

October 1, 2008

Delegate Lacey E. Putney
Chair, House Appropriations Committee

Senator Charles J. Colgan, Sr.
Chair, Senate Finance Committee

Dear Delegate Putney and Senator Colgan:

We are pleased to provide this report on the utilization of the funding received by Virginia Commonwealth University from the Commonwealth's Research Initiative. Submission of the attached report is in compliance with Item 205, Chapter 3, 2006 Acts of Assembly. A hard copy will be delivered to your offices.

The 2006 General Assembly made an historic appropriation of \$3.1M in providing operating support from the general fund for higher education research in the 2006-08 biennium. As a condition of the FY 2008 appropriation, the General Assembly required that the University leverage the state's support with \$6.6 million in nongeneral funds, for a total investment of \$9.7 million for the fiscal year. The report summarizes FY 2008 expenditures, provides an overview of funds that have been committed for FY 2009 and FY 2010, and identifies opportunities for future investments as called for by the Appropriation Act. At the direction of the General Assembly and in keeping with VCU Board of Visitors' recently approved research strategic plan (February 2005), the state support for medical research has been critical to strengthening the School of Medicine research enterprise.

I note a few highlights from the report that demonstrate the importance this funding has been to our research mission. Over the last three years, the School of Medicine has successfully recruited or committed funding to more than 72 new research faculty positions. To date, 71 of the 72 have been hired and have initiated research at VCU. In many cases, these were highly recruited individuals who brought current sponsored program funding with them to VCU. In FY 2008 alone, the School of Medicine recruited 37 new faculty members in the areas of neuroscience, regenerative medicine, infectious disease, computational methods, molecular and translational genetics, and other critical fields.

The state funds were highly leveraged by University nongeneral funds, with the school spending over \$8.8 million NGF in matching support. In FY 2008, School of Medicine sponsored research awards totaled \$102.9 million, essentially equivalent to FY 2007. However, this was significantly constrained due to reduced award levels from our major sponsors, particularly at the National Institutes of Health and other federal funding agencies. Other medical schools have seen declines in their total awards during the past two years. The funding from the Commonwealth's Research Initiative greatly assisted us by increasing our competitive strength for awards. Several indicators suggest the school will make gains in sponsored awards for the upcoming year. New faculty have already contributed \$5 million in total awards to the University in FY 2008 and others are in the process of transferring on-going grants to VCU and/or applying for new awards. In addition, the school saw a 6.6% increase in the dollar value of proposals submitted between FY 2007 and FY 2008. With the stature of the new research faculty we have recruited, VCU is highly competitive for the larger, so-called program and center awards.

Growth in research activity has spurred growth in graduate education. Between FY 2006 and FY 2008, Ph.D. enrollments in the basic health sciences grew from 210 to 265, an increase of 26%. The one-year increase between FY 2007 and FY 2008 was 13%, growing from 236 to 265. The link between growth and research and growth in Ph.D. enrollment is inseparable. These students play a critical role in advancing the faculty's research, in building the school's research enterprise, and in developing the next generation of medical discovery. The "market" for doctoral students in

the basic health sciences requires the University to cover the cost of tuition and fees as well as provide a student stipend to offset a portion of student's living expenses. At current enrollment levels, University support (including extramural funds) for Ph.D. students approaches \$9 million annually.

Growth in research faculty and doctoral students has required growth in additional research space. As VCU's research enterprise grows and its bench research is increasingly translated into clinical treatments, additional research space will be needed. The recent addition of the Goodwin Laboratories at Massey Cancer Center, the construction of Medical Sciences Building II (which will be completed in December 2008), and the major renovation of selected floors in Sanger Hall – all of which received some state support – have added much needed, high-quality research space to VCU's inventory. Currently these spaces are nearing full occupation, or commitment even prior to completion, to funded research faculty.

In closing, with the state's \$6.2 million in general fund support for research in FY 2007 and FY 2008, VCU has been able to make significant headway in transforming its research enterprise. These funds have been instrumental in recruiting top quality researchers in areas such as traumatic brain injuries and rehabilitation, cancer, maternal health, addiction studies, infectious disease, cardio-pulmonary disease, aging and metabolism. The University has fully spent these funds as of June 30, 2008. In addition, the \$1.1 million GF appropriated for FY 2009 have already been committed for the current year.

Sincerely,

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cc:

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Dan Timberlake, Director of Department of Planning and Budget
Thomas Morris, Secretary of Education
Kendall Tyree, Special Assistant to the Secretary of Education
Daniel LaVista, Executive Director, State Council of Higher Education for Virginia

**THE COMMONWEALTH'S RESEARCH INITIATIVE
VIRGINIA COMMONWEALTH UNIVERSITY
2008 REPORT**

SEPTEMBER 30, 2008

BACKGROUND

The 2006 General Assembly made an historic appropriation in providing operating support from the general fund for higher education research in the 2006-08 biennium. Item 205, Chapter 3, 2006 Acts of Assembly,¹ provided \$3.1 million GF in FY 2007 and FY 2008 for this purpose to Virginia Commonwealth University. At the direction of the General Assembly, and in keeping with VCU Board of Visitors' recently approved research strategic plan (February 2005), the state support for medical research has been critical to strengthening the School's research enterprise.

As a condition of the FY 2008 appropriation, the General Assembly required that the University leverage the state's support with \$6.6 million in nongeneral funds – for a total investment of \$9.7 million for the fiscal year. In addition, the University carried forward \$2.1 million GF from FY 2007 that had been committed but not yet expensed. This report summarizes FY 2008 expenditures, provides an overview of funds that have been committed for FY 2009 and FY 2010, and identifies opportunities for future investments as called for by the Appropriation Act. Specifically, Item 205 B of the Appropriation Act states:

Virginia Commonwealth University shall report on the use of these funds and progress made under this initiative to the Chairmen of the House Appropriations and Senate Finance Committees by October 1, 2007. The report shall include, but not be limited to: 1) how the funds were used, 2) the amount of federal and private funds that were leveraged, 3) collaborative efforts in support of private industry, 4) the number of junior and senior faculty recruited in each field, 5) the amount of federal or other grant funds received as the result of those recruitments, 6) additional grants or contracts being pursued, 7) the level of instructional activity conducted by these faculty, 8) the impact of research activities on undergraduate instruction, 9) the use of graduate student aid funds, and 10) recommendations for future investment.

IMPLEMENTATION

In February 2005, VCU's Board of Visitors adopted a strategic plan to advance the School of Medicine's research mission. Under the plan, the University committed more than \$100 million over a six-year period to hire 86 new faculty researchers, increase Ph.D. enrollments by 80 new students, and expand research facilities (*i.e.*, the Goodwin Laboratories at Massey Cancer Center and Medical Sciences Building II). With the subsequent hiring of a new dean (Jerome F. Strauss, III, M.D., Ph.D., an internationally renowned physician scientist from the University of Pennsylvania), the University began implementing the six-year plan in the fall of 2006. The following year, the General Assembly appropriated \$3.1 million in state operating support to enhance research efforts at the University. The infusion of these funds coupled with the planned university support has allowed VCU's School of Medicine to jump-start its research expansion, while maintaining (and even increasing) its commitment to the education and training of physicians throughout the Commonwealth.

¹ This item remains unchanged in the amended Appropriation Act enacted during the 2007 session (Item 205B, Chapter 847, 2007 Acts of Assembly).

Over the last three years, the School of Medicine has successfully recruited or committed funding to more than 72 new research faculty positions. To date, 71 of the 72 have been hired and have begun research at VCU. The remaining faculty member is in the process of transitioning to the University with a start date in November 2008. In FY 2008 alone, the School of Medicine recruited 37 new faculty (see Table 1) in the areas of neuroscience, regenerative medicine, infectious disease, computational methods, molecular and translational genetics, and other critical fields.

Table 1. FY 2008 Research Faculty Hires

Faculty Name	Department	Area of Research	Faculty Rank
Andrew Ottens, Ph.D.*	Anatomy & Neurobiology	Basic Neuroscience	Asst. Prof.
Michael Fox, Ph.D.	Anatomy & Neurobiology	Basic Neuroscience	Asst. Prof.
Michelle Block, Ph.D.*+	Anatomy & Neurobiology	Basic Neuroscience	Asst. Prof.
Jacob Wegelin, Ph.D.	Biostatistics	Statistical Methodology & Data Management	Asst. Prof.
Roy Sabo, Ph.D.	Biostatistics	Statistical Methodology & Data Management	Asst. Prof.
Shumei Sun, Ph.D.*+	Biostatistics	Obesity & Metabolism	Professor & Chair
Penny Reynolds, Ph.D.	Emergency Medicine	Regenerative Medicine	Asst. Prof.
Hongjie Liu, Ph.D.*	Epidemiology & Community Health	Infectious Diseases	Assoc. Prof.
Devanand Sarkar, Ph.D.*+	Human & Molecular Genetics	Molecular & Translational	Asst. Prof.
Nikollaq Vozhilla, DVM	Human & Molecular Genetics	Molecular & Translational	Research Asst.
Paola Barral, Ph.D.	Human & Molecular Genetics	Molecular & Translational	Asst. Prof.
Paul Fisher, Ph.D.*	Human & Molecular Genetics	Molecular & Translational	Professor & Chair
Seok-Geun Lee, Ph.D.	Human & Molecular Genetics	Molecular & Translational	Asst. Prof.
Zhaozhong Su, Ph.D.	Human & Molecular Genetics	Molecular & Translational	Assoc. Prof.
Lori Sweeney, M.D.	Internal Medicine	Endocrinology & Metabolism	Asst. Prof.
Norbert Voelkel, M.D.	Internal Medicine – Pulmonary Disease	Pulmonary Medicine & Vascular Biology	Professor
Huiping Zhou, Ph.D., MS*	Microbiology & Immunology	Side Effects of AIDS Therapies	Asst. Prof.
Jason Carlyon, Ph.D.*	Microbiology & Immunology	Tick-Transmitted Disease	Asst. Prof.

Faculty Name	Department	Area of Research	Faculty Rank
Myrna Serrano, Ph.D.	Microbiology & Immunology	Microbial Genomics	Asst. Prof.
Darlene Brunzell, Ph.D.*	Pharmacology & Toxicology	Addiction Studies	Asst. Prof.
Guo-Huang Fan, Ph.D.*	Pharmacology & Toxicology	Neurosciences	Asst. Prof.
Krista Scoggins, Ph.D.	Pharmacology & Toxicology	Addiction Studies	Research Assoc.
Kurt Hauser, Ph.D.*	Pharmacology & Toxicology	Basic Neuroscience	Professor
Nazira El-Hage, Ph.D.	Pharmacology & Toxicology	Addiction Studies	Asst. Prof.
Robert Vann, Ph.D.	Pharmacology & Toxicology	Addiction Studies	Research Assoc.
Sidney Negus, Ph.D.*	Pharmacology & Toxicology	Neurosciences	Professor
Thomas Green, Ph.D.	Pharmacology & Toxicology	Addiction Studies	Asst. Prof.
Diomedes Logothetis, Ph.D.*	Physiology & Biophysics	Cell Signaling	Professor & Chair
Edgar Leal Pinto, M.D.	Physiology & Biophysics	Cell Signaling	Asst. Prof.
Meng Ciu, Ph.D.+	Physiology & Biophysics	Structural Biology	Asst. Prof.
Danielle Dick, Ph.D.*	Psychiatry	Human Genetics & Addiction Studies	Asst. Prof.
Andrei Pugachev, Ph.D.	Radiation Oncology	Medical Physics	Asst. Prof.
Aylin Rizki, Ph.D.+	Radiation Oncology	Medical Physics	Asst. Prof.
Geoffrey Hugo, Ph.D.*	Radiation Oncology	Medical Physics	Asst. Prof.
Jun Lu, Ph.D.	Radiation Oncology	Medical Physics	Instructor
Amy Sullivan, Ed.D.*	Social & Behavioral Health	Patient Care & Provider Communication	Asst. Prof.
Robin Matsuyama, Ph.D.	Social & Behavioral Health	Cancer & Palliative Care	Asst. Prof.

* Brought extramural research funding to VCU

+ Obtained new funding after joining faculty at VCU

Seven additional faculty recruited in FY 2008 have started work since the beginning of the new fiscal year. (See Table 2 below).

**Table 2. FY 2008 Research Faculty Recruitments
with Start Dates After Fiscal Year End**

Faculty Name	Department	Area of Research	Faculty Rank
Keith Baker, Ph.D.	Biochemistry & Molecular Biology	Molecular Immunology, Cell Signaling, Metabolism	Asst. Prof.
Beata Holkova, M.D., Ph.D.	Internal Medicine	Hematology	Asst. Prof.
Qinglian Liu, Ph.D.	Physiology & Biophysics	Structural Biology	Asst. Prof.
Carlos Escalante, Ph.D.	Physiology & Biophysics	Structural Biology	Asst. Prof.
Lei Zhou, Ph.D.	Physiology & Biophysics	Molecular Biophysics	Asst. Prof.
Scott Ramsey, Ph.D.	Physiology & Biophysics	Molecular Biophysics	Asst. Prof.
Louis De Felice, Ph.D.	Physiology & Biophysics	Molecular Biophysics	Professor

In keeping with the expenditure plan the University submitted to the 2006 General Assembly, the School of Medicine earmarked the \$3.1 million GF for salary and operational support costs. VCU spent the full general fund appropriation for FY 2008 plus \$2.1 million carried forward from FY 2007, for a total of almost \$5.2 million GF for the year. Table 3 below shows the funds that were expended in FY 2008 along with those committed for FY 2009 and FY 2010.

Table 3. Uses of FY08 State Appropriation for Research

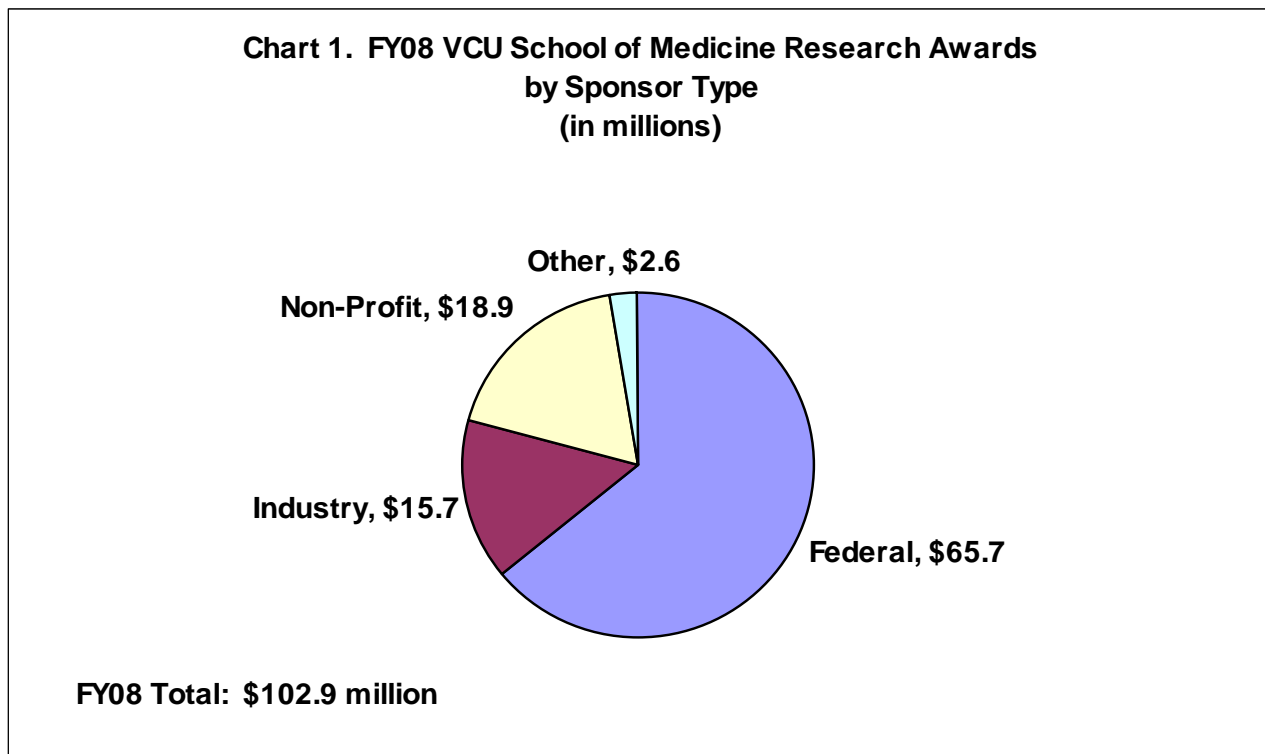
Type of Support	Actual Expenditures	Planned Commitments	
	FY 2008	FY 2009	FY 2010
Salary Support	\$2,053,016	\$291,845	\$544,529
Start Up Support	\$1,685,586	\$870,655	\$617,971
Equipment & Core Lab Services	\$869,267	-	-
Other Expenses	\$585,163	-	-
Total	\$5,193,032	\$1,162,500	\$1,162,500

The state funds were highly leveraged by University nongeneral funds, with the School spending over \$8.8 million NGF in matching support. Expenditures for research faculty/staff compensation and minor renovations/repairs of faculty research and office space accounted for nearly 70% of the total nongeneral fund expenditures.

In FY 2008, sponsored research awards (including direct and indirect costs) remained flat from the prior year, totaling \$102.9 million. The limited growth in the School's research awards is expected given funding constraints, particularly at the National Institutes of Health and other

federal funding agencies. (Chart 1 below shows a breakdown of research awards by sponsor type in FY 2008.)

Among the notable awards in FY 2008 include: the second year of funding for the nationally-coveted BIRCWH award (Building Interdisciplinary Research Careers in Women's Health) a new project grant award totaling \$7.3 million program for the study of allergies and asthma awarded to Lawrence Schwartz, M.D., Ph.D. (Internal Medicine); a project award granted to John Nestler, M.D., (Internal Medicine) to support Translational Research in Polycystic Ovarian Syndrome; a center grant awarded to William L Dewey, Ph.D. (Department of Pharmacology and Toxicology) for the Center for Drug Abuse Research; a \$7.7 million, five-year, P60 grant award from the National Center for Minority Health and Health Disparities; renewal of the NCI Cancer Center core grant; and significant support (totaling more than \$3.5 million) from the U.S. Navy for continued research led by Dr. Bruce D. Spiess, M.D., (Department of Anesthesiology) on the use of blood substitutes in treating decompression sickness, embolisms, traumatic brain injury and blast injuries.



Several indicators suggest the School will make gains in sponsored awards for the upcoming year. First, it typically takes six months or more for faculty transferring from other institutions to have federal awards transferred to their new institution. New faculty have already contributed \$5 million in total awards to the University in FY 2008. Several others are in the process of transferring on-going grants to VCU or applying for new awards. In addition, the School saw a 6.6% increase in the dollar value of proposals submitted between FY 2007 and FY 2008, many of which remain under sponsor review and will be critical in anticipating future sponsored award levels for FY 2009.

Growth in research activity has spurred growth in graduate education. New research faculty have provided new mentoring opportunities for graduate students while in the research phase of their doctoral program. Between FY 2006 and FY 2008, Ph.D. enrollments in the basic health sciences grew from 210 to 265, an increase of 26%. The one-year increase between FY 2007 and FY 2008 was 13%, growing from 236 to 265.

As the School's doctoral programs have increased in size, VCU has also increased its investments in graduate student support. The "market" for doctoral students in the basic health sciences requires the University to cover the cost of tuition and fees as well as provide a student stipend to offset a portion of student's living expenses. VCU shares these costs with faculty researchers who provide funding from extramural sources during the research-intensive phase of the graduate program. So, in a typical five-year Ph.D. program, the University must provide funding for the first two years (currently in excess of \$35,000 per year) with extramural funds supporting students in the last three years of study. At current enrollment levels, University support (including extramural funds) for Ph.D. students approaches \$9 million annually.

Although the growth in research has had significant impact on the School's graduate programs, the impact on undergraduate programs has been minimal. Based on a recent survey of the department chairs, faculty in the School of Medicine typically teach less than 15 undergraduate courses per year, primarily in introductory basic health science courses. However, the University maintains its commitment to undergraduate education in engineering and science and to improving student preparation for success in the undergraduate environment. During the 2007-08 academic year, faculty from the Department of Physiology taught a total of 997 undergraduate students in didactic and laboratory courses. These courses are designed to prepare students for future academic study in health sciences and engineering. Again, this commitment has been recognized nationally. In 2007, VCU was selected as one of 31 biomedical research institutions nationally to participate in the Howard Hughes Medical Institute Pre-College Outreach Initiative. This is the second grant the University has received for this purpose, putting it among an elite group of universities that are leading efforts nationally to improve the biomedical research pipeline.

LOOKING TO THE FUTURE

As we begin the new fiscal year, the School continues to recruit research faculty at a record pace. As of September 1, 2008, the School had 45 teaching and research faculty positions actively under recruitment. Approximately, one third of these are related directly to new faculty being recruited under the research plan. Others are tied to on-going research in cancer, basic health sciences and expansion of faculty and research programs in the emerging School of Public Health. The School is also in the process of recruiting new chairs for the Departments of Neurology, Pediatrics, and Otolaryngology.

With the state's \$6.2 million in general fund support for research in FY 2007 and FY 2008, VCU has been able to accelerate the transformation of its research enterprise. These funds have been instrumental in recruiting top quality researchers in areas such as traumatic brain injuries and rehabilitation, cancer, maternal health, addiction studies, infectious disease, cardio-

pulmonary disease, aging and metabolism. The University has fully spent these funds as of June 30, 2008. In addition, the \$1.1 million GF appropriated for FY 2009 have already been committed for the current year.

As VCU's research enterprise grows and its bench research is increasingly translated into clinical treatments, additional opportunities for investment by the Commonwealth exist. Despite the recent addition of the Goodwin Laboratories at Massey Cancer Center (with gross square feet directly supporting oncology research), the construction of Medical Sciences Building II (which will be completed in December 2008, of which 94,844 gross square feet support research activities), and the major renovation of selected floors in Sanger Hall – all of which received some state support – the need for additional space upgrades, particularly for animal research, remain a constant concern. Likewise, even with the support of the state's Higher Education Equipment Trust Fund, the cost of the School's priority requests for research equipment still surpasses the amount of funding available annually. Finally, as graduate education becomes an even greater part of VCU's mission, additional state support for merit- and need-based graduate financial aid, as well as additional legislative flexibility to provide tuition waivers and unfunded scholarships, will be essential. The School of Medicine's current efforts to recruit and retain outstanding research faculty hinge, in part, on its ability to attract quality doctoral students in the basic sciences. These students play a critical role in advancing the faculty's research, in building the School's research enterprise, and in developing the next generation of medical discovery.