



Alice Li, PhD, CLP

Executive Director  
Center for Technology Licensing  
Cornell University

XL11@cornell.edu  
www.ctl.cornell.edu

395 Pine Tree Road, Suite 310  
Ithaca, NY 14850  
p. 607-254-4698 f. 607-254-5454

1155 York Avenue  
New York, NY 10065  
p. 646-962-7045

July 24, 2018

The Honorable Walter G. Copan  
Under Secretary of Commerce for Standards & Technology  
Director  
National Institute of Standards & Technology  
100 Bureau Drive  
Gaithersburg, MD 20899

RE: Request for Information Regarding Federal Technology Transfer Authorities and Processes  
Via email: [roi@nist.gov](mailto:roi@nist.gov)

Dear Under Secretary Copan:

On behalf of Cornell University, I am submitting comments to the National Institute of Standards and Technology (NIST) in response to the agency's Request for Information Regarding Federal Technology Transfer Authorities and Processes. Cornell commends you for soliciting public comments on the Return on Investment (ROI) Initiative, and especially appreciate your desire to build consensus as you quantify the importance of the federal investment in research and development.

[Cornell University](#) is a privately endowed research university and a partner of the State University of New York. As the federal land-grant institution in New York State, Cornell has a responsibility to make contributions in all fields of knowledge in a manner that prioritizes public engagement to help improve the quality of life in our state, the nation, and the world. Cornell has seven undergraduate colleges and four graduate and professional schools on the main campus in Ithaca, NY, three graduate and professional schools in New York City, an agricultural research campus in Geneva, NY, and a medical school in Doha, Qatar. The university enrolls approximately 22,300 students across all campuses, with students from every state and more than 120 countries.

Cornell University is deeply committed to the generation and transfer of knowledge, the commercialization of discoveries, sustainable economic development, and job creation, all of which work together to improve the quality of life in our community and around the world. [Cornell's Research Serves the Region and Beyond: Small Business Development](#) provides some examples of how Cornell technology has contributed to the growth and development of small businesses.

The [Center for Technology Licensing](#) (CTL) is Cornell University's central technology transfer office. CTL's mission is to bring the University's scientific discoveries, technological innovations,

and medical advances to the marketplace for societal benefit and to foster economic development within New York State and across the nation. Reflective of Cornell's broad research endeavors, CTL manages inventions from many disciplines including chemistry, engineering, information technology, materials science, medicine, plant science, and veterinary medicine. CTL licenses Cornell technologies to industry partners in all 50 states and in countries all around the world. Cornell inventions are patented in over 40 countries. In FY2017, Cornell received 341 patents and granted 87 licenses. Twelve startups based on Cornell technologies were founded in four states and two countries.

Cornell supports the comprehensive comments submitted by several associations—AAU, APLU, AAMC, COGR, and AUTM. Rather than reiterate the points made in those letters, I would like to provide additional information from the university's unique perspective on the four core questions posed in the request for information. For clarity and brevity, I have combined the answers to questions two and three below.

**I. What are the core Federal technology transfer principles and practices that should be protected, and those which should be adapted or changed?**

The landmark statutory framework of the *Bayh-Dole Act of 1980* established a well-balanced system to transfer federally funded technologies. The success of this legislation has been widely acknowledged and is demonstrated clearly by the impact of the technologies commercialized, new ventures created, and economic and societal benefits generated. Based on technologies invented at Cornell, more than 700 products have been commercialized in the marketplace, generating more than \$2.3 billion in sales; and more than 180 startups have raised more than \$2.2 billion for product development.

Many countries have passed legislation modeled after the *Bayh-Dole Act* and created systems to support technology commercialization. As today's economy is becoming more competitive globally and increasingly knowledge based, it is critical that the United States government maintain and increase support for research at universities and research institutions. It is vital that the U.S. remain at the forefront of research and innovation, as the latest discoveries in our labs will always form the fundamental bases of new technology and talent development. In addition, the federal government should strive to preserve the flexibility of the technology transfer system by supporting creative approaches to commercialization and maintaining a reasonable and appropriate level of oversight, as described in more detail below.

**II. What are the issues that pose systemic challenges to the effective transfer of technology, knowledge, and capabilities resulting from Federal R&D?**

**III. What is the proposed solution for each issue that poses a systemic challenge to the effective transfer of technology, knowledge, and capabilities resulting from Federal R&D?**

- A. **Funding support.** There is a lack of financial support by the federal government for technology transfer and proof of concept development. Particularly, funding in the early stage of scientific discoveries is crucial to bridging the gap from early stage to startup, and

ultimately attracting industry partners. Federal agencies should develop programs to fund universities or regional non-profit entities that support the development of technologies across the “valley of death.” As an example, Cornell University has established a series of programs to bridge commercialization and technology ventures. These include:

- a. Gap funding mechanisms to support proof of concept development, such as the [Daedalus Fund](#) and Cornell Technology Acceleration and Maturation ([CTAM](#)) fund;
- b. Pioneering platforms like the [Tri-Institutional Therapeutic Discovery Institute](#), a public-private joint structure to advance biomedical discoveries to preclinical studies where academic and industry researchers can work side-by-side; the [Runway Startup Postdoc](#) program to support venture creation and entrepreneurship at Cornell Tech; and the [Commercialization Fellows](#) program that trains engineering PhD students to exploit the real world-applications of their inventions;
- c. Technology incubators such as the [McGovern Center](#), which is ranked among the top ten university incubators in North America; and
- d. The [Entrepreneurship at Cornell](#) program, which provides resources for thousands of students, faculty, staff, and alumni with a broad programmatic reach including hackathons, conferences, mentorship, and startup support.

Securing funding to maintain and grow these types of programs will be critical if the U.S. hopes to remain competitive on the world stage. American universities are constantly targeted by foreign countries eager to provide funds for access to our students, faculty, research, and technology. The U.S. government must remain engaged with universities at all stages – from funding basic research, promoting technology transfer, and providing support for early-stage commercialization processes – or risk losing the competitive advantage that makes our universities and research institutes the envy of the world.

- B. **The tax code and partnership with industry.** Current restrictions, such as those that limit the public-private use of tax-exempt-bond-financed facilities, or those imposed by the research and development tax credit, do not provide enough incentives for academic-industry partnerships. Cornell recommends changes to the tax code to:
  - a. Simplify the restrictions on tax-exempt bonds that unduly limit innovative partnerships between universities and businesses; and
  - b. Either allow the research expenditures at universities to qualify for the basic research credit for companies, or provide additional tax incentives to promote collaborative research between companies, universities, and federal labs.
- C. **Conflict of interest rules.** The heightened conflict of interest rules discourage university researchers from not only collaborating with industry partners, but also from engaging in the sorts of activities that lead to new ventures. For example, the threshold for financial

interest was reduced from \$10,000 to \$5,000 in the Public Health Service requirements without a clear indication of benefits. Cornell recommends adoption of a uniform system across federal agencies that addresses issues that are detrimental to research integrity and protects the safety of human subjects, while still aligning with the national interests of commercialization and industry collaboration.

D. **Patent rights and challenges.** University inventions are necessarily early stage high-risk technologies that need protection by an effective and predictable patent system with clear rights that can be offered to industry partners. Cornell recommends that the United States Patent and Trademark Office harmonize the *Inter Partes Review* (IPR) claim construction standard with the federal courts and International Trade Commission, and apply same the burden of proof standard in IPR proceedings that is applied by the federal district courts. Additionally, NIST should reiterate support for the intended purpose, scope, and appropriate uses of march-in rights, as articulated in the *Bayh-Dole Act*. Cornell believes that march-in rights should only apply in narrow circumstances and should not be used as a means for drug pricing. Clarification of this point by NIST will help alleviate the current uncertainty around the use of such rights.

E. **Regulation and reporting.** Cornell appreciates the importance of federal regulations and reporting requirements, but the benefits of regulation should not be overshadowed by complexity, burden, and uncertainty. Cornell recommends reducing regulatory burdens and streamlining the reporting procedures by reinstating the former 60-day time period for agency action to request title upon learning of an unreported invention. This will remove the doubt over title that can discourage licensing and provide certainty to our industry partners. Furthermore, implementing a single, coherent, streamlined government-wide reporting process would greatly improve compliance. Current requirements are often duplicated or conflicting, which makes it a challenge to comply.

IV. **What are other ways to significantly improve the transfer of technology, knowledge, and capabilities resulting from Federal R&D to benefit U.S. innovation and the economy? What changes would these proposed improvements require to Federal technology transfer practices, policies, regulations, and legislation?**

A. **Support and expand I-Corps and similar programs.** Cornell is part of the NSF-supported Upstate New York [I-Corps](#) node partnership and is also an I-Corps site. Additionally, Cornell has participated in other programs in the region using similar methodology and witnessed the benefits the program brought to the ecosystem to help advance entrepreneurship. Cornell recommends continued support for the I-Corps program, as well as the creation and expansion of similar programs in other agencies to help advance a system of entrepreneurship nationally.

B. **Allow more flexibility in SBIR/STTR programs.** Cornell recommends allowing Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) funds to be used for technology transfer, commercialization, and the types of market outreach that can be incorporated into product and business development.

- C. **Offer financial support for translational research and proof of concept platforms to advance technology readiness.** Federal support for programs like the technology transfer, entrepreneurship, incubator, and venture support programs at Cornell described above will significantly advance the opportunities for commercialization, new venture development, and entrepreneurship to grow out of university laboratories.

**Conclusion.** From the laboratory bench to the hospital bedside and from cultural evolution to concepts in sustainability, Cornell researchers and scholars are translating discovery into meaningful, measurable impact that is changing the world for the better. Cornell strongly believes that continued federal investment in the technology transfer process will provide a significant return on investment to the federal government and the U.S. economy. Thank you again for the opportunity to provide comments on this important initiative. On behalf of Cornell University, I would be pleased to elaborate on any of the points made in this letter and look forward to working with you going forward.

Sincerely,



Alice Li, Ph.D.  
Executive Director  
Center for Technology Licensing at Cornell University