

Statement of  
Todd T. Sherer, PhD, CLP  
President, Association of University Technology Managers  
Associate Vice President Research Administration, Executive Director, Office of Technology  
Transfer,  
Emory University  
Before the  
U.S. House of Representatives  
Committee on Science, Space, and Technology  
Subcommittee on Technology and Innovation  
June 19, 2012

Mr. Chairman and honorable Members of the Subcommittee, thank you for the opportunity to testify before you today on the important topic of transferring university technology from the lab to the marketplace.

My name is Todd Sherer, and I am the Associate Vice President for Research Administration and Executive Director of the Office of Technology Transfer for Emory University in Atlanta Georgia. I am also President of the Association of University Technology Managers (AUTM). AUTM is a nonprofit organization dedicated to promoting, supporting and enhancing the global academic technology transfer profession. AUTM is an international organization with more than 3,000 members, primarily managers of intellectual property, who come from over 300 universities, research institutions and teaching hospitals as well as numerous businesses and government organizations.

My office at Emory is responsible for managing a portfolio of around 1,000 biomedical inventions made by Emory faculty. Put simply, my professional colleagues and I shepherd them from the lab bench to the hands of commercial partners who then take them through capital-intensive development programs and complicated regulatory processes to get them into the hands of patients. While it may sound simple, in actuality, what we do is quite complex. We evaluate early stage technologies for commercial potential, determine the best intellectual property protection strategy, and market our technologies through a variety of channels in hopes of finding a corporate partner. We then negotiate often complicated agreements to ensure that our inventors, our universities and the taxpayer benefit from the ultimate products. Often we create or assist in the creation of entirely new companies to commercialize our technologies – many of them creating jobs in our own region and state. After licenses are signed, we maintain relationships throughout the life of the agreement, sometimes insisting upon the return of our technology should our partner decide to abandon our technology. Most importantly, we work as a team with our inventors to help make the world a better place by getting academic technologies out of the laboratory and into the economy.

As a result of our activities, over 90 percent of HIV patients in the U.S. on life-saving antiviral therapy take a drug developed at Emory. In addition, more than 4 million patients each year benefit from cardiac imaging innovations made at Emory, including our faculty inventor who underwent cardiac by-pass surgery.

#### **Prior to the Bayh-Dole Act**

In the decades leading up to the 1980 Bayh-Dole Act, the federal government accumulated title to approximately 28,000 patents of which fewer than 5 percent were licensed to companies for commercialization. Several factors influenced the lack of commercialization: lack of incentives for universities and faculty to engage in the very inventions they had made, patent policies that

varied by federal agency and a lack of clarity of ownership of patents developed under federal funding.

The Bayh-Dole Act boldly changed government patent policy, providing ownership and control to any invention made with federal funds to the very universities and small businesses that made them. The Act also established a federal patent policy that was uniformly applied to all of its agencies. Since its passage over 30 years ago, the Bayh-Dole Act has proven instrumental in recognizing that federal patent policy is an integral part of U.S. competitiveness and is the envy of nearly every other country in the world as evidenced by similar legislation in a wide variety of countries including South Africa, India, China, Japan, South Korea and Taiwan. The Bay-Dole Act has served the United States well for more than 30 years. Its beauty is that it creates market incentives for universities, researchers and companies to develop and invest in patenting and licensing new technologies or treatments for diseases. Without the local pride of ownership and control created by the Act, many of these discoveries would still be languishing on the shelf and no revenues would be returned to fund even more research.

### **After Passage of the Bayh-Dole Act**

Universities responded to the passage of the Bayh-Dole Act by creating technology transfer offices (TTOs) to manage the inventions of their faculty. Only 23 universities had TTOs before Bayh-Dole; today, all major research institutions have a technology transfer operation. The level of basic technology transfer activity—invention disclosures, patent applications, patent issuances, and licensing—has increased steadily, too. AUTM has conducted an annual licensing activity survey since 1991. **Attachment 1** shows how key measures of activity have increased since the inception of the survey.

According to an article published in the journal *Nature*, "An invention by an academic in the United States has a better chance of going to market than it does in other nations." *University Entrepreneurship and Professor Privilege*, a working paper released by the Research Institute of Industrial Economics in Stockholm on April 12, 2012, also finds that U.S. technology-transfer offices have more market-analysis skills, invest more in commercialization and often license to solid businesses, boosting the chances of success.<sup>1</sup>

Since the Bayh-Dole Act was passed, more than 5,000 new companies have formed around university research; the majority of which are located in close proximity to the university. In fiscal year 2010, university research helped create on average 1.7 new companies a day. University technology transfer creates billions of dollars of direct benefits to the U.S. economy every year. In fiscal year 2010, universities helped create 657 new products.<sup>2</sup>

And, since the passage of Bayh-Dole, university innovations have helped create whole new industries, like biotechnology, where the U.S. enjoys a leadership role. The bioscience sector represents an employment impact of 8 million jobs, and 76 percent of biotech companies have a license from a university. At least 50 percent of current biotech companies got their start as a result of a university license. According to a 2009 study by the Biotechnology Industry Organization, 279,000 jobs were created through university licenses in the United States

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<sup>1</sup> *Nature*, vol 485, p. 27, May 10, 2012

<sup>2</sup> AUTM Licensing Activity Survey FY2010, pg. 13

between 1996 and 2007 and as much as \$187 billion was contributed to the gross domestic product.<sup>3</sup>

According to the former President of the NASDAQ Stock Market, an estimated 30 percent of its value is rooted in university-based, federally funded research results, which might never have been commercialized had it not been for the Bayh-Dole Act.

Significant benefits for public health and wellbeing are derived from technologies developed under the Bayh-Dole Act, such as:

- HIV medications
- Synthetic penicillin
- Hepatitis B vaccine
- HPV vaccine
- Cisplatin and carboplatin (cancer therapeutics)
- Human growth hormones
- Treatments for Crohn's disease
- Avian Flu vaccine

These breakthroughs occur not only in the field of biotechnology and life sciences, but in all fields ranging from electronics to agriculture. A few examples from AUTM's Better World Report series (<http://www.betterworldproject.net/>) are available in **Attachment 2**.

### **Making Technology Transfer Stronger for the Future**

The academic community and federal agencies continue to find new ways to innovate and to manage innovations. Technology transfer offices are constantly adapting to changes in the economy, learning best practices from each other and understanding the marketplace. TTOs have adapted to address how to help ideas become companies—bridging the valley of death—and to do so they've had to get creative. They are creating accelerators, finding gap funding, encouraging entrepreneurship by faculty and students and rewarding that entrepreneurship. They're finding new ways to advance their technologies. While TTOs focus on negotiating licenses, that is just the means to an end. The end is to get technologies out the door and into public usage for the benefit of taxpayers.

Technology transfer offices are using innovative online partnering tools such as the AUTM Global Technology Portal (GTP). Launched by AUTM in 2012, the GTP is a website that provides a "one stop shop" for industry to identify academic innovations available for licensing thereby helping facilitate licensing agreements and investments or partnership agreements with university startups. In addition to cutting edge technology transfer activities such as the GTP and other web portals, technology transfer offices are using showcases, partnering meetings, translational research funds (gap and seed). They're also training colleagues by providing entrepreneurship assistance and providing education for professors on commercialization.

The old saying that technology transfer is a "contact sport" is still valid, but technology transfer professionals are making use of every marketing channel they have access too—including social networking sites such as Twitter, LinkedIn and Facebook.

Specific examples of innovative university programs can be found in **Attachment 3**.

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<sup>3</sup> The Economic Impact of Licensed Commercialized Inventions Originating in University Research, 1996-2007, Final Report to the Biotechnology Industry Organization, Pg. 8

Many universities across the country are working with smaller technology transfer offices to help them improve their technology transfer function. They are doing this through job shadowing, and networking events to share best practices, as well as with formal arrangements to assist with technology transfer services like the one recently announced between Notre Dame and Purdue.

These projects reflect growing interest by universities toward a more active role in bringing new technology to market.<sup>4</sup> As you can see, universities are not resting on their laurels as we continue to innovate and find better ways to transfer our technology from the lab to the marketplace.

Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) grants were recently reauthorized for six years, and that's great news for emerging companies in the early development stages of research—often university startups. AUTM and our sister organizations, such as the Association of Public and Land Grant Universities, and the Biotechnology Industry Organization, have advocated for reauthorization for years, knowing that the six month or even month-to-month extensions provided in the past did not give companies the ability to plan effectively. Now they can. In addition, allowing startups funded through venture capital to compete for SBIR/STTR grants will increase the number of new innovations available to the public, and making innovations available to the public is at the very heart of what we do.

AUTM will continue its commitment to providing training and education for technology transfer professionals for years to come. We will provide networking events for our members to share best practices in technology transfer as we all expect new practices to continue to emerge, as they always have. Our members must continue to strive to find new ways to reduce the barriers to getting our technology from the lab to the market. We believe that continued support for research at NIH, NSF and other agencies, such as the newly formed NCATS, is the best way that the federal government can encourage even more commercialization of American technologies – after all, it is the level of research funding that drives the level of innovation at our universities. I, AUTM, as well as other organizations, believe that the U.S. technology transfer system will continue to be a catalyst for innovation in the U.S. economy for many decades to come.

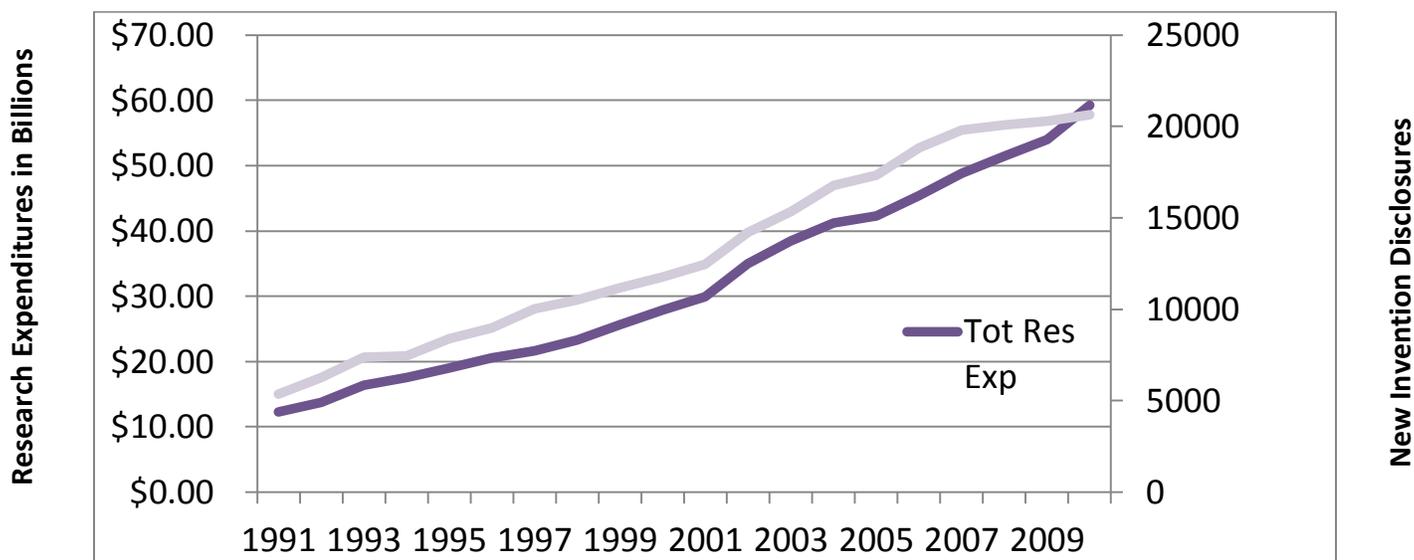
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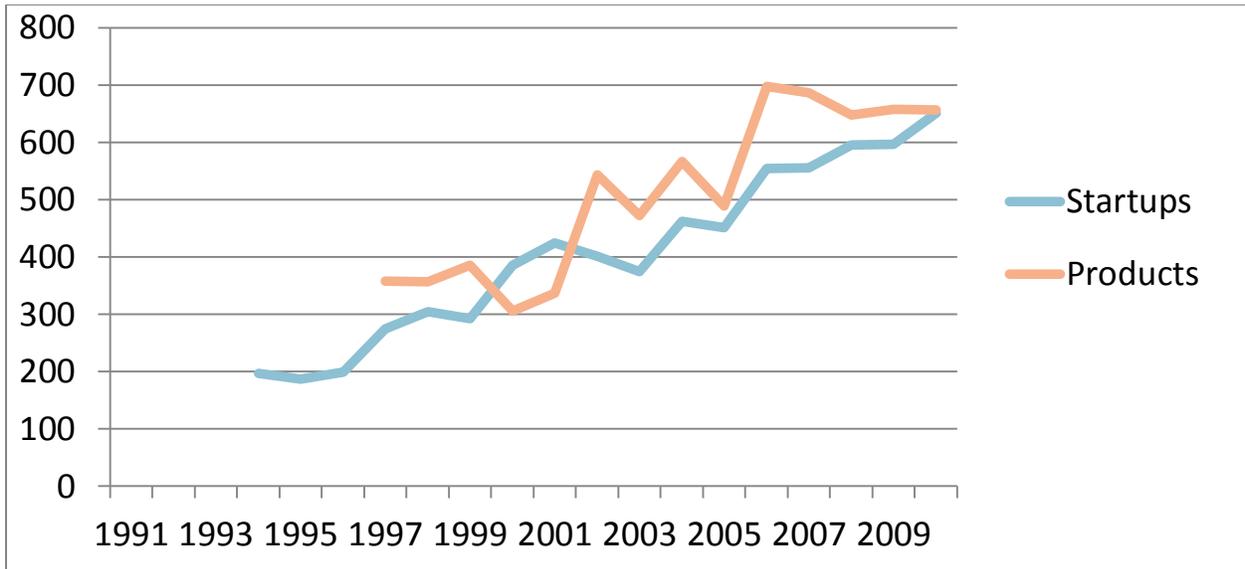
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AUTM has conducted an annual licensing activity survey since 1991. Each year, the survey reveals how activity has increased since the inception of the survey.

### Federal Research Drives Innovation

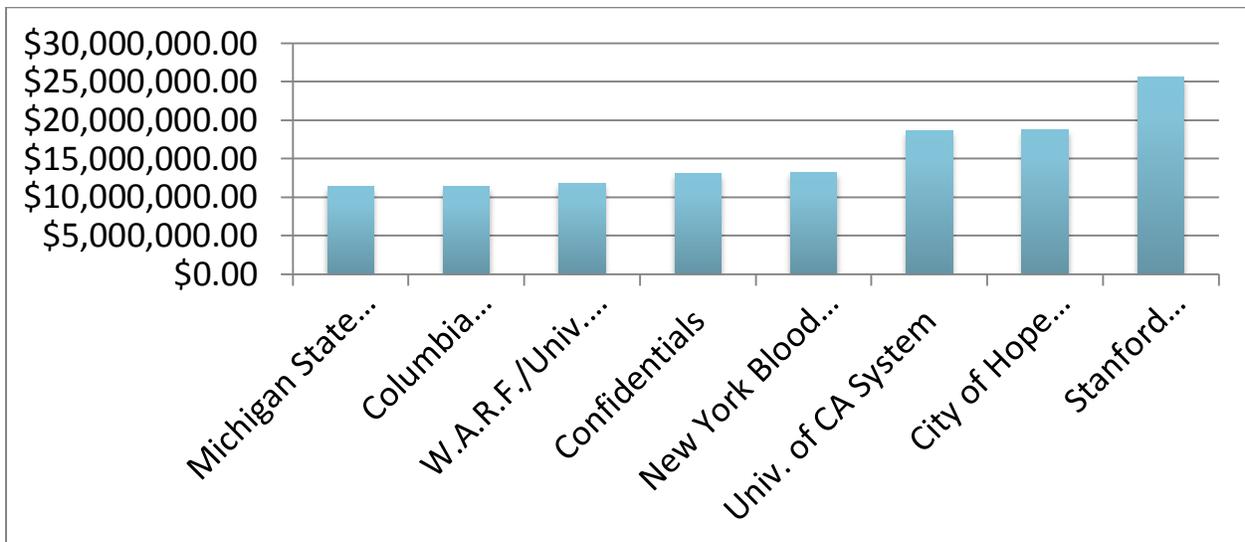


## Results of Investment — Startups and New Products



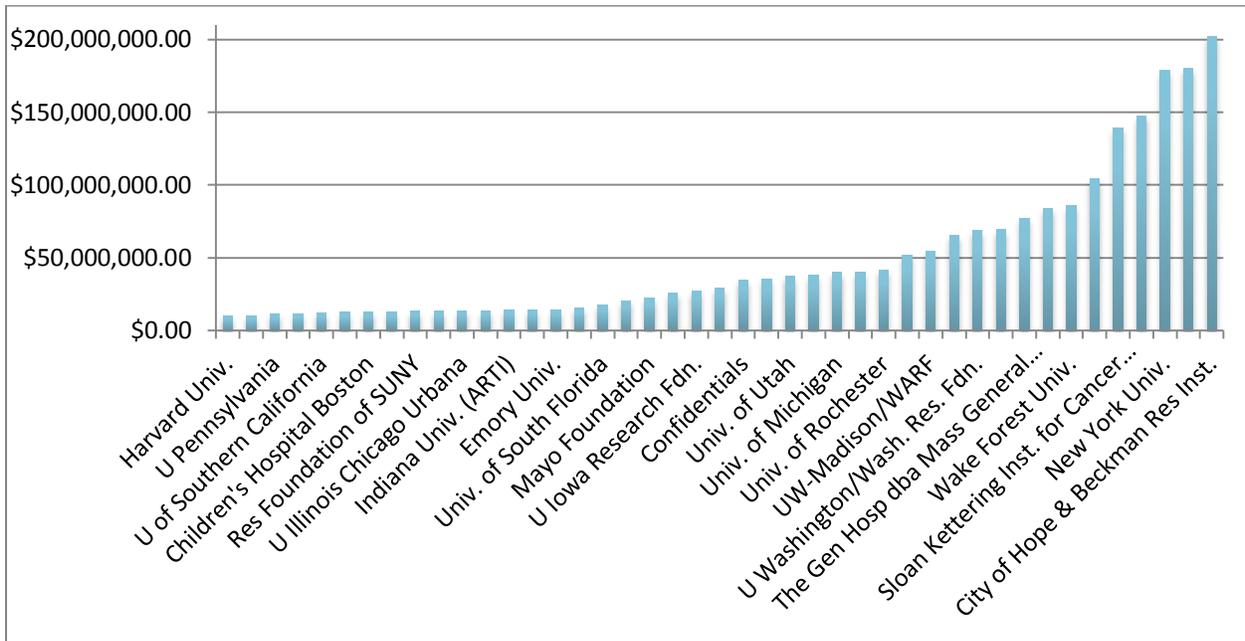
## Results of Investment

### 1991-Universities reporting more than \$10 million in license income

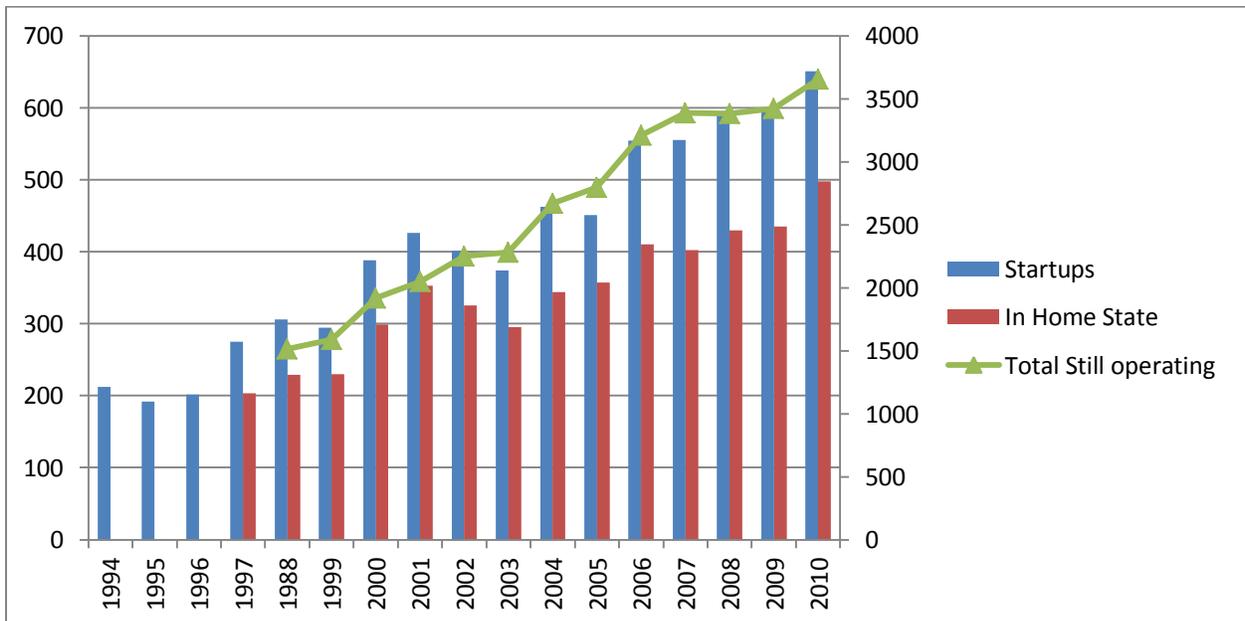


## Results of Investment

### 2010- Universities reporting more than \$10 million in license income



## Economic Development: Startups





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Technology transfer breakthroughs occur not only in the field of biotechnology and life sciences, but in all fields ranging from electronics to agriculture. There are hundreds of examples in AUTM's Better World Report series (<http://www.betterworldproject.net/>). Here is just a sampling:

**Arizona**

Lighting strike detection technology that is now deployed in over 40 countries  
University of Arizona

Chemical-free technology to help control crop diseases is licensed to companies in the Midwest  
University of Arizona

**California**

Topical gel treatment for AIDS-related Kaposi's sarcoma  
Salk Institute for Biological Studies

Electrodes that enable three-dimensional imaging with atomic force microscopy  
Stanford University

Novel IV catheters that eliminate risks of potentially dangerous needlesticks  
City of Hope

**Florida**

First blood test to diagnose brain injuries  
University of Florida

**Georgia**

Once-a-Day HIV Medication  
Emory University

**Indiana**

Altered yeast strains for expanded biofuel supplies  
Indiana University

**Maryland**

Shigellosis Vaccine  
University of Maryland

**Nebraska**

Drought tolerant grass  
University of Nebraska-Lincoln

New Organo-metallic reagents for the synthesis of drugs  
University of Nebraska-Lincoln

**Pennsylvania**

Artificial Lung  
University of Pittsburgh

**Vermont**

Sustainable water filtration technology that reduces phosphorous, suspended solids and pathogens from water supplies  
University of Vermont

**Wisconsin**

Brainport to help the blind "see"  
University of Wisconsin



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## **Examples of Innovative University Programs**

The University of California, San Diego is launching a Center for Novel Therapeutics (CNT) to promote interaction between private company researchers and their university counterparts based at nearby clinical facilities. The CNT will bridge the gap between academic discovery and development of new therapeutics.

The University of Florida will open its Clinical and Translational Research Building in Gainesville, Florida in February 2013. The building will house the university's Institute on Aging, the Clinical and Translational Science Institute, and an Ambulatory Clinical Research Center.<sup>1</sup>

The Ohio State University and Ohio University launched a new venture fund designed to finance early stages of biopharma and other innovative technology ventures from the two schools as well as other Ohio-based academic institutions.

Emory University created an in-house patent counsel as opposed to using more expensive outside law firms. This approach has not only saved the university money, but increased the number of patent filings by better aligning patent and license strategies. Emory's faculty inventors love this new service.

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<sup>1</sup> Academia Increasingly Going Beyond Basic Research by Setting Up Translational Med Centers, Genetic Engineering & Biotechnology News, May 30, 2012