RESEARCH STATISTICS

AWARDS BY SOURCE FY2018

Federal agencies: DHHS: Dept. of Health and Human Services • DOEd: Department of Education • DOE: Dept. of Energy
NIH: National Institutes of Health • NSF: National Science Foundation • USDA: US Department of Agriculture

Dollar amounts shown in millions

$793M

NIH $265.5
DOE $21.9
DOEd $14.5
DOD $26.2
Foundations $27.6
Other DHHS $28.8
USDA $32.1
Other Private $44.1
Business & Industry $64.1
Universities & Colleges $72.5
NSF $80.6
State & Local $90.3

6.5% over previous year
AWARDS BY SOURCE FY2018: FEDERAL

$793M

Federal $494.5M

38%

62%

All other sources $298.5M
IMPACT OF FEDERAL SHUTDOWN

$793M

Shutdown federal sources in red
Sources in orange partially shutdown

Dollar amounts shown in millions
RESEARCH STATISTICS

AWARDS BY SOURCE FY2018

$793M

DOE: Department of Energy
Dollar amounts shown in millions
With a $2.6 million grant from the US Department of Energy's (DOE) ARPA-E agency, the U of M is leading a project to develop a small-scale ammonia synthesis system using water and air, powered by wind energy. Stored ammonia can be used for fertilizer, fuel, and as energy for an electrical grid, creating a renewable and local source of energy for farms and other businesses. The U of M's West Central Research and Outreach Center (WCROC) in Morris, MN serves as a demonstration site, and the research builds on earlier work funded by the University and by the state's Environment and Natural Resources Trust Fund, administered through the Legislative-Citizen Commission on Minnesota Resources (LCCMR).

Lead researchers: Alon McCormick and Ed Cussler Jr., Chemical Engineering and Materials Science (CEMS), College of Science and Engineering, with Paul Dauenhauer and Prodromos Daoutidis (also CEMS), Mike Reese (WCROC, College of Food, Agricultural, and Natural Resource Sciences), and collaborators at Proton OnSite (Connecticut) and the National Renewable Energy Laboratory (NREL).
AWARDS BY MAJOR SOURCE FY2009-FY2018

Dollar amounts shown in millions
Chart excludes funds from ARRA, the 2009 federal fiscal stimulus bill
NATIONAL & GLOBAL ANALYSIS
## NATIONAL RANKINGS

<table>
<thead>
<tr>
<th>Campus</th>
<th>CMUP 2017 Expenditures</th>
<th>CMUP 2017 Rank</th>
<th>ARWU (Shanghai) 2018 Rank</th>
<th>ARWU (Shanghai) World Rank</th>
<th>ARWU (Shanghai) US Rank</th>
<th>ARWU (Shanghai) US Public Rank</th>
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</thead>
<tbody>
<tr>
<td>Michigan</td>
<td>$1,530,139</td>
<td>1</td>
<td>9 of 9</td>
<td>27</td>
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<td>Wisconsin</td>
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<td>9 of 9</td>
<td>28</td>
<td>21</td>
<td>7</td>
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<td>MINNESOTA - TWIN CITIES</td>
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<td>Ohio State</td>
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<td>Penn State</td>
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<td>74</td>
<td>37</td>
<td>18</td>
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<td>Michigan State</td>
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<td>101-150</td>
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<td>Illinois</td>
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<td>8 of 9</td>
<td>41</td>
<td>28</td>
<td>12</td>
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</tbody>
</table>

All UMN campuses: $948M

CMUP: Center for Measuring University Performance • ARWU: Academic Ranking of World Universities

Dollar amounts shown in thousands
AWARDS BY SOURCE FY2018

$793M

DOEd $14.5

DOE $21.9

DOD $26.2

Other Federal $24.9

Foundations $27.6

Other DHHS $28.8

USDA $32.1

Other Private $44.1

Business & Industry $64.1

Universities & Colleges $72.5

State & Local $90.3

NSF $80.6

NIH $265.5

DOEd: Department of Education
Dollar amounts shown in millions
U of M researchers, along with colleagues from the University of Washington, received two grants from the federal Institute of Education Sciences (IES) to develop and evaluate teacher intervention methods: a $1.4 million three-year project to help elementary educators to adopt and deliver evidence-based classroom practices (EBPs) to better meet the social, emotional, and behavioral needs of students; and a four-year, $1.4 million project to pilot test a dropout prevention strategy for 9th grade students as they transition into high school.

Lead researcher: Clayton Cook, Educational Psychology, College of Education and Human Development
TECHNOLOGY COMMERCIALIZATION & BUSINESS PARTNERSHIPS
# UNIVERSITY OF MINNESOTA STARTUP ACTIVITY

## Startups by Sector

<table>
<thead>
<tr>
<th>Sector</th>
<th>FY18</th>
<th>FY06-FY18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bio/Pharma</td>
<td>2</td>
<td>32</td>
</tr>
<tr>
<td>Engineering &amp; PhySci</td>
<td>0</td>
<td>16</td>
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<tr>
<td>Software/IT</td>
<td>4</td>
<td>36</td>
</tr>
<tr>
<td>Med Device</td>
<td>4</td>
<td>26</td>
</tr>
<tr>
<td>Energy &amp; Env</td>
<td>2</td>
<td>16</td>
</tr>
<tr>
<td>Food/Agriculture</td>
<td>1</td>
<td>6</td>
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<tr>
<td><strong>Minnesota</strong></td>
<td>8</td>
<td>102</td>
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<tr>
<td><strong>Outside Minnesota</strong></td>
<td>5</td>
<td>30</td>
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<tr>
<td><strong>Total</strong></td>
<td>13</td>
<td>132</td>
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</table>

### Pie Chart
- Bio/Pharma: 26%
- Software/IT: 27%
- Engineering: 13%
- Energy: 11%
- Med Device: 19%
- Food/Ag: 4%
- **Total**: 100%
AWARDS BY SOURCE FY2018

DOE $21.9
DOEd $14.5
NIH $265.5
State & Local $90.3
NSF $80.6
Business & Industry $64.1
Universities & Colleges $72.5
Other Private $44.1
USDA $32.1
Other DHHS $28.8
Foundations $27.6
Other Federal $24.9
DOD $26.2

NIH: National Institutes of Health
Dollar amounts shown in millions
U STARTUP COREBIOME ACQUIRED BY ORASURE

CoreBiome Inc., which uses University-developed technology to analyze communities of microbes for human health, agricultural, and environmental applications, was purchased in January 2019 by Pennsylvania-based OraSure Technologies Inc., a developer, manufacturer, and distributor of devices that detect or diagnose critical medical conditions. Launched in May 2017 with support from the Discovery Capital Investment Program, CoreBiome is the fourth University startup to be acquired or go public in the last 18 months.

Lead researchers: Dan Knights, Computer Science and Engineering, College of Science and Engineering and BioTechnology Institute, and Kenneth Beckman and Daryl Gohl, University of Minnesota Genomics Center
TECHNOLOGY COMMERCIALIZATION

<table>
<thead>
<tr>
<th></th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
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<tr>
<td>New Licenses*</td>
<td>154</td>
<td>268</td>
<td>194</td>
<td>213</td>
<td>230</td>
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<tr>
<td>Current Revenue Generating Agreements*</td>
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<td>544</td>
<td>528</td>
<td>545</td>
<td>575</td>
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<tr>
<td>Gross Revenues</td>
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<td>$20.2</td>
<td>$46.9</td>
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<tr>
<td>Issued Patents (US and Foreign)</td>
<td>104</td>
<td>136</td>
<td>168</td>
<td>147</td>
<td>186</td>
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<tr>
<td>MN-IP Research Agreements</td>
<td>51</td>
<td>69</td>
<td>81</td>
<td>72</td>
<td>86</td>
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<tr>
<td>Companies W/ MN-IP Research Agreements</td>
<td>44</td>
<td>54</td>
<td>62</td>
<td>51</td>
<td>58</td>
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<tr>
<td>Sponsored Research Commitments</td>
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<td>$10.8</td>
<td>$12.2</td>
<td>$20.9</td>
<td>$21.3</td>
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<tr>
<td>Startup Companies</td>
<td>15</td>
<td>16</td>
<td>17</td>
<td>18</td>
<td>13</td>
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</tbody>
</table>

*Dollar amounts shown in millions
* Updated in FY2014 to include express licenses with revenue greater than $1,000; FY2015 includes 94 licenses for FAST technology, spun out that year as FastBridge Learning.
AWARDS BY SOURCE FY2018

Dollar amounts shown in millions

$793M

DOE $21.9
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State & Local $90.3
NIH $265.5
U of M researchers are working with Mitsubishi Tanabe Pharma to better understand the changes in neural circuits that underlie persistent alcohol-induced changes in behavior. The project combines an animal model with sophisticated whole-brain fMRI to create a baseline of knowledge of how brain cell dynamics change during specific phases of addiction. Understanding these changes will provide new targets for therapeutic intervention and a means to evaluate whether these targets are engaged by new pharmacotherapies.

Lead researcher: Mark Thomas, Neuroscience, Medical School
CAPACITY BUILDING
A universitywide team of data experts are tackling the challenges of mounting data storage needs across the U. Data-intensive research practices, such as DNA sequencing, high-resolution imaging, and supercomputing, while critical for advancing cutting-edge research, will likely more than double the U's data storage needs from 2016 to 2019. The University Storage Council, including experts across the system campuses, the Office of Information Technology, OVPR, and the University Libraries, aims to better coordinate and allocate data to improve the experience for researchers seeking reliable storage and make data storage more efficient and cost effective.

Leadership: University Storage Council
RESEARCH IS TEACHING
RESEARCH STRATEGIC PRIORITIES
RESEARCH STRATEGIC PRIORITIES

Enhance Research Excellence

Promote and Sustain Research Integrity

Accelerate the Transfer of Knowledge for the Public Good
DATA SOURCES

AWARDS BY SOURCE

OVPR Research Data Services

TECHNOLOGY COMMERCIALIZATION

Technology Commercialization InfoEd System
U of M Enterprise Financial System

NATIONAL RANKINGS

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.

PHOTOS

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