

**Clemson University
Clemson, South Carolina**

**Reports Required by *Government Auditing Standards*
And the *Uniform Guidance***

For the year ended June 30, 2023

	<u>Page</u>
Schedule of Expenditures of Federal Awards	1-52
Notes to the Schedule of Expenditures of Federal Awards	53-54
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>	55-56
Independent Auditors' Report on Compliance for Each Major Federal Program; Report on Internal Control Over Compliance; and Report On the Schedule of Expenditures of Federal Awards Required by the Uniform Guidance	57-59
Schedule of Findings and Questioned Costs	60-68

Clemson University
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2023

Federal Grantor/Pass-Through Grantor/Program Title	Assistance Listing Number	Pass-through Entity Identifying Number	Passed Through to Subrecipient	Total Federal Expenditures
RESEARCH AND DEVELOPMENT CLUSTER				
Department of Agriculture				
22-7415-1510-CA	10.028	AP22WSNWRC00C026	\$ -	\$ 15,203
A Controlled Environment Agriculture Platform for Cultivation of Salt-Tolerant Crops with Integrated Saline Water Irrigation and Salinity Management	10.310	2023-69012-39038	-	45,587
A Multi-state Effort to Contain and Manage the Invasive Guava Root Knot Nematode (GRKN) in Vegetable Crops	10.309	2019-51181-30018	614,686	770,668
Acquisition of Goods and Services	10.001	58-6080-2-002	-	7,933
Acquisition of Goods and Services	10.001	58-6080-2-005	-	43,566
Acquisition of Goods and Services	10.001	58-6080-3-002	-	7,739
Acquisition of Goods and Services	10.001	58-6080-3-006	-	3,941
Acquisition of Goods and Services	10.001	58-6082-1-010	-	2,027
Acquisition of Goods and Services	10.001	58-6082-2-008	-	46,509
Acquisition of Goods and Services	10.001	58-6082-2-009	-	2,914
Acquisition of Goods and Services	10.001	58-6082-2-010	-	9,400
Acquisition of Goods and Services	10.001	58-6082-2-013	-	7,613
Acquisition of Goods and Services	10.001	58-6082-2-014	-	33,439
Acquisition of Goods and Services	10.001	58-6082-3-008	-	3,688
Acquisition of Goods and Services	10.001	58-6082-3-009	-	8,904
Acquisition of Goods and Services	10.001	58-6082-3-010	-	5,115
Advancing the ecology of blackberry virus diseases in South Carolina	10.310	2023-67014-39905	-	10,978
Animal Health	10.207	NI23AHDRXXXXG039	-	2,385
Animal Health	10.207	NI22AHDRXXXXG010	-	25,342
Asian Longhorned Beetle Research Support	10.025	AP22PPQS&T00C002	2,810	77,383
Asian Longhorned Beetle Research Support	10.025	AP23PPQS&T00C004	-	61,777
Assessment of an Epizootic Ulcerative Syndrome Outbreak during Forest Harvest Operations, Santee Experimental Forest, South Carolina	10.699	22-CS-11330180-070	-	3,877
Biology of the Redbay Ambrosia Beetle in Sassafras at the Leading Edge of Laurel Wilt	10.000	19-CS-11330129-030	-	6,883
Breeding Biofortified Pulse and Cereal Crops for US Organic Cropping Systems	10.307	2018-51300-28431	-	117,822
Building Partnerships for Climate-Smart Commodities in South Carolina	10.937	NR233A750004G049	-	1,003,292
Carolina Cotton can Conserve Soil with Cover Crops	10.912	NR213A750013G007	14,123	151,497
Characterization of Water Quality and Quantity in Greenhouse and Nursery Waters in the Piedmont Ecoregion of the USA	10.001	58-5082-0-012	-	29,433
Clemson Fire Tigers	10.000	20-PA-11081200-276	-	2,102
Clemson-South Carolina State CYFAR	10.500	2018-41520-28750	107,136	295,808
Collaborative Research to Improve Evaluation of Advanced Wheat Germplasm for FHB Resistance in the Atlantic Coastal Plain	10.001	59-0206-0-150	-	47,769
Conduct Five On-Farm Broiler Litter to Demonstrate the Importance of Broiler Litter to Improve Various Soil Health Parameters Including Soil-Test Biological Activity and Promoting the Appropriate Use	10.912	NR224639XXXXC011	-	15,941
Conduct Five On-Farm Broiler Litter to Demonstrate the Importance of Broiler Litter to Improve Various Soil Health Parameters Including Soil-Test Biological Activity and Promoting the Appropriate Use	10.912	NR224639XXXXC012	-	12,490
Consortium of Appalachian Fire Managers and Scientists	10.707	23-JV-11330160-019	-	54,698
Crop Protection and Pest Management Extension Implementation Program for South Carolina	10.329	2017-70006-27156	-	21,451
Crop Protection and Pest Management Extension Implementation Program for South Carolina	10.329	2021-70006-35508	-	166,753
CULTIVAR DEVELOPMENT: Combining genomics-enabled breeding with coordinated regional testing to accelerate wheat genotype to market	10.310	2021-67014-33941	-	135,296
Design a Framework for Payments for Ecosystem Service and Analysis of Adoption Behavior in the Santee Basin	10.912	NR184639XXXXG002	-	17,354
Detection and Management of Phytophthora species in Nurseries and Greenhouses.	10.001	58-2072-0-058	-	41,578

The accompanying notes are an integral part of this schedule.

Clemson University
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2023

Federal Grantor/Pass-Through Grantor/Program Title	Assistance Listing Number	Pass-through Entity Identifying Number	Passed Through to Subrecipient	Total Federal Expenditures
RESEARCH AND DEVELOPMENT CLUSTER, continued				
Department of Agriculture, continued				
Developing a national team to optimize non-herbicide weed management techniques in cole and leafy green crops	10.309	2021-51181-35856	-	4,274
Developing Fusarium Head Blight (FHB) Resistant Wheat for the Coastal Plain	10.001	59-0206-2-097	-	50,998
Developing High Protein, Low Oil Content Soybeans that Provide Enhanced Nutritional and Economic Value	10.001	59-6070-2-020	-	10,131
Development and Implementation of Biological Control Tactics for Key Vegetable Insect Pests in the Southeastern US	10.307	2018-51300-28425	84,921	140,963
Development of a Regional Southern Pine Beetle Website	10.680	19-DG11083150-038	-	25,789
Development of Genetic Resources for Host-Plant Resistance to Leaf Blight Pseudomonads in Turnip Greens and Spinach	10.310	2020-67014-30868	14,369	145,367
Development of Genomic and Molecular Tools to Accelerate the Identification and Delivery of Durable Genetic Resistance to Fov4 in Upland Cotton	10.310	2019-67029-29915	-	24,200
DEVELOPMENT OF SITE-SPECIFIC, COMBINED WATER AND NUTRIENT MANAGEMENT TECHNOLOGIES FOR OVERHEAD IRRIGATION SYSTEMS	10.310	2021-67022-34930	-	64,089
Distribution and Spread of the Invasive Callery Pear	10.680	20-DG-11083150-008	-	(297)
Diversifying organic inputs to improve soils supporting organic vegetable in southeastern USA	10.303	2020-51106-32363	18,520	138,924
Ecology and Integrated Management of Ambrosia Beetles in Eastern US Orchard and Ornamental Tree Crops-Clemson	10.001	59-5082-1-005	-	75,405
Effects of Prescribed Fire on Ips Bark Beetles	10.680	19-DG11083150-039	-	9,728
El Yunque National Forest: Research to Support Regional Community-Based Tourism and Resilience	10.699	22-PA-11081600-116	-	18,825
Elucidating the processes that regulate the mobilization of heavy metals from soil-applied phosphate rocks and developing rhizobiome-based strategies to sequester these contaminants	10.310	2023-67020-39730	-	12,115
Elucidating The Regulators That Impart The Specificity And Productivity Of Plant- Arbuscular Mycorrhizal Symbiosis	10.310	2022-67014-37145	-	155,431
Enable the Use of Mass Timber Products for Non-Residential Buildings in High Velocity Hurricane Zone	10.600	19-DG11083150-015	-	90,016
Enhancing Communication Skills of Next Generation Scientists and Educators Using Art and Technology	10.310	2020-67034-31765	-	11,566
Enriching the Professional Preparation of Food Science Students	10.310	2020-67038-30654	-	70,285
Establish a Fire History Demonstration Site in the Southern Blue Ridge	10.707	20-JV-11330160-096	-	9,229
Establishing the Infrastructure to Develop Prediction Tools for Diseases & Affecting Cotton to Better Inform Mgmt. Decisions (Clemson)	10.001	58-0206-0-195	-	14,486
Establishment of a Southeastern US Regional Hub in Support of the North American Bat Monitoring Program	10.707	22-JV-11330170-021	-	82,634
Evaluating Sweetpotato Germplasm for Resistance to Reniform Nematode	10.001	58-6080-1-010	-	1,329
Exploring African American Wilderness Heritage in the Southeast United States	10.707	22-JV-11221639-146	-	6,225
Exploring Alternative Uses for Muscid Antimicrobial Effectors	10.001	58-3020-1-017	-	16,380
Exploring mechanisms of chemical resistance in Xanthomonas arboricola pv. pruni and strategies to mitigate resistance and improve disease control	10.310	2021-67013-33574	22,334	153,903
FACT-CIN: Expanded Food and Nutrition Education Program - Web Based Nutrition Education and Evaluation Reporting System (WebNEERS)	10.310	2020-67017-32395	8,917	338,438
FLORECE!: Future Leaders Obtaining Research & Extension Career Experiences	10.310	2021-68018-34636	-	94,980
Food Forward: Community-Focused Food and Health in Rural Development	10.310	2021-67023-34890	-	24,988

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RESEARCH AND DEVELOPMENT CLUSTER, continued				
Department of Agriculture, continued				
FY19BFP Turkey(Uslu) Triple mloGene@Clmsn	10.777	FX19BF-10777R010	\$ - \$	4,139
FY21 NCPN Clemson. Univ./ Cieniewicz-So	10.025	AP21PPQS&T00C107	-	94,128
FY22 NCPN Clemson Univ./Cieniewicz- The	10.025	AP22PPQS&T00C076	-	210,915
FY23 D1 SC ADT	10.025	AP23VSPRS00C066	-	12,228
Genetic basis for acetaminophen toxicity	10.028	AP21WSNWR00C001	-	724
Green Salamander Habitat	10.000	19-PA-11081200-115	-	24,168
Growing Microalgae In Livestock Wastewater - Benefits In Nutrient Recycle, Antibiotic Removal, And Potential Biofuel Production	10.310	2022-67019-37177	-	52,723
Harvesting Options for Restoration Treatments	10.707	19-JV-11330132-087	-	16,107
Hatch & Hatch Multistate	10.203	NI22HFPXXXXXG015	-	3,418,966
Hatch & Hatch Multistate	10.203	NI21HFPXXXXXG016	-	670,312
Hatch & Hatch Multistate	10.203	NI22HMFXXXXXG044	-	923,349
Hatch & Hatch Multistate	10.203	NI23HMFXXXXXG003	-	206,675
Herbicide efficacy for management of invasive Callery pear	10.699	20-CS-11330160-086	-	2,459
High Resolution Mass Spectrometry For Target, Suspect And Nontarget Screening Of Micropollutants In Agroecosystems	10.519	2022-70410-38474	-	420,088
iCORP: Increasing Coastal Organic Rice Production in South Carolina Using Salt Tolerant Cultivars	10.303	2021-51106-35494	-	121,080
Identification of Molecular Markers Associated with Root Traits that Improve Performance in Cotton	10.001	58-6066-1-033	-	66,194
Identifying Effective Farming Practices To Reduce Risks Of Per- And Polyfluoroalkyl Substances (Pfas) In Food Crop Productions	10.310	2021-67019-33682	-	28,382
Immediate Responses of Bats to Prescribed Fire	10.707	21-JV-11330170-033	-	2,122
Impact of litter training strategies on egg-laying, piling, and welfare of laying hens in aviaries	10.310	2022-67015-36310	53,180	124,190
Implementing a Regional Scale Southern Pine Beetle (SPB) Model for the Southeastern United States	10.652	22-CS-11330180-066	-	16,350
Improving Oil Content for Upland Cotton Growers: New Molecular Tools and Germplasm	10.310	2023-69008-39861	-	1,737
Improving Profitability of Organic Sweetpotato through Pest Resistant Clones and Enhanced Anaerobic Soil Disinfestation	10.303	2022-51106-37922	-	85,777
Improving Soybean's Efficiency for Heat Tolerance with an Integrated Metabolic and Genetic Approach	10.310	2022-67013-36173	-	201,280
Improving the Nutritional Value of Chickpeas	10.001	58-2090-8-084	-	38,367
Increasing the Concentration of Sulfur Containing Amino Acids (SCAA) in Pulse Crops	10.001	58-2090-2-032	-	33,528
Integrating a Proven Screening and Breeding Strategy with Functional Biology to Deliver FOV4 Resistance to Upland Cotton Growers	10.310	2022-67014-36980	78,009	96,723
Interactive Effects of Temperature and Photoperiod on Flower Initiation and Development	10.001	58-5082-8-013	-	49,167
Invasive Plants in Southern Forests: Impact on Fuels and Implication to Fire Behavior	10.707	21-JV-11330145-066	-	31,179
Investigating the Plant-Soil Feedback That Maintains the Legacy Effect in Invaded Ecosystems to Formulate Knowledge-Based Restoration Practices	10.310	2017-67014-26698	-	2,607
Kale Alternatives Leading to Enhanced Economics (KALE): Improving Profitability and Evaluating Marketing Decisions of Organic Kale Farmers Facing Alternaria Leaf Spot in the Southeastern U.S	10.303	2021-51106-35495	-	234,177
Linking Dynamic Soil Erodibility to Soil Loss in the Agricultural Landscape	10.001	58-6060-0-008	-	30,330
Longleaf Pine Restoration for Southern Forest Sustainability and Resilience: Towards a Process-Based Understanding of Ecosystem Services	10.652	22-DG-11330180-025	-	75,038
Maintain the RUSLE2 Interface and to Develop Additional RUSLE2 Technology Programming	10.902	NR233A750008C002	9,879	10,866

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RESEARCH AND DEVELOPMENT CLUSTER, continued				
Department of Agriculture, continued				
Management of Salinity Externalities in an Irrigated Agricultural Region	10.310	2021-67024-34480	\$ 170,866	\$ 205,098
McIntire Stennis	10.202	NI21MSCFRXXXG010	-	50,873
McIntire Stennis	10.202	NI22MSCFRXXXG044	-	965,557
MicroRNA-mediated transgene containment in important perennial grasses	10.219	2021-33522-35342	-	77,054
Mitigation Strategies for Ergot Alkaloid-Induced Vasoconstriction and Intrauterine Growth Restricted Muscle Development	10.310	2020-67016-30816	3,359	155,364
Modeling and Valuing the Distributional Impacts of Fuel Treatments	10.000	21-JV-11272131-037	-	9,823
Monitoring Pasture Quality and Quantity Using Field Robotics	10.310	2020-67021-31960	-	106,658
Multiscale Modeling and Machine Learning Guided Characterization and Design of Chitosan-based Nanocomposites for Active Food Packaging	10.310	2022-67022-36423	-	113,948
National Ag Producer Data Cooperative: A Strategic Framework for Innovation	10.310	25-6205-0083-006	-	2,650
National Association of Plant Breeders (NAPB) Meeting 2023 - "Southern hospitality through food and agriculture"	10.310	2023-67013-39484	-	5,770
Natural Language Processing to Understand Public Comments in USFS Planning	10.699	22-CS-11242309-071	-	45,107
Nematode Early Warning System (NEWS) Facilitates Real-Time Remote Monitoring of Soil Pathogens in Agricultural Fields	10.001	59-6080-3-001	-	15,116
On-Farm Demonstration and Evaluation of Cloud-Based Soil Moisture Monitoring Technologies for Irrigation Scheduling to Enhance Farm Profitability and Environmental Quality	10.912	NR203A750013G010	-	65,713
Optimization of Cover Crop Selection and Carbon Waste Stream Recycling to Facilitate Anaerobic Soil Disinfestation in Southeastern Diversified Organic Vegetable Farms: A Planning Grant	10.307	2021-51300-34897	13,013	23,674
Organization and Implementation of the 2022 Southern Soil Survey Conference. CESU 68-3A75-18-501	10.903	NR213A750025C015	-	1,420
Outreach Activities for the Consortium of Appalachian Fire Managers and Scientists	10.707	20-JV-11330160-095	-	28,214
Phytochemical-Mediated Stress Hormesis And Priming As A Mechanism Of Resilience In Weeds And Negating These Stress Adaptations	10.310	2021-67014-33636	-	58,463
Produce Prescription and Nutritional Education to Improve Health Outcomes of Patients with Type-2 Diabetes Living in a Rural and Medically Underserved County in South Carolina	10.331	2022-70424-38554	-	55,238
Promoting adoption of sustainable nutrient management strategies thru 24 on-farm trails in SC for improved sustainable cropping. CESU Umbrella Agreement 68-3A75-18-501.	10.912	NR214639xxxxC020	-	30,807
Promoting Climate-Smart and Resilient Forestry in the Southeastern United States	10.310	2023-67022-39531	-	934
Promoting cyber-learning through technology-enabled modules within FANH education	10.217	2020-70003-32310	-	30,239
Promoting Water, Soil and Nutrient Conservation in Peach Orchards with Trees Planted in Raised Beds	10.912	NR184639XXXXG005	-	484
Providing Assistance to Rural Cooperatives and Mutually Owned Businesses through the South Carolina Center for Cooperative and Enterprise Development	10.771	46-039-576000254 RCDG FY21	40,027	57,622
Quantifying the Cover Crops Nitrogen and Potassium Credit to 3-yr Cotton-Peanut Rotation	10.902	NR184639XXXXG009	-	40,274
Restore Native Ecosystems to Control Chinese Tallow Invasion in Hurricane-Impacted Slash Pine Plantations in MCRD Parris Island	10.707	22-JV-11242311-108	-	4,343
Roles of Microplastics in Reclaimed Water - Altering Persistence and Bioavailability of Antimicrobials in Agricultural Soils	10.310	2020-67019-31022	93,885	163,327

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RESEARCH AND DEVELOPMENT CLUSTER, continued				
Department of Agriculture, continued				
SC FY21 ALB Outreach	10.025	AP21PPQFO000C427	\$ -	\$ 9,643
SC FY21 Forest health Invasive Species 5	10.025	AP21PPQFO000C426	-	3,375
SC FY22 Forest Health Education 5.0542.0	10.025	AP22PPQFO000C272	-	92,571
SC FY22 Imported Fire Ant Survey	10.025	AP22PPQFO000C267	-	44,703
SC FY23 CAPS Survey	10.025	AP23PPQFO000C451	-	11,903
Selection, Molecular and Genetic Analysis of HLB Tolerant/Resistant Variant Citrus Plants	10.309	2017-70016-26051	985,491	1,289,753
Soil Health Demonstration at Pee Dee REC	10.912	NR184639XXXG012	-	16,431
Solutions to the Armillaria Root Rot Threat Affecting the U.S. Stone Fruit Industry	10.309	2020-51181-32142	239,180	1,020,060
South Carolina Aquaculture Futures -Evaluating Socioeconomic Potentials for Rural Communities and Limitations for Entrepreneurs	10.310	2019-67024-29671	-	14,420
Southern Heritage Crops: Developing Economic Potential in a Geographically and Culturally Unique Market Niche for Small and Medium Sized Farms.	10.310	2020-68006-31266	-	49,452
Spatial & Temporal Patterns of ALB Dispersal, Storage, Reactivity, and Bioavailability of Mercury in Managed Forests - Balancing Mercury Toxicity and Wildfire Risks Through Effective Fuel Reduction	10.025	AP21PPQS&T00C183	-	19,637
Studies of Occupations, Culture, and Innovations toward Agricultural Literacy (SOCIAL): Professional Development for Integrating Agriculture and History Curricula	10.310	2021-67037-34301	9,330	75,966
Sustainable, high-quality organic pulse proteins: organic breeding pipeline for alternative pulse-based proteins	10.307	2021-51300-34895	-	179,223
Systems approach to impart stress resilience: Enhancing the drought-resilience of crops through cross-inoculation of beneficial rhizobiome and cover cropping	10.000	2022-67014-37053	-	87,290
To Expand the Delivery of Conservation Assistance, Emphasis on Climate-Smart Agriculture, to Historically Underserved Farmers and Ranchers Including Outreach to Minority Students	10.902	NR223A750003C031	-	192,167
To partially develop science components and code features of the web-based user interface for RUSLE2	10.902	NR233A750008C001	14,285	15,714
To Root or Not to Root? An Integrated Approach to Understanding Adventitious Root Induction in American Chestnut Cuttings	10.310	2023-67014-39539	-	24,715
Training Under-represented Minority Scholars in Sustainable Management of Plant Diseases	10.210	2021-38420-34947	-	75,964
Transgene Containment and Removal in Important Perennial Grasses	10.219	2019-33522-30102	-	119,555
Truck Bed Tool Kit for Detection of Non-Native Plant Species	10.680	22-DG-11083150-305	38,702	45,202
Urban Forestry's Return on Investment: Accelerating our Understanding of the Nature-Health Care Cost Relationship	10.675	20-DG-11132544-057	-	25,609
Utilizing Deep-Rooted Cover Crops to Enhance Water Quality, Soil Health, and Farm Profits While Reducing Soil Compaction in Coastal Plain Region	10.912	69-3A75-17-274	45,793	45,793
White-Nose Syndrome Survival Strategies of Tricolored Bats (Perimyotis subflavus) during Fall, Winter, and Spring	10.707	20-JV-11330170-109	-	57,226
Pass-through programs from:				
Arizona State University				
Secure Traceability in the Food Supply Chain Using Cell Phone Readable Dendritic Identifiers	10.310	ASUB00000994	-	83,783
Brigham Young University				
Engineering for Agricultural Production Systems PARTNERSHIP: The Influence of Leaf Sheath on Greensnap Grain Failure	10.310	22-0581 / PO# PR170670	-	19,948
Colorado State University				
Inferring the Supply of Greenhouse Gas Abatement from US Commodity Producers in The Corn Belt Using Observed Practice Choices: Implications for Carbon Offset Programs	10.310	G-03421-01	-	35,415

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RESEARCH AND DEVELOPMENT CLUSTER, continued				
Department of Agriculture, continued				
Pass-through programs from:				
Cornell University				
Developing an Eastern Broccoli Industry Through Cultivar Development, Economically and Environmentally Sustainable Production and Delivery	10.309	79598-10781	\$ - \$	4,411
Integrated Weed Management in Hemp: A Multistate Effort to Evaluate Practices and Develop to Evaluate Practices and Develop Recommendations	10.329	139252-21126	-	4,619
Ducks Unlimited, Inc.				
CRP Soil Carbon Assessment-Wetlands	10.069	US-RS-55-1	-	109,867
eXtension Foundation				
EXCITE 3 Design Phase	10.229	EXC3-2022-2265	-	5,024
Growers for Grace PBC				
Evaluation of Agricultural Carbon Waste Streams to Facilitate Anaerobic Soil Disinfestation in Watermelon Production	10.170	G4GS-21SCBPSC1010-CU	-	10,534
Iowa State University				
NIFA AG2PI Collaborative: Continuing to Seed the Future of Agricultural Genome to Phenome Research	10.332	026418C	-	1,532
Rapid In-Field Monitoring Of Salmonella Species For Food Safety Using Disposable Laser-Induced Graphene Biosensor	10.310	022384A	-	8,588
LSU Agricultural Center				
Climate Resilient Innovations for Sustainable Production of RICE (CRISP-RICE)	10.310	PO-0000222570	-	24,731
Michigan State University				
CucCAP 2: Harnessing Genomic Resources For Disease Resistance And Management In Cucurbit Crops - Bringing The Tools To The Field	10.309	RC111377B	-	134,926
North Carolina State University				
Alternative Management Options for Destruction of ALB Infested Trees	10.025	2022-1554-01	-	5,540
Farm Bill. Development of A Decision Support Tool to Optimize Fungicide Use Against Downy Mildew Pathogens.	10.329	2022-2708-01	-	17,842
Identifying Overwintering and Landscape Features Associated with Stink Bug Risk and Yield Loss in Corn	10.329	2020-2993-01	-	6,986
North Carolina Central University				
Control of Persistent Foodborne Pathogens Using Visible Light-Activated Antimicrobial Carbon Nanomaterials	10.310	A19-0041-S002 / P0108382	-	36,687
Effectively Using Permanent and Temporary Electric Fence Technology: Adviser Training to Support Producers Implementing Adaptive Grazing Management	10.215	2019-1503-02	-	1,222
Enhancing the Sustainability of United States Cropping Systems through Cover Crops and an Innovative Information and Technology Network	10.310	2019-1507-10	-	76,940
South Carolina Department of Agriculture				
Air or Soil Temperature: Understanding the Cues for Dormancy Transition in Peach	10.170	AM22SCBPSC1167-00	-	2,810
Are the Gummy Blight Fungi in South Carolina Becoming Resistant to Tebuconazole?	10.170	19-G013 AM190100XXXXG013	-	733
Assessing Nematode Populations Damaging Bermudagrass in South Carolina	10.170	21SCBPSC1010	-	4,543
Assessing Tomato and Watermelon Cultivar Susceptibility to Spider Mites and Potential for New IPM Strategies	10.170	AM22SCBPSC1167-00	-	1,825
Cultivating Heat and Humidity Tolerant Beans in South Carolina	10.170	AM200100XXXXG073	-	19,984

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RESEARCH AND DEVELOPMENT CLUSTER, continued				
Department of Agriculture, continued				
Pass-through programs from:				
South Carolina Department of Agriculture (Continued)				
Determining Prevalence of Nematodes Damaging Strawberries in South Carolina	10.170	21SCBPSC1010-00	\$ - \$	32,641
Developing First Strategies to Manage Bronzing, A Major Factor Impairing the Quality of SC Peaches	10.170	AM200100XXXXG073	-	30,168
Establishing Clonal Propagation Systems for Golden Camellia, a Valuable Yellow-Flowering Selection	10.170	AM22SCBPSC1167-00	-	37,173
Exploring Novel Armillaria Root Rot Management Strategies in Peach	10.170	21SCBPSC1010-00	-	16,031
New Winter Legume Cash Crop: Developing Improved Pea Cultivars for SC Organic Cropping Systems	10.170	21SCBPSC1010	-	22,627
Optimization of Nutritional Programs for Stone Fruit in the Southeastern U.S.	10.170	P1601SCMP22-1	21,056	64,493
Stakeholder Needs Assessment and Evaluation Trails to Initiate Quality-focused Vegetable Breeding Programs for South Carolina	10.170	AM22SCBPSC1167-00	-	128
Taking Disease Detection to the Sky: Evaluating Satellite Imagery for Virus Disease Detection in Peach Trees	10.170	21SCBPSC1010-00	-	3,449
The Continued Development and Utilization of the South Carolina Agriwellness Program	10.525	P1601FRSAN22-1	-	24,099
Which Pythium Species Cause Cottony Leak on Pickling Cucumbers in South Carolina	10.170	AM22SCBPSC1167-00	-	4,144
South Carolina Forestry Commission				
Assessing Asian Long-horned Beetle's Impact on Managed and Natural Southern Forest Ecosystems	10.680	21-DG-11083145-008	-	64,943
Enhanced Pear-spectives: Proactive Sky-scouting to Detect Areas at High-risk from Spread of Invasive Callery Pear	10.664	21-DG-1108345-001	-	60,506
Tennessee Department of Agric-Forestry Div				
Developing a Regional Forest Health and Invasive Species Outreach Program	10.664	32510-06619/ 61709 (Edison Vendor ID: 57646)	-	(17)
Tennessee State University				
Enhancing the Integration of Insectary Plants for Managing Arthropod Pests in Southern US Vegetable Production	10.329	332.77-23.3837	-	32,908
Flatheaded Borer Management in Specialty Tree Crops	10.309	332.77-21.2177 / PO142885	-	86,444
Texas A&M University				
Investigating Action Thresholds and Alternative Approaches for Managing Helicoverpa Zea in Cotton	10.329	M2001832	-	478
Multidimensionality of the Livestock/Poultry and Meat Supply Systems	10.000	M2200914	-	6,109
Research and Extension to Address Herbicide Resistance Epidemic in Annual Bluegrass in Managed Turf Systems	10.309	M1900021	-	64,868
The Center for Produce Safety				
Survival of Listeria Monocytogenes and Salmonella spp. on Surfaces Found in the Dry Packinghouse Environment and Effectiveness of Dry Cleaning Processes on Pathogen Reduction	10.170	2022CPS03	-	126,020
Verification and Validation of Environmental Monitoring Programs for Biofilm Control in the Packing House	10.170	2020CPS02	-	103
The Nature Conservancy				
Reptile Surveys of The Talladega Mountain Longleaf Pine Conservation Local Implementation Team (LIT) Boundary, Northwest Georgia, 2022-2023	10.664	GABU 09272022	-	9,129
The Ohio State University				
Environmental, human, and animal health risks from the dissemination of carbapenem-resistant entero-bacteriaceae into agricultural watersheds	10.310	SPC-1000007122 GR129592	-	22,696

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Clemson University
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2023

Federal Grantor/Pass-Through Grantor/Program Title	Assistance Listing Number	Pass-through Entity Identifying Number	Passed Through to Subrecipient	Total Federal Expenditures
RESEARCH AND DEVELOPMENT CLUSTER, continued				
Department of Agriculture, continued				
Pass-through programs from:				
University of Arkansas				
Development and Implementation of Innovative Food Safety Training Tools for the Production and Distribution of Microgreens	10.328	91172-01	\$ - \$	5,358
Environmental Control of SARS-CoV-2 within Food Service Establishments	10.310	AWD-000210-02	-	65,308
University of Florida				
IR-4 (Biopest) Integrated Solutions trials Dispersal and reproductive potential of <i>Helicoverpa zea</i> in Bt and non-Bt crops and implications for Insecticide Resistance Management regulations	10.200	PO 2301045568	-	11,448
Plant Safety, Horticultural Benefits, and Disease Efficacy of Essential Oils for Use in Organically Grown Fruit Crops: From the Farm to the Consumer	10.219	SUB00002839	-	13,727
SmartPath: Grower-directed convergence of nanotechnology and smart decision analytics for irrigation water quality management related to pathogens	10.307	SUB00002400	-	75,966
SweetCAP: Integrated technologies to improve sweet corn breeding, production and marketability	10.310	SUB00002832	-	36,984
Translating a Discovery into Improving Food Safety: A Novel Poultry Salmonella Vaccine and Diagnostic Methodology to Control Foodborne Salmonellosis	10.309	SUB00003558	-	13,627
	10.310	SUB00002531	-	22,580
University of Georgia				
Developing Sustainable and Profitable Tools for Producing Tomato in Fields Infested with Soilborne Pathogens, Nematodes, and Weeds	10.303	SUB00002138	-	13,614
Development of Sustainable Strategies for Managing Bacterial Diseases and Improving Tree Health in the Peach Production System	10.215	SUB00002851	-	76,424
Documenting Challenges, Identifying Solutions, and Developing Decision Support Tools for Small and Medium-sized Forest Businesses	10.310	SUB00002538	-	60,121
Incorporating Natural, Non-toxic Arthropod Resistant Tomato Varieties Into Southern Production Systems	10.215	SUB00002042	24,358	46,734
Optimizing the Cost-Effectiveness of Lighting in Controlled Environment Agriculture	10.309	SUB00003062	-	62,774
Sustainable Agriculture Research and Education (SARE) Program 2020 - Train the Trainers: Reducing Impacts from Harmful Algal Blooms in Livestock Water Resources in South Carolina	10.215	SUB00002595	-	19,646
Sustainable Agriculture Research and Education (SARE) Program 2021	10.215	SUB00002852	10,895	71,029
Sustainable Agriculture Research and Education (SARE) Program 2021	10.215	SUB00002854	4,536	43,657
Sustainable Agriculture Research and Education (SARE) Program 2021	10.215	SUB00002968	-	6,014
Sustainable Agriculture Research and Education (SARE) Program 2021	10.215	SUB00003035	-	4,758
Utility of Anaerobic Soil Disinfestation and Organic Herbicides for Weed and Disease Management in Organic Solanaceous Vegetable Systems	10.215	SUB00001973	-	20,386
University of Nebraska - Lincoln				
Characterizing the Interplay Between Sorghum and Fall Armyworm	10.310	25-6228-0342-002	-	48,015
US Endowment for Forestry & Communities				
Advancing Mass Timber Design and Education for Buildings on Military Installations	10.674	20-00096/ 16-DG11132544-050	6,565	164,125
Transforming Cellulose Nanocrystals into High-Performance Silicon-Based Products	10.689	20-00082	-	224,016

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Clemson University
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2023

Federal Grantor/Pass-Through Grantor/Program Title	Assistance Listing Number	Pass-through Entity Identifying Number	Passed Through to Subrecipient	Total Federal Expenditures
RESEARCH AND DEVELOPMENT CLUSTER, continued				
Department of Agriculture, continued				
Pass-through programs from:				
Virginia Polytechnic Institute				
Peanut Variety and Quality Evaluation - Harnessing Multiscale Data for Trait Prediction to Support Cultivar Release Decisions	10.310	423714-19244	\$ -	\$ 4,957
Washington State University				
Enabling Genomics-Assisted Specialty Crop Breeding and Research through Advanced Database Resources	10.309	137740 SPC004735	-	58,787
Total Department of Agriculture			2,776,775	20,793,168
Department of Commerce				
Developing and Implementing a Biological Condition Gradient for Nearshore Habitats of Puerto Rico	11.420	NA20NOS4200124	-	9,712
Epidemiology and Reproductive Impacts of the Newly Discovered Egg Parasite Carcinonemertes Obrieni on the Caribbean Spiny Lobster Fishery in Florida and the Caribbean	11.427	NA20NMF4270197	19,919	71,482
Improving Disaster Resilience by Quantifying WUI community ember exposure	11.609	70NANB17H213	-	(459)
Novel Time-Dependent Metrology for Precision Spectroscopy of Highly Charged Ions	11.609	70NANB20H087	-	195,947
Salient, Interactive, Relevant & Confidence in Actions (SIRCA): Using Virtual Reality Storm 1 Surge Simulations to Increase Risk Perception and Prevention Behaviors	11.459	NA21OAR4590217	-	61,862
Understanding Visitor Use and its Impacts on Key Resources at the ACE Basin National Estuarine Research Reserve	11.420	NA20NOS4200125	-	15,794
Wetlands to Combat Drought: Strengthening Drought Preparedness on the Coeur d'Alene Reservation Through Wetland Restoration and Monitoring	11.431	NA22OAR4310234	-	89,440
Pass-through programs from:				
North Carolina State University				
Innovating a Community-Based Resilience Model on Climate and Health Equity in the Carolinas	11.431	2021-2933-06	-	51,325
South Carolina Department of Natural Resources				
Estimation of Abundance for Age 1 and Adult Atlantic Sturgeon in Two Rivers in the Carolina and Chesapeake Distinct Population Segments (DPSs)	11.472	SCDNR FY2020-022 P24019487319	-	68,303
South Carolina Research Authority				
South Carolina Medical Device Alliance	11.020	CU-2019	-	125
South Carolina Sea Grant Consortium				
A Pilot Study of Plant-mediated Wetland Greenhouse Gas Emissions	11.417	P/M-2D Year 1	-	2,007
Developing a Blueprint for a Southeast Regional Fisheries and Aquaculture Training Center	11.417	A/AQUA20-1a	-	7,442
Effects of Coastal Flooding on Access to Infrastructure and the Resulting Economic Effects in Coastal Communities: Hydrological and Economic Impacts to Coastal Community Access During Nuisance Flood Events	11.417	R/SE-2 Year 2	-	5,805
Examining the Social Carrying Capacity for Mariculture Development on the South Carolina Coast	11.417	R/A-36 Year 2	-	7,794
On Borrowed Time: Age as a Predictor of Phosphorus Mobility in Coastal Stormwater Ponds and Implications for Management	11.417	R/CG-6	-	34,974
Rapid Response to Seafood Supply Chain Vulnerabilities by Assessing Direct Marketing Options in South Carolina	11.417	A/RR-1a	-	2,530
Something Very Fishy: A Marine Science STEAM Program for Elementary Schools - Year 2	11.417	R/ED-1 Year 2	-	15,738

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Clemson University
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2023

Federal Grantor/Pass-Through Grantor/Program Title	Assistance Listing Number	Pass-through Entity Identifying Number	Passed Through to Subrecipient	Total Federal Expenditures
RESEARCH AND DEVELOPMENT CLUSTER, continued				
Department of Commerce, continued				
Pass-through programs from:				
South Carolina Sea Grant Consortium (Continued)				
Urban Stormwater Runoff as a Source of Microplastic and Tire Wear Particles in Coastal Waterways: Transport, Cumulative Impacts to Biota, and Mitigation - Year 2	11.417	R/ER-52 Year 2	\$ 33,234	\$ 37,696
University of Delaware				
Advanced Bioprocessing Sensor and Analytical Technologies for Induced Pluripotent Stem Cell Culture Online Monitoring and Automation	11.619	PC5.2-127 / UDR0000346	-	66,591
NIIMBL Faculty Fellow Sabbatical Program - Sarah Harcum	11.619	UDR0000299 (FFP-501)	-	90,341
University of South Carolina				
Guiding Successful Applications of Floating Treatment Wetlands in Brackish Coastal Ponds	11.417	22-4813 PO#2000063111/10011752	-	30,400
Guiding Successful Applications of Floating Treatment Wetlands in Brackish Coastal Ponds	11.417	23-5268 PO#2000068731/10012775	-	11,095
North Inlet Winyah Bay NERR FY20 Annual Operations Award Proposal	11.420	22-4790 PO#2000063537	-	25,000
Total Department of Commerce			53,153	900,944
Department of Defense				
A DIGITAL PLATFORM FOR STUDIES IN LEARNING AND OPTIMIZATION OF LEARNING SYSTEMS	12.300	N00014-19-1-2610	-	10,939
A Subependymal Giant Cell Astrocytoma (SEGA) Mouse Model	12.420	W81XWH-20-1-0447	-	129,214
A Unified Materials Approach to Mitigating Nonlinearities in HEL Optical Fibers	12.300	N00014-17-1-2546	167,490	894,404
An Integrated Multi-Material Digital Life Cycle Approach for Additive Manufacturing of Ground Vehicle Structures and Components	12.431	W911NF-20-2-0237	56,571	869,981
Bottomside Ionospheric Inversion using Passive High Frequency Transmissions	12.300	N00014-21-1-2546	-	59,314
Conic Programming Reformulations and Relaxations for Quadratically Constrained and Quadratic Programs	12.300	N00014-20-1-2154	54,863	90,308
Connecting and Leveraging Digital and Physical Dimensions to Advance Human-Autonomy Teaming (Program Type - DURIP)	12.300	N00014-22-1-2250	-	145,675
Considerations of Ethical and Unethical Behavior on Trust in Human-Autonomy Teaming	12.800	FA9550-20-1-0342	-	221,656
Convergent Manufacturing of Multi-materials with Strengthened Metal-Ceramic Interface	12.431	W911NF-23-2-0058	-	19,556
COVIA: Computer Vision based Intelligent Assistant for Mistake Proofing of Complex Maintenance Tasks on Navy Ships	12.300	N00174-21-1-0010	-	96,925
Dam Sector Regional Risk Resilience Program (DSR3P)	12.630	W912HZ-22-2-0034	-	334,159
Deeply Subwavelength All-Dielectric Nanophotonics in Silicon	12.800	FA9550-19-1-0057	-	29,375
Development and Validation of New Technologies for TrueView	12.300	N00014-20-1-2585	-	31,728
Development of eDNA as a Tool to Evaluate Anadromous Fish Passage in Response to Environmental Flows	12.630	W912PM22P0030	-	6,072
Development of Protocols to Quantify Abiotic Transformation Rates and Mechanisms for Chlorinated Ethenes in Water Supply Aquifers	12.000	W912HQ-20-C-0038;CLIN 0001 PO# W74RDV00781560	5,164	70,165
ECO-COATING - Engineering Control of Organic Coatings on Autonomous Navy Gliders (Management)	12.910	HR0011-23-2-0008	81,822	222,936
Electro-thermal Management Using In-situ Junction Thermal Estimates for Enhanced Device Reliability	12.300	N00014-22-1-2558	-	128,917
Exploiting Structural Information in Algorithm Designs for Large-Scale Nonlinear Optimization	12.300	N00014-20-1-2089	77,563	144,119

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Clemson University
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2023

Federal Grantor/Pass-Through Grantor/Program Title	Assistance Listing Number	Pass-through Entity Identifying Number	Passed Through to Subrecipient	Total Federal Expenditures
RESEARCH AND DEVELOPMENT CLUSTER, continued				
Department of Commerce, continued				
Extending the Reformulation-Linearization Technique to Continuous, Nonconvex Problem	12.800	FA9550-19-1-0339	\$ -	\$ 1,588
High Photon Density Spatiotemporal (OAM+SAM) Vector Beams for Maritime Environment	12.300	N00014-20-1-2558	844,661	1,585,089
High Temperature Subsurface Borehole Thermal Energy Storage	12.300	W912HQ22C0075	-	70,009
Hollow-core MWIR Optical Fibers	12.431	W911NF-19-1-0409	-	59,941
Hybrid Integration for Beam Combining on Silicon Photonics Platform-Optoelectronics Program	12.431	W911NF-18-1-0176	50,000	135,291
Hydrothermally Grown Cladding Layers on YAG Crystal Material	12.431	W911NF-22-2-0067	-	100,067
Identifying and Evaluating Impacts to Wetlands from the Savannah River Estuary	12.630	W912HZ-19-2-0007	-	228,338
Incorporating Matrix Diffusion in the New Modflow Flow and Transport Model for Unstructured Grids	12.000	W912HQ19C0018	10,931	18,368
Integrated Logistics and Operational Planning for Anticipated Threat Mitigation Under a Contested Logistics Environments	12.300	N00014-22-1-2762	-	84,494
Integrated Modal Control and Beam Combining of High Power Diode Arrays for the Next Generation HEL System	12.300	N00014-17-1-2556	17,800	264,073
Invasive & Exotic Plant Species Survey and Control Method Evaluations; Townsend Bombing Range; Long and McIntosh Counties, GA	12.000	N62470-21-2-9024	-	79,392
Investigating the Range of Response of Auroral Electron Precipitation in High Latitude Electrodynamics	12.800	FA9550-19-1-0130	-	190,127
Learning ability for single and multiple swimming robots via bioinspired proprioception	12.300	N00014-21-1-2367	-	392,901
Multilevel Hybrid Quantum-classical Algorithms for Combinatorial Optimization	12.431	W911NF2020075	146,062	146,062
PHOTOACOUSTIC INTERACTIONS USING HIGHER ORDER BESSEL BEAMS INTEGRATED IN TIME AND SPACE (HOBBITS)	12.300	N00014-20-1-2037	-	164,368
Photonics: Novel Solid State Lasers and Laser Materials	12.431	W911NF-22-2-0092	-	184,228
Point-of-injury application of hydrogel embedded dexamethasone for severe traumatic brain injury	12.000	W81XWH-20-C-0114	-	237,390
Power Scaling of Combinable Fiber Lasers to Beyond 5kW	12.431	W911NF-17-1-0454	-	(2,608)
Promoting Human Interpretation and Interaction to Mitigate Bias in Artificial Intelligence Assisted Decision Aids	12.300	N00014-21-1-2336	-	131,751
Radiofrequency detection and control of cellular physiological process	12.431	W911NF-21-1-0145	-	6,730
REU in Number Theory	12.901	H98230-23-I-0020	-	33,137
RF Bioelectronics: Noninvasive Measurement and Control of Bacterial Bioelectricity	12.431	W911NF-22-1-0044	-	197,532
Segregation Induced Grain Growth Anomalies in Nanocrystalline Alloys	12.431	W911NF-20-2-0122	-	75,102
TA_1_Testbed_Gao	12.910	HR0011-23-2-0008	-	194,312
TA_1_Testbed_Latour	12.910	HR0011-23-2-0008	-	41,625
TA_1_Testbed_Nagatomi	12.910	HR0011-23-2-0008	-	27,300
TA1_1_Testbed_Calhoun	12.910	HR0011-23-2-0008	-	19,781
TA1_1_Testbed_Hoover	12.910	HR0011-23-2-0008	-	72,245
TA1_3_Analysis_Karig	12.910	HR0011-23-2-0008	-	3,369
TA2_1_Build_Campbell	12.910	HR0011-23-2-0008	-	51,270
TA2_1_Build_Karig	12.910	HR0011-23-2-0008	-	104,221
TA2_2_Test_Campbell	12.910	HR0011-23-2-0008	-	120,532
TA2_2_Test_Karig	12.910	HR0011-23-2-0008	-	952
The Spread of Trust and Distrust in Distributed Human-Autonomy Teaming Constellations	12.800	FA9550-21-1-0314	159,917	454,417
Theoretical Study for Infinite-Layer Nickelate Superconductors	12.800	FA9550-23-1-0153	-	4,262
URE Site: Space-Defense Undergraduate Research Experience	12.800	FA9550-23-1-0448	-	28,000
Virtual Prototyping of Ground Systems (VIPR-GS)	12.000	W56HZV-21-2-0001	85,723	10,577,335

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Clemson University
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2023

Federal Grantor/Pass-Through Grantor/Program Title	Assistance Listing Number	Pass-through Entity Identifying Number	Passed Through to Subrecipient	Total Federal Expenditures
RESEARCH AND DEVELOPMENT CLUSTER, continued				
Department of Defense, continued				
Pass-through programs from:				
Applied Research Associates, Inc. Military Working Dog Protective Suit	12.000	S- D00122-010-02-CLEM/ PO21-01415	\$ - \$	77,800
Arcadis, Inc Thermal In-Situ Sustainable Remediation (TISRSM) To Enhance Biotic and Abiotic Reactions and Accelerate Remediation Timeframes	12.000	04 D20-222/ 30027243.00003	-	214,039
Auburn University Migratory Behavior of Diadromous and Potamodromous Fish at a Rock Arch Rapids Structure in the Cape Fear River, North Carolina	12.630	20-FAA-360863-Clemson	-	61,861
Corcoran Engineering, Inc. High Power Chip Scale Coherent Laser Array	12.000	none	-	51,710
Cornerstone Research Group, Inc. Signature Management Textiles	12.000	PO # 2021-0525 / W911QY-21-C-0046	-	58,221
Georgia Institute of Technology First-Order Optimization Methods for Stochastic Dynamic Programming	12.800	AWD-003884-G1 / PO-5296502	-	38,060
Individual Differences in Executive Attention and its Value in Selection for Military Jobs	12.300	AWD-000996-G1 / PO-5139885	-	64,877
Leidos, Inc Personalized Protective Biosystem	12.901	P010250791	-	291,904
Massachusetts Institute of Technology Virtual Manufacturing Lab (VM-Lab): A Multimedia Design House for Digital Learning in Manufacturing-USA Workforce Education	12.300	S4916 / PO# 388434	-	285,944
Medical University of South Carolina Connectome Biomarkers for Predicting Alzheimer's Risk in Traumatic Brain Injury	12.420	A00-3895-S001/MUSC18-141-8D682	-	7,954
Naval Postgraduate School Gate Drive and Smart Control for Fast Light-Weight DC Solidstate Circuit Breaker	12.300	N00244-21-2-0001	-	108,459
Northern Arizona University Dynamic Data-Driven Decision Making, Planning and Communications in Autonomous Unmanned Aerial Vehicle Networks for Disaster Management	12.800	1004437-01	-	103,465
Northrop Grumman IT, Inc Fiber Laser Materials Research	12.000	PO #5300037834	-	15,225
Palo Alto Research Center Inc. Smart Configuration Optimizer Through Transformative Analytics (SCOTTY)	12.000	P315899	-	390,393
Physics, Materials, and Applied Femtosecond Direct Diode Laser System (fsDDLs) to Enable Hypersonic Drag Reduction	12.000	8067-S01/ Prime HQ0860-23-C-7516	-	28,869
Rowan University Advancing Structural Materials for Army Modernization Priorities via Direct Write Approaches	12.431	51291-4	-	91,028
Snake Creek Laser, LLC Fabrication Of Bonded Yb, Er: Glass-Sapphire Lasing Assemblies	12.000	N6833522C0125b	-	87,256

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Clemson University
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2023

Federal Grantor/Pass-Through Grantor/Program Title	Assistance Listing Number	Pass-through Entity Identifying Number	Passed Through to Subrecipient	Total Federal Expenditures
RESEARCH AND DEVELOPMENT CLUSTER, continued				
Department of Defense, continued				
Pass-through programs from:				
TDA Research, Inc.				
Optimal Rewarming Solutions for Cryopreserved Tissue Systems	12.000	GS.1403.021.CLEM.22.01	\$ - \$	45,803
University of Arkansas				
Inferring network models from spatial snapshots for systems and synthetic biology applications	12.431	UA2023-373 / SPC-006909	-	2,515
University of Essex				
Engineered Biofilms with Modular Functionality for Persistent and Survivable Naval Platforms	12.300	(Essex Reference #13715)	-	73,007
University of Illinois				
Internal Cooling of Fiber and Disc Lasers by Radiation Balancing and Other Optical or Phonon Processes	12.800	084272-16069	-	94,587
University of Maryland				
UMD-ARL Alliance for Additive Manufacturing Science (Task: Functional Polymer-Based Integrated Multimodal Structural Health Monitoring and Electromagnetic Shielding)	12.431	109358-Z8468201	-	74,453
University of Michigan				
Automotive Research Center Phase V - Cooperative Trust-based Symbolic Motion and Task Planning for Multi-robot Bounding Overwatch	12.910	SUBK00013068 / PO 3006000781	-	103,455
VIPR-GS 1.1- Deep Reinforcement Learning Approach to CPS Vehicle Re-envisioning- ARC Phase V Cooperative Agreement	12.910	SUBK00013773 / PO 3006125452	-	67,718
VIPR-GS 2.4- Integrated Transient Control and Thermal Management of Autonomous Off-Road Vehicle Propulsion Systems- ARC Phase V Cooperative Agreement	12.910	SUBK00013774 / PO 3006125310	-	62,377
VIPR-GS 2.5- Energy Management of Multi-Scale Vehicle Fleets- ARC Phase V Cooperative Agreement	12.910	SUBK00013775 / PO 3006125656	-	457,311
VIPR-GS 3.1- Computational Representation and Analysis of Mission and System Requirements- ARC Phase V Cooperative Agreement	12.910	SUBK00013776 / PO 3006125692	-	106,884
VIPR-GS 3.2- Model Interface Specification and Environment to Support Model Integration- ARC Phase V Cooperative Agreement	12.910	SUBK00013777 / PO 3006125693	-	133,300
VIPR-GS 3.3- Best Practices for Computational Tradespace Exploration, Analysis and Decision-Making- ARC Phase V Cooperative Agreement	12.910	SUBK00013778 / PO 3006126223	-	154,531
Virginia Polytechnic Institute				
Topology and Emergence with Ultracold Atoms and Molecules	12.431	450910-19244	-	23,712
West Virginia Research Corporation				
Testing the viability of Majorana-based platforms for topological quantum computation through theoretical and numerical modeling	12.300	23-178-CU	-	38,030
William Marsh Rice University				
Next Generation Teams and Organizational Subsystems Research	12.630	R1A604	-	197,191
Total Department of Defense			1,758,567	23,200,373

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Clemson University
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2023

Federal Grantor/Pass-Through Grantor/Program Title	Assistance Listing Number	Pass-through Entity Identifying Number	Passed Through to Subrecipient	Total Federal Expenditures
RESEARCH AND DEVELOPMENT CLUSTER, continued				
Department of Interior				
An Atlas and Registry for Seabird Colonies and Associated Habitats in the Northern Gulf of Mexico	15.812	G22AC00008 (RWO #106)	\$ - \$	127,703
Assessing Nesting Status of Black-capped Petrels Following Acute Disturbance Events	15.812	G22AC00122	-	2,416
CESU - A Study of Visitors Using the Trails and Rivers at Mammoth Cave National Park to Improve Visitor Access and Protect the Park's Resources	15.945	P19AC01168	6,408	8,522
Conservation and Life History of the Northern Pine Snake (Pituophis melanoleucus) Across North Georgia	15.664	F21AC00507-00	-	35,929
Cooper River Canoe Project	15.929	ST-251081-OMS-21	-	35,855
Edisto River Flow Effects on Summer Water Temperatures: Are Thermal Tolerances of SWAP Fishes Exceeded at Low Flows?	15.634	P24019483623 SCDNR FY2023-015	-	29,667
Evaluating and Informing the Future of NPS Interpretation Planning	15.945	P21AC10777-00	-	100,234
Growing Visitation and Enhancing Visitor Experiences at National Wildlife Refuges (NWRs) Through Better Estimation Techniques	15.812	G19AC00438 (RWO #104)	-	59,414
Importance of Southeast wintering grounds to continental waterfowl populations	15.654	F20AC11121	-	40,646
Investigating Impediments to Recruitment of the Carolina Heelsplitter (Lasmigona decorata)	15.657	F20AC11776	-	23,121
Natural and Anthropogenic Influences on Tidally Influenced Forested Wetlands of the Southeast U.S.	15.808	G19AC00208	-	39,770
South Carolina Water Resources Center Program Management	15.805	G21AP10579	-	2,844
South Carolina Water Resources Center Program Management	15.805	G21AP10579-01	23,252	108,682
Spatial Ecology, Movement Patterns, and At-Sea Habitat Use of Black-capped Petrels	15.812	G21AC00001 (RWO #105)	-	11
Spatial Ecology, Movement Patterns, and At-Sea Habitat use of Brown Pelicans in the South Atlantic Bight	15.812	G16AC00395 (RWO #100)	-	48,702
Vessel-based Surveys for Pelagic Seabirds in the Gulf of Mexico	15.812	G17AC00371 (RWO #102)	-	41,705
Pass-through programs from:				
Georgia Department of Natural Resources				
Conservation and Life History of the Northern Pine Snake Across North Georgia	15.634	46200-605-200126 / PO # 152919	-	(218)
Pine Snake Trapping and Radio Telemetry in North Georgia	15.634	None	-	2,399
Mississippi Department of Wildlife, Fisheries, and Parks				
FY 23/24 NBGI: State of Mississippi	15.611	None	-	29,102
National Fish & Wildlife Foundation				
Advancing Northern Bobwhite Management in the Longleaf Pine Range (AL, GA, LA, VA)	15.663	1903.19.073779	54,205	79,605
Old Dominion University				
NCR Visitor Use Surveys	15.945	22-110-300541-004	-	24,654
South Carolina Department of Natural Resources				
Basin-wide Planning for Bartram's Redeye Bass in the Savannah River	15.634	SCDNR FY2021-029 P24019497620	-	66,558
Environmental DNR Determination of the Distribution of the Patch-Nosed Salamander (Ursperlerpes brucei) in South Carolina	15.634	SCDNR FY 2020-019 P24019497520	-	5,477
Green Salamander Population Assessment and Connectivity Across a Gradient of Forest Disturbance	15.634	SC-T-F18AF00973/ SCDNR#P2404406119	-	6,452
Impacts of Special Hunting Clinics on the Recruitment and Retention of Female Hunters in South Carolina for 2021-22 (SC Hunter Education Program)	15.611	SCDNR FY2022-022 P24014LE0121	-	576

The accompanying notes are an integral part of this schedule.

Clemson University
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2023

Federal Grantor/Pass-Through Grantor/Program Title	Assistance Listing Number	Pass-through Entity Identifying Number	Passed Through to Subrecipient	Total Federal Expenditures
RESEARCH AND DEVELOPMENT CLUSTER, continued				
Department of Interior, continued				
Pass-through programs from:				
South Carolina Department of Natural Resources (Continued)				
SC - National Bobwhite and Grasslands Initiative - South Carolina	15.611	SCDNR FY2023-031 P24014400122	\$ -	\$ 20,984
South Carolina - National Bobwhite Conservation Initiative	15.611	SCDNR FY2022-034 P24014402122	-	(2)
Southeast Aquatic Resources Partnership				
Incorporating Fish Species Swimming Speed into Barrier Removal Prioritization - Coastal	15.608	none	-	22,668
Incorporating Fish Species Swimming Speed into Barrier Removal Prioritization - Swim	15.608	none	-	84,198
Virginia Polytechnic Institute				
What Leads to Better Outcomes in National Park Service Interpretation?	15.945	462773-19244	-	19,816
Wildlife Management Institute				
Black Hunters: Reclaiming the Tradition	15.628	MSCG 2022-01	-	32,947
Total Department of Interior			83,865	1,100,437
Department of Justice				
An Evaluation of De-Escalation Training to Understand the Links between Training and Outcomes				
Clemson University Police Behavioral Health Crisis Response Program	16.560	15PNIJ-21-GG-02719-RESS	172,289	252,710
GIS Application for Building a Nationally Representative Forensic Taphonomy Database	16.745	15PBJA-22-GG-03012-MENT	-	22,616
	16.560	2020-DQ-BX-0025	-	118,935
Pass-through programs from:				
Eluna Network				
Mentoring Youth Affected by Opioid and Other Drug Misuse through Camp Mariposa	16.726	None	-	1,059
Greenville County				
Bureau of Justice Assistance FY2022 Comprehensive Opioid, Stimulant, and Site-Based Program Grant	16.838	none	-	4,987
Oconee County				
Oconee County (SC) Addiction Recovery & Solutions Initiative	16.745	001/ 2020-AR-BX-0045	-	64,324
Oconee County (SC) Justice and Mental Health Planning & Implementation Initiative	16.745	001/ 2020-MO-BX-0045	-	36,751
University of Minnesota				
Identification of Effective Strategies to Disrupt Recruitment of Victims in Human Trafficking: Qualitative Data, Systems Modeling, Survivors and Law Enforcement	16.560	P008619001	-	12,277
University of North Florida				
Missouri 29th Judicial Circuit Co-Occurring Treatment Court Enhancement Initiative	16.585	022-002	-	7,605
Wichita State University				
Assessment of Cognitive Performance-Based Training to Improve Police Decision-Making	16.560	WSU# 21-00192	-	11,483
Total Department of Justice			172,289	532,747
Department of State				
Pass-through programs from:				
Internews				
Minecraft Pluggable Transport Improvement	19.345	SGR-GX1968-FD-3	-	(613)
Total Department of State			-	(613)

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Clemson University
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2023

Federal Grantor/Pass-Through Grantor/Program Title	Assistance Listing Number	Pass-through Entity Identifying Number	Passed Through to Subrecipient	Total Federal Expenditures
RESEARCH AND DEVELOPMENT CLUSTER, continued				
Department of Transportation				
Dwight David Eisenhower Transportation Fellowship Program (DDETFP) Graduate Fellowship	20.215	693JJ32345039	\$ -	\$ 3,330
University Transportation Center - Center for Connected Multimodal Mobility (C2M2)	20.701	69A3551747117	278,000	647,469
University Transportation Center - Center for Connected Multimodal Mobility (C2M2) - Chowdhury	20.701	69A3551747117	-	26,759
University Transportation Center - Center for Connected Multimodal Mobility (C2M2) - Ferrell	20.701	69A3551747117	-	2,421
University Transportation Center - Center for Connected Multimodal Mobility (C2M2) - Jia	20.701	69A3551747117	-	466
University Transportation Center - Center for Connected Multimodal Mobility (C2M2) - Jia	20.701	69A3551747117	-	25,862
University Transportation Center - Center for Connected Multimodal Mobility (C2M2) - Ogle	20.701	69A3551747117	-	25,912
University Transportation Center - Center for Connected Multimodal Mobility (C2M2) - Pisu	20.701	69A3551747117	-	4,220
University Transportation Center - Center for Connected Multimodal Mobility (C2M2) - Pisu	20.701	69A3551747117	-	31,895
Pass-through programs from:				
South Carolina Department of Transportation				
A Preliminary Cost Estimating Model for Transportation Projects	20.205	SPR 757	-	55,809
Best Practices on Collection Asset Information from the Construction Stage	20.205	SPR 759	-	103,599
Develop or Improve Construction Scheduling Methods and Model for Construction Projects	20.205	SPR 764	-	8,565
Impact of Utility Delays on Project Delivery	20.205	SPR 756	39,768	86,088
Investigation and Assessment of Effective Patching Materials for Concrete Bridge Decks	20.205	SPR 755	-	98,718
Optimization of Cement Modified Recycled Base (CMRB) Planning, Design and Testing	20.205	SPR 754	-	57,774
SCDOT Scope of Services Template Research Proposal	20.205	SPR 753	-	51,257
Ultra-High-Performance Concrete (UHPC) Used as a High Friction Surface Treatment (HFST) on Pavements and Bridges	20.205	SPR 762	-	51,115
Update to SCENARIO_PC	20.205	2130; SPR 745	77,377	220,150
Work Zone Safety Training Program	20.205	FPA 15-22	-	40,187
South Carolina State University				
Data-driven Models for Vision-Based Commercial Motor Vehicle Safety Work Zone	20.237	23-570058-ENG-CU-SC	-	2,547
toXcel, LLC				
Additional Considerations for Making ADS Vehicles Accessible for All Road Users	20.999	TO# 693JJ921F000157/ 2019-006	-	196,604
Vulnerable and Disabled Road Users: Considerations Inside and Outside the Vehicle	20.000	2019-006/ TOA 693JJ919F000170	-	147,643
University of Michigan				
Predicting Driver Takeover Performance in Conditional Automation (Level 3) through Physiological Sensing	20.701	SUBK00015064 / PO 3006413512	-	14,321
University of South Carolina				
Calibration of the AASTO Pavement Design Guide to South Carolina Conditions - Phase II	20.205	17-3296/PO#2000031396/ USC#15520FB40	-	38,735
Field Trials for Cost-Effective Strengthening of SC Load Posted Bridges	20.205	22-4618 PO#2000060577	-	106,581
Safe and Cost-Effective Reduction of Load Postings for South Carolina Bridges	20.205	20-4076 PO#2000053138 USC No. 10009980	-	39,586
Total Department of Transportation			395,145	2,087,613

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Clemson University
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2023

Federal Grantor/Pass-Through Grantor/Program Title	Assistance Listing Number	Pass-through Entity Identifying Number	Passed Through to Subrecipient	Total Federal Expenditures
RESEARCH AND DEVELOPMENT CLUSTER, continued				
National Aeronautics and Space Administration				
21-FERMI21-0010, SEARCH FOR LONG-TERM VARIABILITY IN BLAZARS	43.001	80NSSC22K1578	\$ - \$	4,009
21-FERMI21-0011, THE COSMIC HISTORY OF LIGHT	43.001	80NSSC22K1579	-	62,441
21-FERMI21-0012, A LEGACY ANALYSIS OF THE MILKY WAY DWARFS	43.001	80NSSC22K1580	-	57,141
21-FERMI21-0013, CHARACTERIZING THE GAMMA-RAY EMISSION FROM LOW-LUMINOSITY AGN	43.001	80NSSC22K1581	-	54,011
21-FERMI21-0014, MEASUREMENT OF THE ISOTROPIC DIFFUSE GAMMA-RAY BACKGROUND	43.001	80NSSC22K1582	-	10,329
21-NUSTAR21-0007 PROBING AGN OBSCURATION VARIABILITY WITH NUSTAR AND NICER	43.001	80NSSC23K0484	-	4,755
21-SWIFT21-0002, THE LEGACY OF SWIFT-BAT: THE HARD X-RAY SKY	43.001	80NSSC22K1469	-	23,690
21-SWIFT21-0004, PHOTOMETRIC REDSHIFTS FOR FERMI BLAZARS WITH SWIFT/UVOT	43.001	80NSSC22K1472	-	3,729
22-22-ECF-0025, Characterization and Application of Cryogenic Power Semiconductors in Lightweight, Fault-tolerant Systems for Lunar Missions	43.012	80NSSC23K0073	-	36,149
22-XMMNCTFY-22-002 COMPTON-THICK AGN: THE HUNT CONTINUES A Joint Nustar and XMM-Newton Monitoring of a Candidate Changing-Look Compton Thick AGN	43.001	80NSSC23K0146	-	7,673
A XMN-Newton Monitoring of a Candidate Changing-Look Compton Thick AGN	43.001	80NSSC22K0011	-	91,125
An Investigation of Ion-Neutral Coupling During Active Auroral Conditions	43.001	80NSSC22K0335	-	10,578
BL Lacertae Objects at High Redshifts	43.001	80NSSC19K0810	109,078	207,024
Bridging the Gap: A Sensitive Catalog of MEV Sources	43.001	80NSSC21K1888	-	57,192
Chasing the Most Powerful Blazars	43.001	80NSSC21K1914	-	61,648
Chasing the Most Powerful Blazars	43.001	80NSSC20K0044	-	637
Chemical Evolution of the Building Blocks of the Solar System	43.001	80NSSC21K0025	-	25,180
Compton Thick AGN with NUSTAR and XMM-Newton	43.001	80NSSC20K0338	-	112,197
COMPTON-THICK AGN: THE HUNT CONTINUES	43.001	80NSSC21K0016	-	27,173
CUSP Upwelling and Heating Due to Small Scale Electric Field Fluctuations	43.001	GO2-23072X	-	28,665
Exploring the Causes of Water Vapor Variability in the Mesosphere, Derived Residual Mean Circulation and Implications for the Composition of the Thermosphere Using SABER and GOLD	43.001	80NSSC18K0781	891	1,197
Exploring the Response of the Ionosphere/Thermosphere to the Madden Julian Oscillation	43.001	80NSSC20K1353	87,921	258,074
Gamma Rays from AGN-Driven Galactic Outflows	43.001	80NSSC22K1010	12,506	101,199
Gamma-Ray Emission from Galactic Wolf-Rayet Stars	43.001	80NSSC21K1915	-	1,804
Hunting for Compton-Thick AGN in the Local Universe	43.001	80NSSC21K1916	-	56,414
Hunting High Redshift Blazars with Swift and Sara-CT/ORM	43.001	80NSSC22K0005	-	87,980
Momentum Resolved Charge Exchange Cross Section Measurements and X-Ray Spectroscopy	43.001	80NSSC21K1400	-	39,964
Probing the Structure of the AGN Torus with Swift	43.001	80NSSC19K0679	79,161	95,751
Role of Lower Atmosphere Waves in Preconditioning the Ionosphere-Thermosphere Responses to Geomagnetic Storms Using ICON and GOLD	43.001	80NSSC21K1401	-	27,479
The Hosts of GAMMA-Ray Loud Narrow-Line Seyfert 1 Galaxies	43.001	80NSSC22K0018	17,814	174,906
Towards a Full Mapping of the > GEV Extragalactic Sky: Aspectroscopic Follow-up Campaign of Unidentified 3FHL Sources	43.001	80NSSC21K0724	-	33,484
Towards the Full Identification of the 3FHL Catalog	43.001	80NSSC21K1889	-	63,740
Vortex - Vorticity Experiment	43.001	80NSSC21K2079	-	1,418
Vortex - Vorticity Experiment	43.001	80NSSC19K0776	45,558	84,508
	43.001	80NSSC19K0776	-	213,524

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Clemson University
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2023

Federal Grantor/Pass-Through Grantor/Program Title	Assistance Listing Number	Pass-through Entity Identifying Number	Passed Through to Subrecipient	Total Federal Expenditures
RESEARCH AND DEVELOPMENT CLUSTER, continued				
National Aeronautics and Space Administration, continued				
Pass-through programs from:				
Auburn University				
A Joint Theoretical and Experimental Approach to Dielectronic Recombination Data Needs	43.001	22-PHYS-209394-Clemson	\$ - \$	51,592
Center for the Advancement of Science				
Unlocking the Cotton Genome to Precision Genetics	43.002	GA-2019-007	3,991	48,650
College of Charleston				
2022 R3-0007, Appendix I: Coupled CO2 Capture and Conversion at Ambient Conditions to Enable In-Space Propulsion	43.008	521537-CM	-	43,471
Dynamic Topology Optimization for Robust, Lightweight Origami Rovers	43.008	521383-PA-CM-014	-	3,089
Electrochemical Recovery and Conversion of Captured In-Space CO2 to Methane Fuel	43.008	521383-PA-CM-017	-	10,922
Energy Storage Devices for Operation in Extended Temperature Range -60 to 60 oC	43.008	521383-PA-CM-013	-	8,002
Ga2O3 Schottky Diodes for High Temperature Power Electronics	43.008	521383-RP-CM-012	-	1,281
GRF 2022-23: Creep Behavior of Lightweight, Ti-based Multi-principal Element Alloy	43.008	521383-GRF-CM006	-	14,292
GRF 2022-23: Impact Resistance of Nanocellulose Films with Bouligand Microstructures by Integrating Defects	43.008	521383-GRF-CM007	-	15,999
GRF 2022-23: Validating Satellite Remote-Sensing of Aerosols with Ground-based Low-Cost Sensors	43.008	521383-GRF-CM008	-	14,294
Impacts of Gravity and Surfactants on Drainage Flow and Rheology of Wet Foams	43.008	521471-CM	-	1,891
Novel Materials for Spacecraft Optical Windows	43.008	521383-RP-CM-013	-	4,352
PA 2022: Converting In-Space CO2 into Propulsion Fuel Through Cost-Effective and High-Performance Single-Atom-Alloy Electrocatalysts	43.008	521383-PA-CM011	-	8,058
PA 2022: Image-based and Machine Learning-enabled Characterization of Lunar Regolith Simulants in Support of In Situ Resource Utilization	43.008	521383-PA-CM008	-	14,324
PA 2022: Rapid FIRE: Formulation of Innovative Robotic Explorers	43.008	521383-PA-CM009	-	16,508
PA 2022: Student Participation in Developing Nanomaterials-Derived Technologies for Space Applications	43.008	521383-PA-CM010	-	10,250
Palmetto Academy 2021: TERRA-BOTS: Tiny Elastic Reshaping Robotic Architectures-Built for Optimized, Task-specific Solutions	43.008	521383-PA-CM006	-	(1,799)
Peroxide-Producing Microbial Fuel Cells for Space Life Support Systems Applications	43.008	521365-CM	63,197	134,799
Quantum Sensing of Solar Flares using Superconducting Detectors	43.008	521383-PA-CM-015	-	7,486
Rapid Laser Reactive Sintering of High-Performance Electrolytes for Additive Manufacturing of Solid State Batteries	43.008	521474-CM	-	18,123
Rapid Laser: 3D Printing of Reversible Solid Oxide Electrochemical Cell Stacks for Producing Pure O2 from CO2 and Storing Electricity into Carbon	43.008	521434-CM	97,532	183,873
REAP 2021-22: Development of Multi-Body Dynamics and Discrete Element Co-Simulation Tool for Lunar Regolith-Tool Interaction Simulations	43.008	521383-RP-CM004	-	74
REAP 2021-22: Evaluating the Effects of Microgravity on Intervertebral Disc Organoids	43.008	521383-RP-CM006	-	5,799
REAP 2022-23: Deep Eutectic Solvents from Halogen Bonding	43.008	521383-RP-CM011	5,000	10,140
REAP 2022-23: Investigation of High Temperature Performance of III-Nitride Pressure Sensors	43.008	521383-RP-CM010	-	2,082

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Clemson University
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2023

Federal Grantor/Pass-Through Grantor/Program Title	Assistance Listing Number	Pass-through Entity Identifying Number	Passed Through to Subrecipient	Total Federal Expenditures
RESEARCH AND DEVELOPMENT CLUSTER, continued				
National Aeronautics and Space Administration, continued				
Pass-through programs from:				
College of Charleston, continued				
REAP 2022-23: Something Very Fishy Aquanaut Training Mission	43.008	521383-RP-CM009	\$ - \$	4,000
RGP 2022-23: Metal Free Planetary Outpost Food Packaging for 5-Year Shelf-life Food System	43.008	521340-CM003	-	5,314
RGP 2022-23: Reconfigurability of Battery Storage Systems and Its Application in Battery Equalization	43.008	521340-CM002	-	28,997
RockSat-C: Nanoparticle Gyroscope	43.008	521383-RO	-	11,852
SC Space Grant & SC Sea Grant Kathryn Sullivan Earth & Marine Science Fellowship 2023-2024: Utilization of coupled human and natural systems modeling to assess lobster trap removal impacts on cryptic coral reef biodiversity	43.008	521383-KS-CM-002	-	838
SC Space Grant Campus Director Administrative Budget	43.008	521383-CD-CM	-	1,500
Solvent-Free Dry Coating Method for High Mass Loading and High Volumetric Density Si-based Anodes for Lithium-ion Batteries	43.008	521383-GRF-CM-010	-	1,878
Stabilization of Urine through Electro-synthesized Hydrogen Peroxide for Subsequent Recovery of Urea Needed in Food Production during Space Missions	43.008	521383-GRF-CM002	-	1,033
Student Participation in Developing Nanomaterials-Derived Technologies for Space Applications	43.008	521383-PA-CM-016	-	12,000
Thermally Stable Lithium-Sulfur Batteries for NASA Missions	43.008	521383-GRF-CM-011	-	1,550
Toward Bio-inspired Energy-efficient Drilling into Lunar Regolith	43.008	521383-PA-CM-012	-	8,500
UG 2022-23: High Surface Area Copper Optimized by Nickel Single Atom to Boost Electro Carbon Dioxide Reduction Reaction	43.008	521383-UG-CM005	-	7,500
UG 2022-23: Ionospheric Neutral Mass Spectroscopy	43.008	521383-UG-CM004	-	7,500
Embry-Riddle Aeronautical University Sporadic-E ElectroDynamics	43.001	61559-2	-	24,696
KBR Wyle Services, LLC Mitigating Headward Fluid Shifts with Veno-Constrictive Thigh Cuffs During Spaceflight	43.000	SMS0011602/ Natasha Long	-	110,835
Smithsonian Astrophysical Observatory A Spatially Resolved X-ray Analysis of an Extreme Candidate Pulsar Wind Nebula	43.001	GO1-22066X	-	22,281
COMPTON-THICK AGNS: THE HUNT CONTINUES	43.001	GO0-21083X	-	5,738
Touchstone Research Laboratory, Ltd. Precision Heated Tooling for OOA Curing of Thin-Ply Composites	43.000	80NSSC21C0021-1	-	57,125
University of Alaska - Fairbanks Auroral Waves Excited by Substorm Onset Magnetic Events (AWESOME)	43.001	UA 21-0101 / P0549262	-	27,949
Auroral Waves Excited by Substorm Onset Magnetic Events (TOTALLY AWESOME)	43.001	UA 22-0108 / P0560920	-	136,678
In-Situ Measurements of Neutral and Plasma Dynamics Associated with Earth's Cusp-Region Thermospheric Mass Density Anomaly	43.001	UAF 18-0025 P0518692	-	35,447
University of Georgia Project FUSION: Facilitating Unified Systems of Interdependent Organizational Networks	43.003	SUB00001668	-	1,940
University of New Hampshire TOMEX Plus: Turbulent Oxygen Mixing Experiment Plus	43.001	L0058	-	78,387

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Clemson University
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2023

Federal Grantor/Pass-Through Grantor/Program Title	Assistance Listing Number	Pass-through Entity Identifying Number	Passed Through to Subrecipient	Total Federal Expenditures
RESEARCH AND DEVELOPMENT CLUSTER, continued				
National Aeronautics and Space Administration, continued				
Pass-through programs from:				
University of South Carolina				
Augmenting Physics-Based Design and Multi-Physics Based Manufacturing with Data Driven Models to Manufacture Advanced Composites Structures with Automated Fiber Placement	43.008	22-4715 PO#2000061320	\$ - \$	21,380
University of the District of Columbia				
NASA MIRO: Center for Advanced Manufacturing in Space Technology & Applied Research at UDC				
(CAM-STAR)	43.008	SUB-0012020 / P2200367	-	49,964
Total National Aeronautics and Space Administration			522,649	3,419,222
Institute of Museum & Library Services				
Pass-through programs from:				
South Carolina Humanities				
Oconee County and Pickens County African American Heritage Sites Database	45.129	22-2082-3	-	1,663
The Teagle Foundation				
Creating a Humanities-Based Core Text Stream within the General Education Curriculum at Clemson University	45.162	2005349	-	1,000
Total Institute of Museum & Library Services			-	2,663
National Science Foundation				
IRES: Track 1: Self-Healable Materials Development	47.079	1952528	-	70,811
ABI Innovation: Fast Algorithms and Tools for Single-Molecule Sequencing Reads	47.074	1759856	-	109,975
ABR: Collaborative research: Smart earpiece for supporting healthy eating behaviors	47.070	1835974	-	54,063
Addressing Student Skills Gaps in Water Treatment Operator Education Utilizing Virtual Reality Enabled Curriculum Resources	47.076	2202051	-	29,198
ADVANCE Institutional Transformation at Clemson University	47.076	1629934	-	407,660
An Integrated Housing Design and Logistics Operations Modeling and Analysis Framework for Hurricane Relief	47.041	2053660	-	123,400
Azole Antifungals Coordinate Metals and Create Reactive Oxygen Species That Damage DNA and Cause Chromosomal Instability	47.049	2203847	-	59,090
Broadband microwave flow cytometry: comprehensive nanoparticle sensing and characterization	47.041	1711463	-	76,881
Building Leadership among Science Teachers in Rural Regions: Designing, Developing, and Implementing a Science Teacher Leadership Academy	47.076	2243496	-	4,131
CAREER: An Adaptive Stochastic Look-ahead Framework for Disaster Relief Logistics under Forecast Uncertainty	47.041	2045744	-	71,507
CAREER: Cross-Layer Power-Bounded High Performance Computing on Emerging and Future Heterogeneous Computer Clusters	47.070	1551511	-	28,206
CAREER: Characterizing Nanoparticle Surface Interactions using Dissolution Dynamic Nuclear Polarization-Enhanced Nuclear Magnetic Resonance	47.049	1751529	-	63,336
CAREER: Cooperative Control and Decision-Making for Human-Agent Collaborative Teams	47.041	1454139	-	740
CAREER: CritComp Pop Ups: A Research Practice Partnership for Co Designing and Implementing Critical Computing Elementary Education Curricula	47.076	2238712	-	5,808
CAREER: Deep Learning Empowered Nonlinear Deformable Model	47.076	2011471	-	28,145
CAREER: Detecting Patterned Profiles for Functional and Dysfunctional Teamwork	47.075	1654054	-	21,773

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Clemson University
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2023

Federal Grantor/Pass-Through Grantor/Program Title	Assistance Listing Number	Pass-through Entity Identifying Number	Passed Through to Subrecipient	Total Federal Expenditures
RESEARCH AND DEVELOPMENT CLUSTER, continued				
National Science Foundation, continued				
CAREER: Diagnosing the Undiagnosable: Using Enzyme Upregulation to Probe Cellular Behavior in Neuropathic Lysosomal Storage Disease	47.041	2047697	\$ -	\$ 86,555
CAREER: Dual Function Materials for Capture and Conversion of CO2 into Methanol and Higher Alcohols	47.041	2154386	15,588	236,442
CAREER: Dynamic Management of Compressed Arrays for High-Performance Computing Applications	47.070	1943114	-	119,163
CAREER: Elastocapillary fluid mechanics: spreading, splashing, and instability	47.041	1750208	-	72,533
CAREER: Elucidating Fundamental Structure-Property Relationships in Ionomer Nanocomposites for Redox Flow Batteries	47.049	1848347	-	110,534
CAREER: Empowering Students to be Adaptive Decision-makers	47.041	1745347	-	86,450
CAREER: Enabling Low-Cost, Maintenance-Free, Long-Term Embedded Sensing Without Batteries	47.070	1453607	-	6,819
CAREER: Evaluating the contribution of Sensory Drive to the divergence of flower color	47.074	2237529	-	6,522
CAREER: Hierarchical Modeling for Rational Catalyst Design in Aqueous Conditions	47.041	1554385	-	(1,564)
CAREER: Human-Inspired Multi-Robot Navigation	47.070	2047632	-	139,715
CAREER: Hybrid Experimental-Computational Modeling Framework for Transformative Research and Multidisciplinary Education in Cardiovascular Biomechanics	47.041	1749017	-	110,381
CAREER: Innovative Methods for Designing Adaptive Clinical Trials	47.041	1651912	-	65,876
CAREER: Integrated Studies of Polar Wave and Magnetosphere-Ionosphere-Thermosphere Couplings from New Observations and Whole Atmosphere Modeling	47.050	1753214	-	19,810
CAREER: Leveraging Recommendations for Self-Actualization	47.070	2045153	-	109,737
CAREER: Modeling, Measuring and Controlling Human Comfort in Human-Autonomous-Machine Interaction (HaMI)	47.070	1845779	-	68,774
CAREER: Multi-chrome metasurfaces for dynamic structural color and naked eye diagnostics	47.041	2047015	-	116,480
CAREER: Multifunctional Peptide Nanocarriers for Delivery of Nucleic Acid Therapeutics	47.049	2046694	-	108,965
CAREER: Multiscale Study of the Structure and Dynamics of Nanoparticle-Protein Coronae	47.041	1553945	-	5,599
CAREER: Multiscale Surface Structuring by Ultrafast Lasers for Multifunctional Glass Surfaces	47.041	2047000	-	106,206
CAREER: Perceptually Guided Hand Motion Synthesis	47.070	1652210	-	121,559
CAREER: Phenotypic and developmental effects of enhancer variation on cichlid craniofacial evolution	47.074	1942178	-	12,439
CAREER: Phylogenetic scale-dependency of the patterns and processes of quantitative trait evolution	47.074	2237613	-	68,792
CAREER: Protecting Deep Learning Systems against Hardware-Oriented Vulnerabilities	47.070	2047384	-	52,805
CAREER: Quantifying drought and vulnerability indicators for water security in a changing environment	47.041	1653841	-	113,501
CAREER: Quantifying the Adaptability of Building Structures, Envelopes, and Foundations	47.041	1553565	-	25,308
CAREER: Self-Protecting Artificial Implants and Invigorating the STEM Education Pipeline with Biomaterials	47.049	1555224	-	33,058
CAREER: Structural dynamics of post-translationally modified Calmodulin and its role in target recognition	47.074	1749778	-	77,986
CAREER: Toward Autonomous Decision Making and Coordination in Intelligent Unmanned Aerial Vehicles' Operation in Dynamic Uncertain Remote Areas	47.070	2232048	-	21,874
Career: Towards Engineering Electronic Defects in Inorganic Luminescent Materials	47.049	1653016	-	68,410

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Clemson University
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2023

Federal Grantor/Pass-Through Grantor/Program Title	Assistance Listing Number	Pass-through Entity Identifying Number	Passed Through to Subrecipient	Total Federal Expenditures
RESEARCH AND DEVELOPMENT CLUSTER, continued				
National Science Foundation, continued				
CAREER: Understanding Dynamic Recrystallization Mechanisms in Hybrid In-situ Rolled Additive Manufacturing	47.041	2237401	\$ -	\$ 9,124
CAREER: Understanding the Interaction between Mechanical Twinning and Fatigue Crack Growth	47.041	2045082	-	111,514
CAREER: Valuing Education and Career Transition Opportunities Raising Student Success in Engineering	47.041	2144213	-	87,997
CAREER: Multiscale Simulations of Nanofluid Assembly for Smart Materials Design	47.049	1944942	-	127,998
CAREER: Exploring the Unknowns: Responses of Soil Microbial Communities to Increased Plant Functional Trait Diversity in Managed Ecosystems	47.074	1941714	-	143,431
CAS: Deconstructing Plastic and Agricultural Waste via Organosulfur Chemistry	47.049	2203669	-	93,913
CCF: EAGER: DeepGreen: Modeling and Boosting Accelerated Computing on Liquid Immersion Cooled HPC Systems	47.070	1942182	-	48,281
CCRI: MEDIUM: Collaborative Research: F1/10 RACECAR: Community Platforms for Safe, Secure and Coordinated Autonomy	47.070	1925500	-	69,667
CDS&E: HAM3R: Heterogeneous Automated Management of Multiscale Methods and Resources	47.070	2204011	-	65,009
CDS&E: HAM3R: Heterogeneous Automated Management of Multiscale Methods and Resources - REU Supplement	47.070	2204011	-	594
Certification Algorithms for Polynomial System Solving	47.049	1913119	-	1,394
Characterizing Inclusive Strategies that Retain Black Students in Computer Science to Graduation and Beyond	47.076	2111354	28,377	151,358
Charge Transporting Supramolecular pi-Donor/Acceptor Arrays Based on Redox-Active Metallacycles, Metal-Organic Cages, and Daisy-Chain Coordination Polymers	47.049	2203985	-	8,824
CHS: Medium: Collaborative Research: Augmenting Human Cognition with Collaborative Robots	47.070	1900956	-	5,969
CHS: Small: Developing and Validating a Physically Accurate Light-Scattering Model for the Rendering of Bird and Other Dinosaur Feathers	47.070	2007974	-	177,354
CHS: Small: Investigating the Characteristics of User Representations and Long-Term Experiences in Personal Space Depth Perception in Virtual Reality	47.070	2007435	-	136,925
CICI: RSARC: Secure Time for Cyberinfrastructure Security	47.070	1738902	-	112,180
CICI: UCSS: Maximizing Data Utility and Participant Privacy through Usable, Secure Data Workflows for Human-Centered AI Research	47.070	2232690	-	31,192
CIF: Single-Particle Measurements of Soot and Incandescing Aerosol	47.050	2113160	-	53,650
CIF: Small: Deep Stochasticity for Private Collaborative Deep Learning	47.070	2215088	-	36,292
CNS Core: Small: PilotPC: Proactive Inverse Learning of Network Topology for Predictive Communication among Unmanned Vehicles	47.070	2204721	-	52,191
Collaborative Research: A Regularized Poisson Boltzmann Model for Fast Computation of the Ensemble Average Polar Solvation Energy	47.049	1812597	-	12,082
Collaborative Research: Advancing Chemical Separation Simulations: Computational Algorithms and Optimization with Implicit Adsorption Isotherms	47.049	2011902	-	70,523
Collaborative Research: Advancing Theoretical Understanding of Accelerated Nonlinear Solvers, with Applications to Fluids	47.049	2011490	-	21,723
Collaborative Research: ANSWERS: Impacts of Atmospheric Waves and Geomagnetic Disturbances on Quiet-Time and Storm-Time Space Weather	47.050	2149695	-	12,685

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Clemson University
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2023

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RESEARCH AND DEVELOPMENT CLUSTER, continued				
National Science Foundation, continued				
Collaborative Research: Bayesian Residual Learning and Random Recursive Partitioning Methods for Gaussian Process Modeling	47.049	2152998	\$ - \$	25,222
Collaborative Research: Bound-Bound and Bound-Free Opacities of Heavy Lowly-Charged r-Process Ions	47.049	1815932	-	30,232
Collaborative Research: Branching in RNA Secondary Structures	47.049	1815832	-	26,968
Collaborative Research: CCRI: New: A Research News Recommender Infrastructure with Live Users for Algorithm and Interface Experimentation	47.070	2232552	-	1,980
Collaborative Research: CCRI: NEW: Building a Batteryless Computing Community through Access to Education, Testbeds, and Tools	47.070	2235002	-	36,597
Collaborative Research: CEDAR--Experimental and Theoretical Investigation of Midlatitude Ionospheric Instability	47.050	2012994	-	47,031
Collaborative Research: CEDAR--Experimental and Theoretical Investigation of Midlatitude Ionospheric Instability	47.050	2012994	-	84,261
Collaborative Research: CIF: Medium: Harnessing Intrinsic Dynamics for Inherently Privacy-preserving Decentralized Optimization	47.070	2106293	-	5,062
Collaborative Research: CISE-MSI: DP: CCF: SHF: MSI/HSI Research Capacity Building via Secure and Efficient Hardware Implementation of Cellular Computational Networks	47.070	2131070	-	185,632
Collaborative Research: CNS Core: Small: Scalable, Flexible, and Dependable Architecture Design for Heterogeneous Internet of Things	47.070	2008049	-	70,807
Collaborative Research: Concentration Polarization Induced Electrokinetic Flows around Dielectric Surfaces	47.041	2127825	-	103,429
Collaborative Research: CPS: Medium: Wildland Fire Observation, Management, and Evacuation using Intelligent Collaborative Flying and Ground Systems	47.070	2204445	52,900	150,983
Collaborative Research: Creativity in Teams : Identifying the Role of Meetings in Fostering Effective Cognitive and Social Processes in Teams	47.075	1951298	55,719	96,197
Collaborative Research: CRISP Type 2: Coordinated, Behaviorally-Aware Recovery for Transportation and Power Disruptions (CBAR-tpd)	47.041	1822436	54,582	75,479
Collaborative Research: CSSI Frameworks/Software: Future proofing the finite element library deal.II - development and community building	47.041	2015848	-	177,715
Collaborative Research: Deconvolving the southern South American Pleistocene-Holocene dust production pathways	47.050	1911340	-	51,376
Collaborative Research: Development and Application of a Framework for Integrated Geodynamic Earth Models	47.050	1925575	-	60,953
Collaborative Research: Dimensions US-BIOTAQ- Sao-Paulo: Scales of Biodiversity-Integrated Studies of Snake Venom Evolution and Function Across Multiple Levels of Diversity	47.074	1822417	-	23,877
Collaborative Research: Distributed Predictive Control of Cold Atmospheric Microplasma Jet Arrays for Materials Processing	47.041	2302219	-	36,507
Collaborative Research: DMREF: Accelerating Adoption of Sintering Assisted Additive Manufacturing Using Integrated Experiments, Theory, Simulation and Data Science	47.049	2119833	-	164,664
Collaborative Research: Dynamic Data Analytics for the Power Grid via Koopman and Perron-Frobenius Operators	47.041	2031573	-	50,789
Collaborative Research: EAGER: SaTC-EDU: Learning Platform and Education Curriculum for Artificial Intelligence-Driven Socially-Relevant Cybersecurity	47.076	2114920	-	58,738

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Clemson University
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2023

Federal Grantor/Pass-Through Grantor/Program Title	Assistance Listing Number	Pass-through Entity Identifying Number	Passed Through to Subrecipient	Total Federal Expenditures
RESEARCH AND DEVELOPMENT CLUSTER, continued				
National Science Foundation, continued				
Collaborative Research: ECO-CBET: Putting entropy to work: Leveraging the role of water organization in peptide binding events to selectively recover rare earths	47.041	2133512	\$ - \$	102,282
Collaborative Research: Efficient Coupling of Multilevel Partial Differential Equation Solvers and Advanced Sampling Methods	47.049	2028346	-	36,878
Collaborative Research: Efficient Learning of Process-Structure-Property Models in Value-Driven Materials Design	47.041	1761136	-	65,871
Collaborative Research: Elements: SciMem: Enabling High Performance Multi-Scale Simulation on Big Memory Platforms	47.070	2103967	-	48,494
Collaborative Research: Elucidating the chemical plasticity of fine roots in response to soil heterogeneities and developing a better parameter to forecast fine root decomposition	47.074	1754679	-	44,862
Collaborative Research: Emergency Response in the Arctic (ERA): Investments for Global Capabilities and Local Benefits (Transfer from RPI)	47.041	2106726	6,226	21,758
Collaborative Research: Feasibility and Fundamentals of Femtosecond-Laser Shock Peening Without Protective Coating in Air Environment	47.041	1762581	-	16,897
Collaborative Research: HCC: Small: Robot-Rooms: Giving Form to Domestic Activity, On the Go	47.070	2221126	-	53,891
Collaborative Research: High-Throughput Exploration of Microstructure-Sensitive Design for Steel Microstructure Optimization to Enhance its Corrosion Resistance in Concrete	47.041	2221098	-	30,882
Collaborative Research: Improved Geochronology-Based Sediment Provenance Analysis Through Physico-Mechanical Characterization of Zircon Transport	47.050	1946496	-	18,939
Collaborative Research: IRNC: Testbed: FAB: FABRIC Across Borders	47.070	2029260	148,691	245,011
Collaborative Research: Laboratory Data Enabled Phase Field Modeling and Data Assimilation for Coupled Two-Phase Fluid Flow and Porous Media Flow	47.049	2152623	-	9,216
Collaborative Research: Litter Arthropods of High Appalachia	47.074	1916263	-	169,337
Collaborative Research: Microbicidal Carbon Dots for Combating Anti-Biotic Resistance and Beyond	47.049	1701424	-	15,250
Collaborative Research: Militias and Paramilitaries in Militarized Interstate Conflicts	47.075	2116693	-	9,704
Collaborative Research: MoDL: Graph-Optimized Cellular Connectionism via Artificial Neural Networks for Data-Driven Modeling and Optimization of Complex Systems	47.041	2234032	-	8,308
Collaborative Research: MRA: Scale, Space, and Time: A Unifying Approach to Aquatic Invasions	47.074	2017795	-	76,064
Collaborative Research: Network Cluster: Bedrock controls on the deep critical zone, landscapes, and ecosystems	47.050	2012227	-	145,076
Collaborative Research: Non-Ideal Majorana Fermions: A Practical Approach to Topological Quantum Computation	47.049	2014157	-	41,226
Collaborative Research: Practices and Research on Student Pathways in Education from Community College and Transfer Students in STEM (PROSPECT S-STEM)	47.076	2138066	9,308	48,269
Collaborative Research: Rational Design and Mechanistic Understanding of Carbon-Based Hybrid Nanostructures for Potent Microbicidal Function	47.049	2102021	-	23,169
Collaborative Proposal: Response of mercury cycling to disturbance and restoration of low-gradient forested watersheds	47.050	1852020	-	24,241
Collaborative Research: Revolutionizing Electric Vehicle Education	47.076	2202134	-	214,585

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Clemson University
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2023

Federal Grantor/Pass-Through Grantor/Program Title	Assistance Listing Number	Pass-through Entity Identifying Number	Passed Through to Subrecipient	Total Federal Expenditures
RESEARCH AND DEVELOPMENT CLUSTER, continued				
National Science Foundation, continued				
Collaborative Research: Revolutionizing Electric Vehicle Education - REU Supplement	47.076	2202134	\$ - \$	7,580
Collaborative Research: RI: Small: Motion Fields Understanding for Enhanced Long-Range Imaging	47.070	2232298	-	1,241
Collaborative Research: SAI-R: Integrative Cyberinfrastructure for Enhancing and Accelerating Online Abuse Research	47.075	2228616	-	22,150
Collaborative Research: Semiparametric and Reinforcement Learning for Precision Medicine	47.049	2210658	-	30
Collaborative Research: Student Pathways in Engineering and Computing for Transfer Success	47.076	1834081	-	738,606
Collaborative Research: SWIFT: LARGE: AI-Enabled Spectrum Coexistence between Active Communications and Passive Radio Services: Fundamentals, Testbed and Data	47.070	2202972	-	63,086
Collaborative Research: Tessellated Structural Architectural Systems for Rapid Construction, Repair, and Disassembly	47.041	1762899	-	4,442
Collaborative Research: Theoretical and observational investigations of multi-point Monin-Obukhov similarity in the convective atmospheric surface layer	47.050	2054983	-	88,040
Collaborative Research: Understanding the Multiscale Behavior of Triboelectric Devices	47.041	1662587	-	688
COVID 19 - Collaborative Research: RAPID: Compounding Human and Natural Disasters: Implication on agriculture sectors	47.041	2030362	-	9,377
Comparative Biomechanics of Hawk Moths with Minute to Giant Proboscises and Diverse Feeding Habits	47.074	2042937	-	297,320
Computational Methods for Large Algebraic Eigenproblems with Special Structures	47.049	2111496	-	78,592
Conference: 2023 National Association of Plant Breeders (NAPB) Annual Meeting to be held July 16-20, 2023 (Greenville, SC)	47.074	2324719	-	844
Conference: Southeastern Analysis Meeting 39	47.049	2247845	-	10,924
Controlled Fragmentation of Polyolefinic Materials triggered by Microwave Irradiation	47.083	2134564	-	151,441
CPS: DFG Joint: Medium: Collaborative Research: Perceptive Stochastic Coordination in Mass Platoons of Automated Vehicles	47.070	2302215	-	18,050
CRIL: CHS: Understanding and Supporting the Use of Self-Driving Vehicles by Persons with Visual Disabilities	47.041	1849924	-	17,541
Developing a Framework for Assessing Identity Development, Retention and Success of STEM Social and Behavioral Scientists (STEM-SBS): The Case of Sociology	47.076	2200695	56,173	146,011
D-ISN: TRACK 1: Modeling Effective Network Disruptions for Human Trafficking	47.041	2039584	190,966	290,310
Domain Decomposition Methods for Coupled Models of Non-Newtonian Fluids and Solid Structures	47.049	2207971	-	83,466
Dynamic Wetting Effects in the Spectrum of the Sessile Drop: Organizing Principles from the Symmetry-breaking Perspective	47.041	1935590	-	153,704
EAGER: Collaborative Research: Building a Community of Mentors in Engineering Education Research Through Peer Review Training	47.041	2037807	-	120,303
EAGER: Evaluating the Feasibility of Estimating Cognitive Load Using Microsaccadic Eye Motion and Oscillation in Pupil Diameter	47.070	1748380	-	6,900
EAGER: Experimental investigation of physical-space scalar structure and unresolved mixing to improve large-eddy simulation of turbulent combustion	47.041	2208136	-	19,954
EAGER: Magnetically Induced Catalysts for Active and Selective CO2 Reduction under Mild Conditions	47.041	2146591	-	138,875

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Clemson University
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2023

Federal Grantor/Pass-Through Grantor/Program Title	Assistance Listing Number	Pass-through Entity Identifying Number	Passed Through to Subrecipient	Total Federal Expenditures
RESEARCH AND DEVELOPMENT CLUSTER, continued				
National Science Foundation, continued				
EAGER: Principles of Motor Skills (re)Learning When Using Powered Exoskeletons	47.041	2207515	\$ 121,825	\$ 288,327
EAGER: SaTC-EDU: Mathematically-grounded metaphors to teach AI-related cybersecurity	47.076	2039616	-	109,802
EAGER-QAC-QSA: Quantum Algorithms for Correlated ElectronPhonon System	47.049	2038011	44,657	58,776
EAGERSitS: Quantifying the Value of Information for Sensor Placements to Improve Soil Signals for Agricultural Water Management	47.041	1841629	-	32,514
Embodied Sensing and Control in Fish-like Swimming Robots via Passive Degrees of Freedom	47.041	2021612	-	136,891
Encrypted Control for Privacy Preserving and Securing Cyber-physical Systems	47.041	1912702	-	71,058
Examining the Role of District Science Coordinator Professional Learning in Supporting and Retaining Science Teachers	47.076	2150781	-	138,135
Explaining Choice, Persistence, and Attrition of Black Students in Electrical, Computer, and Mechanical Engineering	47.041	1734347	13,293	54,519
Exploring and Solidifying Functional Calibration of Computer Models	47.083	2210686	-	30,121
COVID 19 - Exploring the Strategies Used by Two-year Colleges to Support Academic Continuity in STEM Education During the COVID-19 Crisis	47.076	2037809	-	102,011
Fabrication of High Performance Metasurfaces by Nanoimprinting of Refractive Index	47.041	1825787	-	48,218
FMSG: Internet of People and Things 2 Bridging manual to semiautomated processes through Cybermanufacturing Collaborative Intelligence	47.075	2036873	90,798	200,349
Fundamental Insights into Multi-element Grain Boundary Segregation in Nanocrystalline Alloys	47.049	2114832	-	56,909
FW-HTF: Whole-body Exoskeletons for Advanced Vocational Enhancement (WEAVE)	47.075	2242610	29,691	78,140
FW-HTF-P: Adapting to the Future of Robotic Surgery: Understanding Training and Design Environments for Human-Robot Teams	47.041	2222806	-	65,226
FW-HTF-RL: Preparing the Future Workforce for the Era of Automated Vehicles	47.075	2041215	331,781	568,960
FW-HTF-RM: Collaborative Research: Future of Construction Work at the Human-Technology Frontier	47.070	1928527	-	106,223
FW-HTF-T/Collaborative Research: Occupational Exoskeletons and the Human-Technology Partnership: Achieving Scale and Integration into the Future of Work-	47.041	2202862	251,654	525,309
GOALI/Collaborative Research: Control-Oriented Modeling and Predictive Control of High Efficiency Low-emission Natural Gas Engines	47.041	2302217	-	18,468
GRFP - Adam Haberski	47.070	1744593 & 2139915	-	52,075
GRFP - Britney Hudson	47.076	1744593 & 2139915	-	93,195
GRFP - Cierra Sullivan	47.076	2139915	-	55,869
GRFP - Deyrel Diaz	47.076	2139915	-	37,143
GRFP - Gwendolyn Watson	47.076	1744593 & 2139915	-	(17,343)
GRFP - Haley Hostetter	47.070	1744593 & 2139915	-	50,151
GRFP - Katerina Zapfe	47.076	2139915	-	(6,584)
GRFP - Kelli McCourt	47.041	1744593 & 2139915	-	52,935
GRFP - Megan Pitz	47.041	1744593 & 2139915	-	12,675
GRFP - Miranda Grice	47.076	2139915	-	50,324
GRFP - Sarah Donaher	47.041	1744593 & 2139915	-	(8,762)
GRFP - Stephanie Damas	47.070	1744593 & 2139915	-	49,951
GRFP - Tyler Grimm	47.076	1744593 & 2139915	-	5,593
Guest-Induced Electrical Conductivity and Photovoltaic Activity of Metal-Organic Frameworks	47.049	1809092	-	162,240
HCC: Small: Mitigating Online Risks: Designing Social VR to Prevent New Forms of Online Harassment	47.070	2112878	-	101,537

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Clemson University
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2023

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RESEARCH AND DEVELOPMENT CLUSTER, continued				
National Science Foundation, continued				
High Throughput Purification and Quantification of Bionanoparticles on Capillary-Channeled Fiber Stationary Phases	47.049	2107882	\$ - \$	134,622
I Am a Scientist: Moving African American youth beyond participating in STEM activities to committing to a STEM identity	47.076	1906708	-	99,162
Inclusive Data Science Education for Rural Elementary Students: A Research Practice Partnership for Agile Learning	47.076	2031175	139,964	312,612
Information-Based Complexity Analysis for Large-Scale Nonlinear Optimization	47.049	1913006	-	20,657
Interdisciplinary Workshop on Weather and Climate Extremes	47.049	2231896	-	3,375
Investigating Family Science Habitus and Science Capital to Support the Language of Possibility Around Science	47.076	2225149	-	24,041
Investigating Functional Peptides for Asymmetric Hypervalent Iodine Catalysis	47.049	1664920	-	386
IUCRC Phase II+ Clemson University: Advanced Mammalian Biomanufacturing Innovation Center (AMBIC)	47.041	2100442	-	89,030
IUI Track-2 FEC: The Creation of Next-Generation Tools for Neuroscience-Noninvasive Radioluminescence Approaches to Optogenetics	47.083	1632881	-	127,879
IUSE/ PFE: RED: Clemson University: Learning Teams and Innovation Ventures for Adaptable Training in Engineering (CULTIVATE)	47.041	1730576	-	652,321
Large Scale Networking (LSN) Workshop on Operationalizing SDN	47.070	1747856	-	18,126
Low Dimensional Transition Metal Oxyanion Multiferroics	47.049	2219129	29,586	165,494
LSAMP BD: Clemson University, LS SCAMP	47.076	2005030	-	601,696
Mesoscale Modeling of Controlled Degradation and Erosion of Polymer Networks on Abbreviation	47.049	2110309	-	22,969
Metal Coordination and DNA Interactions Control Sulfur and Selenium Antioxidant Mechanisms	47.049	1807709	-	41,162
Methods for improved size resolution for particle impactors	47.041	1804304	-	26,357
Modeling and measuring critical data literacies in informal learning environments	47.076	2024965	-	129,590
Modifying the floral microenvironment: elevational divergence in floral thermoregulatory mechanisms	47.074	2015459	-	157,190
MRI: Acquisition of a Cyberinstrument for AI-Enabled Computational Science & Engineering	47.070	2018069	-	74,501
MRI: Development of Enodia: A Highly Reconfigurable, HPC- Backed Instrument Enabling Multifaceted Interactive Visualization	47.070	1828611	-	116,419
MTM2: Drivers of functional redundancy across microbiomes	47.074	2025541	-	279,272
New Preconditioned Solvers for Large and Complex Eigenvalue Problems	47.049	1819097	-	348
Novel microcantilever sensor using plasminically enhanced nonlinearity	47.041	1809891	-	39,406
NRI: FND: 3D Concrete Printing with Macro-Micro Robots	47.041	1924721	-	215,538
NRT: Technology-Human Integrated Knowledge Education and Research (THINKER)	47.076	1829008	-	601,858
NRT-DESE: Preparing Resilient and Operationally Adaptive Communities through an Interdisciplinary, Venture-based Education (PROACTIVE)	47.076	1633608	-	75,890
Overcoming Impediments to Computer Science Students' Understanding of Code: Scaling Up Automated Methods and Broadening Participation	47.076	1914667	-	40,723
Particle Electrokinetics in Non-Newtonian Microfluidics	47.041	2100772	-	85,168

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Clemson University
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2023

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RESEARCH AND DEVELOPMENT CLUSTER, continued				
National Science Foundation, continued				
PFI-RP: Design and Fabrication of Hardware-Based Security Platform Using Fabrication Variability of Ultra Low Power Memories	47.041	2204502	\$ 39,524	\$ 293,322
PFI-TT: A non-toxic, biobased, and recyclable polyurethane for foam-in-place packaging and rigid foam insulation.	47.041	2122822	-	112,537
Phase I IUCRC Clemson University Site: Advanced Mammalian Biomanufacturing Innovation Center (AMBIC)	47.041	1624641	-	(142)
PHASE II IUCRC Clemson University: Center for Robots and Sensors for Human Well-Being	47.070	1939058	-	63,906
PIRE: Climate Resilient Sustainable Food Production: Controlled Environment Hydroponic Agriculture with Novel Wastewater Treatment & Reuse	47.079	2230696	-	46,663
Planning Grant: Engineering Research Center for Exploring Human-Machine Integrated Systems in Digitally Intensive Manufacturing Environments (HMIS-DIME)	47.041	1936998	-	(19,250)
Planning: ADAPT in SC: AI-enabled Devices for the Advancement of Personalized and Transformative Healthcare in South Carolina	47.083	2210336	-	5,970
Preparing High School Students with Autism for the Future of Remote Software Development Work	47.076	2148720	-	209,833
Production and Exploration of Rydberg Highly Charged Ions	47.049	1806494	-	12,294
QuIC-TAQs: Voltage-Tunable Hybrid Microwave-Acoustic Interconnects for Multi-modal Quantum Memories	47.049	2137776	363,879	662,916
COVID 19 - RAPID: Aptamer-Linked Nano-Plasmon Sensor for Rapid Detection of SARS-CoV-2	47.041	2030828	32,620	35,145
COVID 19 - RAPID: Archiving and Contextualizing Data around Academic Program Delivery during the Covid-19 Pandemic	47.041	2135089	-	68,014
RAPID: Revisiting the compounding storm surge and extreme precipitation events on coastal flooding during hurricane Florence using field data	47.041	1855374	-	23,252
RCN: Advancing Research and Education Through a National Network of Campus Research Computing Infrastructures - The CaRC Consortium	47.070	1620695	17,347	38,974
RET Site: Engaging and Enabling Teachers through Advanced Manufacturing Research	47.041	2206962	-	66,453
REU Site at Clemson, IMPRESS (IMPlanting the ResEarch Seed in Students)	47.049	2050042	-	138,531
REU Site: Nature's machinery through the prism of Physics, Biology, Chemistry and Engineering	47.074	1757658	-	111,023
REU Site: Research Experience for Undergraduates in Advanced Material Sciences	47.049	1950557	-	96,170
REU Site: Solid-State Devices for Electronics, Photonics, and Magnetics Technology	47.041	1560070	-	3,798
REU Supplement for 206-2015104 FW-HTF-T/Collaborative Research: Occupational Exoskeletons and the Human-Technology Partnership: Achieving Scale and Integration into the Future of Work-	47.041	2202862	-	9,093
RII Track-1: ADAPT in SC: AI-enabled Devices for the Advancement of Personalized and Transformative healthcare in South Carolina (Admin)	47.083	2242812	-	1,407
RII Track-2 FEC: Advanced Biomanufacturing: Catalyzing Improved Host Development and High Quality Medicines through Genome to Phenome Predictions	47.083	1736123	-	25,673
RII Track-2 FEC: Advanced Biomanufacturing: Catalyzing Improved Host Development and High Quality Medicines through Genome to Phenome Predictions	47.083	1736123	103,784	153,384
RII Track--4: Controlling Point-Defect Energetics in Complex Oxides Via Interfacial Strain	47.083	2245128	-	26,039
RII Track-4: Experimentally-informed Mesoscale Modeling of Anisotropic Grain Boundary Solute Segregation in Nanocrystalline Alloys	47.083	2033327	-	76,023

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Clemson University
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2023

Federal Grantor/Pass-Through Grantor/Program Title	Assistance Listing Number	Pass-through Entity Identifying Number	Passed Through to Subrecipient	Total Federal Expenditures
RESEARCH AND DEVELOPMENT CLUSTER, continued				
National Science Foundation, continued				
RII Track-4: NSF: Coupling Magnetism and Photoluminescence in New Lanthanide Materials	47.083	2227933	\$ - \$	31,975
RII Track-4: NSF: Enhanced Multiscale Approaches for Simulations of Multicomponent Fluids with Complex Interfaces Using Fluctuating Hydrodynamics	47.083	2131996	-	60,110
RII-BEC: Bridging Collaboration Across South Carolina Academic Institutions to Support Underserved and Underrepresented Community Needs	47.083	2225816	-	102,492
RTG: Coding Theory, Cryptography, and Number Theory	47.049	1547399	-	126,989
SAI-P: Coupling Regional Economic Development with Transportation Planning for Sustainable Emerging Cities	47.075	2228555	-	33,197
SaTC: CORE: Medium: Collaborative: Cryptographic Provenance for Digital Publishing	47.070	1940679	-	121,136
SaTC: CORE: Small: Leveraging Physical Side-Channel Information to Build Detection-Based Rowhammer Defenses	47.070	2147217	-	69,986
SCC-PG : Human-AI Teaming for Flood Evacuation Decision Making	47.041	2125283	28,429	91,293
SCC-PG: Just in Time Intervention for Patients with Chronic Heart Diseases in Arizona Tribes	47.070	2213915	34,671	53,864
SCH: INT: Collaborative Research: An intelligent Pervasive Augmented reality therapy (iPAL) for Opioid Use Disorder and Recovery	47.070	2019389	9,164	11,547
SCH: INT: Collaborative Research: Crowd in Action: Human-Centric Privacy-preserving Multi-scale Data Analytics for Environmental Public Health	47.070	1949640	-	68,248
Self-Healable Thermoplastic Copolymers	47.049	2003005	-	48,380
SHF: Small: Using Error-Bounded Lossy Compression to Improve High-Performance Computing Systems and Applications	47.070	1910197	-	8,984
Southeastern Number Theory Meetings	47.049	1902170	-	7,614
Structure Regulation of Ionic Copolymers: Unlocking Ionic Clusters through Solvent Shear Adaptation, a Computational-Experimental Insight	47.049	1905407	-	100,249
Supplement for 206-2012481: Interaction of Tool Wear and the Machining Affected Zone in Nickel-Based Superalloys	47.041	1760809	-	56,154
COVID 19 - The Center for Aviation and Automotive Technological Education using ELearning: Providing E-learning Resources and Increasing Knowledge about Their Effectiveness	47.076	2033801	101,695	1,005,594
Travel: NSF Student Travel Grant for 2021 IEEE International Conference on Bioinformatics and Biomedicine (BIBM)	47.074	2131662	-	12,000
Uncertainty Principles in Reproducing Kernel Hilbert Spaces	47.049	2000236	-	58,061
Uncovering Fundamental Transport Principles in Novel, Ultraclean Lignin Based Hydrogels for Bioseparations	47.041	1915787	-	72,560
Understanding Particle Scale Motion Initiation Physics for Loose-laid Building Rooftop Aggregates in Severe Windstorms	47.041	1760999	-	55,510
Urbanization and Rural Land Rights Negotiations	47.075	1918352	-	80,340
Using Storytelling and a Justice Oriented STEM After-School Club as Critical Tools for Cultivating African American Youths' STEM Identities	47.076	2214740	58,048	215,515
Using Whiptail Lizards to Understand the Integration of Environmental and Host Genetic Effects on Host-Associated Microbiota	47.074	2105604	-	173,201
What leads to better outcomes in informal STEM-based environmental education programs for youth?	47.076	1906610	144,356	209,906
COVID 19 - RAPID: Cyber-Hostility and COVID-19	47.075	2031002	-	66,684

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Clemson University
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2023

Federal Grantor/Pass-Through Grantor/Program Title	Assistance Listing Number	Pass-through Entity Identifying Number	Passed Through to Subrecipient	Total Federal Expenditures
RESEARCH AND DEVELOPMENT CLUSTER, continued				
National Science Foundation, continued				
Pass-through programs from:				
American Society for Engineering Education Engineering Fellows Postdoctoral Fellowship Program	47.041	769-2100	\$ - \$	85,774
Engineering Fellows Postdoctoral Fellowship Program - Jessica Aviles	47.041	769-2050	-	77,448
Benedict College				
CISE-MSI: DP: CPS: Statistical and Artificial Intelligence-based Cyberattack Detection Models for Connected Vehicles	47.070	20-88162	-	78,350
Excellence in Research: Securing Machine Learning Against Adversarial Attacks for Connected and Autonomous Vehicles	47.083	20-88882-11410	-	53,301
Boise State University Graduate Identity Formation Through Teaching (GIFT)	47.076	8065-PO139452	-	19,444
Cornell University RESEARCH - PGR: Functional Genomics of Beneficial Legume-microbe Interactions	47.074	20-05	-	14,242
East Carolina University IUSE: EHR: Assessing Virtual Reality Field Experiences for Enhanced Learning in the Geosciences	47.076	A19-0220-S001	-	17,216
Furman University EAGER: Illuminating the Consequences of Membrane Association on Quantum-Based Magnetosensing	47.074	FU10268CU	-	20,261
Georgia Institute of Technology GOALI: Developing An Eco-Genomic Framework for Biofilter Operation	47.041	AWD-003526-G1	-	66,974
Glossifi, Inc. STTR Phase I: Blockchain Ontology and Services for Monitoring and Performing Analytics on Smart Contracts	47.041	none	-	76,801
Harvard University EAGER: SUPER: Optically-enhanced superconductivity in hydrogen- based materials	47.049	134393-5120438	-	4,087
Iowa State University				
CPS: Medium: Data-driven Causality Mapping, System Identification and Dynamics Characterization for Future Power Grid	47.041	021700A	-	123,562
Johns Hopkins University				
2020-16/20: Mechanistic-Informed Hybrid Models for CHO Fed-batch and Perfusion Nutrient Control	47.041	2005435288	-	39,531
2021-21.23: Correlating Charge Variants and Redox State to Improve a Critical Product Quality Attribute	47.041	2005446113	-	58,350
2021-26: Deep Learning Framework for Training Set Reduction during Data-driven Media Optimization	47.041	PO #2005426019	-	82,781
IUCRC Phase II+: Johns Hopkins University: Advanced Mammalian Biomanufacturing Innovation Center (AMBIC)	47.041	2005820961	-	13,113
JHU I/UCRC for advance mammalian biomanufacturing- Redox Speciation and Electrochemical Probing in AMBIC Media	47.041	2004594165	-	(611)
JHU I/UCRC for advanced mammalian biomanufacturing - Enhancing Stability in CHO cells: The linkages between culture stress, chromatin, and gene expression	47.041	2004594243	-	11,962
JHU I/UCRC for advanced mammalian biomanufacturing- 2020- 16/20: Mechanistic-informed Hybrid Models for CHO Fed-batch and Perfusion Nutrient Control	47.041	2004987881	-	(1,433)
JHU I/UCRC for advanced mammalian biomanufacturing: Changes in Metal Speciation Within AMBIC 1.1 Culture Media	47.041	2004615676	-	29

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Clemson University
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2023

Federal Grantor/Pass-Through Grantor/Program Title	Assistance Listing Number	Pass-through Entity Identifying Number	Passed Through to Subrecipient	Total Federal Expenditures
RESEARCH AND DEVELOPMENT CLUSTER, continued				
National Science Foundation, continued				
Pass-through programs from:				
Louisiana Tech University				
Research Initiation: Influence of Self-efficacy and Social Support on Persistence and Achievement in Chemical Engineering Sophomores	47.041	AWD-30000087	\$ - \$	51,396
Sophomore Fast-Forward: A Summer Bridge Program to Support Retention in Engineering	47.076	32-0969-54130-CU	-	17,531
North Carolina Central University				
Excellence in Research: Unveiling the Potent Photo-activated Antiviral Functions of Carbon Dots and Derived Hybrid Dots	47.049	A19-0037-S001 / P0108460	-	51,813
North Carolina State University				
STC: Science and Technologies for Phosphorus Sustainability (STEPS) Center	47.041	2020-0165-09	-	64,700
Northern Arizona University				
Collaborative Research: CCRI: New: Distributed Sensing & Computing Over Sparse Environments (DISCOVER) Platform	47.070	1004978-01	-	36,649
Pennsylvania State University				
Simulation-Based Design of Polymer Nanocomposites for Structural Applications	47.041	6091-CU-NSF-4438	-	(916)
Purdue University				
Collaborative Research: Digitization TCN: Digitizing collections to trace parasite-host associations and predict the spread of vector-borne disease	47.074	10001564-004	-	5,630
Research: Collaborative Research: Sustaining and Scaling the impact of the MIDFIELD project at the American Society for Engineering Education	47.041	10001998-023	-	13,061
SC EPSCoR/IDeA				
Computationally Directed Synthesis of Substituted Ferrites for Enhanced Energy Transfer	47.070	20-GE04	-	16,626
Tennessee Tech University				
CC* Integration-Large: Prototyping a Secure Distributed Storage Infrastructure Accelerating Big Science	47.070	BL149555823	-	96,279
The Citadel				
MCA - Exploring Algal Carbon Capture Potential in High pH Laboratory and Field-Scale Systems	47.050	321307-01-00/2219258	-	45,226
University at Buffalo				
NSF Convergence Accelerator Track F: A Disinformation Range to Improve User Awareness and Resilience to Online Disinformation	47.083	R1286044	-	97,764
NSF Convergence Accelerator Track F: Online Deception Awareness and Resilience Training (DART)	47.084	R1328417	-	84,667
University of Arizona				
PIRE: Dust Stimulated Draw-Down of Atmospheric CO2 as a Trigger for Northern Hemisphere Glaciation	47.000	467895	-	1,525
University of Arkansas				
R11 Track-2 FEC: Membrane Purification Platform for Continuous Biomanufacturing of Viral Vectors and Virus-like...	47.083	UA2023-337 / SPC-006458	-	196,207
University of California Davis				
Computational Infrastructure for Geodynamics	47.050	201504240-01 / A17-0253-S002	-	23,478

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Clemson University
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2023

Federal Grantor/Pass-Through Grantor/Program Title	Assistance Listing Number	Pass-through Entity Identifying Number	Passed Through to Subrecipient	Total Federal Expenditures
RESEARCH AND DEVELOPMENT CLUSTER, continued				
National Science Foundation, continued				
Pass-through programs from:				
University of Georgia				
Science Coordinators Advancing a Framework for Outstanding Leadership Development (SCAFFOLD)	47.076	SUB00002448	\$ - \$	113,745
University of Kentucky				
RII Track-2 FEC: A Multiscale, Multiphysics Modeling Framework for Genome-to-Phenome Mapping via Intermediate Phenotypes	47.070	3200002098-19-053 / PO 7800004458	-	260,953
University of Missouri - Columbia				
CAREER: An Investigation of Microplastics Fate and Contaminant Transport in Storm Runoff, The Nexus of Environmental Engineering and Material Sciences	47.041	C00081534-1	-	4,524
University of Nebraska - Lincoln				
Achieving Critical Transformations in Undergraduate Programs in Mathematics (ACT UP Math)	47.076	25-0536-0059-005	-	39,355
University of North Carolina - Chapel Hill				
FABRIC: Adaptive Programmable Research Infrastructure for Computer Science and Science Applications	47.070	5115814	-	238,700
University of North Carolina at Charlotte				
Planning Grant: Engineering Research Center for Integrated Systems Operations and Planning of a Carbon Neutral Electric Grid	47.041	20210547-01-CLE	-	9,912
University of Notre Dame				
SII-Center: SpectrumX - An NSF Spectrum Innovation Center	47.049	204303CU	-	63,963
University of Pittsburg				
Dynamic Risk-Averse Optimization of Distributed Energy Resource Aggregators	47.041	CNVA00060548 (12215-1)	-	(1)
University of South Carolina				
RII Track 1: Materials Assembly and Design Excellence in South Carolina: MADE in SC	47.083	18-3494 22000-FB02/PO#2000036759	-	653,973
RII Track 2 FEC: Enabling Factory to Factory (F2F) Networking for Future Manufacturing	47.083	23-5089 PO # 2000066632/ USC 10011427	-	16,822
University of Texas				
RESEARCH-PGR: Genomic and Epigenomic Analyses of Fiber Development in Allotetraploid Cottons	47.074	UTA-18-001133	-	5,317
University of Utah				
CloudLab Phase II: Community Infrastructure to Expand the Frontiers of Cloud Computing Research	47.070	10045119-CLEM PO# U000099152	-	23,210
CloudLab Phase III: Expanding the Frontiers of Cloud Computing Through World-Class Community Infrastructure	47.070	10056678-Clemson / PO U000284314	73,403	210,512
University of Vermont				
EAGER: International Type II: A Team Science Examination of Virtual, Hybrid, and In-Person Strategies for Strengthening International Collaboration on Agritourism Research	47.079	AWD00000448SUB00000202/ PO# 194503	-	54,509
Virginia Polytechnic Institute				
Establishing a Design Framework for Multi-functional composites by Leveraging Kirigami Cutting, Multi-stability, and Multi-level Optimization	47.041	480991-19244	-	16,652
Establishing a Design Framework for Multi-functional composites by Leveraging Kirigami Cutting, Multi-stability, and Multi-level Optimization	47.041	480991-19244	-	46,928
LEAP-HI: Safety and Learning from Errors and Near Misses in the Human-Automation Interaction of Socio-Technical Infrastructure Systems	47.041	480665-19244	-	59,158

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Clemson University
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2023

Federal Grantor/Pass-Through Grantor/Program Title	Assistance Listing Number	Pass-through Entity Identifying Number	Passed Through to Subrecipient	Total Federal Expenditures
RESEARCH AND DEVELOPMENT CLUSTER, continued				
National Science Foundation, continued				
Pass-through programs from:				
Virginia Polytechnic Institute, continued				
Learning Environments with Augmentation and Robotics for Next-gen Emergency Responders (LEARNER)	47.083	419355-19244	\$ -	\$ 286,578
NRI: INT: Collaborative Research: A Robotic Platform for Body-Scale Human Physical Interaction Simulation in Embodied Virtual Reality	47.041	480463-19244	-	44,153
Total National Science Foundation			<u>2,678,699</u>	<u>27,002,652</u>
Veterans Affairs				
The Health and Mental Health Needs of Rural Veterans and Their Families	64.000	36C24823C0001 PO# 573-C32115	-	145,697
Total Veterans Affairs			<u>-</u>	<u>145,697</u>
Environmental Protection Agency				
Destruction of PFAS in Leachate and Groundwater	66.509	83963001	-	6,392
Pollution Prevention Grant Program	66.708	02D35822	-	29,716
Pollution Prevention Grants Program	66.708	NP-01D16320	-	10,989
Pollution Prevention Incentives States	66.708	00D84518	-	14,003
Pass-through programs from:				
Garver, LLC				
Technologies and Approaches to Minimize Brominated and Iodinated DBPs in Distribution Systems	66.511	21W20070	-	54,317
Medical University of South Carolina				
Developing an Integrated Framework for Evaluating Toxicity of Real-Life Chemical Mixtures	66.509	A23-0054-S001	-	71,610
South Carolina Department of Health and Environmental Control				
Developing a Watershed Based Plan for Edisto Island and the Town of Edisto Beach	66.460	EQ-0-548	-	7,080
Development and Implementation of the Tidal Saltwater SC Adopt-a-Stream Program	66.461	None	-	57,668
EJ Strong: Strengthening Environmental Justice Communities for Disaster in South Carolina	66.312	EQ-1-679	-	3,836
S.S. Papadopoulos & Associates, Inc.				
Laboratory Evaluation of Bioremediation for Groundwater at the Lane Street Superfund Site	66.000	none	-	6,662
Total Environmental Protection Agency			<u>-</u>	<u>262,273</u>
Nuclear Regulatory Commission				
Coupling Life-Cycle Impact Assessment and Risk Assessment for Sustainability-Informed Decision Making				
	77.008	31310022M0004	-	88,109
Nuclear Faculty Development at Clemson University	77.008	31310018M0037	-	2,922
Tenure-Track Junior Faculty Position in Actinide Chemistry at Clemson University				
	77.008	31310022M0029	-	13,062
U.S. NRC Fellowship Education Grant at Clemson University	77.008	31310022M0006	-	50,208
US NRC Fellowship Education Grant at Clemson University	77.008	31310018M0006	-	(13)
Total Nuclear Regulatory Commission			<u>-</u>	<u>154,288</u>
Department of Energy				
Accelerated Discovery of Protection System and Laser Processing of Protective Coatings on CMC for Hydrogen Turbines	81.089	DE-FE0032231	21,741	102,689
Additive Manufacturing of Circumferentially Embedded Optical Probe Modules for In Situ Monitoring of Coal-Fueled Steam Turbines	81.089	DE-FE0031826	-	192,795
All-digital Sensor System for Distributed Downhole Pressure Monitoring in Unconventional Fields	81.089	DE-FE0031781	330,815	532,961

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Clemson University
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2023

Federal Grantor/Pass-Through Grantor/Program Title	Assistance Listing Number	Pass-through Entity Identifying Number	Passed Through to Subrecipient	Total Federal Expenditures
RESEARCH AND DEVELOPMENT CLUSTER, continued				
Department of Energy, continued				
An Entirely Wood Floor System Designed for Biogenic Carbon Storage, Adaptability, and End of Life De/Re/Construction	81.135	DE-AR0001640	\$ - \$	219,794
An Entirely Wood Floor System Designed for Biogenic Carbon Storage, Adaptability, and End of Life De/Re/Construction	81.135	DE-AR0001640	-	2,740
An Inverse Design Methodology to Fabricate Low-Cost Agile Tools for Manufacturing Lightweight Automotive Components	81.086	DE-EE0010203	44,364	129,234
Analog Quantum Simulation for Solid-State Spectroscopies	81.049	DE-SC0022874	-	72,757
Artificially Intelligent Manufacturing Paradigm for Composites (AIM for Composites)	81.049	DE-SC0023389	157,595	412,424
CFA-22-26530 Quantifying Aerosol Deposition Mechanisms in Model Dry Cask Storage Systems	81.121	DE-NE0009276	-	25,987
Combined Field and Laboratory Studies of Plutonium Aging and Environmental Transport	81.112	DE-NA0004095	-	43,045
Community Collaboration for Counselors (CCC): Increasing School-Based Mental Health Support	81.184	S184X220019	-	56,355
Crystal Growth and Quantum Phases of Frustrated Rare Earth Oxides	81.049	DE-SC0020071	-	126,432
Developing a Thermochemical Database of Radionuclide Reactions at the Mineral-Water Interface for Improved Nuclear Waste Repository Performance Assessment	81.121	DE-NE0008940	-	209,701
Discerning Influences from Enthalpy and Entropy at Aqueous Interfaces Involved in Biomass Conversions in Porous Catalysts	81.049	DE-SC0021170	-	139,674
Electrocatalytically Upgrading Methane to Benzene in a Highly Compacted Microchannel Protonic Ceramic Membrane Reactor	81.089	DE-FE0031871	4,221	205,206
Electrochemical Hydrogen Isotope Fractionation - Fundamental Insights Leading to Process Scale Up	81.049	DE-SC0022190	-	70,414
EM-Enhanced HyPor Loop for Fast Fusion Fuel Cycle	81.135	DE-AR0001376	52,976	180,649
Enabling Partnership between South Carolina and NREL for Advancing Opportunities in Plastics Recycling Research (EPSCOR for Plastics Recycling)	81.049	DE-SC0021367	-	192,947
Functionally Designed Ultra-Lightweight Carbon Fiber Reinforced Thermoplastic Composites Door Assembly	81.086	DE-EE0007293	52,771	93,161
Fundamental Understanding of Thermal Gradients and Stress States on Mass Transport in Fusion Materials	81.049	DE-SC0023385	-	69,413
GSI-22-27480 Advanced Raman Spectroscopy for Characterization of f-Element Coordination Chemistry and Multi-Phasic Nuclear Waste Forms	81.121	DE-NE0009314	-	244,767
High Speed Medium Voltage CHP System with Advanced Grid Support	81.086	DE-EE0008409	92,669	90,408
How do wildfire severity and post-fire precipitation influence fate and transport of pyrogenic organic carbon and nitrogen in terrestrial-aquatic interfaces?	81.049	DE-SC0023311	-	29,009
Human Factors and Technologies Design to Improve User Acceptance of Pooled Rideshare (PR) for Increasing Transportation System Energy Efficiency	81.086	DE-EE0009205	19,593	195,833
Improving Models of Stand and Watershed Carbon and Water Fluxes with More Accurate Representations of Soil-Plant-Water Dynamics in Southern Pine Ecosystems	81.049	DE-SC0023310	-	32,355
Improving the Sensitivity and Precision for Plutonium Isotope Ratio Measurements by Thermal Ionization Mass Spectrometry Using a Novel Polymer Fiber	81.112	DE-NA0004096	-	41,038
Ionic Polymers Under Dynamic Conditions	81.049	DE-SC0019284	-	43,780
Lignin Fractionation and Valorization: Focusing on both Value and Quality	81.087	DE-EE0008502	75,754	171,519
Manufacturing Demonstration of a Large-scale, Multi-material Passenger Vehicle Sub-system	81.086	DE-EE0009656	157,517	829,379

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Clemson University
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2023

Federal Grantor/Pass-Through Grantor/Program Title	Assistance Listing Number	Pass-through Entity Identifying Number	Passed Through to Subrecipient	Total Federal Expenditures
RESEARCH AND DEVELOPMENT CLUSTER, continued				
Department of Energy, continued				
Megawatt Scale, Multi-Source Heat Recovery System with a Flexible Grid Interconnect	81.086	DE-EE0009423	\$ 148,429	\$ 273,558
Nacelle Testing for Offshore Wind Turbines with Hardware-In-the-Loop	81.087	DE-EE0008962	-	482,287
Optimizing Melt Processed Phosphate Glass Waste Forms via Composition-Property-Structure Correlations	81.121	DE-NE0008939	-	199,634
Phosphate Mineral and Glass Waste Forms for Advanced Immobilization of Chloride- and Fluoride-based Waste Streams	81.121	DE-NE0009196	-	18,808
Process Intensification Scale-Up of Direct Lit Electrolysis	81.135	DE-AR0001375	-	261,283
Quantifying Radionuclide Sorption to Engineered Barrier Materials under Elevated Temperature and Ionic Strength Conditions	81.121	DE-NE0008941	-	199,348
Rapid, Non-Radioactive Methods for Prediction and Quantification of Radiolytic Radical Decomposition Products in Nuclear Separations	81.121	DE-NE0009195	-	144,315
Redox Cycles of Novel High-Entropy Perovskite Oxides for Clean Fuel Production through Solar Thermochemical Water and Carbon Dioxide Splitting	81.049	DE-SC0023407	-	199,018
Robust in Situ Strain Measurements to Monitor Carbon Dioxide (CO2) Storage	81.089	DE-FE0028292	-	35,841
Sampling Rare Events In Aqueous Systems Using Molecular Simulations	81.049	DE-SC0015448	-	10,399
Self-healable Copolymer Composites for Extended Service of H2 Dispensing Hoses	81.087	DE-EE0008827	-	286,126
Test and Validate Distributed Coaxial Cable Sensors for in situ Condition Monitoring of Coal-Fired Boiler Tubes	81.089	DE-FE0031765	216,573	563,486
The 3P Program: Phenotyping x Prediction = Productivity	81.135	DE-AR0001134	404,104	491,284
Tool for Reliability Assessment of Critical Electronics in PV (TRACE-PV)	81.087	DE-EE0009348	44,114	122,009
Understanding Twinning and Deformation in High Entropy Alloy: University Nuclear Leadership Program: Scholarship and Fellowship Support	81.049	DE-SC0023232	-	98,343
	81.121	DE-NE0009240	-	53,051
Pass-through programs from:				
Achates Power, Inc.				
New Two-Cylinder Prototype Demonstration and Concept Design of a Next Generation Class 3-6 Opposed Piston Engine	81.086	Prime DE-EE0009202	-	476,452
Opposed-Piston 2-Stroke Hybrid Commercial Vehicle System	81.086	Prime DE- EE0009880	-	330,922
Applied Engineering Concepts, Inc				
Physical Layer Authentication of Wired Networks (PAWN) Phase II	81.049	PAWN-20-0002	-	6,442
Argonne National Laboratory				
Asynchronous Multi-Level I/O Techniques to Cache and Consolidate Checkpoints At Scale	81.000	2F-60270	-	43,505
Benedict College				
Edge-Centric Cloud-Based Distributed Surveillance for Environmental Detection Surveys	81.000	20-82001-54040	-	15,115
Case Western Reserve University				
From Structured Solvents to Hybrid Materials for Chemically Selective Separations of CO2: Mechanisms, Stability and Interfaces	81.049	RESS16683	-	210,542

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Clemson University
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2023

Federal Grantor/Pass-Through Grantor/Program Title	Assistance Listing Number	Pass-through Entity Identifying Number	Passed Through to Subrecipient	Total Federal Expenditures
RESEARCH AND DEVELOPMENT CLUSTER, continued				
Department of Energy, continued				
Pass-through programs from:				
Forward Photonics, LLC				
Wavelength Beam Combination for Multi-Band Countermeasures Applications	81.049	103486	\$ - \$	55,995
Georgia Institute of Technology				
Demonstration of a 5 MVA Modular Controllable Transformer for a Resilient and Controllable Grid	81.122	AWD-103072-G1 / PO 5058541	-	363,763
Horry County Schools				
Horry County Schools Career Technology Education Professional Development Consulting	81.000	PO 1000429103	-	2,303
Montana State University				
High pH/High Alkalinity Cultivation for Direct Atmospheric Air Capture and Algae Bioproducts (High-DAC)	81.087	MSU ID G213-22-W9180	-	36,412
Natl Tech & Engin Solutions of Sandia				
Adaptive Protection and Control for High Penetration PV and Grid Resilience	81.087	2143420	-	147,111
Experimental Investigation of Additive Manufactured Materials in Various Loading Conditions	81.000	PO# 1908748	-	(50)
Global Optimization of Large-Scale AC Power Flow Problems	81.000	PO# 1787843	-	(1,957)
NaSOW p.r. 1886058	81.000	1678873	-	(12,399)
Oak Ridge National Laboratory				
Go! Program: Controlling Quantum Interactions at Interfaces Over Low Dimensional Materials for Photocatalytic Reactions	81.000	PO# 4000192727 (Old PO = 4000171652) ('Basic O#4200000754	-	53,015
Microextraction sample preparation technique for elemental and isotopic analysis	81.000	4000192717/ old 4000185303	-	107,759
Semplastics EHC LLC				
Coal-Waste-Enhanced Filaments for Additive Manufacturing of High-Temperature Plastics and Ceramic Composites	81.089	3D-2022-01	-	32,606
High Strength, Encapsulated, Commercially Useful Components and Particles Made from Coal Combustion Residuals	81.089	CCR-2020-01	-	93,331
Solution Spray Technologies, LLC				
Novel Thermal Barrier Coatings for Gasoline Spark Ignition Engines Phase II funding	81.049	none	-	50,774
Texas A&M University				
IoT Based Comfort Control And Fault Diagnostics System For Energy Efficient Homes	81.086	M2001448	-	75,926
The University of Chicago				
EFRC Catalyst Design for Decarbonization Center (CD4DC)	81.049	AWD103461 (SUB00000768)	-	3,496
Tufts University				
Transmission Expansion Planning Models for Offshore Wind Energy	81.087	104045 / PO# EP0219630	-	38,276
University of Arkansas				
Integrated Process Optimization for Biochemical Conversion	81.087	UA2020-191	-	5,191
University of California, Riverside				
Understanding the Impact of Pollution Aerosol from Los Angeles/Long Beach on Clouds and Radiation in and Upwind of the EPCAPE Study Domain	81.049	S-001593	-	82,550

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Clemson University
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2023

Federal Grantor/Pass-Through Grantor/Program Title	Assistance Listing Number	Pass-through Entity Identifying Number	Passed Through to Subrecipient	Total Federal Expenditures
RESEARCH AND DEVELOPMENT CLUSTER, continued				
Department of Energy, continued				
Pass-through programs from:				
University of Connecticut				
In-situ Measurement and Validation of Uranium Molten Salt Properties at Operationally Relevant Temperatures	81.121	PO# 317174 / KFS# 5649590	\$ - \$	13,231
University of Michigan				
Chemical Partitioning and Radiation Damage in Concentrated Alloys	81.049	SUBK00016769 / PO# 3007236865	-	66,432
University of Minnesota				
Center for Programmable Energy Catalysis (CPEC)	81.049	A010469801	-	87,117
Energy Frontier Research Center for Inorganometallic Catalyst Design	81.049	A004527501	-	80,953
University of Nebraska - Lincoln				
Systems Analysis of the Physiological and Molecular Mechanisms of Sorghum Nutrient Use Efficiency, Water Use Efficiency and Interactions with the Soil Microbiome	81.049	25-1215-0123-006	-	3,752
University of North Carolina - Charlotte				
Optimal Reconfiguration and Resilient Control Framework for Real-Time Photovoltaic Dispatch to Manage Critical Infrastructure (REDIS-PV)	81.087	20190382-01-CLE	-	174,255
Resilient Community Microgrids with Dynamic Reconfiguration to Serve Critical Loads in the Aftermath of Severe Events	81.087	20200875-02-CLE	-	22,179
University of North Carolina - Greensboro				
How does mercury methylation respond to intensive forest management and the creation of anoxia in floodplain soils?	81.049	21200543	-	14,975
University of South Carolina				
Center for Hierarchical Waste Form Materials (CHWM)	81.049	17-3256/USC#13020-FC78/ PO#2000030148	-	250,456
University of Tennessee				
Ultra-Light Tightly-Integrated Modular Aviation-Transportation Enabling Solid-State Circuit Breaker (ULTIMATE-SSCB)	81.135	A21-1349-S002	-	59,945
University of Texas at San Antonio				
Cybersecurity Manufacturing Innovation Institute - CyManII	81.086	1000003894	-	143,183
University of Utah				
Enhanced Geothermal System Concept Testing and Development at the Milford City, Utah Forge Site	81.087	10039612-Clemson-3-2514-AF1	-	613,509
University of Wisconsin - Madison				
Triad National Security Advanced Manufacturing of High-Entropy Alloys as Cost-Effective Plasma Facing Components for Fusion Power Generation.	81.135	0000002743	-	38,574
West Virginia University				
Clean Energy Smart Manufacturing Innovation Institute (CESMII) - Hybrid Modeling for Energy Efficient CNC Grinding	81.087	20-309-CU / PO# MM000338928	-	31,110
Winston Salem State University				
Training a Diverse Quantum Workforce in Carolinas through Establishing the Winston-Salem Quantum Education Collaboratory (WS-QEC)	81.049	211469A	-	77,374
Total Department of Energy			1,823,236	12,089,381

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Clemson University
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2023

Federal Grantor/Pass-Through Grantor/Program Title	Assistance Listing Number	Pass-through Entity Identifying Number	Passed Through to Subrecipient	Total Federal Expenditures
RESEARCH AND DEVELOPMENT CLUSTER, continued				
Department of Education				
Building Capacity for Early Language Learners: Bridges between Reading Recovery and ESOL	84.365	T365Z220099	\$ -	\$ 86,049
Co-DREAM OER (Collaborative Development of Robotics Education and Advanced Manufacturing Open Educational Resources)	84.116	P116T210023	8,329	243,461
Developing a Sentence Writing Intervention for Young Struggling Writers	84.324	R324B200016	-	113,653
Engineers for a Global System: Global Learning and Engineering+Language Programs (at Clemson University)	84.016	P016A200057	-	38,995
English Learner Instruction: Building Capacity Through Design	84.365	T365Z210089	-	390,074
GAANN: Molecular Engineering in Sustainability and Health	84.200	P200A210105	-	249,235
GAANN-Leadership development for Ph.D. students in Electrical and Computer Engineering	84.200	P200A180009	-	30,047
STEM Teacher Learning Progression (CU-TLP)	84.423	S423A200008	-	1,152,836
Pass-through programs from:				
Lexington Technology Center				
Lexington Technology Center 2019-2020 Faculty Professional Development	84.000	2019-2020	-	915
South Carolina Commission on Higher Education				
Addressing Student Learning Loss in Secondary ELA and Science	84.425	H63010497523	-	405,552
University of Virginia				
Build the FRaME: Using Feedback, Reflection, and Multimedia to Teach Evidence-Based Practices for Effective Classroom Management	84.324	GM10187.PO#2292144	-	81,690
Total Department of Education			8,329	2,792,507
National Historical Publications and Records Grants				
Wichoooyake kin agli - They Bring the Stories Back: Connecting Lakota Wild West Performers to Pine Ridge Community	89.003	PL-103356-22	-	5,273
Total National Historical Publications and Records Grants			-	5,273
Department of Health and Human Services				
Administrative Supplement: Drosophila Models of Rare Mendelian Disorders of Chromatin Modification	93.865	3F31HD106719-02S1	-	1,092
Advanced Nursing Education Workforce (ANEW)	93.247	5T94HP32896-04-00	96,534	745,800
Approaches for genetic manipulation of Naegleria fowleri	93.855	1R21AI175463-01	-	32,889
Arsenic's Effects on the Intestinal Stem Cell Niche	93.113	1R15ES031766-01A1	-	253,307
Assessing Cognitive and Psychosocial mechanisms of Useful Field of View Cognitive Training using Ecological Momentary Assessment	93.866	7R21AG060216-03	30,864	35,175
ATTRACT: Assessment of Temporomandibular Joint Morphology, Mechanics, And Mechanobiology in Class II and III Target and Surgical Phenotypes	93.121	1U01DE031512-01	-	126,351
ATTRACT: Assessment of Temporomandibular Joint Morphology, Mechanics, And Mechanobiology in Class II and III Target and Surgical Phenotypes	93.121	5U01DE031512-02	-	98,200
Building the Evidence Base for Vomit Clean-Up Procedures in Long-term Care Facilities.	93.226	5R01HS025987-03	28,679	193,503
Call Me Doctor ESTEEMED Scholars Program at Clemson University	93.286	1R25EB033076-01	-	10,191
Capillary-Channeled Polymers Fibers and Films - A Platform Technology for Exosome Isolation and Analytics	93.859	1R01GM141347-01A1	-	86,144
CDC-HOP Supplemental Project - Childhood Obesity Prevention	93.319	5 NU58DP006562-05-00	-	38,767
Cell and matrix interactions in diabetic vascular tissue engineering models	93.839	5R01HL133303-04	-	216,474

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Clemson University
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2023

Federal Grantor/Pass-Through Grantor/Program Title	Assistance Listing Number	Pass-through Entity Identifying Number	Passed Through to Subrecipient	Total Federal Expenditures
RESEARCH AND DEVELOPMENT CLUSTER, continued				
Department of Health and Human Services, continued				
COBRE Human Genetics - Admin Core	93.859	5P20GM139769-02 REVISED	\$ - \$	847
COBRE Human Genetics - Alexandrov	93.859	5P20GM139769-02 REVISED	-	110,050
COBRE Human Genetics - Duren	93.859	5P20GM139769-02	-	57,557
COBRE Human Genetics - GwdGen Flanagan-Steet	93.859	5P20GM139769-02 REVISED	52,011	52,011
COBRE Human Genetics - Konkel	93.859	5P20GM139769-02 REVISED	-	126,528
COBRE Human Genetics - Morgante	93.859	5P20GM139769-02 REVISED	-	195,099
COBRE Human Genetics - Research Core	93.859	5P20GM139769-02 REVISED	-	98,379
COBRE Human Genetics - YR2 Admin Core	93.859	5P20GM139769-03	19,614	115,431
COBRE Human Genetics - YR2 Alexandrov	93.859	5P20GM139769-03	-	64,772
COBRE Human Genetics - YR2 Duren Pilot	93.859	5P20GM139769-03	-	35,085
COBRE Human Genetics - YR2 Flanagan	93.859	5P20GM139769-03	-	63,250
COBRE Human Genetics - YR2 Konkel	93.859	5P20GM139769-03	-	16,396
COBRE Human Genetics - YR2 Larsen Pilot Project	93.859	5P20GM139769-03	-	132,438
COBRE Human Genetics - YR2 Li Pilot	93.859	5P20GM139769-03	-	124,852
COBRE Human Genetics - YR2 Morgante	93.859	5P20GM139769-03	-	96,260
COBRE Human Genetics - YR2 Research Core	93.859	5P20GM139769-03	-	80,733
COBRE Human Genetics - YR2 Wang Pilot	93.859	5P20GM139769-03	63,268	63,268
COBRE Human Genetics - YR 3 Admin Core	93.859	5P20GM139769-02 REVISED	34,135	156,368
COBRE Human Genetics - YR 3 Pilot - Larsen	93.859	5P20GM139769-02 REVISED	-	144,662
COBRE Human Genetics - YR 3 Pilot - Li	93.859	5P20GM139769-02 REVISED	-	35,011
COBRE Human Genetics - YR 3 Pilot - Liu	93.859	5P20GM139769-02 REVISED	125,611	125,611
COBRE Human Genetics - YR 3 Pilot - Wang	93.859	5P20GM139769-02 REVISED	-	100,033
COBRE Human Genetics - YR 3 Research Core	93.859	5P20GM139769-02 REVISED	-	72,249
COBRE Human Genetics - YR 3 Target - Duren	93.859	5P20GM139769-02 REVISED	-	82,271
COBRE Human Genetics - YR 3 Target - Konkel	93.859	5P20GM139769-02 REVISED	-	40,974
COBRE Human Genetics - YR 3 Target-Alexandrov	93.859	5P20GM139769-02 REVISED	-	269,256
COBRE Human Genetics - YR 3 Target-Flanagan-Steet	93.859	5P20GM139769-02 REVISED	7,404	61,673
COBRE HumanGen-YR1 Carryover Feliciano Pilot	93.859	5P20GM139769-02 REVISED	-	100,736
COBRE: Eukaryotic Pathogens Innovation Center (EPIC) - Admin Core (Main) Yr 1	93.859	1P20GM146584-01	-	1,341,300
COBRE:EPIC-YR5 Admin	93.859	5P20GM109094-05 REVISED	-	113
COBRE:EPIC-YR5 L Kozuboswki	93.859	5P20GM109094-05	-	(1,300)
Craniofacial Dysmorphology Associated with Phelan-McDermid Syndrome using Three-Dimensional Morphometrics	93.121	5R03DE027497-02 REVISED	-	208
Critical functions of the gut microbiota that mediate recovery from recurrent Clostridium difficile infection	93.847	5K01DK111794-05	-	166,765
CYP2B6 Inhibits Proper Distribution of Lipids Leading to Obesity and Fatty Liver Disease	93.113	2R15ES017321-04	-	124,645
Deciphering Macrophage Versus Neutrophil Signaling and Effector Functions in Immune Responses in Vivo	93.859	1R35GM147464-01	-	256,319
Delphi and associated resources: maintenance and further development; Administrative Supplements to Support Undergraduate Summer Research Experiences	93.859	3R01GM093937-11S1	-	2,435
Detecting and Monitoring Implant Infection Using X-ray Excited Luminescence Chemical Imaging (XELCI)	93.846	5R01AR070305-05	-	8,636
COVID 19 - Developing a Dynamic Modeling Framework for Surveillance, Prediction, and Real-Time Resource Allocation to Reduce Health Disparities During Covid-19 and Future Pandemics	93.879	1R01LM014193-01A1	55,117	103,485
Developing an in vivo toolbox to interrogate the intracellular trafficking and killing of Aspergillus spores	93.855	5R21AI164363-02	-	142,365
COVID - 19 Development of an Automated Diagnostic Platform for SARS-CoV-2 Monitoring in Vulnerable Areas	93.273	4U01AA029328-02	92,511	212,147
Development of an integrated intervention involving recovery coaching and cognitive behavioral therapy for opioid use disorder	93.279	R34DA057662	36,640	77,149
Development of a Multiplexed Assay in Kinetoplastid Parasites to Identify Probes for Glycolysis	93.855	5R01AI156382-03	334,359	432,099
Development of a Multiplexed Assay in Kinetoplastid Parasites to Development, Validation, and Application of a CDS Ontology to Facilitate CDS Rules Reuse, Management, and Maintenance in Simulated Primary Care Settings	93.855	3R01AI156382-03S1	-	7,666
	93.859	5R01GM138589-03	8,732	308,569

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Clemson University
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2023

Federal Grantor/Pass-Through Grantor/Program Title	Assistance Listing Number	Pass-through Entity Identifying Number	Passed Through to Subrecipient	Total Federal Expenditures
RESEARCH AND DEVELOPMENT CLUSTER, continued				
Department of Health and Human Services, continued				
Drosophila Models of Rare Mendelian Disorders of Chromatin Modification	93.865	1F31HD106719-01	\$ -	\$ 44,791
Elucidating the Necessary Components and Mechanisms of Cognitive Training.	93.866	7U01AG062370-03 REVISED	113,049	495,199
Enolase inhibitors as therapeutic leads for Naegleria fowleri infections	93.855	1R21AI171217-01A1	-	4,816
Exploration of the hypothesis-generation process as guided by secondary data analysis in clinical research: Can the process be more efficient?	93.879	7R15LM012941-02	4,652	51,733
Genetic Basis of Lifespan and Healthspan Extension by ACE Inhibition in Drosophila	93.866	1R01AG073181-01A1	102,341	323,665
Genetic Basis of Lifespan and Healthspan Extension by ACE Inhibition in Drosophila	93.866	1R56AG073181-01	17,522	37,681
Genetics of Cocaine and Methamphetamine Sensitivity in Drosophila	93.279	2U01DA041613-06	-	525,622
Genetics of Cocaine and Methamphetamine Sensitivity in Drosophila	93.279	5U01DA041613-05	-	(18,070)
Glycosome specialization in African trypanosomes	93.213	1R56AI143687-01A1 Revised	-	29,986
High Resolution Approaches to Defining Organelle Heterogeneity in Trypanosoma Brucei	93.855	R21AI171837	-	173,594
Identifying an Atherogenic Role for Vascular Smooth Muscle Cell miR-33a Expression	93.837	1R15HL152261-01A1	-	87,312
Impact of pathogenic missense mutations on the ARID domain of ARID1a	93.396	1R15CA280699-01	-	29,399
Improving Assessment of Subjective Memory Impairment for Detecting Alzheimer's Disease: A Coordinated Analysis in Two Measurement Burst Studies	93.866	7R01AG062605-04	9,320	377,639
Inhibition of Human Islet Amyloid Polypeptide Aggregation	93.859	1R35GM145409-01	-	88,760
Inhibition of Human Islet Amyloid Polypeptide Aggregation	93.859	5R35GM119691-05	-	56,168
Integrating Craniofacial Morphology, Oral function, Temporomandibular Biomechanics and Mechanobiology to Determine Sex-specific TMJ Pathophysiology in Humans	93.121	5R01DE021134-07 REVISED	3,627	272,825
Investigating the Use of Exoskeletons for Reducing Musculoskeletal Injuries in Surgical Care Tasks	93.226	1R03HS029247-01	892	37,640
Leveraging the HIF-Alpha Pathway to Improve the Engraftment and Therapeutic Efficacy of Human Nanowired Cardiac Organoids	93.837	1F31HL156541-01	-	45,958
Maintenance and development of DelPhi and associated resources	93.859	5R01GM093937-11	57,327	403,337
Mechanistic Pharmacodynamic Modeling for Drug Combination Responses	93.859	5R35GM141891-03	-	587,903
Medial Arterial Calcification: Mechanisms and Therapy	93.837	5R01HL145064-04	149,521	357,012
MENTOR: Medical Enrichment Through Opportunities in Research	93.855	5T35AI134643-04	-	34,925
Nanowired human cardiac organoid derived exosomes for heart repair	93.837	1R01HL168255-01	-	23,262
Nanowired Human Cardiac Spheroids for Heart Repair	93.873	5R01HL133308-04	-	155,382
Neighborhood Environments and Cognitive Decline Among Middle-Aged and Older Adults in China	93.866	5R03AG065637-02	1,080	5,182
Neuron-Specific Nanotherapeutics for Spinal Cord Injury Repair	93.853	5R01NS111037-04 REVISED	79,404	284,756
New Enzymes for DNA Demethylation	93.859	1R15GM121997-01 REVISED	-	(52)
Open, interoperable, and configurable clinical decision support modules for OpenMRS, OpenEMR, and beyond				
Open, interoperable, and configurable clinical decision support modules for OpenMRS, OpenEMR, and beyond	93.859	3R01GM138589-03S1	22,276	203,803
Oral Microbiomes and Dental Caries in a Human Immunodeficiency Virus Infected Population	93.121	5R01DE028154-05	4,171	106,636
Pre-mRNA Intronic Structures in Trans Factor Binding and Alternative Splicing	93.859	5R35GM142851-02	-	492,631
Purification of Circular RNA by Ultrafiltration	93.859	1R21GM145980-01	-	162,296

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Clemson University
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2023

Federal Grantor/Pass-Through Grantor/Program Title	Assistance Listing Number	Pass-through Entity Identifying Number	Passed Through to Subrecipient	Total Federal Expenditures
RESEARCH AND DEVELOPMENT CLUSTER, continued				
Department of Health and Human Services, continued				
Realizing Improved Patient Care through Human-centered Design for Pediatric mental and behavioral health in the Emergency Department (RIPCHD.PED)	93.226	1R18HS029109-01	\$ 76,783	\$ 265,145
Reducing Fall Risk in Rural, Older South Carolinians	93.761	90FPSG0047-01-00	-	79,150
Regulation of the Physiology and Function of the Digestive Vacuole in Toxoplasma Gondii	93.855	5R01AI143707-04	130,575	313,263
Reverse Engineering Quantitative Genetic Variation	93.859	5R01GM128974-04	-	119,116
Role of Homologous Recombination in the Replication Stress Response	93.859	5R35GM142512-02	-	383,313
COVID 19 -SARS- CoV2 sequencing surveillance program for Upstate South Carolina - Supplement to SC TRIMH COBRE - COVID	93.859	5P20GM121342-05S1	-	599,606
SC BioCRAFT Phase III Year 3-BET Core	93.859	5P30GM131959-03	-	1,680
SC BioCRAFT Phase III Year 3-Cottle Pilot	93.859	5P30GM131959-03	-	215
SC BioCRAFT Phase III Year 3-CTRIC Core	93.859	5P30GM131959-03	8,926	43,089
SC BioCRAFT Phase III Year 3-Main Admin	93.859	5P30GM131959-03	2,475	27,814
SC BioCRAFT Phase III Year 3- Stamatikos Pilot	93.859	5P30GM131959-03	-	470
SC BioCRAFT Phase III Year 3-Voucher Program	93.859	5P30GM131959-03	-	1,811
SC BIOCRRAFT Phase III Year 4 - Admin Core	93.859	5P30GM131959-04	-	150,530
SC BIOCRRAFT Phase III Year 4 - Alexander Pilot	93.859	5P30GM131959-04	-	69,614
SC BIOCRRAFT Phase III Year 4 - BET Core	93.859	5P30GM131959-04	-	312,561
SC BIOCRRAFT Phase III Year 4 - CTRIC Core	93.859	5P30GM131959-04	-	232,813
SC BIOCRRAFT Phase III Year 4 - Lee Pilot	93.859	5P30GM131959-04	-	4,366
SC BIOCRRAFT Phase III Year 4 - Voucher Program	93.859	5P30GM131959-04	-	25,508
SC BioCRAFT Phase III- YR2 Main Carryover	93.859	5P30GM131959-03 REVISED	-	20,826
SC BioCRAFT Phase III-Main	93.859	5P30GM131959-03 REVISED	16,605	16,605
SC COBRE for Translational Research Improving Musculoskeletal Health (SC-TRIMH)	93.859	3P20GM121342-05S2	-	239,015
SC COBRE for Translational Research Improving Musculoskeletal Health (SC-TRIMH) - 5 YR AFT	93.859	5P20GM121342-05	-	182,282
SC COBRE for Translational Research Improving Musculoskeletal Health (SC-TRIMH) - YR 5 Admin Core	93.859	5P20GM121342-05	-	387,014
SC COBRE for Translational Research Improving Musculoskeletal Health (SC-TRIMH) - YR 5 Foley	93.859	5P20GM121342-05	-	101,747
SC COBRE for Translational Research Improving Musculoskeletal Health (SC-TRIMH) - YR 5 Harman	93.859	5P20GM121342-05	-	69,854
SC COBRE for Translational Research Improving Musculoskeletal Health (SC-TRIMH) - YR 5 MCM Core	93.859	5P20GM121342-05	-	328,015
SC COBRE for Translational Research Improving Musculoskeletal Health (SC-TRIMH) - YR 5 PAC	93.859	5P20GM121342-05	-	53,382
SC COBRE for Translational Research Improving Musculoskeletal Health (SC-TRIMH) - YR 5 Powder	93.859	5P20GM121342-05	-	212,084
SC COBRE for Translational Research Improving Musculoskeletal Health (SC-TRIMH) - YR 5 WU	93.859	5P20GM121342-05	-	200,342
SC COBRE for Translational Research Improving Musculoskeletal Health (SC-TRIMH) - YR 5 Ye	93.859	5P20GM121342-05	-	153,037
SC County Health Extension: High Obesity Prevention and Elimination	93.319	5NU58DP006562-04-00	-	981,712
SC TRIMH - Year 4 Admin Core	93.859	5P20GM121342-04 REVISED	-	44,079
SC TRIMH - Year 4 AFT Core	93.859	5P20GM121342-04 REVISED	-	15,688
SC TRIMH - Year 4 Foley Pilot Project	93.859	5P20GM121342-04 REVISED	-	13,687
SC TRIMH - Year 4 Harmon	93.859	5P20GM121342-04 REVISED	-	30,355
SC TRIMH - Year 4 MCM Core	93.859	5P20GM121342-04 REVISED	-	21,467
SC TRIMH - Year 4 PAC Core	93.859	5P20GM121342-04 REVISED	41,351	43,561
SC TRIMH - Year 4 Powder	93.859	5P20GM121342-04 REVISED	-	57,566
SC TRIMH - Year 4 Supplement for Equipment	93.859	3P20GM121342-04S1	-	248,241
SC TRIMH - Year 4 Wu	93.859	5P20GM121342-04 REVISED	-	41,859
SC TRIMH - Year 4 Ye	93.859	5P20GM121342-04 REVISED	-	32,260
SC TRIMH Supplement - SARS-CoV2 sequencing surveillance program for Upstate South Carolina	93.859	3P20GM121342-03S1	-	32,112

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Clemson University
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2023

Federal Grantor/Pass-Through Grantor/Program Title	Assistance Listing Number	Pass-through Entity Identifying Number	Passed Through to Subrecipient	Total Federal Expenditures
RESEARCH AND DEVELOPMENT CLUSTER, continued				
Department of Health and Human Services, continued				
Species-specific Chromatin Structure and its Environmental Interaction in Craniofacial Skeletal Development and Variation Using Cichlid Fishes Strategies for continuous biologics purification with new affinity membranes	93.121	1R15DE029945-01 Revised	\$ - \$	96,555
	93.859	1R15GM131341-01	-	49,028
Supplement - Medial Arterial Calcification: Mechanisms and Therapy	93.837	3R01HL145064-04S1	9,354	9,354
Supplement for 209-2012902 Year 4 (Oral Microbiomes and Dental Caries in a Human Immunodeficiency Virus Infected Population)	93.121	3R01DE028154-04S1	76,151	166,447
SutureCoach: Examining Vascular Suturing Skills Assessment, Training, and Transfer of Training via Objective Metrics	93.837	5R01HL146843-03	10,828	344,243
Systems Mechanobiology Modeling for Patient-Specific Cardiac Fibrosis Predictions	93.837	5R01HL144927-04	14,541	42,788
Targeting flagellar motility in the treatment of kinetoplastid diseases	93.855	1R15AI137979-01A1 REVISED	-	85,334
The Development of an EHR-based Measure of Orthopaedic Treatment Success	93.226	1R03HS029060-01	17,617	43,843
The role of septins in the adaptation of Cryptococcus neoformans to host temperature in HIV-based cryptococcosis	93.855	1R01AI167692-01A1	-	183,962
Theranostic Approach to Treat Abdominal Aortic Aneurysms	93.837	5R01HL133662-04 REVISED	-	(1,915)
Tissue Structure and Mechanical Function Relationships of the Human Temporomandibular Lateral Capsule-Ligament: Investigation of Sexual and Racial Dimorphisms	93.121	1K99DE031345-01A1	-	43,876
Understanding and Addressing Racial Disparities in Guideline-Indicated Management of Symptomatic Peripheral Artery Disease	93.837	5K01HL146900-03	-	20,374
Understanding and Using Gene-by-Context Interactions in Human Complex Trait Genetics	93.859	1R35GM146868-01	-	85,003
Validating Sensor-based Approaches for Monitoring Eating Behavior and Energy Intake by Accounting for Real-World Factors that Impact Accuracy and Acceptability	93.847	1R01DK135679-01	-	12,540
Pass-through programs from: Annoviant LLC				
Pulmonary Valved Conduit Xenograft with Regeneration Potential	93.838	Annoviant 2022-010	-	24,144
Aptus Life, LLC				
Pediatric Heart Valve with Expansion Capability	93.837	20210920R41	-	31,606
Aravis Biotech				
X-ray Visualized Implanted Sensor for Prosthetic Joint Infection (X-VIS-PJI)	93.846	1R43AR081748-01	-	56,189
Arizona State University				
Smart Walk: A Culturally Tailored Smartphone-delivered Physical Activity Intervention to Reduce Cardiometabolic Disease Risk among African American Women	93.837	ASUB00001365	-	3,134
Smart Walk: A culturally tailored smartphone-delivered physical activity intervention for reduction of cardiometabolic disease risk among African American women	93.361	ASUB00001230	-	10,660
Blotting Innovations, LLC				
Accessible and Robust High-Throughput Western Blotting for Small Sample Sizes	93.859	1R41GM148112-01CU	-	22,972
Elastrin Therapeutics				
Targeted Chelation for Reversal of Vascular Calcification	93.837	R41HL147653	-	38,812

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Clemson University
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2023

Federal Grantor/Pass-Through Grantor/Program Title	Assistance Listing Number	Pass-through Entity Identifying Number	Passed Through to Subrecipient	Total Federal Expenditures
RESEARCH AND DEVELOPMENT CLUSTER, continued				
Department of Health and Human Services, continued				
Pass-through programs from:				
Fred Hutchinson Cancer Research Center COVID 19 - CoVPN 3006 Protocol Funding (PF) - Clemson Protocol-Specific Site	93.855	0001062451	\$ - \$	96,088
Hampton University				
The Black American United Memory & Aging Project (BA-UMAP): An examination of cognitive middle and older Black adults using remote cognitive assessments, risk factors & biomarkers	93.866	HU-230010	-	1,925
Indiana University				
Cavopulmonary Assist to Reverse the Fontan	93.837	8778 / PO0266438	-	89,604
LiveWell Greenville				
Community-Driven Approaches to Address Factors Contributing to Structural Racism in Public Health	93.137	None	-	16,584
Medical University of South Carolina				
Cardiovascular Diseases Research	93.837	A00-2593-S001	-	32,940
Center for Reliable Sensor Technology-Based Outcomes for Rehabilitation (RESTORE)	93.865	A21-0377-S001	-	4,499
Establishing an Artificially Intelligent Framework for Improving Therapeutic Alliance with Obese African American Youth and Caregivers through multimodal Monitoring of Empathetic Accuracy and Interpersonal Synchrony	93.307	A23-0100-S003	-	9,748
Identifying and Reducing Errors in Perioperative Anesthesia Medication Delivery	93.226	A00-3876-S001/MUSC18-134-8D662	-	83,449
Implementation of Home-Based Palliative Care in Limited Resource Settings	93.393	A21-0042-S002	-	7,889
Multi-site Study of Dyslexia	93.865	A00-0250-S001 (MUSC19-19-89225)	-	50,713
Role of Sphingosine-1-phosphate Receptor 2 in Osteoblastogenesis and Bone Regeneration in Periodontitis	93.121	A22-0025-S001	-	13,138
SC Biomedical Informatics & Data Science for Health Equity Research Training (SC BIDS4HEALTH)	93.879	A23-0007-S001	-	6,576
South Carolina Cancer Disparities Research Center (SC CADRE)				
South Carolina Cancer Disparities Research Center (SC CADRE) - Year 5	93.397	A00-3431-S005 Year 1	-	18,232
	93.397	A00-3431-S002 Year 5	-	5,176
South Carolina Clinical and Translational Research Institute (SCTR)				
System Optimization for Advances in Sterile Processing	93.350	A00-2219-S005	-	73,846
	93.226	A22-0083-S001	-	92,672
New York University				
Map Leukemia-immune Cell Talks with Nanoplasmon Ruler in CAR T-Cell Immunotherapy	93.395	F1429-02 / PO# IB00425635	-	51,237
Using Agent-Based Modeling to Compare Strategies That Can Reduce Rural-Urban Disparities in Cardiovascular Disease.	93.307	23-A0-S2-1008788 / PO M230632369	-	36,721
North Dakota State University				
Perceived Control and Cognitive Aging: Pathways to Preserve Cognitive Functioning and Reduce Risk of Alzheimers Disease in Socioeconomically Diverse Populations	93.866	FAR0036250	-	32,610
Psychosocial Intervention, Maternal Inflammation, and Birth Outcomes: Centering vs. Routine Prenatal Care (PIINC)	93.865	EH17-256-S4	-	25,025
NUBAD, LLC.				
Aminoglycosides with reduced ototoxicity	93.855	R42A11 26874	-	154,402
Aminoglycosides with reduced ototoxicity via miRNA targeting	93.855	CLEM-005	-	651
Delivery of chemically modified PNA oligomers	93.350	none	-	69,518
Development of Peptide Antibiotic Nucleic Acids	93.855	PNA2 (2020001112)	-	222,809
Supplement Request LIDIA.AZANKIA	93.350	None	-	23,402

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Clemson University
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2023

Federal Grantor/Pass-Through Grantor/Program Title	Assistance Listing Number	Pass-through Entity Identifying Number	Passed Through to Subrecipient	Total Federal Expenditures
RESEARCH AND DEVELOPMENT CLUSTER, continued				
Department of Health and Human Services, continued				
Pass-through programs from:				
Oregon State University				
Effects of Multi-axial Whole Body Vibrations on Postural Stability	93.262	P0495A-B	\$ - \$	56,605
Pennsylvania State University				
Ambulatory Methods for Measuring Cognitive Change	93.866	S002196-DHHS	-	15,198
Integrative Pathways to Health and Illness	93.866	S003667-UW	-	37,893
Psychosocial and Neighborhood Mechanisms and Consequences of Black-White Sleep Disparities on Cognition	93.866	S002453-DHHS	-	31,786
Prisma Health Upstate				
Emergency Department Alternatives to Opioids: Adapting Proven Therapies Into Everyday Practice Across the South	93.788	10000597 CLEM UNIV	-	8,917
Managing Abstinence in Newborns (MAiN) 2.0, Expansion	93.000	A202212651A-01CU; GHS Grant # G001217	-	140,137
Project Power - Preventing Opioid Use Disorder and Overdoses With Emerging Resources in Rural South Carolina	93.912	10000768 Project POWER-CU subaward	-	12,917
Purilogs, LLC				
Fast-Track: Improving therapeutic protein purification with new, high-productivity multimodal membranes	93.859	S10007	-	12,603
Regents of the University of California				
Reciprocal effects between scaffold geometry and ventricular vortex flow on viability and performance of tissue-engineered mitral valve	93.837	2023-1896	-	1,916
Research Foundation for the SUNY				
Single Molecule Analysis of MAGUK Structure and Ligand Binding	93.242	81534/2/1147013	-	70,314
South Carolina Department of Health & Human Services				
Quality Assurance Services for the Bureau of Long Term Care Services (Federal) - Year 1 FY22	93.000	A202611999A (Federal) - FY22	-	14
Quality Assurance Services for the Bureau of Long Term Care Services (Federal) - Year 2 FY23	93.000	A202611999A (Federal) - FY23	-	765,297
South Carolina Department of Social Services				
Child Support Employment Initiative - Year 3	93.563	4400025040 Year 3	-	1,382,160
CSS Employment Initiative - Year 2	93.563	4400025040 Year 2	-	817,238
Sigray, Inc				
Development of a Bio-tissue Oxygenation Nanophosphor Enabled Sensing (BONES) system for Quantifying Hypoxia in Bone Marrow	93.859	Clemson 003	-	71,416
Sonavex, Inc.				
Validation of a Bedside Automated 3D Ultrasound-based Arteriovenous Fistula Cannulation Guidance Solution to Improve AV Fistula Outcomes	93.000	1R44DK131644-01	-	74,424
SpineFrontier Inc.				
X-ray Visualized Interbody Spacer Indicating Biomechanical Load (X-VISIBL) Fusion Device	93.846	CLU001	-	6,129
TGen Tech LLC				
Decellularized Xenograft Leaflet Patch for Pulmonary Valve Repair in Pediatric Patients	93.838	TGen2020-101	-	8,555

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Clemson University
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2023

Federal Grantor/Pass-Through Grantor/Program Title	Assistance Listing Number	Pass-through Entity Identifying Number	Passed Through to Subrecipient	Total Federal Expenditures
RESEARCH AND DEVELOPMENT CLUSTER, continued				
Department of Health and Human Services, continued				
Pass-through programs from:				
The Miriam Hospital				
Optimizing Just-in-Time Adaptive Intervention to Improve Dietary Adherence in Behavioral Obesity Treatment: A Micro-randomized Trial	93.837	7107147197 (7147197)	\$ - \$	18,733
Using Multimodal Real-Time Assessment to Phenotype Dietary Non-Adherence Behaviors that Contribute to Poor Outcomes in Behavioral Obesity Treatment	93.847	7147284	-	45,502
Tissue Testing Technologies, LLC				
Ice-free Vitrification and Nanowarming of Large Osteochondral Grafts for Transplantation	93.846	1-R44-AR073136-02	-	3,572
Ice-free Vitrification and Nanowarming Technology for Banking of Cardiovascular Structures	93.837	4-R44-HL142455-02	-	43,854
Trialtus Bioscience, LLC				
STTR: Universal affinity membrane chromatography for rapid, one-step purification of proteins	93.837	SIO008	-	1,597
University of Arkansas				
Systems Mechanobiology Modeling for Patient-Specific Cardiac Fibrosis Predictions	93.837	UA2023-380 / SPC-007132	-	172,419
Title Systems Mechanobiology Modeling for Patient-Specific Cardiac Fibrosis Predictions	93.307	54570	-	55,725
Telehealth Focused Rural Health Research Center Cooperative Agreement				
University of California Davis				
SMART Cancer Care Teams: Enhancing EHR Communication to Improve Interprofessional Teamwork	93.393	A23-0294-S004	-	5,062
University of California-Merced				
Focused x-ray Luminescence at uCT Resolution and uM-level of Sensitivity	93.286	SA29066 / UCMP00021020	-	30,767
University of Florida				
Probiotics That Moderate PH and Antagonize Pathogens to Promote Oral Health	93.121	UFDSP00011201 00125985	-	14,778
University of Georgia				
Microglial RGS10 as a therapeutic target for Lewy body diseases	93.853	SUB00002385	-	25,251
University of Kentucky				
Southeast Center for Agricultural Health and Injury Prevention	93.262	PO# 7800004263 3210000731-18-247	-	(993)
Subjective Mental Workload Evaluation of Logging Equipment Operators	93.262	3210002492-23-148/PO#7800006745	-	13,828
University of Nebraska - Lincoln				
Renewal: Group testing for infectious disease detection: multiplex assays and back-end screening	93.855	24-6225-0056-002	-	42,226
University of South Carolina				
Carolina Center on Alzheimers Disease and Minority Research (CCADMR) - Research Education Core (Training)	93.866	23-4940 PO#2000064843/ USC 10012052	-	13,063
Carolina Center on Alzheimers Disease and Minority Research (CCADMR) - Research Education Core (Training)	93.866	23-5218 PO 2000067924/ USC 10012054	-	25,666
Effects of Musculoskeletal Surgery Rate on Medicare Costs - Year 2	93.866	23-5219 PO#2000067917/ USC 10012054	-	1,723
Effects of Musculoskeletal Surgery Rate on Medicare Costs - Year 3	93.226	22-4594 PO#2000060399	-	15,233
Improving Immunization Information System Implementation in Community Pharmacies	93.226	23-5002 PO# 2000066416	-	50,727

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Clemson University
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2023

Federal Grantor/Pass-Through Grantor/Program Title	Assistance Listing Number	Pass-through Entity Identifying Number	Passed Through to Subrecipient	Total Federal Expenditures
RESEARCH AND DEVELOPMENT CLUSTER, continued				
Department of Health and Human Services, continued				
Pass-through programs from:				
University of South Carolina, continued				
SC INBRE SIRP Award - Applying a Citrate Biomaterial to Reduce Ferroptosis in Spinal Cord Injury	93.855	22-4904 USC No.10011952 PO#2000063926	\$ -	\$ 16,738
South Carolina IDeA Networks of Biomedical Research Excellence (SC INBRE) - Administrative Core Year 2 of 5	93.859	23-5096 PO#2000066739/USC 10012490 22-4664 PO #2000061008/USC	-	1,368
South Carolina IDeA Networks of Biomedical Research Excellence (SC INBRE) - Year 3	93.859	No.10011311	-	105,391
The Development and Evaluation of a Patient-Centered Opioid Discharge Prescribing Guideline with the Electronic Health Record of a Health System	93.859	23-5064 PO#2000066586/USC 10012234	-	167,824
University of South Florida	93.226	23-5179 PO# 2000067671	-	70,186
ACTIVE MIND: An adaptive clinical trial of cognitive training to improve function and delay dementia	93.866	6118-1099-00-E	-	109,122
PACT - Preventing Alzheimer's disease with Cognitive Training (Cognitive Training to Reduce Incidence of Cognitive Impairment in Older Adults)	93.866	6118-1093-00-C / P000014593	18,112	1,091,728
University of Texas at Arlington				
Daily stress processes and sympathetic reactivity in depression	93.242	2020GC18255	-	10,798
VRM Labs, Inc.				
Protective film-forming disinfectant based on chitosan/water/ethanol tertiary solutions	93.000	VRM2021	-	27,027
Total Department of Health and Human Services			<u>1,973,979</u>	<u>27,561,776</u>
Department of Homeland Security				
Pass-through programs from:				
South Carolina Emergency Management Division				
Critical Infrastructure Mapping to Update the SC HMP	97.000	PDM 2018-005	-	112,341
Total Department of Homeland Security			<u>-</u>	<u>112,341</u>
Agency for International Development				
Pass-through programs from:				
Cornell University				
Feed the Future Innovation Lab for Crop Improvement (CIIL)	98.001	89915-11295	-	584,315
Louisiana Tech University				
Preclinical Evaluation of Combination Therapy of Rolipram and Minocycline for Arresting Secondary Injury Cascade after Traumatic Brain Injury	98.853	32-4111-56210-CU	-	38,240
Total Agency for International Development			<u>-</u>	<u>622,555</u>
Total Research and Development Cluster			<u>12,246,686</u>	<u>122,785,297</u>
Department of Education				
Student Financial Assistance Cluster				
Federal Supplemental Educational Opportunity Grants	84.007	unknown	-	700,876
Federal Work Study Program	84.033	unknown	-	763,861
Federal Work Study Program - Federal Job Location and Development	84.033	unknown	-	-
Federal Perkins Loan Program Federal Capital Contributions	84.038	unknown	-	2,634,142
Federal Pell Grant Program	84.063	unknown	-	17,132,983
Federal Direct Loans	84.268	unknown	-	117,780,041
Teacher Education Assistance for College and Higher Education Grants (TEACH Grants)	84.379	unknown	-	82,985
Post Secondary Education Scholarships for Veteran's Dependents (Iraq and Afghanistan Service Grant)	84.408	unknown	-	9,753
Total Student Financial Assistance Cluster			<u>-</u>	<u>139,104,641</u>

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Clemson University
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2023

Federal Grantor/Pass-Through Grantor/Program Title	Assistance Listing Number	Pass-through Entity Identifying Number	Passed Through to Subrecipient	Total Federal Expenditures
Department of Education, continued				
Special Education Cluster				
Pass-through programs from:				
South Carolina Department of Education				
South Carolina Educational Interpreting Center (SCEIC)	84.027	Funds Reservation #4000037496	\$ -	\$ 209,143
Total Special Education Cluster			-	209,143
Total Department of Education			-	139,313,784
Department of Agriculture				
SNAP Cluster				
South Carolina Department of Social Services				
SNAP-ED: CATCH (Coordinated Approach to Child Health)	10.561	4400028286	-	44,794
SNAP-ED: CATCH (Coordinated Approach to Child Health)	10.651	4400030506	-	140,186
SNAP-ED: Cooking Matters	10.561	4400027854	-	46,074
SNAP-ED: Formative Evaluation	10.561	4400030532	-	149,161
SNAP-ED: Go-NAP SACC	10.651	4400030433	-	137,512
SNAP-ED: Go-NAP SACC Community Partnership	10.561	4400027881	-	44,217
SNAP-ED: Implementation of Cooking Matters - Project 3	10.561	4400030367	-	135,733
SNAP-ED: Implementation of Formative Research and Evaluation	10.561	4400027852	-	46,309
SNAP-ED: Implementation of Walk with Ease	10.561	4400027853	-	37,778
SNAP-ED: My Plate/ Sesame Street Healthy Habits	10.561	4400030515	-	118,780
SNAP-ED: My Plate/Sesame Street Healthy Habits	10.561	4400028452	-	41,862
SNAP-ED: Policy, System, and Environmental (PSE) Strategies and Outreach - Project 4	10.561	4400030366	-	111,385
SNAP-ED: Policy, System, Environment (PSE) Strategies and Outreach	10.561	4400027851	-	45,354
SNAP-ED: Walk with Ease - Project 6	10.561	4400030365	-	116,957
Total SNAP Cluster			-	1,216,102
Total Department of Agriculture			-	1,216,102
Department of Transportation				
Highway Planning and Construction Cluster				
Pass-through programs from:				
South Carolina Department of Transportation				
Transportation Technology Transfer Service (T3S) 2022	20.205	SPR 1-22	-	122,677
Transportation Technology Transfer Service (T3S) 2023	20.205	SPR 2-23	-	364,924
Total Highway Planning and Construction Cluster			-	487,601
Total Department of Transportation			-	487,601
OTHER PROGRAMS				
Department of Agriculture				
AgrAbility in South Carolina	10.500	2022-41590-38364	27,767	71,002
Total for Assistance Listing Number 10.500			27,767	71,002
Development and Promotion of Mass Timber				
Noise Barriers for Highways	10.674	19-DG11083150-014	-	80,641
Development of a Mass Timber Structure Training Program	10.674	22-DG-11083150-307	-	5,986
Total for Assistance Listing Number 10.674			-	86,627
Providing Assistance to Rural Cooperatives and Mutually Owned Businesses through the South Carolina Center for Cooperative and Enterprise Development				
	10.771	46-039-576000254 FY22 RCDG	54,058	140,089
Total for Assistance Listing Number 10.771			54,058	140,089
FY21 D1 SC ADT	10.025	AP21VSSPRS00C013	-	5,643
FY21 SC NAHLN Infrastructure II	10.025	AP21VSD&B000C074	-	79,548
FY22 D1 SC ADT	10.025	AP22VSSPRS00C050	-	84,518
FY22 D1 SC UMB	10.025	AP22VSSPRS00C096	-	249,846
FY23 D1 SC UMB - Avian	10.025	AP23VSSPRS00C087	-	25,969

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Clemson University
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2023

Federal Grantor/Pass-Through Grantor/Program Title	Assistance Listing Number	Pass-through Entity Identifying Number	Passed Through to Subrecipient	Total Federal Expenditures
OTHER PROGRAMS, continued				
Department of Agriculture, continued				
FY23 D1 SC UMB - SGCE	10.025	AP23VSSPRS00C087	\$ -	\$ 611
FY23 D1 SC UMB - Swine	10.025	AP23VSSPRS00C087	-	5,392
FY23 DI SC HPAI Clemson University	10.025	AP23VSSPRS00C009	-	18,766
SC 2021 NADPRP Regional Mtg	10.025	AP22VSSP0000C040	-	81,180
SC 2022 NAHLN Infrastructure	10.025	AP22VSD&B000C034	-	140,889
SC 2023 NAHLN Infrastructure	10.025	AP23VSD&B000C039	-	12,331
SC FY21 Asian Longhorned Beetle Eradicator	10.025	AP21PPQFO000C530	-	2,072,624
SC FY21 Cogongrass	10.025	AP21PPQFO000C292	-	5,996
SC FY21 Honey Bee Survey 1S.780.16	10.025	AP21PPQFO000C172	-	1,246
SC FY21 P.ramorum Survey 1S.1103.01	10.025	AP21PPQFO000C413	-	1,099
SC FY22 Asian Longhorned Beetle Eradicator	10.025	AP22PPQFO000C517	-	2,375,644
SC FY22 CAPS Combined Survey	10.025	AP22PPQFO000C151	-	21,071
SC FY22 CAPS Infrastructure	10.025	AP22PPQFO000C152	-	53,023
SC FY22 Cogongrass Treatment and Outreach	10.025	AP22PPQFO000C498	-	176,180
SC FY22 Grape Commodity Survey 1S.0550.01	10.025	AP22PPQFO000C270	-	29,760
SC FY22 Honeybee Survey	10.025	AP22PPQFO000C185	-	11,943
SC FY22 P.ramorum Survey 1S.0477.01	10.025	AP22PPQFO000C328	-	17,999
SC FY22 Solanaceous Survey 1S.0555.01	10.025	AP22PPQFO000C271	-	29,719
SC FY23 CAPS Infrastructure	10.025	AP23PPQFO000C363	-	31,031
SC FY23 Citrus Commodity Survey 1S.0405.	10.025	AP23PPQFO000C242	-	4,210
SC FY23 Cotton Seed Survey	10.025	AP23PPQFO000C361	-	5,702
SC FY23 Grape Commodity Survey 1S.0550.01	10.025	AP23PPQFO000C281	-	6,138
SC FY 23 Imported Fire Ant Survey	10.025	AP23PPQFO000C314	-	27,685
SC FY23 Targeted Outreach 5.0406.01	10.025	AP23PPQFO000C452	-	4,170
SC US Swine Health Improvement Plans (SHIP)	10.025	AP23VSSP0000C003	-	1,484
Total for Assistance Listing Number 10.025			-	5,581,417
South Carolina Farm Financial Benchmarking Project	10.319	2018-38504-28734	-	85,645
Total for Assistance Listing Number 10.319			-	85,645
South Carolina Meat-Poultry Inspection Department - Laboratory	10.475	BASE23 (12-37-A307)	-	12,131
South Carolina Meat-Poultry Inspection Department - All Other	10.475	BASE22 (12-37-A307)	-	92,381
South Carolina Meat-Poultry Inspection Department - All Other	10.475	BASE23 (12-37-A307)	-	275,231
South Carolina Meat-Poultry Inspection Department - Compliance	10.475	BASE22 (12-37-A307)	-	45,098
South Carolina Meat-Poultry Inspection Department - Compliance	10.475	BASE23 (12-37-A307)	-	114,924
South Carolina Meat-Poultry Inspection Department - Cross Utilization	10.475	12-37-A-427 Cross Utilization FY23	-	219,621
South Carolina Meat-Poultry Inspection Department - Cross Utilization FY22	10.475	12-37-A-427 Cross Utilization FY22	-	58,053
South Carolina Meat-Poultry Inspection Department - In-Plant	10.475	BASE23 (12-37-A307)	-	813,427
South Carolina Meat-Poultry Inspection Department - Laboratory	10.475	BASE22 (12-37-A307)	-	6,179
South Carolina Meat-Poultry Inspection Department- In-Plant	10.475	BASE22 (12-37-A307)	-	285,188
Total for Assistance Listing Number 10.475			-	1,922,233
Technical Assistance to Micro Entrepreneurs through the SC Center for Cooperative and Enterprise Development	10.870	46-0392-57600054 RMAP	68,610	94,320
Total for Assistance Listing Number 10.870			68,610	94,320
Towards a more Robust Portfolio of Entrepreneurship and Production Training for South Carolina's Emerging Farmers	10.311	2021-70033-35707	-	201,235
Total for Assistance Listing Number 10.311			-	201,235
Smith - Lever	10.511	NI21SLBCXXXXG008	-	3,999,885
Smith - Lever	10.511	NI22SLBCXXXXG003	-	894,578
Total for Assistance Listing Number 10.511			-	4,894,463

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Clemson University
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2023

Federal Grantor/Pass-Through Grantor/Program Title	Assistance Listing Number	Pass-through Entity Identifying Number	Passed Through to Subrecipient	Total Federal Expenditures
OTHER PROGRAMS, continued				
Department of Agriculture, continued				
Expanded Food and Nutrition Education Program	10.514	NI21EFNEPXXXG014	\$ -	\$ 751,579
Expanded Food and Nutrition Education Program	10.514	NI22EFNEPXXXG006	-	856,895
Total for Assistance Listing Number 10.514			-	1,608,474
Renewable Resources Extension Act	10.515	NI21RREAFXXXG009	-	6,221
Renewable Resources Extension Act	10.515	NI22RREAFXXXG062	-	72,521
Renewable Resources Extension Act	10.515	NI23RREAFXXXG018	-	4,078
Total for Assistance Listing Number 10.515			-	82,820
Pass-through programs from:				
eXtension Foundation				
EXCITE: Extension Collaborative on Immunization, Teaching & Engagement	10.229	EXC1-2021-2042	-	(606)
Total for Assistance Listing Number 10.229			-	(606)
Kansas State University				
4-H Military Partnerships and Outreach Support Program - Wounded Warriors Youth Camps & Deployed Soldiers Youth Camps	10.500	A00-0983-S085-A01	-	309
4-H Military Partnerships and Outreach Support Programs	10.500	A00-0983-S105	-	26,946
Department of Air Force 4-H Military Partnership Outreach and Support	10.500	A22-0394-S018	-	17,185
University of Florida				
Equipping Cooperative Extension Professionals to Better Meet Community Wildland Fire Needs	10.500	SUB00003175	-	3,376
Total for Assistance Listing Number 10.500			-	47,816
University of Florida				
Southern Regional Center for Food Safety Training, Outreach and Lead Regional Coordination Center	10.328	SUB00002999	-	2,322
Southern Regional Center for Food Safety Training, Outreach and Technical Assistance Continuation, and Lead Regional Coordination Center	10.328	P0099377 / UFDSP00012355	-	606
Total for Assistance Listing Number 10.328			-	2,928
The Southern Plant Diagnostic Network	10.304	SUB00002903	-	14,736
The Southern Plant Diagnostic Network	10.304	SUB00003518	-	27,148
Total for Assistance Listing Number 10.304			-	41,884
University of Georgia				
Advanced Soil Health Training for South Carolina Agriculture Professionals	10.215	SUB00001983	-	2,010
Advanced Soil Health Training for South Carolina Agriculture Professionals	10.215	SUB00001983	-	13,947
Sustainable Agriculture Research and Education (SARE) - 2020-2021 Model State Program-Training (MSP20)	10.215	SUB00002352	-	11,468
Sustainable Agriculture Research and Education (SARE) Program 2021	10.215	SUB00002867	-	33,000
Sustainable Agriculture Research and Education (SARE) Program 2021	10.215	SUB00002871	-	27,748
Total for Assistance Listing Number 10.215			-	88,173
University of Tennessee				
Farm and Ranch Stress Assistance Network: Southern Region	10.525	9500095927	-	170,597
Total for Assistance Listing Number 10.525			-	170,597
Total Department of Agriculture			150,435	15,119,117

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Clemson University
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2023

Federal Grantor/Pass-Through Grantor/Program Title	Assistance Listing Number	Pass-through Entity Identifying Number	Passed Through to Subrecipient	Total Federal Expenditures
OTHER PROGRAMS, continued				
Department of Natural Resources				
Pass-through programs from:				
South Carolina Department of Natural Resources				
Community-based Living Shoreline Creation in the Urbanized Watershed of Charleston County, South Carolina to Support Habitat Resiliency and Ecosystem Services				
	11.463	SCDNR FY2020-034 P24018453919	-	800
Department of the Interior				
Archaeological and Historical Assessment of Fort Rutledge and the Battle of Essenecca				
	15.926	P21AP11636-00	-	46,317
Total for Assistance Listing Number 15.926				
			-	46,317
CESU-Digitizing Resource Management Records of Big Cypress National Preserve				
	15.945	P21AC11334-00	-	11,348
CESU - Metals Conservation in Fort Pulaski: Treatment of Iron Architectural Features and Museum Artillery				
	15.945	P20AC01065	-	38,207
Digitize Photographic Materials for Everglades and Biscayne National Parks				
	15.945	P16AC01406	-	15,505
ROCR D-3 Police Substation Historic Structures Report (HSR)				
	15.945	P22AC01967-00	-	52,546
Total for Assistance Listing Number 15.945				
			-	117,606
Total Department of the Interior				
			-	163,923
Department of Justice				
Pass-through programs from:				
City of Greenville				
Greenville, SC Police Project Safe Neighborhood Expansion				
	16.710	none	-	7,441
Total for Assistance Listing Number 16.710				
			-	7,441
National 4-H Council				
4-H Health Rocks! Regional Mentoring Program, Year 2				
	16.726	HR 2/ 2020-JY-FX-0024/ 19343	-	37,399
4-H National Mentoring Program				
	16.726	4-H NMP 12/ 15PJDD-21-GG-02766-MENT/ 20824	5,711	24,987
National 4-H Mentoring				
	16.726	4-H NMP 11/2020-JU-FX-0031/19345	788	13,900
Total for Assistance Listing Number 16.726				
			6,499	76,286
South Carolina Department of Public Safety				
Clemson University Police FY22 CESF Enhanced Delivery Program				
	16.034	1CF20158	-	59,987
Total for Assistance Listing Number 16.034				
			-	59,987
Total Department of Justice				
			6,499	143,714
State Department				
Strategic Partnership in US Politics and International Affairs Between Clemson University and the University of Belgrade				
	19.900	SRB10020GR0064	-	29,784
National Endowment for the Arts				
Call My Name: The Black Experience in the South Carolina Upstate from Enslavement to Desegregation				
	45.164	GI-269711-20	-	2,734
Total for Assistance Listing Number 45.164				
			-	2,734
Exploring America's Stories in the Clemson Landscape: An NEH American Rescue Plan				
	45.149	ZPA-283484-22	-	67,660
Fort Hill National Historic Landmark Historic House Museum Improving Collections Conservation Project				
	45.149	PG-280823-21	-	871
Total for Assistance Listing Number 45.149				
			-	68,531

The accompanying notes are an integral part of this schedule.

Clemson University
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2023

Federal Grantor/Pass-Through Grantor/Program Title	Assistance Listing Number	Pass-through Entity Identifying Number	Passed Through to Subrecipient	Total Federal Expenditures
OTHER PROGRAMS, continued				
National Endowment for the Arts, continued				
Reconstructing the Black Archive: South Carolina as Case Study, 1739-1895	45.163	EH-288094-22	\$ -	\$ 103,496
Total for Assistance Listing Number 45.163			-	103,496
Pass-through programs from:				
California State University				
Mapping the Gay Guides: Understanding Historical LGBTQ Spaces Through Gay Travel Guides	45.149	S-7495-CLEMSON	-	66,937
Total for Assistance Listing Number 45.149			-	66,937
The Teagle Foundation				
Cornerstone: Learning for Living	45.162	2005507	-	25,853
Total for Assistance Listing Number 45.162			-	25,853
Total National Endowment for the Arts			-	267,551
National Science Foundation				
Pass-through programs from:				
University of South Carolina				
Enacting a Culturally-Sustaining STEM Institute in the Gullah/Geechee Community in the Southeastern United States	47.076	22-4741PO#2000065319/ 2000061706	-	11,017
Total National Science Foundation			-	11,017
Small Business Administration				
Pass-through programs from:				
University of South Carolina				
COVID 19 - Small Business Development Center Cares Act	59.037	SBAHQ20C0077 Clemson Cares Act	-	51,314
Small Business Development Center - Federal Operating Grant 2021	59.037	Federal 2021 SBAHQ21B0049	-	229,682
Small Business Development Center - Federal Operating Grant 2022	59.037	Federal 2022 SBAHQ22B0060	-	12,669
Total Small Business Administration			-	293,665
Department of Veterans Affairs				
2021-2022 Veteran Affairs Adaptive Sports Grant Program: Paralympic Soccer Program	64.034	SPORTS-21-017	-	103,454
Total for Assistance Listing Number 64.034			-	103,454
Pass-through programs from:				
Move United, Inc				
Clemson Adaptive Sports and Recreation - Monthly Instruction	64.000	NONE	-	2,912
Clemson Adaptive Sports and Recreation-Track & Field	64.000	NONE	-	4,500
Move United Support of the 2022 Palmetto Games	64.000	NONE	-	(2,000)
Total for Assistance Listing Number 64.000			-	5,412
Total Department of Veterans Affairs			-	108,866
Environmental Protection Agency				
Consolidated Pesticide Certificate and Training	66.700	98463820	-	157,358
Consolidated Pesticide Enforcement Cooperative Agreements - Enforcement	66.700	98463620	-	165,936
Consolidated Pesticide Enforcement Cooperative Agreements - Special Programs	66.700	98463720	-	234,241
Total for Assistance Listing Number 66.700			-	557,535
Multipurpose Program Grants to State and Tribes	66.204	02D15421	-	9,658
Total for Assistance Listing Number 66.204			-	9,658

The accompanying notes are an integral part of this schedule.

Clemson University
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2023

Federal Grantor/Pass-Through Grantor/Program Title	Assistance Listing Number	Pass-through Entity Identifying Number	Passed Through to Subrecipient	Total Federal Expenditures
OTHER PROGRAMS, continued				
Environmental Protection Agency, continued				
Pass-through programs from:				
eXtension Foundation				
The Power of Personal Protective Equipment	66.716	SA-2022-27	\$ -	\$ 6,216
Total for Assistance Listing Number 66.716			-	6,216
Upstate Forever				
Creating a Watershed-Based Plan for the Twelvemile River - Keowee River Watershed	66.468	FS-98431221-0	-	18,779
Total for Assistance Listing Number 66.468			-	18,779
Total Environmental Protection Agency			-	592,188
Department of Education				
Education Stabilization Fund				
COVID 19 - Higher Education Emergency Relief Fund (HEERF)- Institution Portion				
	84.425F	P425F200181	-	18,087,583
Total Education Stabilization Fund			-	18,087,583
Global Challenges, India, and the Curriculum in South Carolina	84.021	P021A200026	-	85,345
Total for Assistance Listing Number 84.021			-	85,345
Pass-through programs from:				
South Carolina Department of Education				
After-School Program at Cedar Grove Elementary and Palmetto Elementary	84.287	22 21st CCLC-41 H63010006922	18,280	18,280
After-School Program at Liberty Primary and Liberty Elementary	84.287	22 21st CCLC-50 H63010006922	30,148	30,148
After-School Program at Liberty Primary and Liberty Elementary	84.287	22-23 21st CCLC-50/H63010006923	43,435	91,910
After-School Program at Spearman Elementary and West Pelzer Elementary	84.287	22 21st CCLC-20 H63010006922	9,442	10,198
Total for Assistance Listing Number 84.287			101,305	150,536
Agriculture Teacher Education and Professional Development	84.048	22ClemsonAgEd	-	10,461
Agriculture Teacher Education and Professional Development	84.048	23 Clemson AgEd H63010107123	-	36,891
Total for Assistance Listing Number 84.048			-	47,352
Call Me MISTER Initiative Engagement Agreement	84.425	None	-	320,000
Total for Assistance Listing Number 84.425			-	320,000
Future Farmers of America (FFA) Program Assistant	84.048	23 Clemson FFA H63010107123	-	7,300
Total for Assistance Listing Number 84.048			-	7,300
Nita M. Lowey 21st Century Community Learning Centers - After-school Program at Cedar Grove Elementary and Palmetto Elementary	84.287	22-23 21st CCLC-41/H63010006923	38,566	59,668
Nita M. Lowey 21st Century Community Learning Centers - After-school Program at West Pelzer, Spearman Elementary	84.287	22-23 21st CCLC-20/H63010006923	41,871	94,354
Total for Assistance Listing Number 84.287			80,437	154,022
The Ohio State University				
Refining and Expanding HEROES: A Literacy Intervention for Young Students with IEPs	84.411	SPC-1000003969 / GR117381	-	84,447
Total for Assistance Listing Number 84.411			-	84,447
Total Department of Education			181,742	849,002

The accompanying notes are an integral part of this schedule.

Clemson University
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2023

Federal Grantor/Pass-Through Grantor/Program Title	Assistance Listing Number	Pass-through Entity Identifying Number	Passed Through to Subrecipient	Total Federal Expenditures
OTHER PROGRAMS, continued				
Department of Health and Human Services				
Advanced Nurse Education-Sexual Nurse Assault Examiner program	93.247	2 T96HP32502-04-00	\$ 96,323	\$ 173,187
Advanced Nurse Education-Sexual Nurse Assault Examiner program	93.247	4T96HP32502-03-01	42,344	75,221
Total for Assistance Listing Number 93.247			138,667	248,408
Mental Health Awareness Training	93.243	1H79SM084452-01	55,231	55,231
Mental Health Training in Youth Sport	93.243	1H79SM084490-01	-	35,434
Total for Assistance Listing Number 93.243			55,231	90,665
Nurse Education, Practice, Quality and Retention	93.359	1 UK1HP46052-01-00	69,376	717,977
Total for Assistance Listing Number 93.359			69,376	717,977
REAL Counselor Training and Development: Reinforcing Education through Addictions-focused Learning	93.243	6H79FG000032-01M001	3,506	41,141
Total for Assistance Listing Number 93.243			3,506	41,141
Rural Communities Opioid Response Program - Neonatal Abstinence Syndrome	93.912	6G26RH40075-02-01	125,901	125,901
Total for Assistance Listing Number 93.912			125,901	125,901
Pass-through programs from:				
Christopher Reeve Paralysis Foundation				
Clemson University: Tutor, Talk and Train	93.325	2020 COVID-19: Addressing Social Isolation	-	20,331
Total for Assistance Listing Number 93.325			-	20,331
National Council on Aging COVID 19 - Accelerating Influenza and Covid-19 Vaccination in South Carolina	93.048	90ADC10008-01-05	-	5,725
Total for Assistance Listing Number 93.048			-	5,725
South Carolina Department of Health and Environmental Control				
Academic Detailing	93.354	CY-19-018 FR#4000043462/LR-2020-06	460,274	460,274
South Carolina Public Health Preparedness Student Corp (SCPHPSC)	93.354	PH-2-533	864,078	1,519,194
Total for Assistance Listing Number 93.354			1,324,352	1,979,468
Total Department of Health and Human Services			1,717,033	3,229,616
Total Other Programs			2,055,709	179,914,313
Total Federal Expenditures			\$ 14,302,395	\$ 302,699,610

The accompanying notes are an integral part of this schedule.

Clemson University**Clemson, South Carolina***Notes to the Schedule of Expenditures of Federal Awards**June 30, 2023*

Note 1. Basis Of Presentation

The accompanying Schedule of Expenditures of Federal Awards (the "Schedule") includes the federal award activity of Clemson University (the "University") under programs of the federal government and is presented on the accrual basis of accounting. The information in the Schedule is presented in accordance with the 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). Because the Schedule presents only a selected portion of the operations of Clemson University, it is not intended to and does not present the financial position, changes in net position, or cash flows of the University.

Note 2. Summary Of Significant Accounting Policies

Expenditures in the Schedule are recognized following the cost accounting principles contained in the Uniform Guidance, wherein certain types of expenditures are not allowable or are limited as to reimbursement. Negative amounts shown on the Schedule represent adjustments or credits made in the normal course of business to amounts reported as expenditures in prior years.

Expenditures for student financial aid programs include the federal share of students' Federal Supplemental Educational Opportunity Grant (FSEOG) program grants and Federal Work Study (FWS) program earnings, certain other federal financial aid for students and administrative cost allowances, where applicable.

Expenditures for nonfinancial aid awards include indirect costs, related primarily to facilities operation and maintenance and general, divisional and departmental administrative services, which are allocated to direct cost objectives (including federal awards) based on negotiated formulas commonly referred to as facilities and administrative cost rates. Facilities and administrative costs allocated to such awards for the year ended June 30, 2023, were based on predetermined fixed rates negotiated with the University's cognizant federal agency. The University has elected not to use the 10-percent de minimis indirect cost rate as allowed under the Uniform Guidance.

Note 3. Federal Perkins Loan Program (Assistance Listing Number 84.038)

The Federal Perkins Loan Program is administered directly by the University and balances and transactions relating to the program are included in the University's financial statements. Federal expenditures reported on the face of the Schedule include loans outstanding at the beginning of the year, loan cancellations, interest subsidies, and administrative expenses. Due to the expiration of the Federal Perkins Loan Program on September 30, 2017, the University did not disburse any Perkins loans to students during the year ended June 30, 2022. The balance of loans outstanding under the Federal Perkins Loan Program was \$2,634,142 as of June 30, 2023. Schools have the option of continuing to collect on outstanding loan balance or can voluntarily liquidate the program. The University has no current plans to begin the Perkins liquidation process. However, the University is required to periodically return excess cash on hand from the program to the Department of Education.

Clemson University**Clemson, South Carolina***Notes to the Schedule of Expenditures of Federal Awards**June 30, 2023*

Note 4. Federal Direct Student Loans Program (Assistance Listing Number 84.268)

The University participates in the Federal Direct Student Loans (Direct Loans) program of the U.S. Department of Education (USDE), which includes subsidized and unsubsidized Federal Stafford Loans and Federal PLUS Loans. Under the Direct Loans program, the University is responsible only for certain administrative duties, accordingly, the disbursements under the program and the outstanding loan balances are excluded from the financial statements of the University.

Note 5. Contingencies

The University receives funds under various federal grant programs and such awards are to be expended in accordance with the provisions of the various grants. Compliance with the grants is subject to audit by various government agencies which may impose sanctions in the event of non-compliance. Management believes that they have complied with all aspects of the various grant provisions and the results of adjustments, if any, relating to such audits would not have any material financial impact.



**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
Clemson University
Clemson, South Carolina

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 financial statements of the business-type activities and the aggregate discretely presented component units of Clemson University (the University), a component unit of the State of South Carolina, as of and for the year ended June 30, 2023, and the related notes to the financial statements, which collectively comprise the University's basic financial statements, and have issued our report thereon dated September 27, 2023.

The financial statements of Clemson University Foundation, and IPTAY were not audited in accordance with *Government Auditing Standards* and accordingly this report does not include reporting on internal control over financial reporting or reportable noncompliance associated with the discretely presented component units.

Report on Internal Control Over Financial Reporting

In planning and performing our audit of the financial statements, we considered Clemson 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 opinions on the financial statements, but not for the purpose of expressing an opinion on the effectiveness of Clemson University's internal control. Accordingly, we do not express an opinion on the effectiveness of Clemson 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 Clemson University's financial statements are free from material misstatement, we performed tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements, noncompliance with which could have a direct and material effect on the financial statements. However, providing an opinion on compliance with those provisions was not an objective of our audit, and accordingly, we do not express such an opinion. The results of our tests disclosed no instances of noncompliance or other matters that are required to be reported under *Government Auditing Standards*.

Purpose of This Report

The purpose of this report is solely to describe the scope of our testing of internal control and compliance and the results of that testing, and not to provide an opinion on the effectiveness of the 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.

A handwritten signature in black ink that reads "CliftonLarsonAllen LLP". The signature is written in a cursive, flowing style.

CliftonLarsonAllen LLP

Atlanta, Georgia
September 27, 2023



**INDEPENDENT AUDITORS' REPORT ON COMPLIANCE FOR EACH MAJOR
FEDERAL PROGRAM, REPORT ON INTERNAL CONTROL OVER COMPLIANCE,
AND REPORT ON THE SCHEDULE OF EXPENDITURES OF
FEDERAL AWARDS REQUIRED BY THE UNIFORM GUIDANCE**

Board of Trustees
Clemson University
Clemson, South Carolina

Report on Compliance for Each Major Federal Program

Opinion on Each Major Federal Program

We have audited Clemson University's 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 Clemson University's major federal programs for the year ended June 30, 2023. Clemson 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, Clemson University complied, in all material respects, with the compliance requirements referred to above that could have a direct and material effect on each of its major federal programs for the year ended June 30, 2023.

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 Clemson 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 Clemson University's compliance with the compliance requirements referred to above.

Other Matter – Federal Expenditures Not included in the Compliance Audit

Clemson University's basic financial statements include the operations of three discretely presented component units and one blended component unit. Federal awards received by the Clemson Research Facilities Corporation (a blended component unit), Clemson University Foundation (a discretely presented component unit), IPTAY (a discretely presented component unit) and Clemson University Land Stewardship Foundation (a discretely presented component unit) are not included in Clemson University's Schedule of Expenditures of Federal Awards for the year ended June 30, 2023. Our compliance audit, described in the Opinion on Each Major Federal Program, does not include the operations of these component units because they did not receive federal awards or they engaged other auditors to perform an audit in accordance with Title 2 U.S. *Code of Federal Regulations* Part 200, *Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards*.

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 Clemson 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 Clemson 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 Clemson 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 Clemson 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 Clemson 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 Clemson 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.

Other Matters

The results of our auditing procedures disclosed instances of noncompliance, which are required to be reported in accordance with the Uniform Guidance and which are described in the accompanying schedule of findings and questioned costs as items 2023-001, 2023-003, 2023-004, 2023-005, and 2023-006. Our opinion on each major federal program is not modified with respect to these matters.

Government Auditing Standards requires the auditor to perform limited procedures on Clemson University's response to the noncompliance findings identified in our compliance audit described in the accompanying schedule of findings and questioned costs. Clemson University's response was not subjected to the other auditing procedures applied in the audit of compliance and, accordingly, we express no opinion on the response.

Report on Internal Control Over Compliance

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 and therefore, material weaknesses or significant deficiencies may exist that were not identified. We did not identify any deficiencies in internal control over compliance that we consider to be material weaknesses. However, as discussed below, we did identify certain deficiencies in internal control over compliance that we consider to be significant deficiencies.

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. We consider the deficiencies in internal control over compliance described in the accompanying schedule of findings and questioned costs as items 2023-001 through 2023-006 to be significant deficiencies.

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.

Government Auditing Standards requires the auditor to perform limited procedures on Clemson University's response to the internal control over compliance findings identified in our audit described in the accompanying schedule of findings and questioned costs. Clemson University's response was not subjected to the other auditing procedures applied in the audit of compliance and, accordingly, we express no opinion on the response.

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 Schedule of Expenditures of Federal Awards Required by the Uniform Guidance

We have audited the financial statements of the business-type activities and the aggregate discretely presented component units of Clemson University as of and for the year ended June 30, 2023, and the related notes to the financial statements, which collectively comprise the University's basic financial statements. We have issued our report thereon, dated September 27, 2023, which contained unmodified opinions on those financial statements. Our audit was conducted for the purpose of forming opinions on the financial statements that collectively comprise the basic financial statements. The accompanying 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 basic 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 basic financial statements. The information has been subjected to the auditing procedures applied in the audit of the basic financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statements or to the basic financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the schedule of expenditures of federal awards is fairly stated in all material respects in relation to the basic financial statements as a whole.



CliftonLarsonAllen LLP

Atlanta, Georgia
September 27, 2023

Clemson University

Clemson, South Carolina

Schedule of Findings and Questioned Costs

For the year ended June 30, 2023

Section I. Summary of Auditors' Results

Financial Statements

1. Type of auditors' report issued: Unmodified
2. Internal control over financial reporting:
 - Material weakness(es) identified? _____ yes x no
 - Significant deficiency(ies) identified? _____ yes x none reported
3. Noncompliance material to financial statements noted? _____ yes x no

Federal Awards

1. Internal control over major federal programs:
 - Material weakness(es) identified? _____ yes x no
 - Significant deficiency(ies) identified? x yes _____ none reported
2. Type of auditors' report issued on compliance for major federal programs: Unmodified
3. Any audit findings disclosed that are required to be reported in accordance with 2 CFR 200.516(a)? x yes _____ no

Identification of Major Federal Programs

Assistance Listing Number(s)

84.425 F

Name of Federal Program or Cluster

COVID-19 Education Stabilization Funds

84.007, 84.033, 84.038, 84.063, 84.268
84.379, 84.408

Student Financial Assistance Cluster

Dollar threshold used to distinguish between
Type A and Type B programs:

\$ 3,000,000

Auditee qualified as low-risk auditee?

 x yes _____ no

Clemson University**Clemson, South Carolina***Schedule of Findings and Questioned Costs**For the year ended June 30, 2023*

Section II. Financial Statement Findings

Our audit did not disclose any matters required to be reported in accordance with *Government Auditing Standards*.

Clemson University

Clemson, South Carolina

Schedule of Findings and Questioned Costs

For the year ended June 30, 2023

Section III. Findings and Questioned Costs - Major Federal Programs

2023 – 001: Improper Payroll Calculation

Federal Agency: U.S. Department of Education

Federal Program Name: Education Stabilization Fund

Assistance Listing Number: 84.425F

Federal Award Identification Number: P425F200181-20B

Award Period: July 1, 2022 – June 30, 2023

Type of Finding: Significant Deficiency in Internal Control over Compliance, Other Matters

Criteria or specific requirement: Internal Control – Per 2 CFR section 200.303(a), a non-Federal entity must: Establish and maintain effective internal control over the Federal award that provides reasonable assurance that the non-Federal entity is managing the Federal award in compliance with Federal statutes, regulations, and the terms and conditions of the Federal award. These internal controls should be in compliance with guidance in “Standards for Internal Control in the Federal Government” issued by the Comptroller General of the United States or the “Internal Control Integrated Framework,” issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

Compliance – Per 2 CFR § 200.403, except where otherwise authorized by statute, costs must meet the following general criteria to be allowable under Federal awards: (a) Be necessary and reasonable for the performance of the Federal award to be allocable thereto under these principles. (b) Conform to any limitations or exclusions set forth in these principles or in the Federal award regarding types or amount of cost items. (c) Be consistent with policies and procedures that apply uniformly to both federally-financed and other activities of the non-Federal entity. (d) Be accorded consistent treatment. A cost may not be assigned to a Federal award as a direct cost if any other cost incurred for the same purpose in like circumstances has been allocated to the Federal award as an indirect cost. (e) Be determined in accordance with generally accepted accounting principles (GAAP), except for state and local governments and Indian tribes only, as otherwise provided for in this part. (f) Not be included as a cost or used to meet cost sharing or matching requirements of any other federally-financed program in either the current or a prior period. (g) Be adequately documented.

Condition: The University incorrectly calculated payroll costs charged to the grant. The employee’s position changed from hourly to salary, and the change in pay was not reflected in the payroll calculation resulting in an error of \$47.

Questioned costs: None

Context: This condition occurred for 1 out of 40 samples selected for testing.

Cause: The interface program looked at the employee's status on the day of upload, as opposed to their status on the last day of the pay period. Therefore, the program uploaded hours to the new job instead of the former hourly job. This error was not caught by the department during or after payroll processing resulting in an overpayment.

Effect: Expenditures may be incorrectly charged to the program.

Repeat Finding: No

Clemson University**Clemson, South Carolina***Schedule of Findings and Questioned Costs**For the year ended June 30, 2023*

Recommendation: We recommend that the University review policies and procedures to ensure that changes in pay rates are being reflected in payroll calculations and reviews are in place to detect any errors on a timely basis.

Views of responsible officials: There is no disagreement with the audit finding.

Clemson University

Clemson, South Carolina

Schedule of Findings and Questioned Costs

For the year ended June 30, 2023

2023 – 002: Review over Cash Drawdowns

Federal Agency: U.S. Department of Education

Federal Program Name: Student Financial Assistance Cluster

Assistance Listing Number: 84.033, 84.408, 84.063, 84.007, 84.379, 84.268

Federal Award Identification Number and Year: P033A223771 (CWS 22-23), P408A220377 (Iraq Afgan Service), P063P220377 (Pell 22-23), P007A223771 (SEOG 22-23), P379T230377 (Teach 22-23), P268K230377 (Direct Loan 2023)

Pass-Through Agency: N/A

Pass-Through Number(s): N/A

Award Period: 7/1/22 – 6/30/23

Type of Finding: Significant Deficiency in Internal Control over Compliance

Criteria or specific requirement: Internal Control – Per 2 CFR section 200.303(a), a non-Federal entity must: Establish and maintain effective internal control over the Federal award that provides reasonable assurance that the non-Federal entity is managing the Federal award in compliance with Federal statutes, regulations, and the terms and conditions of the Federal award. These internal controls should be in compliance with guidance in “Standards for Internal Control in the Federal Government” issued by the Comptroller General of the United States or the “Internal Control Integrated Framework,” issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

Condition: The University did not perform a control review of amounts requested for drawdown from G5 at, or prior to, draw.

Questioned costs: None

Context: This condition occurred for 7 out of 7 draws selected for testing.

Cause: The federal G5 system does not have a workflow component to route transactions for approval. The University’s Director of Financial Compliance reviews all awarded amounts, calculates a percentage to allow for award adjustments to mitigate the risk of overdraw, and initiates the draw of federal scholarship funding from the G5 system.

Effect: This condition may lead to errors in the calculation or amounts drawn in excess of amounts disbursed.

Repeat Finding: No

Recommendation: As an opportunity to enhance the current control environment and reduce the likelihood of errors, the University should implement a drawdown review and approval process prior to requesting federal funds.

Views of responsible officials: There is no disagreement with the audit finding.

Clemson University

Clemson, South Carolina

Schedule of Findings and Questioned Costs

For the year ended June 30, 2023

2023 – 003: Late COD Reporting

Federal Agency: U.S. Department of Education

Federal Program Name: Student Financial Assistance Cluster

Assistance Listing Number: 84.063

Federal Award Identification Number and Year: P063P220377 (Pell 22-23)

Pass-Through Agency: N/A

Pass-Through Number(s): N/A

Award Period: 7/1/22 – 6/30/23

Type of Finding: Significant Deficiency in Internal Control over Compliance, Other Matters

Criteria or specific requirement: Internal Control – Per 2 CFR section 200.303(a), a non-Federal entity must: Establish and maintain effective internal control over the Federal award that provides reasonable assurance that the non-Federal entity is managing the Federal award in compliance with Federal statutes, regulations, and the terms and conditions of the Federal award. These internal controls should be in compliance with guidance in “Standards for Internal Control in the Federal Government” issued by the Comptroller General of the United States or the “Internal Control Integrated Framework”, issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

Compliance – Per 34 CFR 690.83(b)(2), the University is required to report the disbursement dates and amounts awarded for Pell awards to the Common Origination and Disbursement (COD) system within 15 days of disbursing Pell funds to a student.

Condition: The University did not report certain Pell disbursements within 15 days to COD.

Questioned costs: None

Context: For four out of eight Pell disbursements tested across a sample of twelve students receiving Pell awards, the University did not report disbursements until 47 days after disbursement.

Cause: Some Pell disbursements were reported late because of a Banner system defect. This defect prevented the disbursements from sending and did not provide any error acknowledgement on the extract reports.

Effect: The University is not in compliance with required reporting to the Department of Education.

Repeat Finding: No

Recommendation: We recommend the University ensure that a process is in place to report within 15 days, including a process to respond and report timely when there are system irregularities.

Views of responsible officials: There is no disagreement with the audit finding.

Clemson University

Clemson, South Carolina

Schedule of Findings and Questioned Costs

For the year ended June 30, 2023

2023 – 004: Incorrect Fiscal Operations Report and Application to Participate (FISAP) Reporting

Federal Agency: U.S. Department of Education

Federal Program Name: Student Financial Assistance Cluster

Assistance Listing Number: 84.033

Federal Award Identification Number and Year: P033A223771 (CWS 22-23)

Pass-Through Agency: N/A

Pass-Through Number(s): N/A

Award Period: 7/1/22 – 6/30/23

Type of Finding: Significant Deficiency in Internal Control over Compliance, Other Matters

Criteria or specific requirement: Internal Control – Per 2 CFR section 200.303(a), a non-Federal entity must: Establish and maintain effective internal control over the Federal award that provides reasonable assurance that the non-Federal entity is managing the Federal award in compliance with Federal statutes, regulations, and the terms and conditions of the Federal award. These internal controls should be in compliance with guidance in “Standards for Internal Control in the Federal Government” issued by the Comptroller General of the United States or the “Internal Control Integrated Framework”, issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

Compliance - The Code of Federal Regulations, 34 CFR 668.24(e)(i) requires an institution to maintain records to support the data contained in the FISAP.

Condition: The documents retained by the University to support amounts included in the FISAP did not agree to the FISAP.

Questioned costs: None

Context: The amounts reported in the FISAP did not agree to supporting documentation as follows:

Section	Line item description	Amount per FISAP	Amount per Support	Difference
Part III, line 9.2	Total interest repaid by borrowers	\$0	\$96,473.65	\$96,473.65
Part V, line 24	Total students in community service employment	40	85	45

Cause: Part III, line 9.2 was a human error in transferring numbers from the supporting document to the FISAP. A line was left blank, and this blank did not cause a validation error. Usually, the FISAP will not let you submit if it is out of balance or if a question is skipped. However, we did not receive an error for this one. Part V, line 24 was a difference in interpretation whether America Reads and other community service students should be added together. After consultation and research, we decided they should be added together in the future.

Effect: The information in the FISAP is utilized to assist in the awarding of future awards and incorrect data could negatively impact future awards.

Repeat Finding: No

Clemson University**Clemson, South Carolina***Schedule of Findings and Questioned Costs**For the year ended June 30, 2023*

Recommendation: We recommend the University create a formalized review process for the FISAP and ensure all supporting schedules used to populate the form are centrally stored.

Views of responsible officials: There is no disagreement with the audit finding.

Clemson University

Clemson, South Carolina

Schedule of Findings and Questioned Costs

For the year ended June 30, 2023

2023 – 005: Late Return of Checks Outstanding Greater than 240 Days

Federal Agency: U.S. Department of Education

Federal Program Name: Student Financial Assistance Cluster

Assistance Listing Number: 84.268

Federal Award Identification Number and Year: P268K230377 (Direct Loan 2023)

Pass-Through Agency: N/A

Pass-Through Number(s): N/A

Award Period: 7/1/22 – 6/30/23

Type of Finding: Significant Deficiency in Internal Control over Compliance, Other Matters

Criteria or specific requirement: Internal Control – Per 2 CFR section 200.303(a), a non-Federal entity must: Establish and maintain effective internal control over the Federal award that provides reasonable assurance that the non-Federal entity is managing the Federal award in compliance with Federal statutes, regulations, and the terms and conditions of the Federal award. These internal controls should be in compliance with guidance in “Standards for Internal Control in the Federal Government” issued by the Comptroller General of the United States or the “Internal Control Integrated Framework”, issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

Compliance - The Code of Federal Regulations, 34 CFR 668.164(l) states that an institution that attempts to disburse funds by check and the check is not cashed, the institution must return the funds to the Secretary no later than 240 days after the date it issued that check.

Condition: A check related to Title IV disbursements was never cashed and outstanding greater than 240 days.

Questioned costs: None

Context: The University had 23 checks outstanding for greater than 240 days. One of the 23 checks was related to Title IV funds that were never cashed and should have been returned to the Department of Education. The check was originally dated and issued in March 2021. A replacement check was issued and cashed by the student.

Cause: Stale-dated check reconciliations were not received in a timely manner and staff training was deficient.

Effect: The University is not in compliance with Department of Education requirements that all student refund checks that are outstanding for more than 240 days be returned to the Department.

Repeat Finding: No

Recommendation: We recommend the University establish a process to monitor the bank reconciliation for outstanding Title IV checks to adhere to the 240-day requirement.

Views of responsible officials: There is no disagreement with the audit finding.

Clemson University

Clemson, South Carolina

Schedule of Findings and Questioned Costs

For the year ended June 30, 2023

2023 – 006: NSLDS Program Level Reporting

Federal Agency: U.S. Department of Education

Federal Program Name: Student Financial Assistance Cluster

Assistance Listing Number: 84.063, 84.268

Federal Award Identification Number and Year: P063P220377 (Pell 22-23), P268K230377 (Direct Loan 2023)

Pass-Through Agency: N/A

Pass-Through Number(s): N/A

Award Period: 7/1/22 – 6/30/23

Type of Finding: Significant Deficiency in Internal Control over Compliance, Other Matters

Criteria or specific requirement: Internal Control – Per 2 CFR section 200.303(a), a non-Federal entity must: Establish and maintain effective internal control over the Federal award that provides reasonable assurance that the non-Federal entity is managing the Federal award in compliance with Federal statutes, regulations, and the terms and conditions of the Federal award. These internal controls should be in compliance with guidance in “Standards for Internal Control in the Federal Government” issued by the Comptroller General of the United States or the “Internal Control Integrated Framework”, issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

Compliance - Per the National Student Loan Data System (NSLDS) Enrollment Reporting Guide, schools are required to report enrollment at both the Program-Level and the Campus-Level. Included in this required reporting is an Enrollment Effective Date for each program which a student is enrolled. The Enrollment Status Effective Date is defined as “the date that the current enrollment status reported for a student was first effective.”

Condition: A student was not reported with the correct enrollment effective dates within the Program-Level enrollment reporting in NSLDS.

Questioned costs: None

Context: For one out of 40 students selected for testing, the Program-Level enrollment effective date of 5/19/23 did not match the Campus-Level enrollment effective date of 5/16/23.

Cause: Clemson University reported to the National Clearinghouse (NCH) that the student dropped and added classes on 5/19/23, which resulted in the same enrollment level that was reported for the Campus-Level enrollment effective date of 5/16/23.

Effect: Enrollment effective dates are not reported accurately at the Program-Level reporting in NSLDS.

Repeat Finding: No

Recommendation: We recommend the University review its reporting procedures to ensure that students’ enrollment effective dates are accurately reported within the Program-Level enrollment reporting to NSLDS as required by regulations.

Views of responsible officials: There is no disagreement with the audit finding.



Single Audit Corrective Action Plan – Year Ended June 30, 2023

Finding 2023-001- Federal Award Program Audits: U.S Department of Education - Higher Education Emergency Relief Fund (HEERF) – Assistance Listing No. 84.425

Finding: The University incorrectly calculated payroll costs charged to the grant. The employee's position changed from hourly to salary, and the change in pay was not reflected in the payroll calculation.

Recommendation: We recommend that the University review policies and procedures to ensure that changes in pay rates are being reflected in payroll calculations and reviews are in place to detect any errors on a timely basis.

Department's Response: Management acknowledges the finding.

Corrective Action Plan: The Payroll Department has taken immediate action to develop additional safeguards to ensure changes in pay records are accurately reflected on pay lines. We developed monitoring reports to review data extracted from Kronos to data loaded to pay lines. The central Payroll team will use these reports to identify potential discrepancies and correct pay lines prior to giving department liaisons access to the system to review payroll data.

Additionally, Payroll will conduct its routine Kronos Security Audit with Business Officers in October. Once complete, Payroll will communicate with designated HR/Payroll Liaisons and Kronos timekeepers to remind them of their roles and responsibilities as it pertains to monitoring and reviewing payroll data during payroll processing.

Lastly, Payroll has worked with Human Resources IT to develop a query that will mimic the paysheets and provide an additional review tool at the department and budget center level. Once fully tested it will be rolled out to the Business Officers to assist in the payroll review process.

Anticipated Completion Date: December 31, 2023

Person Responsible for Corrective action: Amelia Hood, Director of Payroll

Contact/Responsible Party: Sherri Rowland, AVP and Controller

Contact Information: sherrir@clermson.edu

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Single Audit Corrective Action Plan – Year Ended June 30, 2023

Finding 2023-002- Federal Award Program Audits: U.S Department of Education - Student Financial Assistance Cluster – Assistance Listing No. 84.033, 84.408, 84.063, 84.007, 84.379, 84.268

Finding: Review over Cash Drawdowns

Recommendation: As an opportunity to enhance the current control environment and reduce the likelihood of errors, the University should implement a drawdown review and approval process prior to requesting federal funds.

Department's Response: Management acknowledges the finding.

Corrective Action Plan: The University's Director of Financial Compliance will implement an additional step to email the University's Controller for approval prior to drawdown of federal funds and will follow up with a screenshot of the actual drawdown for validation.

Anticipated Completion Date: September 18, 2023

Person Responsible for Corrective action: Karen Robbins, Director of Financial Compliance

Contact/Responsible Party: Sherri Rowland, AVP and Controller

Contact Information: sherrir@clemson.edu

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Single Audit Corrective Action Plan – Year Ended June 30, 2023

Finding 2023-003 - Federal Award Program Audits: U.S Department of Education - Student Financial Assistance Cluster – Assistance Listing No. 84.063

Finding: Late COD Reporting

Recommendation: We recommend the University ensure that a process is in place to report within 15 days, including a process to respond and report timely when there are system irregularities.

Department's Response: Management acknowledges the finding.

Corrective Action Plan: We will continue to proactively monitor for system data irregularities and take corrective action as needed. We have implemented a weekly review of Banner to COD data for Pell disbursement activity to quickly identify and resolve discrepancies. A senior staff member completes this review with findings reported to management to determine if further action is required.

Anticipated Completion Date: Tested plan of action, applied corrections and verified successful resolution as of March 1, 2023. Corrective action plan implemented March 9, 2023.

Person Responsible for Corrective action: Elizabeth Milam, Director of Financial Aid

Contact/Responsible Party: Sherri Rowland, AVP and Controller

Contact Information: sherrir@clermson.edu

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Single Audit Corrective Action Plan – Year Ended June 30, 2023

Finding 2023-004- Federal Award Program Audits: U.S Department of Education - Student Financial Assistance Cluster – Assistance Listing No. 84.033

Finding: Incorrect Fiscal Operations Report and Application to Participate (FISAP) Reporting

Recommendation: We recommend the University create a formalized review process for the FISAP and ensure all supporting schedules used to populate the form are centrally stored.

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Department's Response: Management acknowledges the finding.

Corrective Action Plan: The Office of Student Financial Aid will engage with the Office of Internal Audit (IA) to review the FISAP, and if any errors are found, will make corrections during the allotted time in December. Supporting schedules are centrally stored and will be made available to IA.

Anticipated Completion Date: December 1, 2023

Person Responsible for Corrective action: Elizabeth Milam, Director of Financial Aid

Contact/Responsible Party: Sherri Rowland, AVP and Controller

Contact Information: sherrir@clemson.edu



Single Audit Corrective Action Plan – Year Ended June 30, 2023

Finding 2023-005- Federal Award Program Audits: U.S Department of Education - Student Financial Assistance Cluster – Assistance Listing No. 84.268

Finding: Late Return of Checks Outstanding Greater than 240 Days

Recommendation: We recommend the University establish a process to monitor the bank reconciliation for outstanding Title IV checks to adhere to the 240-day requirement.

Department's Response: Management acknowledges the finding.

Corrective Action Plan: The staff performing stale-dated check processing were notified of the audit finding and have received training. We have engaged with our banking partners to develop a report of outstanding checks to be available to Student Financial Services staff to identify aged outstanding student refund checks. Student Financial Services staff will communicate with students who have outstanding checks as a proactive measure to decrease the volume of uncashed stale-dated checks.

Anticipated Completion Date: October 31, 2023

Person Responsible for Corrective action: Rebecca Pruitt, Director of Student Financial Services

Contact/Responsible Party: Sherri Rowland, AVP and Controller

Contact Information: sherrir@clermson.edu

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Single Audit Corrective Action Plan – Year Ended June 30, 2023

Finding 2023-006- Federal Award Program Audits: U.S Department of Education - Student Financial Assistance Cluster – Assistance Listing No. 84.063 and 84.268

Finding: NSLDS Program-Level Reporting

Recommendation: We recommend the University review its reporting procedures to ensure that students' enrollment effective dates are accurately reported within the Program-Level enrollment reporting to NSLDS as required by regulations.

Department's Response: Management acknowledges the finding.

Corrective Action Plan: After consultation with the National Clearinghouse (NCH), and written guidance from the U.S. Department of Education (ED), the Campus-Level enrollment effective date would not change because the enrollment level did not change. Clemson University will work with the NCH and utilize their audit support to further explore this scenario and determine what would need to be changed with field mapping and review, if anything.

Anticipated Completion Date: June 1, 2024

Person Responsible for Corrective action: Cecil (Rock) McCaskill, Associate Registrar

Contact/Responsible Party: Sherri Rowland, AVP and Controller

Contact Information: sherrir@clemson.edu

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