



NATIONAL INSTITUTES OF HEALTH  
SUPPORTED RESEARCH AT THE  
UNIVERSITY OF MICHIGAN

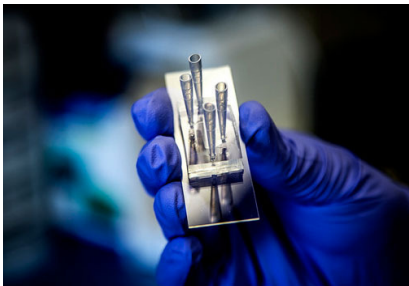


FY 2017 Research Expenditures: \$502,471,194

Year-to-year, NIH-supported projects involve about:

Faculty Researchers.....	2,100
Postdoctoral Fellows.....	445
Graduate Student Researchers.....	292

Examples of U-M projects supported by the National Institutes of Health (NIH):

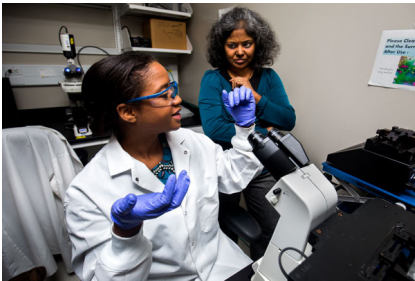


KIDNEY ON A CHIP

U-M researchers used a "kidney on a chip" device to mimic the flow of medication through human kidneys and measure its effect on kidney cells.

The technique, supported through funding from NIH, could lead to more precise dosing of drugs, including some potentially toxic medicines often delivered in intensive care units.

Precise dosing in intensive care units is critical, as up to two-thirds of patients in the ICU experience serious kidney injury.



PREDICTING CANCER

Cancer cells obtained from a blood test may be able to predict how early-stage lung cancer patients will fare.

This information, revealed through research funded by NIH, could be used to determine which patients are most likely to benefit from additional therapies to head off the spread of cancer to other areas of the body.

With a new single cell analysis service in U-M's Comprehensive Cancer Center, researchers are making the necessary technology more widely available across the university system.



TRANSLATIONAL RESEARCH

The next big idea to help people with cancer, heart disease, diabetes, Alzheimer's disease, depression or many other conditions could be bubbling up right now in a U-M research lab.

Or it might be a new idea in the mind of a U-M doctor, scientist, health care professional, graduate student or patient.

A \$58 million grant from NIH will help U-M move those ideas forward, with Michigan residents of all ages and backgrounds as partners.



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### NICOTINE DEPENDENCE

U-M researchers found that a previously dismissed genetic mechanism may contribute to nicotine dependence, and to the withdrawal effects that can make quitting smoking so difficult.

Scientists in the lab of Professor Shawn Xu examined withdrawal responses in millimeter-long roundworms, which get hooked on nicotine just like humans.

In the findings, supported by NIH and the Marie Skłodowska-Curie Actions Research Fellowship Programme, researchers identified specific genes and microRNA that play an essential role in how the roundworms develop nicotine dependence and withdrawal responses—clues that may carry over to the mammalian realm.



### UNDERSTANDING ALZHEIMER'S

Thin parts of the cell membranes of neurons turn out to be particularly vulnerable to a protein that collects in the brain of people with Alzheimer's disease.

The protein amyloid-beta builds up in the brains of people with Alzheimer's disease, ultimately aggregating into sticky clumps called plaque on the surface of neurons.

The discovery, led by U-M Professor Ayyalusamy Ramamoorthy and supported by NIH, could open an avenue for developing treatments for Alzheimer's disease that work within the cell's membrane.



### ENVIRONMENTAL INFLUENCES ON HEALTH

U-M is partnering on a research initiative that explores how exposure to a range of environmental factors in early development—from conception through early childhood—influences the health of children and adolescents.

A \$4.8 million NIH grant covers part of the seven-year project called the Environmental Influences on Child Health Outcomes (ECHO).

The project explores factors that may influence health outcomes around the time of birth, as well as into later childhood and adolescence. Some of the health issues studied will include upper and lower airway health and development, obesity, and brain and nervous system development.