

Testimony for the Record

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By

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Chairwoman Mikulski and Ranking Member Shelby, thank you for the opportunity to present testimony on the importance of federal investments in driving innovation. The University of Michigan heartily endorses the need to sustain, and expand, federal funding for university research. For more than seven decades, this investment has been the engine that drives our economy, spurring the creativity, innovation and entrepreneurship that underlies our success and is the hallmark of our nation.

Research conducted at our nation’s universities is integral with the educational process. As such, not only does it spur the creation of new ideas and insights that lay the foundations for new products, processes, services, and entirely new industries, but it also trains new generations of scientists, engineers, physicians, managers, entrepreneurs, educators, and professionals in all fields who go on to become the innovators who continuously renew our economy, address the challenges we face as a society, and enrich our quality of life.

The work done in our laboratories led to 421 invention disclosures, and 128 issued patents in FY13 alone. Over the last ten years, U-M has launched an average of one new company based on technology developed in our laboratories every five weeks.

While this is important, this technology transfer pales in comparison to the impact of our graduating students. Much of the research performed on a university campus is conducted by graduate students—and undergraduate students as well—under the supervision of faculty. In the process, they learn how to apply what they learn in the classroom to grasp the essence of challenges, develop rigorous approaches to addressing them, and synthesize and communicate the results of their work.

These are the skills that prepare our graduates for a lifetime of contributions as professionals in virtually every field, and every part of the country. Today, we have more than half a million alumni in all 50 states, and almost every country of the world. They have built on the knowledge and expertise they gained at U-M, often in

our research laboratories, to succeed in their fields of choice. Fully 20 percent of them are entrepreneurs.

History shows that this process has dramatically transformed nearly every aspect of our society. Digital computing, for example, evolved out of work at universities that led to the development of the new academic discipline of computer science as well as laying the foundations of a new industry. The entire field of biotechnology grew out of basic scientific work to shed light on how biological processes worked at a molecular level, leading to entirely new ways to develop new drugs and therapies. Many of the key concepts of numerical control emerged from academia, leading to the development of automated manufacturing.

Over the last few decades, federally funded research on the basic nature of materials has led to an understanding of how to design materials with specific properties. This has led to a vast array of new applications for polymers, metals, ceramics, and other materials in many industries. It has been a steady stream of advances in materials science, for example, that have made it possible to make phone calls, access the internet, take and store thousands of photographs, play videos, play games, store and playback music, exchange e-mails, manage our calendars, and find our way around a city—all in a device that fits in the palm of your hand.

In each case, new insights derived in large part from university research have been imparted to new generations of students, and they in turn have carried their expertise to practice.

And the process continues. On-going and proposed research in such key areas as energy, neuroscience, advanced materials, public health, and social behavior, to name just a few, has the potential to continue to transform the world at least as much as it has in the past.

At U-M, we recently launched a major research project to lay the foundations of a commercially viable system of connected and automated vehicles—a revolutionary technology that could reduce crashes by as much as 80 percent while dramatically cutting back on congestion, energy consumption, and pollution. Success will critically depend on our ability to cut across disciplines to address the interrelated legal, political, regulatory, social, economic, and urban planning issues as well as the technical challenges. Not only have we sought government funding for this project, we are also working to leverage that support with a major investment from industry.

It has never been more important to sustain the process of innovation fueled by the federal investment in university research. Inspired by the productivity of our approach, other countries are now increasing their investments in research, strengthening their ability to generate new knowledge and talent and even attracting some of the talent that would once have been drawn to the U.S. If we are to overcome our innovation deficit and maintain our competitive edge, we must

reassert our commitment to the people and ideas that are the key to our nation's continued growth and prosperity.