

# MICHIGAN RESEARCH

FY 2018 Annual Report



RESEARCH  
UNIVERSITY OF MICHIGAN





## RESEARCH TO SERVE THE WORLD.

The University of Michigan embraces the vision above as researchers across campus work together to advance knowledge, solve challenging societal problems, create new products and services that enhance quality of life, and support students and postdoctoral fellows in research and training.

Academic research requires the support of many, including the federal government and industry partners. As credit to our altruistic staff, innovative faculty and strong external collaboration, U-M has conducted the largest volume of research of any public university in the United States for eight consecutive years.

Research expenditures totaled \$1.55 billion in Fiscal Year 2018, a record high and the ninth year in a row that U-M research expenditures have exceeded \$1 billion.

The federal government remains an essential partner in our research endeavors, investing \$852 million in FY 2018 to support U-M research that strengthens national security, improves public health and bolsters economic competitiveness. To put that into perspective, federal support equated to 55 percent of our total research volume last year.

As vice president for research, I am grateful for the opportunity to work with faculty, staff and students across campus who are driven to impact society for the greater good. Moving forward, the U-M Office of Research will continue to collaborate with our partners on campus and beyond to catalyze, support and safeguard university research, with the ultimate goal of serving the world.

S. Jack Hu  
Vice President for Research

## RESEARCH IN ACTION

U-M received several large awards during FY 2018, which funded research ranging from computing to cavities.

### Innovative Computing

The computing industry is working to maintain its historically rapid pace of innovation. With \$27.5 million in support, led by the Semiconductor Research Corporation, U-M established a new center to streamline and democratize the design and manufacturing of next-generation computing systems.

### Income Dynamics

The Panel Study of Income Dynamics, directed by faculty in the Institute for Social Research, is the world's longest running longitudinal household survey. In support of the survey, the National Science Foundation awarded U-M \$15.8 million so that researchers could explore continuity and change in American economic and social life.

### Cavities in Kids

Though largely preventable, about 23 percent of U.S. children aged 2-5 have cavities. The National Institutes of Health awarded two grants totaling \$18.3 million to U-M so that researchers could better predict cavity risk in young children and assess the efficacy of new treatments.

### On the Cover

At Mcity, U-M brings together partners from industry, government and academia to develop the foundation for an ecosystem of connected and automated vehicles for moving people and goods. Photo: Levi Hutmacher/Michigan Engineering



# FOSTERING COLLABORATION

The hallmark of the University of Michigan's research enterprise is excellence across all disciplines, coupled with a strong culture of collaboration. The university has invested in several major research initiatives, including those featured below, which bring together the perspectives of diverse disciplines, as well as of industry and other partners, to address emerging challenges and opportunities in areas of broad potential impact.

## Data Science

Progress in a wide spectrum of fields, ranging from medicine to transportation, relies on the ability to gather, store, search and analyze big data. U-M created its Data Science Initiative to spur advances in the techniques of data science and encourage its creative use in research. The initiative supports interdisciplinary research in areas such as data science methodologies, applications in connected and automated vehicles, personalized healthcare, online survey research and learning analytics.

## Poverty Solutions

Poverty remains one of humanity's most critical and seemingly intractable problems. The university developed its Poverty Solutions initiative to explore and test models to ease the effects of poverty, and broadly share that knowledge with the public. As part of the initiative, researchers partner with community groups and support active-learning opportunities for students to engage in issues related to poverty.

## Humanities Collaboratory

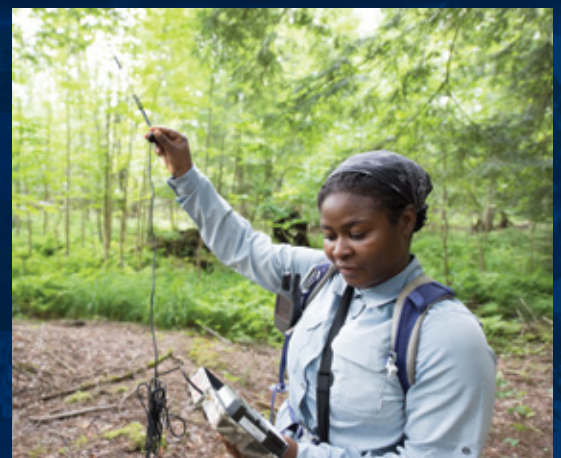
Academic disciplines that study human culture and thought, including language, literature, philosophy, history and the arts, are critical to understanding our complex, challenging world. U-M launched its Humanities Collaboratory to encourage teams across campus to work on large-scale projects that create new models for humanities research, communication of that research to the broader public and training of the next generation of scholars.

## Precision Health

Precision health involves taking millions of data points to understand what factors influence an individual's health and wellness, and then applying that knowledge to make specific, personalized recommendations for prevention, diagnosis and treatment. With a vast breadth of research strengths and collaboration, U-M launched its Precision Health initiative to harness campus-wide research aimed at finding personalized solutions to improve the health and wellness of individuals and communities.

## Biosciences

The study of life, from molecules to populations, involves a broad range of academic disciplines. The university developed its Biosciences Initiative to advance our understanding of human health and disease. The initiative supports U-M faculty in the life sciences and convergent disciplines by catalyzing research in emerging areas of strength, investing in core facilities across campus and creating greater opportunities for community, collaboration and coordination.





# MICHIGAN RESEARCH AT A GLANCE

FY 2018



**\$1.55B** **484**

IN ANNUAL RESEARCH EXPENDITURES

NEW INVENTIONS REPORTED  
IN FY 18



**#1**

IN RESEARCH VOLUME AMONG ALL  
U.S. PUBLIC UNIVERSITIES  
NATIONAL SCIENCE FOUNDATION



**21**

NEW STARTUPS LAUNCHED  
AT U-M IN FY 18



**\$109M**

IN ANNUAL INDUSTRY-SPONSORED RESEARCH

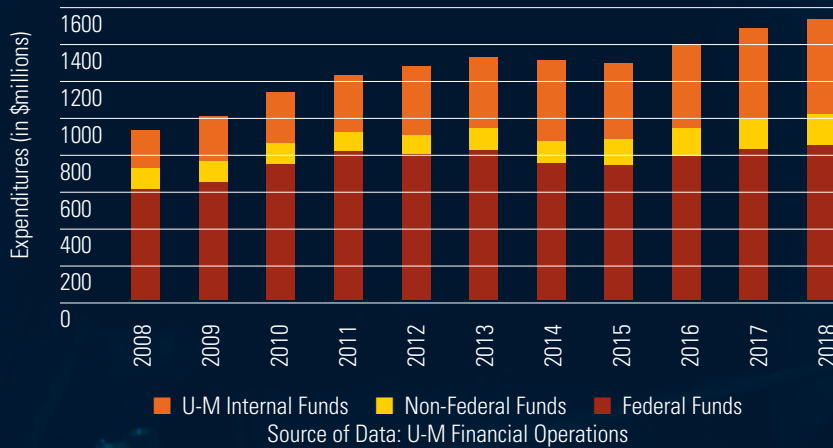


**102**

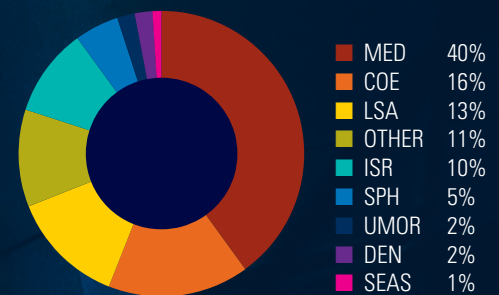
GRADUATE PROGRAMS RANKED  
IN THE TOP 10  
U.S. NEWS & WORLD REPORT

# BY THE NUMBERS

**Figure 1. U-M Research Expenditures**

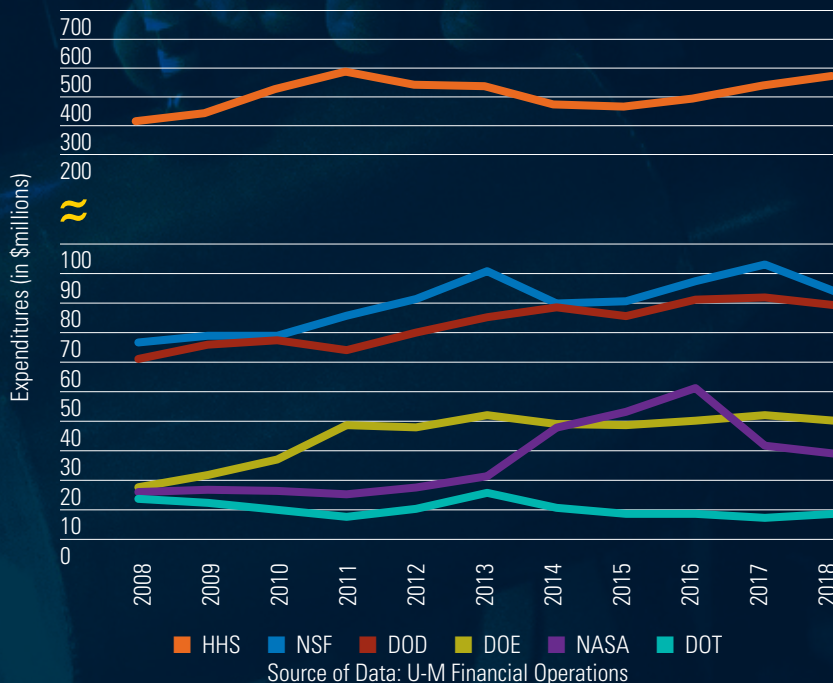


**Figure 3. Research Expenditures by Unit**



Source of Data: U-M Financial Operations

**Figure 2. U-M Federal Funding by Agency**



**Table 1. Technology Transfer Results**

	FY18	FY17
New Startups*	21	12
New Inventions*	484	444
U.S. Patents Issued	169	172
License & Option Agreements*	218	173

\*Denotes U-M Record

Source of Data: U-M Office of Technology Transfer





The University of Michigan Office  
of Research catalyzes, supports  
and safeguards U-M research.



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A Non-discriminatory, Affirmative Action Employer