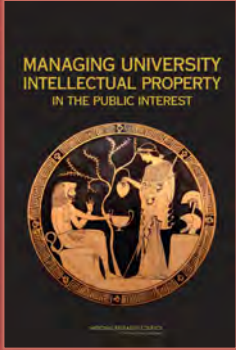


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**Managing Successful  
University  
Technology Transfer**

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Knowledge Exchange Conference  
Hong Kong  
5 December 2011

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Advisors to the Nation on Science, Engineering, and Medicine  
National Academy of Sciences  
National Academy of Engineering  
Institute of Medicine  
National Research Council

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**Reasons for the Academies' Examination of the U.S.  
Technology Transfer Experience**

- 30 years' experience, discussion, and research since the Patent and Trademark Act Amendments of 1980 (the Bayh-Dole Act) had not been assembled and evaluated
- University TT mandates, organization, lines of reporting, and results heterogeneous—possible to discern good practices?
- Persistent under-current of mutual distrust on the part of both universities and industry
- Criticism within the academic community that efforts to commercialize research results undermine norms of open communication, faculty advancement on the basis of scholarly merit, and preeminence of curiosity-driven research
- Uncertainty about university TT performance criteria—number of licenses? university royalties? startup firms launched? other measures?
- New proposals to shift initiative from institutions to faculty inventors

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**U.S. University Commercialization Activity FY 2010**

- Issued Patents: 4,109
- Startups Launched: 613
- Revenue: \$1.8 billion
  - NYU, Columbia, Northwestern account for 38 percent (685 million)

Source: AUTM Survey (155 institutions responding)

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**University Startups (December 1, 2011)**  
<http://bit.ly/tbGokV>



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*Principal Findings*

**1. IP-based technology transfers are a small fraction of the ways academic knowledge and discovery are moved from the university to the broader community (publications, conferences, collaborations, consulting, liaison programs, etc.)**

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*Principal Findings*

**2. The Bayh-Dole regime and associated university practices have not seriously undercut traditional avenues of transfer *NOR* interfered directly with research and knowledge generation for its own sake. There is little evidence of IP-induced**

- publication delays
- information withholding
- change in research orientation
- undermining traditional hiring, promotion, and tenure criteria
- obstacles to further research

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*Principal Findings*

**3. For the range of research discoveries that are patent eligible and for which exclusivity is important for further investment, the Bayh-Dole regime is superior to the predecessor system of government ownership subject, in some cases, to institutional patent agreements or case-by-case waivers.**

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*Principal Findings*

**4. The case has not been made for switching to an inventor-driven system, and doing so could undermine accountability and make conflicts of interest more difficult to identify and manage.**

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*Improvements Needed*

**Objective:**

**1. Better Integration With the Mission of the University**

**Recommendation:**

Institutional leaders—presidents, provosts, and boards of trustees—should create a clear mission for the unit responsible for IP management, convey it to internal and external stakeholders, and evaluate effort accordingly. The mission statement should articulate the university’s foundational responsibility to support smooth and efficient processes to encourage the widest dissemination of university-generated technology for the public good while taking into account the institution’s circumstances and the type of IP that it generates.

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*Improvements Needed*

**Objective:**

**1. Better Integration With the Mission of the University**

**Recommendation:**

Universities should pursue patenting and licensing practices that maximize the further development, use, and beneficial social impact of their technologies.

**Recommendation:**

The technology licensing unit will be more effective when exposed to broader issues in the financing and conduct of research. That objective is best served by locating the technology transfer office in proximity and making it accountable to the university’s research management.

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*Improvements Needed*

**Objective:**

**2. More Open to Outside Influences and Guidance**

**Recommendation:**

Universities with sizable research portfolios should consider creating a standing advisory committee composed of members of the faculty and administration; representatives of other business development units in or affiliated with the institution such as business incubators, research parks, proof-of-concept centers, and entrepreneurial education programs; members of relevant business and investment communities; and, if appropriate, local economic development officials. The committee should help the technology licensing unit establish practices consistent with the institution’s goals and policies, consider how best to exploit inventions, and identify new opportunities.

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*Improvements Needed*

**Objective:**

**2. More Open to Outside Influences and Guidance**

**Recommendation:**

Smaller institutions and those with less experience should consider the following options for technology transfer policies and practices: a) permitting greater outreach by faculty and others b) collaboration with larger institutions in the same region or in fields with complementary research strengths; or c) outsourcing certain functions to private entities with appropriate skills and contacts, perhaps focused on particular technology fields or markets.

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*Improvements Needed*

**Objective:**  
**2. More Open to Outside Influences and Guidance**

**Recommendation:**  
 Universities should periodically review the operations of their technology transfer office similar to the way they evaluate their academic and administrative units. This could involve forming a visiting committee with members drawn from other institutions' technology transfer offices, members of the relevant business and investment communities, and representatives of research sponsors, faculty, and economic development organizations.

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*Improvements Needed*

**Objective:**  
**3. More Supportive of Entrepreneurship**

**Recommendation:**  
 A committee drawn from the university community should hear and help resolve disputes between inventors and the technology transfer office with respect to the protection and commercialization of inventions.

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*Improvements Needed*

**Objective:**  
**3. More Supportive of Entrepreneurship**

**Recommendation:**  
 Universities engaged in licensing technologies to new enterprises should follow processes that both secure IP protection and evaluate whether start-ups or established firms are the most appropriate for development and commercialization. This involves determining that the requisite assets for the start-up's viability are in place or in process, including a clear conception of market need, a vetted business plan, investment capital, and management with appropriate skills.

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*Improvements Needed*

**Objective:**  
**3. More Supportive of Entrepreneurship**

**Recommendation:**  
 Once they have determined a start-up's viability, universities should consider using expedited procedures and more standardized terms for licensing university-generated technology to start-up enterprises formed by faculty, staff or students. Where justified, departure from the standardized, expedited procedure for specific inventions or inventors and the conditions and grounds for discrimination should be articulated ex ante to avoid arbitrariness in the process. Agreement terms should reflect sensitivity to the exigencies facing start-up enterprises in their earliest phases.

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*Improvements Needed*

**Objective:**  
**4. Realistic, Practical, Efficient, and Predictable Approaches to Interactions With Other Institutions**

**Recommendation:**  
 To facilitate the exchange of scientific materials among investigators, especially those engaged in non-profit sector research, sponsors should explicitly encourage and monitor compliance with requests for materials. Moreover, technology transfer offices should either cease requiring use of Material Transfer Agreements for exchanges among investigators at nonprofit research institutions, or use only the Uniform Biological Material Transfer Agreement (UBMTA) or the Simple Letter Agreement (SLA) recommended by the National Institutes of Health. Industry sponsors should follow similar practices, refraining from demanding overly restrictive conditions.

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*Improvements Needed*

**Objective:**  
**4. Realistic, Practical, Efficient, and Predictable Approaches to Interactions With Other Institutions**

**Recommendation:**  
 More specifically, the committee supports an informal, evolving set of good practices known as the “Nine Points to Consider in Licensing”: reserving the right for inventing universities, non-profits, and governmental organizations to practice licensed inventions; structuring licenses, especially exclusive licenses, to promote investment, diligent development, and use; minimizing licensing of “future improvements”; ensuring broad access to research tools; managing or eliminating TT-related conflicts of interest; ensuring that patent purchasers operate under a business model to pursue commercialization rather than, threatening infringement litigation; and structuring agreements to allow for applications that address agricultural, medical, and food needs of developing countries.

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*Improvements Needed*

**Objective:**  
**4. Realistic, Practical, Efficient, and Predictable Approaches to Interactions With Other Institutions**

**Recommendation:**  
 A university should not lightly initiate legal action against an infringer, and its actions should reflect its reasons for obtaining and licensing patents in the first instance.

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*Improvements Needed*

**Objective:**  
**4. Realistic, Practical, Efficient, and Predictable Approaches to Interactions With Other Institutions**

**Recommendation:**  
 University technology licensing and sponsored research offices should explore arrangements with private research sponsors that shorten the often protracted process of negotiating licensing terms. Practices could include universities accepting a percentage premium on research contracts in lieu of negotiating future royalty terms, giving corporate sponsors title to results for work that do not represent leading edge research, and granting corporate sponsors royalty-free non-exclusive licenses to research results where the company pays the full costs of the research in question.

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*Improvements Needed*

**Objective:**  
**5. Accountability to the Public that is Footing the Bill for Most Research**

**Recommendation:**  
 Principal university and professional organizations and federal science agencies should coordinate efforts to develop a more balanced set of measures of total university knowledge exchange with the private sector. This should result in a manageable set of questions incorporated in the National Science Foundation's annual survey of higher education institutions' expenditures on research and development and in other private surveys.

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*Improvements Needed*

**Objective:**  
**5. Accountability to the Public that is Footing the Bill for Most Research**

**Recommendation:**  
 Perhaps by Executive Order, there should be a clear assignment of federal oversight responsibilities such as

- consistent policy across agencies
- review DEC's, government use rights, march-in
- convene an interagency committee
- review Bayh-Dole implementing regulations
- clarify reporting requirements, data storage, and data access

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*Improvements Needed*

**Objective:**  
**5. Accountability to the Public that is Footing the Bill for Most Research**

**Recommendation:**  
 Federal research agencies should reinvigorate the requirement that institutions reliably and consistently provide data to iEdison on the utilization of federally funded inventions, including licensing agreements and efforts to bring about such utilization. These data should be available for analysis by qualified researchers who agree not to disclose the parties to or terms of particular agreements.

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