Advantage: **South Carolina**

2007 REPORT TO STAKEHOLDERS

HEALTH SCIENCES SOUTH CAROLINA

A Collaborative To Advance Health Sciences

The Mission

of Health Sciences South Carolina

The Mission of Health Sciences South Carolina is to conduct collaborative health sciences research to improve the health status, education, workforce development, and economic wellbeing for all South Carolinians.

With regard to **Health Status**, we will accomplish this by:

- Translating research results into clinical practice
- Promoting wellness and implementing disease management programs to reduce disparities in health status
- Improving patient safety and clinical effectiveness

With regard to **Education and Workforce Development**, we will accomplish this by:

- Improving the quality of and access to health-related education
- Increasing the number of health-related professionals trained

With regard to **Economic Wellbeing**, we will accomplish this by:

- Attracting a significant increase in funding to South Carolina for health sciences research
- Attracting nationally prominent scientists to South Carolina, bringing intellectual property to stimulate the state's knowledge-based economy
- Creating and attracting health-related companies to South Carolina that will increase the number of highly skilled jobs

"To accomplish great things we must dream as well as act."

In 2002, the General Assembly passed the South Carolina Research Centers of Economic Excellence Act. The act authorized the use of $200 million in state funds through 2010 from the South Carolina Education Lottery to create endowed chairs at the state's senior research universities: Clemson University, the Medical University of South Carolina and the University of South Carolina. The vision behind the legislation was simple: use research to fuel economic development, create a knowledge-based economy and increase per capita income in South Carolina.

Other important legislation followed. In 2004, the General Assembly adopted the Research University Infrastructure Bond Act, which provided approximately $220 million in research infrastructure funds for the three research universities. The Act enhanced the ability of the state's research universities to partner with the private sector to develop research infrastructure and promote economic development associated with the universities. The Innovation Centers Act of 2005 established three Research Innovation Centers in South Carolina, one associated with each university.

Today, there are 35 research centers of economic excellence in areas as diverse as architecture, engineering, nanotechnology, biomedicine, energy science, environmental science and information technology, linking universities, business, health systems and government. The culmination of leadership, investment, and intellectual infrastructure is succeeding in attracting world-class researchers, national funding for research and capital investment by private business, and in so doing, is driving positive change for South Carolina.

Health Sciences South Carolina commends the General Assembly for their vision and continued support of the Endowed Chairs program.

Dear Stakeholders,

It is with great pleasure that we present the first annual report of Health Sciences South Carolina, *ADVANTAGE: South Carolina*. With this publication, the partners in this unique and creative statewide research collaborative—Clemson University, Greenville Hospital System University Medical Center, the Medical University of South Carolina, Palmetto Health, Spartanburg Regional Healthcare System and the University of South Carolina—wish to share our vision, mission, and accomplishments on behalf of the people of South Carolina.

Since its formation in April 2004, Health Sciences South Carolina has quietly, and with a distinct sense of purpose, advanced our goal of using health sciences research to improve South Carolina's health status, education, workforce development, and economic wellbeing.

It has been quite a journey. South Carolina was hard-hit by the economic downturn that occurred early in this decade. Presently, our state suffers from poor health status, ranking at the top of national rankings for heart disease, stroke, cancer, and chronic disease such as diabetes. There is a statewide shortage of health care workers and a shortage of capacity to train new ones. Yet each of these challenges created opportunity and focus for Health Sciences South Carolina.

In a relatively short period of time, Health Sciences South Carolina has accomplished much:

• Recognizing the merit of our vision for the state, the South Carolina General Assembly funded, or approved for funding, nine research centers of economic excellence (CoEEs) advanced by Health Sciences South Carolina.

• Health Sciences South Carolina successfully recruited and hired researchers of national and international caliber to fill five endowed chairs.

• Health Sciences South Carolina is using research to address major threats to our state's health status: heart disease, stroke, neurological disorders, mental health, patient safety and quality care, and is making noticeable progress.

• We are applying advanced technology to train the next generation of physicians, nurses, and allied health professionals to staff our state's hospitals and to design senior-friendly homes and cars and the hospitals of the future.

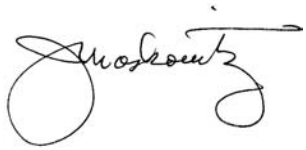
• We have attracted the investment and attention of individuals, corporations, and private foundations such as Peter McCausland, Glaxo-Smith Kline and The Duke Endowment. They and others share our vision and recognize the significant return on investment that our efforts promise.

• We are beginning to see economic rewards in the form of job creation and spin-off technologies and companies.

In many ways, Health Sciences South Carolina is a powerful magnet—for talented people, for new ways of looking at old challenges and for hope. People across the country in business, health care, research, and academia are looking at South Carolina with intense interest and in many cases are choosing to come and join us. People who have lived and worked here for years are energized and generating new ideas. There is hope in the form of better health, higher quality of health care and more educational and job opportunities.

Today, Health Sciences South Carolina is in its infancy. There are many exciting avenues we can explore. The South Carolina General Assembly created an unprecedented opportunity for the state with the Research Centers of Economic Excellence Act, and we are doing all that we can to take full advantage of it.

We give South Carolina the Advantage: In health. In education. In workforce development. And in economic wellbeing.



Jay Moskowitz, PhD
President and CEO, Health Sciences South Carolina
Endowed Chair, Translational Clinical Research,
Center for Healthcare Quality

LETTER FROM THE CHAIR

To the People of South Carolina,

More than three years ago, the leaders of South Carolina's three research universities and three largest health systems came together with a shared vision of improving the state's health and economic wellbeing through health sciences research and education. These diverse and sometimes competing institutions chose to collaborate because the needs were painfully obvious. We believed then as we do today that Health Sciences South Carolina (HSSC) could be a powerful catalyst for change.

What has been amazing is that people from all walks of life and every corner of our state and beyond agree with us. The boards of all six HSSC member organizations have supported and funded our initiatives. The South Carolina General Assembly has approved and either funded or designated funding for nine HSSC research Centers of Economic Excellence. Our researchers, physicians and staffs have been inspired, energized and motivated, responding with innovative research proposals, new collaborations with HSSC colleagues and a palpable shift to a winning attitude.

And people have noticed. What South Carolina is doing with this unique statewide collaborative has allowed us to complement our existing intellectual infrastructure with world-class researchers from esteemed institutions like the University of Pittsburgh, Penn State University, Duke University, and Johns Hopkins. It attracted the largest single grant made by the health care division of The Duke Endowment—$21 million—to fund health care quality and patient safety initiatives. It is now enabling us to redefine modern medicine and in so doing, improve the health status of our citizens and spur economic growth.

Health Sciences South Carolina gives our state a unique advantage. We thank you for believing in and supporting our vision.

Michael C. Riordan
President and CEO
Greenville Hospital System University Medical Center

HEALTH SCIENCES SOUTH CAROLINA BOARD OF DIRECTORS

Front row from top to bottom: *Jay Moskowitz, PhD, president and CEO, Health Sciences South Carolina; Andrew Sorensen, PhD, president, University of South Carolina; Ingo Angermeier, president and CEO, Spartanburg Regional Healthcare System; James F. Barker, FAIA, president, Clemson University.*

Back row from top to bottom: *Michael C. Riordan, CEO, Greenville Hospital System University Medical Center; Charles Beaman, Jr., CEO, Palmetto Health; Ray Greenberg, MD, PhD, president, Medical University of South Carolina.*

Clemson University | Clemson, South Carolina

Clemson University, ranked 27th among U.S. public universities by U.S. News & World Report, combines the best of small-college teaching and campus life with high-tech research, technology and engineering power. Founded in 1889 by Thomas Green Clemson to be a "high seminary of learning" and a driver of economic development, the University provides educational and enrichment opportunities to create leaders, thinkers and entrepreneurs; solve real-world problems through outreach and public service; and build a knowledge-based economy through a relevant, highly focused research agenda. Clemson's 17,000 students can select from more than 70 undergraduate and 100 graduate degree programs through five colleges. The Clemson University International Center for Automotive Research (CU-ICAR) provides a clear example of South Carolina's economic future.

Greenville Hospital System University Medical Center
Greenville, South Carolina

Established nearly a century ago, Greenville Hospital System University Medical Center (GHS) is committed to providing high-quality patient care through advanced technology, leading-edge procedures and experienced health professionals. The 1,254-bed system provides integrated health care to the Upstate and beyond through a regional tertiary referral and education center, community hospitals, physician practices, outpatient facilities, wellness centers and community outreach programs, in addition to a long-term acute care hospital and innovative nursing home. GHS has an extensive medical education program spanning 11 residency and fellowship programs. GHS offers more than 530 active clinical trials, including several first-in-nation cancer treatment studies that involve gene transfer studies, oncolytic viral studies and autologous vaccine trials.

Medical University of South Carolina
Charleston, South Carolina

The Medical University of South Carolina (MUSC) has a long tradition of excellence in education, research and patient care. As the largest non-federal employer in Charleston, MUSC and its affiliates have collective budgets in excess of $1.3 billion per year. MUSC operates a 600-bed medical center, which includes a nationally recognized Children's Hospital and a leading Institute of Psychiatry. MUSC investigators conduct nearly $200 million per year of research, with six departments ranked among the top 20 in National Institutes of Health support. Technology from intellectual property has spawned more than a dozen start-up companies. MUSC has completed recently, or is building, new facilities for heart, vascular and digestive disease care, allied health education, dental education, children's research, cancer care and research, drug discovery, bioengineering, and clinical research.

Palmetto Health | Columbia, South Carolina

Palmetto Health is South Carolina's largest integrated health system in which a progressive environment, the latest technology, including research and treatment protocols, goes hand-in-hand with quality patient care. Palmetto Health is composed of three outstanding hospitals—Palmetto Health Richland in Columbia, and Palmetto Health Baptist in Columbia and Easley—and serves as the primary teaching hospital for the University of South Carolina. Palmetto's three hospitals are highly respected, long-time community members. Each year, they treat nearly a half million patients, welcome nearly 7,200 babies into the world, treat more than 82,000 pediatric patients, 3,000 cancer patients, accommodate 142,000 Emergency department visits and make nearly 38,000 home care visits.

Spartanburg Regional Healthcare System
Spartanburg, South Carolina

Spartanburg Regional is among South Carolina's largest community-based health care providers. Offering services in every facet of care, and named the "Hospital of the Future" by the U.S. Department of Defense in 2006, Spartanburg Regional serves residents in a five-county area of South Carolina and North Carolina. Boasting top-rated heart, cancer, women's and emergency services, Spartanburg Regional is home to South Carolina's first-accredited stroke and chest pain centers. As a Magnet® hospital, the American Nurses Association considers Spartanburg Regional among the nation's top three percent of hospitals for nursing excellence. Spartanburg Regional has been named a "Top 100" hospital for advances in computer technology. Gibbs Cancer Center is one of only six cancer centers in the world affiliated with M.D. Anderson Cancer Center in Houston.

University of South Carolina | Columbia, South Carolina

For two centuries, the University of South Carolina's teaching, research and outreach efforts have been improving the lives of individuals in South Carolina and around the world, and making the state a healthier and more prosperous place to live, work and do business. With 39,000 students on eight campuses, more than 350 degree programs—including law, engineering, public health, pharmacy and medicine—and 240,000 alumni, the University is the most comprehensive institution of higher learning in the state. South Carolina has received the highest research designation awarded by the Carnegie Foundation, and the University's undergraduate international business program is ranked best in the nation by *U.S. News & World Report*. Carolina is home to the Norman J. Arnold School of Public Health and the University of South Carolina School of Medicine.

Advantage: **South Carolina**

HEALTH STATUS

It's no secret. Unfortunately, South Carolina is one of the leaders in heart disease, stroke, and certain types of cancer (breast, prostate and lung). There are unacceptable disparities; African-Americans experience 52 percent more premature death than whites. Deaths from cancer are 24 percent more prevalent in blacks than whites. Residents in rural areas experience more premature death than those in the fringe counties of large metropolitan areas. Health Sciences South Carolina is focused on reversing the effects of these deadly diseases on all South Carolinians, emphasizing translational research that will bring new, life-saving treatments to more people more quickly.

Although it is among the most preventable chronic diseases, stroke is the third leading cause of death in South Carolina. Under the direction of endowed chair Robert J. Adams, MS, MD, and the Medical University of South Carolina (MUSC), University of South Carolina, Greenville Hospital System University Medical Center and Palmetto Health, the Center for Stroke is working to substantially increase access to urgent stroke care, including a life-saving treatment called alteplase. Using the Internet and a telemedicine system known as REACH (Remote Evaluation of Acute Ischemic Stroke), the Center is partnering with community hospitals in rural areas and small towns where access to expert stroke care is limited. Agreements have been signed with Georgetown Memorial Hospital and Waccamaw Community Hospital with services set to begin in January 2008. The Center plans to add six more South Carolina hospitals to the REACH over the next 18 months. In the future, the Stroke Center will place greater efforts on stroke prevention and recovery.

Other major treatment and prevention efforts are under way. Nearly one in two South Carolinians will die from cardiovascular disease if we don't act precipitously. Because heart disease can be prevented, early detection is at the heart of the Center for Proteomics for Cardiovascular Disease Prevention and Treatment. Using high sensitivity molecular assays, robotics and bioinformatics, researchers hope to develop simple, inexpensive, early detection systems for at-risk patients. Plans call for a statewide network to test better ways to prevent, diagnose and treat heart disease as well as to make cutting-edge care more accessible.

Health Sciences South Carolina is addressing cancer through the South Carolina Coordinated Cancer Initiative (see page 18), an initiative of Palmetto Health, the University of South Carolina, and the South Carolina Cancer Center. In November 2007, Phil Buckhaults, PhD, director of the statewide South Carolina Cancer Tissue Bank, announced the discovery of specific mutated genes that may cause breast and prostate cancer. This discovery could lead to advanced treatments based on the cancer's genetic makeup. These and other efforts will give South Carolinians every advantage for a healthier, more prosperous future.

Health Sciences South Carolina is focusing significant effort on improving public health, placing particular emphasis on heart disease, cancer, mental health, and tissue regeneration. Such efforts can be life changing. In 2003, Gene Fallon, an attorney in Florence, SC, was diagnosed with an aneurysm on his aorta. MUSC cardiothoracic surgeon, John Ikonomidis, MD, PhD, performed a revolutionary valve procedure that rid Fallon of the life-threatening aneurysm, salvaged his aorta and saved his life. Today Fallon is back to practicing law and thankful cutting-edge care was available in South Carolina. "I am truly happy to be alive," he says.

ORGANIZATIONAL HISTORY

Established in 2004, Health Sciences South Carolina (HSSC) is a public-private partnership of the state's research universities and largest health systems that share the vision of using health sciences research to drive economic growth and improve the state's health status. The collaborative partnership includes Clemson University, the Medical University of South Carolina, the University of South Carolina, Greenville Hospital System University Medical Center, Palmetto Health, and Spartanburg Regional Healthcare System.

Participation in this unprecedented statewide collaborative required each of the members to invest $2 million each year for 10 years toward research projects that support their respective missions and those of HSSC. These investments are structured to be eligible for dollar-for-dollar matching funds appropriated through the South Carolina Research Centers of Economic Excellence Act, also known as the Endowed Chairs Program. The investments in health sciences research expand the opportunity to attract and recruit nationally renowned researchers, accelerate economic development, compete more effectively for national grant support, and attract additional federal, state, and private funds.

In September 2007, HSSC welcomed its first president and CEO, Jay Moskowitz, PhD, a nationally recognized research policy administrator. With more than 35 years in federal government, academic medicine and research, Dr. Moskowitz was chosen after an extensive national search. He is charged with advancing the mission of HSSC and is playing a critical role in the creation and implementation of an organizational infrastructure. He also serves as an important intellectual and national networking resource for HSSC partners and researchers.

Each member of HSSC is a substantial driver of the state's economy and an essential provider of health services, education and research. Collectively, HSSC is a significant economic engine based on number of employees of its partners, future job creation, capital building projects, and creation and licensing of intellectual property. Project by project, member investments in health sciences research, health care delivery, and education promote the best interests of South Carolina.

Health Sciences South Carolina would like to recognize two founding board members who have since retired: Kester Freeman, former CEO, Palmetto Health, and Frank Pinckney, former president and CEO, Greenville Hospital System University Medical Center. Their vision and leadership were critical to the formation and success of the organization.

HEALTH SCIENCES SOUTH CAROLINA SCIENTIFIC STEERING COMMITTEE

Front row from bottom to top: *Jerry Youkey, MD, Greenville Hospital System University Medical Center; Vincent Gallicchio, PhD, Dp, FRSA, FASAHP, Clemson University; Jerry Reves, MD, Medical University of South Carolina; Harris Pastides, PhD, MPH, University of South Carolina; Chris Przirembel, PhD, Clemson University.*

Back row from bottom to top: *Gordon Baylis, DPhil, University of South Carolina; John Raymond, MD, Medical University of South Carolina; James Raymond, MD, Palmetto Health; Donald DiPette, MD, University of South Carolina; Robert Rainer, MD, Spartanburg Regional Health care System.*

Advantage: **South Carolina**

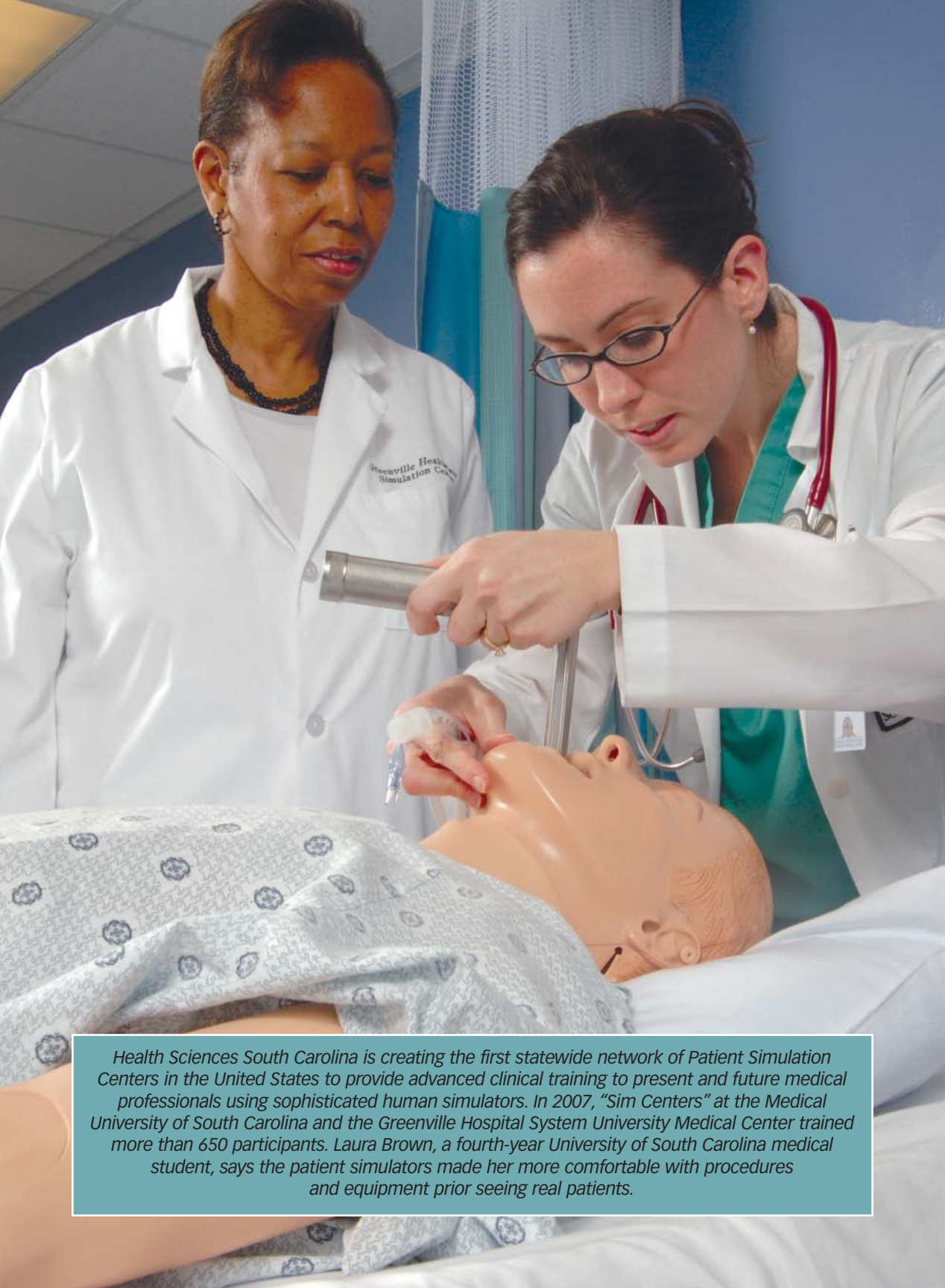
EDUCATION AND WORKFORCE DEVELOPMENT

Careers in health care and biomedical research are well paying, not prone to outsourcing, and offer tremendous opportunities for advancement. South Carolina's hospitals and laboratories are expanding, creating new jobs. Yet training the next generation of health care providers efficiently, safely, and in the volumes needed is a challenge. Current health care professionals also must be kept up-to-date on the latest technologies and patient care protocols.

Health Sciences South Carolina is addressing South Carolina's education and workforce needs from multiple fronts. The Center for Clinical Effectiveness and Patient Safety is redefining how medical, nursing, and allied health students receive clinical training. Prior to learning on real patients, medical and nursing students perfect medical procedures using sophisticated human simulators and highly integrated data acquisition and analysis platforms. Simulators, in addition, provide lifelong continuing education opportunities for licensed professionals to learn new skills and perfect old ones. The first in a statewide network of patient simulation centers opened at Greenville Hospital System last March and, in the first six months of operation, more than 420 University of South Carolina medical students and residents, Clemson University nursing students, Greenville Technical College nursing and allied health students, and current physicians and nurses were trained. At the Medical University of South Carolina (MUSC), the Center held 117 simulation sessions attended by 220 participants on topics that included Medical Emergency Team Training. The benefits are real: faster, safer clinical training, and ultimately, improved patient safety. For example, after simulation training, MUSC anesthesiology residents demonstrated an 80 percent improvement rate in Difficult Airway Management Competency. The Center is now developing standardized training curriculums it hopes to license for use on a state and national basis.

The Center for Health Facilities Design and Testing is creating a new field of academic study that combines architecture, engineering, industrial design, and health sciences. The first of its kind in the world, the Center promises to attract students and practitioners who wish to learn and apply evidence-based design to tomorrow's hospitals, technology and processes.

Health Sciences South Carolina also serves as an incubator for the state's new generation of researchers. At the Brain Imaging Center, postdoctoral fellows, graduates, and undergraduates work side-by-side with faculty researchers honing their research skills. The Center for Regenerative Medicine is establishing pre-doctoral and postdoctoral training programs in stem cell technology, developmental biology, biomaterials, and bioengineering. These and other efforts will ensure that South Carolina students have every advantage in hospitals, laboratories and life.



Health Sciences South Carolina is creating the first statewide network of Patient Simulation Centers in the United States to provide advanced clinical training to present and future medical professionals using sophisticated human simulators. In 2007, "Sim Centers" at the Medical University of South Carolina and the Greenville Hospital System University Medical Center trained more than 650 participants. Laura Brown, a fourth-year University of South Carolina medical student, says the patient simulators made her more comfortable with procedures and equipment prior seeing real patients.

Health Sciences South Carolina has nine research centers of economic excellence, with plans in place for 24 endowed chairs. Of these, five world-class physician/researchers have been successfully recruited.

Brain Imaging Center of Economic Excellence

Partners
Greenville Hospital System University Medical Center
Medical University of South Carolina
Palmetto Health (McCausland Center for Brain Imaging)
University of South Carolina

The Brain Imaging Center of Economic Excellence focuses on how the human brain works, both in health and in disease. The main area of development involves Magnetic Resonance Imaging (MRI). This area of research will lead to intervention technologies, which will improve the function of individuals whose brains have been damaged by illnesses such as stroke or Parkinson's disease. Too, the Center seeks to develop new technologies for medical devices, MRI hardware and software.

Center for Regenerative Medicine

Partners
Clemson University
Medical University of South Carolina
University of South Carolina

Endowed Chair for Regenerative Medicine in Stem Cell Technology
Richard E. Swaja, PhD

Tissue engineering, often called regenerative medicine, is the regeneration or remodeling of tissue and organs for the purpose of repairing, replacing, maintaining or enhancing organ function. The Center for Regenerative Medicine's foundation is to combine principles and methods of biology, medicine, and the physical sciences and engineering to exploit living cells for therapeutic or diagnostic purposes. Therapeutic applications involve growing tissues or organs inside a patient or in vitro for transplantation. Diagnostic applications involve growing tissue in vitro for testing drug metabolism, uptake, toxicity, and pathogenicity. The Center aims to translate basic research into novel therapies for genetic and degenerative disorders.

Center for Clinical Effectiveness and Patient Safety

Partners	Clemson University Greenville Hospital System University Medical Center Medical University of South Carolina Palmetto Health Spartanburg Regional Healthcare System University of South Carolina
Lewis Blackman Endowed Chair in Patient Safety	John J. Schaefer, III, MD

The mission of the Center for Clinical Effectiveness and Patient Safety is to improve clinical education and patient safety through the use of simulation technology. Through a statewide network of simulation centers, the goals of the Center are to improve the quality of delivered care, advance the practice and training of the medical workforce and allied health professionals, and become an international focal point for health sciences education and innovative research in education and safety.

Center for Healthcare Quality

Partners	Greenville Hospital System University Medical Center Medical University of South Carolina Palmetto Health Spartanburg Regional Healthcare System University of South Carolina
Endowed Chair for Translational Clinical Research	Jay Moskowitz, PhD
Endowed Chair for Medical Informatics	Iain Sanderson, MSc, FRCA

The Center for Healthcare Quality will capitalize on recent scientific discoveries and technological advances, as well as South Carolina's unique characteristics and resources, to conduct innovative research to improve the health of the population and the economic wellbeing of the state. Specific projects include developing a statewide Clinical Research Organization, the South Carolina Health Data Portal, and a Healthcare Data Coordinating Center.

Jay Moskowitz

Iain Sanderson

Center for Childhood Neurotherapeutics

Partners
Greenville Hospital System
Medical University of South Carolina
University of South Carolina

Neurotherapy is the treatment of psychological, psychiatric and/or nervous disorders. The Center for Childhood eurotherapeutics is an integrated statewide team, which focuses on the prevention of brain damage in premature infants and the curing of infant brain diseases through cellular engineering. The three endowed chairs for this Center will focus on translating neuroscience into pharmaceuticals for safe use in children, develop new protocols and drugs to treat neurodevelopmental disorders, and evaluate new treatment protocols, drugs and devices, and prepare them for marketing and dissemination.

Center for Proteomics for Cardiovascular Disease Prevention and Treatment

Partners
Medical University of South Carolina
Spartanburg Regional Healthcare System

Cardiovascular disease is the leading cause of death and disability in South Carolina, accounting for one in four deaths. It is something physicians and researchers have struggled to evaluate until after a patient has exhibited symptoms, at which point the disease is often advanced and irreversible. The purpose of the Center for Proteomics for Cardiovascular Disease Prevention and Treatment is to translate advances in basic "bench" science to clinical "bedside" care in an effort to improve the health care of the citizens of South Carolina. The Center's priorities are creating diagnostic techniques, prognostic risk profiles, therapeutic management strategies, a statewide network, and technology development and transfer.

Center for Health Facilities Design and Testing

Partners
Clemson University
Medical University of South Carolina
Spartanburg Regional Healthcare System

The Center for Health Facilities Design and Testing will engage in collaborative interdisciplinary research on how design of specific health care settings and features impacts operational efficiency, therapeutic outcomes and patient safety, patient/staff satisfaction and change. Research will focus on the rigorous study of repetitive settings within health care facilities where significant health care interactions occur. Design and research activities will involve conceiving, testing and implementing new concepts for a range of patient care, diagnosis and treatment spaces.

Stroke Center

Partners
Greenville Hospital System University Medical Center
Medical University of South Carolina
Palmetto Health
University of South Carolina

Endowed Chair
Robert J. Adams, MS, MD

Although it is among the most preventable chronic diseases, stroke is the third leading cause of death in South Carolina and particularly prevalent among African Americans. The Center for Stroke has the long term vision of developing novel methods and statewide collaborations aimed at the reduction of the incidence of stroke, providing up-to-date acute and long term care, and improving outcomes of stroke survivors in South Carolina. The Center also strives to enhance the ways that stroke is treated through research and innovative service delivery.

SeniorSMART™ Center

Partners
Clemson University
Greenville Hospital System University Medical Center
Medical University of South Carolina
Palmetto Health
University of South Carolina

The aging of the U.S. population will present unprecedented challenges and opportunities now and in the coming years. The so-called "baby boomer" generation will now become the "senior boomers," and will wield unprecedented wealth and political influence and have different expectations from previous cohorts. A core value of this generation can be expressed in the term "independence." The SeniorSMART™ Center will focus on preserving older adult independence through interdisciplinary research that focuses on key areas including the home, physical mobility, driving, and maintaining a healthy brain. The Center uses SmartHOME, SmartWHEELS, and SharpBRAIN research areas of focus. The economic potential for those companies that contribute to maintaining independence and improving quality of life for older adults is tremendous.

ACCOMPLISHMENTS

Health Sciences South Carolina's spirit of collaboration has inspired numerous initiatives across the state. Like the research centers of economic excellence, these efforts are leveraging intellectual capital and other resources to improve South Carolina's health status, spark economic development, and provide new educational opportunities. Here is a sampling of accomplishments.

A health sciences research campus for the Upstate. In 2005, the Greenville Hospital System University Medical Center in Greenville, SC, broke ground on a 22-acre health sciences research education and innovation campus adjacent to Greenville Memorial Hospital that will serve as the home of numerous Health Sciences South Carolina research initiatives. The first structure on the campus, the Research Education and Innovation (REI) Building, is scheduled for completion in 2008.

Attacking cancer together. South Carolina is disproportionately affected by some forms of cancer, including breast, prostate and lung. This is particularly true among African-Americans. Presently, South Carolina does not have a National Cancer Institute (NCI) designated comprehensive cancer center. To improve the Palmetto State's fight against cancer and to aid the MUSC Hollings Cancer Center's bid to secure NCI designation, Health Sciences South Carolina partners announced in April 2006 their intent to establish the nation's first statewide cancer research alliance, the South Carolina Coordinated Cancer Initiative.

By bringing together cancer researchers and care providers across the state, this initiative will enable life-saving research to move from the laboratory into patient care more quickly and efficiently. To date, the Initiative has established a statewide clinical trials network and a cancer tissue bank system to facilitate research and standardize cancer care protocols.

Hollings Cancer Center at the Medical University of South Carolina in Charleston.

"The Duke Endowment grant addresses clinical effectiveness, patient safety, and health care quality, which are increasingly important areas of focus for the health care industry as well as The Duke Endowment. The great work by HSSC on these issues, with the Endowment's new support, will ultimately make a positive difference in the health of all Carolinians now, and for generations to come."

– **Russell M. Robinson, II, Chairman**
Board of Trustees
The Duke Endowment

A $21 million show of support. In August 2006, The Duke Endowment awarded Health Sciences South Carolina a three-year $21 million grant, the largest ever made by the health care division of the Charlotte-based private foundation. The Duke grant is helping to establish the Center of Health care Quality as well as support critical operational and information technology infrastructure. It played an instrumental role in the recruitment of both Jay Moskowitz, PhD, and Iain Sanderson, MD, FRCA, from Duke University to serve as Chief Medical Information Officer (CMIO) for Health Sciences South Carolina. Dr. Sanderson is now the endowed chair of Medical Informatics in the Center for Health care Quality.

A statewide effort to support seniors. Health Sciences South Carolina representatives have established the South Carolina Aging Research Network (SCARN), a statewide network of geriatricians and clinician-scientists who are addressing issues of importance to the state's senior population. Three major projects are currently underway: stroke education and prevention; research into the link between Vitamin D and hypertension, obesity, and functional ability; and an effort to promote better balance and reduce falls in seniors. With aging Baby Boomers threatening to overwhelm available health care resources, the work of SCARN is invaluable and will become even more so in the future.

Streamlining statewide research collaboration. Medical research involving human participants must go through Institutional Review Boards (IRBs) to determine that the study is ethical, legal and meets community standards. If several institutions are involved in a research project, as is often the case with Health Sciences South Carolina, the investigative team is faced with multiple IRBs, a time-consuming process. Last year, many of the partners were using paper-based IRB systems. To streamline the process, all Health Sciences South Carolina partners agreed to invest in and implement a statewide, integrated IRB system that will streamline and accelerate the IRB process. This effort, which will go live in early 2008, increases South Carolina's competitiveness for national research funding and in recruiting world-class researchers and, most importantly, continues to protect the rights of research participants.

A new president and CEO. In September 2007, Jay Moskowitz, PhD, was named the first president and CEO of Health Sciences South Carolina. A 26-year veteran of leadership positions within the National Institutes of Health, the largest funding agency for medical research in the world, Dr. Moskowitz held research-related administrative dean and associate vice president positions with Wake Forest University and Penn State University. He has also been named the Center of Health care Quality's endowed chair of Translational Clinical Research.

Advantage: **South Carolina**

ECONOMIC WELLBEING

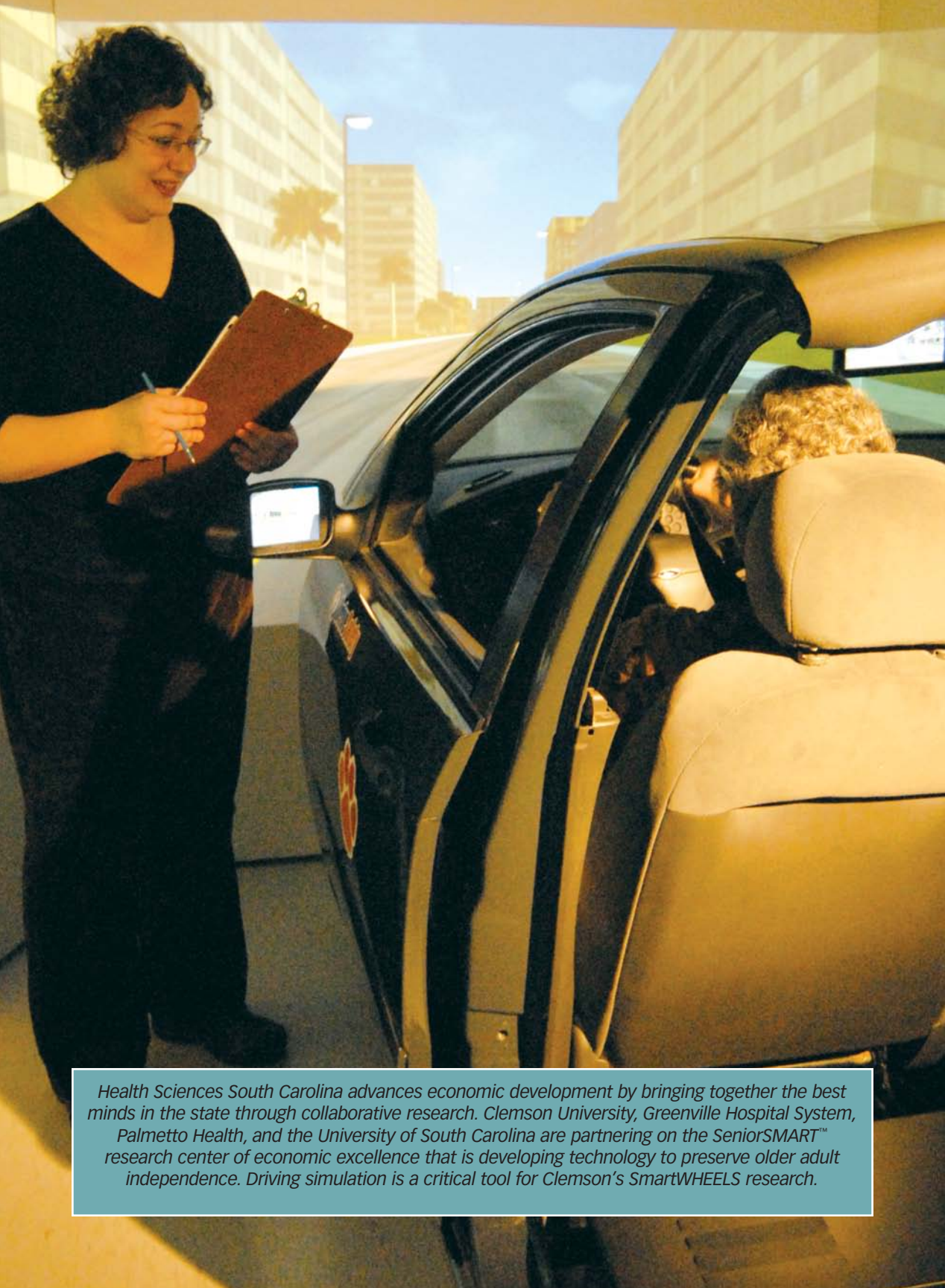
Knowledge is the currency of the global economy, and Health Sciences South Carolina is using its intellectual capital to stimulate the state's economy. Already, universities and health care systems are powerful economic engines. In 2007, HSSC members employed more than 42,000 South Carolinians across the state.

Health Sciences South Carolina is successfully fostering entrepreneurship. One such example is the Brain Imaging Center's spin-off company, Cephos Corporation, which uses advanced functional magnetic resonance imaging (fMRI) to detect when people are lying. The technology has proven to be 90 percent accurate, unprecedented results for deception detection. Two major markets exist for Cephos' products: the government, which currently employs a variety of techniques such as polygraph tests to grant national security clearances, and the legal industry. The U.S. Department of Defense alone spends in excess of $200 million annually for polygraph testing.

The Center for Regenerative Medicine has filed several patents in wound-healing technology and has launched a spin-off company, FirstString, to market the technology. The company is developing a wound-repair gel that may bring tens of millions of revenue to South Carolina.

Scientific discoveries have the potential to ignite entire industries. The SeniorSMART™ Center is specifically targeted at preserving older adult independence, leveraging the researchers and resources of Clemson University, Greenville Hospital System, Palmetto Health, and the University of South Carolina. Activities are structured around three central themes: SharpBRAIN, aimed at helping seniors retain their intellectual capacity; SmartWHEELS, promoting mobility outside the home; and SmartHOME, supporting independent living. Laboratories have been established at partner sites as well as at the Lowman Home Campus of Lutheran Homes of South Carolina to develop and test technologies aimed at improving the quality of life of senior citizens, one of the state's fastest growing demographic groups. Commercial opportunities are diverse: homes with special motion detectors, heat sensors and voice activated appliances; cars with safety features that accommodate slower reaction times and changing vision; novel therapies and technologies that keep minds sharp.

The Center for Health Facilities Design and Testing also promises economic opportunity. America's health care infrastructure is aging and this Center will apply evidence-based interdisciplinary design to creating facilities and technology that advance operational efficiency, therapeutic outcomes, patient safety, and employee satisfaction. There is no program like this in the world, giving South Carolina the advantage in becoming the world leader.



Health Sciences South Carolina advances economic development by bringing together the best minds in the state through collaborative research. Clemson University, Greenville Hospital System, Palmetto Health, and the University of South Carolina are partnering on the SeniorSMART™ research center of economic excellence that is developing technology to preserve older adult independence. Driving simulation is a critical tool for Clemson's SmartWHEELS research.

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Looking Ahead

Transforming a state's health status, the way it educates and trains its health care workforce, and its economy is a challenge few want to tackle. Yet these issues must be addressed and overcome for South Carolina to thrive in the global, knowledge-driven economy. We must have a population that is healthy, educated, and prepared to work.

South Carolina's General Assembly and the Research Centers of Economic Excellence Act along with the Research University Infrastructure Act, Innovation Center Act, the Venture Capital Investment Act, and Industry Partner Act, provided the all-important catalyst for change. Health Sciences South Carolina is and will be a driver for change.

As we move forward, our focus will be on filling all of our endowed chairs, accelerating the pace of research, attracting more investors, and generating more economic opportunities. We are accountable to the State of South Carolina and our fellow citizens; return on investment is our objective.

And yet, we cannot do it alone. More organizations and people must get involved in our initiatives and efforts. Already we've seen students, physicians, nurses, pharmacists, technical colleges, private foundations, and business embrace our ideas. We want and will encourage more.

South Carolina needs every advantage it can get to become a healthier, more prosperous and economically vibrant state.

Join us.

Health Sciences South Carolina
www.healthsciencessc.org
803.296.2821

Advantage: **South Carolina**

Health Sciences South Carolina has created a "health sciences research and technology corridor" that runs from the Lowcountry to the Upstate along Interstate 26 and across South Carolina's portion of Interstate 85.

HEALTH SCIENCES SOUTH CAROLINA

A Collaborative To Advance Health Sciences

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