

**University of Maryland, Baltimore**  
**Testimony to U.S. Senate Committee on Appropriations**  
**FY15 Hearing: Driving Innovation through Federal Investments**  
**Tuesday, April 29, 2014**

The University of Maryland, Baltimore (UMB) is pleased to have the opportunity to submit testimony for the U.S. Senate Committee on Appropriations' hearing on innovation through federal investments. Founded in 1807, the University of Maryland, Baltimore is a multidisciplinary campus of seven professional schools internationally recognized for professional and graduate education in medicine, dentistry, nursing, pharmacy, social work, and law. It is the University's goal to excel in educating professionals and engaging in research that addresses real-world issues affecting the human condition.

Innovation is thriving at UMB. In FY 2013, UMB was awarded \$497.8 million in grants and contracts – nearly 2 billion in the last four years. These resources have led to commercially viable discoveries in therapeutics, diagnostics, devices and research tools. The University's research yields more than 15 dollars in economic activity for every one dollar of state general fund appropriation, employs nearly 23,000 people and, together with affiliated hospital systems and practices, generates over \$6 billion in annual economic activity. Federal research funding is vital to the work that UMB does and to the health and well-being of the communities we serve. With the support of federal investments, our researchers are able to change the course of human health in such areas as traumatic brain injury and Alzheimer's disease, breast cancer, and diabetes, and improve Marylanders' well-being for years to come.

**The Importance of NIH Investment in the Future of Biomedical Research:**

The National Institutes of Health (NIH) is the primary source of federal funding for medical research that supports the discovery of groundbreaking cures and treatments and invests half of its budget to support biomedical and health services research at the nation's medical schools and their teaching hospital partners. This important funding must be protected and nourished.

In FY2013, researchers at the University of Maryland, Baltimore received over \$163 million in NIH funding to study the causes of disease and drive discovery. The salaries of over 2,500 UMB employees are directly supported by NIH funds and our researchers leverage this support to attract an additional \$180 million from other sources. While the majority of the funding is concentrated in the School of Medicine, almost all UMB graduate schools receive some NIH funding. Both the Schools of Dentistry and Nursing are currently ranked in the top ten for amount of funding received compared to all universities.

NIH awards are supporting groundbreaking research throughout UMB. The National Institute of Allergy and Infectious Diseases (NIAID) again awarded UMB's Center of Vaccine Development (CVB) with the designation of a Vaccine and Treatment Evaluation Unit, one of only nine in the US. With this renewed contract, CVB will be able to design and test better vaccines and delivery systems. In the School of Nursing, NIH is funding a \$2.3 million grant to

investigate Duchenne Muscular Dystrophy, where UMB researchers are investigating innovative ways to slow down the disease's progression until a cure is found.

In addition to the state benefiting economically from NIH investments at the University of Maryland, Baltimore and other universities in the state, Maryland residents also gain access to treatments and therapies from premier health research. The School of Nursing is studying 400 pregnant women from Baltimore City to better determine the causes of preterm birth. This study is being funded by a \$1.8 million grant from the National Institute of Nursing Research. Through research in UMB sponsored clinical trials and those of NIH's intramural research program, the health of Maryland citizens, and particularly Baltimore residents, is positively impacted in multiple areas because of the NIH funding UMB receives.

### **Dr. Angela Brodie, a Pioneer in Breast Cancer Cures:**

An important story to highlight about the importance of innovation through federal investments is of Dr. Angela Hartley Brodie, professor of pharmacology and experimental therapeutics at the University of Maryland School of Medicine, and an internationally recognized researcher at the University of Maryland Marlene and Stewart Greenebaum Cancer Center. Dr. Brodie is renowned for her groundbreaking work in the development of aromatase inhibitors used in the treatment of breast cancer.

Aromatase inhibitors help to prevent recurrence of breast cancer in postmenopausal women by reducing the level of estrogen in the body, thereby cutting off the fuel that promotes the growth of cancer cells. The drugs are proving to be significantly more effective than the standard breast cancer drug, tamoxifen, which stops working after five years. Dr. Brodie began developing this novel approach of targeting the enzyme aromatase to inhibit the synthesis of estrogen in the early 1970s and went on to develop formestane, the first aromatase inhibitor to be used to treat breast cancer patients. Released for worldwide use in 1994, formestane was the first new agent in a decade designed to treat breast cancer. Her work paved the way for the development of other aromatase inhibitors, which are now prescribed for women around the world.

"Dr. Brodie's pioneering work in developing aromatase inhibitors represents a major scientific achievement that has helped to save thousands of lives worldwide," says Kevin J. Cullen, M.D., director of the University of Maryland Marlene and Stewart Greenebaum Cancer Center and professor of medicine at the University of Maryland School of Medicine. "This new class of drugs represents arguably the most important advance in the treatment of breast cancer in recent years."

Dr. Brodie, who in the last decade has received over \$7 million in NIH funding, has expanded her research into prostate cancer; she is now developing steroidal compounds that target key enzymes in the production of androgens, or male hormones, which play a role in recurrence of the cancer. Furthermore, since coming to the University of Maryland, Baltimore in 1979, she has taught hundreds of students and mentored post-doctoral fellows, preparing the next generation to continue work in this important field.

Without federal investment it's hard to say where Dr. Brodie's research would be today, and how breast cancer patients would be fighting the disease, getting better, and living their lives.

### **Investing in Research that Improves the Health of our Veterans:**

Beyond the NIH campus, research funding provided through the Department of Defense has been essential in advancing the science and of hand, face and other complex transplants, which is achieving life-changing results for veterans.

In 2012, the most extensive full-face transplant completed to date, including both jaws, teeth, and tongue was successfully completed by a multi-disciplinary team of faculty physicians from the University of Maryland School of Medicine and a team of over 150 nurses and professional staff at the University of Maryland Medical Center. The face transplant, formally called a vascularized composite allograft (VCA), was part of a 72-hour marathon of transplant activity at one of the busiest transplant centers in the world. This medical event marked the first time in the world that a full-face transplant was performed by a team of plastic and reconstructive surgeons with specialized training and expertise in craniofacial surgery and reconstructive microsurgery.

Grant funding from the Office of Naval Research (ONR) in the Department of Defense to Dr. Stephen Bartlett, chairman of the Department of Surgery at the University of Maryland School of Medicine and the Senior Vice President and Surgeon-in-Chief for the University of Maryland Medical System, supported UMB's basic and clinical research program in vascularized composite transplantation, leading up to and supporting this groundbreaking face transplant.

In previous years, additional transplantation research funding has been provided through one-time awards or appropriations, and the University of Maryland, Baltimore was pleased that Congress included \$15 million for reconstructive transplant research in the FY14 omnibus appropriations bill. UMB, along with a consortium of institutes that also participate in this type of research, hope that this funding will continue, since it has such immediate and transformative implications for wounded warriors and promising benefits for civilian patients as well. The return-on-investment is profound as service members with debilitating, disfiguring and disabling injuries regain their independence and return to daily living and employment.

### **Conclusion:**

Unfortunately, the University of Maryland, Baltimore has observed worrisome trends in recent years regarding federal grant funding levels for biomedical research. Curtailed investments in biomedical research will negatively impact researchers' ability to develop cures and make the discoveries we need to take care of our communities. Limiting or reducing research budgets could not only prolong the time it will take for new and better treatments to be available to patients, but also force promising young researchers to search for opportunities abroad, or abandon the field altogether.

As a higher education institution, we continue to be nimble, flexible and responsive in order to compete in an environment where budgets are continuously tightened and opportunities for federal funding become more challenging to secure. That said, the University of Maryland, Baltimore appreciates the federal support we do receive and hope that we've provided a glimpse into how federal investments drive the advancements made in science and medical research on campus.

The University of Maryland, Baltimore is happy to provide additional information, answer questions, or introduce the Committee to our researchers on campus. Thank you again for the opportunity to submit testimony on this vital subject.