RESEARCH PRIORITIES

Produce **excellence**

Be **transformative**, lead not follow

Advance **transdisciplinary** work

Focus on critical **global challenges**

Present real, **measurable results**
FIVE YEARS FORWARD
THROUGH COLLECTIVE INSPIRATION AND DISCOVERY

Enhance research excellence
Advance transdisciplinary partnerships
Accelerate transfer of knowledge for the public good
Promote culture of serendipity
FIVE YEARS FORWARD
THROUGH COLLECTIVE INSPIRATION AND DISCOVERY

- MnDRIVE
- Research Computing
- Advancing Human Research Protections
- Office of University Economic Development
- Public-private partnerships; nearly doubling business & industry awards

- 100th startup company milestone
- Discovery Capital (7:1 ROI) & Gener8tor partnership
- Convergence Colloquia, Serendipity Grants, Connectors Network, & Serendipity Team
- D2D State Fair Facility
- Hormel Institute expansion
# Maroon and Gold Measures

## Maroon Measures

<table>
<thead>
<tr>
<th></th>
<th>2014-15</th>
<th>2015-16</th>
<th>Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Public Research Ranking</td>
<td>8</td>
<td>8</td>
<td>Maintain Top 10</td>
</tr>
<tr>
<td>MN-IP Agreements</td>
<td>69</td>
<td>81</td>
<td>10% Annual Growth</td>
</tr>
</tbody>
</table>

## Gold Measures

<table>
<thead>
<tr>
<th></th>
<th>2014</th>
<th>2015</th>
<th>Goal/Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>R &amp; D Expenditure (UMTC)</td>
<td>$877M</td>
<td>$881M</td>
<td>$900M/2021</td>
</tr>
</tbody>
</table>
AWARDS BY SOURCE

- **NIH** $257.0 (16.9%)
- **STATE & LOCAL** $90.9 (14.6%)
- **BUSINESS & INDUSTRY** $80.8
- **B&I** $3.6% ($29.4 million)
- **OTHER FEDERAL** $28.7
- **DOE** $16.0
- **DOA** $26.3
- **DOED** $9.0
- **OTHER DHHS** $28.7
- **NSF** $84.2 (8.8%)

$788M

Dollar amounts represented in millions
AWARDS BY COLLEGE & CAMPUS

RESEARCH STATISTICS

CLA 111.9%

$788M

4.5%

Dollar amounts represented in millions
In FY2016, William Iacono and Monica Luciana in the College of Liberal Arts, Department of Psychology, received $7.4 million of a five-year $21.7 million award from the National Institutes of Health (NIH) to support research at the University’s Adolescent Brain Cognitive Development (ABCD) study site. The U of M is one of 19 sites nationwide, where they are collaborating with other universities to research how substance use affects youth brain function, behavior and health.
AWARDS BY MAJOR SOURCE CATEGORY

Dollar amounts represented in millions

RESEARCH STATISTICS

Actual 10 year growth: 27.2%
Inflation adjusted 10 year growth: 9.0%

Dollar amounts represented in millions

ARRA
OTHER PRIVATE
STATE & LOCAL
BUSINESS & INDUSTRY
FEDERAL
# AWARDS BY MAJOR SOURCE CATEGORY

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>ARRA</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>131.4</td>
<td>74.2</td>
<td>2.5</td>
<td>0.8</td>
<td>0.6</td>
<td>0.2</td>
<td>0.1</td>
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<tr>
<td>Other Private</td>
<td>93.6</td>
<td>103.2</td>
<td>104.1</td>
<td>111.3</td>
<td>112.8</td>
<td>123.9</td>
<td>116.8</td>
<td>130.1</td>
<td>133.0</td>
<td>149.9</td>
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<tr>
<td>State &amp; Local</td>
<td>55.0</td>
<td>75.9</td>
<td>46.8</td>
<td>61.8</td>
<td>50.0</td>
<td>59.7</td>
<td>53.1</td>
<td>64.6</td>
<td>79.3</td>
<td>90.9</td>
</tr>
<tr>
<td>Business &amp; Industry</td>
<td>47.8</td>
<td>52.8</td>
<td>41.7</td>
<td>45.5</td>
<td>43.6</td>
<td>55.2</td>
<td>47.6</td>
<td>55.2</td>
<td>78.0</td>
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<td>Federal</td>
<td>422.9</td>
<td>442.9</td>
<td>409.3</td>
<td>472.7</td>
<td>488.5</td>
<td>507.7</td>
<td>475.2</td>
<td>490.0</td>
<td>463.1</td>
<td>465.9</td>
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<tr>
<td><strong>Total</strong></td>
<td>619.2</td>
<td>674.8</td>
<td>601.9</td>
<td>822.7</td>
<td>769.1</td>
<td>749.1</td>
<td>693.4</td>
<td>740.6</td>
<td>753.6</td>
<td>787.7</td>
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</table>

Dollar amounts represented in millions

![10 year trends]

**STATE & LOCAL $35.9M**  
**B&I $33.0M**  
**FEDERAL $43.0M**
The Center for Spintronic Materials, Interfaces and Novel Architectures (C-SPIN) received $5.6 million as part of a five-year, $28 million award from the Semiconductor Research Corporation (a technology research consortium that includes seven industry sponsors) and the U.S. Department of Defense. C-SPIN, led by the College of Science and Engineering’s Jian-Ping Wang, brings together top researchers from across the nation to develop faster, smaller and more energy-efficient computing technologies.
The Accessibility Observatory, a joint project of the Center for Transportation Studies and the Department of Civil, Environmental, and Geo-Engineering, received a five-year, $1.6 million award from Minnesota Department of Transportation and 11 other transportation agencies across the nation to calculate and map data on city residents’ access to jobs by car, public transit, bicycle and walking. The data will help transportation agencies nationwide plan and evaluate more effective transportation systems.
ANNUAL AWARDS BY BIG TEN INSTITUTION

Dollar amounts represented in millions

[Graph showing research awards by Big Ten institutions from 2007 to 2016]
NATIONAL & GLOBAL ANALYSIS
## NATIONAL & GLOBAL ANALYSIS

### TOP 20 INSTITUTIONS

<table>
<thead>
<tr>
<th>Rank</th>
<th>Institution</th>
<th>Public Expenditures (in thousands)</th>
<th>...</th>
<th>...</th>
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<tr>
<td>1</td>
<td>MICHIGAN</td>
<td>1,369,278</td>
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<td>WASHINGTON</td>
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<td>3</td>
<td>UC SAN FRANCISCO</td>
<td>1,126,620</td>
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<td>4</td>
<td>UC SAN DIEGO</td>
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<tr>
<td>5</td>
<td>WISCONSIN</td>
<td>1,069,077</td>
<td>9</td>
<td>28</td>
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<tr>
<td>6</td>
<td>UCLA</td>
<td>1,021,227</td>
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<td>12</td>
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<tr>
<td>7</td>
<td>NORTH CAROLINA</td>
<td>966,781</td>
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<td>35</td>
<td>25</td>
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<tr>
<td>8</td>
<td>MINNESOTA—TWIN CITIES</td>
<td>880,618</td>
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<td>33</td>
<td>24</td>
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<tr>
<td>9</td>
<td>TEXAS A&amp;M</td>
<td>866,678</td>
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<td>101</td>
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<tr>
<td>10</td>
<td>PITTSBURGH</td>
<td>861,205</td>
<td>7</td>
<td>70</td>
<td>37</td>
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<td>11</td>
<td>TEXAS M.D. ANDERSON CANCER</td>
<td>833,406</td>
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<td>68</td>
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<td>12</td>
<td>OHIO STATE</td>
<td>817,881</td>
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<td>13</td>
<td>PENN STATE</td>
<td>791,031</td>
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<td>14</td>
<td>UC BERKELEY</td>
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<td>15</td>
<td>GEORGIA TECH</td>
<td>765,370</td>
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<td>16</td>
<td>FLORIDA</td>
<td>759,522</td>
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<td>90</td>
<td>45</td>
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<tr>
<td>17</td>
<td>UC DAVIS</td>
<td>721,077</td>
<td>5</td>
<td>75</td>
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<td>18</td>
<td>TEXAS (AUSTIN)</td>
<td>650,608</td>
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<tr>
<td>19</td>
<td>ILLINOIS</td>
<td>639,817</td>
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<tr>
<td>20</td>
<td>RUTGERS</td>
<td>628,613</td>
<td>3</td>
<td>96</td>
<td>48</td>
</tr>
</tbody>
</table>

Dollar amounts represented in thousands
*As of 10/13/2015 the 2013 CMUP data is the latest available.
†Total expenditures for all U of M campuses: $901M
TECHNOLOGY COMMERCIALIZATION and ECONOMIC DEVELOPMENT
## TECHNOLOGY COMMERCIALIZATION DATA

<table>
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<tbody>
<tr>
<td><strong>GENERAL</strong></td>
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<tr>
<td>Invention Disclosures</td>
<td>321</td>
<td>331</td>
<td>343</td>
<td>354</td>
<td>402</td>
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<tr>
<td>New Licenses*</td>
<td>71</td>
<td>91</td>
<td>154</td>
<td>268</td>
<td>194</td>
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<tr>
<td>Current Revenue Generating Agreements*</td>
<td>426</td>
<td>331</td>
<td>429</td>
<td>544</td>
<td>528</td>
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<tr>
<td>Gross Revenues</td>
<td>$45.7</td>
<td>$39.5</td>
<td>$27.4</td>
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<td>Outgoing Material Transfer Agreements</td>
<td>313</td>
<td>281</td>
<td>288</td>
<td>297</td>
<td>273</td>
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<tr>
<td><strong>PATENTS</strong></td>
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<tr>
<td>Issued Patents (U.S. and Foreign)</td>
<td>153</td>
<td>129</td>
<td>104</td>
<td>136</td>
<td>168</td>
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<tr>
<td>New Patent Filings*</td>
<td>115</td>
<td>148</td>
<td>138</td>
<td>146</td>
<td>202</td>
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<tr>
<td><strong>MN-IP</strong></td>
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<td></td>
<td></td>
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<tr>
<td>MN-IP Research Agreements</td>
<td>14</td>
<td>41</td>
<td>51</td>
<td>69</td>
<td>81</td>
</tr>
<tr>
<td>Companies w/ MN-IP Research Agreements</td>
<td>15</td>
<td>38</td>
<td>44</td>
<td>54</td>
<td>62</td>
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<tr>
<td>Sponsored Research Commitments</td>
<td>$2.6</td>
<td>$3.8</td>
<td>$4.3</td>
<td>$10.8</td>
<td>$12.2</td>
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<tr>
<td><strong>STARTUPS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Startup Companies</td>
<td>12</td>
<td>14</td>
<td>15</td>
<td>16</td>
<td>17</td>
</tr>
</tbody>
</table>

Dollar amounts represented in millions
Office for Technology Commercialization, InfoEd System, U of M Enterprise Financial System
* New Licenses and Current Revenue Generating Agreements: Updated in FY 2014 to include express licenses with revenue greater than $1,000; FY2015 data includes 94 licenses for the FAST technology, spun out that year as FastBridge Learning.
* New Patent Filings: Updated in FY2015 to include both U.S. and foreign filings. Pre-FY2015 data include only U.S. filings.
ACHIEVED 100TH STARTUP MILESTONE

COMPANIES BY YEAR

$2,191,896,988

AGGREGATE INVESTMENT CAPITAL RAISED
Two University of Minnesota startups, Innotronics and Minnepura Technologies, were named among the “Best University Startups 2016” by the National Council of Entrepreneurial Tech Transfer. Innotronics develops advanced sensors for agriculture and construction vehicles, while Minnepura specializes in biotechnology that naturally breaks down dangerous chemicals in waterways.
EXPEDITE ACCESS

• Fielded 166 online Front Door requests (70% increase)
• 16% from Fortune 500 or FT Global 500 including Boston Scientific, Cargill and Medtronic
• Corporate Engagement Workgroup: 16% of B&I Research Awards
ACT STATEWIDE

- UED hosted 63 campus visits and 70 onsite visits for business/community partners
- Over a quarter of onsite visits were to Greater Minnesota communities
- UED represented the U at 66 conferences/events, and presented, hosted, sponsored, or exhibited at 22 of them
CATALYZE ECONOMIC DEVELOPMENT

- Economic Development Fellows Consulting Program in collaboration with the Graduate School: 9 projects, 64 graduate students
- APLU Award: Most Innovative Public Research University from the Council on Innovation, Competitiveness & Economic Prosperity
CAPACITY BUILDING
$167M external funding ($71M in state funding)

511 people hired
800 researchers
116 departments
29 colleges, 3 campuses
184 invention disclosures, 13 startups
900 events, 77,000 attendees
30 supported students graduated
The Natural Resources Research Institute received $300,000 from the state Iron Range Resources and Rehabilitation Board, matched by additional funds from OVPR and U of M Duluth, to test a new technology for refining high-purity titanium dioxide from mineral deposits in northeastern Minnesota and to evaluate its potential economic impact. Titanium can be alloyed to produce strong lightweight materials for jet engines, mobile phones and more.
RESEARCH ADVANCEMENT

In the past five years, OVPR has invested $36 million in research funding across the U of M campuses

**Minnesota Futures:** $1.98M, 8 awards; ROI $6.79:$1

**Grant-in-Aid:** $14.5M; ROI $4.19:$1

**Research Infrastructure:** $36.8M, 59 projects, 2,000+ users
ADVANCING HUMAN RESEARCH PROTECTIONS

Support an ethical culture

Provide more education and training for investigators and staff

Improve IRB processes and policies

Develop new approaches to managing conflicts of interest

Increase community participation and oversight
UNIVERSITY REPUTATIONS: THE TRUTHS ARE NOT SELF EVIDENT

There is a fraying belief in the state of higher education in the U.S.

There is a disconnect between academics and the public in the role of universities.

Public expects universities to use excellence to provide opportunity beyond the academic walls.

Overlooking the public’s point of view can put your institution at risk.

It is critical to connect academic excellence to real-world impact—both personal and societal.

CONCLUSIONS
DATA SOURCES

AWARDS BY SOURCE
AWARDS BY COLLEGE & CAMPUS
AWARDS BY MAJOR SOURCE CATEGORY
OVPR Data Services

TECHNOLOGY COMMERCIALIZATION
OTC InfoEd System; UMN Enterprise Financial System

AWARDS BY CIC INSTITUTION
Committee on Institutional Cooperation (researchadmin.iu.edu/cic.html)

TOP 20 INSTITUTIONS
UMN R&D EXPENDITURES
Association of American Universities Data Exchange (aaude.org)
University of California, San Francisco
University of Texas M.D. Anderson Cancer Center
National Science Foundation (nsf.gov/statistics/srvyherd/)
Center for Measuring University Performance (mup.asu.edu)

Note: Rankings are based on nine measures: Total Research, Federal Research, Endowment Assets, Annual Giving, National Academy Members, Faculty Awards, Doctorates Granted, Postdoctoral Appointees and SAT/ACT range.

Academic Ranking of World Universities (shanghairanking.com)

Note: Rankings are determined by several indicators, including alumni and staff winning Nobel Prizes and Fields Medals, highly cited researchers, papers published in Nature and Science, papers indexed in major citation indices, and the per capita academic performance of an institution.