Chair Cantwell, Ranking Member Wicker, and members of the committee, thank you for the opportunity to speak to you today about a topic vital to our Nation's future. For the past century the U.S. has led the world in research, innovation, and technology development. However, that leadership is now in peril, requiring immediate and sustained action. This issue has no political nor geographic affiliation, and solutions must be crafted that benefit every American if we are to maintain that leadership. We must be unified in developing this solution, since our threats are not within the U.S.; rather the threat is from competition abroad.

Past federal investments in research have made a tremendous difference in our state. Mississippi State University (MSU) won a National Science Foundation (NSF) Engineering Research Center (ERC) in 1990, focused on computational field simulation. We have many success stories that came from that ERC, but none more important than how it was used to attract Nissan to the State of Mississippi. As a part of the incentive to attract Nissan, we leveraged the ERC to create a new Center for Advanced Vehicular Systems (CAVS) at MSU, with a combination of basic engineering research and industrial outreach to support the automotive industry in the state. In fact, the Department of Commerce has estimated the impact of just this one center, not the entire university, to be nearly $6 billion over a twelve year period, in jobs saved or created. Without the NSF investment, I doubt any of this would have been possible.

I appreciate the language in the current proposed legislation that recognizes the need for broad participation, but would challenge that it does not go far enough. The Established Program to Stimulate Competitive Research, EPSCoR, is mentioned specifically. I serve on the EPSCoR Coalition board, and can attest from firsthand knowledge that this program has a substantial

impact on the 28 states and territories that qualify for this program. However, allocating only twelve percent of the funds to the EPSCoR program belies the commitment to see distribution of technology and innovation funding beyond the five states that see the vast majority of existing funds. Language regarding the regional hubs similarly has a minimal role for an EPSCoR state to be included, and no leadership role is expected. EPSCoR jurisdictions are the home of tremendous potential; however, a lack of resources greatly limits the development of this potential.

The disparity of existing NSF funding between states, the haves and have-nots, is striking, and my concern is that without specific and proactive action mandated in legislation this disparity will only worsen. Congress has the opportunity to ensure that zip code does not determine whether talented students can develop the workforce of the future, the new ideas for entrepreneurial businesses, and the economic development so desperately needed in some of our more depressed economies.

I will use my state of Mississippi and my institution as an example. Mississippi population has the highest percentage of African Americans of U.S. states. At MSU, we enroll a higher percentage of African Americans — by a wide margin — than any other university in the Southeastern Conference. And by an equally wide margin, Mississippi State enrolls a greater proportion of African Americans than any other historically white land-grant university in the United States. MSU enrolls the most PELL-eligible students of any university in our state. We strive for all students, but particularly those from under-represented and disadvantaged populations, to be successful. To do that, however, we must be provided the resources to involve

these students in creative discovery, technology development, and entrepreneurship in order to ensure that they are given all the tools necessary to be successful in life and their careers. Currently, Mississippi ranks at the bottom of all states in terms of NSF funding per capita. Less than $7 is invested per Mississippi citizen, whereas the national average is $23, and in some states is over $80 per capita. This inequity simply must be addressed if we as a nation are to move forward in unity.

On another note, we need to see stronger coordination with other federal research agencies and national laboratories. In working with Department of Energy and Department of Defense national labs, it has often struck me that there needs to be a much stronger partnership among federal agencies in technology and innovation. Discovery science at the national labs can readily partner with technology development programs at academic institutions that would benefit both, and dramatically enhance innovation and entrepreneurship in the U.S. Mississippi State has done this particularly well with the US Army Corps of Engineers, Engineer Research and Development Center in Vicksburg Mississippi, and our state has seen tremendous benefit from this partnership.

Establishing a Technology and Innovation Directorate at NSF will not only ensure the United States' leadership role in research is continued, it will also bring about STEM training for the workforce of the future and lead to an economic development renaissance not seen in decades. Mississippi State has placed tremendous focus on these efforts already, and the benefits have been gratifying. Our Thad Cochran Research, Technology and Economic Development Park is completely filled, and phase 2 has already been implemented. We have wonderful,

entrepreneurial industry partners such as Camgian, Babel Street, II-IV Inc, Martin Federal, and HBM nCode working side by side with MSU faculty and students in efforts to grow the Mississippi economy. Our Center for Advanced Vehicular Systems works particularly closely with industry in the state to develop innovative solutions as businesses grow. And, our Raspet Flight Research Laboratory has a seven-decade history of partnering with companies such as Boeing, Airbus, and new startup companies in manned and unmanned aircraft systems. It is clear that these partnerships are having a positive impact on the community, pushing it to a leading technology center with new jobs and industries.

Two years ago I had the opportunity to testify at a sub-committee hearing before this Committee, and would reiterate here the following four recommendations from that testimony, calling for investments to be:

1. Broad-based geographically. We must support the best and brightest students and researchers wherever they are, not just at a few locations if we as a nation are to make the progress you envision.
2. Trans-disciplinary in nature. The most challenging issues we face today cannot be solved by any one or even a few disciplines. Rather, issues such as health disparity, food security, and water scarcity can only be solved by the hard sciences and social sciences working together in new and novel ways.
3. Broadly supportive of both fundamental and developmental research endeavors. Both basic and applied research are critical if we are to lead the world in innovation and entrepreneurship.

4. Encouraging federal, state, university, and industry partnerships. We must find ways to invest in research that leads directly to innovation that spawns entrepreneurship and economic development in the private sector. Historically, our economy is based on this innovation, and with reduced private investment in academic research, federal funding is ever more important if we are to continue to lead the world.

Finally, I applaud your efforts to ensure that the U.S. is working on an even playing field in research and development. MSU fully recognizes the threat from intellectual property theft, as well as national security issues in research, and diligently works with federal law enforcement officials to do all that we can to ensure our research findings are held with the appropriate confidentiality.

Chair Cantwell, Ranking Member Wicker, members of the committee, I thank you again for the opportunity to testify before you today. Mississippi State University is a staunch advocate for bipartisan support in technology development and innovation, and we are eager to be full participants in your efforts.