

**Clemson University
Clemson, South Carolina**

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

For the year ended June 30, 2022

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Clemson University, Clemson, South Carolina
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2022

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				
Acquisition of Goods and Services	10.RD	58-6080-0-018	\$ -	\$ 6,767
Acquisition of Goods and Services	10.RD	58-6080-2-002	-	41,297
Acquisition of Goods and Services	10.RD	58-6082-0-008	-	(223)
Acquisition of Goods and Services	10.RD	58-6082-0-009	-	1,041
Acquisition of Goods and Services	10.RD	58-6082-1-008	-	5,436
Acquisition of Goods and Services	10.RD	58-6082-1-009	-	70,650
Acquisition of Goods and Services	10.RD	58-6082-1-010	-	34,255
Acquisition of Goods and Services	10.RD	58-6082-2-008	-	3,563
Acquisition of Goods and Services	10.RD	58-6082-2-009	-	5,560
Acquisition of a versatile triple quadrupole mass spectrometer to facilitate agricultural and environmental research and training at Clemson University	10.RD	2021-70410-35296	-	448,882
A Multi-state Effort to Contain and Manage the Invasive Guava Root Knot Nematode (GRKN) in Vegetable Crops	10.RD	2019-51181-30018	522,312	681,744
Animal Health	10.RD	N121AHDRXXXXG056	-	24,534
Animal Health	10.RD	N122AHDRXXXXG010	-	227
Area-wide Pest Management of the Invasive Sugarcane Aphid in Grain Sorghum- Clemson University, South Carolina	10.RD	58-6048-6-015	-	36,539
Asian Longhorned Beetle Research Support	10.RD	AP21PPQS&T00C002	-	48,523
Asian Longhorned Beetle Research Support	10.RD	AP22PPQS&T00C002	-	61,484
Biology of the Redbay Ambrosia Beetle in Sassafras at the Leading Edge of Laurel Wilt	10.RD	19-CS-11330129-030	-	13,462
Breeding Biofortified Pulse and Cereal Crops for US Organic Cropping Systems	10.RD	2018-51300-28431	-	285,376
Carolina Cotton can Conserve Soil with Cover Crops	10.RD	NR213A750013G007	4,768	70,604
Characterization of Water Quality and Quantity in Greenhouse and Nursery Waters in the Piedmont Ecoregion of the USA	10.RD	58-5082-0-012	-	54,494
Clemson Fire Tigers	10.RD	20-PA-11081200-276	-	969
Clemson-South Carolina State CYFAR	10.RD	2018-41520-28750	119,359	276,789
Collaborative Research to Improve Evaluation of Advanced and Diverse Wheat Germplasm for FHB Resistance in the Atlantic Coastal Plain	10.RD	58-6070-8-014	-	75
Collaborative Research to Improve Evaluation of Advanced Wheat Germplasm for FHB Resistance in the Atlantic Coastal	10.RD	59-0206-0-150	-	64,694
Crop Protection and Pest Management Extension Implementation Program for South Carolina	10.RD	2017-70006-27156	-	163,522
Crop Protection and Pest Management Extension Implementation Program for South Carolina	10.RD	2021-70006-35508	-	66,886
CULTIVAR DEVELOPMENT: Combining genomics-enabled breeding with coordinated regional testing to accelerate wheat genotype to market	10.RD	2021-67014-33941	-	115,709
Design a Framework for Payments for Ecosystem Service and Analysis of Adoption Behavior in the Santee Basin	10.RD	NR184639XXXXG002	-	15,370
Detection and Management of Phytophthora species in Nurseries and Greenhouses	10.RD	58-2072-0-058	-	32,879
Developing a national team to optimize non-herbicide weed management techniques in cole and leafy green crops	10.RD	2021-51181-35856	-	45,030
Developing High Protein, Low Oil Content Soybeans that Provide Enhanced Nutritional and Economic Value	10.RD	59-6070-2-020	-	14,550
Developing Host Plant Resistance for Thrips in Cotton to Address Emerging Insecticide Resistance	10.RD	2017-70006-27264	60	60,652
Developing Resources to Manage the Exotic Root-Knot Nematode Meloidogyne Enterolobii	10.RD	58-6080-8-010	-	1,446
Development and Comparison of Pathogen Viability Tests for Seed Certification and Improved Management of Bacterial Spot of Tomato	10.RD	2017-70006-27206	-	92
Development and Implementation of Biological Control Tactics for Key Vegetable Insect Pests in the Southeastern US	10.RD	2018-51300-28425	209,260	272,487
Development of a Field Detection Tool for Old World Bollworm, Helicoverpa Armigera	10.RD	AP19PPQS&T00C039	-	2,190
Development of a Regional Southern Pine Beetle Website	10.RD	19-DG11083150-038	-	12,141
Development of Genetic Resources for Host-Plant Resistance to Leaf Blight Pseudomonads in Turnip Greens and Spinach	10.RD	2020-67014-30868	1,994	142,684
Development of Genomic and Molecular Tools to Accelerate the Identification and Delivery of Durable Genetic Resistance to Fov4 in Upland Cotton	10.RD	2019-67029-29915	-	58,939
DEVELOPMENT OF SITE-SPECIFIC, COMBINED WATER AND NUTRIENT MANAGEMENT TECHNOLOGIES FOR OVERHEAD IRRIGATION SYSTEMS	10.RD	2021-67022-34930	-	22,755
Distribution and Spread of the Invasive Callery Pear	10.RD	20-DG-11083150-008	-	11,238
Diversifying organic inputs to improve soils supporting organic vegetable in southeastern USA	10.RD	2020-51106-32363	30,295	154,527
Ecology and Integrated Management of Ambrosia Beetles in Eastern US Orchard and Ornamental Tree Crops- Clemson	10.RD	59-5082-1-005	-	3,381
Effects of Prescribed Fire on Ips Bark Beetles	10.RD	19-DG11083150-039	-	35,487
El Yunque National Forest: Research to Support Regional Community-Based Tourism and Resilience	10.RD	22-PA-11081600-116	-	21,011
Elucidating The Regulators That Impart The Specificity And Productivity Of Plant- Arbuscular Mycorrhizal Symbiosis	10.RD	2022-67014-37145	-	16,950
Enable the Use of Mass Timber Products for Non-Residential Buildings in High Velocity Hurricane Zone	10.RD	19-DG11083150-015	-	66,142
Enhancing Communication Skills of Next Generation Scientists and Educators Using Art and Technology	10.RD	2020-67034-31765	-	84,162
Enhancing FANH Education Through Sensor-Linked Mobile Applications to Improve Technical Literacy	10.RD	2017-70003-26390	-	26,617
Enhancing the Nutrient Use Efficiency in Crop Plants by Tailoring the Nitrogen and Phosphorous Release Rates from Rendered Animal Materials	10.RD	2016-67020-25264	-	(100)
Enriching the Professional Preparation of Food Science Students	10.RD	2020-67038-30654	-	85,464
Establishing the Infrastructure to Develop Prediction Tools for Diseases & Affecting Cotton to Better Inform Mgmt. Decisions (Clemson)	10.RD	58-0206-0-195	-	33,253
Establishment of a Southeastern US Regional Hub in Support of the North American Bat Monitoring Program	10.RD	22-JV-11330170-021	-	10,125
Evaluating Sweetpotato Germplasm for Resistance to Reniform Nematode	10.RD	58-6080-1-010	-	19,989
Evaluation of Paper Bags for Pest and Disease Management in Organic Peach Production	10.RD	2016-51300-25726	39,961	48,127
Exploring Alternative Uses for Muscid Antimicrobial Effectors	10.RD	58-3020-1-017	-	13,560
Exploring mechanisms of chemical resistance in Xanthomonas arboricola pv. pruni and strategies to mitigate resistance and improve disease control	10.RD	2021-67013-33574	30,250	126,302
FACT-CIN: Expanded Food and Nutrition Education Program - Web Based Nutrition Education and Evaluation Reporting System (WebNEERS)	10.RD	2020-67017-32395	13,221	267,845
FLORECE!: Future Leaders Obtaining Research & Extension Career Experiences	10.RD	2021-68018-34636	-	85,522
FY19BFP Turkey(Uslu) Triple mloGene@Clmsn	10.RD	FX19BF-10777R010	-	535
FY2019 NCPN Clemson University Southeast	10.RD	AP19PPQS&T00C105	-	2,784
FY2020 NCPN Clemson Univ./Cieniewicz- So	10.RD	AP20PPQS&T00C042	-	106,965
FY21 NCPN Clemson. Univ./ Cieniewicz-So	10.RD	AP21PPQS&T00C107	-	162,183
Genetic basis for acetaminophen toxicity	10.RD	AP21WSNWR00C001	-	6,203
Genomics, Transcriptomics and Microbiome Analysis of Dipteran Pests Affecting Livestock and Humans	10.RD	58-3020-6-015	-	84,765
Green Salamander Habitat	10.RD	19-PA-11081200-115	-	2,206
Growing Microalgae In Livestock Wastewater - Benefits In Nutrient Recycle, Antibiotic Removal, and Potential Biofuel Production	10.RD	2022-67019-37177	-	2,648
Harvesting Options for Restoration Treatments	10.RD	19-JV-11330132-087	-	10,258
Hatch & Hatch Multistate	10.RD	N120HMFXXXXG029	-	1,186,347
Hatch & Hatch Multistate	10.RD	N121HMFXXXXG016	-	2,792,213
Hatch & Hatch Multistate	10.RD	N121HMFXXXXG011	-	856,857
Hatch & Hatch Multistate	10.RD	N122HMFXXXXG044	-	218,502
Herbicide efficacy for management of invasive Callery pear	10.RD	20-CS-11330160-086	-	3,489
iCORP: Increasing Coastal Organic Rice Production in South Carolina Using Salt Tolerant Cultivars	10.RD	2021-51106-35494	-	38,045
Identification of Molecular Markers Associated with Root Traits that Improve Performance in Cotton	10.RD	58-6066-1-033	-	31,859

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RESEARCH AND DEVELOPMENT CLUSTER, continued				
Department of Agriculture, continued				
Identifying Effective Farming Practices To Reduce Risks Of Per- And Polyfluoroalkyl Substances (Pfas) In Food Crop Productions	10.RD	2021-67019-33682	-	5,992
Immediate Responses of Bats to Prescribed Fire	10.RD	21-JV-11330170-033	-	606
Improving Soybean's Efficiency for Heat Tolerance with an Integrated Metabolic and Genetic Approach	10.RD	2022-67013-36173	-	26,175
Improving the Nutritional Value of Chickpeas	10.RD	58-2090-8-084	-	31,785
Increasing Mass Timber and Wood Markets in the Southeast	10.RD	20-DG-11083150-250	-	2,849
Integrated Housing Design and Logistics for Disaster Relief	10.RD	19-JV-11111133-037	-	13,087
Interactive Effects of Temperature and Photoperiod on Flower Initiation and Development	10.RD	58-5082-8-013	-	43,377
Invasive Plants in Southern Forests: Impact on Fuels and Implication to Fire Behavior	10.RD	21-JV-11330145-066	-	24,867
Investigating the Plant-Soil Feedback That Maintains the Legacy Effect in Invaded Ecosystems to Formulate Knowledge-Based Restoration Practices	10.RD	2017-67014-26698	-	105,261
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.RD	2021-51106-35495	-	83,005
Linking Dynamic Soil Erodibility to Soil Loss in the Agricultural Landscape	10.RD	58-6060-0-008	-	46,690
Management of Salinity Externalities in an Irrigated Agricultural Region	10.RD	2021-67024-34480	30,926	68,874
McIntire Stennis	10.RD	NI20MSCFRXXXG072	-	176,761
McIntire Stennis	10.RD	NI21MSCFRXXXG010	-	872,940
MicroRNA-mediated transgene containment in important perennial grasses	10.RD	2021-33522-35342	-	14,316
Mitigation Strategies for Ergot Alkaloid-Induced Vasoconstriction and Intrauterine Growth Restricted Muscle Development	10.RD	2020-67016-30816	4,770	96,825
Modeling and Valuing the Distributional Impacts of Fuel Treatments	10.RD	21-JV-11272131-037	-	6,724
Monitoring Pasture Quality and Quantity Using Field Robotics	10.RD	2020-67021-31960	-	124,222
Multiscale Modeling and Machine Learning Guided Characterization and Design of Chitosan-based Nanocomposites for Active Food Packaging	10.RD	2022-67022-36423	-	27,265
On-Farm Demonstration and Evaluation of Cloud-Based Soil Moisture Monitoring Technologies for Irrigation Scheduling to Enhance Farm Profitability and Environmental Quality	10.RD	NR203A750013G010	-	107,316
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.RD	2021-51300-34897	9,395	22,381
Organization and Implementation of the 2022 Southern Soil Survey Conference. CESU 68-3A75-18-501	10.RD	NR213A750025C015	-	5,962
Outreach Activities for the Consortium of Appalachian Fire Managers and Scientists	10.RD	19-JV-11330136-078	-	(1,732)
Outreach Activities for the Consortium of Appalachian Fire Managers and Scientists	10.RD	20-JV-11330160-095	-	86,263
Phytochemical-Mediated Stress Hormesis And Priming As A Mechanism Of Resilience In Weeds And Negating These Stress Adaptations	10.RD	2021-67014-33636	-	80,509
Population Analysis Of Pseudoperonospora Cubensis And Identification Of Downy Mildew Resistance In Cucumis Mel	10.RD	2020-67034-31741	-	69,396
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.RD	NR214639XXXXC020	-	14,845
Promoting cyber-learning through technology-enabled modules within FANH education	10.RD	2020-70003-32310	-	41,832
Promoting Water, Soil and Nutrient Conservation in Peach Orchards with Trees Planted in Raised Beds	10.RD	NR184639XXXXG005	-	2,290
Providing Assistance to Rural Cooperatives and Mutually Owned Businesses through the South Carolina Center for Cooperative and Enterprise Development	10.RD	46-039-576000254	20,673	76,999
Purchase of a Shared-Use Conviron BDW160 Plant Growth Chamber for Plant Science Research across Multiple Disciplines and Institutions	10.RD	2020-70410-32898	-	247,922
Quantifying the Cover Crops Nitrogen and Potassium Credit to 3-yr Cotton-Peanut Rotation	10.RD	NR184639XXXXG009	-	34,001
Quantifying the Spatial and Temporal Patterns of Population Establishment & Growth of the Asian Longhorned Beetle in South Carolina	10.RD	20-JV-11242303-095	-	3,084
Roles of Microplastics in Reclaimed Water - Altering Persistence and Bioavailability of Antimicrobials in Agricultural Soils	10.RD	2020-67019-31022	52,770	112,308
SC FY19 Forest Pest Outreach - Underserved Landowners	10.RD	AP19PPQF0000C259	-	84
SC FY20 Invasive Species Education Prog.	10.RD	AP20PPQF0000C165	-	(146)
SC FY21 ALB Outreach	10.RD	AP21PPQF0000C427	-	71,577
SC FY21 Forest health Invasive Species 5	10.RD	AP21PPQF0000C426	-	72,778
SC FY22 Imported Fire Ant Survey	10.RD	AP22PPQF0000C267	-	17,297
Selection, Molecular and Genetic Analysis of HLB Tolerant/Resistant Variant Citrus Plants	10.RD	2017-70016-26051	586,321	794,821
Solutions to the Armillaria Root Rot Threat Affecting the U.S. Stone Fruit Industry	10.RD	2020-51181-32142	245,138	806,753
South Carolina Aquaculture Futures - Evaluating Socioeconomic Potentials for Rural Communities and Limitations for Entrepreneurs	10.RD	2019-67024-29671	-	59,258
Southern Heritage Crops: Developing Economic Potential in a Geographically and Culturally Unique Market Niche for Small and Medium Sized Farms	10.RD	2020-68006-31266	1,774	59,154
Spatial & Temporal Patterns of ALB Dispersal	10.RD	AP21PPQS&T00C183	-	40,332
Storage, Reactivity, and Bioavailability of Mercury in Manage Forests - Balancing Mercury Toxicity and Wildfire Risks Through Effective Fuel Reduction	10.RD	2018-67019-27795	4,406	126,716
Studies of Occupations, Culture, and Innovations toward Agricultural Literacy (SOCIAL): Professional Development for Integrating Agriculture and History Curricula	10.RD	2021-67037-34301	677	57,964
Sustainable, high-quality organic pulse proteins: organic breeding pipeline for alternative pulse-based proteins	10.RD	2021-51300-34895	-	119,158
Systems approach to impart stress resilience: Enhancing the drought-resilience of crops through cross-inoculation of beneficial rhizobiome and cover cropping	10.RD	2022-67014-37053	-	8,302
To Expand the Delivery of Conservation Assistance, Emphasis on Climate-Smart Agriculture, to Historically Underserved Farmers and Ranchers Including Outreach to Minority Students	10.RD	NR223A750003C031	-	232
Transforming Nanocellulose Into an Advanced Biorenewable Reinforcement With Hyperbranched Polymers	10.RD	2016-67021-25016	11,224	114,254
Transgene Containment and Removal in Important Perennial Grasses	10.RD	2019-33522-30102	-	154,235
Urban Forestry's Return on Investment: Accelerating out Understanding of the Nature-Health Care Cost Relationship	10.RD	20-DG-11132544-057	-	19,694
Utilizing Deep-Rooted Cover Crops to Enhance Water Quality, Soil Health, and Farm Profits While Reducing Soil Compaction in Coastal Plain Region	10.RD	69-3A75-17-274	103,008	104,075
White-Nose Syndrome Survival Strategies of Tricolored Bats (Perimyotis subflavus) during Fall, Winter, and Spring	10.RD	20-JV-11330170-109	-	59,439
Whole Genome Sequencing of the Face Fly, Musca Autumnalis	10.RD	58-3094-7-018	-	7,292
Pass-through programs from:				
Arizona State University				
Secure Traceability in the Food Supply Chain Using Cell Phone Readable Dendritic Identifiers	10.RD	ASU800000994	-	56,419
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.RD	G-03421-01	-	35,371
Cornell University				
Developing an Eastern Broccoli Industry Through Cultivar Development, Economically and Environmentally Sustainable Production and Delivery	10.RD	79598-10781	-	71,965
Integrated Weed Management in Hemp: A Multistate Effort to Evaluate Practices and Develop Recommendations	10.RD	139252-21126	-	9,489
Ducks Unlimited, Inc.				
CRP Soil Carbon Assessment-Wetlands	10.RD	US-RS-55-1	-	32,573

Clemson University, Clemson, South Carolina
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2022

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RESEARCH AND DEVELOPMENT CLUSTER, continued				
Department of Agriculture, continued				
Pass-through programs from, continued:				
Growers for Grace PBC				
Evaluation of Agricultural Carbon Waste Streams to Facilitate Anaerobic Soil Disinfestation in Watermelon Production	10.RD	G4GS-21SCBPSC1010-CU	-	8,029
Iowa State University				
Rapid In-Field Monitoring Of Salmonella Species For Food Safety Using Disposable Laser-Induced Graphene Biosensor	10.RD	022384A	-	1,373
Michigan State University				
CucCAP 2: Harnessing Genomic Resources For Disease Resistance And Management In Cucurbit Crops - Bringing The Tools To The Field	10.RD	RC111377B	-	98,780
North Carolina State University				
Alternative Management Options for Destruction of ALB Infested Trees	10.RD	2022-1554-01	-	1,060
Alternative Management Options for Destruction of ALB Infested Trees in SC	10.RD	2021-1547-01	-	6,600
Identifying Overwintering and Landscape Features Associated with Stink Bug Risk and Yield Loss in Corn	10.RD	2020-2993-01	-	28,914
NCSU, Clemson, & NC A&T CYFAR SCP 4-H STEM Education & Science Literacy: Developing The Next Generation Of Scientists	10.RD	2016-2288-02	-	11,336
North Carolina Central University				
Control of Persistent Foodborne Pathogens Using Visible Light-Activated Antimicrobial Carbon Nanomaterials Effectively Using Permanent and Temporary Electric Fence Technology: Adviser Training to Support Producers	10.RD	A19-0041-S002 / P0108382	-	655
Implementing Adaptive Grazing Management	10.RD	2019-1503-02	-	2,988
Enhancing the Sustainability of United States Cropping Systems through Cover Crops and an Innovative Information and Technology Network	10.RD	2019-1507-10	-	50,621
Growing New Roots: Grafting to Enhance Resiliency in U.S. Vegetable Industries	10.RD	2016-1498-01	-	18,805
Pennsylvania State University				
Regional Approach to Cucurbit Downy Mildew Prevention, Monitoring and Management	10.RD	6061-CU-PDA-7029	-	12,343
Rutgers, The State University of New Jersey				
Protecting Pollinators with Economically Feasible and Environmentally Sound Ornamental Horticulture	10.RD	0876-PP2018-Tharayil / PO# 1046399	-	123,866
Protecting Pollinators with Economically Feasible and Environmentally Sound Ornamental Horticulture	10.RD	1609-PP2020-Chong / PO 1380272	-	99,319
Protecting Pollinators with Economically Feasible and Environmentally Sound Ornamental Horticulture	10.RD	6065-PP2016-Chong / PO#479850	-	11
South Carolina Department of Agriculture				
Are the Gummy Blight Fungi in South Carolina Becoming Resistant to Tebuconazole?	10.RD	19-G013	-	11,512
Assessing Nematode Populations Damaging Bermudagrass Across South Carolina	10.RD	AM200100XXXXG073	-	13,049
Assessing Nematode Populations Damaging Bermudagrass in South Carolina	10.RD	21SCBPSC1010	-	17,331
Capture and Reuse of Phosphorus in Specialty Crop Production	10.RD	AM180100XXXXG026	-	1,299
Cultivating Heat and Humidity Tolerant Beans in South Carolina	10.RD	AM200100XXXXG073	-	2,693
Detecting and Managing the hypervirulent nematode Meloidogyne enterolobii on Sweet Potato and Pepper in South Carolina	10.RD	AM190100XXXXG013	33	33
Determining Prevalence of Nematodes Damaging Strawberries in South Carolina	10.RD	21SCBPSC1010-00	-	18,793
Developing First Strategies to Manage Bronzing, A Major Factor Impairing the Quality of SC Peaches	10.RD	AM200100XXXXG073	-	28,216
Developing Strategies to Improve Management of Bacterial Diseases in South Carolina Peach Orchards	10.RD	AM190100XXXXG013	-	4,189
Developing Strategies to Manage Premature Peach Tree Decline from Cytospora Canker in Peach Orchards	10.RD	AM180100XXXXG026	-	1,641
Development of a New Diagnostic Tool to Identify the Bacterial Disease Complex on Leafy Brassica Greens	10.RD	AM200100XXXXG073	-	23,713
Enabling Breeding of Peach Cultivars for Spring Climate Resilience Traits	10.RD	AM200100XXXXG073	-	12,829
Evaluating and Promoting Cold-Hardy Citrus Species for South Carolina	10.RD	AM200100XXXXG073	-	16,423
Exploring Novel Armillaria Root Rot Management Strategies in Peach	10.RD	21SCBPSC1010-00	-	26,756
Good Agricultural Practices for Field Pea and Kale Nutritional Breeding in South Carolina	10.RD	AM180100XXXXG026	-	3,981
Improving Irrigation Scheduling for Maximum Fruit Size in Peach Orchards in South Carolina	10.RD	AM180100XXXXG026	-	896
Improving Propagation Efficiency of Golden Camellia, a Valuable Yellow-flowering Selection, with High Market Demand	10.RD	AM200100XXXXG073	-	6,705
Integrated Management of Peach Associated Nematodes Endemic in South Carolina	10.RD	AM200100XXXXG073	-	28,298
Managing Cercospora Leaf Spot on Beet Greens with Tolerant Cultivars and Conventional and Organic Fungicides	10.RD	AM190100XXXXG013	-	4,428
New Winter Legume Cash Crop: Developing Improved Pea Cultivars for SC Organic Cropping Systems	10.RD	21SCBPSC1010	-	1,187
Optimization of Nutritional Programs for Stone Fruit in the Southeastern U.S.	10.RD	P1601SCMP22-1	-	321
Reducing the Impacts of Chemical Insect Pest Management in Cucurbit Crops	10.RD	AM180100XXXXG026	-	975
Research Projects, Educational Events, Demonstrations and Field Days to Educate Growers and Improve Grower Production Management Skills	10.RD	AM200100XXXXG073	-	5,683
South Carolina Cantaloupe Disease Survey	10.RD	AM180100XXXXG026	-	252
Taking Disease Detection to the Sky: Evaluating Satellite Imagery for Virus Disease Detection in Peach Trees	10.RD	21SCBPSC1010-00	-	17,142
The Continued Development and Utilization of the South Carolina Agrivellness Program	10.RD	P1601FRSAN22-1	-	121,374
South Carolina Forestry Commission				
Assessing Asian Long-horned Beetle's Impact on Managed and Natural Southern Forest Ecosystems	10.RD	21-DG-11083145-008	-	27,840
Enhanced Pear-spectives: Proactive Sky-scouting to Detect Areas at High-risk from Spread of Invasive Gallery Pear Ice Storm Impact on Forest Health: Monitoring & Predicting the Growth & Mortality of Ice-damaged Trees in Southern Forests	10.RD	21-DG-1108345-001	-	14,900
Tennessee Department of Agriculture-Forestry Division				
Developing a Regional Forest Health and Invasive Species Outreach Program	10.RD	32510-06619/ 61709 (Edison Vendor ID: 57646)	-	44,353
Tennessee State University				
Flatheaded Borer Management in Specialty Tree Crops	10.RD	332.77-21.2177 / PO142885	-	2,570
Texas A&M University				
Investigating Action Thresholds and Alternative Approaches for Managing Helicoverpa Zea in Cotton Research and Extension to Address Herbicide Resistance Epidemic in Annual Bluegrass in Managed Turf Systems	10.RD	M2001832	-	59,598
The Center for Produce Safety				
Preventive Sanitation Measures for the Elimination of Listeria monocytogenes Biofilms in Critical Postharvest Harboring Sites	10.RD	2019CPS02	-	267
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.RD	2022CPS03	-	59,115
Verification and Validation of Environmental Monitoring Programs for Biofilm Control in the Packing House	10.RD	2020CPS02	-	92,967
University of Arkansas				
Development and Implementation of Innovative Food Safety Training Tools for the Production and Distribution of Microgreens	10.RD	91172-01	-	27,873
Environmental Control of SARS-CoV-2 within Food Service Establishments	10.RD	AWD-000210-02	-	125,667
University of Florida				
Dispersal and reproductive potential of Helicoverpa zea in Bt and non-Bt crops and implications for Insecticide Resistance Management regulations	10.RD	SUB00002839	-	8,015
Evaluate the Efficacy of Various Products Against Ambrosia Beetles on Ornamental Plants	10.RD	PO: 1800632814	-	404

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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, continued:				
University of Florida, continued				
Plant Safety, Horticultural Benefits, and Disease Efficacy of Essential Oils for Use in Organically Grown Fruit Crops:				
From the Farm to the Consumer	10.RD	SUB00002400	-	45,129
SmartPath: Grower-directed convergence of nanotechnology and smart decision analytics for irrigation water quality management related to pathogens	10.RD	SUB00002832	-	44,094
Translating a Discovery into Improving Food Safety: A Novel Poultry Salmonella Vaccine and Diagnostic Methodology to Control Foodborne Salmonellosis	10.RD	SUB00002531	-	4,511
University of Georgia				
Cover Cropping to Improve Soil Moisture Content for the Following Cash Crop	10.RD	SUB00001798	-	29
Developing Sustainable and Profitable Tools for Producing Tomato in Fields Infested with Soilborne Pathogens, Nematodes, and Weeds	10.RD	SUB00002138	-	81,913
Development of Sustainable Strategies for Managing Bacterial Diseases and Improving Tree Health in the Peach Production System	10.RD	SUB00002851	-	1,003
Documenting Challenges, Identifying Solutions, and Developing Decision Support Tools for Small and Medium-sized Forest Businesses	10.RD	SUB00002538	-	25,056
Incorporating Natural, Non-toxic Arthropod Resistant Tomato Varieties Into Southern Production Systems	10.RD	SUB00002042	49,905	123,952
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.RD	SUB00002595	-	1,771
Sustainable Agriculture Research and Education (SARE) Program 2021	10.RD	SUB00002852	-	2,894
Sustainable Agriculture Research and Education (SARE) Program 2021	10.RD	SUB00002854	-	5,246
The Potential of Inter-Seeded Cover Crops for Enhancing Soil Health and Soil Moisture Content in a Row Crop Production System	10.RD	SUB00002279	-	4,657
Utility of Anaerobic Soil Disinfection and Organic Herbicides for Weed and Disease Management in Organic Solanaceous Vegetable Systems	10.RD	SUB00001973	-	34,728
US Endowment for Forestry & Communities				
A Systems Approach to Design and Manufacture CNC-Enabled Lightweight Automotive Components	10.RD	E17-18	-	32,196
Advancing Mass Timber Design and Education for Buildings on Military Installations	10.RD	20-00096/ 16-DG11132544-050	30,935	163,773
Transforming Cellulose Nanocrystals into High-Performance Silicon-Based Products	10.RD	20-00082	-	83,493
Total Department of Agriculture			2,123,435	17,498,715
Department of Commerce				
Continuation Development of a Mini-Ebit for TES (Transition Edge Sensor) X-ray Detector	11.RD	70NANB21H048	-	71,370
Developing and Implementing a Biological Condition Gradient for Nearshore Habitats of Puerto Rico	11.RD	NA20NOS4200124	-	49,912
Epidemiology and Reproductive Impacts of the Newly Discovered Egg Parasite Carcinonemertes Obrieni on the Caribbean Spiny Lobster Fishery in Florida and the Caribbean	11.RD	NA20NMF4270197	40,642	92,045
Improving Disaster Resilience by Quantifying WUI community ember exposure	11.RD	70NANB17H213	-	43,337
Novel Time-Dependent Metrology for Precision Spectroscopy of Highly Charged Ions	11.RD	70NANB20H087	-	135,268
Salient, Interactive, Relevant & Confidence in Actions (SIRCA): Using Virtual Reality Storm 1 Surge Simulations to Increase Risk Perception and Prevention Behaviors	11.RD	NA21OAR4590217	-	58,646
Understanding Visitor Use and its Impacts on Key Resources at the ACE Basin National Estuarine Research Reserve	11.RD	NA20NOS4200125	-	51,389
Pass-through programs from:				
National Estuarine Research Reserve Association				
Coastal Zone Management Administration Awards	11.RD	NMS-002	-	11,501
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.RD	SCDNR FY2020-022 P24019487319	-	67,366
South Carolina Research Authority				
South Carolina Medical Device Alliance	11.RD	CU-2019	-	129,351
South Carolina Sea Grant Consortium				
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.RD	R/SE-2 Year 1	-	30,918
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.RD	R/SE-2 Year 2	-	23,143
Examining the Social Carrying Capacity for Mariculture Development on the South Carolina Coast	11.RD	R/A-36 Year 2	-	5,690
Kathryn D. Sullivan Earth & Marine Science Fellowship: The Influence of Butterflyfish and Coral Genome on the Progression and Transmission Success of Coral Disease	11.RD	M/PM-2B Year 3	-	1,771
Rapid Response to Seafood Supply Chain Vulnerabilities by Assessing Direct Marketing Options in South Carolina	11.RD	A/RR-1a	-	19,221
Something Very Fishy: A Marine Science STEAM Program for Elementary Schools	11.RD	R/ED-1	-	10,651
Something Very Fishy: A Marine Science STEAM Program for Elementary Schools - Year 2	11.RD	R/ED-1 Year 2	9,388	33,255
Urban Stormwater Runoff as a Source of Microplastic and Tire Wear Particles in Coastal Waterways: Transport, Cumulative Impacts to Biota, and Mitigation	11.RD	R/ER-52	49,191	51,893
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.RD	R/ER-52 Year 2	19,823	41,575
University of South Carolina				
Guiding Successful Applications of Floating Treatment Wetlands in Brackish Coastal Ponds	11.RD	22-4813 PO#2000063111/10011752	-	3,479
The North Inlet-Winyah Bay National Estuarine Research Reserve	11.RD	21-4333 PO#2000056626	-	34,354
Total Department of Commerce			119,044	966,135
Department of Defense				
COVIA: Computer Vision based Intelligent Assistant for Mistake Proofing of Complex Maintenance Tasks on Navy Ships	12.RD	N00174-21-1-0010	-	113,361
A DIGITAL PLATFORM FOR STUDIES IN LEARNING AND OPTIMIZATION OF LEARNING SYSTEMS	12.RD	N00014-19-1-2610	-	172,679
A Unified Materials Approach to Mitigating Nonlinearities in HEL Optical Fibers	12.RD	N00014-17-1-2546	172,657	400,512
Assessing the Impact of Asymmetric Information in Interdiction and Bilevel Games	12.RD	N00014-17-1-2421	-	21,272
Bottomside Ionospheric Inversion using Passive High Frequency Transmissions	12.RD	N00014-21-1-2546	-	70,752
Conic Programming Reformulations and Relaxations for Quadratically Constrained and Quadratic Programs	12.RD	N00014-20-1-2154	40,080	79,644
Connecting and Leveraging Digital and Physical Dimensions to Advance Human-Autonomy Teaming (Program Type - DURIP)	12.RD	N00014-22-1-2250	-	149,789
Development and Validation of New Technologies for TrueView	12.RD	N00014-20-1-2585	-	141,558
Exploiting Structural Information in Algorithm Designs for Large-Scale Nonlinear Optimization	12.RD	N00014-20-1-2089	98,384	206,674
High Photon Density Spatiotemporal (OAM+SAM) Vector Beams for Maritime Environment	12.RD	N00014-20-1-2558	744,115	1,157,686
HOBBIT Control System Development for Higher Order Bessel Beams Integrated in Time (HOBBIT)	12.RD	N00014-17-1-2779	-	10,154
Integrated Modal Control and Beam Combining of High Power Diode Arrays for the Next Generation HEL System	12.RD	N00014-17-1-2556	294,117	624,160
Learning agility for single and multiple swimming robots via bioinspired proprioception	12.RD	N00014-21-1-2367	-	139,573
Multilevel Hybrid Quantum-classical Algorithms for Combinatorial Optimization	12.RD	W911NF2020075	177,927	177,927

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RESEARCH AND DEVELOPMENT CLUSTER, continued				
Department of Defense, continued				
PHOTOACOUSTIC INTERACTIONS USING HIGHER ORDER BESSEL BEAMS INTEGRATED IN TIME AND SPACE (HOBBITS)	12.RD	N00014-20-1-2037	-	201,557
Promoting Human Interpretation and Interaction to Mitigate Bias in Artificial Intelligence Assisted Decision Aids	12.RD	N00014-21-1-2336	-	155,926
Radiofrequency detection and control of cellular physiological process	12.RD	W911NF-21-1-0145	-	52,643
Reactive Membranes for Rapid Isotopic Analyses of Waterborne Special Nuclear Material	12.RD	HDTRA1-16-1-0016	-	45,284
Spatiotemporal Testbed for High Photon Density Beams	12.RD	N00014-21-1-2257	-	623,376
Time for Robotics - Technology in Manufacturing Education for Robotics	12.RD	N00014-18-1-2882	31,886	181,236
Virtual Prototyping of Ground Systems (VIPR-GS)	12.RD	W56HZV-21-2-0001	-	1,201,575
Abiotic Transformation of Chloroethenes in Low-Permeability Formations	12.RD	W912HQ-16-C-0022	545	545
Development of eDNA as a Tool to Evaluate Anadromous Fish Passage in Response to Environmental Flows	12.RD	W912PM22P0030; W912HQ-20-C-0038; CLIN 0001 PO#	-	44,952
Development of Protocols to Quantify Abiotic Transformation Rates and Mechanisms for Chlorinated Ethenes in Water Supply Aquifers	12.RD	W74RDV00781560	24,826	103,931
Identifying and Evaluating Impacts to Wetlands from the Savannah River Estuary	12.RD	W912HZ-19-2-0007	-	281,168
Induced fish movement over lowhead dams	12.RD	W912HZ-21-2-0031 W81XWH-20-1-0447/ Log # TS190006	-	19,700
A Subependymal Giant Cell Astrocytoma (SEGA) Mouse Model	12.RD	FA9453-19-1-0078	-	268,301
Algorithm Design for Optimization in Communication and Navigation	12.RD	FA9550-20-1-0342 2	-	20,898
Considerations of Ethical and Unethical Behavior on Trust in Human-Autonomy Teaming	12.RD	FA9550-19-1-0057	-	162,220
Deeply Subwavelength All-Dielectric Nanophotonics in Silicon	12.RD	FA9550-19-1-0339	-	127,021
Extending the Reformulation-Linearization Technique to Continuous, Nonconvex Problem	12.RD	FA9550-19-1-0130	-	2,405
Investigating the Range of Response of Auroral Electron Precipitation in High Latitude Electrodynamics	12.RD	FA9550-21-1-0314	-	113,874
The Spread of Trust and Distrust in Distributed Human-Autonomy Teaming Constellations	12.RD	W911NF-20-2-0237	29,425	139,480
An Integrated Multi-Material Digital Life Cycle Approach for Additive Manufacturing of Ground Vehicle Structures and Components	12.RD	W911NF-20-2-0237	1,535,306	2,981,251
Complete and Resilient Documentation (CARD) for Operational Medical Environments	12.RD	W81XWH-17-C-0238	-	9,306
Hollow-core MWIR Optical Fibers	12.RD	W911NF-19-1-0409	-	64,025
Hybrid Integration for Beam Combining on Silicon Photonics Platform-Optoelectronics Program	12.RD	W911NF-18-1-0176	-	64,038
Incorporating Matrix Diffusion in the New Modflow Flow and Transport Model for Unstructured Grids	12.RD	W912HQ19C0018	116,080	275,067
Non-Destructive Evaluation Precursor Mechanics of Embedded Magnetostrictive Composite Sensor	12.RD	W911NF-17-2-0184	-	19,504
Point-of-injury application of hydrogel embedded dexamethasone for severe traumatic brain injury	12.RD	W81XWH-20-C-0114	-	228,424
Power Scaling of Combinable Fiber Lasers to Beyond 5kW	12.RD	W911NF-17-1-0454	-	107,334
Privacy Support for TLA	12.RD	W911QY-16-C-0105	-	(7,224)
Pulse-Based Clock Synchronization for Embedded AI	12.RD	W911NF2020054	-	2,536
RF Bioelectronics: Noninvasive Measurement and Control of Bacterial Bioelectricity	12.RD	W911NF2210044	-	40,660
Segregation Induced Grain Growth Anomalies in Nanocrystalline Alloys	12.RD	W911NF-20-2-0122	-	57,865
Invasive & Exotic Plant Species Survey and Control Method Evaluations; Townsend Bombing Range; Long and McIntosh Counties, GA	12.RD	N62470-21-2-9024	-	29,453
Pass-through programs from: Applied Research Associates, Inc.				
Military Working Dog Protective Suit Arcadis, Inc.	12.RD	S- D00122-010-02-CLEM/ PO21-01415	-	58,392
Thermal In-Situ Sustainable Remediation (TISRSM) To Enhance Biotic and Abiotic Reactions and Accelerate Remediation Timeframes Auburn University	12.RD	D20-222/ 30027243.00001/ Hoa Voscott	-	73,075
Migratory Behavior of Diadromous and Potamodromous Fish at a Rock Arch Rapids Structure in the Cape Fear River, North Carolina Brown University	12.RD	20-FAA-360863-Clemson	-	72,922
Fractional PDEs for Conservation Laws and Beyond: Theory, Numerics and Applications Cornerstone Research Group, Inc.	12.RD	00001605	-	9,505
Signature Management Textiles Georgia Institute of Technology	12.RD	PO # 2021-0525 / W911QY- 21-C-0046	-	60,613
Individual Differences in Executive Attention and its Value in Selection for Military Jobs Jacobs	12.RD	AWD-000996-G1 / PO- 5139885	-	57,069
Hydrothermal Cladding of Single Crystal Fibers of Doped YAG. Phase2 Leidos, Inc	12.RD	SC170104	-	(1,995)
Personalized Protective Biosystem Lynntech, Inc.	12.RD	P010250791	-	213,020
Machine Learning for Simulation Environments Maher & Associates LLC	12.RD	NAV-818	-	135
THERMOFORMING OF COMPOSITES FOR ALUMINUM REPLACEMENT Massachusetts Institute of Technology	12.RD	18-0130-0002	-	111
Virtual Manufacturing Lab (VM-Lab): A Multimedia Design House for Digital Learning in Manufacturing-USA Workforce Education	12.RD	S4916 / PO# 388434	-	782,700
Gate Drive and Smart Control for Fast Light-Weight DC Solidstate Circuit Breaker Northrop Grumman IT, Inc.	12.RD	N00244-21-2-0001	-	66,280
Fiber Laser Materials Research Palo Alto Research Center Inc.	12.RD	PO #5300037834	-	3,865
Smart Configuration Optimizer Through Transformative Analytics (SCOTTY) Rowan University	12.RD	P315899	-	289,445
Advancing Structural Materials for Army Modernization Priorities via Direct Write Approaches Snake Creek Laser, LLC	12.RD	51291-4	-	31,848
One Micrometer Integrated Transmitter for Balanced Radio-Frequency-Over- Fiber Photonic Links The Johns Hopkins University	12.RD	N6833520C0973B	-	17,938
Understanding the Skin Microbiome through the Integration of Metagenomics, Bioinformatics, Spatial Ecology, and Synthetic Biology University at Buffalo	12.RD	152174	-	11,169
Computer Vision Based Intelligent Assistant for Mistake Proofing of Complex Maintenance Tasks on Navy Ships University of California Santa Barbara	12.RD	N001741910025 / PO# R1239105	-	871
Highly-Perfect BaSnO3 Thin Films for Electronic Devices University of Illinois	12.RD	KK1905 / N00014-18-1-2704	-	(1,743)
Internal Cooling of Fiber and Disc Lasers by Radiation Balancing and Other Optical or Phonon Processes University of Maryland	12.RD	084272-16069	-	267,479
UMD-ARL Alliance for Additive Manufacturing Science (Task: Functional Polymer-Based Integrated Multimodal Structural Health Monitoring and Electromagnetic Shielding) University of Michigan	12.RD	109358-28468201	-	37,028

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RESEARCH AND DEVELOPMENT CLUSTER, continued				
Department of Defense, continued				
Pass-through programs from, continued:				
Automotive Research Center Phase V - Cooperative Agreement: 1.33: Trust-based Symbolic Motion and Task Planning for Multi-robot Bounding Overwatch	12.RD	SUBK00013068 / PO 3006000781	-	63,822
VIPR-GS 1.1- Deep Reinforcement Learning Approach to CPS Vehicle Re-environmenting- ARC Phase V Cooperative Agreement	12.RD	SUBK00013773 / PO 3006125452	-	836,030
VIPR-GS 2.4- Integrated Transient Control and Thermal Management of Autonomous Off-Road Vehicle Propulsion Systems-ARC Phase V Cooperative Agreement	12.RD	SUBK00013774 / PO 3006125310	-	553,338
VIPR-GS 2.5- Energy Management of Multi-Scale Vehicle Fleets- ARC Phase V Cooperative Agreement	12.RD	SUBK00013775 / PO 3006125656	-	432,411
VIPR-GS 3.1- Computational Representation and Analysis of Mission and System Requirements- ARC Phase V Cooperative Agreement	12.RD	SUBK00013776 / PO 3006125692	-	482,147
VIPR-GS 3.2- Model Interface Specification and Environment to Support Model Integration- ARC Phase V Cooperative Agreement	12.RD	SUBK00013777 / PO 3006125693	-	412,741
VIPR-GS 3.3- Best Practices for Computational Tradespace Exploration, Analysis and Decision-Making- ARC Phase V Cooperative Agreement	12.RD	SUBK00013778 / PO 3006126223	-	497,320
William Marsh Rice University Next Generation Teams and Organizational Subsystems Research	12.RD	R1A604	-	203,647
Total Department of Defense			3,265,348	16,615,255
Department of Interior				
A study on Tree Health and Survival to Determine How Patterns of Tree Decline and Mortality Impact Accumulation of Forest Fuels	15.RD	P19AC01063	-	10,102
An Atlas and Registry for Seabird Colonies and Associated Habitats in the Northern Gulf of Mexico	15.RD	G22AC00008 (RWO #106)	-	30,494
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.RD	P19AC01168	32,606	61,994
CESU - Collect Oral Histories Related to Establishment of Freedom Riders National Monument, Birmingham Civil Rights National Monument, Reconstruction Era National Historic Park	15.RD	P20AC01015	-	26,022
Conservation and Life History of the Northern Pine Snake (Pituophis melanoleucus) Across North Georgia	15.RD	F21AC00507-00	-	43,269
Cooper River Canoe Project	15.RD	ST-251081-OMS-21	-	30,192
Evaluating and Informing the Future of NPS Interpretation Planning	15.RD	P21AC10777-00	-	60,758
Functional Morphology and Physiology of Shortleaf Pine Fire-Adapted Traits JFSP 19-1-01-42	15.RD	L20AC00013	-	12,443
Growing Visitation and Enhancing Visitor Experiences at National Wildlife Refuges (NWRs) Through Better Estimation Techniques	15.RD	G19AC00438 (RWO #104)	-	33,242
Investigating Impediments to Recruitment of the Carolina Heelsplitter (Lasmingona decorata)	15.RD	F20AC11776	-	58,325
Investigating Poaching and Human-elephant Conflict in Myanmar	15.RD	F19AP00779	-	1,762
Keeping History Above Water Charleston - A Workshop for Communities in Action	15.RD	P20AP00386	-	6,725
Monitoring of Non Breeding Sea Ducks on the Great Lakes	15.RD	F21AC00222-00	62,455	69,974
Natural and Anthropogenic Influences on Tidally Influenced Forested Wetlands of the Southeast U.S.	15.RD	G19AC00208	-	67,927
South Carolina Water Resources Center Program Management	15.RD	G21AP10579	-	72,339
Spatial Ecology, Movement Patterns, and At-Sea Habitat Use of Black-capped Petrels	15.RD	G21AC00001 (RWO #105)	-	14,722
Spatial Ecology, Movement Patterns, and At-Sea Habitat use of Brown Pelicans in the South Atlantic Bight	15.RD	G16AC00395 (RWO #100)	-	74,510
State Water Resources Research Institute Program	15.RD	G16AP00082	5,290	61,198
Vessel-based Surveys for Pelagic Seabirds in the Gulf of Mexico	15.RD	G17AC00371 (RWO #102)	3,000	145,830
Pass-through programs from:				
Georgia Dept. of Natural Resources				
Conservation and Life History of the Northern Pine Snake Across North Georgia	15.RD	46200-605-200126 / PO # 152919	-	16,373
NC Wildlife Resources Commission				
Ecological Studies and Monitoring Strategies for Eastern Spotted Skunks in North Carolina	15.RD	WM-0322	-	67,746
Old Dominion University				
NCR Visitor Use Surveys	15.RD	22-110-300541-004	-	33,078
South Carolina Department of Natural Resources				
Basin-wide Planning for Bartram's Redeye Bass in the Savannah River	15.RD	SCDNR FY2021-029 P24019497620	-	109,618
Effect of Forest Management on Early-Successional Avian Species in South Carolina	15.RD	SCDNR FY 2020-018 P24019486020	-	22,945
Environmental DNR Determination of the Distribution of the Patch-Nosed Salamander (Ursplereperes brucei) in South Carolina	15.RD	SCDNR FY 2020-019 P24019497520	-	11,131
Green Salamander Population Assessment and Connectivity Across a Gradient of Forest Disturbance	15.RD	SC-T-F18AF00973/ SCDNRWP2404406119	-	27,480
Impacts of Special Hunting Clinics on the Recruitment and Retention of Female Hunters in South Carolina for 2021-22 (SC Hunter Education Program)	15.RD	SCDNR FY2022-022 P24014LE0121	-	18,173
NABat Acoustic Monitoring in South Carolina	15.RD	P24014404619 SCDNR FY 2019-40	-	10,445
Response of Bachman's Sparrow to Habitat Management in a Wiregrass-tree Ecosystem	15.RD	SCDNR FY 2020-017 P24019087119	-	10,940
South Carolina - National Bobwhite Conservation Initiative	15.RD	SCDNR FY2022-034 P24014402122	-	39,002
Southeast Aquatic Resources Partnership				
Incorporating Fish Species Swimming Speed into Barrier Removal Prioritization - Coastal	15.RD	None	-	21,171
Incorporating Fish Species Swimming Speed into Barrier Removal Prioritization - Swim	15.RD	None	-	67,484
The Nature Conservancy				
Reptile Surveys of The Talladega-Mountain Longleaf Pine Conservation Local Implementation Team (LIT) Boundary, Northwest Georgia	15.RD	GABU 02182020	-	12,102
Wildlife Management Institute				
Black Hunters: Reclaiming the Tradition	15.RD	MSCG 2022-01	-	26,695
Total Department of Interior			103,351	1,376,211
Department of Justice				
An Evaluation of De-Escalation Training to Understand the Links between Training and Outcomes	16.RD	15PNUI-21-GG-02719-RESS	33,020	65,368
Effects of Campus Sexual Assault Prevention Programs on Attitudes and Behavior Among College Students: A Systematic Review and Meta-analysis	16.RD	2019-SI-AX-0004	9,345	88,465
GIS Application for Building a Nationally Representative Forensic Taphonomy Database	16.RD	2020-DQ-BX-0025	-	165,293
Pass-through programs from:				
Wichita State University				
Assessment of Cognitive Performance-Based Training to Improve Police Decision-Making	16.RD	WSU# 21-00192	-	62,507
University of Minnesota				
Identification of Effective Strategies to Disrupt Recruitment of Victims in Human Trafficking: Qualitative Data, Systems Modeling, Survivors and Law Enforcement	16.RD	P008619001	-	75,509

The accompanying notes are an integral part of this schedule

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RESEARCH AND DEVELOPMENT CLUSTER, continued				
Department of Justice, continued				
Pass-through programs from, continued:				
Oconee County				
Oconee County (SC) Justice and Mental Health Planning & Implementation Initiative	16.RD	001/ 2020-MO-BX-0045	-	33,452
University of North Florida				
The Missouri 29th Judicial Veterans Treatment Court (VTC) Enhancement Initiative	16.RD	022-003	-	9,263
Total Department of Justice			<u>42,365</u>	<u>499,857</u>
Department of State				
Pass-through programs from:				
Internews				
Minecraft Pluggable Transport Improvement	19.RD	SGR-GX1968-FD-3	-	48,082
Total Department of State			<u>-</u>	<u>48,082</u>
Department of Transportation				
University Transportation Center - Center for Connected Multimodal Mobility (C2M2)	20.RD	69A3551747117	488,623	805,986
University Transportation Center - Center for Connected Multimodal Mobility (C2M2) - Chowdhury	20.RD	69A3551747117	-	8,504
University Transportation Center - Center for Connected Multimodal Mobility (C2M2) - Ferrell	20.RD	69A3551747117	-	51,418
University Transportation Center - Center for Connected Multimodal Mobility (C2M2) - Jia	20.RD	69A3551747117	-	66,813
University Transportation Center - Center for Connected Multimodal Mobility (C2M2) - Li	20.RD	69A3551747117	-	959
University Transportation Center - Center for Connected Multimodal Mobility (C2M2) - Ogle	20.RD	69A3551747117	-	43,883
University Transportation Center - Center for Connected Multimodal Mobility (C2M2) - Pisu	20.RD	69A3551747117	-	85,047
University Transportation Center - Center for Connected Multimodal Mobility (C2M2) - Sarasua	20.RD	69A3551747117	-	39,026
Pass-through programs from:				
South Carolina Department of Transportation				
A Preliminary Cost Estimating Model for Transportation Projects	20.RD	SPR 757	-	18,711
Best Practices on Collection Asset Information from the Construction Stage	20.RD	SPR 759	-	59
Developing a DOT Specific UAS Simulator and a Flight Proficiency Exam	20.RD	SPR 1-21	-	86,662
Evaluating the Construction Cost and Schedule Impacts of SCDOT's Traffic Control Restrictions	20.RD	SPR 747	-	28,024
Impact of Utility Delays on Project Delivery	20.RD	SPR 756	62,018	189,221
Investigation and Assessment of Effective Patching Materials for Concrete Bridge Decks	20.RD	SPR 755	-	66,182
Optimization of Cement Modified Recycled Base (CMRB) Planning, Design and Testing	20.RD	SPR 754	-	125,863
SCDOT Scope of Services Template Research Proposal	20.RD	SPR 753	-	219,103
Ultra-High-Performance Concrete (UHPC) Used As a High Friction Surface Treatment (HFST) on Pavements and Bridges	20.RD	SPR 762	-	17,002
Update to SCENARIO_PC toXcel, LLC	20.RD	2130; SPR 745	84,347	166,752
Additional Considerations for Making ADS Vehicles Accessible for All Road Users	20.RD	TO# 693J921F000157/ 2019-006	-	2,793
Vulnerable and Disabled Road Users: Considerations Inside and Outside the Vehicle	20.RD	2019-006/ TOA 693J919F000170	-	170,838
University of Michigan				
Predicting Driver Takeover Performance in Conditional Automation (Level 3) through Physiological Sensing	20.RD	SUBK00015064 / PO 3006413512	-	37,759
University of South Carolina				
Calibration of the AASTO Pavement Design Guide to South Carolina Conditions - Phase II	20.RD	17-3296/PO#2000031396/ USC#15520FB40	-	182,785
Field Trials for Cost-Effective Strengthening of SC Load Posted Bridges	20.RD	22-4618 PO#2000060577 20-4076 PO#2000053138	-	35,581
Safe and Cost-Effective Reduction of Load Postings for South Carolina Bridges	20.RD	USC No. 10009980	-	123,289
Total Department of Transportation			<u>634,988</u>	<u>2,572,260</u>
National Aeronautics and Space Administration				
A New Efficient Galactic Accelerator	43.RD	80NSSC21K0020	-	37,208
An Investigation of Ion-Neutral Coupling During Active Auroral Conditions	43.RD	80NSSC19K0810	274,398	577,366
BL Lacertae Objects at High Redshifts	43.RD	80NSSC21K1888	-	17,403
Bridging the Gap: A Sensitive Catalog of MEV Sources	43.RD	80NSSC21K1914	-	13,352
Chasing the Most Powerful Blazars	43.RD	80NSSC20K0044	-	32,172
Chasing the Most Powerful Blazars	43.RD	80NSSC21K0025	-	45,952
Chemical Evolution of the Building Blocks of the Solar System	43.RD	80NSSC20K0338	-	57,833
Compton Thick AGN with NUSTAR and XMM-Newton	43.RD	80NSSC21K0016	-	58,625
Compton-Thick AGN: The Final Quest	43.RD	80NSSC19K0531	-	23,516
CUSP Upwelling and Heating Due to Small Scale Electric Field Fluctuations	43.RD	80NSSC18K0781	59,561	73,327
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.RD	80NSSC20K1353	32,977	183,451
Gamma Rays from AGN-Driven Galactic Outflows	43.RD	80NSSC21K1915	-	78,196
Gamma-Ray Emission from Galactic Wolf-Rayet Stars	43.RD	80NSSC21K1916	-	14,867
Hunting for Compton-Thick AGN in the Local Universe	43.RD	80NSSC22K0005	-	7,823
Hunting High Redshift Blazars with Swift and SARA-CT/ORM	43.RD	80NSSC20K1495	-	17,823
Hunting High-Redshift BL Lacertae Objects	43.RD	80NSSC20K0221 SMS0011602/	-	6,623
Mitigating Headward Fluid Shifts with Venio-Constrictive Thigh Cuffs During Spaceflight	43.RD	Natasha Long	-	1,698
Momentum Resolved Charge Exchange Cross Section Measurements and X-Ray Spectroscopy	43.RD	80NSSC19K0679	99,592	158,736
Probing the Structure of the AGN Torus with Swift	43.RD	80NSSC21K1401	-	12,521
Response of the Mesosphere/lower Thermosphere/ionosphere to Tidal Variability Caused by the Madden-Julian Oscillation	43.RD	80NSSC19K0258	-	45,444
Role of Lower Atmosphere Waves in Preconditioning the Ionosphere-Thermosphere Responses to Geomagnetic Storms Using ICON and GOLD	43.RD	80NSSC22K0018	-	64,724
Single Source; Data Analysis for NASA LWS SET DIME Experiments	43.RD	80NSSC21K0179	-	66,514
The Compton Thick AGN Legacy Project: A Complete Sample of NuSTAR-Observed Nearby Compton Thick AGN	43.RD	80NSSC20K0045	-	60,069
The Compton Thick AGN Legacy Project: A Complete Sample of Nu-STAR-Observed Nearby Compton Thick AGN	43.RD	80NSSC20K0834	-	35,995
The First 5 Sigma Detection of Periodicities in Blazars	43.RD	80NSSC20K1562	-	31,948
The Hosts of GAMMA-Ray Loud Narrow-Line Seyfert 1 Galaxies	43.RD	80NSSC21K0724	-	41,516
Towards a Full Mapping of the > GEV Extragalactic Sky: A spectroscopic Follow-up Campaign of Unidentified 3FHL Sources	43.RD	80NSSC21K1889	-	11,260
Towards the Full Identification of the 3FHL Catalog	43.RD	80NSSC21K2079	-	38,582
VortEx - Vorticity Experiment	43.RD	80NSSC19K0776	7,375	73,435

Clemson University, Clemson, South Carolina
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2022

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.RD	22-PHYS-209394-Clemson	-	64,886
Center for the Advancement of Science				
Unlocking the Cotton Genome to Precision Genetics	43.RD	GA-2019-007	19,953	59,965
College of Charleston				
GRF 2022-23: Creep Behavior of Lightweight, Ti-based Multi-principal Element Alloy	43.RD	521383-GRF-CM006	-	1,714
GRF: SC Space Grant Consortium Graduate Research Fellowship	43.RD	521383-GRF-CM001	-	3,261
Impacts of Gravity and Surfactants on Drainage Flow and Rheology of Wet Foams	43.RD	521471-CM	-	86,142
Increased Impact-Resistance for Rigid-Flex PCB Robotics via Topology-Optimized, High-Performance Polymer Reinforcement	43.RD	521383-GRF-CM004	-	12,805
Kathryn D. Sullivan Earth & Marine Science Fellowship: The Influence of Butterflyfish and Coral Genome on the Progression and Transmission Success of Coral Disease	43.RD	521383-KS-CM001	-	1,208
Mini-REAP: Simultaneous Production of Fuel and Oxygen through Developing Cu-based Cathode Catalytic Flow Cell Systems: An Atoms-to-Space Approach	43.RD	521179-RP-CM003	-	16
MIST 2021: Biomimetic Configurations of Modular Robotic Systems for On-orbit Servicing, Assembly, and Manufacturing	43.RD	521383-MS-CM001	-	7,500
MIST 2022-23: Fabrication of a Cryogenic Test Platform for Superconducting Particle Detectors	43.RD	521383-MS-CM002	-	7,500
Modular Fault-tolerant Inverter for Electrified Aircraft Propulsion	43.RD	521340-CM001	-	5,092
Molecularly Informed Design of Nanosheet-Reinforced Polymer Nanocomposites for Wastewater Filtration Application	43.RD	521383-GRF-CM003	-	14,000
Nanomaterials-Based Hybrid Energy Storage Devices and Systems for Space Applications	43.RD	521296-Clemson	-	33,433
PA 2022: Converting In-Space CO2 into Propulsion Fuel Through Cost-Effective and High-Performance Single-Atom-Alloy Electrocatalysts	43.RD	521383-PA-CM011	-	14,875
PA 2022: Image-based and Machine Learning-enabled Characterization of Lunar Regolith Simulants in Support of In Situ Resource Utilization	43.RD	521383-PA-CM008	-	7,500
PA 2022: Rapid FIRE: Formulation of Innovative Robotic Explorers	43.RD	521383-PA-CM009	-	9,717
PA 2022: Student Participation in Developing Nanomaterials-Derived Technologies for Space Applications	43.RD	521383-PA-CM010	-	12,750
Palmetto Academy 2021: Investigating the Mechanism of Tool-Regolith Interaction for In Situ Characterization of Lunar Regolith	43.RD	521383-PA-CM004	-	16,810
Palmetto Academy 2021: Stabilization of Yellow Water Using Electro-synthesized Hydrogen Peroxide for Subsequent Nitrogen Recovery	43.RD	521383-PA-CM005	-	15,500
Palmetto Academy 2021: Student Participation in Developing Nanomaterials-Derived Technologies for Space Applications	43.RD	521383-PA-CM007	-	11,000
Palmetto Academy 2021: TERRA-BOTS: Tiny Elastic Reshaping Robotic Architectures-Built for Optimized, Task-specific Solutions	43.RD	521383-PA-CM006	-	12,670
Peroxide-Producing Microbial Fuel Cells for Space Life Support Systems Applications	43.RD	521365-CM	51,472	187,307
Rapid Laser Reactive Sintering of High-Performance Electrolytes for Additive Manufacturing of Solid State Batteries	43.RD	521474-CM	-	69,911
Rapid Laser: 3D Printing of Reversible Solid Oxide Electrochemical Cell Stacks for Producing Pure O2 from CO2 and Storing Electricity into Carbon	43.RD	521434-CM	6,863	131,405
REAP 2020: Exploring the Potential of Anaerobic Osmotic Membrane Bioreactors for Regenerative Water Purification in Space	43.RD	521383-RP-CM001	-	7,687
REAP 2020: Rigid-Flex PCB Robots for Extreme Impact Resistance	43.RD	521383-RP-CM002	-	6,805
REAP 2021-22: Development of Multi-Body Dynamics and Discrete Element Co-Simulation Tool for Lunar Regolith-Tool Interaction Simulations	43.RD	521383-RP-CM004	-	19,025
REAP 2021-22: Evaluating the Effects of Microgravity on Intervertebral Disc Organoids	43.RD	521383-RP-CM006	-	1,786
REAP 2021-22: Near-Earth Space Radiation Effects on Functional Ceramic Materials: A Combined Experimental-Monte Carlo Approach	43.RD	521383-RP-CM005	-	14,994
REAP 2021-22: Quantifying Solder Joint Quality in Ultrasonic Soldering of Dissimilar Materials	43.RD	521383-RP-CM003	-	19,796
REAP 2021-22: Single-Atom-Alloy Based Electrocatalytic System for High-Yield Fuel Production and Oxygen Supply	43.RD	521383-RP-CM007	-	12,617
REAP 2021-22: Storybook Structures Curriculum	43.RD	521383-RP-CM008	-	4,000
REAP 2022-23: Deep Eutectic Solvents from Halogen Bonding	43.RD	521383-RP-CM011	-	1,466
REAP 2022-23: Investigation of High Temperature Performance of III-Nitride Pressure Sensors	43.RD	521383-RP-CM010	-	17,918
RGP 2022-23: Reconfigurability of Battery Storage Systems and Its Application in Battery Equalization	43.RD	521340-CM002	-	3,067
RockSat-C: Nanoparticle Gyroscope	43.RD	521383-RO	-	1,763
Space Grant Graduate Research Fellowship: Shape-Morphing Structures with Wind Energy for Passive Robotic Operations	43.RD	521193-CM001	-	322
Stabilization of Urine through Electro-synthesized Hydrogen Peroxide for Subsequent Recovery of Urea Needed in Food Production during Space Missions	43.RD	521383-GRF-CM002	-	12,782
STEM Outreach Award: Neuro-Robotics Outreach Initiative	43.RD	521383-SOA-CM002	-	6,000
Undergraduate Student Research Award	43.RD	521383-UG-CM001	-	7,500
Undergraduate Student Research Award	43.RD	521383-UG-CM002	-	7,500
Undergraduate Student Research Award	43.RD	521383-UG-CM003	-	5,000
Validating Satellite Remote-Sensing of Aerosols with Ground-based Low-cost Sensors	43.RD	521383-GRF-CM005	-	14,573
Embry-Riddle Aeronautical University				
Sporadic-E ElectroDynamics	43.RD	61559-2	-	29,918
Jet Propulsion Laboratory				
Initial Stress Analysis for JPL Lunar PUFFER	43.RD	1621866	-	(4,922)
Lynntech, Inc.				
Multi-Analyte Microfluidic Colorimetric Sensor for Inorganic Ions as Water Contaminants	43.RD	NAS-259	-	50,043
Smithsonian Astrophysical Observatory				
COMPTON-THICK AGNS: THE HUNT CONTINUES	43.RD	GOO-21083X	-	49,451
Witnessing the Birth of a Blazar with Chandra (Proposal No. 21700462)	43.RD	GOO-21106X	-	31,346
Touchstone Research Laboratory, Ltd.				
Precision Heated Tooling for OOA Curing of Thin-Ply Composites	43.RD	80NSSC21C0021-1	-	127,214
University of Alaska - Fairbanks				
Auroral Waves Excited by Substorm Onset Magnetic Events (AWESOME)	43.RD	UA 21-0101 / P0549262	-	22,984
In-Situ Measurements of Neutral and Plasma Dynamics Associated with Earth's Cusp-Region Thermospheric Mass Density Anomaly	43.RD	UAF 18-0025 / POS18692	-	141,406
In-Situ Measurements of Neutral and Plasma Dynamics Associated with Earth's Cusp-Region Thermospheric Mass Density Anomaly (C-REX2 SUPP)	43.RD	UA 21-0125 P0550050	-	106,503
KINET-X: Kinetic-Scale Energy and Momentum Transport Experiment	43.RD	UAF 19-0008 / P0528927	-	48,591
University of the District of Columbia				
NASA MIRO: Center for Advanced Manufacturing in Space Technology & Applied Research at UDC (CAM-STAR)	43.RD	SUB-0012020 / P2200367	-	28,826
University of Georgia				
Project FUSION: Facilitating Unified Systems of Interdependent Organizational Networks	43.RD	SUB00001668	-	81,684
University of New Hampshire				
TOMEX Plus: Turbulent Oxygen Mixing Experiment Plus	43.RD	L0058	-	11,813
Total National Aeronautics and Space Administration			552,191	3,564,404

Clemson University, Clemson, South Carolina
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For the year ended June 30, 2022

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RESEARCH AND DEVELOPMENT CLUSTER, continued				
Institute of Museum & Library Services				
Pass-through programs from:				
South Carolina Humanities				
Oconee County and Pickens County African American Heritage Sites Database	45.RD	22-2082-3	-	333
Total Institute of Museum & Library Services				333
National Science Foundation				
A Sustainable ATE Coordination Network for Enhancing Personalized Learning Using Virtual and Augmented Reality- based Technology Innovations in Technical Education	47.RD	1700621	-	51,540
ABI Innovation: Fast Algorithms and Tools for Single-Molecule Sequencing Reads	47.RD	1759856	-	193,272
ABR: Collaborative research: Smart earpiece for supporting healthy eating behaviors	47.RD	1835974	-	123,819
ADVANCE Institutional Transformation at Clemson University	47.RD	1629934	-	646,581
AIR-TT: Ultrapure Lignins Recovered from Paper-Mill Black Liquors as Renewable Biopolymers	47.RD	1701128	-	52,885
Algorithm Development and Analysis for Non-Newtonian Fluids Interacting with Elastic and Porolastic Structures	47.RD	1818842	-	46,137
An Integrated Housing Design and Logistics Operations Modeling and Analysis Framework for Hurricane Relief	47.RD	2053660	-	39,192
Broadband microwave flow cytometry: comprehensive nanoparticle sensing and characterization	47.RD	1711463	-	71,417
CAREER: Cross-Layer Power-Bounded High Performance Computing on Emerging and Future Heterogeneous Computer Clusters	47.RD	1551511	-	88,120
CAREER: An Adaptive Stochastic Look-ahead Framework for Disaster Relief Logistics under Forecast Uncertainty	47.RD	2045744	-	13,153
CAREER: Characterizing Nanoparticle Surface Interactions using Dissolution Dynamic Nuclear Polarization-Enhanced Nuclear Magnetic Resonance	47.RD	1751529	-	9,483
CAREER: Cooperative Control and Decision-Making for Human-Agent Collaborative Teams	47.RD	1454139	-	62,186
CAREER: Deep Learning Empowered Nonlinear Deformable Model	47.RD	2011471	-	47,222
CAREER: Detecting Patterned Profiles for Functional and Dysfunctional Teamwork	47.RD	1654054	-	137,584
CAREER: Diagnosing the Undiagnosable: Using Enzyme Upregulation to Probe Cellular Behavior in Neuropathic Lysosomal Storage Disease	47.RD	2047697	-	93,936
CAREER: Dual Function Materials for Capture and Conversion of CO2 into Methanol and Higher Alcohols	47.RD	2154386	19,576	29,853
CAREER: Dynamic Management of Compressed Arrays for High-Performance Computing Applications	47.RD	1943114	-	39,115
CAREER: Elastocapillary fluid mechanics: spreading, splashing, and instability	47.RD	1750208	-	75,742
CAREER: Elucidating Fundamental Structure-Property Relationships in Ionomer Nanocomposites for Redox Flow	47.RD	1848347	-	126,644
CAREER: Empowering Students to be Adaptive Decision-makers	47.RD	1745347	-	89,738
CAREER: Enabling Low-Cost, Maintenance-Free, Long-Term Embedded Sensing Without Batteries	47.RD	1453607	-	48,136
CAREER: Hierarchical Modeling for Rational Catalyst Design in Aqueous Conditions	47.RD	1554385	-	51,755
CAREER: Human-Inspired Multi-Robot Navigation	47.RD	2047632	-	105,019
CAREER: Hybrid Experimental-Computational Modeling Framework for Transformative Research and Multidisciplinary Education in Cardiovascular Biomechanics	47.RD	1749017	-	79,919
CAREER: Innovative Methods for Designing Adaptive Clinical Trials	47.RD	1651912	-	85,261
CAREER: Integrated Studies of Polar Wave and Magnetosphere-Ionosphere-Thermosphere Couplings from New Observations and Whole Atmosphere Modeling	47.RD	1753214	-	33,890
CAREER: Large Scale Simulations Enabled Materials Engineering for Heterogeneous Ice Nucleation	47.RD	1653352	-	10,213
CAREER: Leveraging Recommendations for Self-Actualization	47.RD	2045153	-	72,538
CAREER: Leveraging the Three- Dimensional Multi-Stability from Origami Folding to Synthesize Multi-Functional Material Systems	47.RD	1751449	-	116,336
CAREER: Modeling, Measuring and Controlling Human Comfort in Human-Autonomous-Machine Interaction (HaMI)	47.RD	1845779	-	25,935
CAREER: Multi-chrome metasurfaces for dynamic structural color and naked eye diagnostics	47.RD	2047015	-	108,916
CAREER: Multifunctional Peptide Nanocarriers for Delivery of Nucleic Acid Therapeutics	47.RD	2046694	-	102,847
CAREER: Multiscale Study of the Structure and Dynamics of Nanoparticle-Protein Corona	47.RD	1553945	-	147,254
CAREER: Multiscale Surface Structuring by Ultrafast Lasers for Multifunctional Glass Surfaces	47.RD	2047000	-	66,286
CAREER: Perceptually Guided Hand Motion Synthesis	47.RD	1652210	-	135,431
CAREER: Phenotypic and developmental effects of enhancer variation on cichlid craniofacial evolution	47.RD	1942178	-	111,659
CAREER: Protecting Deep Learning Systems against Hardware-Oriented Vulnerabilities	47.RD	2047384	-	83,210
CAREER: Quantifying drought and vulnerability indicators for water security in a changing environment	47.RD	1653841	-	63,790
CAREER: Quantifying the Adaptability of Building Structures, Envelopes, and Foundations	47.RD	1553565	-	68,435
CAREER: Self-Protecting Artificial Implants and Invigorating the STEM Education Pipeline with Biomaterials	47.RD	1555224	-	47,488
CAREER: Structural dynamics of post-translationally modified Calmodulin and its role in target recognition	47.RD	1749778	-	149,355
Career: Towards Engineering Electronic Defects in Inorganic Luminescent Materials	47.RD	1653016	-	19,047
CAREER: Understanding the Interaction between Mechanical Twinning and Fatigue Crack Growth	47.RD	2045082	-	29,070
CAREER: Valuing Education and Career Transition Opportunities Raising Student Success in Engineering	47.RD	2144213	-	5,638
CAREER: Multiscale Simulations of Nanofluid Assembly for Smart Materials Design	47.RD	1944942	-	86,741
CAREER: Exploring the Unknowns: Responses of Soil Microbial Communities to Increased Plant Functional Trait Diversity in Managed Ecosystems	47.RD	1941714	-	147,630
CC*Data: National Cyberinfrastructure for Scientific Data Analysis at Scale (SciDAS)	47.RD	1659300	61,151	77,845
CCF: EAGER: DeepGreen: Modeling and Boosting Accelerated Computing on Liquid Immersion Cooled HPC Systems	47.RD	1942182	-	54,370
CCRI: MEDIUM: Collaborative Research: F1/10 RACECAR: Community Platforms for Safe, Secure and Coordinated Autonomy	47.RD	1925500	-	6,126
Certification Algorithms for Polynomial System Solving	47.RD	1913119	-	11,949
Characterizing Inclusive Strategies that Retain Black Students in Computer Science to Graduation and Beyond	47.RD	2111354	-	43,827
CHS: Small: Looking Across the Uncanny Valley: Procedural and Data-Driven Methods for Gaze Modeling	47.RD	1423189	-	(219)
CHS: Medium: Collaborative Research: Augmenting Human Cognition with Collaborative Robots	47.RD	1900956	-	8,057
CHS: Small: Developing and Validating a Physically Accurate Light-Scattering Model for the Rendering of Bird and Other Dinosaur Feathers	47.RD	2007974	-	169,349
CHS: Small: Investigating the Behavioral Effects of Longitudinal Exposure to Immersive Consumer Virtual Reality	47.RD	1717937	-	7,224
CHS: Small: Investigating the Characteristics of User Representations and Long-Term Experiences in Personal Space Depth Perception in Virtual Reality	47.RD	2007435	-	113,046
CHS: Small: Towards Next-Generation Large-Scale Nonlinear Deformable Simulation	47.RD	2016414	-	246,149
CICI: RSARC: Secure Time for Cyberinfrastructure Security	47.RD	1738902	-	250,498
CIF: Single-Particle Measurements of Soot and Incandescing Aerosol	47.RD	2113160	-	79,765
CNH-L: Coupled Social and Ecological Consequences of Conservation Easements	47.RD	1518455	-	28,685
CNS Core: Small: PilotPC: Proactive Inverse Learning of Network Topology for Predictive Communication among Unmanned Vehicles	47.RD	2204721	-	37,805
Collaborative Proposal: Response of mercury cycling to disturbance and restoration of low-gradient forested watersheds	47.RD	1852020	-	6,399
Collaborative Research: A Regularized Poisson Boltzmann Model for Fast Computation of the Ensemble Average Polar Solvation Energy	47.RD	1812597	-	49,475
Collaborative Research: Advancing Chemical Separation Simulations: Computational Algorithms and Optimization with Implicit Adsorption Isotherms	47.RD	2011902	-	9,574
Collaborative Research: Advancing Theoretical Understanding of Accelerated Nonlinear Solvers, with Applications to Fluids	47.RD	2011490	-	101,799
Collaborative Research: Bound-Bound and Bound-Free Opacities of Heavy Lowly-Charged r-Process Ions	47.RD	1815932	-	33,007
Collaborative Research: Branching in RNA Secondary Structures	47.RD	1815832	-	2,015

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: CEDAR - Along-Term Investigation of Auroral and Tidal Forcing of E-Region Thermospheric Winds at High Latitudes	47.RD	1853408	-	14,099
Collaborative Research: CEDAR-Experimental and Theoretical Investigation of Midlatitude Ionospheric Instability	47.RD	2012994	-	36,748
Collaborative Research: CIF: Medium: Harnessing Intrinsic Dynamics for Inherently Privacy-preserving Decentralized Optimization	47.RD	2106293	-	3,205
Collaborative Research: CISE-MSI: DP: CCF: SHF: MSI/HSI Research Capacity Building via Secure and Efficient Hardware Implementation of Cellular Computational Networks	47.RD	2131070	-	24,473
Collaborative Research: CNS Core: Small: Scalable, Flexible, and Dependable Architecture Design for Heterogeneous Internet of Things	47.RD	2008049	-	45,678
Collaborative Research: Combining Operando Spectroscopy and Multi-Scale Modeling to Elucidate the Mechanism of Aqueous Phase Reforming of Oxygenates	47.RD	1764296	-	79,858
Collaborative Research: Concentration Polarization Induced Electrokinetic Flows around Dielectric Surfaces	47.RD	2127825	-	24,529
Collaborative Research: CPS: Medium: Wildland Fire Observation, Management, and Evacuation using Intelligent Collaborative Flying and Ground Systems	47.RD	2204445	26,823	50,204
Collaborative Research: Creativity in Teams : Identifying the Role of Meetings in Fostering Effective Cognitive and Social Processes in Teams	47.RD	1951298	39,085	110,184
Collaborative Research: CRISP Type 2: Coordinated, Behaviorally-Aware Recovery for Transportation and Power Disruptions (CBAR-tpd)	47.RD	1822436	29,465	129,970
Collaborative Research: CSSI Frameworks/Software: Future proofing the finite element library deal. I - development and community building	47.RD	2015848	-	95,755
Collaborative Research: Deconvolving the southern South American Pleistocene-Holocene dust production pathways	47.RD	1911340	-	55,335
Collaborative Research: Development and Application of a Framework for Integrated Geodynamic Earth Models	47.RD	1925575	-	27,345
Collaborative Research: Dimensions US-BIOTAQ.Sao Paulo: Scales of Biodiversity-Integrated Studies of Snake Venom Evolution and Function Across Multiple Levels of Diversity	47.RD	1822417	-	92,604
Collaborative Research: DMREF: Accelerating Adoption of Sintering-Assisted Additive Manufacturing Using Integrated Experiments, Theory, Simulation and Data Science	47.RD	2119833	-	15,960
Collaborative Research: Dynamic Data Analytics for the Power Grid via Koopman and Perron-Frobenius Operators	47.RD	2031573	-	35,169
Collaborative Research: EAGER: SaTC-EDU: Learning Platform and Education Curriculum for Artificial Intelligence-Driven Socially-Relevant Cybersecurity	47.RD	2114920	-	31,806
Collaborative Research: ECO-CBET: Putting entropy to work: Leveraging the role of water organization in peptide binding events to selectively recover rare earths	47.RD	2133512	-	30,914
Collaborative Research: Efficient Coupling of Multilevel Partial Differential Equation Solvers and Advanced Sampling Methods	47.RD	2028346	-	21,486
Collaborative Research: Efficient Learning of Process-Structure-Property Models in Value-Driven Materials Design	47.RD	1761136	-	75,203
Collaborative Research: Elements: SciMem: Enabling High Performance Multi-Scale Simulation on Big Memory Platforms	47.RD	2103967	-	11,117
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.RD	1754679	-	72,926
Collaborative Research: Emergency Response in the Arctic (ERA): Investments for Global Capabilities and Local Benefits (Transfer from RPI)	47.RD	2106726	16,317	30,378
Collaborative Research: Feasibility and Fundamentals of Femtosecond-Laser Shock Peening Without Protective Coating in Air Environment	47.RD	1762581	-	83,266
Collaborative Research: Improved Geochronology-Based Sediment Provenance Analysis Through Physico-Mechanical Characterization of Zircon Transport	47.RD	1946496	-	18,151
Collaborative Research: IRNC: Testbed: FAB: FABRIC Across Borders	47.RD	2029260	61,309	132,939
Collaborative Research: Litter Arthropods of High Appalachia	47.RD	1916263	-	212,759
Collaborative Research: Microbicidal Carbon Dots for Combating Anti-Biotic Resistance and Beyond	47.RD	1701424	-	69,215
Collaborative Research: Militias and Paramilitaries in Militarized Interstate Conflicts	47.RD	2116693	-	9,790
Collaborative Research: MRA: Scale, Space, and Time: A Unifying Approach to Aquatic Invasions	47.RD	2017795	-	69,019
Collaborative Research: Network Cluster: Bedrock controls on the deep critical zone, landscapes, and ecosystems	47.RD	2012227	-	188,181
Collaborative Research: Non-Ideal Majorana Fermions: A Practical Approach to Topological Quantum Computation	47.RD	2014157	-	42,904
Collaborative Research: Novel Laser and Nonlinear Properties of Anderson Localization Optical Fibers	47.RD	1808232	-	32,439
Collaborative Research: Practices and Research on Student Pathways in Education from Community College and Transfer Students in STEM (PROSPECT S-STEM)	47.RD	2138066	-	15,097
Collaborative Research: Rational Design and Mechanistic Understanding of Carbon-Based Hybrid Nanostructures for Potent Microbicidal Function	47.RD	2102021	-	1,944
Collaborative Research: REU Site: Resilience and Adaptation to Coastal Change Across Virtual Communities (C2-Virtual-C)	47.RD	2041427	-	4,997
Collaborative Research: Revolutionizing Electric Vehicle Education	47.RD	2202134	-	4,000
Collaborative Research: Student Pathways in Engineering and Computing for Transfer Success	47.RD	1834081	-	447,469
Collaborative Research: SWIFT: LARGE: AI-Enabled Spectrum Coexistence between Active Communications and Passive Radio Services: Fundamentals, Testbed and Data	47.RD	2202972	-	23,040
Collaborative Research: Tessellated Structural Architectural Systems for Rapid Construction, Repair, and Disassembly	47.RD	1762899	-	116,102
Collaborative Research: Theoretical and observational investigations of multi-point Monin-Obukhov similarity in the convective atmospheric surface layer	47.RD	2054983	-	47,991
Collaborative Research: Understanding the Multiscale Behavior of Triboelectric Devices	47.RD	1662587	-	29,674
Collaborative Research: What Do Leaders Want?: Collecting and Coding Issue Positions and Demands in the Militarized Interstate Dispute (MID) Data, 1816-2010	47.RD	1729138	-	(204)
COVID 19 - Collaborative Research: RAPID: Compounding Human and Natural Disasters: Implication on agriculture sectors	47.RD	2030362	-	47,255
Comparative Biomechanics of Hawk Moths with Minute to Giant Proboscises and Diverse Feeding Habits	47.RD	2042937	-	173,700
Computational Methods for Large Algebraic Eigenproblems with Special Structures	47.RD	2111496	-	56,587
Controlled Fragmentation of Polyolefinic Materials triggered by Microwave Irradiation	47.RD	2134564	-	8,208
CPS: Synergy: Collaborative Research: Semi-Automated Emergency Response System	47.RD	1812524	-	20,972
CRII: CHS: Redesigning Democratized Technology: The Broadening of Citizen Participation in Bottom-Up Technological Innovation	47.RD	1849718	-	24,349
CRII: CHS: Understanding and Supporting the Use of Self-Driving Vehicles by Persons with Visual Disabilities	47.RD	1849924	-	45,882
CRII: CPS: Bilateral Adaptation Between Models for Human-Perceived Safety/ Comfort and Autonomous Driving Controllers	47.RD	1755771	-	3,273
CRISP Type 1: Data-driven Real-time Simulation for Adaptive Control of Interdependent Infrastructure Systems	47.RD	1638321	-	2,400
CS For All: RPP: A Scalable RPP for Preparing and Supporting Teachers to Teach Culturally Responsive and Rigorous CS Courses in SC High Schools	47.RD	1738760	-	17,768
D-ISON: TRACK 1: Modeling Effective Network Disruptions for Human Trafficking	47.RD	2039584	91,844	154,402
DMREF: Collaborative Research: An Integrated Multiscale Modeling And Experimental Approach To Design Fouling-Resistant Membranes	47.RD	1534304	-	45,814
Dynamic Wetting Effects in the Spectrum of the Sessile Drop: Organizing Principles from the Symmetry-breaking Perspective	47.RD	1935590	-	99,922
EAGER: Collaborative Research: Building a Community of Mentors in Engineering Education Research Through Peer Review Training	47.RD	2037807	-	88,570

Clemson University, Clemson, South Carolina
Schedule of Expenditures of Federal Awards
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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: Evaluating the Feasibility of Estimating Cognitive Load Using Microsaccadic Eye Motion and Oscillation in Pupil Diameter	47.RD	1748380	-	1,520
EAGER: Magnetically Induced Catalysts for Active and Selective CO2 Reduction under Mild Conditions	47.RD	2146591	-	109,732
EAGER: Principles of Motor Skills (re)Learning When Using Powered Exoskeletons	47.RD	2207515	-	6,707
EAGER: SaTC-EDU: Mathematically-grounded metaphors to teach AI-related cybersecurity	47.RD	2039616	-	155,758
EAGER-QAC-QSA: Quantum Algorithms for Correlated Electron Phonon System	47.RD	2038011	36,939	129,023
EAGERSIS: Quantifying the Value of Information for Sensor Placements to Improve Soil Signals for Agricultural Water Management	47.RD	1841629	-	42,323
Embodied Sensing and Control in Fish-like Swimming Robots via Passive Degrees of Freedom	47.RD	2021612	-	93,144
Encrypted Control for Privacy Preserving and Securing Cyber-physical Systems	47.RD	1912702	-	4,571
Envisioning Community & Public	47.RD	1918352	-	4,086
Explaining Choice, Persistence, and Attrition of Black Students in Electrical, Computer, and Mechanical Engineering	47.RD	1734347	41,254	82,222
Exploiting Multi-Stability to Enable Mechanical Intelligence for Versatile and Efficient Control of Soft Robotic Locomotion and Manipulation	47.RD	1933124	-	85,824
COVID 19 - Exploring the Strategies Used by Two-year Colleges to Support Academic Continuity in STEM Education During the COVID-19 Crisis	47.RD	2037809	-	265,462
Fabrication of High Performance Metasurfaces by Nanoimprinting of Refractive Index	47.RD	1825787	-	102,476
FMSG: Internet of People and Things 2 Bridging manual to semiautomated processes through Cybermanufacturing Collaborative Intelligence	47.RD	2036873	32,248	250,520
Fundamental Insights into Multi-element Grain Boundary Segregation in Nanocrystalline Alloys	47.RD	2114832	-	16,962
Fundamental Study of Nonlinear Electrokinetic Phenomena in Insulator-based Dielectrophoretic Microdevices	47.RD	1704379	-	38,438
FW-HTF-P: Wearable Adaptive Cognitive Assistance to Auditory Situational Awareness for Workers Exposed to Complex and Dynamic Noises	47.RD	1928550	-	47,507
FW-HTF-RL: Preparing the Future Workforce for the Era of Automated Vehicles	47.RD	2041215	296,507	615,814
FW-HTF-RM: Collaborative Research: Future of Construction Work at the Human-Technology Frontier	47.RD	1928527	-	62,125
FW-HTF-T/Collaborative Research: Occupational Exoskeletons and the Human-Technology Partnership: Achieving Scale and Integration into the Future of Work-	47.RD	2202862	35,399	217,141
GP-EXTRA: Building An Affective Pathway To The Geosciences Through Experiential Learning Opportunities For Non-Geoscience Majors	47.RD	1540702	-	1,535
Graduate Research Fellowship	47.RD	1246875 & 1744593	-	(7,280)
Graduate Research Fellowship - Ryan Borem	47.RD	1246875 & 1744593	-	(5,870)
GRFP - Adam Haberski	47.RD	1744593 & 2139915	-	51,925
GRFP - Britney Hudson	47.RD	1744593 & 2139915	-	73,188
GRFP - Cierra Sullivan	47.RD	1744593	-	52,392
GRFP - Deyrel Diaz	47.RD	1744593	-	52,392
GRFP - Gwendolyn Watson	47.RD	1744593 & 2139915	-	52,289
GRFP - Haley Hostetter	47.RD	1744593 & 2139915	-	49,954
GRFP - John Sherwood	47.RD	1744593	-	(19,412)
GRFP - Kelli McCourt	47.RD	1744593 & 2139915	-	52,392
GRFP - Kylie Gomes	47.RD	1744593	-	(3,951)
GRFP - Megan Pitz	47.RD	1744593 & 2139915	-	28,922
GRFP - Michael Stoner	47.RD	1246875 & 1744593	-	(4,709)
GRFP - Michelle Greenough	47.RD	1246875 & 1744593	-	(8,328)
GRFP - Sarah Donaher	47.RD	1744593 & 2139915	-	50,898
GRFP - Shyla Kupis	47.RD	1744593	-	(15,497)
GRFP - Stephanie Damas	47.RD	1744593 & 2139915	-	51,925
GRFP - Tyler Grimm	47.RD	1744593 & 2139915	-	57,566
Guest-Induced Electrical Conductivity and Photovoltaic Activity of Metal-Organic Frameworks	47.RD	1809092	-	155,441
HCC: Small: Mitigating Online Risks: Designing Social VR to Prevent New Forms of Online Harassment	47.RD	2112878	-	95,533
High Throughput Purification and Quantification of Bionanoparticles on Capillary-Channeled Fiber Stationary Phases	47.RD	2107882	-	279,590
Hydrothermal Brines: New Media for the Synthesis and Crystal Growth of Materials	47.RD	1808371	-	79,123
I Am a Scientist: Moving African American youth beyond participating in STEM activities to committing to a STEM identity	47.RD	1906708	-	38,402
Inclusive Data Science Education for Rural Elementary Students: A Research Practice Partnership for Agile Learning	47.RD	2031175	88,651	310,878
Information-Based Complexity Analysis for Large-Scale Nonlinear Optimization	47.RD	1913006	-	58,054
Interaction of Tool Wear and the Machining Affected Zone in Nickel-Based Superalloys	47.RD	1760809	-	99,611
Investigating Functional Peptides for Asymmetric Hypervalent Iodine Catalysis	47.RD	1664920	-	48,237
IREs: Track 1: Self-Healable Materials Development	47.RD	1952528	-	57,640
IUCRC Phase II+ Clemson University: Advanced Mammalian Biomanufacturing Innovation Center (AMBIC)	47.RD	2100442	-	119,602
IUI Track-2 FEC: The Creation of Next-Generation Tools for Neuroscience-Noninvasive Radioluminescence Approaches to Optogenetics	47.RD	1632881	40,217	595,870
IUSE/ PFE: RED: Clemson University: Learning Teams and Innovation Ventures for Adaptable Training in Engineering (CULTIVATE)	47.RD	1730576	-	348,161
Large Scale Networking (LSN) Workshop on Operationalizing SDN	47.RD	1747856	-	36,592
Mesoscale Modeling of Controlled Degradation and Erosion of Polymer Networks on Abbreviation	47.RD	2110309	-	18,386
Metal Coordination and DNA Interactions Control Sulfur and Selenium Antioxidant Mechanisms	47.RD	1807709	-	95,193
Methods for improved size resolution for particle impactors	47.RD	1804304	-	85,862
Modeling and measuring critical data literacies in informal learning environments	47.RD	2024965	-	150,776
Modifying the floral microenvironment: elevational divergence in floral thermoregulatory mechanisms	47.RD	2015459	-	147,961
MRI: Acquisition of a Cyberinstrument for AI-Enabled Computational Science & Engineering	47.RD	2018069	-	260,925
MRI: Development of Enodia: A Highly Reconfigurable, HPC- Backed Instrument Enabling Multifaceted Interactive Visualization	47.RD	1828611	3,108	107,278
MTM2: Drivers of functional redundancy across microbiomes	47.RD	2025541	-	311,509
Multi-Point Monin-Obukhov Similarity and Spectral Dynamics in the Convective Atmospheric Surface Layer	47.RD	1561190	-	28,325
New Preconditioned Solvers for Large and Complex Eigenvalue Problems	47.RD	1819097	-	35,157
Novel Graphene-based Label-free Biosensor Array for Smart Health and Drug Discovery	47.RD	1606882	-	19,748
Novel microcantilever sensor using plasmatically enhanced nonlinearity	47.RD	1809891	-	61,441
NRI: FND: 3D Concrete Printing with Macro-Micro Robots	47.RD	1924721	-	335,380
NRI:FND:COLLAB: Drones and the Design of Public Outdoor Spaces	47.RD	1734247	-	28,347
NRT: Technology-Human Integrated Knowledge Education and Research (THINKER)	47.RD	1829008	-	495,792
NRT-DESE: Preparing Resilient and Operationally Adaptive Communities through an Interdisciplinary, Venture-based Education (PROACTIVE)	47.RD	1633608	-	340,112
Overcoming Impediments to Computer Science Students' Understanding of Code: Scaling Up Automated Methods and Broadening Participation	47.RD	1914667	-	87,150
Particle Electrokinetics in Non-Newtonian Microfluidics	47.RD	2100772	-	37,180
PFI:AIR - TT: Novel Low-Power III-Nitride Heater Cantilever Based Selective VOC Sensor	47.RD	1602006	-	4,634
PFI-RP: Design and Fabrication of Hardware-Based Security Platform Using Fabrication Variability of Ultra Low Power Memories	47.RD	2204502	-	16,126
PFI-TT: A non-toxic, biobased, and recyclable polyurethane for foam-in-place packaging and rigid foam insulation	47.RD	2122822	-	58,414
Phase I IUCRC Clemson University Site: Advanced Mammalian Biomanufacturing Innovation Center (AMBIC)	47.RD	1624641	1,536	156,937

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RESEARCH AND DEVELOPMENT CLUSTER, continued				
National Science Foundation, continued				
PHASE II IUCRC Clemson University: Center for Robots and Sensors for Human Well-Being	47.RD	1939058	-	101,263
Planning Grant: Engineering Research Center for Computer And Network Resiliency and Security for Transportation (CAN-RESIST)	47.RD	1937000	-	38,120
Planning Grant: Engineering Research Center for Exploring Human-Machine Integrated Systems in Digitally Intensive Manufacturing Environments (HMIS-DIME)	47.RD	1936998	-	36,995
Planning: ADAPT in SC: AI-enabled Devices for the Advancement of Personalized and Transformative Healthcare in South Carolina	47.RD	2210336	-	53,113
Production and Exploration of Rydberg Highly Charged Ions	47.RD	1806494	-	27,012
Program Income for 206-20133852: PHASE II IUCRC Clemson University: Center for Robots and Sensors for Human Well-Being	47.RD	1939058	-	50,000
Quantifying dense gas dispersion in urban areas	47.RD	1703548	-	18,223
QuIC-TAQ5: Voltage-Tunable Hybrid Microwave-Acoustic Interconnects for Multi-modal Quantum Memories	47.RD	2137776	150,499	322,243
COVID 19 - RAPID: Aptamer-Linked Nano-Plasmon Sensor for Rapid Detection of SARS-CoV-2	47.RD	2030828	24,885	42,549
COVID 19 - RAPID: Archiving and Contextualizing Data around Academic Program Delivery during the Covid-19 Pandemic	47.RD	2135089	-	41,888
COVID 19 - RAPID: Cyber-Hostility and COVID-19	47.RD	2031002	-	24,269
RAPID: Reconstruction of Hurricane Florence Flood Hydrographs (HF2Hs) for South Carolina's Critical Infrastructures Using Data Analytics Algorithms and In-situ Field Measurements	47.RD	2035685	-	1,451
RAPID: Revisiting the compounding storm surge and extreme precipitation events on coastal flooding during hurricane Florence using field data	47.RD	1855374	-	35,939
RCN: Advancing Research and Education Through a National Network of Campus Research Computing Infrastructures - The CaRC Consortium	47.RD	1620695	8,798	66,876
Research: Developing Engineering Experiences and Pathways (D.E.E.P) in Engineering Technology Career Formation	47.RD	1825126	8,930	8,080
REU Site at Clemson, IMPRESS (IMPlanting the ResEarCh Seed in Students)	47.RD	2050042	-	103,332
REU Site: Nature's machinery through the prism of Physics, Biology, Chemistry and Engineering	47.RD	1757658	-	177,402
REU Site: Research Experience for Undergraduates in Advanced Material Sciences	47.RD	1950557	-	80,062
REU Site: Solid-State Devices for Electronics, Photonics, and Magnetics Technology	47.RD	1560070	-	30,738
REU Site: Summer Undergraduate Research Program at Clemson University	47.RD	1560300	-	6,456
RI: Small: Collaborative Research: A Modular Approach to Robot Systems Incorporating Compliant and Soft Elements	47.RD	1718075	-	34,118
RII Track-2 FEC: Advanced Biomanufacturing: Catalyzing Improved Host Development and High Quality Medicines through Genome to Phenome Predictions	47.RD	1736123	611,398	908,599
RII Track4: Event Based Approach to Model Indoor Airflow Patterns	47.RD	1832971	-	2,422
RII Track-4: Experimentally-informed Mesoscale Modeling of Anisotropic Grain Boundary Solute Segregation in Nanocrystalline Alloys	47.RD	2033327	-	49,804
RII Track-4: Exploring Ferromagnetism in Two-Dimensional Van Der Waals Materials	47.RD	1929138	-	35,387
RII Track-4: NSF: Enhanced Multiscale Approaches for Simulations of Multicomponent Fluids with Complex Interfaces Using Fluctuating Hydrodynamics	47.RD	2131996	-	18,397
RTG: Coding Theory, Cryptography, and Number Theory	47.RD	1547399	-	314,939
SaTC: CORE: Medium: Collaborative: Cryptographic Provenance for Digital Publishing	47.RD	1940679	-	159,582
SaTC: CORE: Small: Leveraging Physical Side-Channel Information to Build Detection-Based Rowhammer Defenses	47.RD	2147217	-	83,340
SCC-PG : Human-AI Teaming for Flood Evacuation Decision Making	47.RD	2125283	5,760	30,358
SCH: INT: Collaborative Research: An intelligent Pervasive Augmented reality therapy (IPAL) for Opioid Use Disorder and Recovery	47.RD	2019389	4,460	12,787
SCH: INT: Collaborative Research: Crowd in Action: Human-Centric Privacy-preserving Multi-scale Data Analytics for Environmental Public Health	47.RD	1949640	-	57,420
Self-Healable Thermoplastic Copolymers	47.RD	2003005	-	56,836
SHF: Small: Using Error-Bounded Lossy Compression to Improve High-Performance Computing Systems and Applications	47.RD	1910197	-	101,839
Structure Regulation of Ionic Copolymers: Unlocking Ionic Clusters through Solvent Shear Adaptation, a Computational-Experimental Insight	47.RD	1905407	-	102,989
COVID 19 - The Center for Aviation and Automotive Technological Education using ELearning: Providing E-learning Resources and Increasing Knowledge about Their Effectiveness	47.RD	2033801	92,961	680,772
Tigers Teach Noyce Scholarship	47.RD	1136293	-	313
Transforming the Kirigami Art into a Design Framework for Multi-functional Adaptive Composites	47.RD	1760943	-	132,489
Travel: NSF Student Travel Grant for 2021 IEEE International Conference on Bioinformatics and Biomedicine (BIBM)	47.RD	2131662	-	8,000
Uncertainty Principles in Reproducing Kernel Hilbert Spaces	47.RD	2000236	-	79,440
Uncovering Fundamental Transport Principles in Novel, Ultraclean Lignin-Based Hydrogels for Bioseparations	47.RD	1915787	-	187,772
Understanding Particle Scale Motion Initiation Physics for Loose-laid Building Rooftop Aggregates in Severe Windstorms	47.RD	1760999	-	42,517
Urbanization and Rural Land Rights Negotiations	47.RD	1918352	-	20,172
Using Whiptail Lizards to Understand the Integration of Environmental and Host Genetic Effects on Host-Associated Microbiota	47.RD	2105604	-	77,285
What leads to better outcomes in informal STEM-based environmental education programs for youth?	47.RD	1906610	178,585	409,285
Pass-through programs from:				
American Society for Engineering Education				
Engineering Fellows Postdoctoral Fellowship Program - Jessica Aviles	47.RD	769-2050	-	128,420
Benedict College				
CISE-MSI: DP: CPS: Statistical and Artificial Intelligence-based Cyberattack Detection Models for Connected Vehicles	47.RD	20-88162	-	5,715
Boise State University				
Graduate Identity Formation Through Teaching (GIFT)	47.RD	8065-PO139452	-	22,664
Cornell University				
RESEARCH - PGR: Functional Genomics of Beneficial Legume-microbe Interactions	47.RD	20-05	-	115,148
SCH: EXP: Home+, An Intelligent and Interoperable Suite of Robotic Furnishings, Learning and Evolving with Their Users	47.RD	81402-10758	-	12,150
East Carolina University				
IUSE: EHR: Assessing Virtual Reality Field Experiences for Enhanced Learning in the Geosciences	47.RD	A19-0220-S001	-	70,117
Georgia Institute of Technology				
GOALI: Developing An Eco-Genomic Framework for Biofilter Operation	47.RD	AWD-003526-G1	-	11,631
Harvard University				
EAGER: SUPER: Optically-enhanced superconductivity in hydrogen-based materials	47.RD	134393-5120438	-	42,556
Iowa State University				
CPS: Medium: Data-driven Causality Mapping, System Identification and Dynamics Characterization for Future Power Grid	47.RD	021700A	-	97,652
Johns Hopkins University				
2020-16/20: Mechanistic-Informed Hybrid Models for CHO Fed-batch and Perfusion Nutrient Control	47.RD	2005435288	-	20,451
2021-21.23: Correlating Charge Variants and Redox State to Improve a Critical Product Quality Attribute	47.RD	2005446113	-	27,679
2021-26: Deep Learning Framework for Training Set Reduction during Data-driven Media Optimization	47.RD	PO #2005426019	-	755
AMBC Reference Cell, Product, Media, Feeds (CLEMSON)	47.RD	PO# 2003603375	-	1,156
JHU I/UCRC for advance mammalian biomanufacturing- Redox Speciation and Electrochemical Probing in AMBC Media	47.RD	2004594165	-	49,187
JHU I/UCRC for advanced mammalian biomanufacturing - Enhancing Stability in CHO cells: The linkages between culture stress, chromatin, and gene expression	47.RD	2004594243	-	19,898

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RESEARCH AND DEVELOPMENT CLUSTER, continued				
National Science Foundation, continued				
Pass-through programs from, continued:				
Johns Hopkins University, continued				
JHU I/UCRC for advanced mammalian biomanufacturing- 2020-16/20: Mechanistic-informed Hybrid Models for CHO Fed-batch and Perfusion Nutrient Control	47.RD	2004987881	-	41,405
JHU I/UCRC for advanced mammalian biomanufacturing: Changes in Metal Speciation Within AMBIC 1.1 Culture Media	47.RD	2004615676	-	60,856
Understanding & Controlling ER Stress in Highly Secreting CHO Cells	47.RD	PO# 2003683366	-	7,483
Louisiana Tech University				
Research Initiation: Influence of Self-efficacy and Social Support on Persistence and Achievement in Chemical Engineering Sophomores	47.RD	32-4111-54147-CU	-	37,424
Sophomore Fast-Forward: A Summer Bridge Program to Support Retention in Engineering	47.RD	32-0969-54130-CU	-	5,493
North Carolina Central University				
Excellence in Research: Unveiling the Potent Photo-activated Antiviral Functions of Carbon Dots and Derived Hybrid Dots	47.RD	A19-0037-S001 / P0108460	-	30,591
Northern Arizona University				
Collaborative Research: CCR1: New: Distributed Sensing & Computing Over Sparse Environments (DISCOVER) Platform	47.RD	1004978-01	-	34,983
Penn State University				
Social Movement Impact on Policy Outcomes	47.RD	S001590-NSF	-	1,158
Purdue University				
Collaborative Research: Digitization TCN: Digitizing collections to trace parasite-host associations and predict the spread of vector-borne disease	47.RD	10001564-004	-	7,965
Expanding Access to and Participation in the Multiple-Institution Database for Investigating Engineering Longitudinal Development	47.RD	10000949-012	-	14,830
Hazards Sees: Bridging Information, Uncertainty, and Decision-Making in Hurricanes using and Interdisciplinary Perspective Research: Collaborative Research: Sustaining and Scaling the impact of the MIDFIELD project at the American Society for Engineering Education	47.RD	10000900-008	-	6,795
	47.RD	10001998-023	-	5,930
SC EPSCoR/DeA				
Computational Modeling Guided Biomaterials Development for Therapeutic Vascularization	47.RD	20-GE06	9,211	9,773
Computationally Directed Synthesis of Substituted Ferrites for Enhanced Energy Transfer	47.RD	20-GE04	-	559
Summer Undergraduate Research Experience in Nanobiotechnology	47.RD	20-SA01	-	2,000
Tennessee Tech University				
CC* Integration-Large: Prototyping a Secure Distributed Storage Infrastructure Accelerating Big Science	47.RD	BL149555823	-	28,736
The University of Memphis				
Exploring Coupled Physical, Biological and Chemical Processes that Control Lead Fate and Transport through Plastic Plumbing Materials	47.RD	A21-0043-S001 / P0293416	-	3,707
University of Arizona				
PIRE: Dust Stimulated Draw-Down of Atmospheric CO2 as a Trigger for Northern Hemisphere Glaciation	47.RD	467895	-	47,077
University of California Davis				
Computational Infrastructure for Geodynamics	47.RD	201504240-01 /	-	41,220
University of Georgia				
Science Coordinators Advancing a Framework for Outstanding Leadership Development (SCAFFOLD)	47.RD	SUB00002448	-	144,840
University of Kentucky				
RII Track-2 FEC: A Multiscale, Multiphysics Modeling Framework for Genome-to-Phenome Mapping via Intermediate Phenotypes	47.RD	3200002098-19-053 / PO 7800004458	-	411,607
University of North Carolina Chapel Hill				
FABRIC: Adaptive Programmable Research Infrastructure for Computer Science and Science Applications	47.RD	5115814	-	165,839
University of Notre Dame				
SII Planning Grant: National Center for Radio Spectrum Innovations (NCRSI)	47.RD	203949CU	-	14,491
University of Pittsburgh				
Dynamic Risk-Averse Optimization of Distributed Energy Resource Aggregators	47.RD	CNVA00060548 (12215-1)	-	76,724
University of South Carolina				
	47.RD	18-3494 22000-FB02/PO#2000036759	-	880,824
RII Track 1: Materials Assembly and Design Excellence in South Carolina: MADE in SC	47.RD		-	
University of Texas				
RESEARCH-PGR: Genomic and Epigenomic Analyses of Fiber Development in Allotetraploid Cottons	47.RD	UTA-18-001133	-	81,683
University of Utah				
	47.RD	10045119-CLEM PO# U000099152	-	116,994
CloudLab Phase II: Community Infrastructure to Expand the Frontiers of Cloud Computing Research	47.RD	10056678-Clemson / PO U000284314	26,389	1,073,952
CloudLab Phase III: Expanding the Frontiers of Cloud Computing Through World-Class Community Infrastructure	47.RD	10040652-CU / PO # U000094568	-	1
CNH-L: Adaptation, Mitigation, and Biophysical Feedbacks in the Changing Bonneville Salt Flats				
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.RD	AWD00000448SUB00000202 / PO# 194503	-	38,174
University at Buffalo				
NSF Convergence Accelerator Track F: A Disinformation Range to Improve User Awareness and Resilience to Online Disinformation	47.RD	R1286044	-	22,189
University of Rochester				
RAISE - EQuIP: A high-speed, reconfigurable, fully integrated circuit platform for quantum photonic applications / URF (AWD00002483)	47.RD	417415G / UR FAO GR510842	-	80,048
Virginia Polytechnic Institute				
LEAP-HI: Safety and Learning from Errors and Near Misses in the Human-Automation Interaction of Socio-Technical Infrastructure Systems	47.RD	480665-19244	-	18,670
NRI: INT: Collaborative Research: A Robotic Platform for Body-Scale Human Physical Interaction Simulation in Embodied Virtual Reality	47.RD	480463-19244	-	49,003
Total National Science Foundation			2,043,306	25,937,113
Environmental Protection Agency				
Destruction of PFAS in Leachate and Groundwater	66.RD	83963001	-	114,387
Forest Watershed Management Practices & DW Quality	66.RD	CR-83586401	(5,821)	(5,821)
Pollution Prevention Grants Program	66.RD	NP-01D16320	-	35,998
Pollution Prevention Incentives States	66.RD	00D84518	-	20,976
Schools: Lead in Drinking Water	66.RD	00D87419	-	23,350
Pass-through programs from:				
South Carolina Department of Health and Environmental Control				
Developing a Watershed Based Plan for Edisto Island and the Town of Edisto Beach	66.RD	EQ-0-548	-	14,331
Development and Implementation of the Tidal Saltwater South Carolina Adopt-a-Stream Program	66.RD	None	-	81,056
EJ Strong: Strengthening Environmental Justice Communities for Disaster in South Carolina	66.RD	EQ-1-679	-	9,497

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RESEARCH AND DEVELOPMENT CLUSTER, continued				
Environmental Protection Agency, continued				
South Carolina Volunteer Stream Monitoring Program (SC Adopt-a-Stream)	66.RD	None	-	13,562
Total Environmental Protection Agency			(5,821)	307,336
Nuclear Regulatory Commission				
Coupling Life-Cycle Impact Assessment and Risk Assessment for Sustainability-Informed Decision Making	77.RD	31310022M0004	-	49,743
Nuclear Faculty Development at Clemson University	77.RD	31310018M0037	-	327,228
US NRC Fellowship Education Grant at Clemson University	77.RD	31310018M0006	-	88,060
Total Nuclear Regulatory Commission			-	465,031
Department of Energy				
Additive Manufacturing of Circumferentially Embedded Optical Probe Modules for In Situ Monitoring of Coal-Fueled Steam Turbines	81.RD	DE-FE0031826	-	173,455
All-digital Sensor System for Distributed Downhole Pressure Monitoring in Unconventional Fields	81.RD	DE-FE0031781	100,798	250,655
Crystal Growth and Quantum Phases of Frustrated Rare Earth Oxides	81.RD	DE-SC0020071	67,244	180,518
DEIntegrated TBC/EBC for SiC Fiber Reinforced SiC Matrix Composites for Next Generation Gas Turbines	81.RD	DE-FE0031281	-	1,606
Developing a Thermochemical Database of Radionuclide Reactions at the Mineral-Water Interface for Improved Nuclear Waste Repository Performance Assessment	81.RD	DE-NE0008940	-	193,501
Discerning Influences from Enthalpy and Entropy at Aqueous Interfaces Involved in Biomass Conversions in Porous Catalysts	81.RD	DE-SC0021170	-	117,271
Electrocatalytically Upgrading Methane to Benzene in a Highly Compacted Microchannel Protonic Ceramic Membrane Reactor	81.RD	DE-FE0031871	20,671	162,292
Electrochemical Hydrogen Isotope Fractionation - Fundamental Insights Leading to Process Scale Up	81.RD	DE-SC0022190	-	94,008
EM-Enhanced HyPor Loop for Fast Fusion Fuel Cycle	81.RD	DE-AR0001376	78,837	215,699
Enabling Partnership between South Carolina and NREL for Advancing Opportunities in Plastics Recycling Research (EPSCOR for Plastics Recycling)	81.RD	DE-SC0021367	-	180,321
Energy Efficiency for the Growing South Carolina Manufacturing Industries	81.RD	DE-EE0007727	-	139,242
Fully Integrated High Speed Megawatt Class Motor and High Frequency Variable Speed Drive System	81.RD	DE-EE0007254	-	660,269
Functionally Designed Ultra-Lightweight Carbon Fiber Reinforced Thermoplastic Composites Door Assembly	81.RD	DE-EE0007293	-	101,159
High Speed Medium Voltage CHP System with Advanced Grid Support	81.RD	DE-EE0008409	386,209	443,845
High-Speed Thermogravimetry Equipped with Mass Spectrometry for Thermodynamic and Kinetic Study of Nuclear Energy Materials	81.RD	DE-NE0009018	-	228,237
Human Factors and Technologies Design to Improve User Acceptance of Pooled Rideshare (PR) for Increasing Transportation System Energy Efficiency	81.RD	DE-EE0009205	166,496	347,971
Ionic Polymers Under Dynamic Conditions	81.RD	DE-SC0019284	-	177,902
Laser 3D Printing of Highly Compacted Protonic Ceramic Electrolyzer Stack	81.RD	DE-EE0008428	-	359,325
Lignin Fractionation and Valorization: Focusing on both Value and Quality	81.RD	DE-EE0008502	172,059	500,756
Manufacturing Demonstration of a Large-scale, Multi-material Passenger Vehicle Sub-system	81.RD	DE-EE0009656	20,115	140,052
Megawatt Scale, Multi-Source Heat Recovery System with a Flexible Grid Interconnect	81.RD	DE-EE0009423	-	60,495
Nacelle Testing for Offshore Wind Turbines with Hardware-in-the-Loop	81.RD	DE-EE0008962	-	171,549
Optimizing Melt Processed Phosphate Glass Waste Forms via Composition-Property-Structure Correlations	81.RD	DE-NE0008939	-	36,964
Phosphate Mineral and Glass Waste Forms for Advanced Immobilization of Chloride- and Fluoride-based Waste Streams	81.RD	DE-NE0009196	-	3,080
Process Intensification Scale-Up of Direct Lit Electrolysis	81.RD	DE-AR0001375	-	160,696
Quantifying Radionuclide Sorption to Engineered Barrier Materials under Elevated Temperature and Ionic Strength Conditions	81.RD	DE-NE0008941	-	229,429
Rapid, Non-Radioactive Methods for Prediction and Quantification of Radiolytic Radical Decomposition Products in Nuclear Separations	81.RD	DE-NE0009195	-	74,401
Robust In Situ Strain Measurements to Monitor Carbon Dioxide (CO2) Storage	81.RD	DE-FE0028292	-	373,255
Sampling Rare Events in Aqueous Systems Using Molecular Simulations	81.RD	DE-SC0015448	-	57,818
Self-healable Copolymer Composites for Extended Service of H2 Dispensing Hoses	81.RD	DE-EE0008827	-	300,043
Test and Validate Distributed Coaxial Cable Sensors for in situ Condition Monitoring of Coal-Fired Boiler Tubes	81.RD	DE-FE0031765	101,039	545,394
The 3P Program: Phenotyping x Prediction = Productivity	81.RD	DE-AR0001134	704,545	1,236,541
Tool for Reliability Assessment of Critical Electronics in PV (TRACE-PV)	81.RD	DE-EE0009348	21,919	254,941
Pass-through programs from:				
Achatas Power, Inc.				
New Two-Cylinder Prototype Demonstration and Concept Design of a Next Generation Class 3-6 Opposed Piston Engine	81.RD	Prime DE-EE0009202	-	551,297
Opposed-Piston 2-Stroke Hybrid Commercial Vehicle System	81.RD	Prime DE-EE0009880	-	52
Applied Engineering Concepts, Inc.				
Physical Layer Authentication of Wired Networks (PAWN) Phase II	81.RD	PAWN-20-0002	-	59,379
Benedict College				
Edge-Centric Cloud-Based Distributed Surveillance for Environmental Detection Surveys	81.RD	20-82001-54040	-	56,765
Case Western Reserve University				
From Structured Solvents to Hybrid Materials for Chemically Selective Separations of CO2: Mechanisms, Stability and Interfaces	81.RD	RES516683	-	68,674
Cummins Inc.				
Advancing Platooning with ADAS Control Integration and Assessment--Cummins--AOI 3d	81.RD	None	-	51,399
Detroit Diesel Corporation				
		PO#1-1590027724// PO#2-1590029839// PO#3-1590030886// PO#4-1590032107//		
Thermal Barrier Coatings for Improving Thermal Efficiency of a Heavy-Duty Engine	81.RD	PO#5-1590033375	50,334	52,856
Georgia Institute of Technology				
Demonstration of a 5 MVA Modular Controllable Transformer for a Resilient and Controllable Grid	81.RD	AWD-103072-G1 / PO 5058541	-	62,277
Handix Scientific LLC.				
A Microfluidic Ice Nucleating Particle Counter for Continuous Measurements	81.RD	1801 // Prime # DE-SC0018474	-	68,950
Lexington Technology Center				
Lexington Technology Center 2018-19 Faculty Professional Development	81.RD	2018-19	-	336
High pH/high alkalinity cultivation for Direct Atmospheric Air Capture and Algae Bioproducts	81.RD	MSU ID G213-22-W9180	-	62,298
National Technology & Engine Solutions of Sandia				
Adaptive Protection and Control for High Penetration PV and Grid Resilience	81.RD	2143420	-	97,703
NaSOW p.r. 1886058	81.RD	1678873	-	44,216
Oak Ridge National Laboratory				
GoI Program: Controlling Quantum Interactions at Interfaces Over Low Dimensional Materials for Photocatalytic Reactions	81.RD	TO# 4000171652/ PO# 4000192727/ old - PO#4200000754	-	51,387

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RESEARCH AND DEVELOPMENT CLUSTER, continued				
Department of Energy, continued				
Pass-through programs from, continued:				
Oak Ridge National Laboratory, continued				
Microextraction sample preparation technique for elemental and isotopic analysis	81.RD	4000192717/ old	-	95,375
Semplastics EHC LLC				
Coal-Waste-Enhanced Filaments for Additive Manufacturing of High-Temperature Plastics and Ceramic Composites	81.RD	3D-2022-01	-	20,629
High Strength, Encapsulated, Commercially Useful Components and Particles Made from Coal Combustion Residuals				
Siemens Energy, Inc.	81.RD	CCR-2020-01	-	130,641
1A - Clemson Hydrogen Combined Heat and Power Storage System				
Solution Spray Technologies, LLC	81.RD	9770122687	-	50,008
Novel Thermal Barrier Coatings for Gasoline Spark Ignition Engines Phase II funding				
Texas A&M University	81.RD	None	-	215,248
IoT Based Comfort Control And Fault Diagnostics System For Energy Efficient Homes				
Tufts University	81.RD	M2001448	-	44,860
Transmission Expansion Planning Models for Offshore Wind Energy				
University of Arkansas	81.RD	104045	-	27,847
Integrated Process Optimization for Biochemical Conversion				
University of Connecticut	81.RD	UA2020-191	-	35,097
In-situ Measurement and Validation of Uranium Molten Salt Properties at Operationally Relevant Temperatures				
University of Maryland	81.RD	PO# 317174 / KFS# 5649590	-	62,277
Low-cost Vacuum Insulated Glass (VIG) for Retrofit of Single Pane Windows				
University of Minnesota	81.RD	76494-27044201	-	(17,622)
Energy Frontier Research Center for Inorganometallic Catalyst Design				
University of North Carolina - Charlotte	81.RD	A004527501	-	139,308
Optimal Reconfiguration and Resilient Control Framework for Real-Time Photovoltaic Dispatch to Manage Critical Infrastructure (REDIS-PV)				
University of North Carolina - Greensboro	81.RD	20190382-01-CLE	-	208,033
Resilient Community Microgrids with Dynamic Reconfiguration to Serve Critical Loads in the Aftermath of Severe Events				
University of North Carolina - Greensboro	81.RD	20200875-02-CLE	-	37,536
How does mercury methylation respond to intensive forest management and the creation of anoxia in floodplain soils?				
University of South Carolina	81.RD	21200543	-	2,826
Center for Hierarchical Waste Form Materials (CHWM)				
University of Tennessee	81.RD	17-3256/USC#13020-FC78/PO#2000030148	-	122,619
Ultra-Light Tightly-Integrated Modular Aviation-Transportation Enabling Solid-State Circuit Breaker (ULTIMATE-SSCB)				
University of Texas	81.RD	A21-1349-S002	-	35,692
Federal Facilities Data Analytics Research and Applications Program (FF-DARAP)				
University of Texas at San Antonio	81.RD	UTA20-000903	-	71,287
Cybersecurity Manufacturing Innovation Institute				
University of Utah	81.RD	1000003894	-	108,577
Cybersecurity Manufacturing Innovation Institute - CyManII				
University of Utah	81.RD	1000003894	-	412,750
Enhanced Geothermal System Concept Testing and Development at the Milford City, Utah Forge Site				
West Virginia University	81.RD	10039612-Clemson-3-2514-AF1	-	278,483
Clean Energy Smart Manufacturing Innovation Institute (CESMII) - Hybrid Modeling for Energy Efficient CNC Grinding				
81.RD	81.RD	20-309-CU / PO# MM000338928	-	118,550
Total Department of Energy			1,890,266	11,600,300
Department of Education				
Co-DREAM OER (Collaborative Development of Robotics Education and Advanced Manufacturing Open Educational Resources)				
84.RD	84.RD	P116T210023	-	74,385
Developing a Sentence Writing Intervention for Young Struggling Writers				
84.RD	84.RD	R324B200016	-	68,501
Engineers for a Global System: Global Learning and Engineering + Language Programs (at Clemson University)				
84.RD	84.RD	P016A200057	-	56,500
English Learner Instruction: Building Capacity Through Design				
84.RD	84.RD	T36S2210089	-	190,901
GAANN: Molecular Engineering in Sustainability and Health				
84.RD	84.RD	P200A210105	-	209,176
GAANN: Molecular Engineering in Sustainability and Health				
84.RD	84.RD	P200A180076	-	15,861
GAANN-Leadership development for Ph.D. students in Electrical and Computer Engineering				
84.RD	84.RD	P200A180009	-	379,141
STEM Teacher Learning Progression (CU-TLP)				
84.RD	84.RD	S423A200008	-	1,060,011
Pass-through programs from:				
Lexington Technology Center				
Lexington Technology Center 2019-2020 Faculty Professional Development				
84.RD	84.RD	2019-2020	-	2,221
University of Virginia				
Build the FRaME: Using Feedback, Reflection, and Multimedia to Teach Evidence-Based Practices for Effective Classroom Management				
84.RD	84.RD	GM10187.PO#2292144	-	70,043
Total Department of Education			-	2,126,740
Department of Health and Human Services				
Advanced Nursing Education Workforce (ANEW)				
93.RD	93.RD	5T94HP32896-04-00	32,087	677,376
Arsenic's Effects on the Intestinal Stem Cell Niche				
93.RD	93.RD	1R15ES031766-01A1	-	25,372
Assessing Cognitive and Psychosocial mechanisms of Useful Field of View Cognitive Training using Ecological Momentary Assessment				
93.RD	93.RD	7R21AG060216-03	440,250	499,540
ATTRACT: Assessment of Temporomandibular Joint Morphology, Mechanics, And Mechanobiology in Class II and III Target and Surgical Phenotypes				
93.RD	93.RD	1U01DE031512-01	5,221	5,221
Building the Evidence Base for Vomit Clean-Up Procedures in Long-term Care Facilities				
93.RD	93.RD	5R01HS025987-03	262,474	323,115
CanSim: A Novel Simulator for Training Cannulation Skills in Dialysis Care				
93.RD	93.RD	5K01DK11767-05	-	3,145
Cell and matrix interactions in diabetic vascular tissue engineering models				
93.RD	93.RD	5R01HL133303-04	-	351,907
COBRE Human Genetics - Admin Core				
93.RD	93.RD	5P20GM139769-02 REVISED	29,427	138,378
COBRE Human Genetics - Alexandrov				
93.RD	93.RD	5P20GM139769-02 REVISED	-	102,915
COBRE Human Genetics - GwdGen Flanagan-Steet				
93.RD	93.RD	5P20GM139769-02 REVISED	105,787	105,787
COBRE Human Genetics - Konkel				
93.RD	93.RD	5P20GM139769-02 REVISED	-	116,631
COBRE Human Genetics - Morgante				
93.RD	93.RD	5P20GM139769-02 REVISED	-	46,927
COBRE Human Genetics - Research Core				
93.RD	93.RD	5P20GM139769-02 REVISED	-	228,347
COBRE Human Genetics - YR2 Admin Core				
93.RD	93.RD	5P20GM139769-02 REVISED	17,068	93,447
COBRE Human Genetics - YR2 Alexandrov				
93.RD	93.RD	5P20GM139769-02 REVISED	-	122,213

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RESEARCH AND DEVELOPMENT CLUSTER, continued				
Department of Health and Human Services, continued				
COBRE Human Genetics - YR2 Duren Pilot	93.RD	5P20GM139769-02 REVISED	-	79,364
COBRE Human Genetics - YR2 Flanagan	93.RD	5P20GM139769-02 REVISED	73,183	73,183
COBRE Human Genetics - YR2 Konkel	93.RD	5P20GM139769-02 REVISED	-	84,565
COBRE Human Genetics - YR2 Larsen Pilot Project	93.RD	5P20GM139769-02 REVISED	-	31,314
COBRE Human Genetics - YR2 Li Pilot	93.RD	5P20GM139769-02 REVISED	-	20,400
COBRE Human Genetics - YR2 Morgante	93.RD	5P20GM139769-02 REVISED	-	63,519
COBRE Human Genetics - YR2 Research Core	93.RD	5P20GM139769-02 REVISED	-	146,764
COBRE:EPIC - YR4 Main Carryover	93.RD	5P20GM109094-05 REVISED	-	103,748
COBRE:EPIC-YR4 Carryover (Whitehead-Pilot)	93.RD	5P20GM109094-05 REVISED	-	1,464
COBRE:EPIC-YR5 Admin	93.RD	5P20GM109094-05 REVISED	-	27,183
COBRE:EPIC-YR5 Core 2 (CLIF)	93.RD	5P20GM109094-05 REVISED	-	(79)
COBRE:EPIC-YR5 Erosowski Pilot	93.RD	5P20GM109094-05	-	682
COBRE:EPIC-YR5 J Morris	93.RD	5P20GM109094-05	-	(44)
COBRE:EPIC-YR5 L Kozubowski	93.RD	5P20GM109094-05 5R03DE027497-02	-	(13)
Craniocfacial Dysmorphology Associated with Phelan-McDermid Syndrome using Three-Dimensional Morphometrics	93.RD	REVISED	-	12,937
Critical functions of the gut microbiota that mediate recovery from recurrent Clostridium difficile infection	93.RD	5K01DK111794-04	-	146,095
CYP2B6 Inhibits Proper Distribution of Lipids Leading to Obesity and Fatty Liver Disease	93.RD	2R15ES017321-04	-	103,188
Defining and harnessing macrophage pathways for Aspergillus clearance in vivo	93.RD	5K22AI134677-02	-	3,416
Detecting and Monitoring Implant Infection Using X-ray Excited Luminescence Chemical Imaging (XELCI)	93.RD	5R01AR070305-05	1,931	128,190
Developing an in vivo toolbox to interrogate the intracellular trafficking and killing of Aspergillus spores	93.RD	1R21AI164363-01A1	-	24,168
Development of a Multiplexed Assay in Kinetoplastid Parasites to Identify Probes for Glycolysis	93.RD	5R01AI156382-02	73,928	177,569
Development of an Automated Diagnostic Platform for SARS-CoV-2 Monitoring in Vulnerable Areas	93.RD	4U01AA029328-02	216,048	500,950
Development, Validation, and Application of a CDS Ontology to Facilitate CDS Rules Reuse, Management, and Maintenance in Simulated Primary Care Settings	93.RD	5R01GM138589-03	11,996	295,989
Drosophila Models of Rare Mendelian Disorders of Chromatin Modification	93.RD	1F31HD106719-01 7U01AG062370-03	-	44,133
Elucidating the Necessary Components and Mechanisms of Cognitive Training.	93.RD	REVISED	194,573	617,956
Exploration of the hypothesis-generation process as guided by secondary data analysis in clinical research: Can the process be more efficient?	93.RD	7R15LM012941-02	32,248	160,720
Genetic Basis of Lifespan and Healthspan Extension by ACE Inhibition in Drosophila	93.RD	1R56AG073181-01	52,353	110,527
Genetics of Cocaine and Methamphetamine Sensitivity in Drosophila	93.RD	2U01DA041613-06	-	67,826
Genetics of Cocaine and Methamphetamine Sensitivity in Drosophila	93.RD	5U01DA041613-05 1R56AI143687-01A1	-	500,372
Glycosome specialization in African trypanosomes	93.RD	REVISED	-	121,995
High Resolution Approaches to Defining Organelle Heterogeneity in Trypanosoma Brucei	93.RD	R21AI171837	-	5,231
Identifying an Atherogenic Role for Vascular Smooth Muscle Cell miR-33a Expression	93.RD	1R15HL152261-01A1	-	42,184
Inhibition of Human Islet Amyloid Polypeptide Aggregation	93.RD	5R35GM119691-05	-	171,553
Integrating Craniofacial Morphology, Oral function, Temporomandibular Biomechanics and Mechanobiology to Determine Sex-specific TMJ Pathophysiology in Humans	93.RD	5R01DE021134-07 REVISED	-	69,250
Leveraging the HIF-Alpha Pathway to Improve the Engraftment and Therapeutic Efficacy of Human Nanowired Cardiac Organoids	93.RD	1F31HL156541-01	-	43,508
Maintenance and development of DelPhi and associated resources	93.RD	2R01GM093937-10A1	-	52,481
Mechanistic Pharmacodynamic Modeling for Drug Combination Responses	93.RD	5R35GM141891-02	-	398,156
Medial Arterial Calcification: Mechanisms and Therapy	93.RD	5R01HL145064-04	133,888	415,180
MENTOR: Medical Enrichment Through Opportunities in Research	93.RD	5T35AI134643-04	-	32,553
Nanowired Human Cardiac Spheroids for Heart Repair	93.RD	5R01HL133308-04	-	2,325
Neighborhood Environments and Cognitive Decline Among Middle-Aged and Older Adults in China	93.RD	5R03AG065637-02	-	81,146
Neuron-Specific Nanotherapeutics for Spinal Cord Injury Repair	93.RD	5R01NS111037-04 REVISED	-	65,890
New Enzymes for DNA Demethylation	93.RD	1R15GM121997-01 REVISED	-	45,436
New Generation DelPhi: large systems and beyond electrostatics	93.RD	5R01GM093937-09 REVISED	-	33,477
Oral Microbiomes and Dental Caries in a Human Immunodeficiency Virus Infected Population	93.RD	5R01DE028154-04	96,869	328,748
Pre-mRNA Intronic Structures in Trans Factor Binding and Alternative Splicing	93.RD	5R35GM142851-02	-	168,671
Project EMPOWER - Engaging Medicine Providers On Ways to Enhance Recovery	93.RD	5H79TI081664-03	45,280	66,745
Realizing Improved Patient Care Through Human-Centered Design in the OR	93.RD	5P30HS024380-04 Revised	-	(588)
Reducing Disparities in Birth Outcomes: A Randomized Controlled Trial on Centering Pregnancy	93.RD	5R01HD082311-05 REVISED	39,097	96,940
Reducing Fall Risk in Rural, Older South Carolinians	93.RD	90FP5G0047-01-00	-	110,657
Regulation of the Physiology and Function of the Digestive Vacuole in Toxoplasma Gondii	93.RD	5R01AI143707-03	28,913	363,423
Reverse Engineering Quantitative Genetic Variation	93.RD	5R01GM128974-04	-	288,324
Role of Homologous Recombination in the Replication Stress Response	93.RD	5R35GM142512-02	-	339,028
SC BioCRAFT Phase III Year 3- Stamatikos Pilot	93.RD	5P30GM131959-03	-	37,221
SC BioCRAFT Phase III Year 3-BET Core	93.RD	5P30GM131959-03	-	330,322
SC BioCRAFT Phase III Year 3-Cottle Pilot	93.RD	5P30GM131959-03	-	37,899
SC BioCRAFT Phase III Year 3-CTRIC Core	93.RD	5P30GM131959-03	5,031	257,162
SC BioCRAFT Phase III Year 3-Gao Pilot	93.RD	5P30GM131959-03	-	7,624
SC BioCRAFT Phase III Year 3-Main Admin	93.RD	5P30GM131959-03	45,678	211,750
SC BioCRAFT Phase III Year 3-Voucher Program	93.RD	5P30GM131959-03	-	17,874
SC BioCRAFT Phase III- YR2 Main Carryover	93.RD	5P30GM131959-03 REVISED	-	91,269
SC BioCRAFT Phase III-BET Core	93.RD	5P30GM131959-03 REVISED	-	10,343
SC BioCRAFT Phase III-CTMA	93.RD	5P30GM131959-03 REVISED	14,275	23,228
SC BioCRAFT Phase III-Main	93.RD	5P30GM131959-03 REVISED	31,484	284,394
SC County Health Extension: High Obesity Prevention and Elimination	93.RD	5NU58DP006562-04-00	-	759,170
SC TRIMH - Year 1 thru 3 Admin	93.RD	5P20GM121342-03 REVISED	38,952	138,690
SC TRIMH - Year 1 thru 3 Foley Pilot	93.RD	5P20GM121342-03 REVISED	-	26,473
SC TRIMH - Year 1 thru 3 Harmon	93.RD	5P20GM121342-03 REVISED	-	33,160
SC TRIMH - Year 1 thru 3 Peng	93.RD	5P20GM121342-03 REVISED	-	36,831
SC TRIMH - Year 1 thru 3 Powder Pilot	93.RD	5P20GM121342-03 REVISED	-	1,413
SC TRIMH - Year 1 thru 3 Richardson	93.RD	5P20GM121342-03 REVISED	-	30,548
SC TRIMH - Year 1 thru 3 Ye	93.RD	5P20GM121342-03 REVISED	-	34,180
SC TRIMH - Year 4 Admin Core	93.RD	5P20GM121342-04 REVISED	-	435,858
SC TRIMH - Year 4 AFT Core	93.RD	5P20GM121342-04 REVISED	-	230,102
SC TRIMH - Year 4 Foley Pilot Project	93.RD	5P20GM121342-04 REVISED	-	75,265
SC TRIMH - Year 4 Harmon	93.RD	5P20GM121342-04 REVISED	-	131,591
SC TRIMH - Year 4 MCM Core	93.RD	5P20GM121342-04 REVISED	-	392,663
SC TRIMH - Year 4 PAC Core	93.RD	5P20GM121342-04 REVISED	-	33,379
SC TRIMH - Year 4 Powder	93.RD	5P20GM121342-04 REVISED	-	141,190
SC TRIMH - Year 4 Wu	93.RD	5P20GM121342-04 REVISED	-	166,369
SC TRIMH - Year 4 Ye	93.RD	5P20GM121342-04 REVISED	-	154,385
SC TRIMH - Years 1 thru 3 AFT	93.RD	5P20GM121342-03 REVISED	-	23,418
SC TRIMH - Years 1 thru 3 MCM	93.RD	5P20GM121342-03 REVISED	-	26,733
SC TRIMH - Years 1 thru 3 PAC	93.RD	5P20GM121342-03 REVISED	40,770	60,834

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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				
SC TRIMH - Years 1 thru 3 Sanabria	93.RD	5P20GM121342-03 REVISED	-	6,510
SC TRIMH Supplement - SARS-CoV2 sequencing surveillance program for Upstate South Carolina	93.RD	3P20GM121342-03S1	-	685,638
Species-specific Chromatin Structure and its Environmental Interaction in Craniofacial Skeletal Development and Variation Using Cichlid Fishes	93.RD	1R15DE029945-01 Revised	-	83,688
Strategies for continuous biologics purification with new affinity membranes	93.RD	1R15GM131341-01	-	100,578
Supplement - Medial Arterial Calcification: Mechanisms and Therapy	93.RD	3R01HL145064-04S1	33,328	33,328
Supplement for 209-2012902 Year 4	93.RD	3R01DE028154-04S1	35,256	53,441
Supplement SC BioCraft Phase III - Year 3 Equipment	93.RD	3P30GM131959-03S1	-	206,730
SutureCoach: Examining Vascular Suturing Skills Assessment, Training, and Transfer of Training via Objective Metrics	93.RD	5R01HL146843-03	-	359,888
Systems Mechanobiology Modeling for Patient-Specific Cardiac Fibrosis Predictions	93.RD	5R01HL144927-04	39,271	407,046
		1R15AI137979-01A1	-	-
Targeting flagellar motility in the treatment of kinetoplastid diseases	93.RD	REVISED	-	80,913
Theranostic Approach to Treat Abdominal Aortic Aneurysms	93.RD	5R01HL133662-04 REVISED	19,774	154,963
Understanding and Addressing Racial Disparities in Guideline-Indicated Management of Symptomatic Peripheral Artery Disease	93.RD	5K01HL146900-03	-	146,767
Pass-through programs from:				
Albert Einstein College of Medicine				
Comprehensive Pediatric Hypertension Diagnosis and Management	93.RD	311812 / PO 822501	-	4,742
Aptus Life, LLC				
Pediatric Heart Valve with Expansion Capability	93.RD	20210920R41	-	50,190
Circa Bioscience, LLC				
Development of a Novel Bio-Adhesive Mesh System for Abdominal Hernia Repair	93.RD	C120168-1	-	(8,264)
Colorado State University				
Merging Yoga and Self-Management to Develop Skills (MY-Skills)	93.RD	G-40408-01	-	971
Cornell University				
Quantifying Molecular Consequences of Human Missense Variants with Large-scale Interactome Perturbation Studies	93.RD	82513-11007	-	62,763
Ctr for Construction Research & Training				
Intelligent Hearing Protection for Construction Workers Exposed to Hazardous Noise	93.RD	20-3-PS	-	20,766
Elastrin Therapeutics				
Targeted Chelation for Reversal of Vascular Calcification	93.RD	R41HL147653	-	14,447
Fred Hutchinson Cancer Research Center				
COVID 19 - Prevention Network (CoVPN) Site Preparedness Funding - Clemson Protocol-Specific Site	93.RD	0001060381	-	256
COVID 19 - CoVPN 3006 Protocol Funding (PF) - Clemson Protocol-Specific Site	93.RD	0001062451	-	125,147
Indiana University				
Cavopulmonary Assist to Reverse the Fontan	93.RD	8778 / PO0266438	-	125,434.33
Medical University of South Carolina				
Cardiovascular Diseases Research	93.RD	A00-2593-S001	-	28,118
		A00-3876-S001/MUSC18-134-8D662	-	191,822
Identifying and Reducing Errors in Perioperative Anesthesia Medication Delivery	93.RD	A00-2861-S001 MUSC16-104-8C312/PO#296562	-	(443)
Impact of Integrated HIV/NCD Screening on HIV Testing Uptake and Engagement in HIV Care: an RCT in Kisarawe, Tanzania	93.RD	A21-0042-S002	-	35,381
Implementation of Home-Based Palliative Care in Limited Resource Settings	93.RD	A00-0250-S001 (MUSC19-19-89225)	-	73,270
Multi-site Study of Dyslexia	93.RD	A00-3431-S002 PO#399813	-	5,686
South Carolina Cancer Disparities Research Center (SC CADRE)	93.RD	A00-3431-S002 Year 5	-	61,786
South Carolina Cancer Disparities Research Center (SC CADRE) - Year 5	93.RD	A00-2219-S005	-	96,994
South Carolina Clinical and Translational Research Institute (SCTR)	93.RD	A22-0083-S001	-	82,433
System Optimization for Advances in Sterile Processing	93.RD	A00-3356-S001/MUSC17-119-8D017	-	60,573
Using Connectomics to Characterize Risk for Alzheimer's Disease	93.RD		-	
New York University				
Map Leukemia-immune Cell Talks with Nanoplasmon Ruler in CAR T-Cell Immunotherapy	93.RD	F1429-02 / PO# iB00425635	-	8,892
NUBAD, LLC.				
Aminoglycosides with reduced ototoxicity	93.RD	R42AI1 26874	-	142,823
Aminoglycosides with reduced ototoxicity via miRNA targeting	93.RD	CLEM-005	-	87,721
Delivery of chemically modified PNA oligomers	93.RD	None	-	63,749
Development of Peptide Antibiotic Nucleic Acids	93.RD	PNA2 (2020001112)	-	57,093
Nucleobase Aminosugars with Reduced Ototoxicity	93.RD	NARO	-	55,065
Supplement Request LIDIA.AZANKIA	93.RD	None	-	60,117
Penn State University				
Ambulatory Methods for Measuring Cognitive Change	93.RD	S002196-DHHS	-	12,500
Psychosocial and Neighborhood Mechanisms and Consequences of Black-White Sleep Disparities on Cognition	93.RD	S002453-DHHS	-	30,872
Pennsylvania Department of Health				
Maternal and Child Health Services Block Grant to the States ;PA Department of Health, Olweus Bullying Prevention Program for Community Youth Organizations	93.RD	SAP#: 4100080792	26,601	120,676
Emergency Department Alternatives to Opioids: Adapting Proven Therapies Into Everyday Practice Across the South	93.RD	10000597 CLEM UNIV	-	7,728
Nursing Research Pilot Project Leadership	93.RD	10000640	-	17,232
Project TRANSFORM (Teaching Recovery-informed Addiction Care and Negating Stigma FOR Medical Professionals)	93.RD	5219-1	-	13,269
Purilogs, LLC				
Fast-Track: Improving therapeutic protein purification with new, high-productivity multimodal membranes	93.RD	SI0007	-	69,903
SBIR Phase II: Protein A membrane Absorbers for Rapid Protein Purification	93.RD	SI0005	-	3,296
Research Foundation for the SUNY				
Single Molecule Analysis of MAGUK Structure and Ligand Binding	93.RD	81534/2/1147013	-	76,122
South Carolina Department of Health & Human Services				
		A202611999A (Federal) - FY22	-	655,586
Quality Assurance Services for the Bureau of Long Term Care Services (Federal) - Year 1 FY22	93.RD		-	
South Carolina Department of Social Services				
CSS Employment Initiative - Year 1	93.RD	4400025040 Year 1	-	805,456
CSS Employment Initiative - Year 2	93.RD	4400025040 Year 2	-	1,545,650
Sigray, Inc.				
Development of a Bio-tissue Oxygenation Nanophosphor Enabled Sensing (BONES) system for Quantifying Hypoxia in Bone Marrow	93.RD	Clemson 003	-	79,399
Sonavex, Inc.				
Validation of a Bedside Automated 3D Ultrasound-based Arteriovenous Fistula Cannulation Guidance Solution to Improve AV Fistula Outcomes	93.RD	1R44DK131644-01	-	26,031
SpineFrontier Inc.				
X-ray Visualized Interbody Spacer Indicating Biomechanical Load (X-VISIBL) Fusion Device	93.RD	CLU001	-	67,126
TGen Tech LLC				
Decellularized Xenograft Leaflet Patch for Pulmonary Valve Repair in Pediatric Patients	93.RD	TGen2020-101	-	51,980

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RESEARCH AND DEVELOPMENT CLUSTER, continued				
Department of Health and Human Services, continued				
Pass-through programs from, continued:				
The Miriam Hospital				
Optimizing Just-in-Time Adaptive Intervention to Improve Dietary Adherence in Behavioral Obesity Treatment: A Micro-randomized Trial	93.RD	7107147197	-	36,995
Tissue Testing Technologies, LLC				
Ice-free Vitrification and Nanowarming of Large Osteochondral Grafts for Transplantation	93.RD	1-R44-AR073136-02	-	132,004
Ice-free Vitrification and Nanowarming Technology for Banking of Cardiovascular Structures	93.RD	4-R44-HL142455-02	-	84,767
Trialtus Bioscience, LLC				
STTR: Universal affinity membrane chromatography for rapid, one-step purification of proteins	93.RD	SIOO08	-	77,845
University of Arkansas				
Telehealth Focused Rural Health Research Center Cooperative Agreement	93.RD	54570	-	32,284
University of Florida				
Probiotics That Moderate PH and Antagonize Pathogens to Promote Oral Health	93.RD	UFDSP00011201 00125985	-	12,749
University of Georgia				
Microglial RGS10 as a therapeutic target for Lewy body diseases	93.RD	SUB00002385	-	17,459
Modeling the effectiveness of meditation and hypertension reduction on the risk of Alzheimer Diseases	93.RD	SUB00002420	-	8,028
University of Kentucky				
Southeast Center for Agricultural Health and Injury Prevention				
	93.RD	PO# 7800004263 3210000731-18-247 3200003706-21-180 / PO 7800005671	-	(3,818)
Southeast XLERator Network				
University of Missouri-Columbia	93.RD	800066265-2	-	3,205
Influenza Host Specific Glycan Motif Identification Through Systems Biology	93.RD	C00066265-2	-	1,766
University of North Carolina - Charlotte				
Characterization of Various Multifunctional Nucleic Acid Nanoparticles and Understanding Their Immunotoxicity	93.RD	20170356-02-CLE	-	8,008
University of Nebraska-Lincoln				
Renewal: Group testing for infectious disease detection: multiplex assays and back-end screening	93.RD	24-6225-0056-002	-	45,364
University of South Carolina				
Carolina Center on Alzheimer's Disease and Minority Research (CCADMR) - Admin Core				
	93.RD	10011074	-	12,683
Carolina Center on Alzheimer's Disease and Minority Research (CCADMR) - Research Education Core (Training)				
	93.RD	21-4153 PO#2000054716	-	4,481
Carolina Center on Alzheimer's Disease and Minority Research (CCADMR) - Research Education Core (Training)				
	93.RD	22-4642	-	29,799
Carolina Center on Alzheimer's Disease and Minority Research (CCADMR) - Research Education Core (Training)				
	93.RD	22-4743 PO#2000061708	-	29,601
Carolina Center on Alzheimer's Disease and Minority Research (CCADMR) - Research Education Core (Training)				
	93.RD	22-4838 21-4184 PO#2000056090/USC	-	8,564
COVID 19 - DHEC SARS-COV-2 Antibody Statewide Surveillance				
	93.RD	10010327	-	34,393
Effects of Musculoskeletal Surgery Rate on Medicare Costs - Year 1				
	93.RD	21-4393 PO#2000057729	-	9,324
Effects of Musculoskeletal Surgery Rate on Medicare Costs - Year 2				
	93.RD	22-4594 PO#2000060399	-	38,618
SC INBRE Collaborative Administrative Supplement - (Role of Hsp90 in Resistance of Cryptococcus neoformans to Fluconazole)				
	93.RD	PO#2000055291/USC No. 10010430	-	15,407
SC INBRE SIRP Award - Modulation of Polymersome Shape to Enhance Blood-Brain Barrier Uptake				
	93.RD	21-4283 PO#2000055942/ USC No. 10010557 22-4664 PO #2000061008/ USC No.10011311	-	40
South Carolina IDEa Networks of Biomedical Research Excellence (SC INBRE) - Administrative Core Year 2 of 5				
	93.RD	21-4211 PO #2000055332/ USC No.10010420	-	105,265
South Carolina IDEa Networks of Biomedical Research Excellence (SC INBRE) Year 1 - Administrative Core				
University of South Florida				
Application for Pilot Project Research Training Sunshine Education and Research Center				
PACT - Preventing Alzheimer's disease with Cognitive Training (Cognitive Training to Reduce Incidence of Cognitive Impairment in Older Adults)	93.RD	6420-1003-10-D 6118-1093-00-C / P000014593	15,982	725,238
University of Texas - El Paso				
Phase II of BUILDing SCHOLARS - Student Training Core	93.RD	2261413288	-	6,766
University of California-Merced				
Focused x-ray Luminescence at uCT Resolution and uM-level of Sensitivity	93.RD	SA29066	-	97,120
Upstate Affiliate Organization d/b/a				
Managing Abstinence in Newborns (MAIN) 2.0, Expansion	93.RD	A202212651A-01CU; GHS Grant # G001217	-	93,419
Virginia Polytechnic Institute				
DPM Research: Monitoring Responses to Ventilation and Control by Water Sprays, and Capacity Building for Mine Ventilation Expertise	93.RD	431827-19244	-	2,095
VRM Labs, Inc.				
Protective film-forming disinfectant based on chitosan/water/ethanol tertiary solutions	93.RD	VRM2021	28,160	77,203.29
Xlerate Health, LLC				
R-FIX (Rib-FIXation System) for severe progressive spinal deformity	93.RD	None	-	2,988
Total Department of Health and Human Services			2,371,362	23,610,537
Corporation for National and Community Service				
National Service and Civic Engagement Research Cooperative Agreement	94.RD	17REHSC001	-	(214)
Total Corporation for National and Community Service			-	(214)
Department of Homeland Security				
Pass-through programs from:				
South Carolina Emergency Management Division				
Critical Infrastructure Mapping to Update the SC HMP	97.RD	PDM 2018-005	-	70,707
Total Department of Homeland Security			-	70,707
Agency for International Development				
Pass-through programs from:				
Cornell University				
Feed the Future Innovation Lab for Crop Improvement (CIIL)	98.RD	89915-11295	-	353,847
Louisiana Tech University				
Preclinical Evaluation of Combination Therapy of Rolipram and Minocycline for Arresting Secondary Injury Cascade after Traumatic Brain Injury	98.RD	32-4111-56210-CU	-	19,035

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RESEARCH AND DEVELOPMENT CLUSTER, continued				
Agency for International Development, continued				
Total Agency for International Development			-	372,882
Total Research and Development Cluster			13,139,835	107,631,684
Department of Education				
Student Financial Assistance Cluster				
Federal Supplemental Educational Opportunity Grants	84.007	Unknown	-	789,605
Federal Work Study Program	84.033	Unknown	-	855,912
Federal Work Study Program - Federal Job Location and Development	84.033	Unknown	-	60,000
Federal Perkins Loan Program Federal Capital Contributions	84.038	Unknown	-	4,286,038
Federal Pell Grant Program	84.063	Unknown	-	15,772,818
Federal Direct Loans	84.268	Unknown	-	112,006,057
Teacher Education Assistance for College and Higher Education Grants (TEACH Grants)	84.379	Unknown	-	13,202
Post Secondary Education Scholarships for Veteran's Dependents (Iraq and Afghanistan Service Grant)	84.408	Unknown	-	5,983
Total Student Financial Assistance Cluster			-	133,789,615
Special Education Cluster				
Pass-through programs from:				
South Carolina Department of Education				
SC CREATE: Centers for the Re-Education and Advancement of Teachers in Special Education and Related Services Personnel	84.027	SC CREATE 21-22	-	2,593
SC CREATE: Centers for the Re-Education and Advancement of Teachers in Special Education and Related Services Personnel	84.027	SC CREATE Y18 Funds Reservation #4000037496	-	19,418
South Carolina Educational Interpreting Center (SCEIC)	84.027		-	28,191
Total Special Education Cluster			-	50,202
Total Department of Education			-	133,839,817
Department of Agriculture				
SNAP Cluster				
South Carolina Department of Social Services				
SNAP-ED: CATCH (Coordinated Approach to Child Health)	10.561	4400025162	-	70,398
SNAP-ED: CATCH (Coordinated Approach to Child Health)	10.561	4400028286	-	144,893
SNAP-ED: Cooking Matters	10.561	4400025174	-	21,988
SNAP-ED: Cooking Matters	10.561	4400027854	-	143,687
SNAP-ED: Go-NAP SACC Community Partnership	10.561	4400025164	-	49,255
SNAP-ED: Go-NAP SACC Community Partnership	10.561	4400027881	-	151,546
SNAP-ED: Implementation of Formative Research and Evaluation	10.561	4400025173	-	47,062
SNAP-ED: Implementation of Formative Research and Evaluation	10.561	4400027852	-	111,065
SNAP-ED: Implementation of Walk with Ease	10.561	4400025326	-	40,319
SNAP-ED: Implementation of Walk with Ease	10.561	4400027853	-	122,729
SNAP-ED: My Plate/Sesame Street Healthy Habits	10.561	4400028452	-	122,666
SNAP-ED: Policy, System, Environment (PSE) Strategies and Outreach	10.561	4400025172	-	44,353
SNAP-ED: Policy, System, Environment (PSE) Strategies and Outreach	10.561	4400027851	-	122,216
SNAP-ED: Rethink Your Drink Campaign	10.561	4400028356/4400027013	-	96,721
SNAP-ED: Sesame Street Healthy Habits	10.561	4400025325	-	44,731
Total SNAP Cluster			-	1,333,629
Total Department of Agriculture			-	1,333,629
Department of Transportation				
Highway Planning and Construction Cluster				
Pass-through programs from:				
South Carolina Department of Transportation				
State Work Zone Safety Training Program	20.205	CBSA-002	-	339,739
Transportation Technology Transfer Service (T3S) 2020	20.205	SPR 1-20	-	(91)
Transportation Technology Transfer Service (T3S) 2021	20.205	SPR 2-21	-	112,899
Transportation Technology Transfer Service (T3S) 2022	20.205	SPR 1-22	-	324,040
Total Highway Planning and Construction Cluster			-	776,587
Total Department of Transportation			-	776,587
OTHER PROGRAMS				
Department of Agriculture				
2020 National Animal Health Laboratory N	10.025	AP21VSD&B000C003	-	2,682
FY 21 SC NAHLN Infrastructure	10.025	AP21VSD&B000C048	-	125,888
FY21 D1 SC ADT	10.025	AP21VSSPRS00C013	-	91,580
FY21 D1 SC UMB	10.025	AP21VSSPRS00C028	-	250,678
FY21 SC NAHLN Infrastructure II	10.025	AP21VSD&B000C074	-	131,652
FY22 D1 SC ADT	10.025	AP22VSSPRS00C050	-	2,846
FY22 D1 SC UMB	10.025	AP22VSSPRS00C096	-	7,629
Implement NAHLN Order Message Receiver in USALIMS	10.025	AP20VSD&B000C001	-	39
National Animal Disease Preparedness and Response Program - 2019 Training and Exercise	10.025	AP20VSCAHO0C003	-	21,130
SC 2022 NAHLN Infrastructure	10.025	AP22VSD&B000C034	-	8,732
SC FY20 Asian Longhorned Beetle	10.025	AP20PPQFO000C558	36,978	1,338,198
SC FY20 Cogongrass	10.025	AP20PPQFO000C518	-	26,280
SC FY20 Forest Pest Outreach 5.0200.01	10.025	AP20PPQFO000C112	-	(1)
SC FY20 Honey Bee Survey 1S.0560.30	10.025	AP20PPQFO000C130	-	2,489

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OTHER PROGRAMS, continued				
Department of Agriculture, continued				
SC FY20 Jr. Invasive Outreach 5.0286.01	10.025	AP20PPQF0000C111	-	6,909
SC FY21 Asian Longhorned Beetle Eradication	10.025	AP21PPQF0000C530	-	841,434
SC FY21 CAPS Infrastructure	10.025	AP21PPQF0000C174	-	64,843
SC FY21 CAPS Survey	10.025	AP21PPQF0000C175	-	27,038
SC FY21 Cogongrass	10.025	AP21PPQF0000C292	-	194,003
SC FY21 Forest Pest Outreach 5.0686.01	10.025	AP21PPQF0000C117	-	33,479
SC FY21 Grape Commodity Survey 1S.1093.0	10.025	AP21PPQF0000C148	-	35,000
SC FY21 Honey Bee Survey 1S.780.16	10.025	AP21PPQF0000C172	-	12,554
SC FY21 Imported Fire Ant	10.025	AP21PPQF0000C247	-	56,148
SC FY21 P.ramorum Survey 1S.1103.01	10.025	AP21PPQF0000C413	-	22,901
SC FY21 Solanaceous Survey 1S.1104.01	10.025	AP21PPQF0000C173	-	35,000
SC FY22 CAPS Combined Survey	10.025	AP22PPQF0000C151	-	8,490
SC FY22 CAPS Infrastructure	10.025	AP22PPQF0000C152	-	19,066
SC FY22 Grape Commodity Survey 1S.0550.01	10.025	AP22PPQF0000C270	-	5,888
SC FY22 Solanaceous Survey 1S.0555.01	10.025	AP22PPQF0000C271	-	6,028
Total for Assistance Listing Number 10.025			36,978	3,378,602
Assisting Rural Groups and Cooperatives through the South Carolina Center for Cooperative and Enterprise Development	10.771	46-039-576000254 2020 RCDG	68,653	122,147
Total for Assistance Listing Number 10.771			68,653	122,147
Business Acumen Training, Professional Networking, and Innovation Support for Emerging Agricultural and Food System Entrepreneurs in Rural South Carolina.	10.351	Case #841224685	-	40,571
Total for Assistance Listing Number 10.351			-	40,571
Development and Promotion of Mass Timber Noise Barriers for Highways	10.674	19-DG11083150-014	-	51,766
Total for Assistance Listing Number 10.674			-	51,766
South Carolina Farm Financial Benchmarking Project	10.319	2018-38504-28734	-	103,588
Total for Assistance Listing Number 10.319			-	103,588
South Carolina Meat-Poultry Inspection Department - All Other	10.475	BASE21 (12-37-A307)	-	63,853
South Carolina Meat-Poultry Inspection Department - All Other	10.475	BASE22 (12-37-A307)	-	211,119
South Carolina Meat-Poultry Inspection Department - Compliance	10.475	BASE21 (12-37-A307)	-	35,348
South Carolina Meat-Poultry Inspection Department - Compliance	10.475	BASE22 (12-37-A307)	-	104,242
South Carolina Meat-Poultry Inspection Department - Cross Utilization FY21	10.475	Cross Utilization - FY21 12-37-A-427 Cross Utilization	-	127,602
South Carolina Meat-Poultry Inspection Department - Cross Utilization FY22	10.475	FY22	-	144,965
South Carolina Meat-Poultry Inspection Department - Laboratory	10.475	BASE21 (12-37-A307)	-	4,709
South Carolina Meat-Poultry Inspection Department - Laboratory	10.475	BASE22 (12-37-A307)	-	10,013
South Carolina Meat-Poultry Inspection Department- In-Plant	10.475	BASE21 (12-37-A307)	-	286,319
South Carolina Meat-Poultry Inspection Department- In-Plant	10.475	BASE22 (12-37-A307)	-	794,464
Total for Assistance Listing Number 10.475			-	1,782,634
Technical Assistance to Micro Entrepreneurs through the SC Center for Cooperative and Enterprise Development	10.870	46-039-576000254	-	5,055
Total for Assistance Listing Number 10.870			-	5,055
Towards a more Robust Portfolio of Entrepreneurship and Production Training for South Carolina's Emerging Farmers	10.311	2021-70033-35707	-	95,965
Total for Assistance Listing Number 10.311			-	95,965
Smith-Lever	10.511	NI20SLBCXXXXG024	-	2,517,983
Smith-Lever	10.511	NI21SLBCXXXXG008	-	2,059,283
Total for Assistance Listing Number 10.511			-	4,577,267
Expanded Food & Nutrition Education Program	10.514	NI20EFNEPXXXXG061	-	838,811
Expanded Food & Nutrition Education Program	10.514	NI21EFNEPXXXXG014	-	849,597
Total for Assistance Listing Number 10.514			-	1,688,409
Renewable Resources Extension Act Program	10.515	NI20RREAFXXXXG047	-	10,419
Renewable Resources Extension Act Program	10.515	NI21RREAFXXXXG009	-	66,300
Total for Assistance Listing Number 10.515			-	76,719
Pass-through programs from:				
eXTension Foundation				
EXCITE: Extension Collaborative on Immunization, Teaching & Engagement	10.229	EXC1-2021-2042	-	24,784
Total for Assistance Listing Number 10.229			-	24,784
Kansas State University				
2020 4-H Military Partnerships and Outreach Support Program	10.500	A00-0983-S053-A01	-	3,401
4-H Military Partnerships and Outreach Support Program - Expedition Sewee	10.500	A00-0983-S077-A01	-	7,927
4-H Military Partnerships and Outreach Support Program- Wounded Warriors Youth Camps & Deployed Soldiers Youth Camps	10.500	A00-0983-S085-A01	-	21,877
Department of Air Force 4-H Military Partnership Outreach and Support	10.500	A22-0394-S018	-	10,454
Total for Assistance Listing Number 10.500			-	43,659
Softwood Lumber Board				
Timber Design Faculty Development Workshop	10.000	None	-	19,496

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OTHER PROGRAMS, continued				
Department of Agriculture, continued				
Total for Assistance Listing Number 10.000			-	19,496
University of Florida				
Southern Plant Diagnostics Network	10.304	UFDSP00011536 / P0019073	-	17,337
The Southern Plant Diagnostic Network	10.304	SUB00002903	-	24,764
Total for Assistance Listing Number 10.304			-	42,101
Southern Regional Center for Food Safety Training, Outreach and Technical Assistance Continuation, and Lead Regional Coordination Center	10.328	P0099377 / UFDSP00012355	-	3,115
Total for Assistance Listing Number 10.328			-	3,115
University of Georgia				
Advanced Soil Health Training for South Carolina Agriculture Professionals	10.215	SUB00001983	1,988	3,682
SC SARE 2020-2021 Model State Program - Program Assistant (MSA20)	10.215	SUB00002353	-	15,641
Southern Region SARE Sustainable Agriculture Training Program 2019-2020 Model State Program - Training (MSP19)	10.215	SUB00002039	-	10,004
Sustainable Agriculture Research and Education (SARE) Program - Model State Program - Program Assistant	10.215	SUB00002660	-	33,333
Total for Assistance Listing Number 10.215			1,988	62,660
University of Tennessee				
Farm and Ranch Stress Assistance Network: Southern Region	10.525	9500095927	-	201,252
Total for Assistance Listing Number 10.525			-	201,252
Total Department of Agriculture			107,619	12,319,789
Department of the Interior				
Archaeological and Historical Assessment of Fort Rutledge and the Battle of Eseneca	15.926	P21AP11636-00	-	28,361
Total for Assistance Listing Number 15.926			-	28,361
CESU - Metals Conservation in Fort Pulaski: Treatment of Iron Architectural Features and Museum Artillery	15.945	P20AC01065	-	71,250
CESU-Digitizing Resource Management Records of Big Cypress National Preserve	15.945	P21AC11334-00	-	13,474
Digitize and Transcribe Historical Documents, Oversized Documents, Video Tapes, Audio Tapes, and Photographic Materials	15.945	P17AC01647	-	3,750
Digitize Photographic Materials for Everglades and Biscayne National Parks	15.945	P16AC01406	-	60
Total for Assistance Listing Number 15.945			-	88,534
Total Department of the Interior			-	116,895
Department of Justice				
Clemson University Police Department Justice and Mental Health Collaboration Program (JMHP) Initiative	16.745	2019-MO-BX-0035	-	21,236
Total for Assistance Listing Number 16.745			-	21,236
Pass-through programs from:				
South Carolina Department of Public Safety				
Clemson University Police FY22 CESF Enhanced Delivery Program	16.034	1CF20158	-	30,615
Total for Assistance Listing Number 16.034			-	30,615
National 4-H Council				
4-H Health Rocks! Mentoring Program	16.726	NMP10/2019-JY-FX-0026/ 4-H ID 17780	-	12,705
4-H Health Rocks! Regional Mentoring Program, Year 2	16.726	HR 2/ 2020-JY-FX-0024/ 19343	-	43,109
National 4-H Mentoring	16.726	4-H NMP 11/ 2020-JU-FX- 0031/ 19345	8,597	39,993
South Carolina National Mentoring Program	16.726	2019-MU-FX-0002/ 4-H 17781	-	17,842
Total for Assistance Listing Number 16.726			8,597	113,650
Total Department of Justice			8,597	165,501
State Department				
Strategic Partnership in US Politics and International Affairs Between Clemson University and the University of Belgrade	19.900	SR810020GR0064	-	15,332
Total State Department			-	15,332
Treasury Department				
Pass-through programs from:				
State of South Carolina				
Coronavirus Relief Funds	21.019	unknown	-	2,101
Total Treasury Department			-	2,101
National Endowment for the Arts				
Call My Name: African Americans in Early Clemson University History	45.130	ZR-256734-18	-	12,756
Total for Assistance Listing Number 45.130			-	12,756
Exploring America's Stories in the Clemson Landscape: An NEH American Rescue Plan	45.149	ZPA-283484-22	-	28,188
Fort Hill National Historic Landmark Historic House Museum Improving Collections Conservation Project	45.149	PG-280823-21	-	7,668
Pass-through programs from:				
California State University				
Mapping the Gay Guides: Understanding Historical LGBTQ Spaces Through Gay Travel Guides	45.149	S-7495-CLEMSON	-	70,986

Clemson University, Clemson, South Carolina
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2022

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				
Total for Assistance Listing Number 45.149			-	106,842
Total National Endowment for the Arts			-	119,598
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 Federal 2020	-	81,433
Small Business Development Center - Federal Operating Grant 2020	59.037	SBAHQ20B0059 Federal 2021	-	81,987
Small Business Development Center - Federal Operating Grant 2021	59.037	SBAHQ21B0049	-	143,481
Total Small Business Administration			-	306,901
Department of Veterans Affairs				
2021-2022 Veteran Affairs Adaptive Sports Grant Program: Paralympic Soccer Program	64.034	SPORTS-21-017	-	37,506
Paralympic Soccer Club Initiative	64.034	SPORTS-20-016	-	94,930
Total for Assistance Listing Number 64.034			-	132,436
Pass-through programs from:				
Move United, Inc.				
MOVE UNITED (FKA Adaptive Sports) USA National Veteran Airgun Outreach Series	64.000	None	-	(1,143)
Move United Support of the 2022 Palmetto Games	64.000	None	-	4,000
Total for Assistance Listing Number 64.000			-	2,857
Total Department of Veterans Affairs			-	135,293
Environmental Protection Agency				
Consolidated Pesticide Certificate and Training				
Consolidated Pesticide Enforcement Cooperative Agreements - Enforcement	66.700	98463820	-	154,385
Consolidated Pesticide Enforcement Cooperative Agreements - Special Programs	66.700	98463620	-	168,232
Consolidated Pesticide Enforcement Cooperative Agreements - Special Programs	66.700	98463720	-	156,215
Total for Assistance Listing Number 66.700			-	478,832
Multipurpose Grants to States and Tribes	66.204	01D17320	-	20,609
Multipurpose Grants to States and Tribes	66.204	AA01D02620	-	27,805
Multipurpose Program Grants to State and Tribes	66.204	02D15421	-	2,479
Total for Assistance Listing Number 66.204			-	50,893
Pass-through programs from:				
eXtension Foundation				
The Power of Personal Protective Equipment	66.716	SA-2022-27	-	13,634
Understanding Pesticide Use and Safety	66.716	SA-2021-54	-	14,124
Total for Assistance Listing Number 66.716			-	27,758
Total Environmental Protection Agency			-	557,483
Department of Education				
Education Stabilization Fund				
COVID 19 - Higher Education Emergency Relief Fund (HEERF)- Student Portion	84.425E	P425E200221-20C	-	18,223,526
COVID 19 - Higher Education Emergency Relief Fund (HEERF)- Institution Portion	84.425F	P425F200181	-	393,293
COVID-19 - American Rescue Plan - Elementary and Secondary School Emergency Relief (ARP ESSER) - Call Me MISTER Initiative Engagement Agreement	84.425U	None	-	80,000
Total Education Stabilization Fund			-	18,696,819
Global Challenges, India, and the Curriculum in South Carolina	84.021	P021A200026	-	14,331
Total for Assistance Listing Number 84.021			-	14,331
Pass-through programs from:				
Monaview Elementary				
Monaview Magic Initiative	84.287	1st PO #203214 // 2nd PO #211132//3rd PO# 221447	-	2,865
South Carolina Department of Education				
After-School Program at Cedar Grove Elementary and Palmetto Elementary	84.287	22 21st CCLC-41 H63010006922	46,370	95,665
After-School Program at Liberty Primary and Liberty Elementary	84.287	22 21st CCLC-50 H63010006922	36,287	60,097
After-School Program at Spearman Elementary and West Pelzer Elementary	84.287	22 21st CCLC-20 H63010006922	8,114	17,285
Nita M. Lowey 21st CCLC After-School Program at Cedar Grove Elementary and Palmetto Elementary	84.287	20 21st CCLC-41 H63010006920	-	738
Nita M. Lowey 21st CCLC After-School Program at Cedar Grove Elementary and Palmetto Elementary	84.287	21 21st CCLC-41 H63010006921	14,493	16,745
Nita M. Lowey 21st CCLC After-School Program at Chastain and Liberty Elementary	84.287	21 21st CCLC-50 H63010006921	12,535	14,447
Nita M. Lowey 21st CCLC After-School Program at Spearman Elementary and West Pelzer Elementary	84.287	20 21st CCLC-20 H63010006920	-	232
Nita M. Lowey 21st CCLC After-School Program at Spearman Elementary and West Pelzer Elementary	84.287	21 21st CCLC-20 H63010006919	12,686	12,686
Total for Assistance Listing Number 84.287			130,485	220,760
National Writing Project				
NWP 2019-2020 Year 3 i3 Scale-Up C3WP Professional Development	84.411	01-SC11-2019i3C3WP	-	(1)

Clemson University, Clemson, South Carolina
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2022

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, continued				
Pass-through programs from, continued:				
South Carolina Department of Education				
Scaling Up the National Writing Project's College-Ready Writers Program: Expanding Access, Reach, and Leadership for Ongoing Improvement				
The Ohio State University	84.411	01-SC11-2020i3C3WP	-	78,553
Refining and Expanding HEROES: A Literacy Intervention for Young Students with IEPs				
	84.411	SPC-100003969 / GR117381	-	120,311
Total for Assistance Listing Number 84.411			-	198,863
South Carolina Department of Education				
Agriculture Teacher Education and Professional Development				
	84.048	21ClemsonAgEd	-	20,458
Agriculture Teacher Education and Professional Development				
	84.048	22ClemsonAgEd	-	33,401
Future Farmers of America (FFA) Program Assistant				
	84.048	21ClemsonFFA	-	8,524
Future Farmers of America (FFA) Program Assistant				
	84.048	22ClemsonFFA	-	21,693
Total for Assistance Listing Number 84.048			-	84,076
Total Department of Education			130,485	19,214,849
Department of Health and Human Services				
Advanced Nurse Education-Sexual Nurse Assault Examiner program				
	93.247	4T96HP32502-03-01	102,029	198,464
Total for Assistance Listing Number 93.247			102,029	198,464
Mental Health Awareness Training				
	93.243	5H79SM081359-03	90,282	90,282
REAL Counselor Training and Development: Reinforcing Education through Addictions-focused Learning				
	93.243	6H79FG000032-01M001	7,156	79,234
Total for Assistance Listing Number 93.243			97,438	169,516
Rural Communities Opioid Response Program-Neonatal Abstinence Syndrome				
	93.912	6G26RH40075-02-01	80,406	80,406
Total for Assistance Listing Number 93.912			80,406	80,406
Pass-through programs from:				
Christopher Reeve Paralysis Foundation				
Clemson University: Tutor, Talk and Train				
	93.325	2020 COVID-19: Addressing Social Isolation	-	15,971
Total for Assistance Listing Number 93.325			-	15,971
South Carolina Department of Health and Environmental Control				
Academic Detailing				
	93.354	CY-19-018	407,680	407,680
South Carolina Public Health Preparedness Student Corp (SCPHPSC)				
	93.354	FR#4000043462/LR-2020-06 PH-2-533	22,678	102,744
Total for Assistance Listing Number 93.354			430,358	510,425
COVID 19 - Vaccine Outreach Initiative				
	93.323	CBO-2-006	-	107,164
Total for Assistance Listing Number 93.323			-	107,164
Vanderbilt University				
Translation and Integration of Genomics is Essential to Doctoral Nursing: "TIGER"				
	93.172	UNIV 62244 / P22002982	-	13,717
Total for Assistance Listing Number 93.172			-	13,717
Total Department of Health and Human Services			710,231	1,095,662
Total Other Programs			956,932	34,049,403
Total Federal Expenditures			14,096,767	277,631,120

Clemson University

Clemson, South Carolina

Notes to the Schedule of Expenditures of Federal Awards

June 30, 2022

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, 2022, 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 \$2,591,444 as of June 30, 2022. 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, 2022***

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 Auditor's 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***

Members of 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 (*Government Auditing Standards*), the financial statements of the business-type activities and discretely presented component units of Clemson University (the "University"), as of and for the year ended June 30, 2022, 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 30, 2022. Our report includes a reference to other auditors who audited the financial statements of the Clemson University Foundation, the Clemson University Land Stewardship Foundation, and IPTAY, as described in our report on Clemson University's financial statements. This report does not include the results of other auditors' testing of internal control over financial reporting or compliance and other matters that are reported on separately by those auditors. The financial statements of the Clemson University Foundation, the Clemson University Land Stewardship Foundation, and IPTAY were not audited in accordance with *Government Auditing Standards*.

Report on Internal Control Over Financial Reporting

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

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

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

Report on Compliance and Other Matters

As part of obtaining reasonable assurance about whether the University's 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 "Elliott Davis, LLC". The signature is written in a cursive style with a large, sweeping initial "E".

Greenville, South Carolina
September 30, 2022

**Independent Auditor's 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**

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

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

Basis for Opinion on Each Major Federal Program

We conducted our audit of compliance in accordance with auditing standards generally accepted in the United States of America (GAAS); the standards applicable to financial audits contained in *Government Auditing Standards* issued by the Comptroller General of the United States (*Government Auditing Standards*); 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 Auditor's Responsibilities for the Audit of Compliance section of our report.

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

Responsibilities of Management for Compliance

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

Auditor's Responsibilities for the Audit of Compliance

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

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

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

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

Report on Internal Control Over Compliance

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

Our consideration of internal control over compliance was for the limited purpose described in the Auditor's Responsibilities for the Audit of Compliance section above and was not designed to identify all deficiencies in internal control over compliance that might be material weaknesses or significant deficiencies in internal control

over compliance. Given these limitations, during our audit we did not identify any deficiencies in internal control over compliance that we consider to be material weaknesses, as defined above. However, material weaknesses or significant deficiencies in internal control over compliance may exist that were not identified.

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

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

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

We have audited the financial statements of the University as of and for the year ended June 30, 2022, and have issued our report thereon dated September 30, 2022, which contained an unmodified opinion on those financial statements. We did not audit the financial statements of the Clemson University Foundation (a discretely presented component unit), the Clemson University Land Stewardship Foundation (a discretely presented component unit), and IPTAY (a discretely presented component unit). Those statements were audited by other auditors whose reports have been furnished to us, and our opinions, insofar as they relate to the amounts included for these discretely presented components units, are based solely on the reports of the other auditors. Our audit was performed for the purpose of forming an opinion on the financial statements as a whole. 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 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 financial statements. The information has been subjected to the auditing procedures applied in the audit of the financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the financial statements or to the 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 financial statements as a whole.



Greenville, South Carolina
September 30, 2022

Clemson University
Clemson, South Carolina
Schedule of Findings and Questioned Costs
For the year ended June 30, 2022

Section I. Summary of Auditor's Results

Financial Statements

Type of report the auditor issued on whether the financial statements audited were prepared in accordance with GAAP: Unmodified

Internal control over financial reporting:

- Material weakness identified? _____ yes X no
- Significant deficiency identified? _____ yes X none reported

Noncompliance material to financial statements noted? _____ yes X no

Federal Awards

Internal control over major federal programs:

- Material weakness identified? _____ yes X no
- Significant deficiency identified? _____ yes X none reported

Type of auditor's report issued on compliance for major federal programs: Unmodified

Any audit findings disclosed that are required to be reported in accordance with 2 CFR 200.516 (a)? _____ yes X no

Identification of major federal programs:

<u>Assistance Listing Numbers</u>	<u>Name of federal program or cluster</u>
10.RD; 11.RD; 12.RD; 15.RD; 16.RD; 19.RD; 20.RD; 43.RD; 45.RD; 47.RD; 66.RD; 77.RD; 81.RD; 84.RD; 93.RD; 94.RD; 97.RD; 98.RD	Research and Development Cluster
10.025	Plant and Animal Disease, Pest Control, and Animal Care
84.425E; 84.425F	Higher Education Emergency Relief Fund (HEERF)

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, 2022

Section II. Financial Statement Findings

No matters were reported.

Section III. Federal Award Questioned Costs and Findings

No matters were reported.