

Testimony for the Record
Submitted to the United States Senate Committee on Appropriations
Hearing on “Driving Innovation through Federal Investments”
April 29, 2014

THE UNIVERSITY OF ILLINOIS

The University of Illinois is a world leader in research and discovery, the largest educational institution in the state with more than 78,000 students, more than 23,000 faculty and staff, and campuses in Urbana-Champaign, Chicago and Springfield. It awards more than 20,000 undergraduate, graduate and professional degrees annually. The University of Illinois has been a leader of research, innovation, and discovery for nearly 150 years. Our cutting-edge research creates solutions to global challenges and changes the way people think, work, and live.

The University commends the Senate Appropriations Committee and Chairwoman Mikulski and Ranking Member Shelby for holding this hearing on “Driving Innovation through Federal Investments.” As members of the Association of American Universities (AAU), the Association of Public and Land-grant Universities (APLU), and The Science Coalition (TSC), we also associate ourselves with their testimony.

Economists credit research-driven advances with generating most of our nation’s post-World War II economic growth. Yet over the past few decades our investments in research and innovation have flattened. Today, under twin pressures of budget caps and sequestration, they fail to even keep up with rates of inflation. While the American funding climate is at a standstill, we face new threats from other nations that are emulating our track record of strong economic growth by dramatically increasing their investments in these critical areas. As a pre-eminent research institution with global impact, the University of Illinois expresses our grave concern about this “innovation deficit”—the widening gap between the actual level of federal government funding for research and higher education and what the investment needs to be if the United States is to remain the world’s innovation leader.

A Strong Legacy of Innovation

The University of Illinois is the birthplace of the transistor, the light-emitting diode (LED), the Mosaic web browser, the breakthrough HIV/AIDS drug Prezista, and the technologies that gave us magnetic resonance imaging (MRI) and night-vision technology. These discoveries—and so many more—revolutionized the way our country communicates and conducts commerce, reveals and treats disease, and keeps our nation’s military equipped with the best technology.

To be sure, these discoveries created jobs, but they also spawned entire industries, improving the health and quality of life of Americans and those all over the world. To retain our nation’s rightful place as the world leader in innovation, and to provide the foundation for the next generation of groundbreaking discoveries at the University of Illinois, we implore Congress to

reverse its course of research investment stagnation and to provide strong and sustained funding for scientific research.

Training Tomorrow's Problem-Solvers

As one of the original Land-Grant Universities established by the Morrill Act, the University of Illinois takes seriously its moral obligation to be at the forefront of education and knowledge discovery while responding to the challenges of tomorrow. Along with teaching, research, and public service, economic development is a core mission of the University of Illinois and it is at the heart of all that we do. The University of Illinois graduates more engineering students than the top four engineering schools in the nation combined. It is a training ground for the next generation of scientists and engineers. The University of Illinois is a significant contributor to the pipeline of scholars and researchers that are changing the world.

From Pell grants to subsidized student loans, federal education investments are vital to preparing this next generation of problem solvers and we implore Congress to preserve investments that help preserve this pipeline of talent.

Leading the Way in Advanced Manufacturing

In February, the Department of Defense selected the University of Illinois and UI LABS—a research, training and commercialization center that spun out of the University—to lead a consortium of industry, academic, and government partners to create the Digital Manufacturing & Design Innovation Institute (DMDII). As one of the four \$70 million National Network for Manufacturing Innovation (NNMI) institutes established to date, the University of Illinois is at the heart of the federal government's effort to spur economic growth, new jobs, innovation, and revitalization of American manufacturing and global competitiveness.

Located in Chicago, with leading industry partners such as GE and Rolls-Royce, the DMDII is an applied research institute that will develop digital manufacturing technologies and deploy and commercialize these technologies across key manufacturing industries. Notably, the consortium more than tripled the required matching funds for this grant, putting up more than \$250 million for a combined \$320 million advanced manufacturing institute. The DMDII will be the nation's flagship research institute for digital manufacturing—a world-class, first-of-its-kind manufacturing hub with capabilities, innovation, and collaboration necessary to transform American manufacturing. Digital manufacturing will create new jobs, grow the economy, and dramatically increase the competitiveness of American companies so that the future of manufacturing will be "Made in America." The lab's mission is to lead this next industrial revolution, leveraging the region's strong and diverse manufacturing base and unique applied research strengths.

Federal funding is driving innovation in American manufacturing and addressing critical needs for our nation's economic future. These investments not only allow our students to work alongside cutting-edge industrial partners, but they also ensure thousands of new, high-wage jobs when they graduate.

Innovating Health

The University of Illinois is a leader in healthcare advances and discoveries. With an aging population with chronic conditions, a flood of people entering the healthcare system as a result of the Affordable Care Act, and a nationwide physician shortage, the demand for bioengineering and biomedical innovations continues to rise.

At the University of Illinois, we are moving lifesaving treatments from the lab to the patient, enhancing health, and reducing the burden of illness. Our expertise in genetics, computation, imaging, and other burgeoning research areas in the life sciences helps millions of people live healthier, more productive lives. University advances and programs that translate into patient care include a number of discoveries and treatments, including: a treatment for HIV that combats drug resistance; genetic discoveries around autism that will lead to new therapies; discoveries around inherited amyotrophic lateral sclerosis (ALS) that will lead to therapies of its sporadic form; and medical imaging devices that enable doctors to better diagnose and treat ailments. These and so many more discoveries are possible due to the federal funding received by our Center for Clinical and Translational Science in Chicago, our Beckman Institute for Advanced Science and Technology in Urbana-Champaign, and the groundbreaking research of our faculty across all campuses.

With the nation's largest medical school, a hospital and health sciences system that includes a 496-bed safety net hospital and more than a dozen federally qualified neighborhood clinics in Chicago, the University of Illinois takes seriously its mission to advance the health of Illinois' citizens. Biomedical research—like that funded by the federal government—furthers that mission by providing the foundation for lifesaving advances.

Transferring Basic Research Discovery to the Market

Finally, the University of Illinois also ensures that the results of research are successfully transferred outside the University to drive economic growth in the state and beyond. The University was ranked tenth on the "Top 100 Worldwide Universities Granted U.S. Patents" list.

In Fall 2013, the Science Coalition published a report, *Sparking Economic Growth 2.0*, that highlighted 100 spin-off companies that resulted from basic federal research. The report highlights the ways in which the federal investment in scientific research helps stimulate the economy. Nine of these companies—which created jobs and economic growth in Illinois and beyond—hail from the University of Illinois.

From building batteries that charge faster and last longer, to developing a device that repairs and regenerates damaged tissue, to developing basic applications at the heart of night-vision technology and next-generation solar panels, these spin-off companies help commercialize knowledge gained from basic research. These companies are not only an example of the benefits of basic scientific research, but they are a real-world reminder of what we stand to lose if we do not preserve strong, sustained funding for scientific research.

Conclusion

The University of Illinois has always been—and hopes to always be—an innovator that shapes our nation’s economic growth, physical health, and national security. We look forward to continuing to train the next generation of problem-solvers while helping lead the digital manufacturing revolution. We will continue to partner with existing industry and foster new spin-offs. However, to achieve these goals, we need stronger leadership from Congress. We need sustained investments in scientific research that meet or exceed annual inflation in the cost of doing research. We must reverse the arbitrary, across-the-board cuts of sequestration and instead stabilize our deficit with a balanced approach that invests in research and education and creates economic and job growth. Our national competitiveness depends upon it.

Again, thank you for holding this hearing and for the opportunity to submit testimony.

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