,074	—
JUAMI (Joint Undertaking for Africa Materials Institute)		47.049	DMR-1756245	13,157	—
Collaborative Research: Predictive theory, synthesis and characterization of a new type of transparent conductor without doping		47.049	DMR-1806912	29,486	—
Materials Chemistry of Superprotonic Solid Acids		47.049	DMR-1807234	(15,966)	—
EAGER: Enabling Quantum Leap: Driven Non-Equilibrium Room Temperature Quantum States		47.049	DMR-1838507	57,800	57,800
Engineering New Anisotropic Superfluid Phases of 3He		47.049	DMR-1903053-003	231,218	—
Symmetry Breaking in Non-Hermitian Plasmonic Lattices		47.049	DMR-1904385-001	253,107	—
Solid-State Oxides and Oxide-Fluorides		47.049	DMR-1904701 001	46,994	—
Manipulation of Hole-pinned Vortices: Classical and Quantum		47.049	DMR-1905742-003	153,409	—
Total Tomography of Nonplanar Heterostructures for Quantum Information Processing		47.049	DMR-1905768	199,639	—
Bioengineering Single Crystal Growth		47.049	DMR-1905982-002	164,526	—
Optical Spin Orientation and Transport in Layered Mono- and Di-chalcogenide Semiconductors		47.049	DMR-1905986	168,668	—
GOALI : *Collaborative Research: An Experimental and Theoretical Study of the Microstructural and Electrochemical Stability of Solid Oxide Cells*		47.049	DMR-1912530/002	129,956	—
GOALI: Investigation of Cyclic Failure in Aluminosilicate Nanocomposites		47.049	DMR-1928702 001	33,827	—
Unconventional Heteroanion Ceramics: 2D Layered Seleno- and Thio-Phosphates		47.049	DMR-1929356	124,983	—
CAREER: Visualizing single-chain conformation and dynamics of bottlebrush polymers in the bulkstate		47.049	DMR-1945249-002 & 003	76,997	—
Collaborative Research: Optical Transitions in Metallic Nanoclusters at High Pressure		47.049	DMR-2002891	17,256	—
Synthesis of Complex and Advanced Chalcogenide Materials		47.049	DMR-2003476	92,272	—
Quantum Coherence Effects on Charge Generation in Organic Semiconductors		47.049	DMR-2003739	196,992	—
Collaborative Research: Impact of a colloidal suspension droplet: Suspension flows at extreme shear rates		47.049	DMR-2004176 002	80,821	—
Probing Fundamental Magneto-Electronic Properties of Two-Dimensional Metal Halides		47.049	DMR-2004420	141,334	—
Ions at aqueous interfaces: X-ray fluorescence and scattering studies		47.049	DMR-2004557-001	147,599	—
Peptide Brush Polymers: Theory and Synthesis for Functional Design		47.049	DMR-2004899	230,086	—
Motile Colloids with Tunable Random Walk: Individual Dynamics and Collective Behavior*		47.049	DMR-2004926	83,717	—
Structure and Function of Heteroanionic Materials		47.049	DMR-2011208 001	63,910	—
COVID-19: RAPID: On-mask Chemical Modulation of Respiratory Droplets		47.049	DMR-2026944	(5,655)	—
COVID-19: RAPID: Hydrated Graphene Oxide Elastomeric Composites for Sterilizable and Reusable N95 Masks		47.049	DMR-2029058	25,833	—
COVID-19: RAPID: Regenerable Antiviral Nanoporous Materials for Protection		47.049	DMR-2029270	22,024	—
Protein Crystallization Programmed with DNA		47.049	DMR-2104353	157,818	—
Collaborative Research: Design and Demonstration of Persistent Spin Textures in Ferroelectric Oxide Thin Film		47.049	DMR-2104397	65,002	—
Role of Organic Matrix Molecules in the Formation of Very High Magnesium Calcite		47.049	DMR-2104759-001	49,768	—
NSF-BSF Influences of cohesion enhancing elements, impurities and hydrogen or deuterium at grain boundaries and heterophase interfaces on embrittlement (ductilization) of steels		47.049	DMR-2105362	41,748	—
Collaborative Research: DMREF: Accelerated Data-Driven Discovery of Ion-Conducting Material		47.049	DMR-2118839	65,240	—
Collaborative Research: DMREF: GOALI: High-Affinity Supramolecular Peptide Materials for Selective Capture and Recovery of Proteins		47.049	DMR-2119686	54,511	—
Characterizing and Exploiting the Remarkable Surface Redox Chemistry of Ceria and Its Derivatives		47.049	DMR-2130831	137,032	—
CAREER: Hybrid membranes as platforms for biomolecule detection, synthesis, and transport		47.049	DMR-2145050	12,898	—
Collaborative Research: Metal-Organic Nanotubes as Tunable Porous Fibers		47.049	DMR-2207269	2,814	—
Analysis on Manifolds		47.049	DMS 1502632 005	112,657	—
K-Stability, Moduli Spaces and Singularities		47.049	DMS 2148266 001	114,969	—
RTG: Interdisciplinary Training in Quantitative Biological Modeling		47.049	DMS-1547394-004	322,495	—
CAREER: Complexity of Disordered Systems		47.049	DMS-1653552 004	18,737	—
A Sheaf-Theoretic Approach to M5-Brane Geometry		47.049	DMS-1708503	331	—
Collective dynamics of particles at fluid interfaces		47.049	DMS-1716114	92,911	—
Midwest Topology Seminar		47.049	DMS-1747457	5,004	—
Northwestern University Quantitative Biology Center (NUQuB)		47.049	DMS-1764421-004	1,185,197	—
Dynamics with a Combinatorial Bent		47.049	DMS-1800544	59,899	—
Moduli of Galois representations and applications		47.049	DMS-1802037-002	8,510	—
Singularities and Smoothness in Geometric Partial Differential Equations		47.049	DMS-1809011	18,966	—
CAREER: An Integrated Inferential Framework for Big Data Research and Education		47.049	DMS-1841569/002	235,131	—
Collaborative Research: Adaptive Gaussian Markov Random Fields for Large-scale Discrete Optimization via Simulation		47.049	DMS-1854562	49,483	—
Midwest Dynamical Systems Conference 2019-2020		47.049	DMS-1856176	22,833	—
Word distributions in groups		47.049	DMS-1902041	50,179	—
Causeway Postbaccalaureate Program		47.049	DMS-1916410	214,930	—
Equidistribution of Torus Orbits		47.049	DMS-1946333 002	14,198	—
FRG: Collaborative Research: Geometric Structures in the p-adic Langlands Program		47.049	DMS-1952678 AMD002	67,693	—
Collaborative Research: Variational inference approach to computer model calibration, uncertainty quantification, scalability, and robustness		47.049	DMS-1952897	23,037	—
Inducing and exploiting grid structures for fast, adaptive and accurate estimation		47.049	DMS-1953111	11,142	—
Nonlinear Partial Differential Equations and Geometry		47.049	DMS-2005311	86,648	—
Zero-Order and Stochastic Methods for Large-Scale Optimization		47.049	DMS-2011494	62,795	—
Novel Decomposition and Active-Set Techniques Enabling Scalable Computational Frameworks for Large-Scale Nonlinear Optimization Problems		47.049	DMS-2012410	53,525	—
Collaborative Research: High-Dimensional Decision Making and Inference with Applications to Personalized Medicine		47.049	DMS-2015568 003	7,615	—
CAREER: Rigidity of Group Actions on Manifolds		47.049	DMS-2020013 003	74,650	—
Linear Partial Differential Equations on Singular Spaces		47.049	DMS-2054424	110,853	—
Combinatorial and Algebraic Structures in Dynamics		47.049	DMS-2054643	69,720	—
Cyclotomic Spectra and p-Divisible Groups		47.049	DMS-2102010	166,401	—
Moduli Problems and Applications of Constructible Sheaves		47.049	DMS-2104091-001	146,715	—
Fractal Fourier Extension Estimates		47.049	DMS-2107729	38,684	—
Nonlinear dynamics of colloidal rotors: chaos and order		47.049	DMS-2108502	116,350	—
CAREER: Higher Brauer Groups and Topological Azumaya Algebras		47.049	DMS-2120005	43,252	—

NORTHWESTERN UNIVERSITY
 Supplementary Schedule of Expenditures of Federal Awards
 Year ended August 31, 2022

Cluster title/Federal grantor/Subagency/Project title	Pass-through entity	Assistance listing number	Sponsor award number	Federal expenditures	Passed-through to subrecipients
RTG: Dynamics: Classical, Modern and Quantum		47.049	DMS-2136217	\$ 3,000	—
REU Site: Quantitative Biology REU (QBREU) at Northwestern University		47.049	DMS-2150134	120,409	—
Spin Glasses and Other Models of Disordered Media		47.049	DMS-2154076	63,495	—
SII Planning: WHISPERS: Wireless Hardware Innovations and Signal Processing for Enhanced Radio-astronomy and Scientific Spectrum Sharing	296	47.049	GA11529_PO#2277962/2037838	5,080	—
CCI Phase I: NSF Center for the Mechanical Control of Chemistry (CMCC)	219	47.049	M2002925//CHE-2023644	(88)	—
Photochemical Strategies to Activate Far-Red Fluorescence with Green Light	267	47.049	OS00000274//CHE-1954430	50,560	—
Telecom-Band Rotational Cooling of a Heavy Molecular Ion		47.049	PHY – 1806861 002	33,579	—
Collaborative Research: Axion Resonant InterAction Detection Experiment (ARIADNE) – a renewal proposal		47.049	PHY 2111544	59,604	—
Collaborative Research: Axion Resonant InterAction DetectoN Experiment (ARIADNE) – a continuation proposal		47.049	PHY-1806671 003	18,671	—
Measuring gravity at the micron scale with laser-cooled trapped microspheres: a continuation		47.049	PHY-1806686-002	(3,322)	—
Collaborative Research: The SuperCDMS SNOLAB Experiment		47.049	PHY-1809730-003	132,282	—
Lepton Magnetic Moments and Fine Structure Constant		47.049	PHY-1903756 /002	(6,411)	—
Gravitational-Wave Inference from Binary Compact Objects		47.049	PHY-1912648	362,998	—
Collaborative Research: Uncovering how riboswitches exploit out-of-equilibrium RNA folding pathways to make genetic decisions		47.049	PHY-1914567 002	69,286	—
Low-Threshold Modular Detectors for Coherent Elastic Neutrino-Nucleus Scattering		47.049	PHY-2013203-001	173,698	—
Measuring gravity at the micron-scale with laser-cooled trapped microspheres: a renewal proposal		47.049	PHY-2110524	235,272	—
PM: Electron and Positron Magnetic Moments from a Quantum Cyclotron		47.049	PHY-2110565	179,386	—
Data Acquisition and Analysis for the MJOE Pilot Run		47.049	PHY-2111556-01	41,320	—
Q-Array Deployment and Science Analysis for the Ricochet Experiment		47.049	PHY-2209585	11,865	—
CCI Phase I: NSF Center for Quantum Electrodynamics for Selective Transformations (QuEST)	281	47.049	SUB00000131AM1 // UR FAO GR531225	29,468	—
Center for Integration of Modern Optoelectronic Materials on Demand (IMOD)	297	47.049	UWSC12982/2019444	109,335	—
				<u>18,218,031</u>	<u>310,101</u>
Critical Zone Observatory Network for Intensively Managed Landscapes	256	47.050	072212-14695	(1,408)	—
Network Cluster CiNet: Critical Interface Network in Intensively Managed Landscapes	256	47.050	101348-18067//EAR-2012850	82,981	—
NSFGEO-NERC: Collaborative Research: Developing a new Lower Cretaceous time scale: Foundation for the next generation of paleoceanographic		47.050	1951835 EAR-01	67,959	—
U.S. Science Support Program Office associated with the International Ocean Discovery Program (USSSP:IODP) (Gabriella D. Kitch)	56	47.050	71B(GG009393)//OCE 1450528 Amd. #3	3,000	—
U.S. Science Support Program Office associated with the International Ocean Discovery Program (USSSP:IODP) (Gabriella D. Kitch) Carbonate chemistry and carbon cycling during the Paleogene	56	47.050	71C(GG009393-04)//OCE-1450528	14,724	—
CAREER: triple-isotope approach to unraveling subsurface food webs		47.050	EAR-2042349	99,438	—
Collaborative Research: Evolution of Subsurface Microbe-Rock-Fluid Systems		47.050	EAR-2120912	42,962	—
The Ca and Sr (radiogenic and stable) isotope geochemistry of weathering in Iceland		47.050	EAR-1613359	(2,810)	—
Collaborative Research: NSF/EAR-BSF: Coupled Sand and Clay Motion, Bed Morphodynamics, and Porewater Exchange		47.050	EAR-1734300	80,949	—
Superdeep Diamonds from the Transition Zone and Lower Mantle		47.050	EAR-1853521	50,782	—
Collaborative Research: Dry Rifting in the Albertine-Rhino graben (DRIAR), Uganda		47.050	EAR-2021721	102,537	—
Effect of Pore Pressure Rate on Rate and State Frictional Slip In Experiments		47.050	EAR-2120374	17,839	—
PREEVENTS Track 2: Collaborative Research: Defining precursors of ground failure: a multiscale framework for early landslide prediction through geomechanics and remote sensing		47.050	ICER-1854951	184,583	—
GP-IN: Graduate soft skills development through mentoring pre-university students through diverse geoscience		47.050	ICER-2023263	67,985	—
CAREER: South Greenland's Holocene Climate History Reconstructed Using Three Paleolimnological Approaches		47.050	PLR-1454734	(677)	—
				<u>810,844</u>	<u>—</u>
Computing Innovation Fellows 2021 Project	58	47.070	2021 CIF-Northwestern-10//2127309	117,092	—
Computing Innovation Fellows 2021 Project – Fumeng Yang	58	47.070	2021 CIF-Northwestern-45//2127309	84,038	—
HDR Institute: Institute for Data Driven Dynamical Design	54	47.070	402052_5805-001//2118201	143,591	—
CRI: Ci-SUSTAIN: Racket on Alternative Platforms	160	47.070	502648-780501//CNS-1823244	75,240	—
CAREER: Robot Learning from Motor-Impaired Instructors and Task Partners	186	47.070	81454 Amd 5 //IIS-1552706	(272)	—
IRNC: RXP: StarLight SDX – A Software Defined Networking Exchange for Global Science Research and Education		47.070	ACI-1450871	82,310	—
SHF: Small: Greybox Computing: An Associative Computing Methodology with Instruction Directed Power and Clock Management		47.070	CCF-1618065-001	(1,835)	—
AIIF: Collaborative Research: Algorithms for Probabilistic Inference in the Real World		47.070	CCF-1637585	21,062	—
CAREER: Beyond Worst-Case Analysis: New Approaches in Approximation Algorithms and Machine Learning		47.070	CCF-1652491 004	161,869	—
AIIF: Mechanism Design and Machine Learning for Peer Grading		47.070	CCF-1733860	33,153	—
Collaborative Research: TRIPODS Institute for Optimization and Learning		47.070	CCF-1740735	21,888	—
CAREER: SOISTICE: Software Synthesis with Timing Contracts for Cyber-Physical Systems		47.070	CCF-1834701 002	80,125	—
CAREER: Design and Synthesis of Energy-efficient Time-domain Computing for Intelligent Edge Processing		47.070	CCF-1846424-002	48,237	—
SHF: Small: The Compiler-Architecture Solution to the Data Dependent, Circuit-Level Critical-Paths Variations		47.070	CCF-1908488	180,058	—
CIF: Small: Wireless Massive Access: From Fundamental Limits to Practical Design		47.070	CCF-1910168	112,123	—
HDR TRIPODS: Collaborative Research: Institute for Data, Econometrics, Algorithms and Learning		47.070	CCF-1934931/001	327,659	—
Collaborative Research: AF: Medium: Design and Analysis of Models and Algorithms for Real-life Problems		47.070	CCF-1955351 001	57,264	—
Collaborative Research: CIF: Small: Convexification-based Decomposition Methods for Large-Scale Inference in Graphical Models		47.070	CCF-2007814	55,824	—
Collaborative Research: CIF: Small: A Unified Framework of Distributional Optimization via Variational Transport		47.070	CCF-2008827	138,019	—
SHF: Small: Development of Differentiable Memory Augmented Neural CPU Architecture for Cognitive Computing		47.070	CCF-2008906	48,620	—
Collaborative Research: PPOSS: Planning: Unifying Software and Hardware to Achieve Performant and Scalable Zero-cost Parallelism in the Heterogeneous Future		47.070	CCF-2028851-002	31,467	—
Collaborative Research: FET: Medium: Neuroplane: Scalable Deep Learning through Gate-tunable MoS2 Crossbars		47.070	CCF-2106964-001 & 002	110,881	—
Collaborative Research: PPOSS: Planning: A Disciplined Approach to Scaling in the Post-Moore's Law Era		47.070	CCF-2118708	16,828	—
Collaborative Research: PPOSS: LARGE: Unifying Software and Hardware to Achieve Performant and Scalable Frictionless Parallelism in the Heterogeneous Future		47.070	CCF-2119069	109,469	—
Computing Innovation Fellows 2020 Project	58	47.070	CIF2020-NWU-13//CCF-2030859	110,549	—
SaTC: CORE: Small: Efficient Logic Encryptions for Hardware IP Protection		47.070	CNS 2113704	89,464	—
Collaborative Research: Chameleon: A Large-Scale, Reconfigurable Experimental Environment for Cloud Research		47.070	CNS-1743324-003	25,901	—
CSR: Medium: Collaborative Research: Interweaving the Parallel Software/Hardware Stack		47.070	CNS-1763743 005	144,446	—
NeTS: Small: Incentivizing Internet-Scale Web Mining with Webcoin		47.070	CNS-1810582	127,249	—

NORTHWESTERN UNIVERSITY
 Supplementary Schedule of Expenditures of Federal Awards
 Year ended August 31, 2022

Cluster title/Federal grantor/Subagency/Project title	Pass-through entity	Assistance listing number	Sponsor award number	Federal expenditures	Passed-through to subrecipients
CSR: Small: Development of Distributed Neural Processing Electronics for Whole-body Computing and Biomedical Sensor Fusion		47.070	CNS-1816870	\$ 121,966	—
Computer Science for All: Researcher Practitioner Partnerships Workshops (CS for All: RPP), Chicago and Los Angeles		47.070	CNS-1821362	96,662	—
SCC: I4all (interests for all): A smart socio-technical infrastructure to identify, cultivate, and sustain youth STEAM interests in a diverse midsized American city		47.070	CNS-1831685	479,859	286,393
Equitable Computer Science for All Learning Ecosystems: Developing Underserved Students' Computational Making Literacies Through Community-Embedded Out of School Time Programming		47.070	CNS-1838916	(1)	—
Equitable Computer Science for All Learning Ecosystems: Developing Underserved Students' Computational Making Literacies Through Community-Embedded Out of School Time Programming		47.070	CNS-1838916	14,981	14,981
CPS: Synergy: Securing the Timing of Cyber-Physical Systems		47.070	CNS-1839511	—	—
CPS: Synergy: Securing the Timing of Cyber-Physical Systems		47.070	CNS-1839511	66,953	66,953
CAREER: Efficient Query Processing for Private Data Federations		47.070	CNS-1846447 003	67,384	—
CRII: CSR: Systems and Tooling Enabling Adaptive Intermittent Computing		47.070	CNS-1850496-002	29,438	—
CNS Core: Small: Collaborative Research: The Interplay of Markets and Security in 5G Shared Spectrum Services		47.070	CNS-1908807	62,751	—
DCL: SaTC: Early Stage Interdisciplinary Collaboration: Privacy Enhancing Framework to Advance Behavior Models		47.070	CNS-1915847	32,058	—
Envisioning Workshops for Computing in Undergraduate Education		47.070	CNS-1944777	222,158	14,337
Collaborative Research: SaTC: CORE: Medium: Quicksilver: a Write-oriented, Private, Outsourced Database Management System		47.070	CNS-2016240	60,122	—
Collaborative Research: Chameleon: A Large Scale, Reconfigurable Experimental Environment for Cloud Research		47.070	CNS-2027173 002	80,114	—
COVID-19: RAPID: Internet Traffic and Compliance with Government Stay-at-Home Measures		47.070	CNS-2027922	22,849	—
COVID-19: RAPID: Low-cost, Batteryless Smart PPE Tackling the COVID-19 Pandemic		47.070	CNS-2032408	351	—
CPS: Medium: Batteryless Sensors Enabling Smart Green Infrastructure		47.070	CNS-2038853	456,485	—
SCC-CIVIC-PG Track B: Strengthening Resilience of Ojibwe Nations across Generations (STRONG): Sovereignty, Food, Water, and Cultural (in)Security		47.070	CNS-2044053	41,178	—
CAREER: Designing for Learning at the Intersection of Sports, Analytics and Physical Computing		47.070	CNS-2047693-001	145,115	—
NSF-BSF: CNS Core: Small: Reliable and Zero-Power Timekeepers for Intermittently Powered Computing Devices via Stochastic Magnetic Tunnel Junctions		47.070	CNS-2106562	26,839	—
Collaborative Research: CNS Core: Medium: On the Criticality of the Submarine Cable Network		47.070	CNS-2107392-001	181,878	—
Collaborative Research: CNS Medium: Systems Foundations for Battery-free Body Area Intelligence and Sensing		47.070	CNS-2107400	73,198	—
SCC-PG: Improving healthcare access in marginalized communities through smart connected technologies		47.070	CNS-2125488	40,661	—
Collaborative Research: BPC-DP: Culturally Relevant Physical Computing for Sustainability Programs for Native Hawaiian Students		47.070	CNS-2137784	2,773	—
CAREER: Enabling Dynamic, Adaptive, and Reliable Battery-free Embedded Computing		47.070	CNS-2145584-001	39,366	—
RINGS: Accelerating the NextG Protocols Definition to Code Generation with an Automatic and Secure Verification-Compilation Tool-Chain		47.070	CNS-2148177	106,950	—
RINGS: Robust and Resilient Wireless Networks using Next Generation Spectrum		47.070	CNS-2148183 001	6,023	—
SaTC: CORE: Small: Towards Locating Memory Corruption Vulnerability with Core Dump		47.070	CNS-2219379	97,777	—
SaTC: CORE: Small: Collaborative: Towards Facilitating Kernel Vulnerability Reproduction by Fusing Crowd and Machine Generated Data		47.070	CNS-2221122	50,650	—
Collaborative Research: SaTC: CORE: Small: Towards Label Enrichment and Refinement to Harden Learning-based Security Defenses		47.070	CNS-2225225	24,444	—
CAREER: Securing Deep Reinforcement Learning		47.070	CNS-2225234 001	21,448	—
CRII: CHS: Automatically Praising Learning Process to Promote the Growth Mindset in Computer Science		47.070	COM IIS-1755628	(6,585)	—
CHS: Small: Computer-supported Collective Deliberation for the Future of Work		47.070	IIS 2008450	133,556	—
NSF Cyberlearning: Context-Aware Metacognition Practice: Instrumenting Classroom Ecosystems to Help Introductory Computer Science Students Develop Effective Learning Strategies		47.070	IIS 2016900	71,095	—
Collaborative Research: HCC: Medium: TouchBots for Surface Haptics		47.070	IIS 2106191	237,860	—
HDR DSC: Collaborative Research: The Metropolitan Chicago Data Science Corps (MCDC): Learning from Data to Support Communities		47.070	IIS 2123447-002	135,847	—
CAREER: Coherent Computational Imaging: Micro Measurements in a Macro World		47.070	IIS-1453192	(3,104)	—
CHS: Large: Collaborative Research: TextureShop: Tools for the Composition and Display of Virtual Texture		47.070	IIS-1518602 003	(288)	—
DIP: Collaborative Research: CRAFT: An Online Learning Platform for Scaffolding the Crowd Feedback Loop for Design Innovation Education		47.070	IIS-1530637	(494)	—
CHS: Small: Collaborative Research: The Presentation of Self in Networked Life		47.070	IIS-1617387 001	(2)	—
CHS: Small: Collaborative Research: Pathways to Community Success: Advancing a Comparative Science of Online Collaborative Organization		47.070	IIS-1617468-001	9,451	—
EXP: Agile Research Studios: Scaling Cognitive Apprenticeship to Advance Undergraduate and Graduate Research Training in STEM		47.070	IIS-1623635	(79)	—
CAREER: Understanding and addressing geographic inequalities in location-aware technologies		47.070	IIS-1707296-003	1,560	—
CHS: Small: Assessing the Role of Platform Algorithms in Shaping News Attention		47.070	IIS-1717330	(1)	—
EXP: Readily Available Learning Experiences: Turning the Entire Web into Scaffolded Examples to Bridge Conceptual Knowledge Gaps for Novice Web Developers		47.070	IIS-1735977	147,791	—
CHS: Small: Collaborative Research: Structured Data Peer Production: Addressing Challenges and Leveraging Opportunities		47.070	IIS-1815507/001	1,701	—
RI: Small: A Unified Compositional Model for Explainable Video-based Human Activity Parsing		47.070	IIS-1815561	175,631	—
Making Minecraft Multimodal: A Naturalistic Platform for Collaborative Learning and Creating		47.070	IIS-1822865-002	218,617	—
Collaborative Research: NCS-FO: Discovering dynamics in massive-scale neural datasets using machine learning		47.070	IIS-1835345	17,569	—
BIGDATA: IA: Collaborative Research: Asynchronous Distributed Machine Learning Framework for Multi-Site Collaborative Big Brain Data Mining		47.070	IIS-1837999	35,707	—
CAREER: Computational Journalism: Integrating Algorithms and People in the Production of News Information		47.070	IIS-1845460-006	94,870	—
CHS: Medium: Next Generation Content Production Tools for People with Vision Impairments		47.070	IIS-1901456-005	218,710	29,286
CHS: Medium: Collaborative Research: Empirically Validated Perceptual Tasks for Data Visualization		47.070	IIS-1901485	42,415	—
CHS: Small: Collaborative Research: Representing and Learning Visualization Design Knowledge		47.070	IIS-1907941	64,169	—
CHS: Small: Collaborative Research: Modeling the Ecological Dynamics of Online Organizations		47.070	IIS-1917202-002	149,832	—
CAREER: Enhancing Critical Reflection on Data by Integrating Users' Expectations in Visualization Interaction		47.070	IIS-1930642 005	37,650	—
CAREER: Transforming Online Scholarly Communication with Networked Crowd Computation		47.070	IIS-1943506 002	37,674	—
Collaborative Research: RI: Medium: Living Architectures: From Army Ants to Self-Assembling Robot Swarms		47.070	IIS-1956019	75,019	—
RI: Small: Extracting and Representing Commonsense Knowledge Using Language Models		47.070	IIS-2006851	60,805	—
Collaborative Research: NRI: FND: Flying Swarm for Safe Human Interaction in Unstructured Environments		47.070	IIS-2024615	35,547	—
CAREER: Towards Intelligent Learning Environments that Support the Practice of Programming		47.070	IIS-2045809	43,834	—
Collaborative Research: RI: Medium: Thermal Computational Imaging		47.070	IIS-2106786	98,086	—
Collaborative Research: HCC: Medium: Intelligent support for non-experts to navigate large information spaces		47.070	IIS-2107334	105,971	—
HCC: Medium: Visual Processing Capacity in Dynamic Data		47.070	IIS-2107490	155,349	—
Supporting Computational Literacy by Designing a Collaborative Platform at the Intersection of Music and Code		47.070	IIS-2119701	305,326	13,708
CHS: Small: Collaborative Research: Validating and Communicating Model-based Approaches for Data Visualization Ability Assessment		47.070	IIS-2120750-000	25,371	—
NCS-FO: The Biology and Technology of Online Planning		47.070	IIS-2123725	155,344	—
CHS: Small: Developing a Probabilistic Grammar of Graphics for Flexible Uncertainty Visualization		47.070	IIS-2126598	206,084	115,775
Collaborative Research: HCC: Small: Science communication in the ecosystem of digital media platforms		47.070	IIS-2133963	409	—
CRII: RI: Sub-mm 3D Scanning of Real-World Scenes with Active Multi-View Event Sensing		47.070	IIS-2153516	4,288	—
CyberTraining: CIU: The LSST Data Science Fellowship Program		47.070	OAC-1829740	130,065	—
Collaborative Research: Framework: Data: HDR: Nanocomposites to Metamaterials: A Knowledge Graph Framework		47.070	OAC-1835782	108,535	—

NORTHWESTERN UNIVERSITY
 Supplementary Schedule of Expenditures of Federal Awards
 Year ended August 31, 2022

Cluster title/Federal grantor/Subagency/Project title	Pass-through entity	Assistance listing number	Sponsor award number	Federal expenditures	Passed-through to subrecipients
Collaborative Research: Frameworks: Multiphase Fluid-Structure Interaction Software Infrastructure to Enable Applications in Medicine, Biology, and Engineering		47.070	OAC-1931372	\$ 54,587	—
Mid-scale RI-1 (M1:IP):SAGE: A Software-Defined Sensor Network		47.070	OAC-1935984 004	2,337,475	542,915
Multi-scale Modeling of Accretion and Jets in Active Galactic Nuclei		47.070	OAC-2031997	5,988	—
Expeditions: DISCOVER: Design and Integration of Superconducting Computation for Ventures beyond Exascale Realization	284	47.070	SCON-00003341//CCF-2124453	3,745	—
Frameworks: Bayesian Analysis for Nuclei in Diverse Theories	169	47.070	UT21727//OAC-2004601	195,077	—
				11,152,906	1,084,348
Quantifying the Prevalence and Phenotypic Consequences of Transcriptional Irreversibility in Bacteria	294	47.074	7GMO 230921 PO 0000002785//2206974	8,766	—
Collaborative Research: Hyaluronan, NRF2 and Protracted Female Fertility in Long-lived Naked Mole-Rats	60	47.074	91778-20440 // IOS-2005919	14,324	—
CSBR: Living Stocks – Enhancement of the Caenorhabditis Natural Diversity Resource		47.074	DBI-1930382	206,732	—
Collaborative Research: IIBR Instrumentation: The Nanosizer – A new tool for the preparation of arbitrary bioactive surfaces		47.074	DBI-2032180-002	111,746	—
EAGER: Integrating host-associated microbes into trait-based community ecology frameworks		47.074	DEB-1938302-001	71,700	—
URoL:EN: Towards a unified theory of regulatory functions and networks across biological and social systems		47.074	EF-2133863	10,698	—
Mechanisms of sensory control of developmental rate		47.074	IOS- 1755244	229,528	—
The Vibrissotactile Natural Scene		47.074	IOS-1558068	40,529	—
CAREER: Discovery of the molecular mechanisms underlying microevolution of phenotypic plasticity in a developmental trait		47.074	IOS-1751035-003	91,359	—
CAREER: Mapping the proteomic landscape of neural systems		47.074	IOS-1846234-003	90,231	—
Collaborative Research: Bilateral BBSRC-NSF/BIO: Synthetic Biology for Lignin Utilization		47.074	MCB-1614953	(1)	—
CAREER: Uncovering Quantitative Design Principles of RNA Regulators for Synthetic Biology		47.074	MCB-1650040 002	(28)	—
Collaborative Research: EAGER: Customized cell biosensors for interrogating cancer cell physiology		47.074	MCB-1745753	62,701	—
EAGER: Toward engineering a synthetic enhancer in Caenorhabditis elegans		47.074	MCB-1748307	(19)	—
Biophysical Studies of Metalloenzymes		47.074	MCB-1908587	199,887	—
Collaborative Research: EAGER: Uncovering the role of Golgi organization on function		47.074	MCB-1935356	3,347	—
Novel determinants of prokaryotic copper homeostasis		47.074	MCB-1938715	145,594	—
Locus specific manipulatins of chromatin function		47.074	MCB-2024073	(919)	—
COVID-19: RAPID: Point-of-Need Detection of COVID-19 using CRISPR-Enabled Cell-Free Synthetic Biology		47.074	MCB-2028651	45,933	1,878
NeuroNex: Communication, Coordination, and Control of Neuromechanical Systems (C3NS)	41	47.074	RESS15698 // DBI-2015317	321,649	—
				1,653,757	1,878
Diversity and Networking in Law School: Are Law Students from Diverse Backgrounds Disadvantaged?	238	47.075	2022-1652//SES-2147011	3,571	—
In the Shadow of Whiteness: Middle Eastern and North African Identity in the US	17	47.075	ACGMT 911621//2000500	11,480	—
Doctoral Dissertation Research: Active assignment of quantifier scope guides language processing		47.075	BCS 2116989	5,073	—
The Development of Relational Processing in Infancy		47.075	BCS-1729720	32,320	—
Surviving the Terminal Classic Maya Collapse: Settlement and Household Archaeology at Aventura, Belize		47.075	BCS-1732129	60,593	—
NCS-FO: Collaborative Research: Understanding the neural basis for sensorimotor control loops using whisker-based robotic hardware platforms		47.075	BCS-1734981	156,160	—
Doctoral Dissertation Research: The Role Socioeconomic and Cultural Variation in Neurotrauma Recovery		47.075	BCS-1756617	490	—
Studies of memory reactivation during sleep using intracranial recordings		47.075	BCS-1829414	(8,520)	—
Studies of memory reactivation during sleep using intracranial recordings		47.075	BCS-1829414	46,416	46,416
Doctoral Dissertation Research: Intergenerational effects of prenatal stress on physiological and psychosocial outcomes		47.075	BCS-1849265	(2,879)	—
Doctoral Dissertation Research: Ritual, Network Formation, and Governance among Displaced Communities		47.075	BCS-1851195	1,074	—
LEARNING, CREATIVE PROBLEM-SOLVING, REM SLEEP, AND AWARENESS OF DREAMING.		47.075	BCS-1921678-002	175,053	—
CAREER: Stereotypes of Teens and Adolescent Neuropsychological Development		47.075	BCS-1944644-002	120,369	—
Memory and context effects on representations of variation in phrasal intonation		47.075	BCS-1944773	137,500	—
Doctoral Dissertation Improvement Award: Urban Longevity and Social Inequality		47.075	BCS-1946385	18,928	—
Collaborative Research: The Chicagoland Language Project		47.075	BCS-2017716	46,941	—
Doctoral Dissertation Research: Eating to fit in: Impacts of acculturative stress on diet change and metabolic health among immigrant young adults in Spain		47.075	BCS-2020422	25,192	—
COVID-19: RAPID: Generating knowledge with next phase serological testing for SARS-CoV-2		47.075	BCS-2035114	32,136	—
Collaborative Research: Using AI-enabled Smart Blocks to Understand and Support Spatial Reasoning and Learning		47.075	BCS-2040421	49,091	—
Doctoral Dissertation Research: The influence of the social environment on the infant skin microbiome		47.075	BCS-2041600	5,040	—
CAREER: Elucidating the role of brain hubs in task control.		47.075	BCS-2048066	22,585	—
NSF-BSF: Linking theta with offline memory consolidation: A bridge from wake to sleep		47.075	BCS-2048681	51,828	—
From sensation to symptom: The social shaping of functional illness experience		47.075	BCS-2051512	114,094	—
Doctoral Dissertation Research: Role of Prior Knowledge in Consolidation of Novel Phonotactic Patterns for Speech Production		47.075	BCS-2116802	10,618	—
Doctoral Dissertation Research: High school choice and the social meanings of NCS reversal in Chicago		47.075	BCS-2116957	4,450	—
Doctoral Dissertation Research: The effects of experience and attitudes on heritage bilinguals' language processing		47.075	BCS-2141430	512	—
Collaborative Research: An archaeological examination of the cultural and ecological consequences of colonialism		47.075	BCS-2150876	22,018	—
COVID-19: RAPID: Teaming in the Time of Covid-19: Understanding how technology affordances can enable collaboration during sudden workplace disruption		47.075	SAS-2027572	27,465	—
Problem-Solving Sociology Workshops		47.075	SES 1823709	15,506	—
Collaborative Research: International Migration and Fertility: Towards a Multidimensional Understanding		47.075	SES 1918274	91,284	52,207
Tribal Constitutions: Constructing Power by Developing Structures of Self-Governance		47.075	SES 2044007	9,093	—
The Network Structure of Police Misconduct		47.075	SES 2049513-003	67,988	—
Constructions of Traditional Medicine during Decolonization and the Global Cold War		47.075	SES-1456984-003	10,903	—
Collaborative Research: Time-Sharing Experiments for the Social Sciences (TESS): Proposal for Renewed Support, 2016-2019		47.075	SES-1628057	(1,313)	—
Collaborative Research: Time-Sharing Experiments for the Social Sciences (TESS): Proposal for Renewed Support, 2016-2019		47.075	SES-1628057	82,948	82,948
Workshop: Advances in Experimental Political Science		47.075	SES-1822286	(1,711)	—
Collaborative Research: Using Web Data to Study Campaigns and Representation		47.075	SES-1823896	(1)	—
Fiduciary Duty, Financial Regulation, and the Market for Retirement Products		47.075	SES-1824463	69,754	—
Applications of Dynamic Information Design		47.075	SES-1851883	50,072	—
Collaborative Research: Evidence in Economic Models		47.075	SES-1919494	78,024	—
Collaborative Research: Transparency and the Rule of Law: A Field Experiment in Ukraine		47.075	SES-1921294/002	483	—
Monotone Methods in Reputations: Behavioral Predictions and Reputation Sustainability		47.075	SES-1947021	41,655	—
Collaborative Research: Time-Sharing Experiments for the Social Sciences (TESS): Proposal for Renewed Support, 2020-2023		47.075	SES-2017581-005	391,047	204,188
Understanding the Long-Run Effects of School Desegregation on Political and Social Preferences		47.075	SES-2018869	16,867	—

NORTHWESTERN UNIVERSITY
 Supplementary Schedule of Expenditures of Federal Awards
 Year ended August 31, 2022

Cluster title/Federal grantor/Subagency/Project title	Pass-through entity	Assistance listing number	Sponsor award number	Federal expenditures	Passed-through to subrecipients
Collaborative Research: Social Norms, Trust and the Inter-generational Flow of Innovations in a Developing Country		47.075	SES-2019086	\$ 42,263	—
Doctoral Dissertation Research in DRMS: Assembling Teams Supported by Augmented Intelligence		47.075	SES-2021117	19,023	—
COVID-19: RAPID: Quantifying the Downstream Effects of COVID-19 Online Misinformation on Risk Perceptions, Decision-making, Policy Preferences, and Preventive Health Behaviors		47.075	SES-2031705	77,691	53,404
COVID-19: The Next Normal for Teaming: Transitioning Out of COVID-19		47.075	SES-2052366	103,062	—
A Large-Scale Analysis of Mergers and Merger Simulations		47.075	SES-2116934	124,581	—
Career: Information, Algorithms, and Learning		47.075	SES-2145352	43,021	—
Collaborative Research: Understanding Team Success and Failure		47.075	SMA-1829344	22,460	—
Safe Bets and Risky Propositions: Leveraging Rich Data to Understand Scientific Diversity, Impact, and Potential of Teams		47.075	SMA-1856090	166,220	—
Production, Migration, & Differentiation: Analyzing the Co-Evolution of Careers & Knowledge Production		47.075	SMA-1934313	110,780	—
SCISIPBIO: A data-science approach to evaluating the likelihood of fraud and error in published studies		47.075	SMA-1956338	263,229	—
Collaborative Research: Identifying Reproducible Research Using Human-in-the-loop Machine Learning		47.075	SMA-2022466	48,347	—
COVID-19: RAPID: Impact of the Covid-19 Pandemic on the Biomedical Research Workforce: Productivity and Progress in Academia		47.075	SMA-2035112 AMD 001	43,329	—
				<u>3,156,203</u>	<u>439,163</u>
Teachers and Students Synergistic Learning Through Youth Participatory Science	255	47.076	16774-00 // DRL 1720856	2,904	—
AGEP National Research Conference 2020: Sustaining, Institutionalizing and Scaling AGEP Alliance Models and Initiatives	30	47.076	4500002984//HRD-1841978	19,790	—
Collaborative Research: NSF INCLUDES Alliance: An Alliance to Develop an Inclusive and Diverse National Faculty for Broadening Success of Underrepresented 2-Year and 4-Year STEM Students	23	47.076	Agmt 5/16/19//HRD-1834518	91,977	—
Doctoral Dissertation Research: A Geospatial Analysis of Alpine Glacial Variability		47.076	BCS-1812764	(115)	—
REU Site: Synthetic Biology at Northwestern: From Molecules to Society (SynBREU2.0)		47.076	DBI-2150269-001	80,747	—
Graduate Research Fellowship Program (GRFP)		47.076	DGE – 1842165-003	4,823,014	—
NRT-URoL: Synthesizing Biology Across Scales – A Convergent Synthetic Biology Training Program		47.076	DGE 2021900	349,539	—
NRT-DESE: Training in Data-Driven Discovery – From the Earth and the Universe to the Successful Careers of the Future		47.076	DGE-1450006-004	(1)	—
Collaborative Research: Professional Learning to Support Teacher Customizations of 3D Science Curriculum Materials for Equitable Student Sensemaking		47.076	DRL 2101377	111,327	—
Synthesizing Research on Spatial Taxonomies		47.076	DRL 2135743	38,329	—
Collaborative Research: Group-Based Cloud Computing for STEM Education Project		47.076	DRL-1614745	(237)	(237)
Collaborative Research: Mechanisms of Visuospatial Thinking in STEM		47.076	DRL-1661264 002	1,878	—
An investigation of the impact of culture and experience on reasoning about complex ecological phenomena among students from diverse backgrounds		47.076	DRL-1713368	117,709	—
Collaborative Research: Adapting and Implementing a Geospatial High School Course in Career and Technical Education Clusters in Urban Settings		47.076	DRL-1759360	95,305	—
Collaborative Research: Next Generation Science Standards (NGSS) and Designing School System Educational Infrastructure to support Elementary School Science Instruction		47.076	DRL-1761057-002	342,052	—
Broadening Participation in Computer Science Through Music, Dance, and Coding Across Learning Spaces		47.076	DRL-1837661	213,494	194,397
Methods for assessing replication		47.076	DRL-1841075	77,811	—
"CT-ifying" the High-School Science Curriculum to Broaden Participation in Computational Science		47.076	DRL-1842374-001	702,693	—
Building theories of scientific phenomena: Comparing and Integrating aggregate pattern-based and agent-based computational approaches		47.076	DRL-1842375	379,586	73,134
Collaborative Research: Strategies: Building a Learning Ecology to Increase STEM Participation Among Middle School Girls		47.076	DRL-1850543	172,269	—
Collaborative Research: Making Space for Story-Based Tinkering to Scaffold Early Informal Engineering Learning		47.076	DRL-1906808	115,238	—
Collaborative Research: Investigating a Nested Mentoring Model Designed to Support STEM Skill and Identity Development for Middle School Youth, Student		47.076	DRL-1906971-003	162,617	22,800
Improving Evaluations of R&D in STEM Education		47.076	DRL-1937719	119,862	—
An investigation of the impact of culture and experience on reasoning about complex ecological phenomena among students from diverse backgrounds		47.076	DRL-1946478	81,733	12,440
Computational Thinking and Physical Computing in Physical Education		47.076	DRL-2031467-001	293,644	—
Collaborative Research: Mastery in Out-of-School-Time (MOST): Documenting STEM Learning to Expand Educational Pathways		47.076	DRL-2115326	111,074	—
Collaborative Research: Leveraging the Power of Reflection ...		47.076	DRL-2115905	58,237	—
Collaborative Research: Intergenerational Learning, Deliberation, and Decision Making For Changing Lands and Waters		47.076	DRL-2115963	182,982	—
Collaborative Research: Learning in Places: PK-5+ Field Based Science Education Across Schools, Families, and Communities		47.076	DRL-2201253	1,032	—
Collaborative Research: IUJSE: EHR – Inclusive Learning and Teaching in Undergraduate STEM Instruction		47.076	DUE-1821684/003	228,919	49,999
Collaborative Research: AGEP Transformation Alliance: CIRTL AGEP – Improved Academic Climate for STEM Dissertators and Postdocs to Increase Interest in Faculty Careers		47.076	HRD-1647146-005	21,090	—
CAREER: Investigation of Undergraduate Learning Contexts Considering Ethical, Racial, and Disciplinary Identities of Students in Engineering and Computer Science		47.076	HRD-1855494-002	108,564	—
Barry University Engaged STEM Scholars (ESS) Program	24	47.076	NSF-1930076 ESS-Sub 1//DUE-1930076	2,096	—
Facilitating Teacher Learning with Video Clips of Instruction in Science	82	47.076	R000002772/2000833	6,984	—
Learning in Places: Field Based Science in Early Childhood Education	297	47.076	UWSC11018 Amd. #3//DRL-1720578 AM 004	36,585	—
Improving the STEM preparation of K-5 preservice teachers through a project-based, interdisciplinary approach	297	47.076	UWSC13096/DUE-2111261	37,984	—
				<u>9,188,712</u>	<u>352,533</u>
Seasonality of Abrupt Climate Change over Greenland: Direct Tests for the Younger Dryas and 8.2 ka event using Paleolimnology		47.078	OPP-2002515	177,495	—
COVID-19: Investigating the Association between Smoking Status and COVID-19 Outcomes, Collecting Data from Health Systems Affiliated with the National Cancer Institute's Cancer Center Cessation Initiative (C3I)	298	47.079	000001070//OISE-20-66590-3	17,813	—
Collaborative Research: NSF-BSF: WoU-MMA: Crossing the Chasm: From Compact Object Mergers to Cosmic Fireworks		47.079	AST-2107839	26,046	—
PIRE: Computationally Based Imaging of Structure in Materials (CuBISM)		47.079	OISE-1743748	783,822	19,179
				<u>827,681</u>	<u>19,179</u>
PIRE: Integrated Computational Materials Engineering for Active Materials and Interfaces in Chemical Fuel Production	256	47.083	077340-1 580 Amd. 03//OISE-1545907	(46)	—
A1: An open knowledge network to transform the transparency and accessibility of court records		47.083	ITE-2033604 003	2,194,544	263,615
				<u>2,194,498</u>	<u>263,615</u>
World Without Waste	231	47.RD	Agmt 10/14/21	7,455	—
Cusatis NSF Rotator Appointment		47.RD	CMMI-2148861-005	245,584	—
			National Science Foundation Total	<u>59,027,031</u>	<u>2,827,320</u>

NORTHWESTERN UNIVERSITY
 Supplementary Schedule of Expenditures of Federal Awards
 Year ended August 31, 2022

Cluster title/Federal grantor/Subagency/Project title	Pass-through entity	Assistance listing number	Sponsor award number	Federal expenditures	Passed-through to subrecipients
U.S. Agency for International Development:					
Agency for International Development:					
Global Security Act: Policy Analysis and Measurement	196	98.001	0882//7200AA18LA00003-03	\$ 191,797	—
MOMENTUM 2C – ACCEL	94	98.001	115423.5116109//7200AA20CA00003	58,584	—
Comparing HIV Mucosal Targets in US and Kenyan Populations	117	98.001	7503// AID-OAA-A-16-00032	31,830	—
COVID-19: Impact of COVID-19 on Food Security	129	98.001	A00-1012-S002//7200AA18LA00003//AID-OAA-L-14-00006	214,176	—
Rule of Law Activity in Georgia	73	98.001	G-1977-22-100-3047-20//72011422CA00001	5,565	—
U.S. Agency for International Development Total				501,952	—
U.S. Intelligence Community:					
Office of the Director of National Intelligence:					
Tailoring NIR/IR-Light Absorbing Conjugated Polymers for Mechanically and Environmentally Robust Electrochromic Devices	167	12.RD	Marks AGMT 9/21/22	9,737	—
U.S. Intelligence Community Total				9,737	—
Research and Development Cluster Total				621,112,866	87,756,897
Student Financial Assistance Cluster:					
Department of Education:					
Federal SEOG 2021-2022		84.007	P007A211246	2,186,241	—
Federal Work-Study Administrative Cost Allowance FY22		84.033		285,000	—
Federal Work-Study 2020-2021		84.033	P033A201246	505,442	—
Federal Work-Study 2021-2022		84.033	P033A21146	2,833,019	—
Federal Work-Study 2022-2023		84.033	P033A221246	61,090	—
				3,684,551	—
Federal Perkins Loans – Outstanding as of 9/1/21		84.038		10,803,614	—
Federal Pell Grant 2020-2021		84.063	P063P201371	4,332	—
Federal Pell Grant 2021-2022		84.063	P063P211371	8,482,284	—
				8,486,616	—
Federal Direct Loan Program 2020-2021		84.268	P268K211371	5,814	—
Federal Direct Loan Program 2021-2022		84.268	P268K221371	211,200,776	—
Federal Direct Loan Program 2022-2023		84.268	P268K231371	5,237,202	—
				216,443,792	—
Health Professionals Student and Primary Care – Outstanding as of 9/1/21		93.342		170,583	—
Department of Education Total				241,775,397	—
Student Financial Assistance Cluster Total				241,775,397	—
Other Programs:					
Corporation for National and Community Service:					
Jumpstart Northwestern	127	94.006	CFDA-94.006-JS-SITE #271//2172021	69,284	—
Jumpstart Northwestern	127	94.006	Lewis AGMT 12/3/20/210271	(215)	—
Corporation for National and Community Service Total				69,069	—
Department of Education:					
COVID-19: Education Stabilization Fund – Higher Education Emergency Relief Fund		84.425E	P425E205897	15,286,000	—
COVID-19: Education Stabilization Fund – Higher Education Emergency Relief Fund		84.425F	P425F205216	4,477,436	—
Department of Education Total				19,763,436	—
Department of Energy:					
Addressing Rigor and Reproducibility in Heterogeneous, Thermal Catalysis		81.049	DE-SC0022918	7,664	—
Department of Energy Total				7,664	—
Department of Health and Human Services:					
Illinois Perinatal Quality Collaborative (ILPQC) – Federal FY22 Funding	108	93.667	FCSAU04929	40,100	—
Administration for Community Living:					
Age Friendly Chicago – Alzheimer’s Disease Program Initiative	46	93.470	Invoice 2/26/21	33,454	—
Centers for Disease Control and Prevention:					
Overdose Data to Action, Strategy 2: Statewide Unintentional Drug Overdose Reporting System	109	93.136	#13282005I	547,513	122,553
Drug User Health and Evaluation of Substance Use Delegate Agencies (TO 35)	47	93.136	(TO 35) 51549-41-TSK-0007//5NU17CE924986-02-00	54,389	—
Collecting Violent Death Information Using National Violent Death Reporting System (NVDRS): Illinois	109	93.136	5 NU1 7CED10031-02-00	428,432	5,039
Overdose Data to Action, Strategy 2: Statewide Unintentional Drug Overdose Reporting System	109	93.136	AGMT 23282003J-A1 // NU17CE924980	929,506	—
				1,959,840	127,592
Surveillance of antimicrobial-resistant Gram negative bacteria and fungi in a Pakistan health care system		93.318	5 NU3HCK000007-02-00	144,363	—

NORTHWESTERN UNIVERSITY
 Supplementary Schedule of Expenditures of Federal Awards
 Year ended August 31, 2022

Cluster title/Federal grantor/Subagency/Project title	Pass-through entity	Assistance listing number	Sponsor award number	Federal expenditures	Passed-through to subrecipients
COVID-19: CDPH Wastewater Surveillance 2-Year Demonstration Project	255	93.323	18840/6 NU0CK000556-02-03	\$ 22,522	—
COVID-19: Project No. 90: Evaluation of Shelter-Based Services Teams	47	93.323	6 NU0CK000556-02-03 // TOR# 51549-41-TSK-00009 – P	41,667	—
				<u>64,189</u>	<u>—</u>
CSTE Injury Data Science	61	93.421	7618//SNU38OT000297	24,823	—
COVID-19 Electronic Health Data Initiative	214	93.421	Agmt# 03/07/21 // NU38OT000316-03-02	78,578	—
				<u>103,401</u>	<u>—</u>
Improving the Health of Illinoisans Through Chronic Disease Prevention (ENRICH)	109	93.426	23286008//6 NU58DP006511-03-00	51,299	—
Improving the Health of Illinoisans Through Chronic Disease Prevention (ENRICH)	109	93.426	33286008K//SNU58DP006511-05-00	3,433	—
				<u>54,732</u>	<u>—</u>
Illinois Cancer Alliance to Reduce mortality and Enhance Screening (CARES)	244	93.800	AWD101193 (SUB00000357)//5 NU58DP006764-02-00	18,446	—
Assuring Comprehensive Prevention and Treatment for Families Affected by HIV to Eliminate Perinatal HIV Transmission in the United States	272	93.939	34-5311-3020-005//SNU65PS923665-05-00 AMD 5	10,090	—
Center for the Evaluation of the Chicago HIV Services Portfolio	47	93.940	51549 TOR 666//NU62PS924560-01-00	207,808	24,895
Integrated HIV Surveillance and Prevention, Component B – Demonstration Project	47	93.940	98537//SNU62PS924560 Amd 1	481,200	420,720
Integrated HIV Surveillance and Demonstration 2022	47	93.940	98537//NU62PS924560	499,145	357,000
Evaluation of Chicago's Community HIV Services Portfolio	47	93.940	Agreement No. 51549 TOR 668	141,947	6,705
				<u>1,330,100</u>	<u>809,320</u>
Illinois Perinatal Quality Collaborative Working Together for Healthier Moms and Babies in Illinois		93.946	5 NU58DP006360-05-00	198,204	110,402
COVID-19: ILPQC CDC (FY) 2021 COVID-19 Supplemental funds		93.946	5 NU58DP006360-05-00	50,315	—
CDC Supplement: ILPQC MNO Initiative additional support for provider education and safe discharge planning		93.946	6NU58DP006360-03-01	24,554	22,457
				<u>273,073</u>	<u>132,859</u>
Centers for Medicare & Medicaid Services:					
Medicaid 1115 SUD Waiver Evaluation Project	315	93.U01	18-489-NU // BMS2100000007	27,652	—
MACRA-Provider Resource Network (M-PRN)	11	93.U02	SC-17-009//HHSM-500-2017- 0004C	151,008	(1,708)
Health Resources and Services Administration:					
I PROMOTE ILLINOIS (Innovations to ImPRove Maternal OuTcomes in Illinois)	255	93.110	17747//SU7AMC33720-03-00 AMD 02	122,825	18,630
ACOG Alliance for Innovation on Maternal Health ("AIM")	12	93.110	Agmt 02/06/2020 // UC4MC28042	6,009	—
				<u>128,834</u>	<u>18,630</u>
Evaluation of HIV Services Portfolio	47	93.686	51549 TOR 666 // 6UT8HA33950-02-01	16,306	—
Quality Management of HIV Prevention Services in Chicago	47	93.686	TO 700 HSRA//5 UT8HA33950-03-00	17,364	—
				<u>33,670</u>	<u>—</u>
Mothers and Babies Training and Technical Assistance	108	93.870	FCSAV04131	41,674	—
Evaluation of HIV Services Portfolio	47	93.914	51549 TOR 666 // H89HA00008	118,298	—
Quality Management of HIV Prevention Services in Chicago	47	93.914	51549 TOR 700 // H89HA00008	522,819	68,162
				<u>641,117</u>	<u>68,162</u>
HRSA/SPNS Evidence-Informed Approaches to Improving Health Outcomes for People Living with HIV	150	93.928	18-SA-321001-848//U90HA31882 Amd.#3	42,452	—
Illinois Perinatal Quality Collaborative (ILPQC) Title V	109	93.994	16380002//B04MC33835	415,793	140,520
Office of the Assistant Secretary for Health:					
Increasing Minority Participation and Awareness in Clinical Trials+ (IMPACT+)	137	93.137	8130-300-2551-50//1 CPIMP211305	16,040	—
The Deep South Lupus Health Equity Project (DS-LHEP)	233	93.137	A21-0567-S001//1CPIMP211309-01-00	10,025	—
Training to Increase Minority Enrollment in Lupus Clinical Trials with Community Engagement (TIMELY)	13	93.137	Agmt 2-10-2022//1CPIMP211307-01-00	6,015	—
				<u>32,080</u>	<u>—</u>
Substance Abuse and Mental Health Services:					
Unaccompanied Minor Adaptation of Think Trauma	97	93.234	7430-01//1H79SM083664-01	2,875	—
Center for Child Trauma Assessment, Services and Interventions		93.243	5U79SM080018-05	181,228	—
			Department of Health and Human Services Total	<u>5,730,171</u>	<u>1,295,375</u>
Department of State:					
Young African Leaders Initiative 2020	118	19.009	FY20-YALI-BE-NWU-07 MOD. 2//S-ECAGD-18-CA-0022	9,237	—
Mandela Washington Fellowship for Young African Leaders – Leadership Institute	118	19.009	FY22-YALI-BE-NWU-08//S-ECAGD-21-CA-3082	160,740	—
			Department of State Total	<u>169,977</u>	<u>—</u>
Department of the Treasury:					
Training and Technical Support to ICJIA Violence Prevention & Intervention Grantees	106	21.027	#822037	80,897	—
			Department of the Treasury Total	<u>80,897</u>	<u>—</u>
National Aeronautics and Space Administration:					
NASA Langley Research Center:					
RFQ T3-0687-FY22: TI-21-01685 Independent Technical Assessment of NASA and External Quantum Sensing Capability	19	43.U03	TEAMS3-Northwestern University//80LARC17C0003	19,619	—
			National Aeronautics and Space Administration Total	<u>19,619</u>	<u>—</u>

NORTHWESTERN UNIVERSITY
 Supplementary Schedule of Expenditures of Federal Awards
 Year ended August 31, 2022

Cluster title/Federal grantor/Subagency/Project title	Pass-through entity	Assistance listing number	Sponsor award number	Federal expenditures	Passed-through to subrecipients
National Endowment for the Arts: A Site of Struggle: Making Meaning of Anti-Black Violence in American Art and Visual Culture The Block Museum of Art, General Operating Support FY22	105	45.024	1865835-44-21	\$ 3,098	—
National Endowment for the Humanities: Constructing African Medical Heritage: Legacies of Empire and the Geopolitics of Culture, 1890-1990		45.025	2022-0030700//1886887-61-21	15,950	—
		45.161	RZ-271304-20	163,229	—
			National Foundation of the Arts and Humanities Total	<u>182,277</u>	<u>—</u>
U.S. Agency for International Development: Agency for International Development: Promoting Rule of Law in Georgia	73	98.001	AID-114-A-15-00004	28,079	—
			U.S. Agency for International Development Total	<u>28,079</u>	<u>—</u>
			C Other Programs Total	<u>26,051,189</u>	<u>1,295,375</u>
Health Center Program Cluster: Department of Health and Human Services: Health Resources and Services Administration: AllianceChicago Research: Health Services Research Scientist Optimizing Virtual Care for Underserved Populations	10	93.527	Agmt 3-10-2022//5H2QCS33120-03-00	26,683	—
	79	93.527	Q8VCS45437-01-00-NU//6 Q8VCS45437-01-01	18,975	—
			Department of Health and Human Services Total	<u>45,658</u>	<u>—</u>
			Health Center Program Cluster Total	<u>45,658</u>	<u>—</u>
Highway Planning and Construction Cluster: Department of Transportation: Illinois, a Leader in Mobility 4.0 and Beyond	256	20.205	087795-18408//1775200501	38,972	—
			Department of Transportation Total	<u>38,972</u>	<u>—</u>
			Highway Planning and Construction Cluster Total	<u>38,972</u>	<u>—</u>
Medicaid Cluster: Department of Health and Human Services: Centers for Medicare & Medicaid Services: Illinois Medicaid EHR Incentive Program Education and Outreach Program	107	93.778	2020 37-002	346,944	143,640
			Department of Health and Human Services Total	<u>346,944</u>	<u>143,640</u>
			Medicaid Cluster Total	<u>346,944</u>	<u>143,640</u>
			Grand Total	<u>889,371,026</u>	<u>89,195,912</u>

NORTHWESTERN UNIVERSITY

Supplementary Schedule of Expenditures of Federal Awards

Legend for Pass-Through Award Prime Recipients

Year ended August 31, 2022

Sponsor full name	Pass-through ID Number
Adaptive Health, Inc.	1
Advanced Technology International	2
Aerojet Rocketdyne, Inc.	3
Albert Einstein College of Medicine	4
Alcorix Co.	5
AlisBio LLC	6
Alliance for Clinical Trials in Oncology	7
Alliance for Sustainable Energy, LLC, National Renewable Energy Laboratory	8
Alliance NCTN Foundation	9
AllianceChicago	10
Altarum Institute	11
American College of Obstetricians and Gynecologists	12
American College of Rheumatology	13
American Foundry Society Inc.	14
American Institutes for Research	15
American Lung Association	16
American Political Science Association	17
Amphix Bio, Inc.	18
Analytical Mechanics Associates, Inc.	19
Ann & Robert H. Lurie Children's Hospital	20
Arizona State University	21
Associated Universities, Inc., National Radio Astronomy Observatory	22
Association of Public and Land-grant Universities	23
Barry University	24
Battelle Energy Alliance, LLC, Idaho National Laboratory	25
Baylor College of Medicine	26
Benaroya Research Institute at Virginia	27
Blue Marble Space	28
Boston Medical Center	29
Boston University	30
Brigham and Women's Hospital	31
BrightOutcome Inc.	32
Broad Institute, Inc.	33
Brookhaven Science Associates, LLC, Brookhaven National Laboratory	34
Brown University	35
Buck Institute for Research on Aging	36
California Institute of Technology	37
CanCure LLC	38
Cardialen, Inc.	39
Carnegie Institution of Washington	40
Case Western Reserve University	41

NORTHWESTERN UNIVERSITY

Supplementary Schedule of Expenditures of Federal Awards

Legend for Pass-Through Award Prime Recipients

Year ended August 31, 2022

Sponsor full name	Pass-through ID Number
Cedars-Sinai Medical Center	42
Cell Reprogramming & Therapeutics LLC	43
Cerner Government Services, Inc.	44
Chicago Association for Research and Education in Science	45
Chicago Department of Family and Support Services	46
Chicago Department of Public Health	47
Children's Hospital of Philadelphia	48
Children's Research Institute	49
Cincinnati Children's Hospital Medical Center	50
CJE SeniorLife	51
Clarix Imaging Corporation	52
Cleveland Clinic Lerner College of Medicine of Case Western Reserve University	53
Colorado School of Mines	54
Colorado State University	55
Columbia University	56
Community Action Project of Tulsa County, Inc.	57
Computing Research Association, Inc.	58
COPD Foundation	59
Cornell University	60
Council of State and Territorial Epidemiologists	61
Critical Path Institute	62
Cusatis Computational Services, Inc.	63
Dana-Farber Cancer Institute	64
Dartmouth College	65
Defined Biosciences, Inc.	66
Delaware State University	67
DePaul University	68
Digital Optics Technologies, Inc.	69
Drexel University	70
Duke University	71
Durametrix LLC	72
East-West Management Institute Inc.	73
ECOG-ACRIN Medical Research Foundation, Inc.	74
Elorac, Inc.	75
Emmes Company, LLC	76
Emory University	77
Engineering and Software System Solutions, Inc.	78
Erie Family Health Center	79
Fermi Research Alliance, LLC, Fermi National Acceleratory Laboratory	80
Florida International University	81
Florida State University	82

NORTHWESTERN UNIVERSITY

Supplementary Schedule of Expenditures of Federal Awards

Legend for Pass-Through Award Prime Recipients

Year ended August 31, 2022

Sponsor full name	Pass-through ID Number
Fred Hutchinson Cancer Research Center	83
FuelCell Energy, Inc.	84
General Electric Company	85
General Motors Holdings LLC	86
George Mason University	87
George Washington University	88
Georgetown University	89
Georgia Institute of Technology	90
Georgia State University	91
Government of Israel Ministry of Defense Mission to the USA	92
Great Lakes Hemophilia Foundation	93
Harvard University	94
Hastings Center Inc.	95
Health Research, Incorporated	96
Heartland Alliance International, LLC	97
Hektoen Institute for Medical Research	98
Helios-NRG, LLC	99
Henry M. Jackson Foundation for the Advancement of Military Medicine	100
Histogen Inc.	101
Honeywell Federal Manufacturing & Technologies, LLC	102
Honeywell International Inc.	103
Icahn School of Medicine at Mount Sinai	104
Illinois Arts Council	105
Illinois Criminal Justice Information Authority	106
Illinois Department of Healthcare and Family Services	107
Illinois Department of Human Services	108
Illinois Department of Public Health	109
Illinois Institute of Technology	110
ImmunoChem Therapeutics, LLC	111
Indiana University	112
Inspiration At Work Inc	113
Intact Genomics, Inc.	114
Integrated Protein Technologies, Inc.	115
Intelligent Automation, Inc.	116
International AIDS Vaccine Initiative	117
International Research & Exchanges Board	118
Iowa State University	119
Iowa State University, Ames Laboratory	120
J. Craig Venter Institute	121
Jackson Laboratory	122
Jackson State University	123

NORTHWESTERN UNIVERSITY

Supplementary Schedule of Expenditures of Federal Awards

Legend for Pass-Through Award Prime Recipients

Year ended August 31, 2022

Sponsor full name	Pass-through ID Number
Jaeb Center for Health Research	124
Joan and Sanford I. Weill Medical College of Cornell University	125
Johns Hopkins University	126
Jumpstart for Young Children, Inc.	127
Kaiser Foundation Research Institute	128
Kansas State University	129
KBR Wyle Services, LLC	130
Kent County Memorial Hospital	131
Kitware, Inc	132
Krueck & Sexton Architects, LTD	133
Lantana Consulting Group, Inc.	134
Lehigh University	135
Louisiana State University Health Sciences Center Shreveport	136
Lupus Foundation of America, Inc.	137
Massachusetts General Hospital	138
Massachusetts Institute of Technology	139
Mayo Clinic	140
Mayo Clinic Jacksonville	141
Medical College of Wisconsin	142
Medical Science & Computing, LLC	143
Medical University of South Carolina	144
Methodist Hospital Research Institute	145
Metis Foundation (TX)	146
Michelin North America, Inc.	147
Michigan State University	148
Monell Chemical Senses Center	149
National Alliance of State and Territorial AIDS Directors	150
National Technology and Engineering Solutions of Sandia, LLC	151
Nemalife, Inc.	152
Neurodon LLC	153
NeuroKine Therapeutics, LLC	154
New England Research Institutes, Inc.	155
New Mexico Institute of Mining and Technology	156
New York University	157
New York University School of Medicine	158
NexTech Materials, Ltd.	159
Northeastern University	160
Northern California Institute for Research and Education	161
Northrop Grumman Corporation	162
NorthShore University HealthSystem	163
Nour, LLC	164

NORTHWESTERN UNIVERSITY

Supplementary Schedule of Expenditures of Federal Awards

Legend for Pass-Through Award Prime Recipients

Year ended August 31, 2022

Sponsor full name	Pass-through ID Number
Novinoor, LLC	165
NRG Oncology Foundation, Inc.	166
Oak Ridge Institute for Science and Education	167
Ohio State University	168
Ohio University	169
Old Dominion University Research Foundation	170
Opto-Knowledge Systems, Inc.	171
Oregon Health & Science University	172
Oregon Research Institute	173
Pacific Northwest National Laboratory	174
Pennsylvania State University	175
Pennsylvania State University Applied Research Laboratory	176
Photonwares Corporation	177
Princeton University	178
Proteinaceous, Inc.	179
Public Health Institute	180
Purdue University	181
QuesTek Innovations LLC	182
Radiation Monitoring Devices, Inc.	183
Rainmakers Strategic Solutions, LLC	184
RAND Corporation	185
Rehabilitation Institute of Chicago	186
Renalis, LLC	187
Research Corporation	188
Research Foundation for Mental Hygiene, Inc.	189
Research Institute at Nationwide Children's Hospital	190
Research Triangle Institute	191
RNET Technologies, Inc.	192
Rockefeller University	193
Rosalind Franklin University of Medicine and Science	194
Rush University Medical Center	195
Rutgers University, the State University of New Jersey	196
San Diego Biomedical Research Institute	197
San Diego State University Foundation	198
Sanford Burnham Prebys Medical Discovery Institute	199
Scientific Consulting Group, Inc.	200
Scripps Research Institute	201
SIMmersion LLC	202
Smart Information Flow Technologies, LLC	203
Smithsonian Astrophysical Observatory	204
Sonica LLC	205

NORTHWESTERN UNIVERSITY

Supplementary Schedule of Expenditures of Federal Awards

Legend for Pass-Through Award Prime Recipients

Year ended August 31, 2022

Sponsor full name	Pass-through ID Number
Space Telescope Science Institute	206
Stanford University	207
Stanford University, SLAC National Accelerator Laboratory	208
State University of New York at Buffalo	209
State University of New York at Stony Brook	210
Stealth Software Technologies, Inc.	211
Sustainable Manufacturing Innovation Alliance Corp.	212
Sutter Bay Hospitals	213
Task Force for Global Health, Inc.	214
Temple University	215
Texas A&M Engineering Experiment Station	216
Texas A&M Transportation Institute	217
Texas A&M University	218
Texas A&M University System	219
Texas Biomedical Research Institute	220
Thomas Jefferson University	221
Triad National Security, LLC, Los Alamos National Laboratory	222
Triton Systems, Inc.	223
Tufts University	224
Tulane University	225
UChicago Argonne, LLC, Argonne National Laboratory	226
UES, Inc.	227
UI Labs	228
Universities Space Research Association	229
University Health Network (Toronto)	230
University Industry Demonstration Partnership	231
University of Abuja	232
University of Alabama	233
University of Alabama at Birmingham	234
University of Arizona	235
University of Botswana	236
University of California, Davis	237
University of California, Irvine	238
University of California, Lawrence Berkeley National Laboratory	239
University of California, Los Angeles	240
University of California, San Diego	241
University of California, San Francisco	242
University of California, Santa Barbara	243
University of Chicago	244
University of Cincinnati	245
University of Colorado	246

NORTHWESTERN UNIVERSITY

Supplementary Schedule of Expenditures of Federal Awards

Legend for Pass-Through Award Prime Recipients

Year ended August 31, 2022

Sponsor full name	Pass-through ID Number
University of Colorado Denver	247
University of Connecticut	248
University of Connecticut Health Center	249
University of Delaware	250
University of Florida	251
University of Georgia	252
University of Houston	253
University of Ibadan	254
University of Illinois at Chicago	255
University of Illinois at Urbana-Champaign	256
University of Iowa	257
University of Jos	258
University of Kansas Medical Center Research Institute, Inc.	259
University of Kentucky	260
University of Lagos	261
University of Louisiana at Lafayette	262
University of Maryland, Baltimore	263
University of Maryland, College Park	264
University of Massachusetts Amherst	265
University of Massachusetts Medical School	266
University of Miami	267
University of Michigan	268
University of Minnesota	269
University of Missouri-Columbia	270
University of Nebraska at Omaha	271
University of Nebraska Medical Center	272
University of New Hampshire	273
University of North Carolina at Chapel Hill	274
University of North Texas Health Science Center at Fort Worth	275
University of Notre Dame	276
University of Oklahoma	277
University of Oregon	278
University of Pennsylvania	279
University of Pittsburgh	280
University of Rochester	281
University of South Carolina	282
University of South Florida – Tampa	283
University of Southern California	284
University of Tennessee	285
University of Tennessee Health Science Center	286
University of Texas at Arlington	287
University of Texas at Austin	288

NORTHWESTERN UNIVERSITY

Supplementary Schedule of Expenditures of Federal Awards

Legend for Pass-Through Award Prime Recipients

Year ended August 31, 2022

Sponsor full name	Pass-through ID Number
University of Texas at Dallas	289
University of Texas at El Paso	290
University of Texas at San Antonio	291
University of Texas Health Science Center at Houston	292
University of Texas M. D. Anderson Cancer Center	293
University of Texas Southwestern Medical Center at Dallas	294
University of Utah	295
University of Virginia	296
University of Washington	297
University of Wisconsin-Madison	298
University of Wisconsin-Milwaukee	299
UT-Battelle, LLC, Oak Ridge National Laboratory	300
Vanderbilt University	301
Vanderbilt University Medical Center	302
Versiti Wisconsin, Inc.	303
Vibrent Health	304
Villanova University	305
Virginia Commonwealth University	306
Virscio, Inc.	307
Volexion, Inc.	308
Vox Biomedical LLC	309
Wake Forest University Health Sciences	310
Washington University in St. Louis	311
Water Research Foundation	312
Wayne State University	313
Wearifi, Inc.	314
West Virginia University	315
WestEd	316
Wisconsin Department of Transportation	317
Yale University	318

NORTHWESTERN UNIVERSITY

Notes to Supplementary Schedule of Expenditures of Federal Awards

Year ended August 31, 2022

(1) Organization and Scope of Operations

Northwestern University (the University) is a not-for-profit corporation organized under the laws of the State of Illinois, whose charter establishes a Board of Trustees to oversee the implementation of its mission to carry out research and education. All federal expenditures of the University are included in the scope of this U.S. Office of Management and Budget (OMB) Circular Single Audit Report. The U.S. Department of Health and Human Services has been designated as the University's cognizant agency.

(2) Summary of Significant Accounting Policies

Basis of Accounting – The accompanying supplementary schedule of expenditures of federal awards (the Schedule) summarizes the expenditures of the University and its subsidiaries under programs of the federal government for the year ended August 31, 2022. Since the Schedule presents only a selected portion of the operations of the University, it is not intended to, and does not, present the consolidated financial position, changes in net assets, or cash flows of the University.

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 organizations pursuant to federal grants, contracts, and similar agreements. Complete Assistance Listing (AL) numbers and pass-through numbers are provided on the Schedule when available.

Indirect Costs – The University has negotiated indirect cost rates with the U.S. Department of Health and Human Services. The University does not use the 10% de minimis indirect cost rate described in 2 CFR 200.414 of the Uniform Guidance.

Expenditure and Revenue Recognition – The Schedule presents the expenditures of individual programs on the accrual basis of accounting. All program outlays, including accrued expenditures and capital outlays, are reported as expenditures. Related revenues (which are not presented in the Schedule or herein) are recognized up to award amounts for consolidated financial statement and program reporting. Award reporting periods do not necessarily coincide with the fiscal reporting period of the University. Negative amounts presented in the Schedule represent adjustments, in the normal course of business, to expenditures reported in prior years.

Pass Through Awards – The University receives certain federal awards from pass-through awards of the State of Illinois and other nonfederal organizations. The total amount of expenditures for such pass-through awards is included in the Schedule.

Subrecipients – The University passes through certain funds to subrecipient organizations. The total amount of such subrecipient expenditures is included in the Schedule for each federal award, where applicable.

NORTHWESTERN UNIVERSITY

Notes to Supplementary Schedule of Expenditures of Federal Awards

Year ended August 31, 2022

(3) Federal Student Loan Programs

Loans made by the University to eligible students under federal student loan programs and federally guaranteed loans originating with the University and issued to its students during the year ended August 31, 2022, are summarized as follows:

Federal Perkins Loan Program (ALN 84.038)	\$	—
Federal Direct Student Loans (ALN 84.268)		216,443,792
HPSL Primary Care Loans (ALN 93.342)		<u>—</u>
Total Federal Student Loan Programs	\$	<u>216,443,792</u>

The Perkins and Health Professions Student Loan (HPSL) programs are administered directly by the University and balances and transactions relating to these programs are included in the University's consolidated financial statements. The balances of loans outstanding under the Perkins (AL 84.038) and HPSL (ALN 93.342) programs were \$8,171,877 and \$133,783, respectively, at August 31, 2022. The University incurred \$285,000 in administrative expenses under the Federal Work Study program, and \$0 under the Federal Supplemental Educational Opportunity Grant and Perkins programs for the year ended August 31, 2022.



KPMG LLP
Aon Center
Suite 5500
200 E. Randolph Street
Chicago, IL 60601-6436

Independent Auditors' Report 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

The Board of Trustees
Northwestern University:

We have audited, in accordance with the 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 Northwestern University (the University), which comprise the University's consolidated statement of financial position as of August 31, 2022, the related consolidated statements of activities and cash flows for the year then ended, and the related notes to the consolidated financial statements, and have issued our report thereon dated December 16, 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 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 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 entity'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 entity's internal control and compliance. Accordingly, this communication is not suitable for any other purpose.

KPMG LLP

Chicago, Illinois
December 16, 2022



KPMG LLP
Aon Center
Suite 5500
200 E. Randolph Street
Chicago, IL 60601-6436

Independent Auditors' Report on Compliance for Each Major Federal Program; Report on Internal Control Over Compliance; and Report on Supplementary Schedule of Expenditures of Federal Awards Required by the Uniform Guidance

The Board of Trustees
Northwestern University:

Report on Compliance for Each Major Federal Program

Opinion on Each Major Federal Program

We have audited Northwestern 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 August 31, 2022. The University's major federal programs are identified in the summary of auditors' 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 August 31, 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 (GAAS); the standards applicable to financial audits contained in *Government Auditing Standards* issued by the Comptroller General of the United States; and the audit requirements of Title 2 U.S. Code of Federal Regulations Part 200, *Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards* (Uniform Guidance). Our responsibilities under those standards and the Uniform Guidance are further described in the Auditors' Responsibilities for the Audit of Compliance section of our report.

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

Responsibilities of Management for Compliance

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

Auditors' Responsibilities for the Audit of Compliance

Our objectives are to obtain reasonable assurance about whether material noncompliance with the compliance requirements referred to above occurred, whether due to fraud or error, and express an opinion on the University's compliance based on our audit. Reasonable assurance is a high level of assurance but is not



absolute assurance and therefore is not a guarantee that an audit conducted in accordance with 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 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 a 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.

Report on Supplementary Schedule of Expenditures of Federal Awards Required by the Uniform Guidance

We have audited the consolidated financial statements of the University as of and for the year ended August 31, 2022, and have issued our report thereon dated December 16, 2022, which contained an unmodified opinion on those consolidated financial statements. Our audit was conducted for the purpose of forming an opinion on the consolidated financial statements as a whole. The accompanying supplementary schedule of expenditures of federal awards is presented for purposes of additional analysis as required by the 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 GAAS. In our opinion, the supplementary schedule of expenditures of federal awards is fairly stated, in all material respects, in relation to the consolidated financial statements as a whole.

KPMG LLP

Chicago, Illinois
May 24, 2023

NORTHWESTERN UNIVERSITY
Schedule of Findings and Questioned Costs
Year ended August 31, 2022

(1) Summary of Auditors' Results

- (a) Type of report issued on whether the consolidated financial statements were prepared in accordance with U.S. generally accepted accounting principles: Unmodified
- (b) Internal control deficiencies over financial reporting disclosed by the audit of the consolidated financial statements:
 - Material weaknesses: No
 - Significant deficiencies: None reported
- (c) Noncompliance material to the consolidated financial statements: No
- (d) Internal control deficiencies over major program disclosed by the audit:
 - Material weaknesses: No
 - Significant deficiencies: None reported
- (e) Type of report issued on compliance for major program: Unmodified
- (f) Audit findings that are required to be reported in accordance with 2 CFR 200.516(a): No
- (g) Major program:
 - Student Financial Assistance Cluster – Various ALNs
 - Education Stabilization Fund – Higher Education Emergency Relief Fund – 84.425E and 84.425F
- (h) Dollar threshold used to distinguish between Type A and Type B programs: \$3,000,000
- (i) Auditee qualified as a low-risk auditee: Yes

(2) Findings Relating to the Consolidated Financial Statements Reported in Accordance with *Government Auditing Standards*

None

(3) Findings and Questioned Costs Relating to Federal Awards

None