Sponsored Research Awards
FY2011 vs. FY2010

2011
$695M
$74M
$769M

2010
$691M
$132M
$823M

(Dollar amounts represented in millions)
Awards by College
FY2011

(Dollar amounts represented in millions)
2010 NSF R&D Expenditures*
Public Research Universities

(Minnesota, Twin Cities) is highlighted in yellow.

(Dollar amounts represented in millions)

*Preliminary figures pending publication of the FY2010 NSF Higher Education and Development Survey
# Top 20 Comparison Group

## Public Universities

<table>
<thead>
<tr>
<th></th>
<th>NSF • 2010</th>
<th>Center for Measuring U Performance • 2010</th>
<th>Shanghai • 2010</th>
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<tr>
<td></td>
<td>Public</td>
<td>Public Group</td>
<td>World</td>
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<tr>
<td>Michigan</td>
<td>1</td>
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<td>22</td>
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<tr>
<td>Wisconsin, Madison</td>
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<td>Group 1</td>
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<tr>
<td>Washington, Seattle</td>
<td>3</td>
<td>Group 2</td>
<td>16</td>
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<tr>
<td>UC San Diego</td>
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<td>Group 3</td>
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<tr>
<td>UCLA</td>
<td>5</td>
<td>Group 1</td>
<td>12</td>
</tr>
<tr>
<td>UC San Francisco</td>
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<tr>
<td>Pittsburgh</td>
<td>7</td>
<td>Group 2</td>
<td>57</td>
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<tr>
<td>Minnesota, Twin Cities</td>
<td>8</td>
<td>Group 2</td>
<td>28</td>
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<tr>
<td>Penn State, U Park</td>
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<td>UNC, Chapel Hill</td>
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<td>Ohio State</td>
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<td>Group 2</td>
<td>63</td>
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<tr>
<td>UC Berkeley</td>
<td>12</td>
<td>Group 1</td>
<td>4</td>
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<td>Texas A&amp;M</td>
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<td>UTX M.D. Anderson Cancer Center</td>
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<td>151-200</td>
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<td>Arizona</td>
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<tr>
<td>Purdue</td>
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<td>Group 5</td>
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UNIVERSITY: INDUSTRY PARTNERSHIPS
TRADITIONAL AND EMERGING DRIVERS
University and industry partnerships in the US date back to before the Industrial Revolution and have contributed significantly to the impact of university research.

The Bayh-Dole Act of 1980 incented technology transfer and created an academic economy based on commercialization of “intellectual property”
University: Industry Partnerships
Traditional and Emerging Drivers

Three traditional motivators for U:I relationships:

1. Translation of research to products
2. Sponsored research funding
3. Royalty streams (tech transfer)
Trends in Federal R&D by Agency

Amounts in billions of constant Fiscal 2011 dollars

Funding as Driver

### Funding as Driver

#### The Source-Performer Matrix

*Estimated Distribution of R&D Funds in 2011
Millions of Current U.S. Dollars (Percent Change from 2010)*

<table>
<thead>
<tr>
<th>Source</th>
<th>Federal Gov’t</th>
<th>Industry</th>
<th>Academia</th>
<th>FFRDC</th>
<th>Non-Profit</th>
<th>Total</th>
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<td>Federal Government</td>
<td>$27,499</td>
<td>$25,983</td>
<td>$36,098</td>
<td>$15,595</td>
<td>$6,245</td>
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<td></td>
<td>-0.71%</td>
<td>-0.05%</td>
<td>0.58%</td>
<td>-0.24%</td>
<td>-0.19%</td>
<td>-0.04%</td>
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<tr>
<td>Industry</td>
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<td>$286,862</td>
<td>$2,765</td>
<td>$1,781</td>
<td>$17,803</td>
<td>$265,444</td>
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<td></td>
<td>3.33%</td>
<td>3.01%</td>
<td>5.89%</td>
<td>2.56%</td>
<td>1.35%</td>
<td>3.35%</td>
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<tr>
<td>Academia</td>
<td></td>
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<td>$12,140</td>
<td></td>
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<td>5.34%</td>
<td>2.13%</td>
<td>5.34%</td>
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<tr>
<td>Non-Profit</td>
<td></td>
<td></td>
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<td>$3,088</td>
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<td>1.58%</td>
<td>-0.24%</td>
<td>2.00%</td>
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<tr>
<td>Total</td>
<td>$27,499</td>
<td>$286,862</td>
<td>$57,524</td>
<td>$15,595</td>
<td>$17,803</td>
<td>$405,283</td>
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<tr>
<td></td>
<td>-0.71%</td>
<td>3.01%</td>
<td>1.93%</td>
<td>-0.24%</td>
<td>1.35%</td>
<td>2.40%</td>
</tr>
</tbody>
</table>

Source: Battelle, R&D Magazine
**B&I Sponsored Research Awards**

(UMN 10-year trend)

- Relatively flat for 10 years
- ~4% of sponsored research total
- For FY2009 UMN:
  - Ranked 27th overall in B+I sponsored total
  - Ranked 21st among public universities
  - Ranked 13th among the top 20 public universities in B+I support as a % of total research expenditures (range = 1 – 17%; avg = 7%)

(Dollar amounts represented in millions)

**Room for Improvement**
Royalties as Driver
Misplaced Emphasis?

“Patenting and licensing practices should not be predicated on the goal of raising significant revenue for institutions. The likelihood of success is small, the probability of disappointed expectations high and the risk of distorting and narrowing dissemination efforts great.”

“In Managing University Intellectual Property in the Public Interest”, National Research Council of the National Academies, 2010

In 2010, only 33 universities or university systems reported licensing income greater than $10 million.... Before expenses.

Source: Association of University Technology Managers
A New Set of Drivers

Increasing pressures from the federal government, funding agencies and state governments to demonstrate ROI and drive economic development.
Value propositions for U:I relationships increasingly recognize other advantages of U:I partnerships:

1. Need to translate discoveries to marketable products
2. Source of sponsored research (grant money)
3. Revenue stream - Royalties from licensing and commercialization of IP
4. Federal and state pressures to contribute to competitiveness & economic development
5. Advantages of Strategic Partnerships
   a. Improved approaches to complex research
   b. Intellectual cross-fertilization
   c. Practical experiences for students
   d. Share resources and expertise
   e. Enhanced national competitiveness
   f. Active legislative support of mission
   g. Philanthropy
Objective: Strategic Partnerships

Situation Dynamics

Vicious Cycle
- IP-centric
- It takes too much time, effort, money to negotiate agreements
- Perceived deterioration of trust and goodwill, adversely affecting long-term partnerships & collaborations
- Increased flow of sponsored research funds to other parts of the world
- At the working level, people just walk away

Virtuous Cycle
- Relationship-centric
- Trust-enhancing
- Builds on each other’s work
- Attracts increasing financial support
- Motivates increasing commitment and contribution of the current contributors
- Attracts increasing involvement of other organizations

Wayne Johnson, VP Hewlett-Packard
Relationship Implications

IP-centric

Negative “Spill-overs” From Poor Relationships

Relationship Implications
Relationship-centric

Positive “Amplifiers” From Good Relationships

Optimizing the Value Add

The U is employing multiple strategies to enhance U:I relationships:

• Office of Business Relations; “front door” to the U
• Research consortia
• Collaborative partnerships supporting regional economic growth efforts
• Exchange of best practices
• Participation in national organizations addressing challenges inherent in U:I partnerships
• New approaches to IP
  • Increasing use of master agreements
  • Express licensing strategies
• *Minnesota Innovation Partnerships Program (MN-IP)*
1. Pre-paid exclusive option fee.
   10% of sponsored research contract or $15K, whichever is greater

2. Company pays patent costs and has the benefit of driving prosecution while collaborating with the University on patent claims.

3. Option to exclusive license with pre-set terms:
   - No annual minimums or ‘other’ fees
   - No time limits or milestones
   - Sponsor is free to sublicense/cross license
   - “Home run” clause: Each year licensee sales using licensed IP is ≥ $20M, licensee pays 1% royalties on gross sales
   - No cap on royalties unless invention improves on the sponsor’s pre-existing product or processes

Essentially, the MN-IP program will give a company sponsoring research at the U the opportunity to pay an administrative fee and receive rights for an exclusive world-wide license with these pre-set terms for any IP generated.
MN-IP Impact

• An industry-leading strategy
• A game-changer
• Expected to make UMN a research destination of choice for corporate sponsors of research

Will earn the University of Minnesota a spot at the top of the second page!
Conclusions

• The U continued its strong research performance in FY2011 and remained 8th among public research universities in the US
• In FY2011 the U joined the ranks of leading universities in the NIH’s Clinical and Translational Research Award program
• Transformations in the tech transfer operation have elevated the U into a position among the best in class
• The U has launched new initiatives to encourage more effective research partnerships with business and industry
• The U remains an invaluable asset to the state of Minnesota
Funding as Motivation
By the Numbers (FY 2011)

Total Federal R&D funding = $111 billion
  Federal R&D to Universities = $36.1 billion

Total Industry R&D funding = $265 billion
  ~1% Industry R&D to Universities = $2.8 billion
  ~7.8% of Federal R&D to Universities
U:I partnerships
Concerns often cited

• Corporatization of universities

• Distortion of research mission
  • Loss of independence
  • Decrease in basic research in favor of applied research

• Increase in secrecy; reduced knowledge dissemination

• Conflicts of interest
  • Individual
  • Institutional

• Risks to students and trainees
Worst Fears – Not Realized

“The Bayh-Dole legal framework and the practices of universities have not seriously undermined academic norms of uninhibited inquiry, open communication, or faculty advancement based on scholarly merit.”

“Managing University Intellectual Property in the Public Interest”, National Research Council of the National Academies, 2010

“The direct impacts of UCB-N on the university as a whole have been minimal. The agreement has not produced the major changes that many feared it would.”

“External Review of the Collaborative Research Agreement between Novartis Agricultural Discovery Institute, Inc and the Regents of the University of California”, 2004

Most academic researchers are keen to retain their autonomy by ensuring that collaborative work with industry is conducive to—or at least compatible with—their research activity.... As opposed to a ‘sellout’, we found strong evidence that universities managed to retain their distinct identity as organizations governed by the ‘republic of science’.”

Essential Requirements
Responsible Stewardship

• Define inviolate academic values and apply policies and procedures to protect them

• Engage governance processes to safeguard values and hold individuals and officials accountable

• Consult with faculty; respected faculty leaders must be engaged

• Regents must be informed and must provide proper oversight

• Universities should voluntarily agree to establish consistent approaches and standards
Facilitating University-Industry Collaboration

From Letter to Commerce Secretary Locke, endorsed by 135 University Presidents, April 2011

“To facilitate university-industry collaboration, we will:

• Further support programs that facilitate sharing of labs, facilities, student-faculty teams, and other resources.

• Strengthen strategic investments in university-industry collaborations aimed at advancing technologies of mutual interest and renowned research programs, designed to enhance market-pull of research.

• Develop ways to incentivize and support industry R&D professionals to collaborate with universities.

• Encourage the development of accelerators and public-private partnerships on or within close proximity to campuses; and find ways to provide innovation services to new enterprises external to the university.”
Awards by Agency

(Dollar amounts represented in millions)
What Companies Value

Intellectual Property as commonly defined

Hierarchy of Need

Undergraduate Students
Graduate Students
Continuing Education
Consortia and Centers
Professors for Consulting
Sponsored Research
Purchasing IP from U

Intellectual capital
**MN-IP Key Terms**

1. Pre-paid exclusive option fee.
   - 10% of sponsored research contract or $15K, whichever is greater

2. Company pays patent costs and has the benefit of driving prosecution while collaborating with the University on patent claims.

3. Option to exclusive license with pre-set terms:
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