



November 30, 2016

The Honorable Nikki R. Haley, Governor of the State of S.C.
The Honorable Hugh K. Leatherman, Sr., President *Pro Tempore*, and Members, S.C. Senate The
Honorable James H. "Jay" Lucas, Speaker, and Members, S.C. House of Representatives

Dear Governor Haley and Members of the S.C. General Assembly:

On behalf of the S.C. Centers of Economic Excellence Review Board, I am pleased to provide you with the *SmartState® Program 2015-2016 Annual Report* and the *2015-2016 SmartState Program Audit*. We are proud to share with you the program's accomplishments and to report again this year an unqualified audit with no material findings. These reports highlight the tremendous success of SmartState.

To date, the SmartState Review Board has approved 51 research centers in areas such as biomedicine, pharmaceutical research, automotive engineering and transportation, energy, nanotechnology, information science, and advanced materials. Across these centers, 85 SmartState endowed chair positions have been approved, and 66 appointments have been made and announced. As envisioned by the General Assembly in 2002, SmartState is delivering significant returns on the state's investment on many fronts such as sponsored research, corporate partnerships, company relocations and startups, increased jobs in our state, and opportunities for young people at our universities, in industry and as entrepreneurs. According to a recent study by the University of S.C.'s Moore School of Business, SmartState is responsible for helping to create and support approximately 12,483 jobs in our state, which are associated with nearly \$2.4 billion in total economic activity and \$669 million in labor income for South Carolinians that would not exist otherwise. Of the total 12,483 jobs, 5,081 (41%) are high- paying knowledge economy jobs created directly through the program with an average salary of \$70,803, which is roughly 70 percent higher than the average annual salary among all jobs in South Carolina.

The SmartState annual program report and audit are being transmitted in accordance with statute and made available to members of the S.C. General Assembly in electronic format through the S.C. Legislative Services Agency. You will also find a copy of the annual report and other program information available at www.smartstatesc.org. Should you desire a hardcopy annual report, please contact Dr. Argentini Anderson at the S.C. Commission on Higher Education at aanderson@che.sc.gov or 803.737.2276.

The SmartState Review Board trusts the enclosed reports will be helpful to you in better understanding this important program and looks forward to working with you in the coming year and as the future of SmartState is considered. As always, we extend our appreciation and thanks to each of you for the work you accomplish on behalf of higher education and academic research and for the betterment of South Carolina and its citizens.

Regan Voit
Chair, SmartState Review Board

cc: The Honorable Richard Eckstrom, S.C. Comptroller General
The Honorable Curtis Loftis, State Treasurer of S.C.
Ms. Marcia Adams, Executive Director, Department of Administration
Members, SmartState Review Board
Mr. Gary Glenn, Interim Executive Director, S. C. Commission on Higher Education & Director
Fiscal Affairs



ELEVATE

SOUTH CAROLINA

2015 / 2016 ANNUAL REPORT

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MISSION

The South Carolina SmartState® Program serves the public interest by creating incentives for the state's research universities, in cooperation with other institutions of higher education in the state, to raise capital from non-state sources to fund endowments for specialized research professorships. These professorships in turn serve as the nucleus for unique, university-based research centers which cultivate critical, public-private industrial partnerships, expand the state's knowledge base, create well-paying jobs, enhance economic opportunities, and improve the Quality of life for the people of South Carolina. ●

ELEVATE

SOUTH CAROLINA | 2015 / 2016 ANNUAL REPORT

A WELCOME FROM THE SMARTSTATE® REVIEW BOARD

The SmartState® Review Board consists of eleven members who serve three-year terms. Three are appointed by the Governor, three are appointed by the President Pro Tempore of the Senate, three are appointed by the Speaker of the House of Representatives, one by the Senate Finance Committee, and one by the Chairperson of the House Ways and Means Committee. The Review Board oversees operations of the SmartState® Program. The presidents of South Carolina's three research universities serve as ex officio, non-voting members.

The SmartState® Program does not receive taxpayer dollars to fund economic development related initiatives to benefit the state; it is funded through revenue generated by the South Carolina Education Lottery, which is then matched dollar-for-dollar by non-state businesses and foundations.



"I have served on the Smart State Review Board since 2008 and I am honored to have been asked to help implement this important program that our legislators and state business leaders created. Today, South Carolina's three research universities are known throughout the world for the 51 research centers of economic excellence they established. The Smart State Program has clearly delivered on its primary mission to generate the high skilled and high wage jobs that our state needs to raise the per capita income of our citizens and improve their quality of life."

REGAN VOIT, CHAIR

*Appointed by the Chairman,
Senate Finance Committee*

"Recognized as one of the best of its kind, the SmartState® Program has created an unprecedented collaboration between businesses and the three research universities to enhance economic opportunities and improve the quality of life for the people of South Carolina, along with attracting world-renown scientists and experts to the state. The SmartState® Program will positively impact South Carolina for years to come and it has been a pleasure and joy for me to be involved with such a positive and impactful program."



MELVIN C. WILLIAMS, VICE CHAIR

*Appointed by the President
Pro Tempore, Senate*

"The SmartState® Program has enabled our research universities to be more competitive in attracting top talent to our state and there is a significant, tangible benefit to economic development and the quality of life in South Carolina."



CHARLES W. GARNETT

Appointed by the Governor

"It is honor to serve on the SmartState® Review Board, which gives me the opportunity to help promote South Carolina in a competitive economic environment nationwide. The Smart State Program has succeeded in elevating South Carolina's knowledge economy by financially supporting the research universities in recruiting world-class experts for the endowed chairs. Our research universities are important to the state's success through developing cutting edge technologies and bring South Carolina to the front in today's knowledge-based economy."



KAROLY "CHARLES" KEREKES

Appointed by the Governor

"As a small business owner, I see the SmartState® Program as a win for the State of South Carolina, the business community and our citizens. SmartState® is funded by the South Carolina Education Lottery, not by tax dollars. Every dollar invested earns a high rate of return in terms of high-paying job creation, company formation and corporations relocating to our state. It's an investment that keeps giving back."



LISA D. MAIN

Appointed by the Speaker, House of Representatives

"I have served on the SmartState® Review Board for all but a few months of its many-year existence and I could not be more proud of the collective effort of the many board members over the years, our legislative supporters, and the leaders of Clemson, USC and MUSC. The accomplishments have included attracting to South Carolina hundreds of the finest minds in the world to conduct research and help commercialize their successes, and overall to provide the muscle needed for our great state to become a worldwide leader in innovation."



All of us involved with SmartState® helped fuel the expansion of BMW and related automotive research and development companies, and helped convince Boeing to come to South Carolina and then expand, invest and conduct more and more of its worldwide research and development efforts here. The history of success of the South Carolina SmartState® Program is unbelievable and will continue to grow and positively impact many future generations of leaders and business people. Thank you to the vision of the few who have forever impacted the lives of the many!"

ROBERT W. PEARCE, JR.

Appointed by the Speaker, House of Representatives

"The SmartState® Program has truly amplified our three research universities' significant roles in South Carolina's economic development efforts with more than 12,000 high-wage jobs created and a \$2.4 billion total impact. This trend seems likely to strengthen as our state's progresses into the era of a true innovation economy. Now with 51 Centers of Excellence operating in six high-tech industry clusters, our universities truly have the leadership to make economic revitalization a continued priority, the culture to mesh that objective with their academic mission, the legal flexibility to mix and match assets and brainpower with the private sector, and the resources to make it all work."



JASON P. PREMO

Appointed by the Governor

"Did anyone imagine how the creation of this program would elevate South Carolina to extraordinary heights in clusters of national and global importance? Some of the best and brightest researchers have joined our state's three research universities as SmartState® Endowed Chairs. Some of the most generous individuals and companies have donated matching dollars to lottery funds. Universities are graduating highly qualified candidates in our cluster fields ... advanced materials, automotive and transportation, biomedical, energy and alternative fuels, information science, and pharmaceuticals ... and employers are hiring them in South Carolina. Universities are collaborating and public-private partnerships have flourished. Now let's start to imagine what could be next!"



ROBERTA BANKHEAD WOOD

Appointed by the Chairman, House Ways & Means Committee

SOUTH CAROLINA'S SENIOR RESEARCH UNIVERSITIES

Elevating South Carolina Through Research, Innovation and Education

The SmartState® Program funds Centers of Economic Excellence at South Carolina's three senior research universities: Clemson University, the Medical University of South Carolina (MUSC) and the University of South Carolina (USC). Other state universities such as South Carolina State University and the College of Charleston are included as collaborative research partners.

In 2002, members of the South Carolina General Assembly recognized the critical role research universities play in advancing innovation, creating economic and educational opportunities, and improving overall quality of life for the state's citizens when it acted with foresight and an eye to the future, passing the enabling legislation of the SmartState® Program. Today, other states look to South Carolina's SmartState® Program as the model for university-based public-private partnerships that foster innovation, launch companies and create jobs.

Ranked #23 among national public universities, Clemson is a major land grant, science- and engineering-oriented research university that

is an inclusive, student-centered community characterized by high academic standards, a culture of collaboration, school spirit, and a competitive drive to excel. With agricultural and forestry research centers and innovation campuses located from Greenville to Charleston, and a presence in every county, Clemson's campus is truly the entire state of South Carolina. This year, Clemson was classified among universities with the highest level of research activity by the Carnegie Classification for Institutions of Higher Education.

Clemson has launched a new strategic plan, ClemsonForward, which emphasizes high-impact engagement opportunities to prepare students for

a knowledge-based global economy, and growing research and doctoral education to help find solutions to real world problems. The plan also supports economic development and creates jobs, enhances quality of life and builds the university's national academic reputation. The plan identifies six innovation clusters to support development of multi-disciplinary teams and large research projects: Health Innovation, Sustainable Environment, Human Resilience, Big Data Science, Complex Engineered Systems, and Advanced Materials.

MUSC has served the citizens of our state since 1824. MUSC has expanded from a small, private college to a comprehensive academic health sciences center, with approximately 1,500 faculty members educating and training more than 3,000 students, residents, and biomedical scientists in six colleges (Dental Medicine, Graduate Studies, Health Professions, Medicine, Nursing, and Pharmacy). As the largest non-federal employer in Charleston, the university and its affiliates have collective annual budgets in excess of \$2.2 billion, with an annual economic impact of more than \$3.8 billion and research funding in excess of \$250 million annually. MUSC Health operates one of the state's largest



and most innovative health systems, which includes a nationally recognized Children's Hospital, the Ashley River Tower (cardiovascular, digestive disease, and surgical oncology), Hollings Cancer Center (a National Cancer Institute-designated center), Level I Trauma Center, Institute of Psychiatry, and the state's only transplant center.

Established in 1805, USC is home to more than 200 years of history and tradition, with nearly 50,000 students at its eight campuses across the state. The main campus in Columbia offers 324 degree programs through its 14 colleges and schools, which include medical schools in Columbia and Greenville, and the USC School of Law in Columbia. The Sonoco International

Business Department within the Darla Moore School of Business offers an undergraduate international business major that is consistently ranked as #1 by U.S. News & World Report. USC is one of only 32 public universities to receive both the top-tier research designation and the top-tier community engagement designation from the Carnegie Foundation. ●



"The SmartState® Program continues to have a tremendous impact on both Clemson University and the State of South Carolina. The program is a shining example of the power of public-private partnerships, and I know it has made a difference in our ability to recruit and retain faculty members who are regarded nationally among the best in their fields. This, in turn, has boosted Clemson's research profile, allowed us to recruit the best and brightest students from around the country, and has attracted more industry partners to South Carolina."

JAMES P. CLEMENTS, Ph.D.

President
Clemson University



"The SmartState® Program accelerates the opportunity to allow biomedical discovery to become reality for the citizens of South Carolina, and for the advancement of economic development throughout the state. This aligns with MUSC's strategy for the future, Imagine MUSC 2020, which embraces collaboration, drives innovation, and ultimately is fueled by the ability to recruit and retain world-class investigators."

DAVID J. COLE, M.D.

President
Medical University of South Carolina



"Fourteen years after the inception of South Carolina's SmartState® Program, we are pleased to see not only highly productive, successful partnerships between the state's research universities and businesses, but also a new knowledge-based economy that is elevating the Palmetto State through job-creating research in high-growth, high-wage industries. It is gratifying to see the opportunities afforded to our brightest students as they work side-by-side with world-class SmartState® scientists and engineers. Indeed, students participating in these SmartState® Programs will soon be South Carolina's most sought after employees. As new jobs and new federal and private funding continue to come in, nothing elevates South Carolina more than a competitive workforce that begins here at South Carolina's great research universities."

HARRIS PASTIDES, Ph.D.

President
University of South Carolina

GUEST PROFILE

ELEVATING SOUTH CAROLINA

No one understands South Carolina business and government like Ted Pitts.

He joined the South Carolina Chamber of Commerce in 2015 after serving as Governor Nikki Haley's first chief-of-staff. He is a former member of the South Carolina House of Representatives and worked as a partner and commercial real estate broker with Wilson Kibler. Ted is also a major in the South Carolina Army National Guard.

SSP: What makes South Carolina so attractive to businesses?

TP: When businesses look at South Carolina, they see an incredible quality of life. Our friendliness and natural resources set us apart. It also helps that we are the least unionized state in the country; businesses want direct relationships with their employees.

SSP: What big wins have elevated South Carolina over the last 18 months?

TP: Everyone has worked hard to make South Carolina the best state in the country in which to do business, and we have many wins, especially in manufacturing. The first was becoming a work-ready state; Governor Nikki Haley made it a priority. Workforce is the number one factor companies consider when locating to a state. Second, we all know about BMW, but South Carolina has succeeded in becoming an automotive industry world leader. Two of the last ten automotive manufacturing facilities that have come to North America, Volvo and Daimler, were put in South Carolina; the other eight went to Mexico. Third, Boeing continues to expand and now has close to 9,000 employees. Their suppliers have also located here, bringing more jobs.

Finally, we are the tire manufacturer of the world with Michelin North America, Bridgestone, Continental, and Giti, a Chinese tire maker that recently announced a plant in Chester County.

SSP: Workforce development is a priority for the South Carolina Chamber. What needs to be done to ensure South Carolina stays competitive?

TP: When we talk to Chamber members of all sizes and from all sectors—health care, information technology, insurance, and manufacturing—there's one thing that keeps CEOs up at night: workforce. Our workforce is aging and there's a skills gap. Jobs today are much more technical so people need a higher level of skill. We have to change the way we deliver education and training. We need to continue to expand options to high school students and grow apprenticeship programs. By using the work done by SCDEW on the sector strategies, we can entice students to go into fields where there are jobs.

Recognizing the need for more coordination on the state level, the Chamber and others worked with the General Assembly on House Bill 4145, which creates a public/private Coordinating Council for Workforce Development. The bill passed both Houses June 2, 2016 and Governor Haley signed it into law a week later. What this new council will do is make sure that K-12, university, and technical college education in our state aligns with future workforce needs. South Carolina is also the first state to implement sector strategies,

which studied the four regions of the state to evaluate current jobs and what the present and future workforce needs are. It's a forward-looking approach and we've got tremendous momentum.

SSP: What roles do Clemson, MUSC and University of South Carolina "USC" have in attracting and keeping businesses in SC?

TP: Our research universities are a vital driver in education, workforce development and ultimately improving the quality of life for South Carolinians. Clemson has helped elevate two important areas for the state, agribusiness and automotive industries through CU-ICAR. USC has the top Master of International Business program in the nation, and its aerospace, business, information technology, and insurance focuses have a multiplier effect on our economy. MUSC's medical research and innovative telehealth initiatives are nationally recognized and have a real impact on South Carolinians. All three universities are critical to South Carolina's success.

SSP: Where are the largest opportunities for improvement?

TP: South Carolina's infrastructure needs attention and investment. Our main transportation arteries fall behind other states, with bridges in disrepair and growing congestion on our interstates. Fortunately, the General Assembly passed a bill during the 2016 legislative session to improve both. The Port of Charleston is being deepened to accommodate larger cargo ships. We're also focused on improving our information technology infrastructure. ●



SOUTH CAROLINA
CHAMBER OF COMMERCE

TED PITTS

President & CEO
South Carolina Chamber of Commerce

SMARTSTATE® PROFILE:

DR. ROBERT BALDWIN

Growing up in Maine, a state historically dependent on forestry and agriculture, Robert Baldwin developed a love of nature and conservation. When given the opportunity to become the Margaret Lloyd SmartState® Chair in the Center for Urban Ecology & Restoration at Clemson University, his answer was a resounding yes.

"South Carolina is like Maine in that it's also a rural state whose backbone is forestry and agriculture; these industries have a \$41 billion annual impact on the state's economy. However, South Carolina is transitioning into a more urbanized, high-tech economy. A large part of the attraction for companies like BMW and Boeing is the state's coasts, mountains and forests, which create a wonderful quality of life. Economic growth and job creation are important, but also pose challenges," Baldwin said.

Chief among them is urban sprawl. Spreading from urban cores, strip malls and parking lots dominate landscapes near cities across the country. While necessary, these vestiges of commercial success destroy habitats and lower overall quality of life. According to Baldwin, the question for South Carolina is one of balance: how do we balance growth with preservation of natural resources.

Baldwin, a conservation biologist and

landscape ecologist whose research is supported by the U.S. Environmental Protection Agency, U.S. Forest Service, U.S. Fish and Wildlife Service, National Science Foundation, private conservation foundations, and the forest products industry, has the answer: strategic decision making about land uses.

"Economic and environmental success can go hand-in-hand; however, South Carolina must plan and build for a sustainable future," Baldwin said. "There is incredible value in embedding small conservation lands in urban landscapes; they are good for the economy and good for health. We have done a great job integrating nature into cities, like Reedy River in Greenville. People flock there. But we have not done a great job keeping natural areas near cities. Urban sprawl threatens the natural landscapes that our wonderful cities are embedded in". Natural areas make cities more livable," Baldwin said. "We need more nature where we live and work."

Baldwin's SmartState® Endowed Chair covers these issues. He is working to educate business people, policy makers, land owners, and the public in South Carolina on the value of preserving and protecting the state's unique natural resources like the Congaree Swamp in the Midlands and the Appalachians to the West.

"At the heart of sustainable development is prioritizing decisions on areas to protect from urbanization often through conservation easements. We have to target very carefully and work with landowners," he explained.

Baldwin is using Geographic Information Systems (GIS) to do statistical modeling to determine what areas are most vulnerable. He and his Clemson colleagues are among the first conservation biologists to harness large super computers to solve extensive fine-grain urban ecology spatial problems. Their work will ultimately impact urban centers, forestry, agriculture, and protected natural areas throughout South Carolina.

"We want to ensure South Carolina's natural beauty endures for future generations. We also want happier, healthier communities now. Thanks to the SmartState® Program, Clemson is leading the way," Baldwin said. ●

"South Carolina's population is growing at a rate of six percent a year, attracting people with jobs and natural beauty. We must make a concerted effort to preserve the things that make the state great: its mountains, forests and coasts. People need nature and South Carolina needs a strategy for sustainable development."



ROBERT BALDWIN, Ph.D.

Margaret Lloyd Endowed Chair
Center for Urban Ecology & Restoration

SMARTSTATE® PROFILE:

DR. CAROL FEGHALI-BOSTWICK

Scleroderma is a mysterious and rare disease for which there is no cure. It causes skin to thicken, compromises internal organ function and eventually leads to death.

Scleroderma is also common in South Carolina, particularly among African-Americans. Many of those with scleroderma live in rural areas, far from specialty medical care and no means of transportation. Thanks to Charlestonian, Kitty Trask Holt, whose death from the disease inspired friends and family to raise \$1.3 million in less than eight months to find a cure, MUSC researcher Dr. Carol Feghali-Bostwick is getting close to an answer.

Feghali-Bostwick is a top scleroderma researcher; her interest began in graduate school and she has pursued it with a passion. When the SmartState® Endowed Chair was funded and named in Kitty Trask Holt's honor, Dr. Richard Silver recruited Feghali-Bostwick to MUSC, which is also internationally known for its work in scleroderma research.

Feghali-Bostwick was honored to come to MUSC and highly motivated to make a difference. "Scleroderma has a profound effect on South Carolina. It affects individuals, their families and jobs. People often live in

smaller communities with no access to specialty care. Transportation is an issue. Care is expensive," she explained. "What's frustrating is that we don't know what causes it. Data suggest it is likely triggered by environmental factors in people who are more susceptible."

Her determination to find a cure paid off in 2009 while at the University of Pittsburgh. She identified a peptide that showed promise in protecting against fibrosing diseases such as scleroderma. In 2012, Feghali-Bostwick published the findings of her research, which was funded by the National Institute of Arthritis and Musculoskeletal and Skin Diseases, part of the National Institutes of Health, in Science and Translational Medicine. The article detailed the peptide, dubbed E4, derived from endostatin, a component of the protein collagen XVIII. Lab tests showed E4 protected against fibrosis, the thickening of the skin and/or internal organs common in scleroderma and idiopathic pulmonary fibrosis.

The discovery was significant because the E4 peptide may possibly be the therapy Kitty Trask Holt and countless others hoped would be found.

"Kitty was never without a smile. She believed that the research accomplished through the SmartState® endowment would someday make an impact on the healing of those like her who struggled with scleroderma."

– ED HOLT

Fast forward to 2016. Feghali-Bostwick is working with iBio, Inc., a leader in plant-based biotechnology, to develop CFB03, which is based on E4 to combat fibrosis. She and iBio are working with the FDA to get approval for Phase 1 clinical trials of the drug, which are required to prove safety. If all goes well, Phase 2 trials for efficacy will follow.

Feghali-Bostwick admits they are proceeding cautiously and says she is not "counting her chickens before they hatch." Still, her enthusiasm is obvious. "Our goal is to develop therapies that will prevent or reverse fibrosis and preserve organ function in people with scleroderma and other diseases. I am keeping my fingers crossed." ●

"There is no cure for scleroderma, a rare, often fatal disease that is common in South Carolina. We're awaiting FDA approval to conduct clinical trials of our drug, which has shown promise in improving fibrosis in human tissues. We can't count our chickens before they hatch, but we're very hopeful."



CAROL FEGHALI-BOSTWICK, Ph.D.

**Kitty Trask Holt Endowed Chair for Scleroderma Research
SmartState® Center for Inflammation & Fibrosis Research**

SMARTSTATE® PROGRAM: RETURN ON INVESTMENT

The primary mission of the SmartState® Program is to elevate the state's knowledge economy by generating high-skilled, high-wage jobs in South Carolina.

The SmartState® Program's established research centers help elevate the state's knowledge economy by creating public-private partnerships, supporting start-up firms, and helping to retain highly skilled workers. Each of these efforts results in the creation of jobs that are among the highest paid in South Carolina.

Following the 2008 recession, geographic regions with the highest rates of economic growth have typically had higher shares of their workforce employed in the knowledge economy. The skills associated with these jobs often include more advanced training in the fields of mathematics and science, complex problem solving, and creative and technological innovation. The commercialization of new technologies leads to economic growth and significant knowledge spillover effects.

As of 2016, the SmartState® Program is responsible for helping to create and support approximately 12,483 jobs in South Carolina, which are associated with \$2.4 billion in economic activity and \$669 million in labor income for South Carolinians that would not

exist otherwise. Approximately 5,081 of these positions are knowledge economy jobs created directly through the SmartState® Program, with the 7,402 arising from additional spending activity generated through the economic multiplier effect.

The specific employment multiplier associated with these estimates is 2.5—for every ten knowledge economy jobs created through the SmartState® Program, an additional 15 jobs are created elsewhere in South Carolina. This multiplier effect is larger than the state average. Each new job created through the SmartState® Program increased total South Carolina employment by more than it would if that job had been created in another industry of comparable size.

The average annual salary associated with a SmartState® job is \$70,803, roughly 78 percent higher than the average annual salary among all jobs in South Carolina. When examining the salaries of all jobs associated with the SmartState® Program, including those created through the economic multiplier effect, the average annual

salary is estimated at \$53,610. This dollar amount is approximately 34 percent higher than the average annual salary among all South Carolina jobs. ●

“One of the driving forces behind regions in the United States that have experienced high-wage job creation in the 21st century is the presence of a strong and vibrant knowledge economy. Since 2002, the SmartState® Program has helped facilitate the development of South Carolina's knowledge economy, and in the process, has generated more than 12,000 jobs with annual salaries that pay significantly above the state average.”

DR. JOSEPH VON NESSEN

*Research Economist
Darla Moore School of Business, University
of South Carolina*

“As of 2016, the SmartState® Program is responsible for helping to create and support approximately 12,483 jobs in South Carolina, which is associated with over \$2.4 billion in economic activity and \$669 million in labor income for South Carolinians that would not exist otherwise.”

DR. JOSEPH VON NESSEN

Research Economist

Darla Moore School of Business, University of South Carolina



¹ Industry-focused research is conducted in six areas of global importance: Advanced Materials and Nanotechnology, Automotive and Transportation, Biomedical, Energy, Information Science, and Pharmaceutical.

² Includes \$180 million from the State Education Lottery appropriations and \$17.6 million accrued interest from SmartState® Program endowment.

³ The figures reported are from the November 2016 Economic Impact of the SmartState® Program analysis conducted by the Darla Moore School of Business. Of the total 12,483 jobs, 5,081 are knowledge economy jobs created directly through the SmartState® Program, including 597 SmartState® personnel, 1,287 start-up company and corporate relocation personnel, 20 alumni placed with in-state employers, and 3,177 employed through Extramural Research Funding. The remaining 7,402 jobs are indirect employment arising from the economic multiplier effect. For more information about the return on investment, see page 12.

⁴ See page 14 for a listing of investors, start-ups and corporate relocations.

Investors, Start-ups, and Corporate Relocations in SC

CORPORATE AND ORGANIZATIONAL INVESTORS

More than three dozen companies have invested \$500,000 or more in the SmartState® Program.

- Abney Foundation
- BASF
- Bank of America Foundation
- Biomass Gas & Electric
- BlueCross BlueShield Foundation of SC
- BMW
- Comporium Group
- Daniel Island Company
- Dialysis Clinics, Inc.
- Duke Energy Foundation
- Electric Cooperatives of South Carolina
- Fluor Corporation
- Force Protection Industries
- General Atomics
- George B. Sibert Annuity
- GlaxoSmithKline
- Greenville Hospital System
- Health Sciences South Carolina
- J.E. Sirrine Foundation
- Kellogg Foundation
- Kentwool
- Michelin
- Okuma
- Palmetto Health
- PalmettoNet
- Research to Prevent Blindness
- Robert Wood Johnson Foundation
- Samuel Freeman / Donaldson Charitable Trust
- Santee Cooper
- Smith & Nephew
- Spartanburg Regional Healthcare System
- The Duke Endowment
- The Spaulding Paolozzi Foundation
- Timken
- Toyota
- Westinghouse

START-UP COMPANIES

Start-up companies that were founded as a result of research at USC, MUSC, and Clemson University:

- Advanced Photonic Crystals
- Cephos
- DF Werke, LLC
- Doxy.me
- Fibro Therapeutics, Inc.
- First String Research
- GeoMat, LLC
- Hydrogen Hybrid Mobility, LLC
- ImmoMod, Inc.
- Inquisatex Epitherapeutics, LLC
- IntrusinMyFamily.com
- MagAssemble, LLC
- MicroVide
- MitoChem Therapeutics, LLC
- MitoHealth
- NextGenEn
- NXT
- Palmetto Fuel Cell Technologies, LLC
- Parallel Permeation, Inc.
- Patient Guided Health Solutions, LLC
- Perfect Mixing, LLC
- Protara, LLC
- SAGE Energy Solutions
- Schnellgen, Inc.
- SemiAllogen, Inc
- SimTunes, LLC
- Smart Innovations, LLC
- South Carolina Science Solutions, LLC
- Specialty & Custom Fibers, Inc.
- Tetramer Technologies
- Vortex Biotechnology
- Zeriscope, Inc.
- 52 Inc.

CORPORATE RELOCATIONS

Companies that have relocated to South Carolina to take advantage of the expertise, resources, and graduates in the SmartState® Program:

- American Titanium Works (ATW) Manufacturing
- American Titanium Works (ATW) Technology Center
- BMW Information Technology Research Center (ITRC)
- CADFEM U.S.*
- Charge2Target
- CleanEnergy
- COE Optics
- Computech*
- Cooliemon Technologies*
- DreamWeaver*
- EHD Tech
- Environment and Health Inc. (EHG)
- Esys Automation
- Fields Group, LLC.*
- Focus Chemicals*
- Greenway Energy, LLC
- Innoventure
- IndySoft
- Intec U.S. Inc.
- JTEKT Technology Center
- Mallet Technology*
- Michelin
- Michelin Incubator
- Mumford Industries*
- OmniSource
- Proterra, Inc.
- Roding*
- Sage Automotive Interiors*
- Senex Biotechnonology, Inc.
- Simpack, Inc.
- ThermoPur Technologies*
- Toho Tenax*
- Tigges*
- Trulite

* In May 2012, CU-ICAR (Clemson University International Center for Automotive Research) opened the doors to the Center for Emerging Technologies (CET) facility, its first multi-tenant building. CET provides office, administrative, and laboratory space for transportation, technology, and energy sectors. These companies have positioned themselves on the CU-ICAR campus to be close to the SmartState® Endowed Chairs and their research teams.

ELEVATING SCIENCE: SCIENCE CAFÉ COMES TO THE UPSTATE

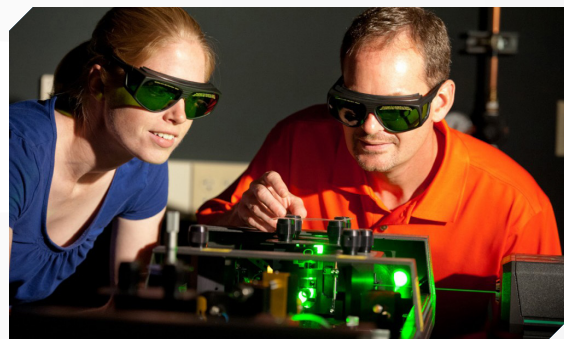
The SmartState® Program is an economy-building, quality of life-enhancing program for the people of South Carolina that is brought to life by Science Cafés. These events, which are now held in Columbia, Charleston and the Upstate, are informal gatherings that feature a SmartState® Endowed Chair, an inquisitive audience and lively discussion. Science Café is fun, engaging, and elevates the SmartState® Program by sharing the incredible science and technology with all interested parties.

The goal of the Science Café series is to educate the public about ongoing research conducted by SmartState® Endowed Chairs at Clemson University, the Medical University of South Carolina (MUSC) and University of South Carolina and how it benefits South Carolinians. From the initial Science Café in Columbia, the state now boasts three such chapters of the global science phenomenon. In 2015, MUSC launched its Science Café, and now in 2016, the Upstate has one too.

Kicking off the Upstate's inaugural Science Café, held September 20 at the NEXT Innovation Center in Greenville, was Clemson's Dr. John Ballato, the SmartState® Endowed Chair in Optical Materials and Photonics. Ballato is one of those

smart guys; make that one of those super-smart guys. In addition to his SmartState® Endowed Chair, he is a professor of Materials Science and Engineering and director of the Center for Optical Materials Science and Engineering Technologies (COMSET).

Ballato holds 25 patents and has served as the principal investigator on more than \$34 million in sponsored research projects. His focus is new optical materials and structures for high-value photonic and optoelectronic applications, including light-emitting nanoparticles for transparent ceramics, lighting and sensing applications. Additionally, his research group develops specialty optical fibers for high-energy laser, biomedical and industrial uses.



SCIENCE CAFE

Clemson University's Dr. John Ballato, the SmartState® Endowed Chair in Optical Materials and Photonics

Nearly 35 people showed up to learn more about Ballato's research and enjoy refreshments provided by SmartState® Review Board member Jason Premo of Premo Ventures. The discussion revealed South Carolina's legacy and contributions in the field of light and wide-ranging applications, which include everything from industrial lasers to U.S. weapons systems. He also shared that Greenville native and Nobel Prize winner, Dr. Charles Townes, is considered the premier innovator of lasers used by industries around the world.

"Science Café Upstate is a great way to indulge the public's curiosity about the important work being done by SmartState® Endowed Chairs," Premo said. "It's knowledge one would never get from daily life." ●

"We deliberately created Science Café Upstate to be inclusive of the entire region. So many wonderful things are happening in Clemson, Greenville and Spartanburg. The more we collaborate, the more we benefit."

— ROBERTA BANKHEAD WOOD, SmartState® Review Board Member

SMARTSTATE® PROFILE:

DR. LAURA B. CARDINAL

The SmartState® Program's new Endowed Chair for Innovation and Commercialization, Laura B. Cardinal, smiles when asked how she became interested in company formation.

"My father was an upwardly mobile business executive and I grew up reading The Wall Street Journal. I was taught to be creative, take risks and color outside the lines."

She adds, "Later I discovered a love of organizations, particularly startup companies, and what makes them successful. Company formation and bringing products to market are not linear processes. If you're missing a piece of the puzzle, you fail. It's messy, fun and complex."

Cardinal, who describes herself as an innovation person who also does entrepreneurship, earned a Ph.D. in Organizational Studies from the University of Texas-Austin where she was a National Science Foundation grant recipient. Her expertise in managing innovation and R&D capabilities, understanding the evolution of founding companies and control systems within those companies led to faculty positions at the University of Houston, Tulane University, University of North Carolina-Chapel Hill, Duke University,

and Southern Methodist University. Along the way, she consulted with corporations, published a book, Organizational Control, and serves on the Academy of Management's Board of Governors and other prestigious industry organizations.

Despite a hectic schedule, Cardinal's life was under control when the University of South Carolina (USC) offered her the SmartState® Endowed Chair within the newly created Center for Innovation and Commercialization. Despite she and her husband having just purchased a home, Cardinal jumped at the offer. "To become a SmartState® Chair at USC and within the Darla Moore School of Business was a once in a lifetime opportunity and too good to pass up," she said.

A passionate advocate for technology born of university research, Cardinal says universities like USC are a rich source of technology and powerful economic drivers. She is quick to point out that success doesn't happen overnight; universities need champions in government and

business to reach their full potential. She points to the University of Texas-Austin as a prime example.

"Once upon a time, Austin was a sleepy college town with very few jobs outside of flipping hamburgers. UT served as a catalyst for entrepreneurial activity and growing talent for Dell, IBM and other Austin-area "Silicon Hills" businesses. Close partnership with state and local governments led to formation of key incubators and alliances for tech development. This caused people to want to live in Austin and be part of dynamic tech environment."

Cardinal believes South Carolina is well on its way to similar success, crediting the SmartState® Program and the willingness of the state's three largest research universities to collaborate with business and each other and commit resources to initiatives like her SmartState® Center, which is dedicated to advancing university innovation and technology commercialization.

"It's an exciting time to be in South Carolina. We have major companies like IBM, Boeing and BMW that have chosen to be here. We have universities that are climbing in national rankings. The world is looking at us and recognizing it's a great place for business, innovation and technology." ●

"University research and knowledge are economic engines. Entire industries and states have benefited from university research. Look at the pharmaceutical industry. Look at North Carolina's Research Triangle. Look at Austin, Texas. Successful, active research universities are at the core. We live in a world of disruptive technology and demand for innovation will only continue to grow."



UNIVERSITY OF
SOUTH CAROLINA

LAURA B. CARDINAL, Ph.D.

SmartState® Endowed Chair

SmartState® Center for Innovation and Commercialization

SMARTSTATE® PROFILE:

DR. MAREK URBAN

Even when Clemson's Marek Urban is deep in his work at the Advanced Materials Research Laboratory at the Clemson University Center for Optical Materials Science and Engineering Technologies (COMSET), his mind always goes back to nature.

Specifically, the way reptiles, fish, and even plants change color in response to stimuli in order to survive.

A color-shifting chameleon seems far removed from Urban and his interdisciplinary research group that explores a broad range of fundamental and applied aspects of materials chemistry in general, and macromolecular science in particular. The connection is very real and Urban is an expert on the topic; he is the author of Stimuli-Responsive Materials: From Molecules to Nature, Mimicking Materials Design.

"The ability for a material to change properties in response to external stimuli is an attractive feature for numerous applications, and as such, stimuli responsive materials are gaining attention across many different fields," Urban said. "My book introduces the concepts of stimuli-responsiveness, including the fundamental materials properties required for design, the science of stimuli responsive materials, as well as recent technological advances."

Many of those advances are from Urban's lab, which focuses on four areas of research: heterogenous radial polymerization, bio-active polymeric surfaces and interfaces, encoding stimuli responsiveness in materials, and self-repairing materials.

Among Urban's projects is encoding stimuli responsiveness into materials so they automatically respond to environmental factors. One example is a polymer stent that reacts to heat so that when implanted in a human artery, it expands with the body's heat, opening a blockage. These dynamic stents could replace rigid metal stents.

Urban is also encoding new molecules into existing polymers to create self-repairing polymer systems with various performance attributes such as with light sensitivity, corrosion inhibition and anti-fouling. These materials actually heal themselves when damaged or torn through electromagnetic radiation or a chemically induced reaction. Imagine a damaged space station that must heal

itself in orbit rather than rely on human intervention.

Another area of research is bio-active polymeric surfaces and interfaces with potential biomedical applications such as anti-microbial and antibiotic infection control. Health care, pharmaceutical, food and beverage producers, schools – any industry where sterility and hygiene are critical could benefit from such materials.

Urban admits most people don't understand his work as the focus is not immediate commercialization. Instead, he explains, "We are exploring the frontiers of technology in hopes of revolutionizing the world."

Some frontiers are closer than others. The aerospace industry is interested in self-heating polymers and composite materials that could extend the lifetime of a jetliner. Such novel materials must meet stringent requirements for safety and performance in extreme environments. The National Science Foundation and U.S. Department of Energy have provided funding for futuristic color-changing, self-healing material and sensors that are sensitive to humidity changes in buildings and rely on built-in chemical energy systems.

"We have an entirely different way of thinking; one with an eye on nature and the future," Urban said. ●

"We are breaking ground for an entirely new generation of stimuli-responsive polymer materials. These transformative technologies are futuristic by design and in high demand by forward-thinking industry leaders in aviation, automotive and biomedical industries that see the potential of advancing performance and sustainability through science."



MAREK URBAN, Ph.D.

J.E. Sirrine Foundation Endowed Chair
SmartState® Center for Advanced Fiber Materials

SMARTSTATE®

CENTERS AND ENDOWED CHAIRS

The work of South Carolina's SmartState® Centers is exciting, groundbreaking, and of critical importance to the state, nation and world. These Centers, which align with industries in South Carolina, help elevate the state's economy and quality of life. What follows is an overview of each Center.

Program totals reported as of November 2016. In cases of joint proposals, Centers awarded by an institution are tallied by the fiscal agent. Endowed chairs are tallied

based on the assigned institution. USC's assigned endowed chairs include one joint appointment with MUSC. On the pages that follow, information about each

SmartState® Center includes the date the Center was approved, the institution(s) awarded, the state award amount that must be matched with an equal amount of non-state investment, the appointed endowed chair(s) as of November 2016, reported extramural research funding (federal and private awards) above the match, and a brief description of the research focus. Centers are grouped by industry cluster. For updated information on Centers and program totals, contact the S.C. Commission on Higher Education or visit SmartStateSC.org. ●

- **51** SmartState® Program Centers Awarded
- **85** SmartState® Endowed Chairs Created
- **66** SmartState® Endowed Chairs Appointed
- **19** SmartState® Endowed Chairs Remaining to be Appointed



	Clemson University	University of South Carolina	MUSC
■	13	18	20
■	16	28	41
■	12	22	32
■	4	6	9

ADVANCED MATERIALS & NANOTECHNOLOGY



ADVANCED FIBER-BASED MATERIALS*

Award Date: 2006

State Award Amount: \$4 million

University: Clemson

Endowed Chair(s):

Dr. Marek Urban

J.E. Sirrine Foundation Endowed Chair in Advanced Fiber-Based Materials

Corporate Partner(s):

J.E. Sirrine Textile Foundation

External Funding Above Match:

\$10.5 million

Research Focus: To provide the vehicle for repositioning existing manufacturing resources to support new industry opportunities based on advanced fiber-based products.

ENVIRONMENTAL NANOSCIENCE AND RISK

Award Date: 2008

State Award Amount: \$3 million

University: USC

Endowed Chair(s):

Dr. Jamie Lead

External Funding Above Match:

\$1.6 million

Research Focus: Understand the fundamental properties of nanomaterials and nanomaterials-environment interaction and use these principles to understand and help reduce impacts of nanomaterials as used as well as develop and innovate nanotechnological applications.

EXPERIMENTAL NANOSCALE PHYSICS*

Award Date: 2003

State Award Amount: \$4 million

University: USC

Endowed Chair(s):

USC is recruiting one endowed chair.

External Funding Above Match:

\$5.1 million

Research Focus: Perform basic and applied research of potential spintronic optoelectronic and nanoelectronic devices and/or materials for future applications in information processing, high-speed, high-density electronics, and bio, chemical and radiation sensing.

MULTIFUNCTIONAL MATERIALS & STRUCTURES (MFMS)

Award Date: 2013

State Award Amount: \$2 million

University: USC

Endowed Chair(s):

Dr. Michael van Tooren

Research Focus: The development and supply of engineered materials for high technology industries such as aerospace by providing a foundation of research and development that will enable and enhance growth in the engineered materials field. Specific examples of research and development include: Lightning strike and EMF management, structural integrity, energy storage, essential power for commercial aircraft, and multi-physics-based micro/nano mechanics of dielectric materials.

OPTICAL MATERIALS/PHOTONICS*

Award Date: 2004

State Award Amount: \$5 million

University: Clemson

Endowed Chair(s):

Dr. John Ballato

J. E. Sirrine Textile Foundation Endowed Chair in Optical Fiber

Corporate Partner(s):

J.E. Sirrine Textile Foundation

External Funding Above Match:

\$21.7 million

Research Focus: Conduct materials research and recruit and mentor graduate students with a focus on domestic scholars. Identify and foster the latest technologies and initiate partnerships with top national research universities and laboratories, Aid South Carolina industry and economic development partners in the transfer of technology from Clemson to the public sector, and participate in the recruitment of optical technology firms to South Carolina.

POLYMER NANOCOMPOSITES*

Award Date: 2004

State Award Amount: \$3.5 million

University: USC

Endowed Chair(s):

Dr. Brian Benicewicz

Materials Science & Engineering

Corporate Partner(s):

Michelin North American, BASF, U.S. Navy, PBI Performance Products

External Funding Above Match:

\$12.2 million

Research Focus: Development of synthetic tools needed to precisely control the environment or interface between nanoparticles and polymer matrix applicable to optics, electronics, biological, medical, and structural material applications.

* Graduated Center



AUTOMOTIVE & TRANSPORTATION

AUTOMOTIVE DESIGN AND DEVELOPMENT*

Award Date: 2004

State Award Amount: \$5 million

University: Clemson

Endowed Chair(s):

Dr. Zoran Filipi
Timken Endowed Chair in Automotive Design & Development

Corporate Partner(s):

Hertz Corporation, Duke Energy

External Funding Above Match:

\$5.9 million

Research Focus: Focuses on the research and design of advanced powertrains for internal combustion engines and hybrid and electric vehicles, along with lightweight design and materials, functional integration and structural dynamics for vehicles.

AUTOMOTIVE MANUFACTURING*

Award Date: 2003

State Award Amount: \$5 million

University: Clemson

Endowed Chair(s):

Dr. Laine Mears
BMW Endowed Chair in Automotive Manufacturing

Corporate Partner(s):

BMW

External Funding Above Match:

\$7.9 million

Research Focus: Develops micro-electromechanical systems technologies for manufacturing and improving the efficiency of manufacturing large, complex objects. The goal is for the Center to be the premier automotive and motorsports research and educational facility in the world.

AUTOMOTIVE SYSTEMS INTEGRATION*

Award Date: 2003

State Award Amount: \$5 million

University: Clemson

Endowed Chair(s):

Clemson is recruiting the *BMW Endowed Chair in Automotive Systems Integration*.

Corporate Partner(s): BMW, Mazda, GM and others

External Funding Above Match:

\$3.7 million

Research Focus: Automotive diagnostics and prognostics, sustainable mobility, concepts, methods and tools. Deriving a simple, flexible energy management control strategy for plug-in hybrid electric vehicles.

SUPPLY CHAIN OPTIMIZATION AND LOGISTICS*

Award Date: 2006

State Award Amount: \$2 million

University: Clemson

Endowed Chair(s):

Dr. Scott Mason
Fluor Endowed Chair in Supply Chain Optimization & Logistics

Corporate Partner(s): Fluor

External Funding Above Match:

\$10.3 million

Research Focus: Interdisciplinary research addressing the multifaceted problems associated with supply chains. Deliver tangible supply chain optimization and logistics products and services through theoretical and applied research.

VEHICLE ELECTRONIC SYSTEMS INTEGRATION*

Award Date: 2004

State Award Amount: \$3 million

University: Clemson

Endowed Chair(s):

Dr. Venkat Krovi
Michelin Endowed Chair in Vehicle Electronic Systems Integration

Corporate Partner(s):

Michelin

External Funding Above Match:

\$1.7 million

Research Focus: Research in automotive and vehicular electronics, particularly systems integration issues, electromagnetic compatibility and electromagnetic modeling.

* Graduated Center

Once a Center has reached a point of full operability, the SmartState Review Board has the authority to graduate SmartState Centers. A Center must meet the requirements in the following key areas to be considered graduated: non-state match; all drawn downs; endowed chairs and key personnel; initiatory programmatic activities have been achieved; the most recent annual report cites demonstrable programmatic activity; and match certification. Once a center is graduated, the majority of fiscal and administrative oversight responsibilities is transferred to the Center's lead fiscal institution. Certain accountability and reporting obligation will be retained by the graduated Center.



BIOMEDICAL

ADVANCED TISSUE BIOFABRICATION

Award Date: 2008

State Award Amount: \$5 million

Universities: MUSC, USC, Clemson

Endowed Chair(s):

MUSC, USC, and Clemson are recruiting Endowed Chairs in *Biofabrication Biology* and *Biofabrication Engineering*.

Research Focus: Develop innovative technologies and approaches that will enable repair, replacement, or restoration of diseased cells, tissues and organs.

BRAIN IMAGING

Award Date: 2003

State Award Amount: \$5 million

Universities: USC, MUSC

Endowed Chair(s):

Dr. Chris Rorden, USC

Dr. Joseph Helpert, MUSC

MUSC is recruiting one additional endowed chair.

External Funding Above Match:
\$27.4 million

Research Focus: Creating a world-class brain imaging center. Initiated the first study using transcranial magnetic stimulation (TMS). Combined with functional MRI, TMS provides a short strong magnetic field useful for studying how the brain works. Specific studies include stroke-related brain injury and MRI physics techniques for clinical and neuroscience research.

CHILDHOOD NEUROTHERAPEUTICS

Award Date: 2006

State Award Amount: \$5 million

Universities: USC, MUSC

Endowed Chair(s):

Dr. Jeffrey Twiss, USC
Child and Adolescent Neurochemistry

Dr. Manuel Casanova, USC
Translational Clinical Research

USC is recruiting one endowed chair in *Translational Clinical Research*.

MUSC is recruiting one endowed chair in *Neurodevelopmental Disorders*.

External Funding Above Match:
\$7.2 million

Research Focus: Prevention of brain damage in premature infants and curing infant brain diseases through cellular engineering. Also working on cognitive behavioral tasks in transgenic mice to determine if therapeutics can improve functional development outcomes, which may someday help children with ADHD.

CLINICAL EFFECTIVENESS AND PATIENT SAFETY

Award Date: 2006

State Award Amount: \$5 million

Universities: MUSC, USC

Endowed Chair(s):

Dr. John Schaefer, MUSC
Lewis Blackman Endowed Chair for Patient Simulation & Research for Health Sciences South Carolina

Dr. Jihad Obeid, MUSC
Biomedical Informatics

USC is recruiting one endowed chair.

External Funding Above Match:
\$12.1 million

Research Focus: Quality and safety of patient care, and improving the medical informatics aspects of data acquisition and the evaluation of health information technology on the quality and safety of clinical care processes and outcomes. The Center also focuses on developing South Carolina as a training center for physicians and other health professions using human simulators and sophisticated software-based training scenarios.

EFFECTIVENESS RESEARCH IN ORTHOPEDICS (CERortho)

Award Date: 2007

State Award Amount: \$5 million

University: USC

Endowed Chair(s):

Dr. John Brooks

Corporate Partner(s):

Smith & Nephew

External Funding Above Match:
\$15.2 million

Research Focus: Medical health needs in orthopaedic disorders, exercise and sports-related injury prevention, treatment, and rehabilitation. The Center investigates the biologics of tissue-engineered materials and implantable devices to find solutions to musculoskeletal maladies.



BIOMEDICAL

HEALTHCARE QUALITY*

Award Date: 2007

State Award Amount: \$5 million

Universities: USC, MUSC

Endowed Chair(s):

Dr. Les Lenert, MUSC
Medical Bioinformatics

Dr. Xiaoming Li, USC
Translational Clinical Research

Corporate Partner(s):

The Duke Endowment

External Funding Above Match:

\$18.3 million

Research Focus: Creating a unique and comprehensive clinical data store that collects data from providers, enhances data usability, and makes it available in an easily accessible form for participants to use for clinical improvement and research purposes.

HEALTH FACILITIES DESIGN AND TESTING

Award Date: 2007

State Award Amount: \$2 million

University: Clemson, MUSC

Endowed Chair(s):

Dr. Anjali Joseph, Clemson
Architecture & Health Research

Dr. Kenneth Catchpole, MUSC
Clinical Practice and Human Factors

External Funding Above Match:

\$1.4 million

Research Focus: The impact of health facility design on health and healthcare delivery and the creation of architectural settings that provide better support for the health, safety, and wellbeing of patients and staff.

INFLAMMATION AND FIBROSIS RESEARCH

Award Date: 2010

State Award Amount: \$5 million

University: MUSC

Endowed Chair(s):

Dr. Carol Feghali-Bostwick
Kitty Trask Holt Endowed Chair for Scleroderma Diseases

Dr. Betty Tsao
Inflammation Research

External Funding Above Match:

\$14.2 million

Research Focus: Develop new therapies and education programs for inflammatory and fibrosing rheumatic diseases such as lupus, scleroderma, and rheumatoid arthritis.

MARINE GENOMICS

Award Date: 2003

State Award Amount: \$4 million

Universities: MUSC, College of Charleston

Endowed Chair(s):

Dr. Gavin Naylor, MUSC
Bioinformatics

MUSC is recruiting one endowed chair.

External Funding Above Match:

\$8.9 million

Research Focus: Monitoring and predicting the impact of environmental changes on marine biosystems, which can, in turn, affect human health. Specific areas of study include environmental causation in wildlife, human disease and susceptibility, and mapping variability in genomes and populations; as well as research of shark and ray species.

MOLECULAR PROTEOMICS IN CARDIOVASCULAR DISEASE AND PREVENTION

Award Date: 2006

State Award Amount: \$5 million

University: MUSC

Endowed Chair(s):

Dr. Sheldon E. Litwin
Countess Alicia Spaulding Palozzi Chair in Cardiovascular Imaging

Dr. Thomas G. DiSalvo
Volpe SmartState Endowed Chair in Cardiovascular Biomarker Development for Diagnosis & Prevention

External Funding Above Match:

\$4.5 million

Research Focus: Translation advances in basic bench science to clinical bedside care to improve the health care of the citizens of South Carolina. Priorities include diagnostic techniques, therapeutic management strategies, relations of protein signatures to clinical outcomes for risk assessment, and treatment of disease manifestation.

NEUROSCIENCES

Award Date: 2003

State Award Amount: \$3 million

University: MUSC

Endowed Chair(s):

Dr. Christopher Cowan
William E. Murray Endowed Chair in Neuroscience

MUSC is recruiting the *Josephine Tucker Morse Endowed Chair in Parkinson's Disease*.

External Funding Above Match:

\$14.5 million

Research Focus: Brain neuromodulatory systems and their roles in cognitive performance, drug abuse, sleep and affective disorders. Other areas of research are movement disorders such as Ataxia, Choro, Bradykinesia and multiple system atrophy.

* Graduated Center



BIOMEDICAL

PROSTATE CANCER DISPARITIES

Award Date: 2008

State Award Amount: \$3.6 million

University: MUSC, USC, SCSU

Endowed Chair(s):

Dr. Chanita Hughes-Halbert, MUSC
*AT&T Distinguished Endowed Chair in
Cancer Equity in Cancer Disparities*

MUSC and USC are each recruiting
one endowed chair in *Cancer Disparities*.

Corporate Partner(s): AT&T Foundation

External Funding Above Match:
\$32.5 million

Research Focus: Facilitate statewide
partnerships in cancer prevention
and control research, clinical trials,
and training to significantly decrease
disparities in prostate cancer
incidence and mortality in South
Carolina.

PROTEOMICS

Award Date: 2003

State Award Amount: \$4 million

University: MUSC

Endowed Chair(s):

Dr. Richard Drake

Dr. Anand S. Mehta

External Funding Above Match:
\$21.5 million

Research Focus: Develop and use
high-end analytical technologies
to understand the biologic profile
of protein expression in health and
disease. Developing enzyme-based
analytical methods to effectively detect
biomolecules in tissues and tissue
microarray platforms.

REGENERATIVE MEDICINE

Award Date: 2004

State Award Amount: \$5 million

Universities: MUSC, USC, Clemson

Endowed Chair(s):

Dr. Martin Morad, USC
*BlueCross BlueShield of SC Foundation
Chair in Cardiovascular Health*

Dr. Stephen Duncan, MUSC
*Regenerative Medicine
and Cell Biology*

Dr. Jeremy Gilbert, Clemson
*Hansjörg Wyss Endowed Chair in
Bioengineering*

External Funding Above Match:
\$40.6 million

Research Focus: Regenerative medicine
approach for cardiovascular
applications and provide expertise
in clinical trials, statistics and/or
assay development. Application
of regenerative medicine and
tissue engineering approaches to
orthopaedic and neural diseases.
Regeneration of tissue and organs for
repairing, replacing, and maintaining
organ function.

RENAL DISEASE BIOMARKERS

Award Date: 2008

State Award Amount: \$5 million

University: MUSC

Endowed Chair(s):

Dr. Deepak Nihalani
Renal Biomarkers

MUSC is recruiting one endowed
chair in *Translational Nephrology
Research*.

External Funding Above Match:
\$4.7 million

Research Focus: Identifying biomarkers
that identify or predict prognosis
for acute kidney injury, diabetic
neuropathy, lupus nephritis, and focal
segmental alomerulosclerosis.

SENIORSMART®

Award Date: 2007

State Award Amount: \$5 million

Universities: USC, Clemson

Endowed Chair(s):

Dr. Sue Levkoff, USC
SmartHOME

Dr. Julius Fridriksson, USC
SmartBRAIN™

Clemson is recruiting one endowed
chair in *SmartWHEELS™*.

External Funding Above Match:
\$7.3 million

Research Focus: Three areas of
research include: *SmartBRAIN™*
(maintaining intellectual activity),
SmartWHEELS™ (independent
mobility outside the home) and
SmartHOME® (independent
mobility inside the home) to foster
independent living among seniors.



BIOMEDICAL

STROKE*

Award Date: 2007

State Award Amount: \$5 million

Universities: MUSC, USC

Endowed Chair(s):

Dr. Robert Adams, MUSC
Stroke

Dr. Mark Chimowitz, MUSC
*Countess Alicia Paolozzi Endowed Chair
in Translational Neurology*

Dr. Souvik Sen, USC
Clinical Neurology

External Funding Above Match:

\$19.5 million

Research Focus: Enhancing stroke treatment, prevention, and recovery. This Center is developing new stroke-related therapeutics, drug discovery, and biotechnology, and is a leader in stroke telemedicine.

TECHNOLOGY CENTER TO ENHANCE HEALTHFUL LIFESTYLES*

Award Date: 2009

State Award Amount: \$3 million

Universities: USC, MUSC

Endowed Chair(s):

Dr. Frank Trieber, MUSC
Technology Applications for Disease Prevention, Management, and Risk Reduction

Dr. Delia West, USC
Technology Application for Health Behavior Change

External Funding Above Match:

\$13.6

Research Focus: Develop and test lifestyle interventions for improving health, preventing illness and managing chronic health problems caused by physical inactivity, poor diets, and other lifestyle behaviors.

TOBACCO-RELATED MALIGNANCY

Award Date: 2007

State Award Amount: \$5 million

University: MUSC

Endowed Chair(s):

Dr. Nancy DeMore
BMW Chair in Cancer Research

MUSC is recruiting the *Burtschy Family Distinguished Endowed Chair in Lung Cancer Research*.

Corporate Partner(s):

BMW

External Funding Above Match:

\$52.1 million

Research Focus: Devoted to discovering tobacco-related malignancy biomarkers via clinical trials with a specific focus on tobacco-related cancers. Additionally, the Center is evaluating the specificity and sensitivity of novel biomarkers by molecular epidemiologic techniques across the diverse populations of South Carolina.

TRANSLATIONAL BIOMEDICAL INFORMATICS

Award Date: 2013

State Award Amount: \$2 million

University: MUSC

Endowed Chair(s):

Dr. Stephane Meystre

Research Focus: The new Center will provide expertise in translational biomedical informatics essential for cutting-edge, innovative methodologies to link genetic/genomic data with vast amounts of clinical data. The contributions of the center to data sharing/analysis will decrease cost and increase efficiency in research and healthcare delivery and provide a robust IT platform for industry partnerships and new company formation.

URBAN ECOLOGY AND RESTORATION

Award Date: 2006

State Award Amount: \$2 million

University: Clemson

Endowed Chair(s):

Dr. Robert F. Baldwin
Margaret H. Lloyd SmartState Chair in Urban Ecology

External Funding Above Match:

\$6.4 million

Research Focus: Applied research in environmental science and engineering, habitat restoration and water quality management; environmental industry growth; and urban ecology projects in South Carolina.

VISION SCIENCE

Award Date: 2005

State Award Amount: \$4.5 million

Universities: MUSC

Endowed Chair(s):

Dr. Baerbel Rohrer
Chair in Gene and Pharmaceutical treatment of Retinal Degenerative Diseases

MUSC is recruiting one endowed chair.

Corporate Partner(s):

Alcon Labs, Taligen, Alexion Pharmaceuticals

External Funding Above Match:

\$21.8 million

Research Focus: New treatments for macular degeneration, development of new anti-glaucoma agents and innovations in cataract surgery. The Center also focuses on using advances in bioengineering and material sciences to improve the diagnosis, treatment, and prevention of eye diseases.

* Graduated Center

ENERGY & ALTERNATIVE FUELS



CATALYSIS FOR RENEWABLE FUELS*

Award Date: 2005

State Award Amount: \$3 million

University: USC

Endowed Chair(s):

Dr. John Regalbuto

External Funding Above Match:

\$9.2 million

Research Focus: Developing catalysts that allow production of alternative fuels from renewable sources, thereby reducing dependence on imported oil and carbon fuel. The Center focuses on synthesizing inorganic catalysts for converting biomass to biofuels and synthesizing electrocatalysts for solar fuels and fuel cells.

GENERAL ATOMICS CENTER FOR THE DEVELOPMENT OF TRANSLATIONAL NUCLEAR TECHNOLOGY

Award Date: 2009

State Award Amount: \$3 million

University: USC

Endowed Chair(s):

Dr. Theodore Besmann
Energy and Nuclear Security

Corporate Partner(s):

General Atomics

External Funding Above Match:

\$4.8 million

Research Focus: The production of biofuels and coal to liquid fuels using nuclear process heat for more efficient production and the reduction of wastes associated with recycling of used fuel, seeking more long term strategies to manage used fuel, recovery of energy value in used fuel, and eliminating concerns over proliferation associated with recycling used fuel.

NUCLEAR SCIENCE AND ENERGY

Award Date: 2008

State Award Amount: \$3 million

University: USC

Endowed Chair(s):

Dr. Dan Gabriel Cacuci
Nuclear Power and Advanced Materials

Corporate Partner(s):

Duke Energy, Progress Energy, SCANA, Westinghouse

External Funding Above Match:

\$6.6 million

Research Focus: Performance, efficiency, and maintenance issues at existing and future nuclear power plants using expertise modeling and simulation related to nuclear fuels and materials.

SMART GRID TECHNOLOGY

Award Date: 2013

State Award Amount: \$5 million

University: Clemson

Endowed Chair(s):

Dr. Johan Enslin
Duke Energy Smart Grid Technology Chair

Corporate Partner(s):

Duke Energy

External Funding Above Match:

\$739,331

Research Focus: Develop technology to better manage global electric grid systems.

SOLID OXIDE FUEL CELLS*

Award Date: 2006

State Award Amount: \$3 million

University: USC

Endowed Chair(s):

USC is recruiting one endowed chair.

External Funding Above Match:

\$55.1 million

Research Focus: Develop solid oxide fuel cells for use in large, high-power systems such as industrial sites and electricity generating stations as well as for mobile power for computers, cell phones, and other electronics.

STRATEGIC APPROACHES TO THE GENERATION OF ELECTRICITY (SAGE)*

Award Date: 2007

State Award Amount: \$5 million

University: USC

Endowed Chair(s):

Dr. Jochen Lauterbach

External Funding Above Match:

\$9.8 million

Research Focus: Developing, improving, and advancing technologies to enhance the environmental performance of electricity production. Other work focuses on converting CO₂ to chemicals, fuel cell and hydrogen storage-related research, and chemical production from coal to biomass.

* Graduated Center



INFORMATION SCIENCE

CYBERINSTITUTE

Award Date: 2008

State Award Amount: \$2 million

University: Clemson

Endowed Chair(s):

Clemson is recruiting the *C. Tycho Howle Endowed Chair in Collaborative Computing Environments*.

Corporate Partner(s):

Omnibond Systems, LLC

External Funding Above Match:

\$4.1 million

Research Focus: Connecting research and scholarship, particularly in the fields of human computer interaction, data storage, interpretation, and visualization to the commercial sector via strategic industrial partnerships. Conduct research in conjunction with the Clemson University Cyber-Institute.

DATA ANALYSIS, SIMULATION, IMAGING, AND VISUALIZATION

Award Date: 2010

State Award Amount: \$2 million

University: USC

Endowed Chair(s):

Dr. Wolfgang Dahmen
Williams-Hedberg-Hedberg Chair of Mathematics

External Funding Above Match:

\$1.9 million

Research Focus: Develop technology for transforming data into knowledge concentrating on inline data processing, multi-sensor data acquisition, tissue modeling, atomic scale modeling, and bioimaging.

OPTOELECTRONICS*

Award Date: 2008

State Award Amount: \$2 million

University: Clemson

Endowed Chair(s):

Dr. Eric Johnson
PalmettoNet Endowed Chair in Optoelectronics

Corporate Partner(s):

Advanced Photonic Crystal, Tetramer Technologies

External Funding Above Match:

\$3.8 million

Research Focus: Improving devices, systems, and protocols used in high-speed optical communications networks.

SUSTAINABLE DEVELOPMENT

Award Date: 2010

State Award Amount: \$4 million

University: Clemson

Endowed Chair(s):

Dr. Amy Landis
Thomas F. Hash '69 Endowed Chair in Sustainable Development

External Funding Above Match:

\$2.1 million

Research Focus: Developing new technologies to support real-time monitoring and management of natural and built environments through the Intelligent River™ Project. The Center has created a wireless sensor that can monitor and transmit environmental data in real time.

TOURISM AND ECONOMIC DEVELOPMENT*

Award Date: 2005

State Award Amount: \$2 million

University: USC

Endowed Chair(s):

Dr. Simon Hudson

Corporate Partner(s):

Rawle Murdy
US Travel Association (USTA)

External Funding Above Match:

\$303,459

Research Focus: Tourism is a \$17 billion industry in South Carolina. The Center conducts cutting-edge tourism and hospitality research initiatives that will improve South Carolina's competitiveness as a tourism destination.

INNOVATION AND COMMERCIALIZATION

Award Date: 2004

State Award Amount: \$5 million

University: USC

Endowed Chair(s):

Dr. Laura B. Cardinal
Discovery and Innovation

Corporate Partner(s):

Fluor Foundation and Savannah River Nuclear Solutions LLC

External Funding Above Match:

\$21.6 million

Research Focus: The innovation, commercialization, and new venture development of research in the SmartState Centers, leading to technology commercialization and transfer activities in collaboration with business organizations and public sector stakeholders.

* Graduated Center



PHARMACEUTICAL

CANCER DRUG DISCOVERY

Award Date: 2005

State Award Amount: \$5 million

Universities: MUSC, USC

Endowed Chair(s):

Dr. John LeMasters, MUSC
*GlaxoSmithKline Distinguished
Endowed Chair*

Dr. Patrick Woster, MUSC
Medicinal Chemistry

Dr. Mark Hamann, MUSC
Charles & Carol Cooper Chair in Pharmacy

Dr. Mitzi Nagarkatti, USC
Structural Biology and Pharmacy

Corporate Partner(s):

GlaxoSmithKline

External Funding Above Match:

\$17.5 million

Research Focus: Advanced biomedical screening technologies to identify disease mechanisms and targets, and also screening drug candidates. Structural biology for target analysis, chemical biology for designing drug candidates, and advanced biomedical screening technologies.

CANCER STEM CELL BIOLOGY AND THERAPY

Award Date: 2008

State Award Amount: \$5 million

Universities: MUSC, Clemson

Endowed Chair(s):

Dr. Zihai Li, MUSC
*Abney Endowed Chair Remembering
Sally Abney Rose*

Dr. Xue Zhong Yu, MUSC
Biomedical Engineering

External Funding Above Match:

\$9.9 million

Research Focus: Developing new technologies for isolating, growing, and manipulating cancer stem cells. This will enable the Center to find ways to use adult stem cells from bone marrow or organs to treat cancer.

GASTROINTESTINAL CANCER DIAGNOSTICS

Award Date: 2005

State Award Amount: \$5 million

University: MUSC

Endowed Chair(s):

Dr. Carolyn Britten
*Charles Westerfield Coker Distinguished
Chair in Gastrointestinal Malignancy*

MUSC is recruiting the *Grace E. DeWolff
Endowed Chair in Medical Oncology*.

Corporate Partner(s):

Roche Carolina, Bank of America

External Funding Above Match:

\$12.3 million

Research Focus: Clinical and translational gastrointestinal oncology and biomarker development and gastrointestinal (GI) malignancies. Bringing state-of-the-art translational medicine to all GI cancer patients in South Carolina, thereby decreasing the overall impact of cancer mortality and morbidity and closing disparity gaps throughout the state.

LIPIDOMICS, PATHOBIOLOGY AND THERAPY

Award Date: 2009

State Award Amount: \$5 million

University: MUSC

Endowed Chair(s):

Dr. J. Alan Diehl
Lipidomics & Pathobiology

Dr. Besim Ogretmen
Lipidomics Drug Discovery

External Funding Above Match:

\$26.8 million

Research Focus: Develop models for translational research and study of lipidomics and their pathobiology with an emphasis on cancer and inflammation.

MEDICATION SAFETY AND EFFICACY

Award Date: 2008

State Award Amount: \$2 million

Universities: MUSC, USC

Endowed Chair(s):

Dr. Charles Bennett
*Frank P. and Josie M. Fletcher Professor
of Pharmacy*

External Funding Above Match:

\$4 million

Research Focus: Increasing drug safety and effectiveness, as well as decreasing medication errors by identifying the incidence and significance of adverse drug events.

TRANSLATIONAL CANCER THERAPEUTICS

Award Date: 2004

State Award Amount: \$5 million

Universities: MUSC, USC

Endowed Chair(s):

Dr. Kenneth Tew, MUSC
*John C. West Endowed Chair
in Cancer Research*

Dr. Igor Roninson, USC
Drug Efficacy

External Funding Above Match:

\$21.3 million

Research Focus: Development of new approaches in cancer treatment, including the discovery and development of new drugs. Research also focuses on utilizing mouse models predisposed to cancer to study the impact of gene misregulation and therapeutic agents on tumor development, and the identification and inhibition of new cancer drug targets.

SMARTSTATE® PROFILE:

DR. STEPHEN DUNCAN

According to the American Liver Foundation, 17,000 adults and children are medically approved for liver transplants and waiting for donor organs. Six thousand liver transplants are performed each year and the number is rising. Meanwhile, 1,500 Americans die each year waiting for a donor.

What if people with potentially lethal liver diseases had non-transplant options? Could we avoid costly and not always effective liver transplants and improve patient outcomes? These are questions Dr. Stephen Duncan, the SmartState® Endowed Chair in Regenerative Medicine at the Medical University of South Carolina (MUSC) is working on answering.

Duncan is a pioneer in stem cell research who came to MUSC in 2015 from the Medical College of Wisconsin in Milwaukee. And while his research, which is funded in part by the National Institute of Diabetes, Digestive and Kidney Disease (NIDDKD), was making substantial progress, Duncan chose to accept the SmartState® Endowed Chair and also the chairmanship of MUSC Department of Regenerative Medicine and Cell Biology.

"I was interested in a leadership position and expanding the scope

of my research in liver-related regenerative medicine. MUSC and the SmartState® Program provided the perfect opportunity," Duncan said. "I was also attracted to Charleston, the aesthetic beauty of the Lowcountry and the friendly people. It provides great balance to my life."

Not that he has much free time. Duncan completed his postdoctoral work in liver disease under the guidance of James Darnell at Rockefeller University, a leader in liver disease. While there, Duncan began exploring the use of embryonic stem cells and genetics in determining better treatment modalities for liver disease. Today, he is pioneering stem cell research and is at the forefront of the race to develop new technology to make liver cells.

"Ultimately, our goal is to use stem cell approaches to cure metabolic liver diseases that include a rare form of

hypercholesterolemia. We're currently working on how to efficiently produce liver cells from stem cells in the laboratory. These reprogrammed cells from patients would then provide us with a target for drug testing," Duncan explained.

Duncan's research takes "patient-centered care" to new heights, using a patient's own cells to find a cure for their disease. The patient's stem cells are harvested from a urine sample or blood draw. Molecular techniques are applied to turn the sample into stem cells genetically identical to the person who provided them. Duncan and his team then replicate the patient's disease in the lab with the aim to identify better, non-surgical treatment options.

In the case of drug development, Duncan has successfully modeled several metabolic liver diseases by generating liver cells from patient-specific cells. He believes this has opened a new door into drug discovery that could yield important breakthroughs in the next five years or so.

"We want to help people with serious liver disease immediately rather than making them wait months or years for a liver transplant that may or may not work," Duncan said. ●

"The ability to produce patient-specific liver cells using the patient's own stem cells has opened doors that reveal a new way of studying metabolic liver disease that could revolutionize treatment of such disorders. Our long-term goal is to avoid liver transplants and secure better long-term outcomes for patients."



STEPHEN DUNCAN, Ph.D.

Endowed Chair

SmartState® Center for Regenerative Medicine

SMARTSTATE® ENDOWED CHAIRS

The role of SmartState® Program Endowed Chairs is to serve as catalysts for the state's knowledge economy.

Sixty-six chairs of 85 approved chairs have been filled at Clemson, MUSC, and USC across 51 SmartState® Centers. The SmartState® Program welcomed 14

new endowed chairs this year: Dr. Laura B. Cardinal, Dr. Kenneth Catchpole, Dr. Christopher Cowan, Dr. Thomas DiSalvo, Dr. Johan Enslin, Dr. Julius Fridriksson, Dr.

Jeremy Gilbert, Dr. Venkat Krovi, Dr. Laine Mears, Dr. Anand S. Mehta, Dr. Stephane Meystre, Dr. Mitzi Nagarkatti, Dr. Deepak Nihalani, and Dr. Betty Tsao. ●



ROBERT ADAMS

Stroke
MUSC



ROBERT F. BALDWIN

*Urban Ecology and
Restoration*
Clemson



JOHN BALLATO

*Optical Materials/
Photonics*
Clemson



BRIAN BENICEWICZ

Polymer Nanocomposites
USC



CHARLES BENNETT

*Medication Safety and
Efficacy*
USC



**THEODORE
BESMANN**

General Atomics
USC



CAROLYN BRITTEN

*Gastrointestinal Cancer
Diagnostics*
MUSC



JOHN BROOKS

*Effectiveness Research
in Orthopedics*
USC



**DAN GABRIEL
CACUCI**

*Nuclear Science and
Energy*
USC



LAURA B. CARDINAL

*Innovation and
Commercialization*
USC



MANUEL CASANOVA

*Childhood
Neurotherapeutics*
USC



**KENNETH
CATCHPOLE**

*Health Facilities Design
and Testing*
MUSC



MARK CHIMOWITZ

Stroke
MUSC



CHRISTOPHER COWAN

Neurosciences
MUSC



WOLFGANG DAHMEN

*Data Analysis
Simulation Imaging and
Visualization*
USC



NANCY DEMORE

*Tobacco-related
Malignancies*
MUSC



J. ALAN DIEHL

*Lipidomics Pathobiology
and Therapy*
MUSC



THOMAS DISALVO

*Molecular Proteomics in
Cardiovascular Disease
and Prevention*
MUSC



RICHARD DRAKE

Proteomics
MUSC



STEPHEN A. DUNCAN

Regenerative Medicine
MUSC



JOHAN ENSLIN

Smart Grid Technology
Clemson



CAROL FEGHALI-BOSTWICK

*Inflammation & Fibrosis
Research*
MUSC



ZORAN FILIPI

*Automotive Design and
Development*
Clemson



JULIUS FRIDRIKSSON

SeniorSMART™
USC



JEREMY GILBERT

Regenerative Medicine
Clemson



MARK HAMANN

Cancer Drug Discovery
MUSC



JOSEPH HELPERT

Brain Imaging
MUSC



SIMON HUDSON

*Tourism and Economic
Development*
USC



CHANITA HUGHES-HALPERT

*Prostate Cancer
Disparities*
MUSC



ERIC JOHNSON

Optoelectronics
Clemson



ANJALI JOSEPH
*Health Facilities Design
 and Testing*
 Clemson



VENKAT KROVI
*Vehicle Electronic Systems
 Integration*
 Clemson



AMY LANDIS
Sustainable Development
 Clemson



**JOCHEN
 LAUTERBACH**
*Strategic Approaches
 to the Generation of
 Electricity (SAGE)*
 USC



JAMIE LEAD
*Environmental
 Nanoscience and Risk*
 USC



JOHN LEMASTERS
Cancer Drug Discovery
 MUSC



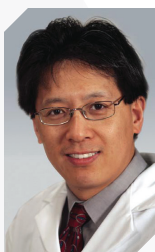
LES LENERT
Healthcare Quality
 MUSC



SUE LEVKOFF
SeniorSMART™
 USC



XIAOMING LI
Healthcare Quality
 USC



ZIHAI LI
*Cancer Stem Cell Biology
 and Therapy*
 MUSC



SHELDON E. LITWIN
*Molecular Proteomics in
 Cardiovascular Disease
 and Prevention*
 MUSC



SCOTT MASON
*Supply Chain
 Optimization and
 Logistics*
 Clemson



LAINE MEARS
*Automotive
 Manufacturing*
 Clemson



ANAND S. MEHTA
Proteomics
 MUSC



**STEPHANE
 MEYSTRE**
*Translational Biomedical
 Informatics*
 MUSC



MARTIN MORAD
Regenerative Medicine
 USC



GAVIN NAYLOR
Marine Genomics
 MUSC



MITZI NAGARKATTI
Cancer Drug Discovery
 USC



DEEPAK NIHALANI
Renal Disease Biomarkers
MUSC



JIHAD OBEID
Clinical Effectiveness and
Patient Safety
MUSC



BESIM OGRETMEN
Lipidomics Pathobiology
and Therapy
MUSC



JOHN REGALBUTO
Catalysis for Renewable
Fuels
USC



BAERBEL ROHRER
Vision Science
MUSC



IGOR RONINSON
Translational Cancer
Therapeutics
USC



CHRIS RORDEN
Brain Imaging
USC



JOHN SCHAEFER
Clinical Effectiveness and
Patient Safety
MUSC



SOUVIK SEN
Stroke
USC



KENNETH TEW
Translational Cancer
Therapeutics
MUSC



FRANK TRIEBER
Technology Center to
Enhance Healthful
Lifestyles
MUSC



BETTY TSAO
Inflammation and
Fibrosis Research
MUSC



JEFFREY TWISS
Childhood
Neurotherapeutics
USC



MAREK URBAN
Advanced Fiber
Materials
Clemson



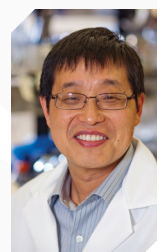
**MICHAEL VAN
TOOREN**
Multifunctional
Materials & Structures
USC



DELIA WEST
Technology Center to
Enhance Healthful
Lifestyles
USC



PATRICK WOSTER
Cancer Drug Discovery
MUSC



XUE ZHONG YU
Cancer Stem Cell Biology
and Therapy
MUSC

SMARTSTATE® PROFILE:

DR. JULIUS FRIDRIKSSON

It is a concern of clinicians and patients alike; why some stroke victims suffer from aphasia, a condition that leaves them unable to speak, listen, read or write, but does not affect intelligence.

Also troubling is why aphasia is sometimes temporary, lasting a few days or weeks, while in other cases is permanent. Aphasia is of particular concern in South Carolina, a state with the seventh highest stroke-related death rate and half of stroke patients are under age 60.

The issue has interested SmartState® Chair Julius Fridriksson, who is also a distinguished professor in the University of South Carolina (USC) Arnold School of Public Health's Department of Communication Sciences and Disorders. Last March, Fridriksson received a five-year, \$11.1-million grant from the National Institute on Deafness and Other Communication Disorders, one of the largest grant awards in USC's history, to help solve the aphasia mystery. He and his co-investigators will use the grant to establish the Center for the Study of Aphasia Recovery, which will span four research sites, including the USC Arnold School of Public Health, working with USC's McCausland Center for

Brain Imaging; the Medical University of South Carolina (MUSC), Johns Hopkins University, and the University of California Irvine (UCI).

Although technology for evaluating and treating stroke survivors has advanced significantly, the ability of clinicians to offer personalized prognosis and treatment plans for individual patients has remained stunted because factors such as age, gender, and brain fitness and how they impact rehabilitation outcomes are unknown.

"Clinicians have to end every appointment by telling the patient, 'everyone's different and I can only speculate on how you will recover. This is frustrating for everyone,'" Fridriksson explained. "I don't want to do that anymore. I know for certain that the patients and their families don't want to hear that anymore. They need something more concrete."

These unknowns and the uncertain future they cause can lead to anxiety

and depression for stroke patients. Fridriksson hopes to identify the crucial factors that affect an individual's prognosis. One of the primary factors in predicting prognosis is brain fitness, an umbrella term that includes many different measures of brain integrity, such as residual cerebral blood flow, intactness of brain connections, and location and size of brain damage. Fridriksson and his co-investigators will also assess variables such as age, time-post stroke, gender, and neuropsychological status.

The answers, said Fridriksson, lie in two areas: detailed MRI images that show blood flow and functional activity of the brain and big data. All four sites, USC, MUSC, Johns Hopkins and UCI, will collect and analyze MRIs and data from hundred of stroke patients. Joining the project are Fridriksson's close collaborators and fellow SmartState® Chairs Chris Rorden, Neuroimaging, and Souvik Sen, Stroke. "Chris is known worldwide for his data analysis. He provides data analytics expertise that I don't have and we need for this study. Souvik brings stroke and neurology expertise. When completed, this will be the largest aphasia recovery study in the last several decades and, we hope our research findings will have national and international implications on stroke patients' treatment." ●

"Aphasia caused by stroke affects a person's ability to speak, listen, read or write, but doesn't affect intelligence. Currently, clinicians have a difficult time predicting which patients will be impacted or how severe or long-lasting the effects will be. With this new \$11.1 million federal grant, we hope to better understand why this happens and improve recovery from stroke-induced communication impairment."



UNIVERSITY OF
SOUTH CAROLINA

JULIUS FRIDRIKSSON, Ph.D.

**SmartBRAIN™ Endowed Chair
SeniorSMART® Center**

IN CLOSING

Elevating South Carolina: A Shared Effort, A Shared Success

The SmartState® Program would like to borrow a quote from Peter Drucker and give it a slight twist:

“Whenever you see a successful state, someone once made a courageous decision.”

In preparing the 2015-2016 SmartState® Program annual report, we realized how many courageous decisions have been made since the program’s founding in 2002 when the South Carolina General Assembly passed the enabling legislation. No state had ever done what South Carolina was about to do, which was use public-private partnerships to recruit and fund

university-based endowed chairs to transform the state’s economy.

The decision was risky. It was courageous. And it worked!

Fast-forward 14 years. In a June 2016 report released by WalletHub and reported in Forbes, South Carolina was ranked thirteenth in the nation in economic activity, well above North Carolina at twenty-second and just below Georgia at eleventh. WalletHub drew these conclusions looking at metrics ranging from GDP growth and business startup activity to venture-capital funding per-capita

and percentage of jobs held by scientists and engineers. Each measure was weighted and divided into one of three categories: economic activity, economic health and innovation potential.

This ranking signaled something many in South Carolina already know: we are a state on the rise!

The SmartState® Program would like to thank everyone who has made courageous decisions—our lawmakers, our universities, endowed chairs, business leaders and the public. Your efforts have elevated South Carolina to new heights and new success. ●

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The SmartState® Program annual report is prepared annually for the South Carolina General Assembly and the South Carolina Budget and Control Board by the SmartState® Review Board and the South Carolina Commission on Higher Education in accordance with S.C. Code of Laws §2-75-10.

In accordance with S.C. Code of Laws §1-11-425, the following information is provided: Number of reports printed: 400. Cost per report: \$6.31. Total printing cost: \$2,523



SMARTSTATESC.ORG
South Carolina Commission on Higher Education
1122 Lady Street, Suite 300
Columbia, South Carolina 29201

**SOUTH CAROLINA CENTERS
OF ECONOMIC EXCELLENCE**

**FINANCIAL AND
COMPLIANCE REPORT**

JUNE 30, 2016

**SOUTH CAROLINA CENTERS OF ECONOMIC EXCELLENCE
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YEAR ENDED JUNE 30, 2016**

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**SOUTH CAROLINA CENTERS OF ECONOMIC EXCELLENCE
REVIEW BOARD
JUNE 30, 2016**

<u>NAME</u>	<u>POSITION</u>	<u>APPOINTMENT</u>
Regan Voit	Chair	Chair, Senate Finance Committee
Melvin C. Williams	Vice-Chair	President Pro Tempore of the Senate
Lisa Main	Secretary	Speaker of the House
Robert W. Pearce, Jr.	Member	Speaker of the House
Jason Premo	Member	Governor
Charles W. Garnett	Member	Governor
Karoly Kerekes	Member	Governor
Roberta Bankhead Wood	Member	Chair, House Ways and Means Committee
James P. Clements	Ex-officio	President, Clemson Univ.
David J. Cole	Ex-officio	President, Medical Univ. of S.C.
Harris Pastides	Ex-officio	President, Univ. of S. C.



SmartState Program
Management's Discussion and Analysis
Period: Fiscal Year 2015-16

Management's Discussion and Analysis provides an overview of the SmartState program and data covering the fiscal year ended June 30, 2016. This discussion and analysis should be read in conjunction with the financial statement and accompanying notes. The financial statements have been prepared by an independent auditor (Derrick, Stubbs & Stith, LLP) in accordance with S.C. Code of Laws, as amended, Section 2-75-10.

Overview of the SmartState Program

In 2002, the South Carolina General Assembly passed the Research Centers of Economic Excellence (RCEE) Act. The legislation originally required appropriation of \$200 million through 2010¹ from the South Carolina Education Lottery to establish unique Centers of Economic Excellence at South Carolina's three senior research institutions: Clemson University, University of South Carolina (USC), and Medical University of South Carolina (MUSC). Each Center of Economic Excellence (Center) specializes in unique, knowledge-based economy research (in fields such as engineering, nanotechnology, biomedical science, and energy science) that promotes and creates enhanced economic opportunities for the state. In 2008, the General Assembly amended the RCEE Act to replace the \$200 million funding cap and the 2010 sunset date with a statutory guarantee of \$30 million in annual funding so long as (a) Lottery-supported scholarships have been fully funded, and (b) the SmartState Review Board has, by the end of the most previous fiscal year, awarded a minimum of 80% of overall appropriations since 2003.

The RCEE Act also created the SmartState Review Board, which provides program oversight. The Review Board is composed of 11 members: three appointed by the

¹ The General Assembly appropriated \$30 million per year in the state budget for fiscal years 2003 through 2008. The General Assembly has appropriated no new funds for fiscal years 2009 through 2016.

Governor; three by the President Pro Tempore of the Senate; three by the Speaker of the House of Representatives; one by the Chair of the Senate Finance Committee; and one by the Chair of the House Ways & Means Committee. Membership terms are three years, and individuals may serve three total terms. Presidents of South Carolina's three research universities serve as ex-officio, non-voting members of the Review Board. Staff and operational support for the SmartState Program are provided by CHE.

The SmartState Review Board held its first meeting on October 17, 2002, at which it approved formal *Bylaws*. On December 5, 2002, the Review Board approved Program *Guidelines* and *Requests for Proposals Guidelines for 2002-2003*, which established a competitive, annual process whereby Centers of Economic Excellence are proposed by the research institutions and approved by the Review Board. The three-tier review process includes two rigorous scientific evaluations (a technical review and an onsite panel review), followed by the Review Board's analysis of the review findings and a formal vote on individual proposals. In 2008, the General Assembly amended the RCEE Act by encoding the technical and scientific review process for proposals.

Once a new Center is approved, an institution has 18 months in which to solicit non-state (private, federal, or municipal) investors to pledge dollar-for-dollar matching of a Center's total state award (between \$2 million to \$5 million). In February 2007, the SmartState Review Board approved a policy whereby an institution may apply for up to two six-month extensions beyond the 18-month pledge verification deadline. All matching pledges must be realized within 78 months of a Center's approval date. In February 2009, the SmartState Review Board approved a policy whereby an institution may apply for as many as two six-month extensions beyond the 78-month drawdown deadline.

State funds may only be drawn against perfected (eligible and received) non-state pledges. The majority of funds (all of the state funds plus no less than 30% of the non-state match) is placed in endowment, which may be used to pay the salaries or salary supplements of the world-class scientists (endowed chairs) specially recruited to lead each Center, as well as to pay for the purchase of specialized equipment, laboratory construction, other faculty, and research assistants. In 2008, the General Assembly amended the RCEE Act by codifying the use of a certain portion (determined by the

SmartState Review Board) of non-state matching funds “to pay for initial operating costs” of Centers (S.C. 2-75-100).

On December 12, 2006, the SmartState Review Board convened a Cost Share Work Group. Representatives from all three research institutions, the Office of the State Treasurer, and CHE gathered to discuss accounting standards related to the RCEE Act. On February 26, 2007, the Review Board approved a Cost Share Accounting Policy which contains specific guidelines for claiming and valuing in-kind matches. In 2008, the General Assembly amended the RCEE Act to encode the use of cash equivalent and in-kind donations as valid non-state matches for the SmartState Program.

In 2010, the General Assembly amended the RCEE act to create a new type of SmartState award to be made in concert with the South Carolina Department of Commerce. One-quarter of the unallocated Centers of Excellence Matching Endowment funds were dedicated for funding such “SmartState Commerce Awards.” SmartState Commerce Awards may not individually exceed \$2 million and do not require the dollar-for-dollar, non-state match of standard SmartState awards. In place of the matching requirement, the Secretary of Commerce is required to certify that a “significant capital investment” has been made in the related research field of the proposed SmartState Commerce Award professorial endowment. These revisions became effective January 1, 2011. The SmartState Review Board issued an RFP for awards in FY 2011. At the request of the Department of Commerce, the awards for this component of the SmartState Program have not been made. However, during the 2015-2016 legislative session, the SC General Assembly approved Proviso 117.139², which states that the SmartState Endowed Chairs Program funds earmarked for Commerce Awards shall be transferred by the Commission on Higher Education to the Department of Commerce’s Applied Research Centers by August 1, 2016. The program fund amount of \$2.8 million was transferred to the Department of Commerce on July 25, 2016.

Over time, each research institution has developed concentrated SmartState focus areas. Clemson University’s core strengths lie in the area of automotive and transportation technology, advanced materials and biotechnology/biomedical sciences. USC’s Centers

² Part 1B Proviso 117.139, FY 2015-16, states: The Endowed Chairs Program funds that have been set aside for “Commerce Awards” shall be transferred by the Commission on Higher Education to the Department of Commerce’s Applied Research Centers by August 1, 2016.

generally fall within three clusters: future fuels, biomedical sciences, and nanotechnology. MUSC's strengths lie in the areas of neuroscience, cancer research, vascular disease, and health care quality and finance.

One hallmark of the SmartState Program is an almost unprecedented scientific collaboration at the academic level. More than one-third of the Centers are partnerships between and among state public institutions, including three four-year comprehensive teaching universities. Dr. John Schaefer, SmartState Endowed Chair at MUSC's Clinical Effectiveness and Patient Safety Center has noted that such academic collaboration rarely exists—not even at Harvard or Yale. The lure of bonded research partnerships serves as an enticing recruiting tool to the renowned scientists required to lead each Center.

2015-16 SmartState Summary Information

At the end of FY 2015-16, the program consists of 51 Centers with 85 approved SmartState Endowed Chairs of which 66 have been appointed. As envisioned by the General Assembly, the SmartState Program has become a successful boost to the state's knowledge-based economy. Of the \$197.6 million³ in SmartState awards granted by the Board through the end of FY 2015-16, \$197.6 million in matching pledges have been committed by non-state sources. Of the committed pledges through FY 2015-16, \$197.6 million have been perfected and drawn down.

The table found on the following pages provides summary information on the Centers from FY 2002-03 through FY 2015-16.

³ To date, the SmartState Review Board has obligated \$17.6 million in accrued program interest for the awarding of additional proposals, as is permitted by statute. To date, the Review Board has used all of the \$17.6 million in accrued interest to fund proposals in the 2008-2009, 2009-2010 and 2012-2013 award cycles.



**Summary of Approved SmartState Program
Centers of Economic Excellence by Fiscal (Funding) Year (2002-03 – 2015-16)**

Funding Year 2002-2003			
Institution (fiscal institution first)	Proposal Title	Endowed Chairs	Proposal Amount
Clemson	Automotive Systems Integration	1	\$5 million
Clemson	Automotive Manufacturing	1	\$5 million
USC	Nanostructures	1	\$4 million
USC/MUSC	Brain Imaging	3 ¹	\$5 million
MUSC	Proteomics	2	\$4 million
MUSC	Neuroscience	2 ²	\$3 million
MUSC/USC/CoC	Marine Genomics	2 ⁴	\$4 million
Total Awarded in 2002-2003		12	\$30 million
Funding Year 2003-2004			
Institution (fiscal institution first)	Proposal Title	Endowed Chairs	Proposal Amount
Clemson	Automotive Design & Development	1	\$5 million
Clemson	Electronic Systems Integration	1	\$3 million
Clemson	Photonic Materials	1	\$5 million
USC	Polymer Nanocomposites	1	\$3.5 million
USC	Innovation and Commercialization	1 ⁴	\$2.5 million
MUSC/Clemson/USC	Regenerative Medicine	3	\$5 million
MUSC/USC	Translational Cancer Therapeutics	2	\$5 million
Total Awarded in 2003-2004		10	\$29 million
Funding Year 2004-2005			
Institution (fiscal institution first)	Proposal Title	Endowed Chairs	Proposal Amount
Clemson	Restoration [WITHDRAWN]	—	[\$3 million]
Clemson	Electron Imaging [WITHDRAWN]	—	[\$5 million]
USC	Catalysis for Renewable Fuels	1	\$3 million
USC	Innovation and Commercialization	[See 03-04]	\$2.5 million
USC/Coastal Carolina	Tourism & Economic Development	1	\$2 million
MUSC	Gastrointestinal Cancer Diagnostics	2 ⁵	\$5 million
MUSC/USC	Cancer Drug Discovery	4	\$5 million
MUSC	Vision Science	2 ⁶	\$4.5 million
Total Awarded in 2004-2005		10	\$22 million

¹Revised to three chairs by act of the SmartState Review Board on January 12, 2009.

²Revised to two chairs by act of the SmartState Review Board on February 9, 2015.

³Revised to two chairs by act of the SmartState Review Board on February 23, 2010.

⁴The The Hydrogen Economy Center was approved during 2003-2004. Funding for one half of this Center was provided in 2003-04, the other half in 2004-2005. In 2014, the name changed to the SmartState Center for Innovation and Commercialization and revised to one chair.

⁵ Increased from one to two endowed chairs by act of the SmartState Review Board on September 8, 2008.

⁶Revised to two chairs and relinquished USC as a collaborative partner by act of the SmartState Review Board on February 11, 2014.

Funding Year 2005-2006			
Institution (fiscal institution first)	Proposal Title	Endowed Chairs	Proposal Amount
Clemson	Supply Chain Optimization & Logistics	1	\$2 million
Clemson	Urban Ecology and Restoration	1	\$2 million
Clemson	Advanced Fiber-Based Materials	1	\$4 million
Clemson	Molecular Nutrition [WITHDRAWN]	—	[\$2 million]
USC	Solid Oxide Fuel Cells	1	\$3 million
USC/MUSC	Childhood Neurotherapeutics	3	\$5 million
MUSC	Molecular Proteomics in Cardiovascular Disease & Prevention	2	\$5 million
MUSC/USC	Clinical Effectiveness & Patient Safety ⁷	3	\$5 million
Total Awarded in 2005-2006		12	\$26 million
Funding Year 2006-2007			
Institution (fiscal institution first)	Proposal Title	Endowed Chairs	Proposal Amount
Clemson/MUSC	Health Facilities Design & Testing ⁸	2	\$2 million
USC	Rehabilitation and Reconstruction Science	1	\$5 million
USC	Strategic Approaches to the Generation of Electricity	1	\$5 million
USC/MUSC/Clemson	Healthcare Quality	2	\$5 million
USC/Clemson	Senior SMART TM Center ⁹	3	\$5 million
MUSC	Tobacco-Related Malignancy	2	\$5 million
MUSC/USC	Stroke	3	\$5 million
Total Awarded in 2006-2007		14	\$32 million

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⁷On September 9, 2008, the SmartState Review Board approved a revision to this proposal which relinquished Clemson University as a collaborative partner and transferred the Chair at Clemson to MUSC.

⁸The state award total for this Center was revised from \$5 million to \$2 million by the SmartState Review Board on June 11, 2012.

⁹The SeniorSMART Center of Economic Excellence was approved in 2007-2008. Funding was provided from 2006-2007 dollars.

SC Centers of Economic Excellence Funded Proposals (continued)

Funding Year 2007-2008			
Institution (fiscal institution first)	Proposal Title	Endowed Chairs	Proposal Amount
Clemson	Optoelectronics	1	\$2 million
Clemson	CyberInstitute	1	\$2 million
USC	Environmental Nanoscience and Risk	1	\$3 million
USC	Nuclear Science and Energy	1	\$3 million
MUSC	Renal Disease Biomarker	2	\$5 million
MUSC/Clemson	Cancer Stem Cell Biology	2	\$5 million
MUSC/USC/Clemson	Advanced Tissue Biofabrication	3	\$5 million
MUSC/USC/SCSU	Cancer Disparities ¹⁰	3	\$3.6 million
MUSC/USC	Medication Safety & Efficacy ¹¹	1	\$2 million
Total Awarded in 2007-2008		15	\$30.6 million
Funding Year 2008-2009			
Institution (fiscal institution first)	Proposal Title	Endowed Chairs	Proposal Amount
Clemson	Tissue Systems Characterization [WITHDRAWN]	—	[\$3 million]
USC	General Atomics Center for Development of Transformational Nuclear Technologies	1	\$3 million
USC/MUSC	Healthful Lifestyles ¹²	2	\$3 million
MUSC	Lipidomics, Pathobiology and Therapy	2	\$5 million
Total Awarded in 2008-2009		5	\$11 million
Funding Year 2009-2010			
Institution (fiscal institution first)	Proposal Title	Endowed Chairs	Proposal Amount
Clemson	Sustainable Development	1	\$4 million
USC	Data Analysis	1	\$2 million
MUSC	Inflammation and Fibrosis Research	2	\$5 million
Total Awarded in 2009-2010		4	\$11 million

¹⁰The Cancer Disparities Center of Economic Excellence was approved in 2008-2009. Funding was provided from 2007-2008 dollars.

¹¹The Medication Safety & Efficacy Center was approved in 2008-2009. Funding was provided from 2007-2008 dollars.

¹²The Healthful Lifestyles Center of Economic Excellence was approved in 2009-2010 with funding from 2008-2009 dollars.

SC Centers of Economic Excellence Funded Proposals (continued)

Funding Year 2012-2013			
Institution (fiscal institution first)	Proposal Title	Endowed Chairs	Proposal Amount
Clemson	Smart Grid Technology	1	\$2 million
USC	Multifunctional Materials and Structures	1	\$2 million
MUSC	Translational Biomedical Informatics	1	\$2 million
Total Awarded in 2012-2013		3	\$6 million

Program Totals¹	
TOTAL LOTTERY APPROPRIATIONS (2003-2008)	\$180 million
ACCRUED PROGRAM INTEREST USED FOR ADDITIONAL AWARDS * * As permitted by S.C. 2-75-30(A).	\$17.6 million
TOTAL FUNDS AWARDED (2003-2013)	\$197.6 million

Research Institution Totals				
Institution	Centers Awarded	Chairs Created	Chairs Appointed (Remaining to be Appointed)	State Funds Drawn
Clemson University	13	16	8 (8)	\$43,000,000
University of South Carolina	18	28	21 (7)	\$65,875,037
Medical University of South Carolina	20	41	24 (17)	\$86,351,058
TOTALS	51	85	53 (32)	\$195,226,095

¹Program totals are as of fiscal year end June 30, 2015. For Research Institution Totals, Centers Awarded and State Funds Drawn for each institution are tallied on the fiscal agent in cases of joint proposals. Chairs are tallied based on the assigned institution as of November 2015. For updated information on Centers and program totals, contact CHE or see www.smartstaesc.org.

INDEPENDENT AUDITOR'S REPORT

To the Review Board
South Carolina Centers of Economic Excellence
Columbia, South Carolina

We have audited the statements of program revenues and expenditures of the South Carolina Centers of Economic Excellence (the Program) for the year ended June 30, 2016, as listed in the index. These financial statements are the responsibility of the Program's management. Our responsibility is to express an opinion on these financial statements based on our audit.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

We conducted our audit in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial presentation. We believe that our audit provides a reasonable basis for our opinion.

Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the program revenues and expenditures of the South Carolina Centers of Economic Excellence for the year ended June 30, 2016, in conformity with accounting principles generally accepted in the United States of America.

Other Reporting Required by Government Auditing Standards

In accordance with *Government Auditing Standards*, we have also issued a report dated November 15, 2016, on our consideration of the Program's internal control over financial reporting and our tests of its compliance with certain provisions of laws, regulations, contracts and grants. The purpose of that report is to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on the internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* and should be read in conjunction with this report in considering the results of our audit.

Other Matter

Accounting principles generally accepted in the United States of America require that the Management's Discussion and Analysis on pages 2 through 9 be presented to supplement the basic financial statements. Such information, although not a required part of the basic financial statements, is required by the Governmental Accounting Standards Board, which considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Derrick, Stubbs & Stith, LLP

November 15, 2016

**SOUTH CAROLINA CENTERS OF ECONOMIC EXCELLENCE
STATEMENT OF PROGRAM REVENUES AND EXPENDITURES - CONSOLIDATED SUMMARY
YEAR ENDING JUNE 30, 2016**

	Clemson University				Medical University of South Carolina					
	State Endowment	Non-State Endowment	Non-State Expendable	Endowment Earnings	Total	State Endowment	Non-State Endowment	Non-State Expendable	Endowment Earnings	Total
Contribution Revenue										
State funds	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,048,942	\$ -	\$ -	\$ -	\$ 1,048,942
Non-state matching funds	-	-	-	-	-	700,000	722,200	43,064	-	1,465,264
Total contribution revenue	-	-	-	-	-	1,748,942	722,200	43,064	-	2,514,206
Investment Income										
Realized gain (loss)	-	-	-	857,325	857,325	-	-	-	4,515,856	4,515,856
Unrealized gain (loss)	-	-	-	(3,531,655)	(3,531,655)	-	-	-	(11,301,950)	(11,301,950)
Endowment income	-	-	-	231,477	231,477	-	-	-	1,716,791	1,716,791
Total investment income (loss)	-	-	-	(2,442,853)	(2,442,853)	-	-	-	(5,069,303)	(5,069,303)
Total revenue	-	-	-	(2,442,853)	(2,442,853)	1,748,942	722,200	43,064	(5,069,303)	(2,555,097)
Expenditures										
Personal services	-	-	-	583,091	583,091	-	-	155,146	1,589,116	1,744,262
Fringe	-	-	-	180,403	180,403	-	-	55,677	689,705	745,382
Travel	-	-	-	77,119	77,119	-	-	3,578	35,231	38,809
Supplies	-	-	661	124,081	124,742	-	-	850	523,626	524,476
Contractual	-	-	-	-	-	-	-	60	206,088	206,148
Tuition assistance	-	-	-	118,695	118,695	-	-	-	-	-
Fixed charges	-	-	-	-	-	-	-	-	-	-
Administrative fees	-	-	-	-	-	-	-	80,909	1,164,225	1,245,134
Other	-	-	503	716,990	717,493	-	-	50,006	9,005	59,011
Facilities	-	-	-	125,000	125,000	-	-	14	523,106	523,120
Equipment	-	-	-	161,255	161,255	-	-	14	324,787	324,801
Total expenditures	-	-	1,164	2,086,634	2,087,798	-	-	346,254	5,064,889	5,411,143
Program net income (loss)	-	-	(1,164)	(4,529,487)	(4,530,651)	1,748,942	722,200	(303,190)	(10,134,192)	(7,966,240)
Transfers	-	-	-	-	-	-	-	-	-	-
Prior Period Adjustment	-	-	-	-	-	-	-	-	-	-
Cumulative Program Net Income										
Beginning	43,000,000	35,487,523	189,066	28,052,229	106,728,818	86,351,057	34,271,429	11,722,846	31,072,425	163,417,757
Ending	\$ 43,000,000	\$ 35,487,523	\$ 187,902	\$ 23,522,742	\$ 102,198,167	\$ 88,099,999	\$ 34,993,629	\$ 11,419,656	\$ 20,938,233	\$ 155,451,517

See notes to financial statements.

**SOUTH CAROLINA CENTERS OF ECONOMIC EXCELLENCE
STATEMENT OF PROGRAM REVENUES AND EXPENDITURES - CONSOLIDATED SUMMARY
YEAR ENDING JUNE 30, 2016**

	University of South Carolina					Total - Consolidated Summary				
	State Endowment	Non-State Endowment	Non-State Expendable	Endowment Earnings	Total	State Endowment	Non-State Endowment	Non-State Expendable	Endowment Earnings	Total
Contribution Revenue										
State funds	\$ -	\$ 3,500	\$ 712	\$ -	\$ 4,212	\$ 1,048,942	\$ 3,500	\$ 712	\$ -	\$ 1,053,154
Non-state matching funds	-	1,076,800	-	1,277,000	2,353,800	700,000	1,799,000	43,064	1,277,000	3,819,064
Total contribution revenue	-	1,080,300	712	1,277,000	2,358,012	1,748,942	1,802,500	43,776	1,277,000	4,872,218
Investment Income										
Realized gain (loss)	-	-	-	1,026,569	1,026,569	-	-	-	6,399,750	6,399,750
Unrealized gain (loss)	-	-	4,017	(2,087,866)	(2,083,849)	-	-	4,017	(16,921,471)	(16,917,454)
Endowment income	-	-	-	2,542,839	2,542,839	-	-	-	4,491,107	4,491,107
Total investment income (loss)	-	-	4,017	1,481,542	1,485,559	-	-	4,017	(6,030,614)	(6,026,597)
Total revenue	-	1,080,300	4,729	2,758,542	3,843,571	1,748,942	1,802,500	47,793	(4,753,614)	(1,154,379)
Expenditures										
Personal services	-	-	11,655	1,825,605	1,837,260	-	-	166,801	3,997,812	4,164,613
Fringe	-	-	76	304,053	304,129	-	-	55,753	1,174,161	1,229,914
Travel	-	-	3,060	173,754	176,814	-	-	6,638	286,104	292,742
Supplies	-	-	83,389	105,456	188,845	-	-	84,900	753,163	838,063
Contractual	-	-	(87,300)	388,542	301,242	-	-	(87,240)	594,630	507,390
Tuition assistance	-	-	-	125,821	125,821	-	-	-	244,516	244,516
Fixed charges	-	-	4,405	13,074	17,479	-	-	4,405	13,074	17,479
Administrative fees	-	-	-	411,685	411,685	-	-	80,909	1,575,910	1,656,819
Other	-	-	(7,176)	167,508	160,332	-	-	43,333	893,503	936,836
Facilities	-	-	-	-	-	-	-	14	648,106	648,120
Equipment	-	-	-	553,515	553,515	-	-	14	1,039,557	1,039,571
Total expenditures	-	-	8,109	4,069,013	4,077,122	-	-	355,527	11,220,536	11,576,063
Program net income (loss)	-	1,080,300	(3,380)	(1,310,471)	(233,551)	1,748,942	1,802,500	(307,734)	(15,974,150)	(12,730,442)
Transfers	-	-	-	-	-	-	-	-	-	-
Prior Period Adjustment	-	-	-	-	-	-	-	-	-	-
Cumulative Program Net Income										
Beginning	66,500,000	29,865,163	1,953,409	14,978,893	113,297,465	195,851,057	99,624,115	13,865,321	74,103,547	383,444,040
Ending	\$ 66,500,000	\$ 30,945,463	\$ 1,950,029	\$ 13,668,422	\$ 113,063,914	\$ 197,599,999	\$ 101,426,615	\$ 13,557,587	\$ 58,129,397	\$ 370,713,598

See notes to financial statements.

SOUTH CAROLINA CENTERS OF ECONOMIC EXCELLENCE
CLEMSON UNIVERSITY
STATEMENT OF PROGRAM REVENUES AND EXPENDITURES
YEAR ENDING JUNE 30, 2016

	Automotive Design and Development					Automotive Manufacturing Integration				
	State Endowment	Non-State Endowment	Non-State Expendable	Endowment Earnings	Total	State Endowment	Non-State Endowment	Non-State Expendable	Endowment Earnings	Total
Contribution Revenue										
State funds	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Non-state matching funds	-	-	-	-	-	-	-	-	-	-
Total contribution revenue	-	-	-	-	-	-	-	-	-	-
Investment Income										
Realized gain (loss)	-	-	-	84,608	84,608	-	-	-	110,185	110,185
Unrealized gain (loss)	-	-	-	(353,178)	(353,178)	-	-	-	(447,989)	(447,989)
Endowment income	-	-	-	20,750	20,750	-	-	-	22,876	22,876
Total investment income (loss)	-	-	-	(247,820)	(247,820)	-	-	-	(314,928)	(314,928)
Total revenue	-	-	-	(247,820)	(247,820)	-	-	-	(314,928)	(314,928)
Expenditures										
Personal services	-	-	-	23,815	23,815	-	-	-	23,134	23,134
Fringe	-	-	-	7,676	7,676	-	-	-	10,319	10,319
Travel	-	-	-	14,959	14,959	-	-	-	2,336	2,336
Supplies	-	-	-	1,518	1,518	-	-	-	1,394	1,394
Tuition assistance	-	-	-	1,818	1,818	-	-	-	57,389	57,389
Administrative fees	-	-	-	-	-	-	-	-	-	-
Other	-	-	-	96,358	96,358	-	-	-	108,615	108,615
Facilities	-	-	-	-	-	-	-	-	-	-
Equipment	-	-	-	5,244	5,244	-	-	-	5,244	5,244
Total expenses	-	-	-	151,388	151,388	-	-	-	208,431	208,431
Program net income (loss)	-	-	-	(399,208)	(399,208)	-	-	-	(523,359)	(523,359)
Transfers	-	-	-	-	-	-	-	-	-	-
Cumulative Program Net Income										
Beginning	5,000,000	2,845,991	-	2,597,044	10,443,035	5,000,000	5,000,000	-	3,334,850	13,334,850
Ending	\$ 5,000,000	\$ 2,845,991	\$ -	\$ 2,197,836	\$ 10,043,827	\$ 5,000,000	\$ 5,000,000	\$ -	\$ 2,811,491	\$ 12,811,491

See notes to financial statements.

SOUTH CAROLINA CENTERS OF ECONOMIC EXCELLENCE
CLEMSON UNIVERSITY
STATEMENT OF PROGRAM REVENUES AND EXPENDITURES
YEAR ENDING JUNE 30, 2016

	Automotive Systems Integration					Optical Materials				
	State Endowment	Non-State Endowment	Non-State Expendable	Endowment Earnings	Total	State Endowment	Non-State Endowment	Non-State Expendable	Endowment Earnings	Total
Contribution Revenue										
State funds	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Non-state matching funds	-	-	-	-	-	-	-	-	-	-
Total contribution revenue	-	-	-	-	-	-	-	-	-	-
Investment Income										
Realized gain (loss)	-	-	-	118,457	118,457	-	-	-	84,279	84,279
Unrealized gain (loss)	-	-	-	(481,108)	(481,108)	-	-	-	(355,104)	(355,104)
Endowment income	-	-	-	24,599	24,599	-	-	-	21,325	21,325
Total investment income (loss)	-	-	-	(338,052)	(338,052)	-	-	-	(249,500)	(249,500)
Total revenue	-	-	-	(338,052)	(338,052)	-	-	-	(249,500)	(249,500)
Expenditures										
Personal services	-	-	-	78,327	78,327	-	-	-	106,070	106,070
Fringe	-	-	-	25,245	25,245	-	-	-	36,240	36,240
Travel	-	-	-	4,190	4,190	-	-	-	21,596	21,596
Supplies	-	-	-	54,324	54,324	-	-	-	45,781	45,781
Tuition assistance	-	-	-	26,383	26,383	-	-	-	17,721	17,721
Administrative fees	-	-	-	-	-	-	-	-	-	-
Other	-	-	-	119,658	119,658	-	-	-	39,202	39,202
Facilities	-	-	-	-	-	-	-	-	125,000	125,000
Equipment	-	-	-	17,161	17,161	-	-	-	87,168	87,168
Total expenses	-	-	-	325,288	325,288	-	-	-	478,778	478,778
Program net income (loss)	-	-	-	(663,340)	(663,340)	-	-	-	(728,278)	(728,278)
Transfers	-	-	-	-	-	-	-	-	-	-
Cumulative Program Net Income										
Beginning	5,000,000	5,000,000	114,921	4,225,094	14,340,015	5,000,000	3,050,852	14,384	3,465,425	11,530,661
Ending	\$ 5,000,000	\$ 5,000,000	\$ 114,921	\$ 3,561,754	\$ 13,676,675	\$ 5,000,000	\$ 3,050,852	\$ 14,384	\$ 2,737,147	\$ 10,802,383

See notes to financial statements.

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	Vehicle Electronic Systems				Supply Chain Optimization and Logistics					
	State Endowment	Non-State Endowment	Non-State Expendable	Endowment Earnings	Total	State Endowment	Non-State Endowment	Non-State Expendable	Endowment Earnings	Total
Contribution Revenue										
State funds	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Non-state matching funds	-	-	-	-	-	-	-	-	-	-
Total contribution revenue	-	-	-	-	-	-	-	-	-	-
Investment Income										
Realized gain (loss)	-	-	-	54,253	54,253	-	-	-	44,090	44,090
Unrealized gain (loss)	-	-	-	(225,560)	(225,560)	-	-	-	(178,586)	(178,586)
Endowment income	-	-	-	12,961	12,961	-	-	-	10,498	10,498
Total investment income (loss)	-	-	-	(158,346)	(158,346)	-	-	-	(123,998)	(123,998)
Total revenue	-	-	-	(158,346)	(158,346)	-	-	-	(123,998)	(123,998)
Expenditures										
Personal services	-	-	-	-	-	-	-	-	110,463	110,463
Fringe	-	-	-	-	-	-	-	-	32,129	32,129
Travel	-	-	-	3,306	3,306	-	-	-	11,393	11,393
Supplies	-	-	-	1,394	1,394	-	-	-	1,926	1,926
Tuition assistance	-	-	-	-	-	-	-	-	698	698
Administrative fees	-	-	-	-	-	-	-	-	-	-
Other	-	-	-	103,588	103,588	-	-	-	9,994	9,994
Facilities	-	-	-	-	-	-	-	-	-	-
Equipment	-	-	-	5,244	5,244	-	-	-	3,414	3,414
Total expenses	-	-	-	113,532	113,532	-	-	-	170,017	170,017
Program net income (loss)	-	-	-	(271,878)	(271,878)	-	-	-	(294,015)	(294,015)
Transfers	-	-	-	-	-	-	-	-	-	-
Cumulative Program Net Income										
Beginning	3,000,000	2,000,000	-	1,735,779	6,735,779	2,000,000	2,000,000	-	1,213,276	5,213,276
Ending	\$ 3,000,000	\$ 2,000,000	\$ -	\$ 1,463,901	\$ 6,463,901	\$ 2,000,000	\$ 2,000,000	\$ -	\$ 919,261	\$ 4,919,261

See notes to financial statements.

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	Urban Ecology and Restoration				Advanced Fiber-Based Materials					
	State Endowment	Non-State Endowment	Non-State Expendable	Endowment Earnings	Total	State Endowment	Non-State Endowment	Non-State Expendable	Endowment Earnings	Total
Contribution Revenue										
State funds	\$ -	-	\$ -	-	\$ -	\$ -	-	\$ -	-	\$ -
Non-state matching funds	-	-	-	-	-	-	-	-	-	-
Total contribution revenue	-	-	-	-	-	-	-	-	-	-
Investment Income										
Realized gain (loss)	-	-	-	44,810	44,810	-	-	-	81,304	81,304
Unrealized gain (loss)	-	-	-	(180,695)	(180,695)	-	-	-	(332,615)	(332,615)
Endowment income	-	-	-	11,509	11,509	-	-	-	21,312	21,312
Total investment income (loss)	-	-	-	(124,376)	(124,376)	-	-	-	(229,999)	(229,999)
Total revenue	-	-	-	(124,376)	(124,376)	-	-	-	(229,999)	(229,999)
Expenditures										
Personal services	-	-	-	14,026	14,026	-	-	-	119,757	119,757
Fringe	-	-	-	3,754	3,754	-	-	-	32,827	32,827
Travel	-	-	-	2,238	2,238	-	-	-	6,860	6,860
Supplies	-	-	-	-	-	-	-	661	1,667	2,328
Tuition assistance	-	-	-	-	-	-	-	-	-	-
Administrative fees	-	-	-	-	-	-	-	-	-	-
Other	-	-	-	9,020	9,020	-	-	503	17,300	17,803
Facilities	-	-	-	-	-	-	-	-	-	-
Equipment	-	-	-	-	-	-	-	-	-	-
Total expenses	-	-	-	29,038	29,038	-	-	1,164	178,411	179,575
Program net income (loss)	-	-	-	(153,414)	(153,414)	-	-	(1,164)	(408,410)	(409,574)
Transfers	-	-	-	-	-	-	-	-	-	-
Cumulative Program Net Income										
Beginning	2,000,000	2,000,000	-	1,349,864	5,349,864	4,000,000	3,482,500	59,761	2,895,461	10,437,722
Ending	\$ 2,000,000	\$ 2,000,000	\$ -	\$ 1,196,450	\$ 5,196,450	\$ 4,000,000	\$ 3,482,500	\$ 58,597	\$ 2,487,051	\$ 10,028,148

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	Health Facilities Design and Testing				Optoelectronics					
	State Endowment	Non-State Endowment	Non-State Expendable	Endowment Earnings	Total	State Endowment	Non-State Endowment	Non-State Expendable	Endowment Earnings	Total
Contribution Revenue										
State funds	\$	-	\$	-	\$	-	\$	-	\$	\$
Non-state matching funds		-	-	-	-	-	-	-	-	-
Total contribution revenue										
Investment Income										
Realized gain (loss)	-	-	-	42,731	42,731	-	-	-	45,093	45,093
Unrealized gain (loss)	-	-	-	(196,554)	(196,554)	-	-	-	(182,080)	(182,080)
Endowment income	-	-	-	15,645	15,645	-	-	-	9,885	9,885
Total investment income (loss)	-	-	-	(138,178)	(138,178)	-	-	-	(127,102)	(127,102)
Total revenue	-	-	-	(138,178)	(138,178)	-	-	-	(127,102)	(127,102)
Expenditures										
Personal services	-	-	-	44,720	44,720	-	-	-	18,200	18,200
Fringe	-	-	-	14,973	14,973	-	-	-	3,377	3,377
Travel	-	-	-	9,722	9,722	-	-	-	-	-
Supplies	-	-	-	-	-	-	-	-	16,077	16,077
Tuition assistance	-	-	-	5,220	5,220	-	-	-	9,466	9,466
Administrative fees	-	-	-	-	-	-	-	-	-	-
Other	-	-	-	119,469	119,469	-	-	-	85,203	85,203
Facilities	-	-	-	-	-	-	-	-	-	-
Equipment	-	-	-	4,542	4,542	-	-	-	33,238	33,238
Total expenses	-	-	-	198,646	198,646	-	-	-	165,561	165,561
Program net income (loss)	-	-	-	(336,824)	(336,824)	-	-	-	(292,663)	(292,663)
Transfers	-	-	-	-	-	-	-	-	-	-
Cumulative Program Net Income										
Beginning	2,000,000	2,000,000	-	1,902,808	5,902,808	2,000,000	2,006,799	-	1,553,753	5,560,552
Ending	\$ 2,000,000	\$ 2,000,000	\$ -	\$ 1,565,984	\$ 5,565,984	\$ 2,000,000	\$ 2,006,799	\$ -	\$ 1,261,090	\$ 5,267,889

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	Cyber-Institute				Sustainable Development					
	State Endowment	Non-State Endowment	Non-State Expendable	Endowment Earnings	Total	State Endowment	Non-State Endowment	Non-State Expendable	Endowment Earnings	Total
Contribution Revenue										
State funds	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Non-state matching funds	-	-	-	-	-	-	-	-	-	-
Total contribution revenue	-	-	-	-	-	-	-	-	-	-
Investment Income										
Realized gain (loss)	-	-	-	33,083	33,083	-	-	-	77,095	77,095
Unrealized gain (loss)	-	-	-	(134,600)	(134,600)	-	-	-	(317,762)	(317,762)
Endowment income	-	-	-	9,166	9,166	-	-	-	18,833	18,833
Total investment income (loss)	-	-	-	(92,351)	(92,351)	-	-	-	(221,834)	(221,834)
Total revenue	-	-	-	(92,351)	(92,351)	-	-	-	(221,834)	(221,834)
Expenditures										
Personal services	-	-	-	-	-	-	-	-	44,579	44,579
Fringe	-	-	-	-	-	-	-	-	13,863	13,863
Travel	-	-	-	-	-	-	-	-	519	519
Supplies	-	-	-	-	-	-	-	-	-	-
Tuition assistance	-	-	-	-	-	-	-	-	-	-
Administrative fees	-	-	-	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-	8,583	8,583
Facilities	-	-	-	-	-	-	-	-	-	-
Equipment	-	-	-	-	-	-	-	-	-	-
Total expenses	-	-	-	-	-	-	-	-	67,544	67,544
Program net income (loss)	-	-	-	(92,351)	(92,351)	-	-	-	(289,378)	(289,378)
Transfers	-	-	-	-	-	-	-	-	-	-
Cumulative Program Net Income										
Beginning	2,000,000	1,089,923	-	1,003,408	4,093,331	4,000,000	3,011,458	-	2,513,301	9,524,759
Ending	\$ 2,000,000	\$ 1,089,923	\$ -	\$ 911,057	\$ 4,000,980	\$ 4,000,000	\$ 3,011,458	\$ -	\$ 2,223,923	\$ 9,235,381

See notes to financial statements.

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	Duke Energy Smart Grid				Total - Clemson University					
	State Endowment	Non-State Endowment	Non-State Expendable	Endowment Earnings	Total	State Endowment	Non-State Endowment	Non-State Expendable	Endowment Earnings	Total
Contribution Revenue										
State funds	\$ -	-	\$ -	-	\$ -	\$ -	-	\$ -	-	\$ -
Non-state matching funds	-	-	-	-	-	-	-	-	-	-
Total contribution revenue	-	-	-	-	-	-	-	-	-	-
Investment Income										
Realized gain (loss)	-	-	-	37,337	37,337	-	-	-	857,325	857,325
Unrealized gain (loss)	-	-	-	(145,824)	(145,824)	-	-	-	(3,531,655)	(3,531,655)
Endowment income	-	-	-	32,118	32,118	-	-	-	231,477	231,477
Total investment income (loss)	-	-	-	(76,369)	(76,369)	-	-	-	(2,442,853)	(2,442,853)
Total revenue	-	-	-	(76,369)	(76,369)	-	-	-	(2,442,853)	(2,442,853)
Expenditures										
Personal services	-	-	-	-	-	-	-	-	583,091	583,091
Fringe	-	-	-	-	-	-	-	-	180,403	180,403
Travel	-	-	-	-	-	-	-	-	77,119	77,119
Supplies	-	-	-	-	-	-	-	661	124,081	124,742
Tuition assistance	-	-	-	-	-	-	-	-	118,695	118,695
Administrative fees	-	-	-	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	503	716,990	717,493
Facilities	-	-	-	-	-	-	-	-	125,000	125,000
Equipment	-	-	-	-	-	-	-	-	161,255	161,255
Total expenses	-	-	-	-	-	-	-	1,164	2,086,634	2,087,798
Program net income (loss)	-	-	-	(76,369)	(76,369)	-	-	(1,164)	(4,529,487)	(4,530,651)
Transfers	-	-	-	-	-	-	-	-	-	-
Cumulative Program Net Income										
Beginning	2,000,000	2,000,000	-	262,166	4,262,166	43,000,000	35,487,523	189,066	28,052,229	106,728,818
Ending	\$ 2,000,000	\$ 2,000,000	\$ -	\$ 185,797	\$ 4,185,797	\$ 43,000,000	\$ 35,487,523	\$ 187,902	\$ 23,522,742	\$ 102,198,167

See notes to financial statements.

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	Proteomics			Neurosciences		
	State Endowment	Non-State Endowment	Non-State Expendable	Endowment Earnings	Non-State Expendable	Total
Contribution Revenue						
State funds	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Non-state matching funds	-	-	-	-	-	-
Total contribution revenue	-	-	-	-	-	-
Investment Income						
Realized gain (loss)	-	-	-	232,890	-	232,890
Unrealized gain (loss)	-	-	-	(483,257)	-	(483,257)
Endowment income	-	-	-	311,848	-	311,848
Total investment income (loss)	-	-	-	61,481	-	61,481
Total revenue	-	-	-	61,481	-	61,481
Expenditures						
Personal services	-	-	-	44,722	-	44,722
Fringe	-	-	-	55,307	-	55,307
Travel	-	-	-	15,342	-	15,342
Supplies	-	-	-	17,947	-	17,947
Contractual	-	-	-	-	-	-
Administrative fees	-	-	-	61,141	13	61,141
Other	-	-	-	9,176	6	9,176
Facilities	-	-	-	-	-	-
Equipment	-	-	-	-	-	-
Total expenditures	-	-	-	203,635	19	203,635
Program net income (loss)	-	-	-	(142,154)	(19)	(142,154)
Transfers	-	-	-	-	-	-
Cumulative Program Net Income						
Beginning	4,000,000	1,254,266	660,098	1,514,156	770,848	5,946,722
Ending	\$ 4,000,000	\$ 1,254,266	\$ 660,098	\$ 1,372,002	\$ 770,829	\$ 5,701,419

See notes to financial statements.

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	Marine Genomics				Regenerative Medicine					
	State Endowment	Non-State Endowment	Non-State Expendable	Endowment Earnings	Total	State Endowment	Non-State Endowment	Non-State Expendable	Endowment Earnings	Total
Contribution Revenue										
State funds	\$	-	\$	-	\$	\$	-	\$	-	\$
Non-state matching funds		-	-	-	-	-	-	-	-	-
Total contribution revenue		-	-	-	-	-	-	-	-	-
Investment Income										
Realized gain (loss)		-	-	163,350	163,350		-	-	254,395	254,395
Unrealized gain (loss)		-	-	(368,534)	(368,534)		-	-	(569,139)	(569,139)
Endowment income		-	-	52,204	52,204		-	-	105,733	105,733
Total investment income (loss)		-	-	(152,980)	(152,980)		-	-	(209,011)	(209,011)
Total revenue		-	-	(152,980)	(152,980)		-	-	(209,011)	(209,011)
Expenditures										
Personal services		-	-	326,953	326,953		-	-	10,000	10,000
Fringe		-	-	21,259	21,259		-	-	620	620
Travel		-	-	120	120		-	-	6,607	6,607
Supplies		-	-	(6,930)	(6,930)		-	-	26,645	26,645
Contractual		-	-	-	-		-	-	271	271
Administrative fees		-	-	73,412	73,412		-	-	60,356	60,356
Other		-	-	-	-		-	-	7,650	7,650
Facilities		-	-	160	160		-	-	125	125
Equipment		-	-	-	-		-	-	2,190	2,190
Total expenditures		-	-	414,974	414,974		-	-	114,464	114,464
Program net income (loss)		-	-	(567,954)	(567,954)		-	-	(323,475)	(323,475)
Transfers		-	-	-	-		-	-	-	-
Cumulative Program Net Income										
Beginning	4,000,000	1,500,000	-	1,724,180	7,224,180	5,000,000	2,000,000	159,108	2,180,909	9,340,017
Ending	\$ 4,000,000	\$ 1,500,000	\$ -	\$ 1,156,226	\$ 6,656,226	\$ 5,000,000	\$ 2,000,000	\$ 159,108	\$ 1,857,434	\$ 9,016,542

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	Translational Cancer Therapeutics				Drug Discovery in Cancer					
	State Endowment	Non-State Endowment	Non-State Expendable	Endowment Earnings	Total	State Endowment	Non-State Endowment	Non-State Expendable	Endowment Earnings	Total
Contribution Revenue										
State funds	\$	-	\$	-	\$	-	\$	-	\$	-
Non-state matching funds		-	-	-	-	-	-	-	-	-
Total contribution revenue		-	-	-	-	-	-	-	-	-
Investment Income										
Realized gain (loss)	-	-	-	14,452	14,452	-	-	-	288,645	288,645
Unrealized gain (loss)	-	-	-	(1,338,431)	(1,338,431)	-	-	-	(600,506)	(600,506)
Endowment income	-	-	-	30,737	30,737	-	-	-	92,298	92,298
Total investment income (loss)	-	-	-	(1,293,242)	(1,293,242)	-	-	-	(219,563)	(219,563)
Total revenue	-	-	-	(1,293,242)	(1,293,242)	-	-	-	(219,563)	(219,563)
Expenditures										
Personal services	-	-	-	108,545	108,545	-	-	-	119,871	119,871
Fringe	-	-	-	65,792	65,792	-	-	-	39,748	39,748
Travel	-	-	-	-	-	-	-	-	(1,029)	(1,029)
Supplies	-	-	-	(802)	(802)	-	-	-	6,710	6,710
Contractual	-	-	-	69,230	69,230	-	-	-	-	-
Administrative fees	-	-	-	-	-	-	-	-	75,823	75,823
Other	-	-	-	-	-	-	-	-	(188,238)	(188,238)
Facilities	-	-	-	-	-	-	-	-	-	-
Equipment	-	-	-	-	-	-	-	-	4,488	4,488
Total expenditures	-	-	-	242,765	242,765	-	-	-	57,373	57,373
Program net income (loss)	-	-	-	(1,536,007)	(1,536,007)	-	-	-	(276,936)	(276,936)
Transfers	-	-	-	-	-	-	-	-	-	-
Cumulative Program Net Income										
Beginning	5,000,000	1,998,095	-	1,846,614	8,844,709	5,000,000	1,604,510	-	1,798,462	8,402,972
Ending	\$ 5,000,000	\$ 1,998,095	\$ -	\$ 310,607	\$ 7,308,702	\$ 5,000,000	\$ 1,604,510	\$ -	\$ 1,521,526	\$ 8,126,036

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	Gastrointestinal Cancer Diagnostics				Vision Science					
	State Endowment	Non-State Endowment	Non-State Expendable	Endowment Earnings	Total	State Endowment	Non-State Endowment	Non-State Expendable	Endowment Earnings	Total
Contribution Revenue										
State funds	\$	-	\$	-	\$	\$	-	\$	-	\$
Non-state matching funds		-	-	-	-	-	-	-	-	-
Total contribution revenue		-	-	-	-	-	-	-	-	-
Investment Income										
Realized gain (loss)	-	-	-	306,868	306,868	-	-	-	277,797	277,797
Unrealized gain (loss)	-	-	-	(638,615)	(638,615)	-	-	-	(576,246)	(576,246)
Endowment income	-	-	-	98,265	98,265	-	-	-	88,837	88,837
Total investment income (loss)	-	-	-	(233,482)	(233,482)	-	-	-	(209,612)	(209,612)
Total revenue	-	-	-	(233,482)	(233,482)	-	-	-	(209,612)	(209,612)
Expenditures										
Personal services	-	-	155,146	-	155,146	-	-	-	88,005	88,005
Fringe	-	-	55,677	-	55,677	-	-	-	24,699	24,699
Travel	-	-	3,578	-	3,578	-	-	-	2,924	2,924
Supplies	-	-	850	-	850	-	-	-	13,905	13,905
Contractual	-	-	60	-	60	-	-	-	-	-
Administrative fees	-	-	80,896	-	80,896	-	-	-	72,920	72,920
Other	-	-	-	-	-	-	-	-	-	-
Facilities	-	-	-	-	-	-	-	-	-	-
Equipment	-	-	-	-	-	-	-	-	19,999	19,999
Total expenditures	-	-	296,207	-	296,207	-	-	-	222,452	222,452
Program net income (loss)	-	-	(296,207)	(233,482)	(529,689)	-	-	-	(432,064)	(432,064)
Transfers	-	-	351,486	(351,486)	-	-	-	-	-	-
Cumulative Program Net Income										
Beginning	5,000,000	2,000,000	477,955	2,024,116	9,502,071	4,500,000	1,883,774	787,737	1,706,104	8,877,615
Ending	\$ 5,000,000	\$ 2,000,000	\$ 533,234	\$ 1,439,148	\$ 8,972,382	\$ 4,500,000	\$ 1,883,774	\$ 787,737	\$ 1,274,040	\$ 8,445,551

See notes to financial statements.

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	Clinical Effectiveness and Patient Safety					Molecular Proteomics in Cardiovascular Disease and Prevention				
	State Endowment	Non-State Endowment	Non-State Expendable	Endowment Earnings	Total	State Endowment	Non-State Endowment	Non-State Expendable	Endowment Earnings	Total
Contribution Revenue										
State funds	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Non-state matching funds	-	-	-	-	-	-	1,000	-	-	1,000
Total contribution revenue	-	-	-	-	-	-	1,000	-	-	1,000
Investment Income										
Realized gain (loss)	-	-	-	308,518	308,518	-	-	-	351,582	351,582
Unrealized gain (loss)	-	-	-	(644,310)	(644,310)	-	-	-	(730,645)	(730,645)
Endowment income	-	-	-	98,568	98,568	-	-	-	112,686	112,686
Total investment income (loss)	-	-	-	(237,224)	(237,224)	-	-	-	(266,377)	(266,377)
Total revenue	-	-	-	(237,224)	(237,224)	-	1,000	-	(266,377)	(265,377)
Expenditures										
Personal services	-	-	-	172,387	172,387	-	-	-	77,815	77,815
Fringe	-	-	-	62,557	62,557	-	-	-	164,782	164,782
Travel	-	-	-	(11,807)	(11,807)	-	-	-	6,371	6,371
Supplies	-	-	-	98	98	-	-	-	2,696	2,696
Contractual	-	-	-	25,882	25,882	-	-	-	-	-
Administrative fees	-	-	-	81,117	81,117	-	-	-	92,859	92,859
Other	-	-	-	(18,460)	(18,460)	-	-	-	3,564	3,564
Facilities	-	-	-	-	-	-	-	-	-	-
Equipment	-	-	-	(23,859)	(23,859)	-	-	-	162,756	162,756
Total expenditures	-	-	-	287,915	287,915	-	-	-	510,843	510,843
Program net income (loss)	-	-	-	(525,139)	(525,139)	-	1,000	-	(777,220)	(776,220)
Transfers	-	-	-	-	-	-	-	-	-	-
Cumulative Program Net Income										
Beginning	5,000,000	2,000,000	-	1,458,242	8,458,242	5,000,000	3,516,805	1,197,319	2,206,911	11,921,035
Ending	\$ 5,000,000	\$ 2,000,000	\$ -	\$ 933,103	\$ 7,933,103	\$ 5,000,000	\$ 3,517,805	\$ 1,197,319	\$ 1,429,691	\$ 11,144,815

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	Tobacco-Related Malignancy					Stroke				
	State Endowment	Non-State Endowment	Non-State Expendable	Endowment Earnings	Total	State Endowment	Non-State Endowment	Non-State Expendable	Endowment Earnings	Total
Contribution Revenue										
State funds	\$	-	\$	-	\$	\$	-	\$	-	\$
Non-state matching funds	-	-	42,784	-	42,784	-	-	-	-	-
Total contribution revenue	-	-	42,784	-	42,784	-	-	-	-	-
Investment Income										
Realized gain (loss)	-	-	-	81,611	81,611	-	-	-	337,721	337,721
Unrealized gain (loss)	-	-	-	(487,257)	(487,257)	-	-	-	(702,548)	(702,548)
Endowment income	-	-	-	18,352	18,352	-	-	-	108,161	108,161
Total investment income (loss)	-	-	-	(387,294)	(387,294)	-	-	-	(256,666)	(256,666)
Total revenue	-	-	42,784	(387,294)	(344,510)	-	-	-	(256,666)	(256,666)
Expenditures										
Personal services	-	-	-	132,773	132,773	-	-	-	75,651	75,651
Fringe	-	-	-	1,670	1,670	-	-	-	26,102	26,102
Travel	-	-	-	-	-	-	-	-	-	-
Supplies	-	-	-	42,150	42,150	-	-	-	-	-
Contractual	-	-	-	32,198	32,198	-	-	-	78,507	78,507
Administrative fees	-	-	-	89,762	89,762	-	-	-	88,764	88,764
Other	-	-	-	9,454	9,454	-	-	50,000	-	50,000
Facilities	-	-	-	522,821	522,821	-	-	-	-	-
Equipment	-	-	-	2,050	2,050	-	-	-	-	-
Total expenditures	-	-	-	832,878	832,878	-	-	50,000	269,024	319,024
Program net income (loss)	-	-	42,784	(1,220,172)	(1,177,388)	-	-	(50,000)	(525,690)	(575,690)
Transfers	-	-	-	-	-	-	-	382,438	(382,438)	-
Cumulative Program Net Income										
Beginning	5,000,000	1,671,812	1,581,120	2,301,347	10,554,279	5,000,000	2,500,000	321,813	1,989,117	9,810,930
Ending	\$ 5,000,000	\$ 1,671,812	\$ 1,623,904	\$ 1,081,175	\$ 9,376,891	\$ 5,000,000	\$ 2,500,000	\$ 654,251	\$ 1,080,989	\$ 9,235,240

See notes to financial statements.

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	Renal Disease Biomarker					Cancer Stem Cell Biology and Therapy				
	State Endowment	Non-State Endowment	Non-State Expendable	Endowment Earnings	Total	State Endowment	Non-State Endowment	Non-State Expendable	Endowment Earnings	Total
Contribution Revenue										
State funds	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Non-state matching funds	-	250	280	-	530	-	9,200	-	-	9,200
Total contribution revenue	-	250	280	-	530	-	9,200	-	-	9,200
Investment Income										
Realized gain (loss)	-	-	-	88,557	88,557	-	-	-	292,360	292,360
Unrealized gain (loss)	-	-	-	(427,111)	(427,111)	-	-	-	(609,363)	(609,363)
Endowment income	-	-	-	22,987	22,987	-	-	-	93,458	93,458
Total investment income (loss)	-	-	-	(315,567)	(315,567)	-	-	-	(223,545)	(223,545)
Total revenue	-	250	280	(315,567)	(315,037)	-	9,200	-	(223,545)	(214,345)
Expenditures										
Personal services	-	-	-	30,745	30,745	-	-	-	82,452	82,452
Fringe	-	-	-	19,211	19,211	-	-	-	50,927	50,927
Travel	-	-	-	4,582	4,582	-	-	-	-	-
Supplies	-	-	-	50,576	50,576	-	-	-	151,539	151,539
Contractual	-	-	-	-	-	-	-	-	-	-
Administrative fees	-	-	-	-	-	-	-	-	76,762	76,762
Other	-	-	-	57,372	57,372	-	-	-	16,531	16,531
Facilities	-	-	14	14	14	-	-	-	-	-
Equipment	-	-	14	16,252	16,266	-	-	-	86,238	86,238
Total expenditures	-	-	28	178,738	178,766	-	-	-	464,449	464,449
Program net income (loss)	-	250	252	(494,305)	(493,803)	-	9,200	-	(687,994)	(678,794)
Transfers	-	-	-	-	-	-	-	-	-	-
Cumulative Program Net Income										
Beginning	5,000,000	1,413,207	967,278	1,345,673	8,726,158	5,000,000	1,530,236	1,576,255	1,314,295	9,420,786
Ending	\$ 5,000,000	\$ 1,413,457	\$ 967,530	\$ 851,368	\$ 8,232,355	\$ 5,000,000	\$ 1,539,436	\$ 1,576,255	\$ 626,301	\$ 8,741,992

See notes to financial statements.

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	Advanced Tissue Biofabrication				Medication Safety and Efficacy					
	State Endowment	Non-State Endowment	Non-State Expendable	Endowment Earnings	Total	State Endowment	Non-State Endowment	Non-State Expendable	Endowment Earnings	Total
Contribution Revenue										
State funds	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 400,000	\$ -	\$ -	\$ -	\$ 400,000
Non-state matching funds	-	-	-	-	-	-	-	-	-	-
Total contribution revenue	-	-	-	-	-	400,000	-	-	-	400,000
Investment Income										
Realized gain (loss)	-	-	-	286,417	286,417	-	-	-	110,783	110,783
Unrealized gain (loss)	-	-	-	(594,920)	(594,920)	-	-	-	(227,025)	(227,025)
Endowment income	-	-	-	91,643	91,643	-	-	-	34,872	34,872
Total investment income (loss)	-	-	-	(216,860)	(216,860)	-	-	-	(81,370)	(81,370)
Total revenue	-	-	-	(216,860)	(216,860)	400,000	-	-	(81,370)	318,630
Expenditures										
Personal services	-	-	-	21,432	21,432	-	-	-	-	-
Fringe	-	-	-	7,394	7,394	-	-	-	-	-
Travel	-	-	-	-	-	-	-	-	-	-
Supplies	-	-	-	5,253	5,253	-	-	-	42,408	42,408
Contractual	-	-	-	-	-	-	-	-	-	-
Administrative fees	-	-	-	75,339	75,339	-	-	-	27,531	27,531
Other	-	-	-	153	153	-	-	-	-	-
Facilities	-	-	-	-	-	-	-	-	-	-
Equipment	-	-	-	-	-	-	-	-	-	-
Total expenditures	-	-	-	109,571	109,571	-	-	-	69,939	69,939
Program net income (loss)	-	-	-	(326,431)	(326,431)	400,000	-	-	(151,309)	248,691
Transfers	-	-	-	-	-	-	-	-	-	-
Cumulative Program Net Income										
Beginning	5,000,000	1,200,000	75,000	2,107,941	8,382,941	1,600,000	600,000	137,344	406,608	2,743,952
Ending	\$ 5,000,000	\$ 1,200,000	\$ 75,000	\$ 1,781,510	\$ 8,056,510	\$ 2,000,000	\$ 600,000	\$ 137,344	\$ 255,299	\$ 2,992,643

See notes to financial statements.

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	Prostate Cancer Disparities					Lipidomics, Pathobiology and Therapy				
	State Endowment	Non-State Endowment	Non-State Expendable	Endowment Earnings	Total	State Endowment	Non-State Endowment	Non-State Expendable	Endowment Earnings	Total
Contribution Revenue										
State funds	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 648,942	\$ -	\$ -	\$ -	\$ 648,942
Non-state matching funds	-	-	-	-	-	700,000	700,000	-	-	1,400,000
Total contribution revenue	-	-	-	-	-	1,348,942	700,000	-	-	2,048,942
Investment Income										
Realized gain (loss)	-	-	-	207,060	207,060	-	-	-	319,622	319,622
Unrealized gain (loss)	-	-	-	(432,089)	(432,089)	-	-	-	(640,450)	(640,450)
Endowment income	-	-	-	65,998	65,998	-	-	-	100,633	100,633
Total investment income (loss)	-	-	-	(159,031)	(159,031)	-	-	-	(220,195)	(220,195)
Total revenue	-	-	-	(159,031)	(159,031)	1,348,942	700,000	-	(220,195)	1,828,747
Expenditures										
Personal services	-	-	-	25,723	25,723	-	-	-	94,815	94,815
Fringe	-	-	-	30,274	30,274	-	-	-	32,711	32,711
Travel	-	-	-	3,380	3,380	-	-	-	1,885	1,885
Supplies	-	-	-	-	-	-	-	-	169,829	169,829
Contractual	-	-	-	-	-	-	-	-	-	-
Administrative fees	-	-	-	54,353	54,353	-	-	-	77,985	77,985
Other	-	-	-	70,120	70,120	-	-	-	9,490	9,490
Facilities	-	-	-	-	-	-	-	-	-	-
Equipment	-	-	-	-	-	-	-	-	-	-
Total expenditures	-	-	-	183,850	183,850	-	-	-	386,715	386,715
Program net income (loss)	-	-	-	(342,881)	(342,881)	1,348,942	700,000	-	(606,910)	1,442,032
Transfers	-	-	-	-	-	-	-	-	-	-
Cumulative Program Net Income										
Beginning	3,600,000	1,080,000	9,769	1,116,426	5,806,195	3,651,058	2,751,075	(118,779)	1,099,746	7,383,100
Ending	\$ 3,600,000	\$ 1,080,000	\$ 9,769	\$ 773,545	\$ 5,463,314	\$ 5,000,000	\$ 3,451,075	\$ (118,779)	\$ 492,836	\$ 8,825,132

See notes to financial statements.

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	Inflammation and Fibrosis				Translational Biomedical Informatics					
	State Endowment	Non-State Endowment	Non-State Expendable	Endowment Earnings	Total	State Endowment	Non-State Endowment	Non-State Expendable	Endowment Earnings	Total
Contribution Revenue										
State funds	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Non-state matching funds	-	11,750	-	-	11,750	-	-	-	-	-
Total contribution revenue	-	11,750	-	-	11,750	-	-	-	-	-
Investment Income										
Realized gain (loss)	-	-	-	312,387	312,387	-	-	-	104,777	104,777
Unrealized gain (loss)	-	-	-	(649,563)	(649,563)	-	-	-	(216,640)	(216,640)
Endowment income	-	-	-	99,635	99,635	-	-	-	33,490	33,490
Total investment income (loss)	-	-	-	(237,541)	(237,541)	-	-	-	(78,373)	(78,373)
Total revenue	-	11,750	-	(237,541)	(225,791)	-	-	-	(78,373)	(78,373)
Expenditures										
Personal services	-	-	-	177,227	177,227	-	-	-	-	-
Fringe	-	-	-	86,652	86,652	-	-	-	-	-
Travel	-	-	-	3,439	3,439	-	-	-	3,417	3,417
Supplies	-	-	-	1,031	1,031	-	-	-	571	571
Contractual	-	-	-	-	-	-	-	-	-	-
Administrative fees	-	-	-	80,695	80,695	-	-	-	27,427	27,427
Other	-	-	-	19,954	19,954	-	-	-	589	589
Facilities	-	-	-	-	-	-	-	-	-	-
Equipment	-	-	-	1,869	1,869	-	-	-	-	-
Total expenditures	-	-	-	370,867	370,867	-	-	-	32,004	32,004
Program net income (loss)	-	11,750	-	(608,408)	(596,658)	-	-	-	(110,377)	(110,377)
Transfers	-	-	-	-	-	-	-	(8,116)	8,116	-
Cumulative Program Net Income										
Beginning	4,999,999	2,267,299	2,369,981	1,439,239	11,076,518	2,000,000	600,000	750,000	216,815	3,566,815
Ending	\$ 4,999,999	\$ 2,279,049	\$ 2,369,981	\$ 830,831	\$ 10,479,860	\$ 2,000,000	\$ 600,000	\$ 741,884	\$ 114,554	\$ 3,456,438

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	Total - Medical University of South Carolina				
	State Endowment	Non-State Endowment	Non-State Expendable	Endowment Earnings	Total
Contribution Revenue					
State funds	\$ 1,048,942	\$ -	\$ -	\$ -	\$ 1,048,942
Non-state matching funds	700,000	722,200	43,064	-	1,465,264
Total contribution revenue	1,748,942	722,200	43,064	-	2,514,206
Investment Income					
Realized gain (loss)	-	-	-	4,515,856	4,515,856
Unrealized gain (loss)	-	-	-	(11,301,950)	(11,301,950)
Endowment income	-	-	-	1,716,791	1,716,791
Total investment income (loss)	-	-	-	(5,069,303)	(5,069,303)
Total revenue	1,748,942	722,200	43,064	(5,069,303)	(2,555,097)
Expenditures					
Personal services	-	-	155,146	1,589,116	1,744,262
Fringe	-	-	55,677	689,705	745,382
Travel	-	-	3,578	35,231	38,809
Supplies	-	-	850	523,626	524,476
Contractual	-	-	60	206,088	206,148
Administrative fees	-	-	80,909	1,164,225	1,245,134
Other	-	-	50,006	9,005	59,011
Facilities	-	-	14	523,106	523,120
Equipment	-	-	14	324,787	324,801
Total expenditures	-	-	346,254	5,064,889	5,411,143
Program net income (loss)	1,748,942	722,200	(303,190)	(10,134,192)	(7,966,240)
Transfers	-	-	-	-	-
Cumulative Program Net Income					
Beginning	86,351,057	34,271,429	11,722,846	31,072,425	163,417,757
Ending	\$ 88,099,999	\$ 34,993,629	\$ 11,419,656	\$ 20,938,233	\$ 155,451,517

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	Nanostructures				Brain Imaging					
	State Endowment	Non-State Endowment	Non-State Expendable	Endowment Earnings	Total	State Endowment	Non-State Endowment	Non-State Expendable	Endowment Earnings	Total
Contribution Revenue										
State funds	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Non-state matching funds	-	-	-	-	-	-	-	-	-	-
Total contribution revenue	-	-	-	-	-	-	-	-	-	-
Investment Income										
Realized gain (loss)	-	-	-	63,559 (138,512)	63,559 (138,512)	-	-	-	80,698 (4,848)	80,698 (4,848)
Unrealized gain (loss)	-	-	-	166,711	166,711	-	-	-	27,634	27,634
Endowment income	-	-	-	91,758	91,758	-	-	-	103,484	103,484
Total investment income (loss)	-	-	-	91,758	91,758	-	-	-	103,484	103,484
Total revenue	-	-	-	91,758	91,758	-	-	-	103,484	103,484
Expenditures										
Personal services	-	-	-	201,848	201,848	-	-	-	120,337	120,337
Fringe	-	-	-	21,788	21,788	-	-	-	18,338	18,338
Travel	-	-	-	8,665	8,665	-	-	-	2,475	2,475
Supplies	-	-	-	36,009	36,009	-	-	-	13,757	13,757
Contractual	-	-	-	35,645	35,645	-	-	-	-	-
Tuition assistance	-	-	-	22,188	22,188	-	-	-	-	-
Fixed charges	-	-	-	327	327	-	-	-	-	-
Administrative fees	-	-	-	23,495	23,495	-	-	-	29,831	29,831
Other	-	-	-	1,420	1,420	-	-	-	126,404	126,404
Equipment	-	-	-	-	-	-	-	-	478,000	478,000
Total expenditures	-	-	-	351,385	351,385	-	-	-	789,142	789,142
Program net income (loss)	-	-	-	(259,627)	(259,627)	-	-	-	(685,658)	(685,658)
Transfers	-	-	-	-	-	-	-	-	-	-
Cumulative program net income beginning as previously stated	4,000,000	1,631,274	-	1,408,254	7,039,528	5,000,000	2,089,589	-	1,205,164	8,294,753
Ending	\$ 4,000,000	\$ 1,631,274	\$ -	\$ 1,148,627	\$ 6,779,901	\$ 5,000,000	\$ 2,089,589	\$ -	\$ 519,506	\$ 7,609,095

See notes to financial statements.

SOUTH CAROLINA CENTERS OF ECONOMIC EXCELLENCE
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	Polymer Nanocomposites				Hydrogen Fuel Cell Economy					
	State Endowment	Non-State Endowment	Non-State Expendable	Endowment Earnings	Total	State Endowment	Non-State Endowment	Non-State Expendable	Endowment Earnings	Total
Contribution Revenue										
State funds	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Non-state matching funds	-	2,800	-	25,000	27,800	-	-	-	-	-
Total contribution revenue	-	2,800	-	25,000	27,800	-	-	-	-	-
Investment Income										
Realized gain (loss)	-	-	-	24,782	24,782	-	-	-	-	-
Unrealized gain (loss)	-	-	-	(53,879)	(53,879)	-	-	4,017	-	4,017
Endowment income	-	-	-	124,995	124,995	-	-	-	182,935	182,935
Total investment income (loss)	-	-	-	95,898	95,898	-	-	4,017	182,935	186,952
Total revenue	-	2,800	-	120,898	123,698	-	-	4,017	182,935	186,952
Expenditures										
Personal services	-	-	7,878	142,246	150,124	-	-	-	5,923	5,923
Fringe	-	-	51	21,855	21,906	-	-	-	1,565	1,565
Travel	-	-	1,324	58,644	59,968	-	-	-	-	-
Supplies	-	-	-	26,303	26,303	-	-	-	-	-
Contractual	-	-	-	11,190	11,190	-	-	(98,726)	-	(98,726)
Tuition assistance	-	-	-	12,216	12,216	-	-	-	-	-
Fixed charges	-	-	-	3,002	3,002	-	-	-	-	-
Administrative fees	-	-	-	9,160	9,160	-	-	-	-	-
Other	-	-	(10,208)	3,774	(6,434)	-	-	-	-	-
Equipment	-	-	-	-	-	-	-	-	-	-
Total expenditures	-	-	(955)	288,390	287,435	-	-	(98,726)	7,488	(91,238)
Program net income (loss)	-	2,800	955	(167,492)	(163,737)	-	-	102,743	175,447	278,190
Transfers	-	-	-	-	-	-	-	-	-	-
Cumulative program net income beginning as previously stated	3,500,000	1,427,525	13,862	545,581	5,486,968	5,000,000	1,800,000	(4,017)	1,335,479	8,131,462
Ending	\$ 3,500,000	\$ 1,430,325	\$ 14,817	\$ 378,089	\$ 5,323,231	\$ 5,000,000	\$ 1,800,000	\$ 98,726	\$ 1,510,926	\$ 8,409,652

See notes to financial statements.

SOUTH CAROLINA CENTERS OF ECONOMIC EXCELLENCE
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	Tourism and Economic Development				Renewable Fuel Cells					
	State Endowment	Non-State Endowment	Non-State Expendable	Endowment Earnings	Total	State Endowment	Non-State Endowment	Non-State Expendable	Endowment Earnings	Total
Contribution Revenue										
State funds	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Non-state matching funds	-	-	-	-	-	-	-	-	-	-
Total contribution revenue	-	-	-	-	-	-	-	-	-	-
Investment Income										
Realized gain (loss)	-	-	-	51,213	51,213	-	-	-	59,804	59,804
Unrealized gain (loss)	-	-	-	(111,606)	(111,606)	-	-	-	(130,330)	(130,330)
Endowment income	-	-	-	86,167	86,167	-	-	-	126,602	126,602
Total investment income (loss)	-	-	-	25,774	25,774	-	-	-	56,076	56,076
Total revenue	-	-	-	25,774	25,774	-	-	-	56,076	56,076
Expenditures										
Personal services	-	-	-	124,643	124,643	-	-	-	161,855	161,855
Fringe	-	-	-	31,583	31,583	-	-	-	9,575	9,575
Travel	-	-	-	15,936	15,936	-	-	-	3,263	3,263
Supplies	-	-	-	(47,783)	(47,783)	-	-	-	25,319	25,319
Contractual	-	-	-	11,798	11,798	-	-	-	2,663	2,663
Tuition assistance	-	-	-	31,566	31,566	-	-	-	13,932	13,932
Fixed charges	-	-	-	1,820	1,820	-	-	-	4,314	4,314
Administrative fees	-	-	-	18,931	18,931	-	-	-	22,107	22,107
Other	-	-	-	-	-	-	-	-	-	-
Equipment	-	-	-	-	-	-	-	-	-	-
Total expenditures	-	-	-	188,494	188,494	-	-	-	243,028	243,028
Program net income (loss)	-	-	-	(162,720)	(162,720)	-	-	-	(186,952)	(186,952)
Transfers	-	-	-	-	-	-	-	-	-	-
Cumulative program net income beginning as previously stated	2,000,000	1,363,600	87	538,132	3,901,819	3,000,000	1,200,000	-	765,515	4,965,515
Ending	\$ 2,000,000	\$ 1,363,600	\$ 87	\$ 375,412	\$ 3,739,099	\$ 3,000,000	\$ 1,200,000	\$ -	\$ 578,563	\$ 4,778,563

See notes to financial statements.

SOUTH CAROLINA CENTERS OF ECONOMIC EXCELLENCE
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	Solid Oxide Fuel Cells				Childhood Neurotherapeutics					
	State Endowment	Non-State Endowment	Non-State Expendable	Endowment Earnings	Total	State Endowment	Non-State Endowment	Non-State Expendable	Endowment Earnings	Total
Contribution Revenue										
State funds	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Non-state matching funds	-	-	-	-	-	-	-	-	-	-
Total contribution revenue	-	-	-	-	-	-	-	-	-	-
Investment Income										
Realized gain (loss)	-	-	-	4,877 (10,627)	4,877 (10,627)	-	-	-	117,003 (254,982)	117,003 (254,982)
Unrealized gain (loss)	-	-	-	135,398	135,398	-	-	-	221,983	221,983
Endowment income	-	-	-	129,648	129,648	-	-	-	84,004	84,004
Total investment income (loss)	-	-	-	129,648	129,648	-	-	-	84,004	84,004
Total revenue	-	-	-	129,648	129,648	-	-	-	84,004	84,004
Expenditures										
Personal services	-	-	-	83,623	83,623	-	-	-	83,768	83,768
Fringe	-	-	-	18,179	18,179	-	-	-	25,244	25,244
Travel	-	-	-	-	-	-	-	-	3,939	3,939
Supplies	-	-	-	4,626	4,626	-	-	-	3,018	3,018
Contractual	-	-	-	2,685	2,685	-	-	-	99,518	99,518
Tuition assistance	-	-	-	-	-	-	-	-	-	-
Fixed charges	-	-	-	-	-	-	-	-	-	-
Administrative fees	-	-	-	1,803	1,803	-	-	-	43,251	43,251
Other	-	-	-	-	-	-	-	-	24,078	24,078
Equipment	-	-	-	-	-	-	-	-	-	-
Total expenditures	-	-	-	110,916	110,916	-	-	-	282,816	282,816
Program net income (loss)	-	-	-	18,732	18,732	-	-	-	(198,812)	(198,812)
Transfers	-	-	-	-	-	-	-	-	-	-
Cumulative program net income beginning as previously stated	3,000,000	900,000	-	311,263	4,211,263	5,000,000	2,500,000	-	1,409,148	8,909,148
Ending	\$ 3,000,000	\$ 900,000	\$ -	\$ 329,995	\$ 4,229,995	\$ 5,000,000	\$ 2,500,000	\$ -	\$ 1,210,336	\$ 8,710,336

See notes to financial statements.

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	Rehabilitation and Reconstruction Science				Strategic Approaches to Electricity Production from Coal					
	State Endowment	Non-State Endowment	Non-State Expendable	Endowment Earnings	Total	State Endowment	Non-State Endowment	Non-State Expendable	Endowment Earnings	Total
Contribution Revenue										
State funds	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 3,500	\$ -	\$ -	\$ 3,500
Non-state matching funds	-	-	-	-	-	-	-	-	-	-
Total contribution revenue	-	-	-	-	-	-	3,500	-	-	3,500
Investment Income										
Realized gain (loss)	-	-	-	-	-	-	-	-	107,569	107,569
Unrealized gain (loss)	-	-	-	(58,836)	(58,836)	-	-	-	(234,392)	(234,392)
Endowment income	-	-	-	175,934	175,934	-	-	-	258,731	258,731
Total investment income (loss)	-	-	-	117,098	117,098	-	-	-	131,908	131,908
Total revenue	-	-	-	117,098	117,098	-	3,500	-	131,908	135,408
Expenditures										
Personal services	-	-	-	270,685	270,685	-	-	3,777	193,688	197,465
Fringe	-	-	-	38,399	38,399	-	-	25	39,954	39,979
Travel	-	-	-	50,582	50,582	-	-	1,736	2,351	4,087
Supplies	-	-	-	3,362	3,362	-	-	82,170	2,610	84,780
Contractual	-	-	-	128,736	128,736	-	-	11,426	8,325	19,751
Tuition assistance	-	-	-	9,678	9,678	-	-	-	16,586	16,586
Fixed charges	-	-	-	61	61	-	-	4,405	4,405	4,405
Administrative fees	-	-	-	25,883	25,883	-	-	-	39,762	39,762
Other	-	-	3,032	11,356	14,388	-	-	-	476	476
Equipment	-	-	-	3,770	3,770	-	-	-	-	-
Total expenditures	-	-	3,032	542,512	545,544	-	-	103,539	303,752	407,291
Program net income (loss)	-	-	(3,032)	(425,414)	(428,446)	-	3,500	(103,539)	(171,844)	(271,883)
Transfers	-	-	-	-	-	-	-	-	-	-
Cumulative program net income beginning as previously stated	5,000,000	2,798,027	1,503,032	459,439	9,760,498	5,000,000	2,500,000	279,144	1,415,582	9,194,726
Ending	\$ 5,000,000	\$ 2,798,027	\$ 1,500,000	\$ 34,025	\$ 9,332,052	\$ 5,000,000	\$ 2,503,500	\$ 175,605	\$ 1,243,738	\$ 8,922,843

See notes to financial statements.

SOUTH CAROLINA CENTERS OF ECONOMIC EXCELLENCE
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	Healthcare Quality				Senior SMART™ Center					
	State Endowment	Non-State Endowment	Non-State Expendable	Endowment Earnings	Total	State Endowment	Non-State Endowment	Non-State Expendable	Endowment Earnings	Total
Contribution Revenue										
State funds	\$ -	\$ -	\$ 712	\$ -	\$ 712	\$ -	\$ -	\$ -	\$ -	\$ -
Non-state matching funds	-	-	-	-	-	-	-	-	-	-
Total contribution revenue	-	-	712	-	712	-	-	-	-	-
Investment Income										
Realized gain (loss)	-	-	-	93,475	93,475	-	-	-	80,892	80,892
Unrealized gain (loss)	-	-	-	(203,708)	(203,708)	-	-	-	(176,285)	(176,285)
Endowment income	-	-	-	217,885	217,885	-	-	-	128,698	128,698
Total investment income (loss)	-	-	-	107,652	107,652	-	-	-	33,305	33,305
Total revenue	-	-	712	107,652	108,364	-	-	-	33,305	33,305
Expenditures										
Personal services	-	-	-	190,041	190,041	-	-	-	30,309	30,309
Fringe	-	-	-	37,986	37,986	-	-	-	2,933	2,933
Travel	-	-	-	12,813	12,813	-	-	-	1,794	1,794
Supplies	-	-	-	16,254	16,254	-	-	1,219	381	1,600
Contractual	-	-	-	12,385	12,385	-	-	-	6,592	6,592
Tuition assistance	-	-	-	-	-	-	-	-	6,396	6,396
Fixed charges	-	-	-	592	592	-	-	-	2,202	2,202
Administrative fees	-	-	-	34,554	34,554	-	-	-	29,902	29,902
Other	-	-	-	-	-	-	-	-	-	-
Equipment	-	-	-	-	-	-	-	-	-	-
Total expenditures	-	-	-	304,625	304,625	-	-	1,219	80,509	81,728
Program net income (loss)	-	-	712	(196,973)	(196,261)	-	-	(1,219)	(47,204)	(48,423)
Transfers	-	-	-	-	-	-	-	-	-	-
Cumulative program net income beginning as previously stated	5,000,000	2,000,000	(712)	1,573,226	8,572,514	5,000,000	2,000,000	35,831	864,085	7,899,916
Ending	\$ 5,000,000	\$ 2,000,000	\$ -	\$ 1,376,253	\$ 8,376,253	\$ 5,000,000	\$ 2,000,000	\$ 34,612	\$ 816,881	\$ 7,851,493

See notes to financial statements.

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	Nanoenvironmental Research and Risk Assessment				Nuclear Science and Energy					
	State Endowment	Non-State Endowment	Non-State Expendable	Endowment Earnings	Total	State Endowment	Non-State Endowment	Non-State Expendable	Endowment Earnings	Total
Contribution Revenue										
State funds	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Non-state matching funds	-	-	-	-	-	-	70,000	-	70,000	140,000
Total contribution revenue	-	-	-	-	-	-	70,000	-	70,000	140,000
Investment Income										
Realized gain (loss)	-	-	-	50,531	50,531	-	-	-	45,899	45,899
Unrealized gain (loss)	-	-	-	(110,122)	(110,122)	-	-	-	(98,794)	(98,794)
Endowment income	-	-	-	123,756	123,756	-	-	-	123,294	123,294
Total investment income (loss)	-	-	-	64,165	64,165	-	-	-	70,399	70,399
Total revenue	-	-	-	64,165	64,165	-	70,000	-	140,399	210,399
Expenditures										
Personal services	-	-	-	38,397	38,397	-	-	-	42,895	42,895
Fringe	-	-	-	8,473	8,473	-	-	-	8,026	8,026
Travel	-	-	-	12,037	12,037	-	-	-	713	713
Supplies	-	-	-	15,460	15,460	-	-	-	-	-
Contractual	-	-	-	9,889	9,889	-	-	-	-	-
Tuition assistance	-	-	-	-	-	-	-	-	-	-
Fixed charges	-	-	-	756	756	-	-	-	-	-
Administrative fees	-	-	-	18,680	18,680	-	-	-	16,952	16,952
Other	-	-	-	-	-	-	-	-	-	-
Equipment	-	-	-	-	-	-	-	-	-	-
Total expenditures	-	-	-	103,692	103,692	-	-	-	68,586	68,586
Program net income (loss)	-	-	-	(39,527)	(39,527)	-	70,000	-	71,813	141,813
Transfers	-	-	-	-	-	-	-	-	-	-
Cumulative program net income beginning as previously stated	3,000,000	1,000,000	2,120	506,254	4,508,374	3,000,000	940,050	124,062	473,562	4,537,674
Ending	\$ 3,000,000	\$ 1,000,000	\$ 2,120	\$ 466,727	\$ 4,468,847	\$ 3,000,000	\$ 1,010,050	\$ 124,062	\$ 545,375	\$ 4,679,487

See notes to financial statements.

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	General Atomics Center for the Development of Translational Nuclear Technology				Healthful Lifestyles					
	State Endowment	Non-State Endowment	Non-State Expendable	Endowment Earnings	Total	State Endowment	Non-State Endowment	Non-State Expendable	Endowment Earnings	Total
Contribution Revenue										
State funds	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Non-state matching funds	-	-	-	180,000	180,000	-	4,000	-	2,000	6,000
Total contribution revenue	-	-	-	180,000	180,000	-	4,000	-	2,000	6,000
Investment Income										
Realized gain (loss)	-	-	-	51,780	51,780	-	-	-	21,209	21,209
Unrealized gain (loss)	-	-	-	(107,254)	(107,254)	-	-	-	(46,134)	(46,134)
Endowment income	-	-	-	122,579	122,579	-	-	-	116,465	116,465
Total investment income (loss)	-	-	-	67,105	67,105	-	-	-	91,540	91,540
Total revenue	-	-	-	247,105	247,105	-	4,000	-	93,540	97,540
Expenditures										
Personal services	-	-	-	41,875	41,875	-	-	-	20,001	20,001
Fringe	-	-	-	3,841	3,841	-	-	-	3,697	3,697
Travel	-	-	-	542	542	-	-	-	-	-
Supplies	-	-	-	-	-	-	-	-	822	822
Contractual	-	-	-	-	-	-	-	-	59,116	59,116
Tuition assistance	-	-	-	7,569	7,569	-	-	-	-	-
Fixed charges	-	-	-	-	-	-	-	-	-	-
Administrative fees	-	-	-	18,792	18,792	-	-	-	7,839	7,839
Other	-	-	-	-	-	-	-	-	-	-
Equipment	-	-	-	-	-	-	-	-	-	-
Total expenditures	-	-	-	72,619	72,619	-	-	-	91,475	91,475
Program net income (loss)	-	-	-	174,486	174,486	-	4,000	-	2,065	6,065
Transfers	-	-	-	-	-	-	-	-	-	-
Cumulative program net income beginning as previously stated	3,000,000	1,230,000	-	409,729	4,639,729	3,000,000	903,000	-	515,354	4,418,354
Ending	\$ 3,000,000	\$ 1,230,000	\$ -	\$ 584,215	\$ 4,814,215	\$ 3,000,000	\$ 907,000	\$ -	\$ 517,419	\$ 4,424,419

See notes to financial statements.

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	Data Analysis, Simulation, Imaging, and Visualization				Multiphysics Heterogeneous Engineered Materials Center					
	State Endowment	Non-State Endowment	Non-State Expendable	Endowment Earnings	Total	State Endowment	Non-State Endowment	Non-State Expendable	Endowment Earnings	Total
Contribution Revenue										
State funds	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Non-state matching funds	-	-	-	-	-	-	1,000,000	-	1,000,000	2,000,000
Total contribution revenue	-	-	-	-	-	-	1,000,000	-	1,000,000	2,000,000
Investment Income										
Realized gain (loss)	-	-	-	69,088	69,088	-	-	-	104,190	104,190
Unrealized gain (loss)	-	-	-	(150,561)	(150,561)	-	-	-	(196,996)	(196,996)
Endowment income	-	-	-	98,676	98,676	-	-	-	104,396	104,396
Total investment income (loss)	-	-	-	17,203	17,203	-	-	-	11,590	11,590
Total revenue	-	-	-	17,203	17,203	-	1,000,000	-	1,011,590	2,011,590
Expenditures										
Personal services	-	-	-	-	-	-	-	-	73,471	73,471
Fringe	-	-	-	-	-	-	-	-	12,617	12,617
Travel	-	-	-	-	-	-	-	-	-	-
Supplies	-	-	-	-	-	-	-	-	5,318	5,318
Contractual	-	-	-	-	-	-	-	-	-	-
Tuition assistance	-	-	-	-	-	-	-	-	5,690	5,690
Fixed charges	-	-	-	-	-	-	-	-	-	-
Administrative fees	-	-	-	25,540	25,540	-	-	-	45,203	45,203
Other	-	-	-	-	-	-	-	-	-	-
Equipment	-	-	-	-	-	-	-	-	71,745	71,745
Total expenditures	-	-	-	25,540	25,540	-	-	-	214,044	214,044
Program net income (loss)	-	-	-	(8,337)	(8,337)	-	1,000,000	-	797,546	1,797,546
Transfers	-	-	-	-	-	-	-	-	-	-
Cumulative program net income beginning as previously stated	2,000,000	1,582,098	-	955,812	4,537,910	2,000,000	2,000,000	-	287,314	4,287,314
Ending	\$ 2,000,000	\$ 1,582,098	\$ -	\$ 947,475	\$ 4,529,573	\$ 2,000,000	\$ 3,000,000	\$ -	\$ 1,084,860	\$ 6,084,860

See notes to financial statements.

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	Total - University of South Carolina			
	State Endowment	Non-State Endowment	Non-State Expendable	Endowment Earnings
				Total
Contribution Revenue				
State funds	\$ -	\$ 3,500	\$ 712	\$ -
Non-state matching funds	-	1,076,800	-	1,277,000
Total contribution revenue	-	1,080,300	712	1,277,000
Investment Income				
Realized gain (loss)	-	-	-	1,026,569
Unrealized gain (loss)	-	-	4,017	(2,087,866)
Endowment income	-	-	-	2,542,839
Total investment income (loss)	-	-	4,017	1,481,542
Total revenue	-	1,080,300	4,729	2,758,542
Expenditures				
Personal services	-	-	11,655	1,825,605
Fringe	-	-	76	304,053
Travel	-	-	3,060	173,754
Supplies	-	-	83,389	105,456
Contractual	-	-	(87,300)	388,542
Tuition assistance	-	-	-	125,821
Fixed charges	-	-	4,405	13,074
Administrative fees	-	-	-	411,685
Other	-	-	(7,176)	167,508
Equipment	-	-	-	553,515
Total expenditures	-	-	8,109	4,069,013
Program net income (loss)	-	1,080,300	(3,380)	(1,310,471)
Transfers	-	-	-	-
Cumulative program net income beginning as previously stated	66,500,000	29,865,163	1,953,409	14,978,893
Ending	\$ 66,500,000	\$ 30,945,463	\$ 1,950,029	\$ 13,668,422
				\$ 113,063,914

See notes to financial statements.

**SOUTH CAROLINA CENTERS OF ECONOMIC EXCELLENCE
YEAR ENDED JUNE 30, 2016**

Notes to Financial Statements

Note 1. Description of Program

The South Carolina Research Centers of Economic Excellence Act (the Act) was introduced by Chapter 75 of Act No. A356 and passed by the South Carolina General Assembly during the 2002 legislative session. The Act was established to create the South Carolina Centers of Economic Excellence (the Program or SmartState) and the Centers of Excellence Matching Endowment, which originally was to be funded annually by appropriations from the South Carolina Education Lottery in an aggregate amount not to exceed \$ 200 million by 2010. During the year ended June 30, 2009, the South Carolina General Assembly revised the Act to provide for \$ 30 million in guaranteed funding each year if (a) the lottery scholarships have been funded, and (b) at least 80% of all appropriations have been awarded by the Review Board through the most recent previous fiscal year. In addition, the Act created the Research Centers of Excellence Review Board (the Review Board), which is responsible for awarding state matching funds, for oversight and operation of the fund, and for various accountability requirements established in the statute for the Program. The Review Board consists of eleven members. Of these eleven members, three must be appointed by the Governor of South Carolina, three must be appointed by the President Pro Tempore of the South Carolina Senate, three must be appointed by the Speaker of the South Carolina House of Representatives, one member each must be appointed by the Chair of the Senate Finance Committee and the Chair of the House Ways and Means Committee. The Presidents of the senior research universities of the State of South Carolina (Clemson University, the Medical University of South Carolina, and the University of South Carolina) serve as ex-officio non-voting members.

The purpose of the Act is to create incentives for the senior research universities of South Carolina to raise capital from the private sector to fund endowments for professorships in research areas targeted to create well-paying jobs and enhanced economic opportunities for the people of South Carolina. Non-state funds are used to match dollar-for-dollar funds appropriated by the General Assembly from the South Carolina Education Lottery. The program's intent is to provide \$ 30 million annually in South Carolina Education Lottery appropriations if (a) the lottery scholarships have been funded, and (b) at least 80% of all appropriations have been awarded by the Review Board through the most recent previous fiscal year. These state appropriations are to be matched by the institutions.

The endowed professorships are awarded to the senior research universities through a competitive application process, which encourages collaboration among the three research universities as well as with other South Carolina institutions of higher education. Awards from the Centers of Excellence Matching Endowment are to be not less than \$ 2 million and not more than \$ 5 million. Non-state matching funds are to be raised exclusively from sources other than South Carolina tax dollars, and committed and raised subsequent to January 1, 2002. The Research Centers of Economic Excellence Act was amended March 17, 2004, adding Section 90, which allows the research institutions to use federal funds received after July 1, 2003, as non-state matching funds. The Research Centers of Economic Excellence Act was further amended on June 25, 2008, adding Section 100, which allows the Review Board to use a portion (as determined by the Review Board) of the non-state match to pay for Center operating costs and which requires that the full state award of any dissolved or withdrawn Center be returned to the Centers of Excellence Matching Endowment. Section 110 was also added on June 25, 2008, which provided the eligibility of in-kind contributions as non-state matches.

In 2010, the General Assembly amended the Research Centers of Economic Excellence Act to create a new type of SmartState Award to be made in concert with the South Carolina Department of Commerce. One-quarter of the unallocated Centers of Excellence Matching Endowment funds is dedicated for funding such "SmartState Commerce Awards." SmartState Commerce Awards may not individually exceed \$ 2 million and do not require the dollar-for-dollar non-state match of Standard SmartState awards. In place of a matching requirement, the Secretary of Commerce is required to certify that a "significant capital investment" has been made in the related research field of a proposed SmartState Commerce Award professorial endowment; the intent of SmartState Commerce Award endowment is to "directly support the industry." These revisions became effective January 1, 2011.

**SOUTH CAROLINA CENTERS OF ECONOMIC EXCELLENCE
YEAR ENDED JUNE 30, 2016**

Notes to Financial Statements

Note 2. Summary of Significant Accounting Policies

Basis of presentation and method of accounting: The Program's financial statements are presented on the accrual basis of accounting. Revenues are recorded in the period earned, and expenses are recorded at the time liabilities are incurred. In as much as state funds are not disbursed until cash gifts are in hand, a pledge received in support of a Center is not recognized as revenue until the pledge has been satisfied.

Property and equipment: Property and equipment purchased with program funds is deemed to be the property of the respective research institution.

Assets available for program use: State funds committed for Program use are permanently restricted, as well as 30% of the non-state matching funds of each Center of Economic Excellence, as endowment funds. Earnings from the endowments funds may be expended for direct program purposes, as well as any non-state matching funds that exceed the 30% endowment requirement. In-kind contributions of real property, equipment, supplies and other expendable property, and the value of goods and services directly benefiting and specifically identifiable to a project or program may be used to satisfy non-state matching requirements, but may not account for more than 70% of the non-state match total for each proposal.

Use of estimates: The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

Federal grants used as non-state matching funds: Federal grants used as non-state matching funds by the research institutions are not reflected in the statements of program revenues and expenditures. Such funds are maintained separately from the Program by the research institutions. See Note 4 for additional information.

Note 3. Assets Maintained by Research Institutions

The assets resulting from program activities are maintained by the research institutions, and are held by the universities, their respective foundations, or by the State Treasurer. At June 30, 2016, cash and investments maintained by the research institutions for program purposes was as follows:

Clemson University	\$ 102,198,167
Medical University of South Carolina	155,451,517
University of South Carolina	113,063,914
Total	<u><u>\$ 370,713,598</u></u>

SOUTH CAROLINA CENTERS OF ECONOMIC EXCELLENCE
YEAR ENDED JUNE 30, 2016

Notes to Financial Statements

Note 4. Proposals Using Federal Grants for Non-State Matching Funds

As described in Note 2, federal grants are eligible for use as non-state matching funds, but are not included in the statements of program revenues and expenses. The following table displays the total federal awards that have qualified as non-state matching funds and those that have been used toward the non-state match for each proposal as of June 30, 2016:

		Federal Grants used as Non-State Matching Funds	
<u>Institution</u>	<u>Proposal</u>	Total Qualifying As Non-State Match	Amount Used As Non-State Match
Clemson	Optical Materials	\$ 772,961	\$ 772,961
Clemson	Sustainable Development	1,313,439	1,000,000
Clemson	Advanced Fiber-Based Materials	310,000	310,000
MUSC	Proteomics	1,375,919	1,265,030
MUSC	Marine Genomics	2,927,730	2,208,577
MUSC	Translational Cancer Therapeutics	6,174,089	3,001,905
MUSC	Cancer Drug Discovery	6,292,518	3,395,490
MUSC	Gastrointestinal Cancer	3,221,264	2,438,472
MUSC	Vision Science	1,956,478	1,476,419
MUSC	Tobacco-Related Malignancies	3,221,264	2,402,853
MUSC	Renal Disease Biomarkers	268,520	254,406
MUSC	Cancer Stem Cell	2,457,288	1,851,876
MUSC	Advanced Tissue Biofabrication	2,578,100	2,502,146
MUSC	Lipidomics	1,624,983	1,523,925
USC	Nanostructures	1,444,820	1,444,820
USC	Brain Imaging	1,336,000	1,336,000
USC	Polymer Nanocomposites	2,020,110	2,020,110
USC	Hydrogen Fuel Cell Economy	661,451	661,451
USC	Renewable Fuel Cells	970,516	970,516
USC	Solid Oxide Fuel Cells	1,106,179	1,106,179
USC	Childhood Neurotherapeutics	1,243,106	1,243,106
USC	Data Analysis	533,444	533,444
USC	Nanoenvironmental Research and Assessment	731,822	731,822
USC	Nuclear Science and Energy	848,512	842,408
USC	General Atomics Center for the Development of Translational Nuclear Technology	1,105,531	1,105,531
		<u>\$ 46,496,044</u>	<u>\$ 36,399,447</u>

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

To the Review Board
South Carolina Centers of Economic Excellence
Columbia, South Carolina

We have audited the financial statements of the South Carolina Centers of Economic Excellence for the year ended June 30, 2016, and have issued our report thereon dated November 15, 2016. We conducted our audit in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States.

Internal Control Over Financial Reporting

In planning and performing our audit, we considered South Carolina Centers of Economic Excellence's internal control over financial reporting (internal control) as a basis for designing our auditing procedures for the purpose of expressing our opinion on the financial statements, but not for the purpose of expressing an opinion on the effectiveness of the Program's internal control. Accordingly, we do not express an opinion on the effectiveness of the Program's internal control.

A control deficiency 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 misstatements on a timely basis. A significant deficiency is a control deficiency, or combination of control deficiencies, that adversely affects the entity's ability to initiate, authorize, record, process or report financial data reliably in accordance with generally accepted accounting principles such that there is more than a remote likelihood that a misstatement of the entity's financial statements that is more than inconsequential will not be prevented or detected by the entity's internal control.

A material weakness is a significant deficiency, or combination of significant deficiencies, that results in more than a remote likelihood that a material misstatement of the financial statements will not be prevented or detected by the entity's internal control.

Our consideration of internal control over financial reporting was for the limited purpose described in the first paragraph of this section and would not necessarily identify all deficiencies in internal control that might be significant deficiencies or material weaknesses. We did not identify any deficiencies in internal control over financial reporting that we would consider to be significant deficiencies or material weaknesses, as defined above.

Compliance and Other Matters

As part of obtaining reasonable assurance about whether South Carolina Centers of Economic Excellence's financial statements are free of 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 determination of financial statement amounts. 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 that are required to be reported under *Government Auditing Standards*.

Purpose of this Report

This report is intended solely for the information of management, the Review Board, the South Carolina Budget and Control Board, and the General Assembly and is not intended to be and should not be used by anyone other than those specified parties.

Derrick, Stubbs & Stith, LLP

November 15, 2016



**South Carolina Centers
of Economic Excellence**

**Report to the
Review Board**

June 30, 2016

To the Review Board
South Carolina Centers of Economic Excellence
Columbia, South Carolina

We are pleased to present this report related to our audit of the financial statements of South Carolina Centers of Economic Excellence for the year ended June 30, 2016. This report summarizes certain matters required by professional standards to be communicated to you in your oversight responsibility for South Carolina Centers of Economic Excellence's financial reporting process.

This report is intended solely for the information and use of management, the Review Board, the South Carolina Budget and Control Board, and General Assembly and is not intended to be and should not be used by anyone other than these specified parties. It will be our pleasure to respond to any questions you have regarding this report. We appreciate the opportunity to continue to be of service to South Carolina Centers of Economic Excellence.

Derrick, Stubbs & Stith, LLP

November 15, 2016

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Required Communications

Generally accepted auditing standards (AU-C 260, *The Auditor's Communication With Those Charged With Governance*) require the auditor to promote effective two-way communication between the auditor and those charged with governance. Consistent with this requirement, the following summarizes our responsibilities regarding the financial statement audit as well as observations arising from our audit that are significant and relevant to your responsibility to oversee the financial reporting process.

Area	Comments
Auditor's Responsibility Under Professional Standards	Our audit of the financial statements of South Carolina Centers of Economic Excellence (Program) was conducted in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable rather than absolute assurance about whether the financial statements are free of material misstatement whether caused by error or fraud. An audit of financial statements includes obtaining an understanding of internal control sufficient to plan the audit and to determine the nature, timing and extent of audit procedures to be performed.
Accounting Practices	Adoption of, or Change in, Accounting Policies Management has the ultimate responsibility for the appropriateness of the accounting policies used by the Program. The Program did not adopt any significant new accounting policies nor have there been any changes in existing significant accounting policies during the current period. Significant or Unusual Transactions We did not identify any significant or unusual transactions or significant accounting policies in controversial or emerging areas for which there is a lack of authoritative guidance or consensus. Alternative Treatments Discussed with Management We did not discuss with management any alternative treatments within generally accepted accounting principles for accounting policies and practices related to material items during the current audit period.
Management's Judgments and Accounting Estimates	The financial statements do not contain any significant estimates.
Financial Statement Disclosures	In various conversations during our audit, we discussed various financial statement disclosures. No disclosures are known that are not consistent with previous years' disclosures.
Audit Adjustments	There were no recorded audit adjustments.
Uncorrected Misstatements	There were no significant unrecorded misstatements noted during the audit.
Disagreements with Management	We encountered no disagreements with management over the application of significant accounting principles, the basis for management's judgments on any significant matters, the scope of the audit or significant disclosures to be included in the financial statements.
Consultations with Other Accountants	We are not aware of any consultations management had with other accountants about accounting or auditing matters.

Area	Comments
Significant Issues Discussed with Management	No significant issues arising from the audit were discussed or were the subject of correspondence with management.
Difficulties Encountered Performing the Audit	We did not encounter any difficulties in dealing with management during the audit.
Communication of Significant Deficiencies and Material Weaknesses	There were no significant deficiencies or material weaknesses identified during our audit of the financial statements.
Certain Written Communications Between Management and Our Firm	Copies of certain written communications between our Firm and the management of the Program are on Pages 3 - 19.



South Carolina Commission on Higher Education

Mr. Tim M. Hoffarth, Chair
Ms. Dianne C. Kuhl, Vice Chair
Mr. Paul O. Batson, III
Mr. Devron H. Edwards
Dr. Bettie Rose Horne
Mr. Kenneth W. Kridland
Ms. Allison Dean Love
Dr. Louis B. Lynn
Vice Admiral Charles Munns, USN (ret.)
Mr. Kim F. Phillips
Ms. Terrye C. Seckinger
Dr. Jennifer B. Settemyer
Dr. Evans Whitaker

Mr. Gary S. Glenn
Interim Executive Director

November 15, 2016

Derrick, Stubbs & Stith, LLP
Post Office Box 36
Columbia, South Carolina 29202

In connection with your audit of the financial statements of the South Carolina Centers of Economic Excellence (the Program) for the year ended June 30, 2016, we confirm that we are responsible for the fair presentation of the statements of program revenues and expenditures in conformity with accounting principles generally accepted in the United States of America.

We confirm to the best of our knowledge and belief, as of November 15, 2016, the following representations made to you during your audit:

1. The financial statements referred to above are fairly presented in conformity with accounting principles generally accepted in the United States of America.
2. We have identified for you all organizations that are a part of this reporting entity or with which we have a relationship, as these organizations are defined in Section 2100 of the Governmental Accounting Standards Board's Codification of Government Accounting and Financial Reporting Standards, that are:
 - a. Component Units.
 - b. Other organizations for which the nature and significance of their relationship with the Program are such that exclusion would cause the reporting entity's financial statements to be misleading or incomplete.
 - c. Jointly governed organizations in which we participated.
3. We have identified for you all funds and governmental functions related to the Program.
4. We have properly classified all funds and activities related to the Program.
5. We are responsible for compliance with laws and regulations applicable to the Program including adopting, approving, and amending budgets.
6. We have identified and disclosed to you all laws and regulations that have a direct and material effect on the determination of financial statement amounts including legal and contractual provisions for reporting specific activities.
7. We have made available to you:
 - a. All financial records and related data of all funds and account groups related to the Program, including those of all special funds, programs, departments, projects, activities, etc., in existence at any time during the period covered by your audit.
 - b. All minutes of the meetings of the Review Board and committees of Board members or summaries of actions of recent meetings for which minutes have not yet been prepared.
 - c. All communications from grantors, lenders, other funding sources or regulatory agencies concerning noncompliance with:
 - (1) Statutory, regulatory or contractual provisions or requirements.
 - (2) Financial reporting practices that could have a material effect on the financial statements.

8. We have no knowledge of fraud or suspected fraud affecting the Program involving:
 - a. Management,
 - b. Employees who have significant roles in the internal control, or
 - c. Others where the fraud could have a material effect on the financial statements.
9. We acknowledge our responsibility for the design and implementation of programs and controls to provide reasonable assurance that fraud is prevented and detected.
10. We have no knowledge of any allegations of fraud or suspected fraud affecting the Program received in communications from employees, former employees, analysts, regulators, short sellers or others.
11. We are aware of no significant deficiencies, including material weaknesses, in the design or operation of internal controls that could adversely affect the Program's ability to record process, summarize, and report financial data.
12. There have been no communications from regulatory agencies concerning noncompliance with, or deficiencies in, financial reporting practices related to the Program.
13. We have no plans or intentions that may materially affect the carrying value or classification of assets and liabilities created by the Program.
14. The following, if applicable, have been properly reflected and/or disclosed in the financial statements:
 - a. Related party transactions and joint ventures in which the Program participates, as defined in Section 2100 of the Governmental Accounting Standards Board's Codification of Governmental Accounting and Financial Reporting Standards, and interfund transactions, including interfund accounts and advances receivable and payable, sale and purchase transactions, interfund transfers, long-term loans, leasing arrangements and guarantees, all of which have been recorded in accordance with the economic substance of the transaction and appropriately classified and reported.
 - b. Guarantees, whether written or oral, under which the Program is contingently liable.
 - c. Arrangements with financial institutions involving compensating balances or other arrangements involving restrictions on cash balances and line of credit or similar arrangements.
 - d. Line of credit or similar arrangements
 - e. Agreements to repurchase assets previously sold.
 - f. Security agreements in effect under the Uniform Commercial Code.
 - g. Any other liens or encumbrances on assets or revenues or any assets or revenues which were pledged as collateral for any liability or which were subordinated in any way.
 - h. The fair value of investments.
 - i. Amounts of contractual obligations for plant construction and purchase of real property or equipment not included in the liabilities or encumbrances recorded on the books.
 - j. Any liabilities which are subordinated in any way to any other actual or possible liabilities.
 - k. All leases and material amounts of rental obligations under long-term leases.
 - l. All significant estimates and material concentrations known to management which are required to be disclosed in accordance with the Risks and Uncertainties Topic of the FASB Accounting Standards Codification. Significant estimates are estimates at the balance sheet date which could change materially within the next year. Concentrations refer to volumes of business, revenues, available sources of supply, or markets for which events could occur which would significantly disrupt normal finances within the next year.
 - m. Deposits and investment securities category of custodial credit risk.
15. We are responsible for making the accounting estimates included in the financial statements. Those estimates reflect our judgment based on our knowledge and experience about past and current events and our assumptions about conditions we expect to exist and courses of action we expect to take. In that regard, adequate provisions have been made:
 - a. To reduce receivables to their estimated net collectible amounts.

- b. To reduce investments, intangibles, and other assets which have permanently declined in value to their realizable values.
 - c. For risk retention, including uninsured losses or loss retentions (deductibles) attributable to events occurring through June 30, 2016, and/or for expected retroactive insurance premium adjustments applicable to periods through June 30, 2016.
 - d. For any material loss to be sustained in the fulfillment of, or from the inability to fulfill, any service commitments.
 - e. For any material loss to be sustained as a result of purchase commitments.
 - f. For environmental clean up obligations.
16. There are no:
- a. Material transactions that have not been properly recorded in the accounting records underlying the financial statements.
 - b. Violations or possible violations of laws or regulations whose effects should be considered for disclosure in the financial statements or as a basis for recording a loss contingency. In that regard, we specifically represent that we have not been designated as, or alleged to be, a "potentially responsible party" by the Federal Environmental Protection Agency or any equivalent state agencies in connection with any environmental contamination related to activities of the Program.
 - c. Other material liabilities or gain or loss contingencies that are required to be accrued or disclosed by the Contingencies Topic of the FASB Accounting Standards Codification and/or GASB Statement No. 10, and we have not consulted a lawyer concerning litigation, claims, or assessments.
17. We are not aware of any pending or threatened litigation, claims, or assessments, or unasserted claims or assessments that are required to be accrued or disclosed in the financial statements in accordance with the Contingencies Topic of the FASB Accounting Standards Codification and/or GASB Statement No. 10, and we have not consulted a lawyer concerning litigation, claims, or assessments.
18. We have no direct or indirect, legal or moral, obligation for any debt of any organization, public or private that is not disclosed in the financial statements.
19. We have satisfactory title to all owned assets.
20. We have complied with all aspects of contractual agreements that would have a material effect on the financial statements in the event of noncompliance.
21. We are not aware of any significant deficiencies or material weaknesses in internal control that should be reported. We are responsible for establishing and maintaining effective internal control over financial reporting.

In connection with your audit, conducted in accordance with *Government Auditing Standards*, we confirm:

- 1. We are responsible for:
 - a. Compliance with the laws, regulations, and provisions of contracts and grant agreements applicable to the Program.
 - b. Establishing and maintaining effective internal control over financial reporting.
- 2. We have identified and disclosed to you:
 - a. All laws, regulations, and provisions of the *Program Guidelines* that have a direct and material effect on the determinations of financial statement amounts or other financial data significant to audit objectives.
 - b. Violations (and possible violations) of laws, regulations, and provisions of the *Program Guidelines* whose effects should be considered for disclosure in the auditor's report on noncompliance.

3. We have taken timely and appropriate steps to remedy violations of provisions of the Program *Guidelines* that have been reported.
4. We have a process to track the status of audit findings and recommendations.
5. We have identified for you previous financial audits, attestation engagements, performance audits, or other studies related to the objectives of the audit being undertaken and the corrective action taken to address significant findings and recommendations.
6. We have provided you with our views on your reported findings, conclusions, and recommendations, as well as our planned corrective actions for the report.
7. We have reviewed, approved, and take full responsibility for the financial statements and related notes and acknowledge the auditor's role in the preparation of this information.

We are responsible for determining that significant events or transactions that have occurred since the balance sheet date and through November 15, 2016, have been recognized or disclosed in the financial statements. No events or transactions other than those disclosed in the financial statements have occurred subsequent to the balance sheet date and through November 15, 2016, that would require recognition or disclosure in the financial statements. We further represent that as of November 15, 2016, the financial statements were complete in a form and format that complied with accounting principles generally accepted in the United States of America, and all approvals necessary for issuance of the financial statements had been obtained.

During the course of your audits, you may have accumulated records containing data which should be reflected in our books and records. All such data have been so reflected. Accordingly, copies of such records in your possession are no longer needed by us.

SOUTH CAROLINA CENTERS OF ECONOMIC EXCELLENCE



Gary Glenn
Interim Executive Director & Director of Fiscal Affairs
SC Commission on Higher Education
Date Signed 11-28-2016

November 15, 2016

Derrick, Stubbs & Stith, LLP
Post Office Box 36
Columbia, South Carolina 29202

In connection with your audit of the financial statements of the South Carolina Centers of Economic Excellence (the Program) as it relates to Clemson University (the University) for the year ended June 30, 2016, we confirm that we are responsible for the fair presentation of the statements of program revenues and expenditures in conformity with accounting principles generally accepted in the United States of America.

Finance and Operations

Clemson University
G06 Sikes Hall
Box 345302
Clemson, SC
29634-5302

P 864-656-2421
F 864-656-2008

We confirm to the best of our knowledge and belief, as of November 15, 2016, the following representations made to you during your audit:

1. The financial statements referred to above are fairly presented in conformity with accounting principles generally accepted in the United States of America.
2. We have identified for you all organizations that are a part of this reporting entity or with which we have a relationship, as these organizations are defined in Section 2100 of the Governmental Accounting Standards Board's Codification of Government Accounting and Financial Reporting Standards, that are:
 - a. Component Units.
 - b. Other organizations for which the nature and significance of their relationship with the Program are such that exclusion would cause the reporting entity's financial statements to be misleading or incomplete.
 - c. Jointly governed organizations in which we participated.
3. We have identified for you all funds and governmental functions related to the Program.
4. All transactions and balances of funds that have been generated by the Program have been accurately reported to you by both the University and the Clemson University Foundation.
5. We have properly classified all funds and activities related to the Program.
6. We are responsible for compliance with laws and regulations applicable to the Program including adopting, approving, and amending budgets.
7. We have identified and disclosed to you all laws and regulations that have a direct and material effect on the determination of financial statement amounts including legal and contractual provisions for reporting specific activities.

8. We have made available to you:
 - a. All financial records and related data of all funds and account groups related to the Program, including those of all special funds, programs, departments, projects, activities, etc., in existence at any time during the period covered by your audit.
 - b. All communications from grantors, lenders, other funding sources or regulatory agencies concerning noncompliance with:
 - (1) Statutory, regulatory or contractual provisions or requirements.
 - (2) Financial reporting practices that could have a material effect on the financial statements.
9. We have no knowledge of fraud or suspected fraud affecting the Program involving:
 - a. Management,
 - b. Employees who have significant roles in the internal control, or
 - c. Others where the fraud could have a material effect on the financial statements.
10. We acknowledge our responsibility for the design and implementation of programs and controls to provide reasonable assurance that fraud is prevented and detected.
11. We have no knowledge of any allegations of fraud or suspected fraud affecting the Program received in communications from employees, former employees, analysts, regulators, short sellers or others.
12. We are aware of no significant deficiencies, including material weaknesses, in the design or operation of internal controls that could adversely affect the Program's ability to record process, summarize, and report financial data.
13. There have been no communications from regulatory agencies concerning noncompliance with, or deficiencies in, financial reporting practices related to the Program.
14. We have no plans or intentions that may materially affect the carrying value or classification of assets and liabilities created by the Program.
15. The following, if applicable, have been properly reflected and/or disclosed in the financial statements:
 - a. Related party transactions and joint ventures in which the Program participates, as defined in Section 2100 of the Governmental Accounting Standards Board's Codification of Governmental Accounting and Financial Reporting Standards, and interfund transactions, including interfund accounts and advances receivable and payable, sale and purchase transactions, interfund transfers, long-term loans, leasing arrangements and guarantees, all of which have been recorded in accordance with the economic substance of the transaction and appropriately classified and reported.
 - b. Guarantees, whether written or oral, under which the Program is contingently liable.
 - c. Arrangements with financial institutions involving compensating balances or other arrangements involving restrictions on cash balances and line of credit or similar arrangements.
 - d. Line of credit or similar arrangements
 - e. Agreements to repurchase assets previously sold.
 - f. Security agreements in effect under the Uniform Commercial Code.

- g. Any other liens or encumbrances on assets or revenues or any assets or revenues which were pledged as collateral for any liability or which were subordinated in any way.
 - h. The fair value of investments.
 - i. Amounts of contractual obligations for plant construction and purchase of real property or equipment not included in the liabilities or encumbrances recorded on the books.
 - j. Any liabilities which are subordinated in any way to any other actual or possible liabilities.
 - k. All leases and material amounts of rental obligations under long-term leases.

 - l. All significant estimates and material concentrations known to management which are required to be disclosed in accordance with the Risks and Uncertainties Topic of the FASB Accounting Standards Codification. Significant estimates are estimates at the balance sheet date which could change materially within the next year. Concentrations refer to volumes of business, revenues, available sources of supply, or markets for which events could occur which would significantly disrupt normal finances within the next year.
 - m. Deposits and investment securities category of custodial credit risk.
16. We are responsible for making the accounting estimates included in the financial statements. Those estimates reflect our judgment based on our knowledge and experience about past and current events and our assumptions about conditions we expect to exist and courses of action we expect to take. In that regard, adequate provisions have been made:
- a. To reduce receivables to their estimated net collectible amounts.
 - b. To reduce investments, intangibles, and other assets which have permanently declined in value to their realizable values.
 - c. For risk retention, including uninsured losses or loss retentions (deductibles) attributable to events occurring through June 30, 2016, and/or for expected retroactive insurance premium adjustments applicable to periods through June 30, 2016.
 - d. For any material loss to be sustained in the fulfillment of, or from the inability to fulfill, any service commitments.
 - e. For any material loss to be sustained as a result of purchase commitments.
 - f. For environmental clean up obligations.
17. There are no:
- a. Material transactions that have not been properly recorded in the accounting records underlying the financial statements.
 - b. Violations or possible violations of laws or regulations whose effects should be considered for disclosure in the financial statements or as a basis for recording a loss contingency. In that regard, we specifically represent that we have not been designated as, or alleged to be, a "potentially responsible party" by the Federal Environmental Protection Agency or any equivalent state agencies in connection with any environmental contamination related to activities of the Program.
 - c. Other material liabilities or gain or loss contingencies that are required to be accrued or disclosed by the Contingencies Topic of the FASB Accounting Standards Codification and/or GASB Statement No. 10, and we have not consulted a lawyer concerning litigation, claims, or assessments.

18. We are not aware of any pending or threatened litigation, claims, or assessments, or unasserted claims or assessments that are required to be accrued or disclosed in the financial statements in accordance with the Contingencies Topic of the FASB Accounting Standards Codification and/or GASB Statement No. 10, and we have not consulted a lawyer concerning litigation, claims, or assessments.
19. We have no direct or indirect, legal or moral, obligation for any debt of any organization, public or private that is not disclosed in the financial statements.
20. We have satisfactory title to all owned assets.
21. We have complied with all aspects of contractual agreements that would have a material effect on the financial statements in the event of noncompliance.
22. We are not aware of any significant deficiencies or material weaknesses in internal control that should be reported. We are responsible for establishing and maintaining effective internal control over financial reporting.

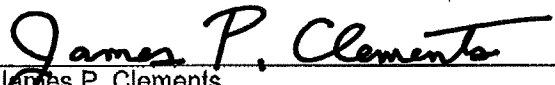
In connection with your audit, conducted in accordance with *Government Auditing Standards*, we confirm:

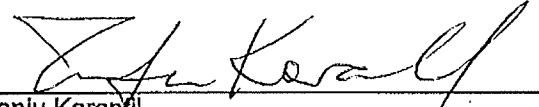
1. We are responsible for:
 - a. Compliance with the laws, regulations, and provisions of contracts and grant agreements applicable to the Program.
 - b. Establishing and maintaining effective internal control over financial reporting.
2. We have identified and disclosed to you:
 - a. All laws, regulations, and provisions of the Program *Guidelines* that have a direct and material effect on the determinations of financial statement amounts or other financial data significant to audit objectives.
 - b. Violations (and possible violations) of laws, regulations, and provisions of the Program *Guidelines* whose effects should be considered for disclosure in the auditor's report on noncompliance.
3. We have taken timely and appropriate steps to remedy violations of provisions of the Program *Guidelines* that have been reported, if any.
4. We have a process to track the status of audit findings and recommendations.
5. We have identified for you previous financial audits, attestation engagements, performance audits, or other studies related to the objectives of the audit being undertaken and the corrective action taken to address significant findings and recommendations.
6. We have reviewed, approved, and take full responsibility for the financial statements and related notes and acknowledge the auditor's role in the preparation of this information.

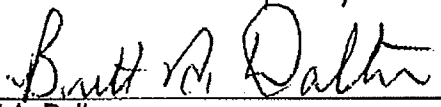
We are responsible for determining that significant events or transactions that have occurred since the balance sheet date and through November 15, 2016, have been recognized or disclosed in the financial statements. No events or transactions other than those disclosed in the financial statements have occurred subsequent to the balance sheet date and through November 15, 2016, that would require recognition or disclosure in the financial statements. We further represent that as of November 15, 2016, the financial statements were complete in a form and format that complied with accounting principles generally accepted in the United States of America, and all approvals necessary for issuance of the financial statements had been obtained.

During the course of your audits, you may have accumulated records containing data which should be reflected in our books and records. All such data have been so reflected. Accordingly, copies of such records in your possession are no longer needed by us.

CLEMSON UNIVERSITY


James P. Clements
President
Date Signed 11.29.16


Tanju Karanfil
Vice President for Research
Date Signed 11/28/16


Brett A. Dalton
Vice President
Finance and Operations
Date Signed 11/28/16

November 15, 2016

Derrick, Stubbs & Stith, LLP
Post Office Box 36
Columbia, South Carolina 29202

In connection with your audit of the financial statements of the South Carolina Centers of Economic Excellence (the Program) as it relates to the Medical University of South Carolina (the University) for the year ended June 30, 2016, we confirm that we are responsible for the fair presentation of the statements of program revenues and expenditures in conformity with accounting principles generally accepted in the United States of America.

We confirm to the best of our knowledge and belief, as of November 15, 2016, the following representations made to you during your audit:

1. The financial statements referred to above are fairly presented in conformity with accounting principles generally accepted in the United States of America.
2. We have identified for you all organizations that are a part of this reporting entity or with which we have a relationship, as these organizations are defined in Section 2100 of the Governmental Accounting Standards Board's Codification of Government Accounting and Financial Reporting Standards, that are:
 - a. Component Units.
 - b. Other organizations for which the nature and significance of their relationship with the Program are such that exclusion would cause the reporting entity's financial statements to be misleading or incomplete.
 - c. Jointly governed organizations in which we participated.
3. We have identified for you all funds and governmental functions related to the Program.
4. All transactions and balances of funds that have been generated by the Program have been accurately reported to you by both the University and the Medical University of South Carolina Foundation.
5. We have properly classified all funds and activities related to the Program.
6. We are responsible for compliance with laws and regulations applicable to the Program including adopting, approving, and amending budgets.
7. We have identified and disclosed to you all laws and regulations that have a direct and material effect on the determination of financial statement amounts including legal and contractual provisions for reporting specific activities.
8. We have made available to you:
 - a. All financial records and related data of all funds and account groups related to the Program, including those of all special funds, programs, departments, projects, activities, etc., in existence at any time during the period covered by your audit.
 - b. All communications from grantors, lenders, other funding sources or regulatory agencies concerning noncompliance with:
 - (1) Statutory, regulatory or contractual provisions or requirements.
 - (2) Financial reporting practices that could have a material effect on the financial statements.

9. We have no knowledge of fraud or suspected fraud affecting the Program involving:
 - a. Management,
 - b. Employees who have significant roles in the internal control, or
 - c. Others where the fraud could have a material effect on the financial statements.
10. We acknowledge our responsibility for the design and implementation of programs and controls to provide reasonable assurance that fraud is prevented and detected.
11. We have no knowledge of any allegations of fraud or suspected fraud affecting the Program received in communications from employees, former employees, analysts, regulators, short sellers or others.
12. We are aware of no significant deficiencies, including material weaknesses, in the design or operation of internal controls that could adversely affect the Program's ability to record process, summarize, and report financial data.
13. There have been no communications from regulatory agencies concerning noncompliance with, or deficiencies in, financial reporting practices related to the Program.
14. We have no plans or intentions that may materially affect the carrying value or classification of assets and liabilities created by the Program.
15. The following, if applicable, have been properly reflected and/or disclosed in the financial statements:
 - a. Related party transactions and joint ventures in which the Program participates, as defined in Section 2100 of the Governmental Accounting Standards Board's Codification of Governmental Accounting and Financial Reporting Standards, and interfund transactions, including interfund accounts and advances receivable and payable, sale and purchase transactions, interfund transfers, long-term loans, leasing arrangements and guarantees, all of which have been recorded in accordance with the economic substance of the transaction and appropriately classified and reported.
 - b. Guarantees, whether written or oral, under which the Program is contingently liable.
 - c. Arrangements with financial institutions involving compensating balances or other arrangements involving restrictions on cash balances and line of credit or similar arrangements.
 - d. Line of credit or similar arrangements
 - e. Agreements to repurchase assets previously sold.
 - f. Security agreements in effect under the Uniform Commercial Code.
 - g. Any other liens or encumbrances on assets or revenues or any assets or revenues which were pledged as collateral for any liability or which were subordinated in any way.
 - h. The fair value of investments.
 - i. Amounts of contractual obligations for plant construction and purchase of real property or equipment not included in the liabilities or encumbrances recorded on the books.
 - j. Any liabilities which are subordinated in any way to any other actual or possible liabilities.
 - k. All leases and material amounts of rental obligations under long-term leases.
 - l. All significant estimates and material concentrations known to management which are required to be disclosed in accordance with the Risks and Uncertainties Topic of the FASB Accounting Standards Codification. Significant estimates are estimates at the balance sheet date which could change materially within the next year. Concentrations refer to volumes of business, revenues, available sources of supply, or markets for which events could occur which would significantly disrupt normal finances within the next year.
 - m. Deposits and investment securities category of custodial credit risk.
16. We are responsible for making the accounting estimates included in the financial statements. Those estimates reflect our judgment based on our knowledge and experience about past and current events and our assumptions about conditions we expect to exist and courses of action we expect to take. In that regard, adequate provisions have been made:
 - a. To reduce receivables to their estimated net collectible amounts.
 - b. To reduce investments, intangibles, and other assets which have permanently declined in value to their realizable values.

- c. For risk retention, including uninsured losses or loss retentions (deductibles) attributable to events occurring through June 30, 2016, and/or for expected retroactive insurance premium adjustments applicable to periods through June 30, 2016.
 - d. For any material loss to be sustained in the fulfillment of, or from the inability to fulfill, any service commitments.
 - e. For any material loss to be sustained as a result of purchase commitments.
 - f. For environmental clean up obligations.
17. There are no:
- a. Material transactions that have not been properly recorded in the accounting records underlying the financial statements.
 - b. Violations or possible violations of laws or regulations whose effects should be considered for disclosure in the financial statements or as a basis for recording a loss contingency. In that regard, we specifically represent that we have not been designated as, or alleged to be, a "potentially responsible party" by the Federal Environmental Protection Agency or any equivalent state agencies in connection with any environmental contamination related to activities of the Program.
 - c. Other material liabilities or gain or loss contingencies that are required to be accrued or disclosed by the Contingencies Topic of the FASB Accounting Standards Codification and/or GASB Statement No. 10, and we have not consulted a lawyer concerning litigation, claims, or assessments.
18. We are not aware of any pending or threatened litigation, claims, or assessments, or unasserted claims or assessments that are required to be accrued or disclosed in the financial statements in accordance with the Contingencies Topic of the FASB Accounting Standards Codification and/or GASB Statement No. 10, and we have not consulted a lawyer concerning litigation, claims, or assessments.
19. We have no direct or indirect, legal or moral, obligation for any debt of any organization, public or private that is not disclosed in the financial statements.
20. We have satisfactory title to all owned assets.
21. We have complied with all aspects of contractual agreements that would have a material effect on the financial statements in the event of noncompliance.
22. We are not aware of any significant deficiencies or material weaknesses in internal control that should be reported. We are responsible for establishing and maintaining effective internal control over financial reporting.

In connection with your audit, conducted in accordance with *Government Auditing Standards*, we confirm:

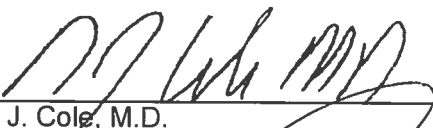
- 1. We are responsible for:
 - a. Compliance with the laws, regulations, and provisions of contracts and grant agreements applicable to the Program.
 - b. Establishing and maintaining effective internal control over financial reporting.
- 2. We have identified and disclosed to you:
 - a. All laws, regulations, and provisions of the Program *Guidelines* that have a direct and material effect on the determinations of financial statement amounts or other financial data significant to audit objectives.
 - b. Violations (and possible violations) of laws, regulations, and provisions of the Program *Guidelines* whose effects should be considered for disclosure in the auditor's report on noncompliance.
- 3. We have taken timely and appropriate steps to remedy violations of provisions of the Program *Guidelines* that have been reported.

4. We have a process to track the status of audit findings and recommendations.
5. We have identified for you previous financial audits, attestation engagements, performance audits, or other studies related to the objectives of the audit being undertaken and the corrective action taken to address significant findings and recommendations.
6. We have provided you with our views on your reported findings, conclusions, and recommendations, as well as our planned corrective actions for the report.
7. We have reviewed, approved, and take full responsibility for the financial statements and related notes and acknowledge the auditor's role in the preparation of this information.

We are responsible for determining that significant events or transactions that have occurred since the balance sheet date and through November 15, 2016, have been recognized or disclosed in the financial statements. No events or transactions other than those disclosed in the financial statements have occurred subsequent to the balance sheet date and through November 15, 2016, that would require recognition or disclosure in the financial statements. We further represent that as of November 15, 2016, the financial statements were complete in a form and format that complied with accounting principles generally accepted in the United States of America, and all approvals necessary for issuance of the financial statements had been obtained.

During the course of your audits, you may have accumulated records containing data which should be reflected in our books and records. All such data have been so reflected. Accordingly, copies of such records in your possession are no longer needed by us.

MEDICAL UNIVERSITY OF SOUTH CAROLINA



David J. Cole, M.D.
President
Date Signed 11/15/2016



Dr. Kathleen Brady
Vice President for Research
Date Signed 11/21/2016



November 15, 2016

Derrick, Stubbs & Stith, LLP
Post Office Box 36
Columbia, South Carolina 29202

In connection with your audit of the financial statements of the South Carolina Centers of Economic Excellence (the Program) as it relates to the University of South Carolina (the University) for the year ended June 30, 2016, we confirm that we are responsible for the fair presentation of the statements of program revenues and expenditures in conformity with accounting principles generally accepted in the United States of America.

We confirm to the best of our knowledge and belief, as of November 15, 2016, the following representations made to you during your audit:

1. The financial statements referred to above are fairly presented in conformity with accounting principles generally accepted in the United States of America.
2. We have identified for you all organizations that are a part of this reporting entity or with which we have a relationship, as these organizations are defined in Section 2100 of the Governmental Accounting Standards Board's Codification of Government Accounting and Financial Reporting Standards, that are:
 - a. Component Units.
 - b. Other organizations for which the nature and significance of their relationship with the Program are such that exclusion would cause the reporting entity's financial statements to be misleading or incomplete.
 - c. Jointly governed organizations in which we participated.
3. We have identified for you all funds and governmental functions related to the Program.
4. All transactions and balances of funds that have been generated by the Program have been accurately reported to you by the University, the University of South Carolina Development Foundation, the University of South Carolina Educational Foundation, and the University of South Carolina Research Foundation.
5. We have properly classified all funds and activities related to the Program.
6. We are responsible for compliance with laws and regulations applicable to the Program including adopting, approving, and amending budgets.
7. We have identified and disclosed to you all laws and regulations that have a direct and material effect on the determination of financial statement amounts including legal and contractual provisions for reporting specific activities.
8. We have made available to you:
 - a. All financial records and related data of all funds and account groups related to the Program, including those of all special funds, programs, departments, projects, activities, etc., in existence at any time during the period covered by your audit.
 - b. All communications from grantors, lenders, other funding sources or regulatory agencies concerning noncompliance with:
 - (1) Statutory, regulatory or contractual provisions or requirements.
 - (2) Financial reporting practices that could have a material effect on the financial statements.

9. We have no knowledge of fraud or suspected fraud affecting the Program involving:
 - a. Management,
 - b. Employees who have significant roles in the internal control, or
 - c. Others where the fraud could have a material effect on the financial statements.
10. We acknowledge or responsibility for the design and implementation of programs and controls to provide reasonable assurance that fraud is prevented and detected.
11. We have no knowledge of any allegations of fraud or suspected fraud affecting the Program received in communications from employees, former employees, analysts, regulators, short sellers or others.
12. We are aware of no significant deficiencies, including material weaknesses, in the design or operation of internal controls that could adversely affect the Program's ability to record process, summarize, and report financial data.
13. There have been no communications from regulatory agencies concerning noncompliance with, or deficiencies in, financial reporting practices related to the Program.
14. We have no plans or intentions that may materially affect the carrying value or classification of assets and liabilities created by the Program.
15. The following, if applicable, have been properly reflected and/or disclosed in the financial statements:
 - a. Related party transactions and joint ventures in which the Program participates, as defined in Section 2100 of the Governmental Accounting Standards Board's Codification of Governmental Accounting and Financial Reporting Standards, and interfund transactions, including interfund accounts and advances receivable and payable, sale and purchase transactions, interfund transfers, long-term loans, leasing arrangements and guarantees, all of which have been recorded in accordance with the economic substance of the transaction and appropriately classified and reported.
 - b. Guarantees, whether written or oral, under which the Program is contingently liable.
 - c. Arrangements with financial institutions involving compensating balances or other arrangements involving restrictions on cash balances and line of credit or similar arrangements.
 - d. Line of credit or similar arrangements
 - e. Agreements to repurchase assets previously sold.
 - f. Security agreements in effect under the Uniform Commercial Code.
 - g. Any other liens or encumbrances on assets or revenues or any assets or revenues which were pledged as collateral for any liability or which were subordinated in any way.
 - h. The fair value of investments.
 - i. Amounts of contractual obligations for plant construction and purchase of real property or equipment not included in the liabilities or encumbrances recorded on the books.
 - j. Any liabilities which are subordinated in any way to any other actual or possible liabilities.
 - k. All leases and material amounts of rental obligations under long-term leases.
 - l. All significant estimates and material concentrations known to management which are required to be disclosed in accordance with the Risks and Uncertainties Topic of the FASB Accounting Standards Codification. Significant estimates are estimates at the balance sheet date which could change materially within the next year. Concentrations refer to volumes of business, revenues, available sources of supply, or markets for which events could occur which would significantly disrupt normal finances within the next year.
 - m. Deposits and investment securities category of custodial credit risk.
16. We are responsible for making the accounting estimates included in the financial statements. Those estimates reflect our judgment based on our knowledge and experience about past and current events and our assumptions about conditions we expect to exist and courses of action we expect to take. In that regard, adequate provisions have been made:
 - a. To reduce receivables to their estimated net collectible amounts.
 - b. To reduce investments, intangibles, and other assets which have permanently declined in value to their realizable values.

- c. For risk retention, including uninsured losses or loss retentions (deductibles) attributable to events occurring through June 30, 2016, and/or for expected retroactive insurance premium adjustments applicable to periods through June 30, 2016.
 - d. For any material loss to be sustained in the fulfillment of, or from the inability to fulfill, any service commitments.
 - e. For any material loss to be sustained as a result of purchase commitments.
 - f. For environmental clean up obligations.
17. There are no:
- a. Material transactions that have not been properly recorded in the accounting records underlying the financial statements.
 - b. Violations or possible violations of laws or regulations whose effects should be considered for disclosure in the financial statements or as a basis for recording a loss contingency. In that regard, we specifically represent that we have not been designated as, or alleged to be, a "potentially responsible party" by the Federal Environmental Protection Agency or any equivalent state agencies in connection with any environmental contamination related to activities of the Program.
 - c. Other material liabilities or gain or loss contingencies that are required to be accrued or disclosed by the Contingencies Topic of the FASB Accounting Standards Codification and/or GASB Statement No. 10, and we have not consulted a lawyer concerning litigation, claims, or assessments.
18. We are not aware of any pending or threatened litigation, claims, or assessments, or unasserted claims or assessments that are required to be accrued or disclosed in the financial statements in accordance with the Contingencies Topic of the FASB Accounting Standards Codification and/or GASB Statement No. 10, and we have not consulted a lawyer concerning litigation, claims, or assessments.
19. We have no direct or indirect, legal or moral, obligation for any debt of any organization, public or private that is not disclosed in the financial statements.
20. We have satisfactory title to all owned assets.
21. We have complied with all aspects of contractual agreements that would have a material effect on the financial statements in the event of noncompliance.
22. We are not aware of any significant deficiencies or material weaknesses in internal control that should be reported. We are responsible for establishing and maintaining effective internal control over financial reporting.

In connection with your audit, conducted in accordance with *Government Auditing Standards*, we confirm:

- 1. We are responsible for:
 - a. Compliance with the laws, regulations, and provisions of contracts and grant agreements applicable to the Program.
 - b. Establishing and maintaining effective internal control over financial reporting.
- 2. We have identified and disclosed to you:
 - a. All laws, regulations, and provisions of the Program *Guidelines* that have a direct and material effect on the determinations of financial statement amounts or other financial data significant to audit objectives.
 - b. Violations (and possible violations) of laws, regulations, and provisions of the Program *Guidelines* whose effects should be considered for disclosure in the auditor's report on noncompliance.
- 3. We have taken timely and appropriate steps to remedy violations of provisions of the Program *Guidelines* that have been reported, if any.

4. We have a process to track the status of audit findings and recommendations.
5. We have identified for you previous financial audits, attestation engagements, performance audits, or other studies related to the objectives of the audit being undertaken and the corrective action taken to address significant findings and recommendations.
6. We have provided you with our views on your reported findings, conclusions, and recommendations, as well as our planned corrective actions for the report.
7. We have reviewed, approved, and take full responsibility for the financial statements and related notes and acknowledge the auditor's role in the preparation of this information.

We are responsible for determining that significant events or transactions that have occurred since the balance sheet date and through November 15, 2016, have been recognized or disclosed in the financial statements. No events or transactions other than those disclosed in the financial statements have occurred subsequent to the balance sheet date and through November 15, 2016, that would require recognition or disclosure in the financial statements. We further represent that as of October 31, 2015, the financial statements were complete in a form and format that complied with accounting principles generally accepted in the United States of America, and all approvals necessary for issuance of the financial statements had been obtained.

During the course of your audits, you may have accumulated records containing data which should be reflected in our books and records. All such data have been so reflected. Accordingly, copies of such records in your possession are no longer needed by us.

UNIVERSITY OF SOUTH CAROLINA



Dr. Harris Pastides
President

Date Signed

28 Nov. 2016



Dr. Prakash Nagarkatti
Vice President for research

Date Signed

Nov 15th, 2016



Mr. Edward L. Walton, CPA
Senior Vice President for Administration and Chief
Operating Officer

Date Signed