2011

RESEARCH REPORT

Tim Mulcahy, Vice President for Research
December 9, 2011
Sponsored Research Awards
FY2011 vs. FY2010

(Dollar amounts represented in millions)
Awards by College
FY2011

(Dollar amounts represented in millions)
Clinical & Translational Science Awards

- UMN awarded $51M CTSA in 2011; largest award of its kind ever received by the U
- Effort lead by Bruce Blazar and Connie Delaney
- UMN joins an elite national consortium of research institutions
- Passport to future translational programs by NIH
- Develop teams of investigators to streamline translation of discoveries into treatments
- Foster clinical and translational science; integrate community into research process
Awards by Category
(10-year trend)

(Dollar amounts represented in millions)
Trends in Federal R&D by Agency

Amounts in billions of constant Fiscal 2011 dollars

2010 NSF R&D Expenditures*
Public Research Universities

*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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<tbody>
<tr>
<td></td>
<td>Public</td>
<td>World</td>
<td>US</td>
</tr>
<tr>
<td>Michigan</td>
<td>1</td>
<td>Group 1</td>
<td>22</td>
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<tr>
<td>Wisconsin, Madison</td>
<td>2</td>
<td>Group 1</td>
<td>19</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>
<td>4</td>
<td>Group 3</td>
<td>15</td>
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<tr>
<td>UCLA</td>
<td>5</td>
<td>Group 1</td>
<td>12</td>
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<td>UC San Francisco</td>
<td>6</td>
<td>Group 1</td>
<td>17</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>
</tr>
<tr>
<td>Penn State, U Park</td>
<td>9</td>
<td>Group 2</td>
<td>45</td>
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<tr>
<td>UNC, Chapel Hill</td>
<td>10</td>
<td>Group 1</td>
<td>42</td>
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<tr>
<td>Ohio State</td>
<td>11</td>
<td>Group 2</td>
<td>63</td>
</tr>
<tr>
<td>UC Berkeley</td>
<td>12</td>
<td>Group 1</td>
<td>4</td>
</tr>
<tr>
<td>Texas A&amp;M</td>
<td>13</td>
<td>Group 4</td>
<td>100</td>
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<tr>
<td>Florida</td>
<td>14</td>
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<td>72</td>
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<td>UC Davis</td>
<td>15</td>
<td>Group 4</td>
<td>48</td>
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<td>Georgia Tech</td>
<td>16</td>
<td>Group 2</td>
<td>102-150</td>
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<tr>
<td>UTX M.D. Anderson Cancer Center</td>
<td>17</td>
<td>Group 3</td>
<td>151-200</td>
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<td>Texas</td>
<td>18</td>
<td>Group 3</td>
<td>35</td>
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<td>Arizona</td>
<td>19</td>
<td>Group 3</td>
<td>80</td>
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<td>Purdue</td>
<td>20</td>
<td>Group 5</td>
<td>61</td>
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## Technology Commercialization

<table>
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<tr>
<td>Disclosures</td>
<td>193</td>
<td>217</td>
<td>244</td>
<td>255</td>
<td>250</td>
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<tr>
<td>New U.S. Patent Filings</td>
<td>51</td>
<td>52</td>
<td>65</td>
<td>66</td>
<td>78</td>
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<td>New Licenses</td>
<td>77</td>
<td>63</td>
<td>44</td>
<td>67</td>
<td>76</td>
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<tr>
<td>Startups</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>8</td>
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<tr>
<td>Current Revenue Generating Agreements</td>
<td>n/a</td>
<td>281</td>
<td>306</td>
<td>399</td>
<td>457</td>
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<tr>
<td>Gross Revenues</td>
<td>$65.2</td>
<td>$86.9</td>
<td>$95.2</td>
<td>$83.8</td>
<td>$10.1</td>
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<tr>
<td>Non-Glaxo Revenues</td>
<td>$8.5</td>
<td>$7.9</td>
<td>$8.7</td>
<td>$8.6</td>
<td>$10.1</td>
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<tr>
<td>Outgoing Material Transfer Agreements</td>
<td>n/a</td>
<td>67</td>
<td>106</td>
<td>171</td>
<td>271</td>
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</table>

**UMN “…has an outstanding track record of accomplishments that put it at the highest ranks of university tech transfer offices.”**

*External Review Committee, 2011*
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)
Funding as Driver

Source: NSF National Patterns of R&D Expenditures Data, Battelle, R&D Magazine Analysis, Estimates, and Forecasts.
# 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>Performer</th>
<th>Federal Gov’t</th>
<th>Industry</th>
<th>Academia</th>
<th>FFRDC</th>
<th>Non-Profit</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal Gov’t</td>
<td>$27,499</td>
<td>-0.71%</td>
<td>$25,983</td>
<td>$36,098</td>
<td>$15,595</td>
<td>$6,245</td>
<td>$111,421</td>
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<tr>
<td>Industry</td>
<td>$260,878</td>
<td>3.33%</td>
<td></td>
<td>$2,765</td>
<td></td>
<td>$1,781</td>
<td>$265,444</td>
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<tr>
<td>Academia</td>
<td></td>
<td></td>
<td></td>
<td>$12,140</td>
<td></td>
<td></td>
<td>$12,140</td>
</tr>
<tr>
<td>Other Gov’t</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$3,413</td>
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<tr>
<td>Non-Profit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$12,865</td>
</tr>
<tr>
<td>Total</td>
<td>$27,499</td>
<td>-0.71%</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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</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 27<sup>th</sup> overall in B+I sponsored total
  - Ranked 21<sup>st</sup> among public universities
  - Ranked 13<sup>th</sup> 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.”

“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

Public Good
Business & Industry
Research Universities

Federal Government

Executive, Congress, Commerce
Federal Agencies, NSF, NIH
State Gov’t

IP
Innovation

Sponsored Research
$
University: Industry Relations 2011
Changing Motivations: Strategic Partnerships

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

Positive “Amplifiers” From Good Relationships

Endowments; Professorships
Gifts
Advocacy for Legislative Agenda
Federal Funding
B&I Sponsored Research
Other Relationship Structures (Consortia)
Fee-for-Service (Contract Research)
Consulting

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 Partnership Program (MN-IP)**
Minnesota Innovation Partnership (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 net 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 worldwide license with these pre-set terms for any IP generated.
MN-IP Comparison

**Current Terms**
Non-Exclusive Royalty Free + Option to Negotiate Exclusive License

- Frustrating and uncertain negotiation only after research is completed
- No incentive to negotiate exclusive license, so no commercialization requirements
- Can result in adversarial relationship with sponsor
- Lack of active “seeking” component in attracting industry sponsors

**MN-IP**
Exclusive Option Fee + Pre-set Terms

- No negotiation needed; all terms and costs known before research starts
- Stronger incentive (pre-paid fees) for company to commercialize technology
- Builds positive relationships with sponsors
- OTC participates in working with faculty to attract sponsors
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