



**JAMES & ESTHER KING
BIOMEDICAL RESEARCH PROGRAM**



ANNUAL REPORT

JULY 2010 – JUNE 2011

James & Esther King Biomedical Research Program

Fiscal Year Annual Report

July 1, 2010 – June 30, 2011

Submitted to

The Governor

The President of the Senate

The Speaker of the House of Representatives

The Florida State Surgeon General

and

The Florida Center for Universal Research to Eradicate Disease

by

Dr. Richard Bookman, Chair

Biomedical Research Advisory Council

February 1, 2012

February 1, 2012

The Honorable Rick Scott, Governor
The Honorable Mike Haridopolos, Senate President
The Honorable Dean Cannon, House Speaker
Ms. Karen Moore, Chair, Florida Center for Universal Research to Eradicate Disease
Frank Farmer, Jr., M.D., Ph.D., FACP, State Surgeon General, Florida Department of Health

Dear Governor Scott, President Haridopolos, Speaker Cannon, Ms. Moore, and Surgeon General Farmer:

Every year cancer and diseases related to tobacco use kill more than 100,000 Floridians, and health care costs are in the billions. The funding of the James & Esther King Biomedical Research Program represents a commitment by the state of Florida to address this devastating toll and heavy societal burden through research leading to the prevention, diagnosis, treatment, and cure of these diseases.

With the confidence the state has placed in utilizing a competitive, peer-reviewed grant program to support the most promising science, Florida institutions across the state have been able to expand research capacity and core resources, to develop vital research collaborations, and to establish commercialization partnerships that are bringing solutions and treatments to Floridians.

Providing funding for protected research time and state-of-the-art equipment is critical to Florida's ability to leverage its investment. To date, supporting the research of King Grantees has resulted in attracting \$173.5 million in additional grant funding, which represents a significant return on Florida's investment.

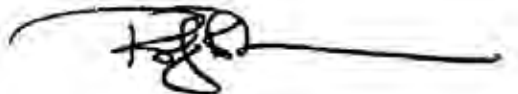
Aside from the obvious benefits of improved health outcomes, supporting research through competitive grant programs stimulates Florida's economy, attracts research talent to Florida, and provides jobs. More than 1,800 researchers, lab personnel, and graduate students across the state have been able to dedicate time to research initiatives as a result of Program funding. Once research teams are established, continuous funding support is critical to maintain momentum and to accelerate translation of discoveries to the benefit of patients. These investments at a state level are fundamental to attracting and developing research talent who can compete for national funding and produce results worthy of national and international attention.

In Fiscal Year (FY) 2010-2011, the King Program received \$22.2 million in appropriations and as a result made 50 grant awards. For FY 2011-2012, appropriations were \$7.2 million, a reduction of nearly 70 percent. While the full effects may not be evident for some time, the immediate impact is that funding is available for only 20 new grants. With less dollars invested, the long-term impacts of this reduction will likely result in less federal research funding flowing into Florida.

This annual report summarizes the achievements of the James & Esther King Biomedical Research Program, the research investment strategies implemented by the Biomedical Research Advisory Council, and how Florida is benefitting from the research conducted to combat cancer, cardiovascular disease, pulmonary disease, and stroke. We have reached out to the scientists who need our support and have shared their challenges along with how this Program is enabling them to bring important discoveries to light.

We are grateful for the confidence in this Program and our ability to demonstrate we are good stewards of the state's funds. Understanding that the current economic environment demands difficult financial choices, we urge you to support this competitive, peer-reviewed research Program as funding priority – not only to save the lives of Floridians but also to create and sustain high-paying jobs and a skilled biomedical research workforce in the state of Florida.

Sincerely,



Richard J. Bookman, Ph.D.
Chair, Florida Biomedical Research Advisory Council

James & Esther King Biomedical Research Program

*Offering Florida Researchers Merit-Based Grants Without Regard
for Institutional Affiliation to Address the Prevention, Diagnosis,
Treatment, and Cure of Tobacco-Related Diseases*

The James & Esther King Biomedical Research Program Goals

The purpose of the King Program is to provide grants for research initiatives that address diseases related to tobacco use.

The five long-term goals of the Program are to:

1. Improve the health of Floridians by researching better prevention, diagnoses, treatments, and cures for tobacco-related cancer, cardiovascular disease, stroke, and pulmonary disease
2. Expand the foundation of biomedical knowledge relating to the prevention, diagnosis, treatment, and cure of diseases related to tobacco use including cancer, cardiovascular disease, stroke, and pulmonary disease
3. Improve the quality of the state's academic health centers by bringing the advances of biomedical research into the training of physicians and other healthcare providers
4. Increase the state's per capita funding for research by undertaking new initiatives in public health and biomedical research that will attract additional funding from outside the state
5. Stimulate economic activity in the state in areas related to biomedical research including the research and production of pharmaceuticals, biotechnology, and medical devices

The report does not necessarily reflect the opinions of the Florida Department of Health or its staff, and any recommendations contained within are those of the Program's Advisory Council.

For more information about the Program or to request additional copies of this report, please contact the Florida Department of Health Florida Biomedical Research Programs at FBRP@doh.state.fl.us. To download a copy of this and prior years' reports, go to www.floridabiomed.com.

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A Strategic Investment

Every year, tobacco use results in more than 28,000 deaths across Florida.¹ But when one considers that smoking and exposure to secondhand smoke are major causes of cancer, cardiovascular disease, respiratory diseases, and stroke,² the number is even greater. Representing four of the top five most common causes of death in Florida,³

lives and reduce the state's health care burden for diseases related to tobacco use. The King Program funds competitively reviewed research grants that focus on discoveries that will lead to effective diagnosis, prevention, and treatment of these diseases including pulmonary disease, cardiovascular disease, cancer, nicotine addictions, and stroke.

Factors Influencing Strategic Decisions

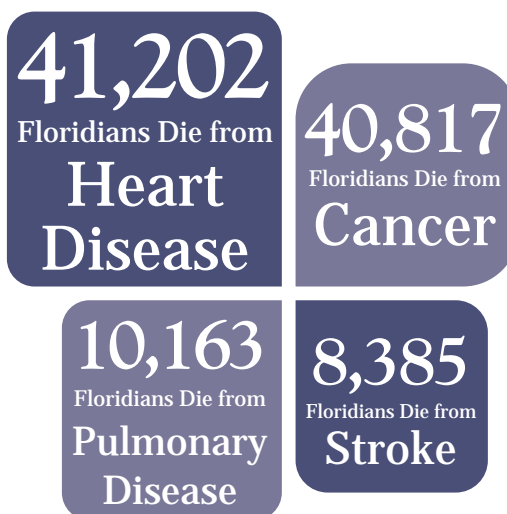
- **Florida's Disease Burden** - Unique demographics and health disparities defining Florida's most urgent needs
 - **Funding Variations** - Swings in Program funding from year-to-year requiring scope adjustments
 - **Continuous Improvement** - Implementing best practices in program operations
 - **Deficiencies in Research Capacity** - Florida's need for increased research capacity and momentum
-

these diseases kill more than 100,000 Floridians each year and exact a huge economic toll. According to a 2010 study, annual direct costs to Florida's economy attributable to smoking are in excess of \$19.6 billion, including workplace productivity losses of \$4.4 billion, premature death losses of \$7.9 billion, and direct medical expenditures of \$7.2 billion.⁴

The James & Esther King Program dedicates resources to research efforts to facilitate medical breakthroughs that will help save

The Biomedical Research Advisory Council (Advisory Council), a group of eminent scholars and appointed representatives from throughout the state, recommends strategies that will lead to successful outcomes focused on addressing the state's greatest biomedical research needs and challenges. The Advisory Council recommends funding for only the most promising science in the state, utilizing a competitive, peer-reviewed evaluation process and oversees both the Bankhead-Coley Cancer Research Program and the James & Esther King Biomedical Research

Each Year in Florida⁵...



Program. These Programs are referred to within this report as the “Florida Biomedical Research Programs” or “Programs.”

In Fiscal Year (FY) 2010-2011, the King Program received \$22.2 million in appropriations and as a result made 50 grant awards. In stark contrast, FY 2011-2012 appropriations were reduced to \$7.2 million. While the full effects

for scientists to become more competitive for federal research dollars, which is a shared component of all Program core strategies. Federal funding brings jobs to Florida and also retains research talent dedicated to improving health outcomes in Florida.

This report demonstrates how the King Program shows responsiveness and flexibility to

Core Strategies to Advance Research Goals

The Advisory Council recommended the following core strategies to advance research goals:

- Supporting new scientists establishing labs in Florida
 - Providing time for established scientists by bridging federal funding gaps to maintain research momentum
 - Jump-starting the transformation of research outcomes into patient applications
 - Encouraging and supporting the formation of collaborative, multi-disciplinary teams to accelerate medical breakthroughs
 - Providing access to shared, high-cost equipment to enhance researchers’ capabilities
-

of this reduction of nearly 70 percent may not be evident for some time, the immediate impact is that funding is available for only 20 grants.

Competing priorities for state funds are constant challenges, and the commitment made to dedicating funds to research has a direct and significant impact on Florida’s economics and research momentum. King Program grants provide protected research time and resources

both opportunities and challenges in the quest to facilitate medical breakthroughs and advance the Program’s statutory goals. Implementation of chosen strategies is having a positive impact on discovering breakthroughs, developing treatments, advancing research, and improving grantees’ successes at obtaining new federal grants based on the important work supported by the King Program.

King Program Direct Support

**Total Funds
Awarded**
\$99.35
million

**Received
Follow-on
Funding**
58%
of Grantees*

**Total
Grants
Awarded**
242

**Total Follow-on
Funding
Received**
\$173.5
million*

Impact of Leveraged Support

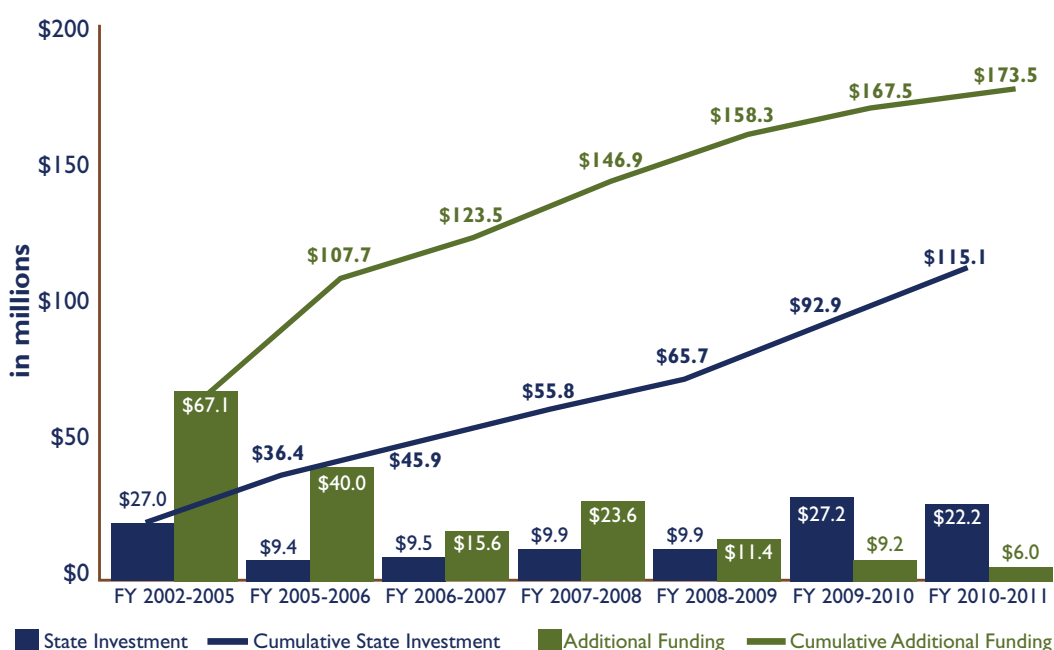
**Calculated based on grants at least one year old, currently 192 grants.*

Leveraging State Funding to Support Research Goals

Grantees are more successful at attracting federal and private funds when provided the time and resources to generate initial research findings. The King Program provides funds for highly meritorious research projects with the anticipation

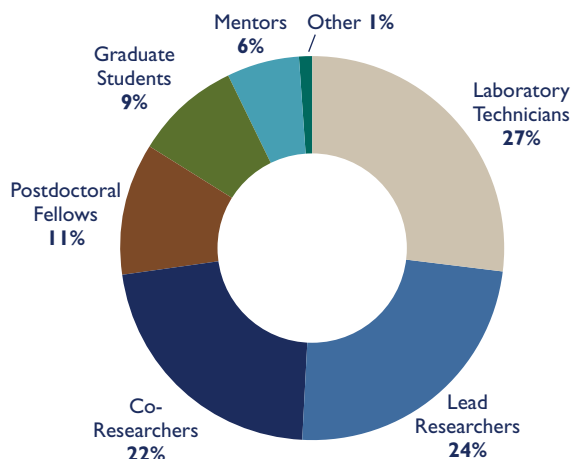
that project results will attract federal funding for continuing related research. Follow-on funding from federal or private resources enables additional research and benefits for Floridians long after the initial grant has ended.

Follow-on Funding Resulting from Grants by Year Awarded

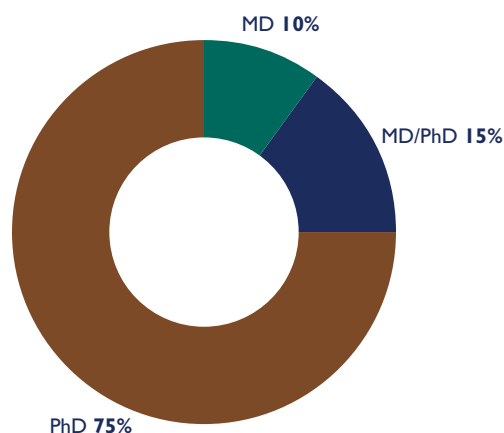


** It can take up to 1 1/2 years for grants to generate significant research findings and obtain additional funding: one year of research with Program funding and at least six months for a standard federal grant application review cycle.*

Number of Jobs Supported



Lead Researcher Qualifications



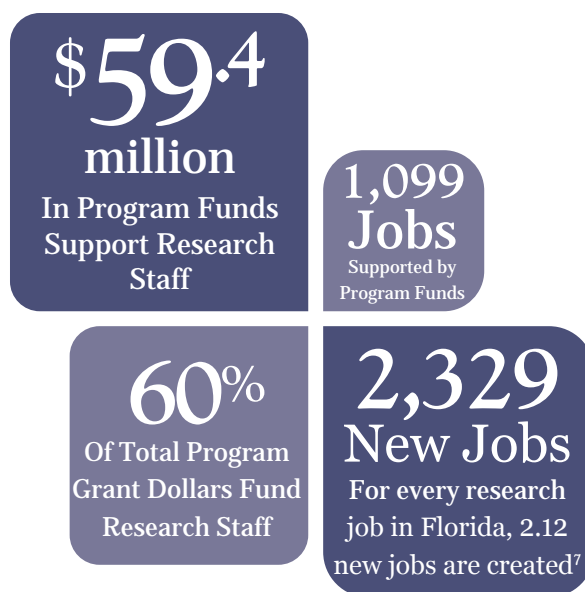
Funding the Best Science

A competitive peer review process, utilizing scientific experts from outside Florida to score scientific merit and compatibility with Program goals is the primary factor for funding. To avoid conflicts of interest, the Advisory Council is “blinded” to the identity of applicants and their institutions.

Only 19 funding programs nationwide, in addition to the Florida Biomedical Research Programs, are included on the National Cancer Institute’s (NCI) list of organizations with approved funding systems.⁶ This distinction creates a competitive advantage for Florida research institutions seeking prestigious NCI Cancer Center designation and NCI Center Support Grants typically exceeding \$1 million per year.

Supporting Florida’s Economic Growth

Research programs attract high-impact businesses and high-wage jobs. The largest percentage of King research funding is allocated to salaries for highly skilled workers. When considering the impact of follow-on funding from federal sources made possible through direct support of the Program, the benefits extend far beyond the salaries provided by grants.



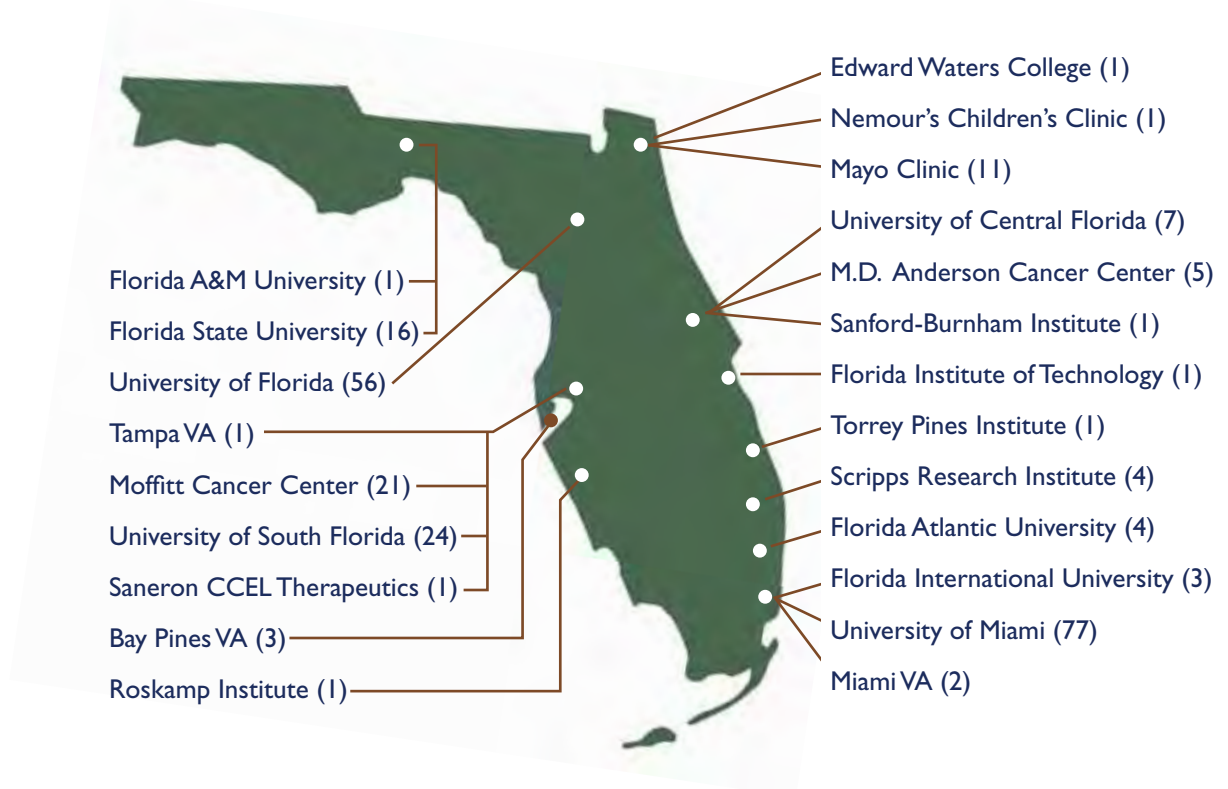


(From left to right) Team members Capella Weems; Dr. E. Aubrey Thompson, Co-Researcher; Tiffany Baker; Dr. Eda Erdogan; and Dr. Alan Fields, Lead Researcher, 2010 Grant, Mayo Clinic

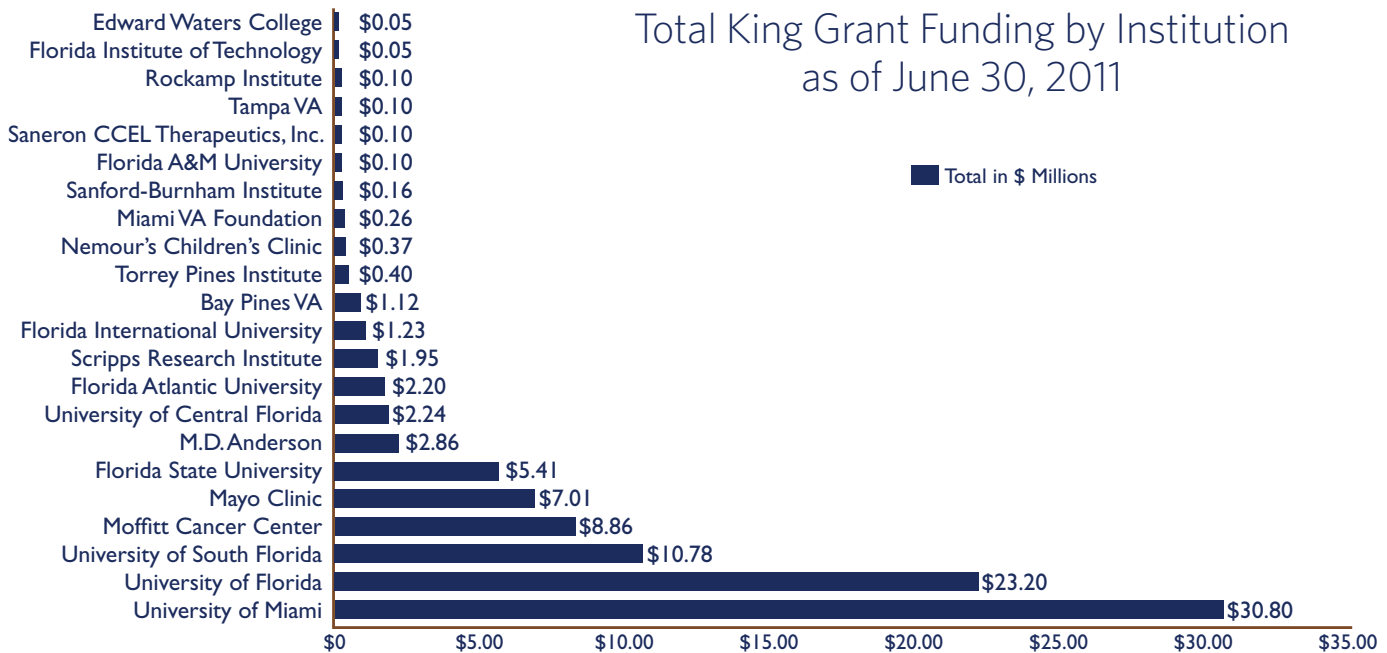
Statewide Research Support

The King Program has invested \$99.35 million at 22 Florida institutions and qualified small businesses. Any university or established research institute in Florida may submit applications for biomedical research

funding from the King Program. For a list of individual grantees and award information for FY 2010-2011, please refer to Appendix A. For a complete list of all awards, see the Program's website at www.floridabiomed.com.



Total King Grant Funding by Institution as of June 30, 2011



Operating with Transparency

The Program's transparency and integrity are evidenced by:

- Full disclosure of how funds are spent
- Annual accounting of scientific progress and impact
- Open, publicly noticed, documented Advisory Council meetings
- Conflict-of-interest safeguards to prevent undue influence

Guided by Experts

The Advisory Council is comprised of eminent scholars and appointed representatives from throughout the state who are well connected within Florida's research community. In addition to recommending strategies, the Advisory Council assists in developing guidelines to ensure fairness, neutrality, and adherence to the principles of merit and quality in the conduct of the Programs.

Demonstrating Accountability

Scientific Progress: For multi-year grants, progress reports are peer reviewed annually against research aims and staff conducts site visits.

Financial Accountability: Every grant dollar awarded is tracked through quarterly and final financial reports. Additionally, multi-year grants undergo a detailed financial review during site visits.

Performance Measurement: Operations are continuously measured, and enhancements are applied regularly to improve the Program's responsiveness and overall performance.

Program Evaluation: Stakeholder feedback is collected to guide continuous improvement and strategic planning efforts.



Dr. Cesar Borlongan, 2010 Grantee, University of South Florida

Program Funding History

The King Program has been Florida’s flagship program for supporting statewide, merit-based science for more than ten years. After seeing an increase of funding for the Florida Biomedical Research Programs during FY 2009-2010 attributed to the commitment by the Legislature to allocate 2.5 percent of proceeds from the tobacco surcharge fee that generates approximately \$1 billion in total revenue annually.

At its peak, the King Program received \$27.2 million. However, in each of the last two legislative sessions appropriations have sharply declined. Along with an overall reduction in support for biomedical research, redistributions of funding away from open, competitive funding to direct, institutional funding result in less funds available for grants. In spite of this, applications for funding through the Program have increased, highlighting the high demand by the entire research enterprise in Florida for sustained and stable funding.



What Others Say about the Program . . .



Dr. John Copland

“We use the King Program continually for recruitment. During interviews, we let them know about opportunities for team research the Program provides. This is definitely a mechanism to attract researchers to Florida.”

-Dr. John Copland
2005 Grantee, Mayo Clinic

“As a member of an NIH [peer review] study section, I have perspective on the Program from outside Florida. My colleagues are jealous of our state funding [for Bridge Grants]. The Program has a good reputation based on the high-quality publications investigators produce.”

-Dr. Jin Cheng
2007 Grantee, Moffitt Cancer Center
& Research Institute

“In this era of tough federal funding, researchers have to submit applications repeatedly to get funded, and my colleagues in other states are quite impressed by this program. The Florida Bridge Grant allows a researcher to keep going and generate the data requested for a resubmission. It’s a clever strategy to help gain more research funding for the state. The state invested one year of funds and received three to five years of federal funding along with a strengthened biomedical research structure in return.”

-Dr. George Sarosi
2006 Grantee, University of Florida



Research Grant Funding Strategies

“This Program is ideal because it funds the best science through a peer-reviewed competitive process. It’s also expanding capacity at Florida’s research institutions, laying the foundation for an even brighter future for our state.”

—Paul Hull

Vice President, Advocacy and Public Policy,
American Cancer Society, Florida Division



Dr. Jessica Chang, 2010 Grantee,
Bay Pines VA Healthcare System

Supporting New Researchers

Voice of Florida's Researchers

Establishing New Research Careers and Labs in Florida

For those of us who have chosen a research career, achieving independence, leading our own research projects, and generating meaningful data worthy of attracting follow-on funding requires an investment of 12-17 years in education and

Many of our institutions do not allocate lab space for us until we have acquired our first grant. With few grants available exclusively to us as new researchers, there is a funding gap for the capital to establish new labs. Without seed money, it's challenging to generate significant preliminary data to

“Without this initial investment, my cancer research program would not have happened.”

—Dr. Evette Radisky
2007 Grantee, Mayo Clinic

lab training. We are, on average, 42 years old when we win our first federal, non-mentored grant.⁸

While establishing our own independently funded labs is an exciting journey, the start-up costs are staggering, including hiring and training personnel as well as purchasing advanced instrumentation and supplies.

compete successfully against experienced researchers for federal funding. The competition is intense – the success rate of all new researchers in acquiring NIH funding in 2009 was 18.5 percent.⁹

In recent years, the state of Florida has filled that gap through New Investigator Research Grants, allowing us to conduct



Team member Michael Rodig
and Dr. Sukwon Hong,
2008 Grantee, University of Florida

experiments and generate data. As a result, we not only have solid preliminary data, but can also publish and present our work, which is a combination that impresses federal grant peer review committees.

Pursuing follow-on funding is critical to continuing our research momentum. With an investment of three or more years in which to establish a lab and train personnel, follow-on federal funding maintains the continuity of our teams. Interruptions in funding can halt work and can mean the end of our projects. Without stable financial support, we may be forced to move our research efforts to states that can offer more opportunities or we may leave science altogether.

King grants have made it possible for us to establish our labs in Florida and launch independent research careers. New researcher funding fuels the cutting-edge science that yields breakthroughs and makes Florida an attractive state for new scientists.

“This is a difficult time in science and funding for research. The people who are cut out because of the funding problem are the new investigators. If we don’t step up to the plate and fund them, we will lose a whole generation of scientists. This is Florida’s future.”

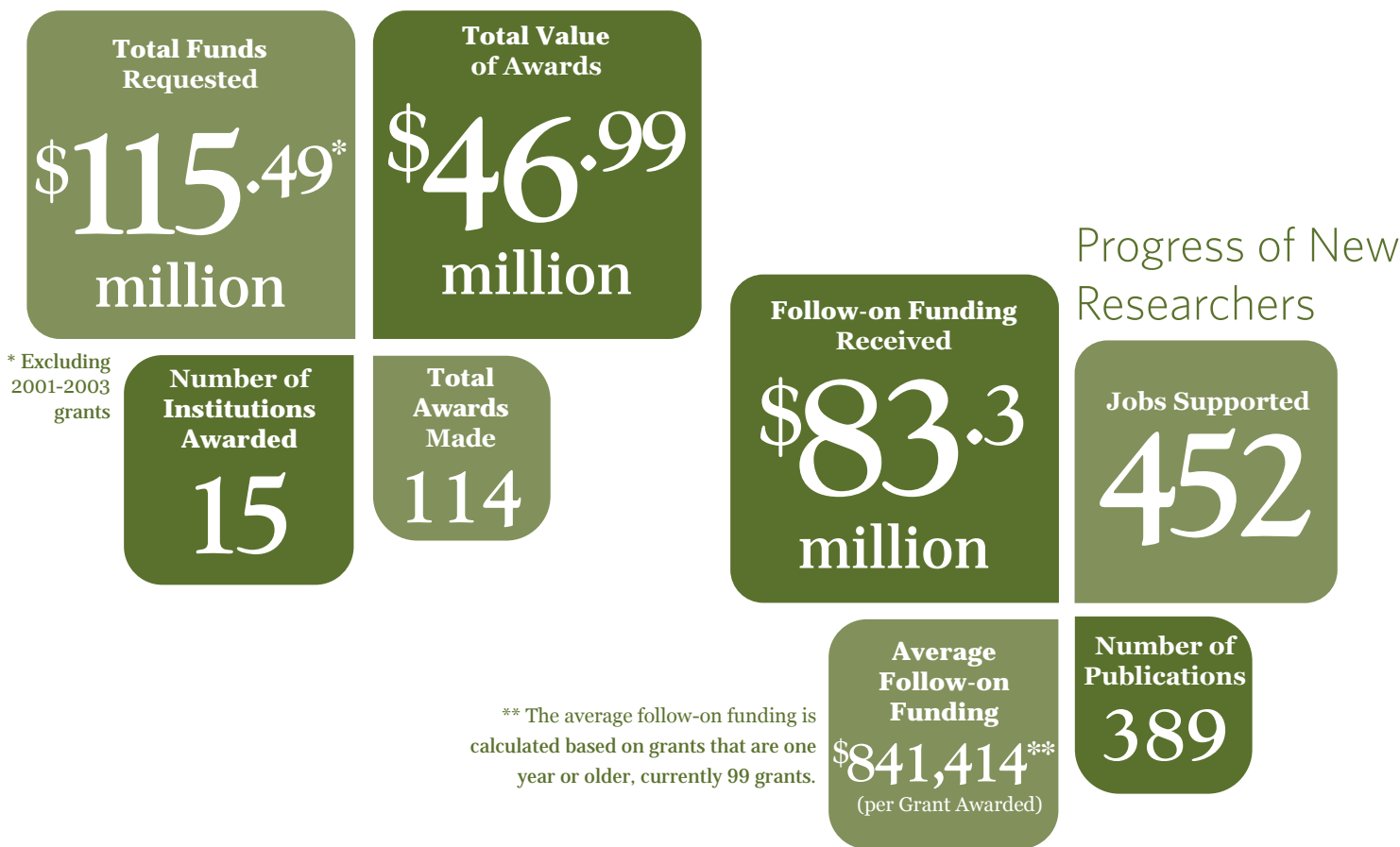
—Dr. Myra Hurt
Senior Dean,

Research, Graduate and Undergraduate Programs,
Florida State University College of Medicine
and Biomedical Research Advisory Council Member



New Researcher Program Facts

New Researcher Grant Statistics





Dr. Matthew Schabath,
2009 Grantee,
Moffitt Cancer Center
& Research Institute

Support for New Researchers Provides Promise for Continuing Research

Florida Biomedical Research Programs Attract New Faculty to State

“Program Grants really set Florida apart from other states in terms of support available for junior faculty starting their careers, especially in the current tough funding climate. This in turn attracts scientists of higher caliber to the state. I am very pleased that I chose Florida to start up my own lab.”

-Dr. Hengli Tang
2009 Grantee, Florida State University

King Grant Launches Research Career

“The King new investigator award served as a springboard for my early career and helped me to establish my laboratory, recruit and train students, and publish our scientific findings. Much of our early success and discovery may not have even taken place without this funding. We have acquired National Institutes of Health and National Science Foundation funds based on our King grant.”

-Dr. William Self
2005 Grantee, University of Central Florida

Research Funding Opportunities Used by Florida Universities to Recruit Young Investigators

“The Program is a lifesaver for young investigators in Florida, and I feel very fortunate to have started my career in this state. Every time I meet with new faculty candidates, I emphasize Florida’s unique opportunity and highly nurturing environment owing to the Program. This funding plays a pivotal role in recruiting talented young investigators to Florida and providing them with necessary support to develop nationally competitive research programs.”

-Dr. Sukwon Hong
2008 Grantee, University of Florida

Grantee Sees Career and Jobs Grow from Funding

“Moffitt researchers used the King and Bankhead-Coley Programs as a big selling point to recruit me from The University of Texas M.D. Anderson Cancer Center. It has personally benefited my career and been a job creator. We have generated a great amount of data on lung cancer, kept people employed, and hired people. There probably would not have been other funding sources for this grant.”

-Dr. Matthew Schabath
2009 Grantee, Moffitt Cancer Center
& Research Institute

Building Bridges to Federal Funding

Voice of Florida's Researchers

Generating Data to Win First-Time or Renewal of Federal Grants

As scientists, we bear the responsibility for finding funding to conduct our research. While some of us may be fortunate enough to receive university support for lab start-up, most of us rely almost exclusively on the National

application with additional preliminary data and progressive research, all the while hoping we can maintain the momentum of the team we have in place.

Productive research requires the dedication of a highly educated and skilled team who

The King Program allows us to bridge gaps in federal funding and sustain our research momentum.

Institutes of Health (NIH) and other major funding sources. Grant awards from the NIH are extremely competitive. As a result, many of our promising research projects are left unfunded.

Acquiring funding requires persistence and patience. Even with applications ranked very highly by our scientific peers, we may have to submit the same application many times to obtain funding. With each submission, we must strengthen the

will work with precision and accuracy. **Recruiting, training, and developing** a cohesive team that works well together and can anticipate and respond to the demands of research is not accomplished easily or overnight. The process is like powering a freight train. It requires a lot to get it going, but once it's up and running, it is most efficient to keep it moving.

If breaks in funding occur, the time and energy invested in the project dissipates.



“One of the most precious qualities of any scientist’s research program is momentum. It is the hardest thing to get, and the easiest thing to lose. When things are going well, that is the time to work even harder.”

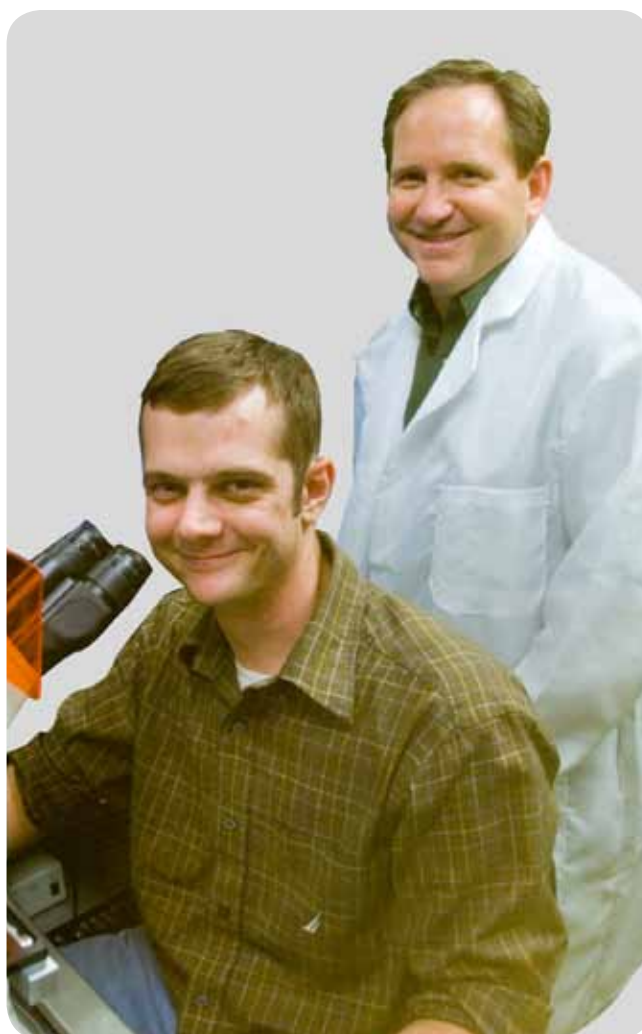
—Dr. Richard Bookman

Senior Advisor to the Dean, University of Miami Miller School of Medicine; Special Assistant to the Provost, University of Miami; Chair of the Florida Biomedical Research Advisory Council

Momentum is lost, people lose their jobs, and Florida loses good researchers.

With an awareness of the tough fight for federal research dollars, the James & Esther King Program started offering the Bridge Grant. To qualify, we must have submitted a federal grant application that received a highly meritorious score (in the top 30th percentile) in a federal peer-reviewed competitive program such as the National Science Foundation, the Department of Defense, or the National Institutes of Health. In addition, our experimental aims must tie closely to Program goals.

For those of us who receive Bridge funding, we can keep our research teams together, generate data for our next federal grant application, and continue advancing our research until we can acquire additional funding. The success rate in subsequent submissions is very high. As a result, Florida’s share of national funding increases and the work to improve the health and longevity of the people who live here can continue.



(From left to right) Medical student, Barrett McCormick, and Dr. Eric Bennett, 2009 Grantee, University of South Florida

Bridge Funding Program Facts

Bridge Grant Statistics

Total Funds
Requested

\$4.50
million

Total Value
of Awards

\$2.62
million

Number of
Institutions
Awarded

5

Total
Awards
Made

14

Follow-on Funding
Received

\$7.19
million

Impact of Bridging Research Funding

Jobs Supported

49

Return on
Investment

\$2.25*
(per Dollar
Awarded)

Number of
Publications

42

* The return on investment is calculated based on grants that are one year or older, currently 14 grants.



Dr. Thomas Beaver, 2009 Grantee, University of Florida

Bridge Funding is Helping to Sustain Research Momentum for Florida's Scientists

Federal Funding Results from Bridge Grant

"Funding from the James & Esther King Biomedical Research Grant provided essential Bridge support that allowed me to successfully compete and obtain \$.83 million in funding from the National Heart, Lung, and Blood Institute."

-Dr. Duane Eichler
2008 Grantee, University of South Florida

Research Pushing for Improved Health in Florida

"This research program demonstrates the commitment of the state of Florida to support research that will lead to the prevention and/or treatment of tobacco-related diseases. Bridge funding has provided me with critical funds to push the impact of our data to an important threshold. This is essential for obtaining federal funding to continue this research."

-Dr. Irene Litosch
2007 Grantee, University of Miami

Bridge Funding Proves Critical to Research Productivity

"Our Bridge grant resulted in two patent applications, numerous publications and presentations, and \$3.3 million in additional funding from the NIH for our work in the development of a new therapy for ischemic stroke."

-Dr. Cesar Borlongan
2009 Grantee, University of South Florida

Bridge Funding Allows Florida's Scientists to Continue Research

"Money to do good research is absolutely critical at times when funding pay lines at the NIH will not get any better. These grants are helping the Florida university system, and we are starting to be recognized nationally as top-notch research institutions. Program funding is helping us get there."

-Dr. Alison Willing
2007 Grantee, University of South Florida

Encouraging Commercialization

Voice of Florida's Researchers

Moving Scientific Discoveries to Health Care Solutions

As researchers, our dream is to see our discoveries lead to transforming breakthroughs in new diagnostics and treatment methodologies. But the journey from our labs to commercial availability is often long, decades in some instances, and full

of obstacles. Citizens have every right to expect results for their investment, but it can't happen overnight and we can't do it alone. Even with the best ideas, our expertise is science so we must form business partnerships with commercialization experts who understand the

“It takes a champion—people with foresight and vision who will not let go regardless of the obstacles—to see a promising new compound from discovery to clinical stages to new therapeutic treatments.”

—Dr. Amy Wright

2008 Grantee, Florida Atlantic University





“King and Bankhead-Coley Program funding is critical to translate an interesting idea from a lab finding into a possible commercial product. A small jump-start is sometimes all it takes to start the process. This initial start-up funding can make or break a commercial project.”

—Dr. Herbert Weissbach

Distinguished Research Professor and Director, Center for Molecular Biology and Biotechnology, Florida Atlantic University and Biomedical Research Advisory Council Member

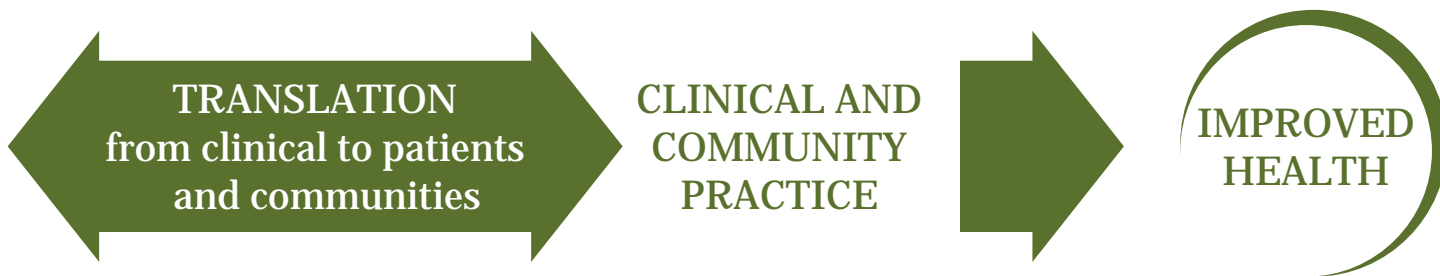
business of transforming our research into the tools, treatments, and pharmaceutical solutions that will help patients.

Although the costs of commercialization are high, often the most challenging burden is finding the seed funding to get started. Developing partnerships with small businesses, protecting intellectual property, and conducting clinical trials take time and money. Since it takes an average of twelve years and millions of dollars to move a drug from the lab to the pharmacy shelf, we need startup funds to start the process.

The King Program provides funding at two critical stages of commercialization. For early stage efforts, feasibility grants enable us to hire

personnel and generate solid preliminary data to market our ideas and form partnerships with small businesses. The data we generate at an early stage must demonstrate potential to attract the interest and investments of federal and private funding necessary to fully develop a drug or technology. Without the initial investment to explore the viability of commercialization, even the discoveries with the greatest potential may never make it out of the lab.

Once we have a commercial interest in our project, King grants allow our business partners to focus on the intricacies of commercializing our discoveries from protecting intellectual property to seeking investors to marketing the final product.¹⁰



Commercialization Program Facts

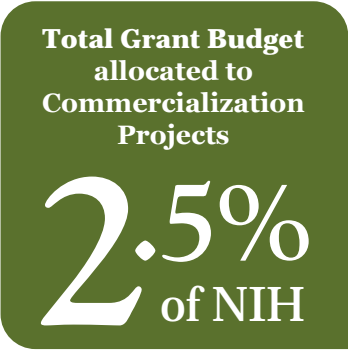
Grantee Commercialization Progress



*The return on investment is
calculated based on grants that are
one year or older, currently 18 grants.



Commercialization Investment Comparison





Dr. Eckhard Podack, 2009 Grantee, University of Miami

Progressive Movement of Research Discoveries to the Marketplace

Research Catches the Attention of Private Business

“The King and Bankhead-Coley Technology Transfer funding helps promote Florida universities and researchers as entrepreneurs, and Florida as an entrepreneurial state. For a small investment at the right time, King funding helped us cross what’s known as ‘the valley of death,’ the bridge between our basic research and development by private companies. These grants focus on taking a good idea from the laboratory and turning it into a drug or product that will help people and consequently move the economy forward. It’s exceptionally important.”

-Dr. Michael Blaber
2011 Grantee, Florida State University

King Grant Spawns Joint Research with Florida Biotech Business

“The Program provides incubator funds to enable high-risk, high-reward biomedical research so that excellent Florida researchers can take a chance on new ideas. My grant was responsible for joint research with a small Florida biotech business that would not otherwise have occurred. If it is a Florida priority to develop a biotech industry by strengthening existing biomedical research institutions and attracting complementary industries to the state, these programs are essential.”

-Dr. Melvyn Tockman
2009 Grantee, Moffitt Cancer Center & Research Institute

Program Funding Stimulates Commercialization

“The merit-based research awards offered by the King Program further research into the most important health issues in the state. On the business side, the awards provide essential funding for investigators and institutions that attracts and retains young investigators, encourages multi-institutional collaborations, and stimulates the development of new ideas to commercialization. Thus, the program not only addresses vital health issues of Floridians, but also enhances highly-skilled job creation in the state.”

-Dr. Steven Goodison
2010 Grantee, M.D. Anderson Cancer Center

Grant Research Raises \$20 Million in Private Equity to Develop New Products

“Based on the initial research and [\$100,000 in] seed funding from the King Program and funds from the University of Florida Opportunity Fund, my team started Xhale, Inc., in 2005 and have since raised \$20M in private equity. We have received a Florida High Technology Corridor grant, one National Science Foundation grant, and two NIH Small Business Innovation Research grants. If not for the King grant and UF, we never would have been able to get to the point we are now.”

-Dr. Richard Melker
2004 Grantee, University of Florida

Advancing Science through Collaborations and Synergies

Voice of Florida's Researchers

Forming Multi-Disciplinary Research Teams to Make Breakthroughs

As senior investigators leading large multi-disciplinary project teams, we face the leadership challenge and privilege of bringing together the right team of experts to accelerate our progress towards making key discoveries. Increasingly specialized

Whether we are developing medical devices, creating new drug therapies, or implementing new treatment options, the strongest approach to making progress may require our teams to include experts in a wide variety of disciplines such as pathologists, physicians, cell biologists,

“NIH prefers project experience with multiple principal investigators; the more we can show collaboration, the better chances we have of getting funding.”

—Dr. Mark McLean

2004 Grantee, University of South Florida

technology and knowledge as well as an emphasis on teamwork from national funding agencies make collaboration a priority. Most importantly, we need diverse teams to achieve medical advances not attainable by researchers working independently.

biostatisticians, mechanical engineers, researcher scientists, and software engineers. Single labs can rarely afford to staff such diverse teams and manage complex research projects.

As essential as they are, collaborative teams just don't happen. Although forming new



(From left to right, front row) Dr. Elsayed Ibrahim, 2009 Grantee; Research team members Erin James, Teresa Swenson, Dr. Richard White (From left to right, back row) Research team members Dr. Kevin Johnson, Jean Shaffer, Engin Dickici, and Anne Shumway, University of Florida

relationships and exchanging ideas to achieve breakthroughs is a strong motivator, we have to invest a considerable amount of time, resources, and energy to pull together busy individuals who are not in close proximity to each other, unite them around a common vision, and identify sub-project leaders. We often need to draw on experts at several institutions to meet project skill and resource requirements.

Fortunately, we have the opportunity to apply for multi-disciplinary, large team grants through the King Program. These grants allow us to unite three to five project teams with diverse skill sets to address common research objectives. The result is something far greater than we could accomplish through our individual efforts. By combining research efforts of teams that may not normally interact with each other, we are able to address issues from many different angles and share information and results. These multi-project grants are established with a “core” team that facilitates communication and ensures continued focus on common objectives. The shared team objectives and constant communication flow allow us to advance our research more quickly and prepare teams for continued success.

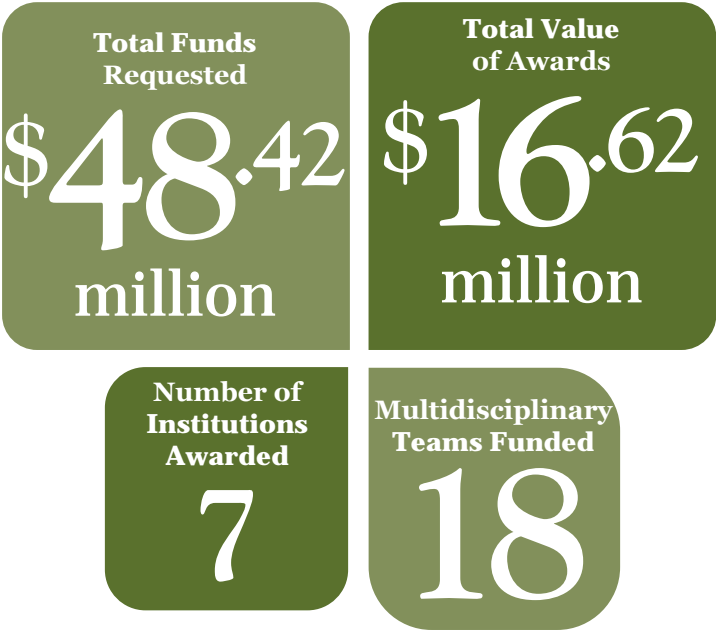
For those of us who formed collaborations through King Grants, we have demonstrated our success by obtaining large-scale federal support and building long-lasting research partnerships.

“It is not what people have in common but their differences that make collaborative work more powerful than working separately. A diverse group can arrive at a place no individual and no like-minded group would have reached.”¹¹

—Dr. Celia Davies
Professor of Health Care,
The Open University, United Kingdom

Collaboration Program Facts

Collaboration Grant Statistics



Impact of Collaborative Research



* The average follow-on funding is calculated based on grants that are one year or older, currently 17 grants.



(From left to right) Mentor Dr. John Lima with Dr. Jason Lang, 2009 Grantee, Nemours Children's Clinic

The Power of Collaboration

Team Acquires National Grant Funding to Focus on Health Issues in Florida

"Our King Grant enabled the development of a research team with breadth and depth. Some of our new projects in Florida include tobacco use studies in medically underserved areas, research about differences in cancer outcomes, smoking cessation and secondhand smoke studies, and developing new diagnostic tests for cancer. Our King grant helped us prepare a competitive application and as a result we received \$6.2 million in additional federal grant awards."

-Dr. David Lee

2006 Grantee, University of Miami

New Center for Excellence in COPD

"The King Grant allowed us to open a Center for Excellence in Chronic Obstructive Pulmonary Disease (COPD) at University of Florida. We leveraged King funds into NIH funding and dollars from private foundations. The University committed time, space, and dollars to establish the Center. Through this grant, we retained two faculty members and developed collaborations in multiple places throughout Florida. For patients, we better understand why smokers have a propensity to develop infection. The King grant ignited the work, and it's just never stopped growing."

-Dr. Veena Antony

2004 Grantee, University of Florida,

Biomedical Research Advisory Council Member 2007-2010

King Grant Collaboration Proves Asset in Medical School Accreditation

"Our King grant encouraged collaboration across neurobiology, immunology, and biochemistry to open up new research areas. The result is a new model for predicting risk of nicotine addiction. The NIH encourages collaborative, neuro-immune interaction studies and awarded us a \$3 million grant. Such research activities are a critical component of being a medical school and contribute to our accreditation process."

-Dr. Keith Brew

2008 Grantee, Florida Atlantic University

Grant-Funded Collaboration Accelerates Research

"The King Program is entirely responsible for this unique collaboration that has produced a team vision, synergy, and a number of new, related projects. Without the grant, we were struggling to get ideas off the ground and were moving at a very slow pace. We have now come a long way in a short amount of time. We hope to see a full clinical application of our technology along with additional imaging and treatment techniques developed here in Florida."

-Dr. Stephen Grobmyer

2006 Grantee, University of Florida

Expanding Research Capacity

Voice of Florida's Researchers

Obtaining Necessary Shared Core Research Resources

If we want to stay at the forefront of biomedical research, it's necessary to invest in the equipment and other shared resources required to do the work. Without it, we lag behind others in our ability to deliver on the promise of research.

grants, stipulating use by multiple researchers and projects over the life of the equipment.

Availability and access to appropriate equipment improves our chances for successful outcomes, leads to potential

“The King Program is essential in building research infrastructure focused on the problems and health issues that directly impact Floridians.”

–Dr. David Lee

2006 Grantee, University of Miami

Far from being “wish list items,” we need the right technology to generate high-quality data that meets federal standards. According to scientific peer reviewers, the right instruments are “critical equipment – essential for the success of researchers.”¹²

collaborations with others using shared equipment, and allows us to conduct research more quickly and effectively. Consequently, we can generate the data necessary for preparing competitive federal grant applications.

Aware of this need, the Florida Biomedical Research Programs offered equipment

Establishing core research resources is just as critical for us as having the equipment to



“States that invest in their biotechnology research base during this protracted federal funding drought will be able to maintain their research infrastructure, while those that do not will likely lose theirs. For this reason, these Programs are a wise investment, strengthening our state’s biotechnology research capacity and, as a result, providing a vibrant economic base for our future.”

—Dr. Kevin Brown
2009 Grantee, University of Florida

conduct research. Core research resources are experts and equipment dedicated to one aspect of research that functions as a shared resource for our individual projects. With King Grants and matching funds from our institutions, we have been able to establish core research resources that serve our institutions and sometimes the region. The result is increased efficiency in terms of maximized research space and optimized equipment use. Cores also provide an effective way to collaborate with other research teams and to overcome obstacles we may face as individual researchers by providing access to critical resources.

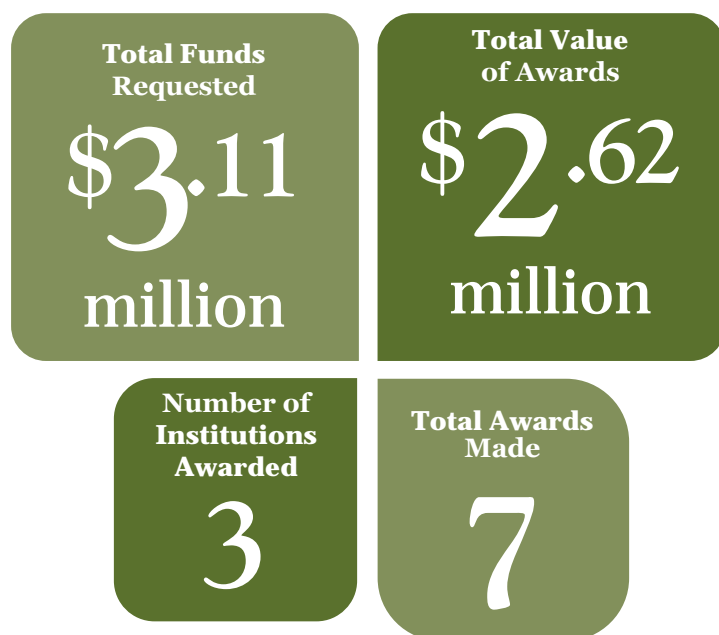
Through the King Grants we now have access to equipment and core research resources including facilities, providing us with opportunities to develop new collaborative efforts to strengthen our research.



Dr. Joshua Hare, 2009 Grantee, University of Miami

Research Capacity Program Facts

Shared Instrument Grant Statistics



Impact of Shared Instrument Grants

The first group of King Program Shared Instrument Grants began in January 2010. The start-up time required to get equipment operational is lengthy due to customization requirements, order and installation time, calibration, and user training. Additionally, some instruments require building modifications, which are funded by the awarded institution. Because of its relative youth, the impact of the King Shared Instrument Grant Program is not yet fully realized, and more complete results are anticipated by the next annual report cycle. However, based on the success of the Bankhead-Coley Shared Instrument Program, significant long-term impacts on Florida's research community can be expected.



(From left to right) Dr. Matthias Salathe, 2009 Grantee, and Instrument Advisory Committee member, Dr. Nevis Fregien, University of Miami

Long-Term Value Provided by Investments in Core Facilities and Shared Instrumentation

Grant Establishes Shared Resources

“The King Grant contributed to the advance in the understanding of chronic bronchitis induced by tobacco smoke. Our grant supported the establishment of two core facilities that are now widely used for several airway disease projects.”

-Dr. Matthias Salathe
2009 Grantee, University of Miami

Equipment Leads to New Treatments and \$5 Million in Grants

“The Optical Coherence Tomography (OCT) instrument has helped us create treatments for age-related macular degeneration, a tobacco-related illness that affects thousands of Floridians. In addition, the OCT instrument has provided critical data used to secure over \$5 million in grant funding from private foundations and from the National Institutes of Health. There are two main groups comprised of 14 researchers using it now, and three more groups are scheduled to start.”

-Dr. Alfred Lewin
2009 Grantee, University of Florida

Instrument Enables the Study of Multiple Tobacco-Related Diseases

“More than 25 investigators and ten labs use the confocal laser microscope purchased through our King Grant to study tumor cells, skin cancer, stroke, and atherosclerosis. We can study biochemical and physical changes at the cellular level with this machine in order to analyze the basic progression of disease.”

-Dr. Vincent Moy
2009 Grantee, University of Miami

Microscope Increases Research Momentum

“I used my King Grant to build an atomic force microscope to study how and why lesions form on the lining of blood vessels. The instrument has led to other tobacco-related collaborations including a breast cancer project, numerous publications, and international presentations.”

-Dr. Ewa Wojcikiewicz
2006 Grantee, University of Miami



Impacting Health Outcomes

“Tobacco-related diseases disproportionately affect minority populations for many reasons beyond rates of smoking. In particular social determinants play a significant role in the health of minority populations. We are better positioned to examine some of these determinants in a comprehensive way because of our recent collaboration to create a health disparities research agenda, bringing focus to the issue.”

—Dr. Penny Ralston

Director, Dean Emeritus and Professor,
Center on Better Health & Life for Underserved
Populations, Institute of Science & Public Affairs,
Florida State University
and Biomedical Research Advisory Council Member



Team member, Dr. Cristhian Ildefonso,
and Dr. Alfred Lewin,
2009 Grantee, University of Florida

A strong, consistent investment in the Florida Biomedical Research Programs allows researchers to continue working for advancements in diagnosing, preventing, and treating the diseases afflicting Floridians.

Quest for Breakthroughs

More than half a million Floridians currently suffer from tobacco-associated health problems,¹³ and for every person who dies from smoking, 20 more suffer from a tobacco-related illness.¹⁴ With the devastating toll on Florida's population and families as well as billions of dollars spent treating patients who suffer from these diseases, the Florida Legislature created the King Program to accelerate medical breakthroughs to combat these health concerns.

The Advisory Council's awareness of the severity and impact of these health issues guides the strategies and ensures that research funding addresses the right things in the right way. As a result, scientists have the tools and resources needed for medical advances that will deliver health improvements to the people of Florida.

Working on the Right Things . . .

All funded projects are committed to researching Florida's top causes of death: heart disease, cancer, lung disease, and stroke in addition to other tobacco-related issues.

Research is dedicated to prevention, diagnosis, treatment, and cure as well as encourages the discovery of medical breakthroughs and cutting-edge treatments that target Florida's health demographics.

Funded grants support all stages of research from early discovery to testing in patients, which is necessary to meet the ultimate goal of improved patient health.

Doing it the Right Way . . .

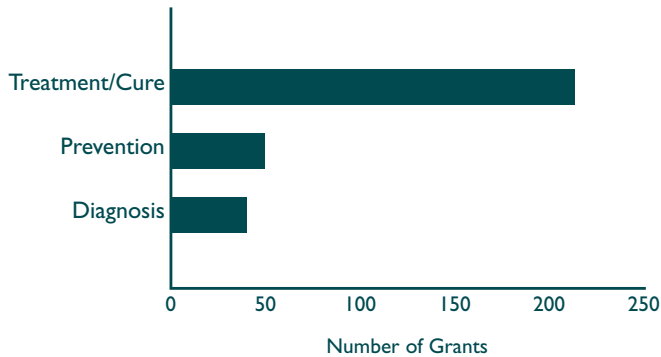
Grants are awarded to only the most promising, scientifically rigorous projects, as determined by an independent scientific peer review process accredited and endorsed by the National Cancer Institute (NCI).

Guided by a well-respected Advisory Council and committed to the effective stewardship of funds, the Programs regularly evaluate chosen strategies and incorporate widely accepted best practices in managing biomedical research programs.

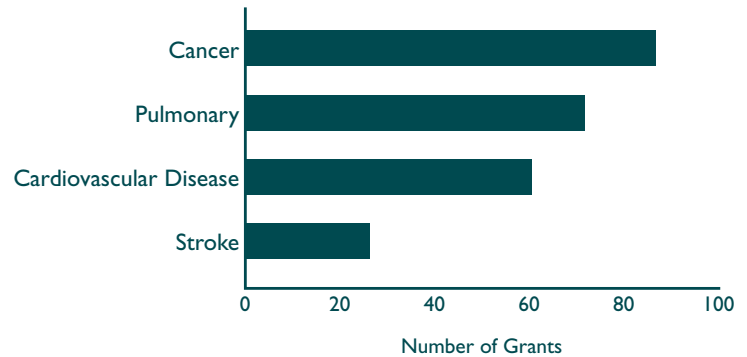
Leads to Improvements...

- Better patient healthcare options and quality of life
- Identification of factors necessary to reduce the inequitable cancer burden in Florida's highly diverse and disproportionately affected populations
- Improved cancer outcomes through new solutions and treatments
- Reduced healthcare burden for Florida

Grants by Discovery Emphasis



Grants by Focus on Top Killers



Due to the nature of research, grants may fall into more than one Emphasis and/or Focus category causing the total number of grants in each graph to be higher than the total number of grants awarded.

Research: Making an Impact

New Standard Practice for Lung Cancer Staging

“Our group started by identifying two genetic mutations responsible for 70 percent of lung cancers. Today we are testing a new drug based on these findings. Further, a new lung cancer staging procedure is now standard practice at the Mayo Clinic based on our research.”

-Dr. Alan Fields
2006 Grantee, Mayo Clinic

Making Radiotherapy Safer for Patients

“Our patients are doing better because we developed improved techniques for radiotherapy, including a way to more accurately target lung tumors, predict doses, and reduce healthy tissue damage.”

-Dr. Sanford Meeks
2008 Grantee,
M. D. Anderson Cancer Center

Changing the Standard of Care for Head and Neck Cancer

“Our King Grant started as a rehabilitative strategy for head and neck cancer patients and grew to become the standard of care for all head and neck cancer patients coming for treatment at our center. What the King grant has begun at University of Florida is a change in the model of care.”

-Dr. Michael Crary
2001 Grantee, University of Florida

Lifetime Smoker Quits After Using New Cessation Program

“I met with an elderly participant one year after her completion of the smoking cessation program designed with our King grant. She was pleased to report that in the past year she had been able to remain smoke-free. I’ll never forget how her face lit up as she told me that after struggling with chronic obstructive pulmonary disease (COPD) for many years, her doctor had been able to take her off breathing treatments because her health had improved so drastically. She was overjoyed because she had been able to quit smoking after having smoked for close to six decades.”

-Mr. Chris Blagg working with Dr. Mary Gerend
2007 Grantee, Florida State University

Cardiovascular Disease Research

“New discoveries in the treatment of heart disease continue to come from James & Esther King Program Grantees. Many of these research findings lead to National Institutes of Health grants and increase the chance of discoveries even further.”

—Mr. James Mosteller
Florida Government Relations Director,
American Heart Association, Greater
Southeast Affiliate

41,202
deaths in
Florida annually

The leading cause of death in Florida is cardiovascular disease, which refers to diseases of the heart and blood vessels.¹⁵ Florida ranks fifth in the nation in deaths due to heart disease.¹⁶

2 to 4
times increased
risk of heart
disease for
smokers

The Surgeon General has called cigarette smoking “the most important of the known modifiable risk factors for coronary heart disease in the United States,” and nearly 30 percent of all coronary heart disease deaths in the U.S. are attributable to cigarette smoking.¹⁷

\$17
billion
Florida hospital
expenditures

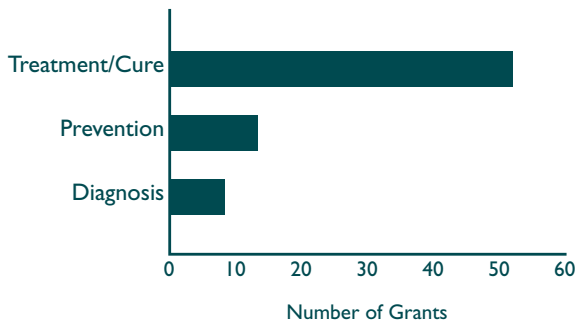
Approximately 1/4 of Florida adults report high blood pressure and 1/3 of those screened report high blood cholesterol, which puts them at greater risk for cardiovascular disease.¹⁸

\$24.7
million
Program
investment
in Cardiovascular
Research

The King Program has funded 60 cardiovascular research projects, and Florida’s scientists have leveraged the state’s initial investment with follow-on funding of \$36.85 million to continue heart disease research.

Focus on Cardiovascular Disease Research

Cardiovascular Grants by Discovery Emphasis



Projects may be classified in more than one category.

Funds Applied to Cardiovascular Research
\$24.7
 million

People Working on Cardiovascular Projects
283

Cardiovascular-Related Projects
60

Institutions Awarded Grants for Cardiovascular Research
10

Projects Involving Clinical Studies
15

Striving to Combat Cardiovascular Disease and Its Deadly Outcomes

New Discovery Leads to Federal Grants

“We are studying the calcification of heart valves and were the first group to show a genetic basis for this condition in a mouse model. Our goal is to find a way to increase the gene to prevent or treat this disease. Based on this research, I have formed collaborations with the Division of Cardiothoracic Surgery at Jackson Memorial Hospital/Holtz Children’s Hospital and acquired \$2.2 million in two NIH grants.”

-Dr. Joy Lincoln
 2007 Grantee, University of Miami

Helping Patients Manage Heart Failure

“At the end of the study, we expect that patients will have a better understanding of their heart condition and become more comfortable taking steps to better manage their heart failure. We are using a phone-based system to help patients with daily weight management and healthy diet and lifestyle choices to treat risk factors of heart failure. In turn, this will help reduce healthcare costs and hospital readmission rates for these patients.”

-Dr. Stuti Dang
 2009 Grantee, University of Miami

New Understanding about Heart Rhythm Disorders

“The King Program provided resources and time for our lab to make significant contributions to the field of cardiac arrhythmias. Tobacco use increases susceptibility to cardiac arrhythmias. With approximately one million Floridians suffering from heart rhythm disorders, this is one small example of the Program’s importance and relevance to the health and economic welfare of our state.”

-Dr. Eric Bennett
 2009 Grantee, University of South Florida

Research to Protect the Cardiovascular System

“Our research centers on how nicotine prevents normal function of the lining of the blood vessels. We are using this information to develop new ways to protect the cardiovascular system. Funding from the King Program has allowed us to successfully obtain a National Heart, Lung, and Blood Institute Grant.”

-Dr. Duane Eichler
 2008 Grantee, University of South Florida

Cancer Research

“Cancer is rapidly becoming the major cause of death in the world, and the cancer burden in Florida is among the greatest in the United States. The Florida Biomedical Research Programs address this problem by providing funding for innovative research that also helps attract and retain a scientific and clinical workforce to meet Florida’s cancer challenges now and in the future.”

—Dr. Daniel Armstrong

Professor and Associate Chair, Pediatrics;
Director, Mailman Center for Child
Development, University of Miami; Florida
Biomedical Research Advisory Council Member

A Profile of Cancer in Florida

40,817
deaths in
Florida annually

Cancer is the second most common cause of death in Florida.¹⁹ On average, 100,250 new cancer cases were diagnosed per year for the period 2004-2008 in Florida.²⁰

30%
of all cancer
deaths are due
to smoking

Smoking causes more than 85 percent of lung cancers and can cause cancer almost anywhere in the body.²¹

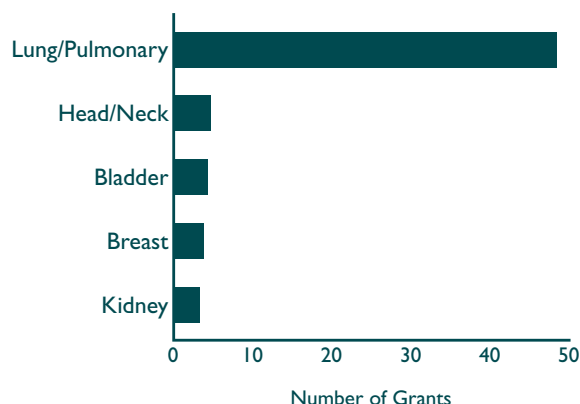
32%
higher death
rate in African
American men
than white men

African Americans have the highest death rate and shortest survival of any U.S. racial and ethnic group for most cancers.²² In 2008, approximately 7.4 percent of the nation’s African American population resided in Florida, a percentage only surpassed by New York.²³

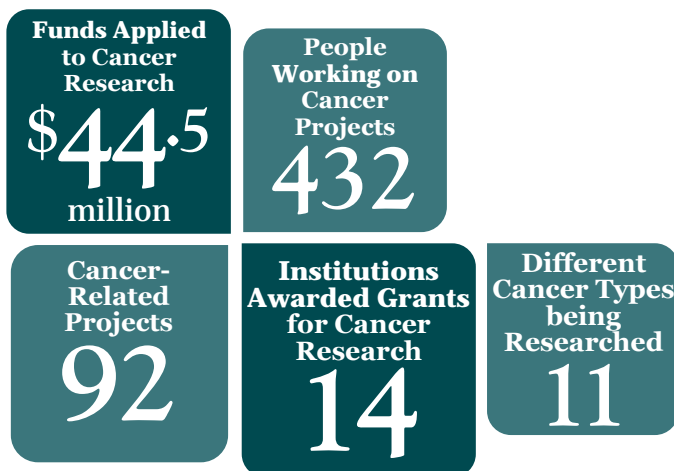
\$44.5
million
Program
investment
in Cancer
Research

The King Program has funded 92 cancer research projects, and Florida’s scientists have leveraged the state’s initial investment with follow-on funding of \$69.79 million to continue cancer research.

Grants Directed Toward Attacking the Top Florida Cancers



Focus on Cancer Research



King Research Offers New Hope for Patients

New Approaches to Cancer Therapy

“We are focusing on melanoma and cancers of the lung, esophagus, throat, and mouth. Through our King grant, we are targeting new approaches for selective, efficient programmed death of cancer cells and new approaches to cancer therapy. We have a patent for our work and two more pending.”

-Dr. Igor Alabugin
2009 Grantee, Florida State University

New Lung Cancer Diagnostic

“This King award enabled us to propel forward a potentially life-saving test for the early detection of lung cancer. Without it, we would have been challenged to establish the critical partnership with biotech necessary for translating research discoveries into commercial products. Based on this work, we received a grant from the American Lung Association to further refine our diagnostic test.”

-Dr. Philip Arlen
2009 Grantee,
M.D. Anderson Cancer Center

Training Tomorrow's Cancer Researchers

“Based on our King research, we are offering a new course and have introduced clinicians and students to biomechanical modeling and its clinical relevance. Faculty and students alike have received background training in radiotherapy techniques. Nearly 200 undergraduate and graduate students have been exposed to the research. Many are considering a career in cancer research.”

-Dr. Segun Ilegbusi
Project Leader on Dr. Sanford Meeks 2008 Grant,
University of Central Florida

King Grant Results in Promising Breast Cancer Research and Additional Grants

“My King grant allowed me to get started on an exciting research project for a type of breast cancer that is very difficult to treat. Our work has resulted in a patent, two grants – including one from the Department of Defense – and additional studies in other tobacco-related cancers. I didn't know at the start where this work would take me, but I am very excited about where it is going.”

-Dr. Karoline Briegel
2005 Grantee, University of Miami

Pulmonary Disease Research

Chronic lower respiratory disease, a group of diseases that occur in the lower lungs, is the third leading cause of death in Florida.²⁴ Lung disease death rates are currently increasing, while death rates due to other major causes of death, such as heart disease, cancer and stroke, are declining.²⁵

A Profile of Pulmonary Disease in Florida

10,163
deaths in
Florida annually

Lung cancer accounts for more deaths than any other cancer in both men and women.²⁶ In 2011, there will be an estimated 17,150 new lung and bronchus cancer cases in Florida.²⁷

Florida ranks
#2
in deaths due
to COPD

Chronic obstructive pulmonary disease (COPD), such as emphysema and chronic bronchitis, is a disease where patients literally lose their ability to breathe.

Asthma
is a leading
childhood
disease

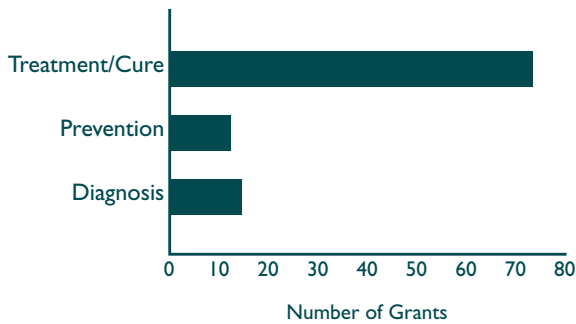
Asthma is the leading serious, chronic illness among children in the U.S.²⁸ Secondhand smoke imposes an enormous disease burden, particularly among vulnerable groups such as children and those with asthma.²⁹ Secondhand smoke can aggravate symptoms in the 400,000 to 1 million asthmatic children in the U.S.³⁰

\$33.5
million
Program
investment
in Pulmonary
Research

The King Program has funded 74 pulmonary research projects, and Florida's scientists have leveraged the state's initial investment with follow-on funding of \$81.46 million to continue pulmonary disease research.

Focus on Pulmonary Research

Pulmonary Grants by Discovery Emphasis



Projects may be classified in more than one category.

Funds Applied to Pulmonary Research
\$33.5
 million

People Working on Pulmonary Projects
358

Pulmonary-Related Projects
74

Institutions Awarded Grants for Pulmonary Research
15

Projects Involving Clinical Studies
30

Providing Support for Promising Pulmonary-Related Research

Secondhand Smoke Exposure in Asthmatic Children

“We are studying the role of secondhand smoke (SHS) in asthma. If we can explain why SHS is so damaging to the lungs of asthmatic kids, we can really push zero tolerance for SHS exposure in prevention efforts and develop better treatments.”

-Dr. Jason Lang
 2009 Grantee, Nemours Children’s Clinic

Early Detection of Lung Cancer

“Dr. Michael Wallace, one of our team members, developed a minimally invasive technique to detect lung cancer and clinically tested the method using our King Grant. The results showed nearly perfect detection of lymph nodes with metastatic lung cancer. Physicians at the Mayo Clinic are now being trained in this technique.”

-Dr. Alan Fields
 2006 Grantee, Mayo Clinic

Identifying Lung Cancer Before it Spreads

“I have created a new technique for detecting lung cancer at the nanoparticle level. This ability enables earlier detection of cancer and treatment before cancer spreads. Without King grant support, I could not have reached this level of discovery. We received a Department of Defense grant to continue this work.”

-Dr. Ming Su
 2007 Grantee, University of Central Florida

Personalized Lung Cancer Therapies

“Using blood from over 650 lung cancer patients, we found that unique gene mutations were predictors of lung cancer survival for specific chemotherapy treatments. These findings may help us develop personalized lung cancer therapies by matching the genetic characteristics of a patient to the type of treatment. Although more research is required to confirm these findings, using the King Grant we were able to generate a tremendous amount of data.”

-Dr. Matthew Schabath
 2009 Grantee, Moffitt Cancer Center & Research Institute

Stroke Research

Stroke is the third leading cause of death in the United States and the leading cause of serious, long-term disability.³¹

On average, a stroke occurs every forty seconds, and every four minutes someone dies from a stroke.³²

A Profile of Stroke in Florida

Stroke is the
5th
leading cause of
death in Florida

Stroke occurs when a clot blocks the brain's blood supply or a brain blood vessel bursts.³³ Florida ranks 4th in the nation for stroke deaths.³⁴

\$1.9
billion
in Florida
hospital
expenditures

An estimated 33 percent of stroke survivors need help caring for themselves.³⁵

2 to 4
times increased
stroke risk
among smokers

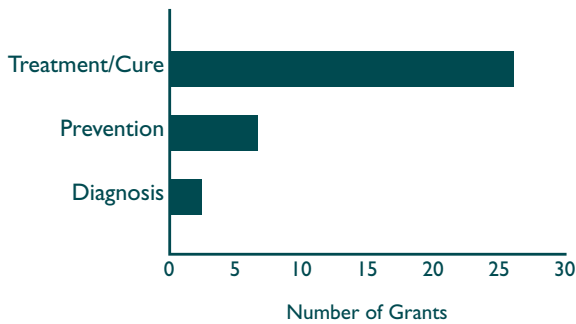
A person's chance of stroke more than doubles with each decade of life after age 55.³⁶ African Americans, who comprise 16 percent of the state's population, have almost twice the risk of first-ever stroke compared with whites.³⁷ Secondhand smoke exposure significantly increases stroke risk.³⁸

\$11.64
million
Program
investment
in Stroke
Research

The King Program has funded 30 stroke-related research projects, and Florida's scientists have leveraged the state's initial investment with follow-on funding of \$8.28 million to continue stroke research.

Focus on Stroke-Related Research

Stroke Grants by Discovery Emphasis



Projects may be classified in more than one category.

Funds Applied to Stroke Research
\$11.64 million

People Working on Stroke Projects
125

Stroke-Related Projects
30

Institutions Awarded Grants for Stroke Research
11

Projects Involving Clinical Studies
5

Investing in Multiple Strategies to Improve Stroke Outcomes

Combining Multiple Drugs to Improve Stroke Outcomes

“We are using our King Grant to test the combination of three FDA-approved drugs that individually have the capacity to reduce brain injury due to stroke. This combination may provide an effective, novel stroke treatment. The project is particularly important for Florida because we are turning discoveries into new patient treatments. Further, I incorporate this research into my medical school instruction.”

-Dr. Jang-Yen Wu

2009 Grantee, Florida Atlantic University

A New View of Stroke

“Through our King Grant, we established that stroke is not just a brain injury, but has a whole body component – the spleen and adrenal system play a major role in stroke. Based on these findings, we are identifying potential new stroke treatments that may extend the physician’s arsenal in the battle against this devastating disease.”

-Dr. Alison Willing

2007 Grantee, University of South Florida

New Stroke Therapies

“We are collecting preclinical data to test a new stroke treatment through a joint collaboration with USF and Cryo-Cell International, Inc. (Oldsmar, FL). The current project focuses on identifying the dosage and timing requirements necessary to achieve maximal recovery.”

-Ms. Nicole Kuzmin-Nichols

2009 Grantee, President & COO of Saneron CCEL Therapeutics, Inc., Tampa

Protection against Stroke

“My King Grant allowed me to establish the first genetics laboratory focused on stroke within the Mayo Clinic. As a result, we are looking at genetic factors in relation to tobacco-related habits, diabetes, hypertension, and obesity. The laboratory works closely with our clinical stroke team as we develop a real and tangible effort to translate research breakthroughs into patient care.”

-Dr. Owen Ross

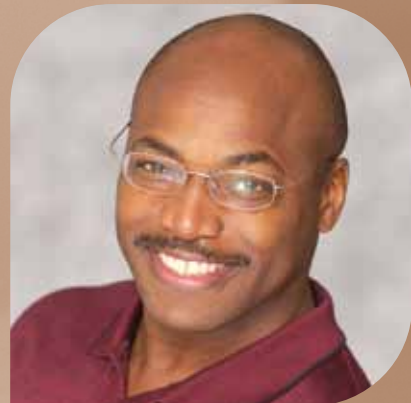
2009 Grantee, Mayo Clinic



Program Year in Review

“My affiliation with the biomedical research Programs has increased my appreciation for the role of scientific discovery, not only in generating improved health outcomes but also in stimulating economic growth. A vibrant, statewide biomedical research enterprise is good for Florida.”

—Al Latimer
Senior Vice President
Strategic Partnerships, Enterprise Florida, Inc.
and Biomedical Research Advisory Council Member



Dr. Claudia Rodrigues, 2009 Grantee,
University of Miami

Competitive Requests for Grant Research Funding

Since 2001, the James & Esther King Program has offered grant research funding competitions seeking proposals for diseases related to tobacco use from scientists of all experience levels. The King Program has received a total of 793 applications requesting more than \$500 million leading to 242 awards totaling \$99.35 million. For a brief description of all grant types offered through the Programs, refer to Appendix B.

Based on recommendations from the Biomedical Research Advisory Council, the Program releases requests for calls for grant applications, which detail the available grant types for that competitive cycle. Scientific peer reviewers evaluate and score all eligible and qualified applications for scientific merit and fit with Program objectives. The Advisory Council then reviews the scores and ranking of those proposals and makes funding recommendations to the State Surgeon General, who makes the final award determinations.

FY 2010-2011 Competitions for Grant Awards

Between July 2010 and June 2011, the King Program issued multiple calls for grants, resulting in the following interest and awards.

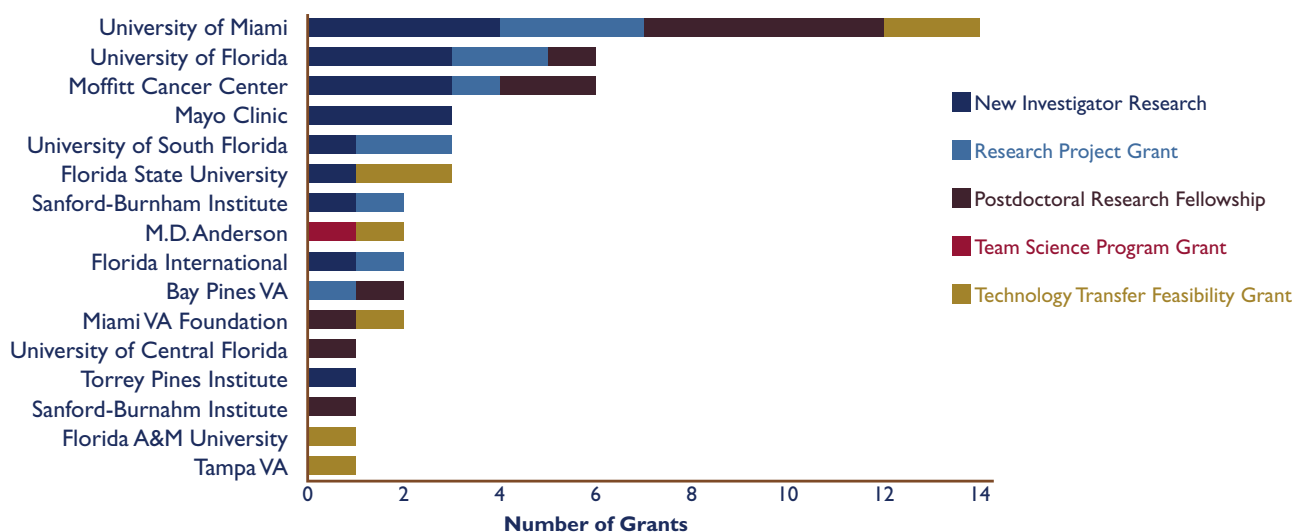
Grant Type	Applications Received	Applications Awarded	Percent of Applications Awarded	Awarded Funding Amount
New Investigator Research (NIR) Grant	52	15	29%	\$ 5,899,349
Team Science Program (TSP) Grant	7	1	14%	\$ 1,335,420
Research Project Grant (RPG)*	63	14	22%	\$ 10,180,757
Postdoctoral Research Fellowship (PRF)	24	12	50%	\$ 1,635,400
Technology Transfer Feasibility (TTF) Grant	23	8	35%	\$ 799,323
Technology Transfer/Commercialization Partnership (TTCP) Grant	12	0	0%	\$ -
TOTAL	181	50	28%	\$19,850,249

* Awarded amount of RPG grants does not include requested funding for Years 4 and 5, which will be allocated from FY 2013-2014 funds, subject to the availability of funds and scientific progress.

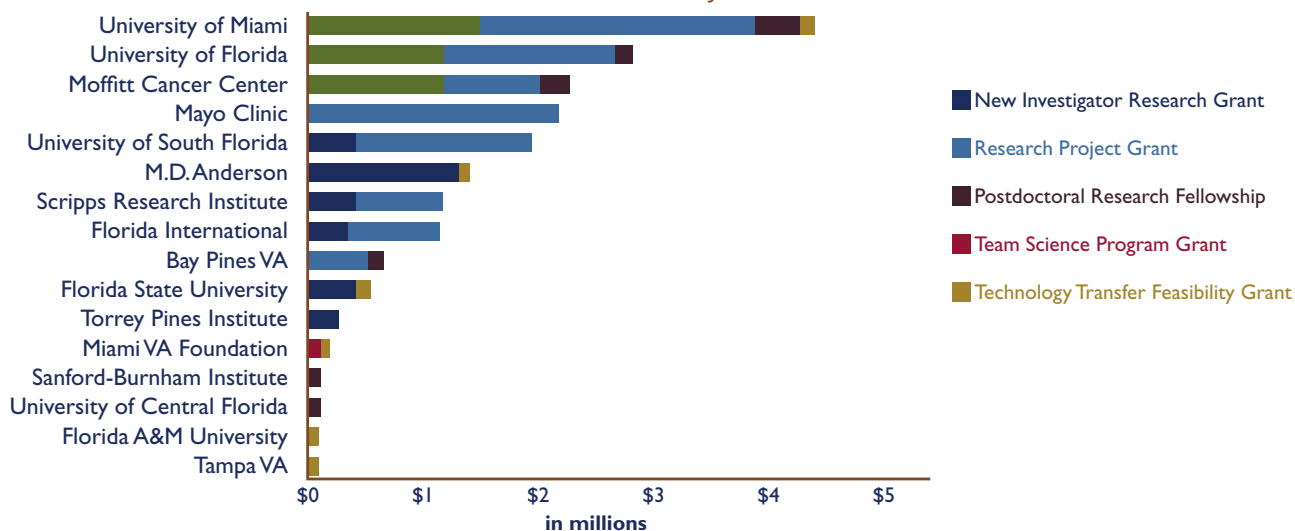
Awards Distributed throughout Florida

Sixteen public and private research organizations throughout Florida benefited from grants received between July 2010 and June 2011. Information about all funded projects may also be accessed from the Florida Biomedical Research Program website, www.floridabiomed.com, by selecting the menu option “Funded Projects.”

FY 2010-2011 Number of Grants Awarded by Institution



FY 2010-2011 Dollar Value of Awards by Institution



Advisory Council Membership

The Biomedical Research Advisory Council (Advisory Council), per section (s.) 215.5602 and 381.922, *Florida Statutes (F.S.)*, advises the Department of Health regarding the direction and scope of the Florida Biomedical Research Programs and assists in developing guidelines to ensure fairness, neutrality, and adherence to the

principles of merit and quality in operations and administrative matters. Although members are from institutions throughout Florida, they represent the seat as indicated below. The Advisory Council follows strict measures to avoid conflicts-of-interest in making funding recommendations.

Daniel Armstrong, Ph.D.

*Professor and Associate Chair, Pediatrics
Director, Mailman Center for Child Development
University of Miami Miller School of Medicine*

Seat: American Cancer Society Representative

Appointed: January 2010



Randal H. Henderson, M.D., MBA

*Associate Medical Director, Proton Therapy Institute
Professor of Radiation Oncology
University of Florida, Jacksonville*

Seat: House – Cancer Program (ACoS)

Appointed: April 2007



Richard J. Bookman, Ph.D.

*Senior Advisor to the Dean,
University of Miami Miller School of Medicine
Special Assistant to the Provost, University of Miami*

Seat: Advisory Council Chair and American Heart Association Representative

Appointed: July 2000



Myra Hurt, Ph.D.

*Senior Dean, Research, Graduate, and Undergraduate Programs
Florida State University College of Medicine*

Seat: Research University

Appointed: February 2006



Mark Brantly, M.D.

*Chief, Division of Pulmonary, Critical Care, and Sleep Medicine
University of Florida
College of Medicine*

Seat: Advisory Council Vice-Chair and American Lung Association Representative

Appointed: October 2010



Albert Latimer, B.B.A.

*Senior Vice President
Strategic Partnerships
Enterprise Florida, Inc.*

Seat: General Public

Appointed: February 2006



Composition of the Advisory Council

The 11 appointees to the Advisory Council include:

- One representative of the Florida Division of the American Cancer Society
- One representative of the Greater Southeast Affiliate of the American Heart Association
- One representative of the American Lung Association of Florida
- Four members appointed by the Governor, two with expertise in biomedical research
- One member from a Florida research university
- One representing the Florida general population
- Two members appointed by the President of the Florida Senate: One with expertise in behavioral or social research and one from a cancer program approved by the American College of Surgeons (ACoS)
- Two members appointed by the Speaker of the Florida House of Representatives: One from a professional medical organization and one from a cancer program approved by ACoS



Edith Perez, M.D.

*Professor of Medicine
Hematology/Oncology
Mayo Clinic, Jacksonville*

Seat: Senate – Cancer Program (ACoS)

Appointed: August 2009



Claes Wahlestedt, M.D., Ph.D.

*Professor and Vice Chair (Research), Department
of Psychiatry and Behavioral Sciences
Associate Dean for Therapeutic Innovation
Director, Center for Therapeutic Innovation,
Hussman Institute for Human Genomics
University of Miami Miller School of Medicine*

Seat: Biomedical Research

Appointed: April 2010



Penny Ralston, Ph.D.

*Director, Dean Emeritus and Professor
Center on Better Health & Life for Underserved
Populations
Institute of Science & Public Affairs
Florida State University*

Seat: Senate - Behavioral/Social Research

Appointed: July 2006



Herbert Weissbach, Ph.D.

*Distinguished Research Professor and Director
Center for Molecular Biology and Biotechnology
Florida Atlantic University*

Seat: Biomedical Research

Appointed: February 2006



Mary Lou Sole, R.N., Ph.D., CCNS, FAAN

*College of Nursing Professor
College of Health & Public Affairs
University of Central Florida*

Seat: House – Professional Medical Organization

Appointed: April 2007

Advisory Council Recommendations

To further the King Program's ability to pursue its goals, priorities, and strategies, the Advisory Council makes the following set of legislative recommendations:

Provide stable and significant year-to-year state funding. The demand for Program funding is very high, as evidenced by record-setting applications requesting a combined \$286.6 million in FY 2009-2010 for the King and Bankhead-Coley Programs. With reduced state investments over the past two years, the impact to the research community is felt not only through the "opportunity cost" represented by unfunded but highly meritorious science that otherwise could lead to the next major medical breakthrough, but also an incremental stagnation of Florida's innovation economy, including job creation. A consistent, significant, "needle moving" investment is necessary to maintain Florida's momentum of the last ten years.

Exempt the Florida Biomedical Research Programs from rule making. For ten years these Programs have successfully operated without administrative rules. The original statute indicated the Department "may" promulgate rules after consultation with the Advisory Council. It has been the recommendation of the Advisory Council to not promulgate rules so the Programs can operate nimbly in response to research policy changes at the federal level and the frequent changes in annual appropriations. Promulgating changes to a rule can delay operations by 60-90 days.

Replace "shall" with "may" in the statute to eliminate unnecessary expenses pertaining to the types of applications that must be solicited. Currently the statute states the Advisory Council "shall"

consider three types of applications regardless of other factors. Doing so would drive up the cost of grant competitions and disingenuously solicits applications for types of grants that the Advisory Council does not intend to recommend for funding. Changing this word to "may" gives an appropriate level of flexibility to the Advisory Council consistent with their statutory responsibility of setting the program priorities and emphases.

Repeal the Advisory Council duties in statute to appoint, supervise or interact with peer review panels to strengthen protections against potential conflicts of interest. Historically the Department and its staff, not the Council, have recruited, selected, contracted and managed peer reviewers, who are paid vendors. Any interaction between Advisory Council members and peer review panels presents the potential for real or perceived conflict of interest. Therefore, it is in the best interests of the Programs that the statute be updated to reflect current practices whereby these duties would be reassigned to the Department.

Additional Council Recommendations

- Provide authority to carry forward funds for up to five years.
- Clarify Advisory Council conflict of interest protections consistent with s. 112.311(4), *F.S.*
- Maintain an appropriate allowance for administrative expenses.

Program Operations

Administrative Cost Fluctuations Resulting from Funding Variability

The King Program by statute can use up to 15 percent of the appropriated funds for administrative expenses. Historically, these costs have been held below this threshold, freeing up additional funds for grants. With the increased number of grants awarded in FY 2009-2010 and FY 2010-2011 combined with substantially decreased appropriations to the Program in FY 2011-2012, administrative carrying costs will necessitate the full use of the administrative expense allowance for FY 2011-2012. Administrative expenses for FY 2012-2013 may exceed the allowance if funding is at or below the FY 2011-12 level.

“The King Research Program is a great opportunity for new investigators to establish their careers to independence. The constant feedback from reviewers during the funding years is a key feature to guide you smoothly through this path.”

—Dr. Francisca Diaz
2008 Grantee, University of Miami

Incorporating Best Practices in Operational Program Management

Grant management involves active monitoring and includes review of a number of grantee deliverables including quarterly financial reports, yearly scientific progress reports, grant-specific deliverables, annual budgets, no-cost extension requests, and a site visit during multi-year grants to evaluate the scientific and financial health of the project.

The King Program uses industry best practices to ensure financial and research accountability, to support grantees, and to maintain compliance with grant terms and conditions. Reporting requirements are intended to ensure progress rather than add administrative burden, and grantees utilize a convenient web-based system for report submission. Annual continuation of multi-year grants depends on outcomes of scientifically peer-reviewed progress reports and site visits as indicators of satisfactory performance as well as the availability of funds.

Performance Indicators

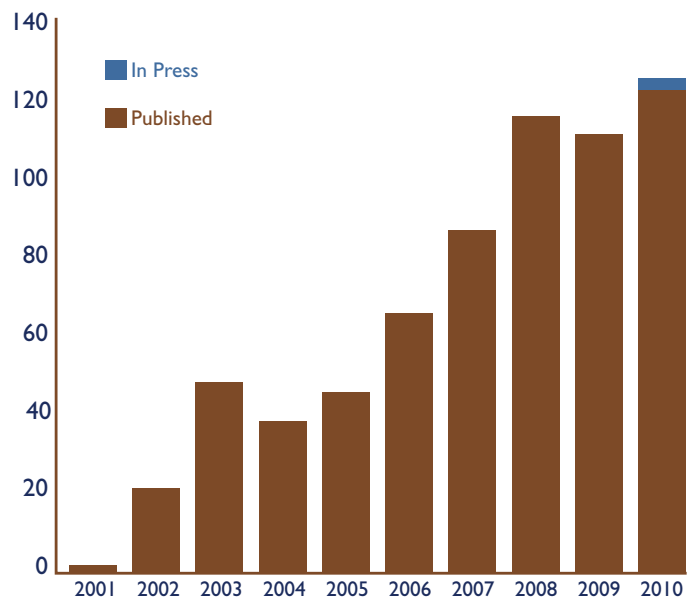
King tobacco-related research findings are stimulating dialogue among Florida’s own research community and helping to earn increasing national and international recognition for the quality of research conducted in Florida.

Increasing research impact is indicated by follow-on funding from federal sources, growth in the number of publications,

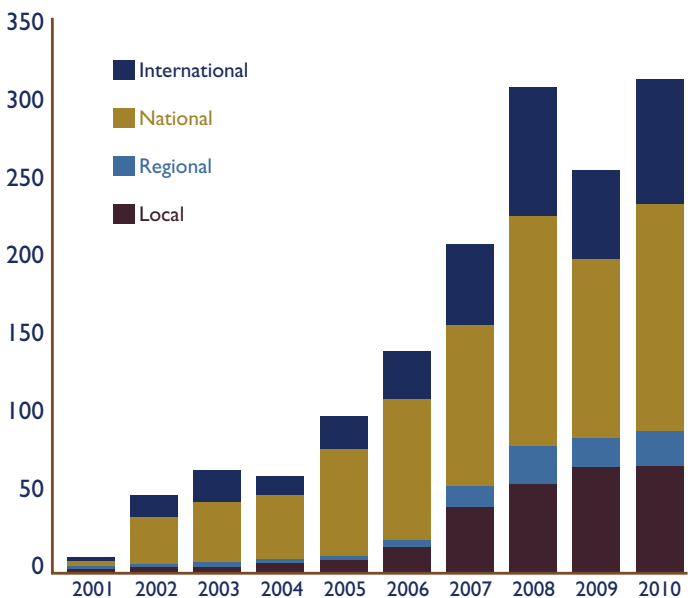
and presentations at scientific meetings as demonstrated below. Refer to Appendix C for a list of Grantees’ related awards and Appendix D for a list of Grantee publications.

Patents also signify unique and innovative research contributions. As of June 30, 2011, King Grants have already produced 48 patent filings.

Publications in Peer-Reviewed Journals by Year



Scientific Presentations by Year



Florida's National Research Funding

While Florida ranks 4th in population in the country, we significantly trail the other most populous states in competing for health-related research funding from three of the top four federal sources.

Florida's Rank in NIH, CDC, NSF and AHRQ Funding, 2010³⁹

National Agency	Funding (in millions)	State Rank
National Institutes of Health (all Centers)	\$391	17
Centers for Disease Control and Prevention	\$304	4
National Science Foundation	\$194	11
Agency for Healthcare Research and Quality	\$7	23
TOTAL	\$896	12

Of greatest significance is the gap in extramural research funding from the National Institutes of Health (NIH). The magnitude of Florida's missed opportunity, on a per capita basis, is evident below.

NIH Research Funding and Population of Selected States

State	2010 Census population (in millions) ⁴⁰	NIH Funding in federal fiscal year 2011 (in millions) ⁴¹	Funding \$ Per capita
California	37.2	\$ 3,332	\$ 89.57
Texas	25.3	\$ 1,078	\$ 42.61
New York	19.3	\$ 2,001	\$ 103.68
Florida	18.8	\$ 391	\$ 20.80
Illinois	12.8	\$ 733	\$ 57.27
Pennsylvania	12.7	\$ 1,405	\$ 110.63
Ohio	11.5	\$ 662	\$ 57.57
Georgia	9.7	\$ 433	\$ 44.63
North Carolina	9.5	\$ 932	\$ 98.10

Reduced National Funding Requires Increased State Commitment

For the foreseeable future, Florida's biomedical researchers will face increasing competition for NIH funding for several reasons:

- The pool of competing researchers has grown due to incremental research capacity generated by the short-term investment of American Recovery and Reinvestment Act, which has now effectively ended.⁴²
- NIH's fiscal year 2012 budget will likely be reduced by at least 5 percent to comply with orders by the Office of Management and Budget.⁴³
- Other states are accelerating the growth in their biomedical research capacity with significant investments (most notably, the \$300 million per year Cancer Prevention Research Institute of Texas).

Appendices

“While journal publications and scientific presentations are the ‘gold standards’ for measuring the impact of research, real success is found in the stories of your friends and family. Ask, and they will tell you of a medical miracle made possible by research, or the need for continued resolve in the fight against disease.”

—Dr. Mark Brantly

Chief, Division of Pulmonary, Critical Care, and
Sleep Medicine
University of Florida, College of Medicine
and Biomedical Research Advisory Council Vice-
Chair



(From left to right) Dr. Omaid Velazquez,
Mentor, and Dr. Zhao-Jun Liu, 2008 Grantee,
University of Miami

Appendix A: FY 2010-2011 Grant Awards

New Investigator Research Grants

Grantee	Institution	Title	Award
Angiolillo, Dominick	University of Florida	<i>Effects of Cigarette Smoking on Clopidogrel Induced Antiplatelet Effects in Patients with Coronary Artery Disease</i>	\$ 377,628
Armishaw, Christopher	Torrey Pines Institute for Molecular Studies	<i>Alpha-Conotoxins as Subtype-specific Nicotinic Acetylcholine Receptor Antagonists for Studying Tobacco Addiction</i>	\$ 400,000
Del Valle, Juan	H. Lee Moffitt Cancer Center & Research Institute	<i>Natural Product-inspired Approaches Targeting Mcl-1</i>	\$ 399,999
Dezfulian, Cameron	University of Miami	<i>Nitrite Mediated Neuroprotection after Cardiac Arrest</i>	\$ 345,000
Gopalan, Priya	University of Florida	<i>A Phase II Clinical Trial of the CDK 4/6 Inhibitor, PD 0332991, in Previously-Treated, Advanced NSCLC Patients with Wildtype RB and Inactivated CDKN2a</i>	\$ 400,000
Gray, Jhanelle	H. Lee Moffitt Cancer Center & Research Institute	<i>Combination Immunotherapy for Lung Cancer</i>	\$ 399,962
Guan, Jingjiao	Florida State University	<i>Array-Based Fiber FISH for Genetic Analysis of Lung Cancer</i>	\$ 391,496
Kim, Donghwa	H. Lee Moffitt Cancer Center & Research Institute	<i>Determine Clinic Pathological Significance of Alteration of NGB and Regulation by AKT2 in Lung Cancer</i>	\$ 399,999
Kojetin, Douglas	The Scripps Research Institute	<i>Dynamic Regulation of Allosteric Communication Networks in PPARgamma Pharmacology</i>	\$ 400,000
Kusmartsev, Sergei	University of Florida	<i>Tumor-infiltrated Myeloid Cells and Prostaglandin Catabolism in Human Bladder Cancer</i>	\$ 400,000
Li, Xiao	University of South Florida	<i>A Rapid and Sensitive Optical Spectroscopic Method for Simultaneous Determination of Cotinine, Trans-3'-hydroxycotinine and Thiocyanate In Vitro</i>	\$ 398,944
Miksovska, Jaroslava	Florida International University	<i>Conformatinal Dynamics in Vertebrate Hexacoordinate Hemoglobins</i>	\$ 387,063
Pinto, Jose	University of Miami	<i>Understanding the Molecular Mechanisms of Troponin Mutations in Cardiac Muscle Dysfunction</i>	\$ 399,258
Wang, Liyong	University of Miami	<i>Understanding the Mechanisms of Smoking on Complex Diseases from NOS2A-Smoking Interaction</i>	\$ 400,000
Young, Karen	University of Miami	<i>Importance of c-kit in Neonatal Lung Development and Disease</i>	\$ 400,000

Postdoctoral Research Fellowships

Grantee	Institution	Title	Award
Alexander, Jon	University of Florida	<i>Investigation of the Role of Corticotropin-releasing Factor in the Basolateral Amygdala during Nicotine Withdrawal and Stress Induced Reinstatement</i>	\$ 159,750
Chang, Jessica	Bay Pines Foundation, Inc.	<i>Antioxidant Transcription Factor Regulation and Alzheimer's Disease</i>	\$ 159,750
Dweck, David	University of Miami	<i>High Throughput Screening to Discover New Compounds that Modulate Cardiac Muscle Contractility</i>	\$ 107,900
Guo, Jianping	H. Lee Moffitt Cancer Center & Research Institute	<i>IKBKE Oncogene in Lung Cancer</i>	\$ 111,300
Li, Qiongzheng	University of Miami	<i>Tobacco Smoke, Stem Cells and Impaired Lung Repair: An Emerging Paradigm in COPD</i>	\$ 56,550
Lin, Hung Wen	University of Miami	<i>Nicotine Exacerbates Post-ischemic Cerebral Blood Flow Derangements After Cardiac Arrest</i>	\$ 111,300
Rangel, Erika	University of Miami	<i>Isolation, Characterization, and Differentiation of c-kit Positive Cells from Neonatal Rat Kidneys</i>	\$ 111,300
Wangpaichitr, Medhi	South Florida VA Foundation	<i>Targeting ROS and Tumor Metabolism to Selectively Kill Cisplatin Resistant Lung Cancer</i>	\$ 164,450
Wen, Yuhui	University of Miami	<i>Mechanisms of Hypoxia-induced Dendrite Degeneration</i>	\$ 164,450
Xie, Xiangyang	Sanford-Burnham Medical Research Institute	<i>Functional Analysis of Novel Akt Substrate ASC2D in Glucose Transport System and its Role in Insulin Resistance</i>	\$ 164,450
Yanez, Ciceron	University of Central Florida	<i>Synthesis and Evaluation of Small Molecule Photoactive Bcl-2 and Bcl-XL Inhibitors for Pro-apoptotic Photodynamic Lung Cancer Therapy</i>	\$ 159,750
Zheng, Hong	H. Lee Moffitt Cancer Center & Research Institute	<i>Regulation of SirT1 Activity by Extra-cellular pH in Lung Cancer</i>	\$ 164,450

Research Project Grants

Grantee	Institution	Title	Award
Borlongan, Cesar	University of South Florida	<i>Blood Brain Repair in Cell Therapy for Stroke</i>	\$ 1,196,000
Cheng, Jin	H. Lee Moffitt Cancer Center & Research Institute	<i>Targeting AKT Pathway in Lung Cancer</i>	\$1,200,000
Echeverria Moran, Valentina	Bay Pines Foundation, Inc.	<i>Investigating Cotinine to Improve Memory and Prevent Tobacco Abuse in Subjects with Cognitive Impairment Due to Psychiatric Disorders</i>	\$ 583,023
Fields, Alan	Mayo Clinic	<i>Combined PKCα and mTOR Inhibition for Treatment of Advanced Non-small Cell Lung Cancer</i>	\$1,200,000
Fields, Alan	Mayo Clinic	<i>Atypical PKC Signaling in Lung Cancer Stem Cells</i>	\$1,200,000
Koniaris, Leonidas	University of Miami	<i>Identifying and Addressing Cancer Outcome Disparities in Breast and Lung Cancer</i>	\$1,200,000
Lee, David	University of Miami	<i>A Community Focused Smoking Cessation Intervention</i>	\$ 716,672
Lewin, Alfred	University of Florida	<i>Developing Gene Therapy for Age Related Macular Degeneration</i>	\$ 720,000

Research Project Grants *cont'd*

Grantee	Institution	Title	Award
Micalizio, Glenn	The Scripps Research Institute	<i>A Future for Natural Product-inspired Hsp90 Inhibitors in the Search for Clinically Relevant Chemotherapeutic Agents</i>	\$ 1,199,600
Miguez, Maria Jose	Florida International University	<i>Cytokines an Underlying Cause of Health Disparities in Tobacco Related Diseases</i>	\$ 1,199,788
Palacio, Ana	University of Miami	<i>Improving Adherence to Cholesterol Lowering Medications among Minority Populations in Florida: A Randomized Trial</i>	\$ 1,199,757
Papke, Roger	University of Florida	<i>Therapies to Improve Smoking Cessation in Neuropsychiatric and Depressed Patients</i>	\$1,200,000
Parker, Alexander	Mayo Clinic	<i>The Molecular Epidemiology of Renal Cell Carcinoma</i>	\$ 1,161,771
Salihu, Hamisu	University of South Florida	<i>Preventing Fetal Body and Brain Size Reduction in Low-income Smoking Mothers: A Randomized Clinical Trial</i>	\$ 1,197,479

* Research Project Grants (RPGs) are awarded for 5 years: The first 3 years have been funded from the FY 2010-2011 budget, and the remaining 2 years will come from the FY 2013-2014 budget subject to the availability of funds.

Team Science Program Grants

Grantee	Institution	Title	Award
Rosser, Charles	M. D. Anderson Cancer Center	<i>A Multidisciplinary Approach to Improve Patient Outcome in Bladder Cancer - A Tobacco-related Disease</i>	\$1,335,420

Technology Transfer Feasibility Grants

Grantee	Institution	Title	Award
Blaber, Michael	Florida State University	<i>Development of "Second-Generation" Fibroblast Growth Factor-1 for Pro-Angiogenic Therapy</i>	\$ 99,350
Goodison, Steven	M.D. Anderson Cancer Center	<i>Diagnostic Assay for Bladder Cancer</i>	\$ 99,973
Li, Wei	University of Miami	<i>Global Mapping of Autoantigen Biomarkers for AMD</i>	\$ 100,000
Sachdeva, Mandip	Florida A&M University	<i>Dual Channel Spray Dried Self- Emulsified Oral Formulation for Treatment of Lung Cancer</i>	\$ 100,000
Sang, Q.-X. Amy	Florida State University	<i>MMP Inhibitor Stroke Drug Development</i>	\$ 100,000
Vesely, David	Tampa VA Research and Education Foundation	<i>Natriuretic Peptides for Treatment of Small Cell Lung Cancers</i>	\$ 100,000
Wilson, James N.	University of Miami	<i>Fluorescent Monoamine Transporter Probes</i>	\$ 100,000
Yu, Hong	South Florida VA Foundation	<i>Activation of Precursor Cells for Cell Therapy</i>	\$ 100,000

Appendix B: Grant Types Offered

Grant Types Offered by the King Program for Tobacco-Related Diseases

Grant Type	Purpose	Maximum Amount & Duration	Years Offered by Program
Bridge Grant	<i>Provide interim support research projects receiving scores in the top 30 percent in federal competitions that were not funded due to Federal budget constraints.</i>	Up to \$200,000 for one year	2009-2010, 2012
Florida Research Challenge (RC1) Grant	<i>Provide support for high-risk, high-reward research proposals in the top four percent of all applications submitted by Florida researchers in response to NIH's 2009 Challenge Grant competition and not funded due to Federal budget constraints.</i>	Up to \$1,000,000 over two years	2010
Investigator Initiated Research (IIR) Grant	<i>Fund research for Florida researchers at all experience levels on a wide variety of tobacco-related research topics.</i>	\$400,000 for two years	2002
New Investigator Research (NIR) Grant	<i>Provide support to Florida-based researchers starting independent research careers and working under the guidance of an experienced Florida mentor.</i>	Up to \$425,000 over three years	2002, 2005-2012
Postdoctoral Research Fellowship (PRF)	<i>Attract and provide support to promising postdoctoral researchers who have the potential to become productive and independent researchers.</i>	Up to \$58,350 per year for one to three years	2011
Research Project Grant (RPG)	<i>Support experienced researchers who are conducting translational and/or health disparities research and who will submit a national application to continue the research.</i>	Up to \$1.5 million over five years	2011
Shared Instrument Grant (SIG)	<i>Improve access to state-of-the-art research instruments that can only be justified on a shared-use basis to support Florida researchers.</i>	Up to \$500,000 for a single instrument	2010
Team Science Program (TSP) Grant	<i>Foster collaboration among three to five Florida researcher teams, supporting complex projects with the potential to secure large external grants.</i>	Up to \$1,500,000 over three years	2005-2012
Technology Transfer / Commercialization Partnership (TTCP) Grant**	<i>Fund collaborations between academic researchers and small, Florida-based biomedical businesses to translate discoveries into new products and therapies.</i>	Up to \$100,000 for one year	2005-2008, 2010-2012
Technology Transfer Feasibility (TTF) Grant	<i>Offer early stage funding in order to develop intellectual property and improve a project's potential and competitiveness for further commercial development activities.</i>	Up to \$100,000 for one year	2011-2012

*When referring to a grant within this report, the year indicates the fiscal year in which the grant started. For example, a grant that began July 1, 2010, is referred to as a 2011 grant.

** Includes Small Business Technology Transfer Grant (SBTT)

Appendix C: Follow-on Funding Awards Reported by Grantees

The following list represents more than \$11.7 million in additional single and multi-year awards reported from July 2010-June 2011 by current and past grantees that are based directly on research findings from projects funded by the King Program. Grants are presented in alphabetical order by last name of the Grantee.

Davenport, Paul. (2006 TSP), “Undergraduate Summer Research Fellowship Program.” American Physiological Society, \$4,000.

Davies, Laurie. (2001 IIR), “Cognitive Function after Coronary Artery Bypass Graft Surgery with or without Cardiopulmonary Bypass.” Medtronic, \$30,000.

Echeverria-Moran, Valentina. (2010 RPG), “Cotinine as a Tool to Decrease Psychiatric Symptoms in Alzheimer’s Disease.” Alzheimer’s Association, \$240,000.

Fletcher, Bradley. (2006 NIR), “Baculoviral Expression and Purification of Single Chain Antibodies.” University of Florida Gatorade Fund, \$60,000.

Fontoura, Beatriz. (2001 NIR), “Fellowship: Nucleoporins in Cardiomyocyte Hypertrophy.” American Heart Association, \$38,000.

Grobmyer, Stephen. (2006 NIR), “Monovalent Targeting of Nanoparticles for Imaging Metastatic Breast Cancer.” University of Florida/Moffitt Collaboration Grant Mechanism, \$100,000.

Jent, Jason. (2009 NIR), “Healthy Steps for Young Children.” The Children’s Trust, \$471,546.

Jiang, Zhihua. (2008 NIR), “The Dichotomy of Alk1 and Alk5 Signaling Pathways in Vascular Response to Injury.” National Heart, Lung, and Blood Institute, \$1,557,440.

Kenny, Paul. (2007 NIR), “Development of $\alpha 5$ NaChR Positive Allosteric Modulators for Tobacco Dependence.” National Institute of Drug Abuse, \$1,593,145.

Kuzmin-Nichols, Nicole. (2009 TTCP), “Novel Autologous Stem Cell Source for Transplant Therapy in Stroke.” Florida High Tech Corridor Matching Research Program, \$52,397.

Lee, David. (2006 TSP), “Secondhand Smoke: Prevalence, Validation, and Effects.” Flight Attendant Medical Research Institute, \$325,000.

Lewin, Alfred. (2010 RPG), “Mitochondrial Oxidative Stress in the Retinal Pigment Epithelium as a Model.” National Eye Institute, \$1,017,534.

Li, Jie. (2004 NIR), “Laminin-8 and Laminin-10 in Squamous Cell Carcinomas.” National Cancer Institute, \$130,049.

Li, Jie. (2004 NIR), “Targeting Laminin-511 Matrix Protein in Melanoma Therapy.” Women’s Cancer Association, \$50,000.

Luesch, Hendrik. (2006 NIR), “In Vivo Target Identification and Antitumor Efficacy of Novel Anticancer Agents.” University of Florida Opportunity Fund, \$100,000.

Pinto, Jose. (2010 NIR), “The Role of Cardiomyopathic Troponin C Mutations in Skeletal and Cardiac Muscle Contraction: From Molecule to Mouse.” National Heart, Lung, and Blood Institute, \$187,921.

Pinto, Jose. (2010 NIR), “Cardiac Troponin in Health and Disease.” National Heart, Lung, and Blood Institute, \$765,000.

Prabhakar, Rajeev. (2008 NIR), “Theoretical Development of Bio-inspired Metalloproteases.” Department of Energy, \$786,727.

Prabhakar, Rajeev. (2008 NIR), “Collaborative Research: Unified Computational Approach.” National Science Foundation, \$1,423,452.

Rodrigues, Claudia. (2009 NIR), “Molecular Mechanisms of Stem Cell Engraftment.” National Heart, Lung, and Blood Institute, \$664,215.

Rose, Dorian. (2009 NIR), “Combining Neural and Behavioral Therapies to Enhance Stroke Recovery.” Department of Veterans Affairs, \$141,200.

Salathe, Matthias. (2005 TSP), “Therapeutic Development Center Miami.” Cystic Fibrosis Foundation, \$70,000.

Siegel, Erin. (2005 NIR), “Defining Epigenetic Alterations in Cervical Neoplasia as Novel Diagnostic and Prognostic Biomarkers.” University of Florida, \$50,000.

Su, Ming. (2007 NIR), “Encapsulated Solid-Liquid Phase Change Nanoparticles as Thermal Barcodes for Highly Sensitive Detections of Multiple Lung Cancer Biomarkers.” Department of Defense, \$100,641.

Tang, Hengli. (2006 NIR), “Cyclosporine, Cyclophilins and HCV Replication.” National Institute of Allergy and Infectious Diseases, \$1,298,172.

Zhang, Xiaohong. (2009 NIR), “Role of Histone Deacetylase 6 and p53 in Cisplatin-resistance of Lung Cancer.” Moffitt Lung Cancer SPORE Program, \$50,000.

Zhang, Xiaohong. (2009 NIR), “Understanding Mechanisms that Lead to Resistance to Platinum-based Treatments.” Ovarian Cancer Research Fund, \$450,000.

Indirect Follow-on Funding:

During the reporting period, current and past grantees reported \$29.25 million in awards that are indirectly related to research findings from projects funded by the King Program. Although not directly related, the Programs’ awards enhanced their competitiveness in earning this additional funding. Grants are presented in alphabetical order by last name of the Grantee.

Alexandrow, Mark. (2006 NIR), “Chromatin Remodeling by Cdt1: Role in DNA Replication and Tumorigenesis.” National Cancer Institute, \$1,559,365.

Briegel, Karoline. (2005 NIR), “Role of Transcription Co-factor LBH (Limb-bud and Heart) - A Novel Target of the Oncogenic Wnt Signaling Pathway in Breast Cancer.” University of Miami Sylvester Cancer Center, \$50,000.

Chan, Sic. (2007 NIR), “Role of Receptor Potential Channel in Ischemic Brain Damage.” American Heart Association, \$165,000.

Cogle, Christopher. (2005 NIR), “Translational Research Program in Blood Stem Cell Disorders.” University of Florida, \$52,762.

Dietz, Noella. (2005 NIR), “Second Hand Tobacco Smoke and Worker Health.” Flight Attendant Medical Research Institute, \$300,000.

Fletcher, Terace Mary. (2004 NIR), “SWI/SNF Chromatin Remodeling in Nucleotide Excision Repair.” National Institute of Environmental Health Sciences, \$1,687,210.

Lang, Jason. (2009 NIR), “Obesity and Asthma: Genetics and Nutrigenetic Response to Omega-3 Fatty Acids.” National Heart, Lung, and Blood Institute, \$796,500.

Lee, David. (2006 TSP), “University of Miami Vision Loss Prevention Translation Research Center (TRC).” National Center for Chronic Disease Prevention and Health Promotion, \$1,247,025.

Lewin, Alfred. (2009), “Mitochondrial Oxidative Stress in the Retinal Pigment Epithelium as a Model for Age Related Macular Degeneration.” National Eye Institute, \$1,493,865.

Melker, Richard. (2004 SBTT), “Detection of Ethanol and Interferents in Breath: Validation of a Novel Technology.” National Institute on Alcohol and Alcoholism, \$910,853.

Miksovska, Jaroslava. (2010 NIR), “Conformational Dynamics Associated with Ca²⁺ Binding to DREAM Protein.” National Science Foundation, \$523,223.

Mohapatra, Shyam. (2007 TSP), “Micro-RNA Directed Generation of Blood Cells from Cord Blood Stem Cells on Integrated Nano-scale Surface Patterns.” Office of Naval Research, \$396,937.

Mohapatra, Shyam. (2007 TSP), “Differentiation of Stem Cells to Blood Cells Using Nanomatrix Scaffolds.” Office of Naval Research, \$387,388.

Mohapatra, Shyam. (2007 TSP), “Production of Platelets from Hematopoietic Stem Cells Using 3-D Smart Scaffolds to Examine the Possibility of Producing Blood Cells from Embryonic and/or Adult Stem Cells using 3-D Scaffolds.” Office of Naval Research, \$480,236.

Salathe, Matthias. (2005 TSP), “Mechanisms of Oxidant-Induced Chronic Bronchitis.” National Heart, Lung, and Blood Institute, \$1,530,000.

Salathe, Matthias. (2005 TSP), “Hispanic Community Health Study – Miami.” National Heart, Lung, and Blood Institute, \$13,156,167.

Schabath, Matthew. (2009 NIR), “Developing Information Infrastructure Focused on Cancer Comparative Effectiveness.” National Cancer Institute, \$1,657,980.

Schabath, Matthew. (2009 NIR), “Radiomics of NSCLC.” National Cancer Institute, \$2,282,832.

Simmons, Vani. (2008 NIR), “A Brief DVD-based Smoking Education Intervention for Cancer Outpatients: A Feasibility Study.” University of South Florida Area Health Education Center, \$33,883.

Su, Ming. (2007 NIR), “Encapsulated Phase Change Nanoparticles for Heat Transfer.” National Science Foundation, \$300,000.

Zhai, R. Grace. (2007 NIR), “Class of 2009 Pew Scholars in the Biomedical Sciences Program.” The Pew Charitable Trusts, \$240,000.

Appendix D: Publications Reported by Grantees

The following list represents new publications in peer-reviewed journals and books reported between July 2010 and June 2011 based on funded research from King Program research. Publications are presented in alphabetical order by last name of the Grantee, shown in **bold type**.

Yang WY, Cao Q, Callahan C, Galvis C, Sang QX, and **Alabugin IV**. Intracellular DNA damage by lysine-acetylene conjugates. *J Nucleic Acids*, 2010;pii:931394.

Aponick A and Biannic B. Chirality transfer in Au-catalyzed cyclization reactions of monoallylic diols: selective access to specific enantiomers based on olefin geometry. *Org Lett*, 2011;13(6):1330-3.

Aponick A, Biannic B, and Jong MR. A highly adaptable catalyst/substrate system for the synthesis of substituted chromenes. *Chem Commun (Camb)*, 2010;46(36):6849-51.

Schwetz TA, Norring SA, Ednie AR, and **Bennett ES**. Sialic acids attached to O-glycans modulate voltage-gated potassium channel gating. *J Biol Chem*, 2011;286(6):4123-32.

Schwetz TA, Norring SA, and **Bennett ES**. N-glycans modulate K(v)1.5 gating but have no effect on K(v)1.4 gating. *Biochim Biophys Acta*, 2010;1798(3):367-75.

Iñiguez SD, Warren BL, Neve RL, Russo SJ, Nestler EJ, and **Bolaños-Guzmán CA**. Viral-mediated expression of extracellular signal-regulated kinase-2 in the ventral tegmental area modulates behavioral responses to cocaine. *Behav Brain Res*, 2010;214(2):460-4.

Sanberg PR and **Borlongan CV**. The proliferation and differentiation of stem cell journals. *Stem Cell Rev*, 2010;6(4):497-9.

Borlongan CV and Weiss MD. Baby STEPS: a giant leap for cell therapy in neonatal brain injury. *Pediatr Res*, 2011;70(1):3-9.

Lulic D, Burns J, Bae EC, van Loveren H, and **Borlongan CV**. A review of laboratory and clinical data supporting the safety and efficacy of cyclosporine a in traumatic brain injury. *Neurosurgery*, 2011;68(5):1172-86.

Kaneko Y, Hayashi T, Yu S, Tajiri N, Bae EC, Solomita MA, Chheda SH, Weinbren NL, Parolini O, and **Borlongan CV**. Human amniotic epithelial cells express melanin receptor MT1, but not melatonin receptor MT2: a new perspective to neuroprotection. *J Pineal Res*, 2011;50(3):272-80.

Antonucci I, Stuppia L, Kaneko Y, Yu S, Tajiri N, Bae EC, Chheda SH, Weinbren NL, and **Borlongan CV**. Amniotic fluid as rich source of mesenchymal stromal cells for transplantation therapy. *Cell Transplant*, 2010;[Epub ahead of print].

Ou Y, Yu S, Kaneko Y, Tajiri N, Bae EC, Chheda SH, Stahl CE, Yang T, Fang L, Hu K, **Borlongan CV**, and Yu G. Intravenous infusion of GDNF gene-modified human umbilical cord blood CD34+ cells protects against cerebral ischemic injury in spontaneously hypertensive rats. *Brain Res*, 2010;1366:217-25.

Borlongan CV. Remyelinating the transected peripheral nerve by fabricated Schwann cells derived from bone marrow. *Exp Neurol*, 2010;225(2):243-5.

Savitz SI, Chopp M, Deans R, Carmichael ST, Phinney D, Wechsler (**Borlongan CV**). Stem cell therapy as an emerging paradigm for stroke (STEPS) II. *Stroke*, 2011;42(3):825-9.

- Sanberg PR, Eve DJ, Willing AE, Garbuzova-Davis S, Tan J, Sanberg CD, Allickson JG, Cruz LE, and **Borlongan CV (Kuzmin-Nichols N)**. The treatment of neurodegenerative disorders using umbilical cord blood and menstrual blood-derived stem cells. *Cell Transplant*, 2011;20(1):85-94.
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Appendix E: Statute Authorizing King Biomedical Research Program

Section 215.5602 of the *Florida Statutes* reflects the statute effective during FY 2010-2011 along with mark-ups that reflect the changes accepted by the Florida Legislature effective for FY 2011-2012.

Section 215.5602, *Florida Statutes* - James and Esther King Biomedical Research Program

- (1) There is established within the Department of Health the James and Esther King Biomedical Research Program funded by the proceeds of the Lawton Chiles Endowment Fund pursuant to s. 215.5601. The purpose of the James and Esther King Biomedical Research Program is to provide an annual and perpetual source of funding in order to support research initiatives that address the health care problems of Floridians in the areas of tobacco-related cancer, cardiovascular disease, stroke, and pulmonary disease. The long-term goals of the program are to:
 - (a) Improve the health of Floridians by researching better prevention, diagnoses, treatments, and cures for cancer, cardiovascular disease, stroke, and pulmonary disease.
 - (b) Expand the foundation of biomedical knowledge relating to the prevention, diagnosis, treatment, and cure of diseases related to tobacco use, including cancer, cardiovascular disease, stroke, and pulmonary disease.
 - (c) Improve the quality of the state's academic health centers by bringing the advances of biomedical research into the training of physicians and other health care providers.
 - (d) Increase the state's per capita funding for research by undertaking new initiatives in public health and biomedical research that will attract additional funding from outside the state.
 - (e) Stimulate economic activity in the state in areas related to biomedical research, such as the research and production of pharmaceuticals, biotechnology, and medical devices.
- (2) Funds appropriated for the James and Esther King Biomedical Research Program shall be used exclusively for the award of grants and fellowships as established in this section; for research relating to the prevention, diagnosis, treatment, and cure of diseases related to tobacco use, including cancer, cardiovascular disease, stroke, and pulmonary disease; and for expenses incurred in the administration of this section. Priority shall be granted to research designed to prevent or cure disease.
- (3) There is created within the Department of Health the Biomedical Research Advisory Council.
 - (a) The council shall consist of 11 members, including: the chief executive officer of the Florida Division of the American Cancer Society, or a designee; the chief executive officer of the Florida/Puerto Rico Affiliate of the American Heart Association, or a designee; and the chief executive officer of the American Lung Association of Florida, or a designee. The remaining 8 members of the council shall be appointed as follows:
 1. The Governor shall appoint four members, two members with expertise in the field of biomedical research, one member from a research university in the state, and one member representing the general population of the state.
 2. The President of the Senate shall appoint two members, one member with expertise in the field of behavioral or social research and one representative from a cancer program approved by the American College of Surgeons.
 3. The Speaker of the House of Representatives shall appoint two members, one member from a professional medical organization and one representative from a cancer program approved by the American College of Surgeons. In making these appointments, the Governor, the President of the Senate, and the Speaker of the House of Representatives shall select primarily, but not exclusively, Floridians with biomedical and lay expertise in the general areas of cancer, cardiovascular disease, stroke, and pulmonary disease. The appointments shall

be for a 3-year term and shall reflect the diversity of the state's population. An appointed member may not serve more than two consecutive terms.

- (b) The council shall adopt internal organizational procedures as necessary for its efficient organization.
 - (c) The department shall provide such staff, information, and other assistance as is reasonably necessary to assist the council in carrying out its responsibilities.
 - (d) Members of the council shall serve without compensation, but may receive reimbursement as provided in s. 112.061 for travel and other necessary expenses incurred in the performance of their official duties.
- (4) The council shall advise the State Surgeon General as to the direction and scope of the biomedical research program. The responsibilities of the council may include, but are not limited to:
- (a) Providing advice on program priorities and emphases.
 - (b) Providing advice on the overall program budget.
 - (c) Participating in periodic program evaluation.
 - (d) Assisting in the development of guidelines to ensure fairness, neutrality, and adherence to the principles of merit and quality in the conduct of the program.
 - (e) Assisting in the development of appropriate linkages to nonacademic entities, such as voluntary organizations, health care delivery institutions, industry, government agencies, and public officials.
 - (f) Developing criteria and standards for the award of research grants.
 - (g) Developing administrative procedures relating to solicitation, review, and award of research grants and fellowships, to ensure an impartial, high-quality peer review system.
 - (h) Developing and supervising research peer review panels.
 - (i) Reviewing reports of peer review panels and making recommendations for research grants and fellowships.
 - (j) Developing and providing oversight regarding mechanisms for the dissemination of research results.
- (5) (a) Applications for biomedical research funding under the program may be submitted from any university or established research institute in the state. All qualified investigators in the state, regardless of institution affiliation, shall have equal access and opportunity to compete for the research funding.
- (b) Grants and fellowships shall be awarded by the State Surgeon General, after consultation with the council, on the basis of scientific merit, as determined by an open competitive peer review process that ensures objectivity, consistency, and high quality. The following types of applications shall be considered for funding:
1. Investigator-initiated research grants.
 2. Institutional research grants.
 3. Predoctoral and postdoctoral research fellowships.
- (6) To ensure that all proposals for research funding are appropriate and are evaluated fairly on the basis of scientific merit, the State Surgeon General, in consultation with the council, shall appoint a peer review panel of independent, scientifically qualified individuals to review the scientific content of each proposal and establish its scientific priority score. The priority scores shall be forwarded to the council and must be considered in determining which proposals shall be recommended for funding.
- (7) The council and the peer review panel shall establish and follow rigorous guidelines for ethical conduct and adhere to a strict policy with regard to conflict of interest. A member of the council or panel may not participate in any discussion or decision with respect to a research proposal by any firm, entity, or agency with which the member is associated as a member of the governing body or as an employee, or with which the member has entered into a contractual arrangement. Meetings of the council and the peer review panels shall be subject to the provisions of chapter 119, s.

286.011, and s. 24, Art. I of the State Constitution.

- (8) The department may contract on a competitive-bid basis with an appropriate entity to administer the program.
Administrative expenses may not exceed 15 percent of the total funds available to the program in any given year.
- (9) The department, after consultation with the council, may adopt rules as necessary to implement this section.
- (10) The council shall submit an annual progress report on the state of biomedical research in this state to the Florida Center for Universal Research to Eradicate Disease and to the Governor, the State Surgeon General, the President of the Senate, and the Speaker of the House of Representatives by February 1. The report must include:
- (a) A list of research projects supported by grants or fellowships awarded under the program.
 - (b) A list of recipients of program grants or fellowships.
 - (c) A list of publications in peer reviewed journals involving research supported by grants or fellowships awarded under the program.
 - (d) The total amount of biomedical research funding currently flowing into the state.
 - (e) New grants for biomedical research which were funded based on research supported by grants or fellowships awarded under the program.
 - (f) Progress in the prevention, diagnosis, treatment, and cure of diseases related to tobacco use, including cancer, cardiovascular disease, stroke, and pulmonary disease.
- (11) The council shall award grants for cancer research through the William G. “Bill” Bankhead, Jr., and David Coley Cancer Research Program created in s. 381.922.
- (12) From funds appropriated to accomplish the goals of this section, up to \$250,000 shall be available for the operating costs of the Florida Center for Universal Research to Eradicate Disease. Beginning in the ~~2010~~ 2011-2012 fiscal year and thereafter, \$50.25 million from the revenue deposited into the Health Care Trust Fund pursuant to ss. 210.011(9) and 210.276(7) shall be reserved for research of tobacco-related or cancer-related illnesses. Of the revenue deposited in the Health Care Trust Fund pursuant to this section, \$50.25 million shall be transferred to the Biomedical Research Trust Fund within the Department of Health. Subject to annual appropriations in the General Appropriations Act, \$20.5 million shall be appropriated to the James and Esther King Biomedical Research Program, \$20.5 million shall be appropriated to the William G. “Bill” Bankhead, Jr., and David Coley Cancer Research Program created under s. 381.922, ~~and \$10,~~ \$5 million shall be appropriated to the H. Lee Moffitt Cancer Center and Research Institute established under s. 1004.43, \$5 million shall be appropriated to the Sylvester Comprehensive Cancer Center of the University of Miami, and \$5 million shall be appropriated to the University of Florida Shands Cancer Center.

History.—s. 2, ch. 99-167; s. 4, ch. 2000-159; s. 2, ch. 2000-255; s. 5, ch. 2000-367; s. 4, ch. 2001-73; s. 1, ch. 2003-414; s. 8, ch. 2004-2; s. 3, ch. 2006-182; s. 14, ch. 2008-6; s. 1, ch. 2009-5; s. 2, ch. 2009-58; s. 13, ch. 2010-161; s. 1, ch. 2011-98.

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