• Approximately $4.4 billion of federal R&D funds are spent each year in Georgia.
• Georgia ranks 4th among the 50 states, District of Columbia, and Puerto Rico in terms of the amount of federal R&D dollars received annually.
• Approximately 26 percent of all federal funds spent in Georgia each year on matters other than the direct support of individuals (i.e., such entitlements as retirement, disability, and housing assistance) is spent on R&D.
BACKGROUND

In recent years, the federal government has spent in the neighborhood of $4.4 billion annually in Georgia on research and development (R&D) activities. On average, federal R&D dollars account for approximately 26 percent of all federal funds spent in Georgia each year on matters other than the direct support of individuals (i.e., such entitlements as retirement, disability, and housing assistance).

Most major federal agencies that currently support federal R&D efforts provide funding for R&D activities in Georgia. Foremost among these agencies is the Department of Defense (DOD), which accounts for 88 percent of all federal R&D dollars spent in Georgia each year. The Department for Health and Human Services (HHS) accounts for an additional 7 percent, with the remainder coming collectively from the Department of Agriculture (USDA), National Aeronautics and Space Administration (NASA), the National Science Foundation (NSF), the Environmental Protection Agency (EPA), the Department of Energy (DOE), and other agencies.¹¹

All federal R&D dollars spent in Georgia either cover the costs of operating federal R&D units in the state, including paying the salaries of federal R&D personnel working at these units, or are awarded as grants, contracts, or cooperative agreements to entities in the state. The following is an overview of what becomes of these federal R&D dollars once they arrive in Georgia.

FEDERAL R&D UNITS IN GEORGIA

Athens, Georgia, is home to USDA's Richard B. Russell Agricultural Research Center, Southeast Poultry Research Laboratory, and Forestry Science Laboratory; the Department of Interior's (DOI) Southeast Field Station and Georgia Cooperative Fish and Wildlife Research Unit; and EPA's Ecosystems Research Division.

- The Richard B. Russell Agricultural Research Center is a unit of USDA's Agricultural Research Service (ARS) located on the

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¹¹ For a complete agency-by-agency breakdown of these R&D dollars, see Appendix C.
campus of the University of Georgia. It consists of five research divisions focusing on animal physiology, poultry microbiological safety, quality assessment, poultry processing and meat quality, and toxicology and mycotoxins. The specific research activities of some of the divisions focus on identifying the mechanisms that enhance reproductive efficiency and reduce carcass fat, developing the technologies to prevent or diminish the association of poultry with human enteropathogenic bacteria, and determining the structure of foods and fibers as related to processing characteristics and end-use quality. The research activities of other divisions focus on improving the ultimate microbiological quality of raw processed poultry and identifying the means of reducing or eliminating hazards of naturally occurring toxins of fungal or plant origin that adversely affect animals or human health, thereby lowering the value of agricultural commodities. This federal R&D center, together with the Southeastern Poultry Research Laboratory described immediately below, annually receives approximately $16.8 million of federal R&D funds and has about 200 FTEs.

- The Southeast Poultry Research Laboratory is also a unit of USDA’s ARS located on the campus of the University of Georgia. It conducts research on diseases that afflict poultry and humans. Specific research activities of this laboratory focus on basic and applied research in diagnostics, prevention, and control strategies; prediction of disease outbreaks; molecular epidemiology; and understanding disease pathogenesis. The funding and staffing information for this federal R&D unit is included in those presented immediately above for the Richard B. Russell Agricultural Research Center.

- The Forestry Science Laboratory is a unit of the Southern Research Station (SRS) inside USDA’s Forest Service. It is on the campus of the University of Georgia and works in close coordination with a unit in Research Triangle Park, North Carolina, to quantify the microbial and metabolic processes governing southern forest productivity and sustainability. SRS
conducted research on natural resource management and sustainability and creates the technology needed to sustain and enhance southern forest ecosystems. Specific research activities of this unit include studies on forest ecology, fire ecology, smoke management, and harvesting and wood properties of forests of the Atlantic Coastal Plain; R&D on effective, environmentally acceptable management options to control insects attacking seed orchards, tree nurseries, and plantations; analyses of the interactions of land use and forest management practices on arthropod populations with regard to their functional role as decomposers, as pollinators of rare plants, and as prey for endangered species; control measures for nonnative, invasive species; and the assessment of outdoor recreation and wilderness in forest ecosystems, with a particular focus on supply-and-demand trends, economic values, and benefits to rural communities. This federal R&D unit annually receives approximately $4 million of federal R&D and has about 47 employees.

- The Southeast Field Station is a unit of the Patuxent Wildlife Research Center inside DOI’s U.S. Geological Survey (USGS). It conducts research on migratory birds, waterfowl harvests, wildlife habitats, environmental contaminants, endangered species, and wildlife populations. Specific research activities of this unit include studying the status and trends of biological resources, investigating the effects of ecological processes and human impacts on biological resources; and restoring and maintaining sustainable ecological systems. This federal R&D unit, in combination with federal R&D funds allocated to the Southern Regional Supervisor, annually receives approximately $847,000 of federal R&D funds and has about 11 FTEs.

- The Georgia Cooperative Fish and Wildlife Research Unit is part of DOI’s USGS. It conducts research on fish and wildlife ecology. Specific research activities of this unit include studying forest wildlife populations on national wildlife refuges; investigating the availability, use, and relative value of cool-water springs as thermal refuge for bass; and looking at the impact of geese on
the ecosystem. This federal R&D unit annually receives approximately $192,000 of federal R&D funds and has about four FTEs.

- The Ecosystems Research Division is a unit of the EPA’s National Exposure Research Laboratory headquartered in Research Triangle Park, North Carolina. It conducts research on organic and inorganic chemicals, greenhouse gas biogeochemical cycles, and land-use perturbations that create direct and indirect, chemical, and nonchemical stressor exposures and potential risks to humans and ecosystems. It develops comprehensive models based on fundamental studies of stressor behavior to predict exposures in multimedia environments, to simulate the interactions of the climate system and the terrestrial biosphere, and to evaluate the aggregate causes of ecological stress, including land-use change/management, within a watershed/regional context. This federal R&D unit annually receives approximately $12.3 million of federal R&D funds and has about 50 FTEs. A portion of these funds is spent on the maintenance and operation of R&D equipment and facilities.

Atlanta, Georgia, is home to most of HHS’s Centers for Disease Control and Prevention, the Agency for Toxic Substances and Disease Registry, and the Southeast Regional Laboratory; units of DOD’s Army Research Laboratory and the Office of Naval Research; and DOI’s Aviation Management Program and Georgia District Office of Water Resources.

- The Centers for Disease Control and Prevention (CDC) is the unit of HHS with primary responsibility for promoting health and quality of life by preventing and controlling disease, injury, and disability. CDC’s National Center for Infectious Diseases conducts research on the infectious diseases that are new or reemerging (e.g., hantavirus, hemorrhagic fever), as well as older infectious diseases (e.g., malaria, pneumonia) that are becoming resistant to the drugs used to combat them. CDC’s National Center for HIV, STD, and TB Prevention conducts research on the development of vaccines against these diseases, as
well as various ways to prevent their spread. CDC’s National Center for Chronic Disease Prevention and Health Promotion conducts research on arthritis, diabetes, cardiovascular diseases, cancer, and other diseases that are prolonged, do not resolve spontaneously, and are rarely cured completely. CDC’s National Center for Injury Prevention and Control conducts research on ways to reduce the morbidity, disability, mortality, and costs associated with injuries. CDC’s National Center for Environmental Health conducts research on the prevention of illness, disability, and death from interactions between people and the environment. CDC’s National Immunization Program conducts research on the use, efficacy, and adverse effects of vaccines. CDC’s Public Health Practice Program Office conducts research on the public health workforce, the effectiveness of public health organizations, the scientific capacity of public health laboratories, and the systems required to manage public health. CDC’s Epidemiology Program Office conducts research on the investigation of epidemics and the surveillance of public health. All of these CDC units are headquartered in Atlanta. The largest of CDC’s units, the National Institute for Occupational Safety and Health, is headquartered in Washington, D.C., with sites in Ohio, West Virginia, Pennsylvania, and Washington. Altogether, the Atlanta-based portion of the CDC annually receives approximately $145 million of federal R&D funds and has about 778 FTEs.

- The Agency for Toxic Substances and Disease Registry is a unit of HHS. It works to prevent exposure and adverse human health effects and diminished quality of life associated with exposure to hazardous substances from waste sites, unplanned releases, and other sources of pollution present in the environment. It conducts R&D activities focusing on the public health assessments of hazardous and toxic substances. The agency is headquartered in Atlanta and maintains 10 regional offices, as well as an office in Washington, D.C. Its funding comes primarily from the Superfund account controlled by the EPA, while a sister HHS unit, the Centers for Disease Control and
Prevention, performs many of its administrative functions. This federal unit annually receives approximately $9 million of federal R&D funds, only about $3 million of which is spent on in-house activities, and employs about 400 people, only a small portion of whom are directly involved in R&D activities.

- The Southeast Regional Laboratory is a unit of HHS’s Food and Drug Administration. It conducts research on the safety and efficacy of human drugs. This federal unit annually receives approximately $812,000 of federal R&D funds and has about seven FTEs directly involved in R&D activities.

- The Georgia Institute of Technology facility is a unit of DOD’s Army Research Laboratory. The laboratory is headquartered in Adelphi, Maryland, with additional sites in Aberdeen, Maryland; White Sands, New Mexico; Cleveland, Ohio; Hampton, Virginia; and Eatontown, New Jersey. This specific unit conducts research on information science and technology to support warfighter analysis. This unit annually receives about $1.7 million of federal R&D funds, approximately $1.5 million of which is spent on in-house activities, and employs about 13 civilians.

- R&D Management Command is a unit of the Office of Naval Research (ONR) inside DOD. ONR is headquartered in Arlington, Virginia, and provides R&D managers to oversee the extramural R&D programs of the Navy and Marine Corps performed by universities, nonprofit organizations, or for-profit companies. ONR sponsors extramural R&D programs in information, electronics, and surveillance; ocean, atmosphere, and space; engineering, materials, and physical science; human systems; and naval expeditionary warfare. This federal unit annually receives approximately $606,000 of federal R&D funds to support the in-house management activities of about 13 FTEs.

- The Aviation Management Program is a unit of DOI’s USGS. It provides aircraft services for USGS researchers, including train-
ing, mapping, and the census of animal populations, such as bears. This federal R&D unit annually received approximately $62,000 of federal R&D funds and had one FTE. This unit was phased out in 1999.

- The Georgia District Office of Water Resources is a unit of DOI’s USGS. It oversees the R&D activities of USGS’s National Water-Quality Assessment (NAWQA), Ground-Water Resources Assessment, Toxic Substances Hydrology, and Federal State Cooperatives programs. The NAWQA program conducts research on the nation’s surface and groundwater resources to better understand the effect of pesticides, erosion, and bacterial contamination on water quality. The Ground-Water Resources Assessment program studies groundwater systems to develop models and simulations to better understand the workings of these systems. The Toxic Substances Hydrology program studies the behavior of toxic substances in hydrologic environments. These research activities investigate subsurface contamination at local releases and aquatic ecosystem contamination on a watershed and regional scale. The Federal State Cooperatives program studies the effects of agricultural chemicals, floods, droughts, and waste disposal on water supply and groundwater quality. This federal unit annually receives approximately $1.9 million in federal R&D funds.

Augusta, Georgia, is home to a Department of Veterans Affairs (DVA) R&D unit.

- While the principal focus of the VA Medical Center in Augusta is providing medical care to veterans, it is also the location of a number of research activities. In a recent year, this federally owned and operated facility was the site of 130 projects with total funding of approximately $1 million. These R&D activities focus on a wide range of topics, including schizophrenia, dementia, Alzheimer’s disease, and cerebrovascular disorders.

Byron, Georgia, is home to USDA’s Southeastern Fruit and Tree Nut Research Laboratory.
• The Southeastern Fruit and Tree Nut Research Laboratory is a unit of USDA’s ARS. It conducts research on methods to enhance the production, value, and safety of pecan, peach, nectarine, and plum crops. Specific research activities of the laboratory include the development of husbandry strategies and research on arthropod, microbial, and nematode pests. This federal R&D unit annually receives approximately $2.4 million of federal R&D funds and has about 30 FTEs. Dawson, Georgia, is home to USDA’s National Peanut Research Laboratory.

• The National Peanut Research Laboratory is a unit of USDA’s ARS. It conducts research on developing technology to address the major problems of the U.S. peanut industry, including reducing the risks associated with peanut production, processing, marketing, and food safety aspects. Specific research activities of this laboratory include the studies of production, harvesting, curing, grading, handling, storage, and aflatoxin prevention. This federal R&D unit annually receives approximately $2.1 million of federal R&D funds and has about 30 FTEs. Decatur, Georgia, is home to a DVA R&D unit.

• While the principal focus of the VA Medical Center Atlanta, located in Decatur, is providing medical care to veterans, it is also the location of a number of research activities. In a recent year, this federally owned and operated facility was the site of 285 projects with total funding of approximately $5 million. These R&D activities focus on a wide range of topics, including aging, cancer, and antiviral agents. Fort Benning, Georgia, is home to a unit of DOD’s Army Research Institute (ARI) and its Dismounted Battlespace Battle Laboratory.

• The Infantry Forces Research Unit is part of DOD’s Army Research Institute for Behavioral and Social Sciences headquartered in Alexandria, Virginia. Additional sites are located in Fort
Rucker, Alabama; Fort Leavenworth, Kansas; Fort Knox, Kentucky; Fort Bragg, North Carolina; Orlando, Florida; Fort Hood, Texas; Heidelberg, Germany; and Boise, Idaho. It conducts research on training and personnel performance to enhance individual and unit performance across the range of Army missions. Its research activities focus on training, leader development, and soldier support, particularly those skills pertaining to the needs of the infantry. Among the unit’s current research are projects examining the training of soldiers and units to get the most out of emerging technologies, the Land Warrior system, technologies for urban operations, and the modernized Bradley Fighting Vehicle. Other research investigates the optimal design and use of new training technologies, such as virtual environments and CD-based instruction. In addition to conducting research, the unit provides technical expertise and research support to the U.S. Army Infantry Center and School and to the Army as a whole. This federal unit annually receives about $1.5 million of federal R&D funds, approximately $790,000 of which are spent on in-house R&D activities, and has about nine civilian personnel directly involved in R&D activities.

• The Dismounted Battlespace Battle Laboratory is a unit of the Army inside DOD. It is one of 11 battle laboratories established to define the horizontally integrated capabilities required to operate and field an effective Army. It conducts research on dismounted soldiers to define requirements needed to expand and dominate the battlespace, maintain a lethal reach over an adversary, and mass weapons systems effectively while dispersing forces and individual soldiers throughout the battlefield. Specific research activities of this laboratory focus on such matters as improving combat identification for light forces, dismounted soldier digitization, and conducting modeling and simulations of the battle activities of the dismounted soldier. This federal unit annually receives about $499,000 of federal R&D funds, only a portion of which is spent in-house, and has 17 civilian person-
nel, only a portion of whom are directly involved in R&D activities.

Fort Gordon, Georgia, is home to one of DOD’s Battle Command Battle Laboratories.

- The Battle Command Battle Laboratory is a unit of the Army inside DOD. It is one of 11 battle laboratories established to define the horizontally integrated capabilities required to operate and field an effective Army. This unit is one of three laboratories focusing specifically on battle command matters. The other two are in Fort Leavenworth, Kansas, and Fort Huachuca, Arizona. Together, the three Battle Command Battle Laboratories teach the art and science of battle command and information warfare to commanders to enable them to operate anywhere on the battlefield, as well as on the move. This particular laboratory assesses whether available commercial equipment can meet the needs of the Army with little or no modifications. Specific R&D activities of this laboratory focus on such areas as modeling and simulation of communications equipment and networks. This federal unit annually receives about $808,000 of federal R&D funds, only a portion of which is spent in-house, and has 11 civilian personnel, only a portion of whom are directly involved in R&D activities.

Griffin, Georgia, is to home of USDA’s Regional Plant Introduction Station.

- The Regional Plant Introduction Station is a unit of USDA’s ARS located on the campus of the University of Georgia at Griffin. It conducts research on the genetic resources of agricultural and horticultural crops, including wild species, wild and weedy relatives, landraces, obsolete and current cultivars, and genetic stocks. At present, the collections of the unit represent more than 250 genera and 1,400 species from almost every country in the world. Specific research activities of this laboratory include helping curators conserve and manage genetic resources in a more effective and cost-efficient manner. This federal R&D
unit annually receives approximately $1.6 million of federal R&D funds and has about 20 FTEs.

Savannah, Georgia, is home to the Department of Commerce’s (DOC) Gray’s Reef National Marine Sanctuary.

- The Gray’s Reef National Marine Sanctuary is a unit of DOC’s National Oceanic and Atmospheric Administration (NOAA). Such sanctuaries conduct research on the marine environment to identify areas of special national significance stemming from their resource or human-use values and on the conservation and management of these marine areas, including restoration of damaged ecosystems. Specific R&D activities of this unit include studying fisheries resources, evaluating sampling techniques for long-term monitoring of hard bottom reef fish assemblages in the South Atlantic Bight, and studying sessile invertebrate colonization and community development on hard substrate. This federal unit annually receives approximately $72,500 of federal R&D funds and has two FTEs.

Tifton, Georgia, is home to USDA’s Georgia Coastal Plain Experiment Station and Insect Biology and Population Management Research Laboratory.

- The Georgia Coastal Plain Experiment Station is a unit of USDA’s ARS located on the campus of the University of Georgia at Tifton. It consists of three research divisions focusing on forage and turf, the Southeast watershed, nematodes, weeds, and crops. It conducts research on breeding methods, genetic populations, breeding lines, and cultivars of forage grasses and legumes to improve yield and quality. Specific research activities of this station include studies on resistance to pests, tolerance of environmental stress, and adaptation to small-farm environments as well as mechanized culture, harvesting, and handling. This federal R&D unit, together with the Insect Biology and Population Management Research Laboratory described immediately below, annually receives approximately $7.6 million of federal R&D funds and has about 93 FTEs.
• The Insect Biology and Population Management Research Laboratory is a unit of USDA’s ARS located on the campus of the University of Georgia at Tifton. It conducts research on developing technologies leading to sustainable pest management strategies for the southeastern United States. Specific research activities of this laboratory include identifying, developing, and releasing germplasm with resistance to insect pests and aflatoxin contamination for sustainable agricultural production systems and using resistant germplasm to minimize insect damage and/or aflatoxin contamination in corn, sorghum, peanuts, and forage grasses. Other research activities focus on developing technologies for sustainable integrated management of arthropod pests among crops and developing, evaluating, and facilitating implementation of insect population management technologies for sustainable cropping systems. The funding and staffing information for this federal R&D unit are included in those presented immediately above for the Georgia Coastal Plain Experiment Station.

**Federal R&D Grants to Georgia Entities**

Every major institution of higher education in Georgia is the recipient of significant federal R&D dollars each year through grants made by federal agencies to faculty, graduate students, and research centers. The vast majority of the R&D grants are made by HHS, NSF, and DOD to individual faculty members and therefore ultimately inure to the benefit of such institutions as Emory University, Georgia Institute of Technology (Georgia Tech), the University of Georgia, the Medical College of Georgia (MCG), Morehouse School of Medicine (MSM), Georgia State University (GSU), and Clark Atlanta University (CAU). The table below shows the number of R&D grants active in FY 1998, highlighting those made by HHS, NSF, and DOD to parties at the various institutions and estimates of the total dollars transferred to them in FY 1998 pursuant to the terms of these grants. Among the grants in the “Other Agencies” category going to Georgia Tech are $4 million each from NASA and EPA and $1 million from...
DOE. Most of the comparable grants going to the University of Georgia come from DOE ($3 million), DOC ($1 million), and EPA ($1 million).

Table 11.1 – Sources of Federal R&D Grants to Higher Education in Georgia

<table>
<thead>
<tr>
<th>Institution</th>
<th>HHS</th>
<th>NSF</th>
<th>DOD</th>
<th>Other Agencies</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
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<td>$3M</td>
<td>$2M</td>
<td>$1M</td>
<td>$109M</td>
</tr>
<tr>
<td>Georgia Tech</td>
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<td>$14M</td>
<td>$16M</td>
<td>$10M</td>
<td>$43M</td>
</tr>
<tr>
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<td>$10M</td>
<td>$1M</td>
<td>$14M</td>
<td>$38M</td>
</tr>
<tr>
<td>MCG</td>
<td>$14M</td>
<td>$1M</td>
<td>$1M</td>
<td>$1M</td>
<td>$14M</td>
</tr>
<tr>
<td>MSM</td>
<td>$11M</td>
<td>$0M</td>
<td>$0M</td>
<td>$0M</td>
<td>$11M</td>
</tr>
<tr>
<td>GSU</td>
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<td>$3M</td>
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<tr>
<td>CAU</td>
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<td>$1M</td>
<td>$2M</td>
<td>$5M</td>
<td>$5M</td>
</tr>
<tr>
<td>Other</td>
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<td>$1M</td>
<td>$5M</td>
<td>$14M</td>
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<tr>
<td>Total</td>
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<td>$21M</td>
<td>$31M</td>
<td>$245M</td>
</tr>
</tbody>
</table>

These activities are particularly significant because they fund much of the “basic research” so critical to expanding our knowledge and understanding of fundamental scientific phenomena. In addition, these funds account for a substantial portion of the dollars available each year to various academic departments within these institutions.

Several other nonacademic institutions in Georgia also receive a significant amount of federal R&D grants each year. Foremost among the institutions that received R&D grants in FY 1998 are the Boys and Girls Clubs of America in Atlanta ($2 million), Skidaway Institute of Oceanography in Savannah ($1 million), the Georgia State Department of Human Resources in Atlanta ($1 million), the Atlanta AIDS Research Consortium ($1 million), and Microcoating Technologies in Chamblee ($1 million).

Scattered among these grants, as well as among the contracts discussed in the section below, are small business innovative research (SBIR) awards. These are special awards made by the SBIR programs supported by the 10 federal agencies with annual budgets for extra-
mural R&D of more than $100 million. In a recent year, small businesses in Georgia received 42 SBIR awards totaling $12 million. Examples include a $700,000 award from DOD (Army) to Satimo, Inc., in Acworth for development of an advanced microwave camera for 3-D imaging of subsurface objects in snow and frozen ground and a $600,000 award from NASA to Search Technology, Inc., in Norcross for work on a pilot-centered turbulence assessment and monitoring system.

Also included among these grants are formula grants from federal agencies. Formula grants differ from the much more common project grants in that the money transmitted through formula grants is allocated to a state or one of its subdivisions in accordance with a distribution formula prescribed by law or regulation. Among the formula grants benefiting Georgia are ones valued more than $6.7 million from USDA’s Cooperative State Research, Education, and Extension Service (CSREES) to State Agricultural Experiment Stations, forestry schools, and veterinary colleges for the support of research in agriculture, forestry, and animal health and disease. Similarly, a modest formula grant goes from DOI’s USGS to the Water Resources Research Institute in Georgia every year to foster research in water and water-related problems.

**Other Federal R&D Activities in Georgia**

Several entities in Georgia also receive notable sums in the form of contracts or cooperative agreements from federal agencies for specific R&D efforts. By far the majority of these funds go from DOD to Lockheed Martin Aeronautical Systems in Marietta, which in FY 1998 received close to $1.7 billion from a continuing Air Force R&D contract to develop the F-22 stealth fighter. In addition, the Boeing Company ($10 million), Scientific Research Corp. ($5 million), Amoco Polymers, Inc. ($3 million), and IXL, Inc. ($3 million), received large R&D contracts from federal agencies in FY 1998. Note that these amounts are in addition to any federal R&D grants also received by these companies. Georgia Tech ($30 million), Emory University ($9 million), Mercer University ($5 million), the University of Georgia
($5 million), and CAU ($1 million) also received contracts from various federal agencies to conduct R&D for the federal government. Although these amounts are notable, they do not come close to eclipsing the funds that these institutions receive from federal R&D grants. Note that Mercer University does not appear by name in the table in the section above, because it received only $800,000 in grants for FY 1998.

A total of $38 million of federal R&D dollars was also received in FY 1998 by entities located in Georgia in the form of cooperative agreements. By far the largest of these cooperative agreements ($9 million in FY 1998) came from DOE to the University of Georgia in Athens to operate the Savannah River Ecology Laboratory in Aiken, South Carolina. Other federal agencies awarding cooperative agreements to Georgia-based entities include DOD, NSF, and USDA.