

Written Testimony of Jennifer M. Sasser, PhD
Assistant Professor, Department of Pharmacology and Toxicology and Department of
Physiology and Biophysics
Director, Graduate Program in Medical Pharmacology
University of Mississippi Medical Center

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Chairman Cochran, Chairman Blunt, Vice Chairman Leahy, and Ranking Member Murray, thank you for the opportunity to appear before the Senate Appropriations Subcommittee on Labor, Health and Human Services and Education today. My name is Jennifer Sasser, and I am an Assistant Professor in the Departments of Pharmacology and Physiology at the University of Mississippi Medical Center.

I would like to begin my testimony by thanking the Committee for its steadfast support for the National Institutes of Health (NIH) and for medical research in general. The funding provided by Congress ensures that the body of knowledge for both discovery and translational clinical applications continues to grow to the benefit of all Americans. As I pursue research in the field of maternal/fetal health and preeclampsia, an increasingly common disease of high blood pressure during pregnancy, this steady support is critical to my future, the future of my students and research assistants and, most importantly, to countless people who will receive better care due to the work funded by NIH.

Mississippi has the unfortunate distinction of leading the nation in the prevalence of diabetes, hypertension, cancer, stroke and obesity. While these conditions are challenging for the adult patients struggling to live with them, they create a very dangerous environment for children. A young woman with hypertension is more likely to develop preeclampsia and deliver a pre-term and/or low birth weight baby, resulting in myriad complications that will follow that child throughout his or her life. Because of our state's prevalence of hypertension, obesity and kidney disease, Mississippi mothers are ten to twenty times more likely to have preeclampsia than the national average. This not only endangers these mothers by increasing the risk of heart attacks, stroke, and end stage kidney disease, but puts the lives and futures of these newborns at risk from the very start. Mississippi ranks number one in the nation in low birth weight babies, many of whom suffer from developmental and cognitive disabilities, cardiovascular disease, asthma, obesity and diabetes for their entire lives. If the human cost isn't enough, the March of Dimes estimates that these pre-term births cost the state of Mississippi \$330,000,000 a yearⁱ.

My research mission is to better understand the early stages of preeclampsia and how we can either re-purpose existing medicines to treat this disease or use genomic technologies to identify new targets to develop better clinical interventions. By finding new treatments that are safe and effective, obstetricians will be able to give babies more time to develop, thereby reducing the problems associated with pre-term delivery. In addition, our studies are important for the health of the mother. We are examining how preeclamptic pregnancy increases the risk for heart attack,

stroke, and kidney disease in the mothers after pregnancy. These women are still in the “prime of life” and taking care of young children, so going to the dialysis clinic multiple times a week or dealing with the after-effects of stroke is a huge burden for them and their families. Finding the right treatments to prevent the progression of disease in these women is imperative to improve their quality of life. Simply stated, identifying better treatments for preeclampsia would have a direct impact on the health of Mississippi mothers and babies, as well as produce cost savings for the state. In addition, the impact of this work would extend far beyond Mississippi to mothers and children nation and worldwide.

The Institutional Development Award (IDeA) program has been important to Mississippi for many years and has funded several groundbreaking research projects in institutions across the state. These grants have supported work in Natural Products, Neuroscience, Metabolic Diseases, Pathogen-Host Interactions, Psychiatric Neuroscience, and Obesity. Had we not been able to compete in this more level playing field of IDeA research states, securing funding for these and other projects would have been difficult, if not impossible. For example, the funding that my laboratory has received through these programs was critical to the establishment of my research program which is now competing successfully with other top research programs in the country.

At the end of last year, the American Society for Biochemistry and Molecular Biology Today (ASBMB Today) published an article entitled “Send My Tax Dollars to Mississippiⁱⁱ.” The article’s primary conclusion is that Mississippi, and in particular the University of Mississippi Medical Center, is an outstanding federal research investment. The article states, “The choice seems obvious: Taxpayers net more scientific publications by funding investigators at the University of Mississippi Medical Center...” and goes on to say very plainly, “...I encourage the NIH to invest a greater fraction of my tax dollars in places like the University of Mississippi Medical Center, because these low-ranked institutions can provide greater returns on taxpayers’ investments than prestigious institutions that currently receive a disproportionate share of NIH research funding.” I am extremely proud to be a part of the University of Mississippi Medical Center research community and am dedicated to continuing the tradition of excellence in research productivity and in training the next generation of biomedical researchers and medical professionals.

Being an early career researcher today comes with a unique set of challenges, for me, for my institution, and for many like me across the country. The pressure to win grants is palpable, and the competition for funding is stronger than ever. This competitive environment leads to few awards, most of which are won by seasoned veterans at select institutions, making it hard for young investigators to get a toehold in the research world. While we also seek funding from industry or private foundations, those opportunities are few and equally as competitive. The pressure to secure funding, compounded by low funding rates, can often be a career ender for many talented, highly trained and eager young researchers who leave the field for other career paths. As the Director of our graduate program in Medical Pharmacology, this is a dilemma I and my fellow faculty members face every year when making decisions about the students we can take into our PhD program. How can we responsibly accept and train students for careers that may not be sustainable in the future? How many students should we accept when we know that

the number of positions available for them after graduation is decreasing? Of course, we emphasize to our students the many career paths that are available to biomedical PhD graduates, but we have to balance our enthusiasm for recruiting and training the next generation of biomedical researchers with the harsh realities of austere funding rates for NIH grant mechanisms, fewer and fewer positions at academic medical centers and universities, and reductions in workforce in the pharmaceutical and biotechnology industries.

I have been fortunate to have benefitted not only from Mississippi's IDeA state status but also from vital assistance from the National Heart, Lung and Blood Institute (NHLBI) and the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK). As a postdoctoral fellow at the University of Florida, my training was supported by an Institutional Training Grant from the NHLBI, a grant that provides stipend support for PhD students and postdoctoral fellows. This support allowed me time to develop the skills needed for this career path. I then successfully competed for a career development award from the NIDDK which has allowed me to fully establish myself as an independent scientist. These training and career development programs are essential for continuing our pipeline of scientists in the coming generations. I credit these programs for kick-starting my career and giving me the stability and confidence to pursue a lifetime of work in medical research. In January, I received a notice of award for my first R01 grant, the "gold standard" grant mechanism for highly competitive research programs. This proposal would not have been funded so quickly without the commitment of the NHLBI to Early Stage Investigators like me.

The additional support from the NHLBI for young investigators has been critical for my career and for many of my peers who are facing promotion and tenure deadlines and may be denied the opportunity to continue their research careers if they do not meet the R01 milestone. This Early Stage Investigator program allowed my proposal to receive special consideration which resulted in faster approval of my grant. Without NIH support, many labs are forced to downsize or completely shut down, not only resulting in a loss of the years of investment into that researcher's training, but also in employment opportunities for research associates and training opportunities for students in science. With this new award, I will be able to grow my laboratory to support two additional PhD students and one or two research assistants, increasing both the number of trainees who will go on to develop their own biomedical innovations and the number of high-quality jobs for Mississippians. On behalf of the thousands of young researchers just getting their start after years of training, I urge you to continue to provide funds for early career programs like these and to encourage NIH to explore how other agencies within the Institute might enhance their programs to support fledgling investigators in their areas of expertise.

I thank you for the opportunity to appear before the Committee today and am happy to answer any questions you may have.

ⁱ "Babies, Business and the Bottom Line," PowerPoint presentation by the Mississippi March of Dimes, February 2015. Web. Accessed February 2017.

ⁱⁱ Wahls WP. Send my tax dollars to Mississippi, *ASBMB Today*, 15: 24-25, 2016.