Top Research Awards of 2023

Wayne State University's research portfolio has grown markedly over the years, further establishing the university as one of the nation's preeminent research institutions. In 2023, Wayne State received more than $352.6 million in research awards – a 22% increase from fiscal year 2022. The work done by our researchers will go on to impact lives, further knowledge and change the world.

Here are six of the top funded research awards received by Wayne State researchers in 2023.

Bruce Berkowitz, Ph.D., Ophthalmology, Visual and Anatomical Sciences, School of Medicine

Funder: National Institute on Aging of the National Institutes of Health

Amount: $5.5 million; 9/15/2023 – 5/31/2028

Title: Novel Early Retinal Imaging Biomarkers for Treating Later Spatial Memory Loss in Experimental Alzheimer's Disease

Description: Aging patients remain vulnerable to the devastating dementia associated with Alzheimer's, a disease with few treatment options to prevent or delay its trajectory. Accumulating evidence highlights hyperactive neurons in its very beginning stages as an important driver of Alzheimer's disease. The prediction that cognitive dysfunction can be restored by treating this early hyperactivity without altering plaque deposition has been confirmed in several AD models and Berkowitz proposes novel imaging biomarkers of hyperactive neurons in the retina, the most accessible part of the nervous system, to enable very early evaluation of treatment efficacy in patients at risk for Alzheimer's disease. His biomarkers are measured from common imaging method used in patients every day: optical coherence tomography.

Read more: https://research.wayne.edu/news/nih-renews-berkowitz-lab-grants-worth-75-million-to-continue-research-on-two-devastating-diseases-including-alzheimers-60507

Hilary Marusak, Ph.D., Psychiatry, School of Medicine

Funder: National Institute of Mental Health of the National Institutes of Health

Amount: $3.6 million; 7/15/2023 – 3/31/2028

Title: Exercise Facilitation of Adolescent Fear Extinction, Frontolimbic Circuitry and Endocannabinoids

Description: Anxiety disorders commonly begin during adolescence and are characterized by deficits in the ability to inhibit or extinguish pathological fear. Recent research has provided new understanding of how fear is learned and can be regulated in the adolescent brain, and how the endocannabinoid system shapes these processes; however, these advances have not yet translated into improved therapeutic outcomes for adolescents with anxiety. This project will leverage a multi-modal experimental therapeutics approach to test whether a behavioral intervention (i.e., acute exercise) modifies hypothesized targets that are relevant for the pathophysiology and treatment of anxiety in youth.

Sidhartha Tan, Ph.D., Pediatrics, School of Medicine

Funder: National Institute of Neurological Disorders and Stroke of the National Institutes of Health

Amount: $3 million; 9/21/2023 – 6/30/2028

Title: Ferroptosis in Knock-in Sepiapterin Reductase Mutation Rabbits

Description: This research will study changes in pathways of ferroptosis, a form of cell death, and its involvement in deficiency of tetrahydrobiopterin (BH4) caused by a mutation in the SPR gene. BH4 is a naturally occurring chemical substance that helps to enhance the functions of certain enzymes. This study will aim to understand the early events around critical cell death that cause motor deficits, and ultimately, provide understanding for the development of much-needed therapies for prevention of motor deficits from congenital BH4 deficiency and cerebral palsy.

Read more: https://research.wayne.edu/news/nih-awards-29m-to-wayne-state-to-understand-and-find-new-therapies-for-two-disorders-sepiapterin-reductase-and-cerebral-palsy-60466

Hyeong-Re Kim, Ph.D., Pathology, School of Medicine

Funder: National Cancer Institute of the National Institutes of Health

Amount: $3 million; 8/15/2023 – 6/30/2028

Title: A Novel AR Degrader in Castrate-resistant Prostate Cancer

Description: While most patients with prostate cancer initially respond to androgen deprivation and/or androgen therapies, a significant portion of patients develop castrate-resistant prostate cancer. The goal of this project is to test the therapeutic efficacy of novel therapeutic agents for androgen receptor protein degradation using autophagy-targeting chimera in castrate-resistant prostate cancer.

Wanqing Liu, Pharmaceutical Science, Eugene Applebaum College of Pharmacy and Health Sciences

Funder: National Institute of Environmental Health Sciences of the National Institutes of Health

Amount: $3 million; 6/15/2023 – 3/31/2028

Title: Interaction between Genome and Heavy Metals in Nonalcoholic Fatty Liver Disease

Description: The study aims to discover and validate the gene X heavy metal (GXM) interactions in human livers and to understand their role in nonalcoholic fatty liver disease (NAFLD). NAFLD is the most common chronic liver disease, affecting more than 30% of the U.S. population. NAFLD is characterized by a spectrum of histological changes with multiple cells involved. There are no approved drug treatments available currently for the disease. The collaborative study will generate important data that has the potential to identify high-risk metals and their essential response genes, ultimately promoting the

development of new strategies for NAFLD diagnosis, prevention and treatment, as well as advance research for other related diseases.

Read more: https://research.wayne.edu/news/nih-awards-3m-to-wayne-state-and-henry-ford-health-to-impact-research-on-liver-disease-53972

Yulya Truskinovsky, Ph.D., Economics, College of Liberal Arts and Sciences

Funder: National Institute on Aging of the National Institutes of Health

Amount: $2.9 million; 2/1/2023 – 1/31/2028

Title: Effects of the COVID-19 Pandemic on Long-Term Care for High-Need Older Adults With and Without Alzheimer's Disease and Related Dementias

Description: This project will study the short- and long-term impacts of the COVID-19 pandemic on the use of long-term care among high-need older adults who have difficulty with one or more self-care activities. It aims to compare the impact of COVID-19 on long-term care and health outcomes of high-need older adults with and without Alzheimer's Disease and Related Dementias (ADRD).

Read more: https://research.wayne.edu/news/wayne-state-economics-professor-receives-29-million-nih-grant-to-study-effects-of-covid-19-on-long-term-care-for-high-need-older-adults-53747

Ulrike Klueh, Ph.D., Biomedical Engineering, College of Engineering

Funder: National Institutes of Health

Amount: $2.6 million; 9/15/2023 – 6/30/2027

Title: A novel inline platform provides an advanced drug delivery device for optimized diabetes therapy

Description: This project aims to develop a novel filtration platform to improve an advanced drug delivery device to optimize diabetes insulin treatments. Subcutaneous insulin administration (SIA) technology has improved significantly over the past two decades, but SIA technology failure and underlying tissue damage caused by insulin phenolic preservatives (IPP) have impeded its progress. To minimize tissue damage and maintain infusion or injection site integrity over time, experts advise on limiting the wear time to three days and rotating the site of the SIA device. Dr. Klueh and her team will use the funding from NIH to determine a way to extend the lifespan of these infusion pumps or injection ports.

Read more: https://research.wayne.edu/news/nih-awards-26m-to-wayne-state-to-develop-new-filtration-platform-for-insulin-administration-61143