

**SUBMITTED BY: STEPHEN M. LANIER, VICE PRESIDENT FOR RESEARCH
 DIVISION OF RESEARCH 2021 HIGHLIGHTS**

RESEARCH DEVELOPMENT

DENISE FIGLEWICZ, PH.D., ASSISTANT VICE PRESIDENT FOR RESEARCH ENHANCEMENT AND DEVELOPMENT

The Research Development office at Wayne State University offers the research community a variety of professional development workshops and seminars, assistance with research proposal development on larger grants, manages a variety of internal funding opportunities aimed at maximizing faculty funding success, and coordinates limited grant submission opportunities for external funding. The following are some highlights of projects the Research Development office worked on in 2021.

TRAINING GRANT FUNDING HIGHLIGHTS

The Research Development office worked with various faculty groups to prepare training grant proposals in 2021. These grants aim to support undergraduate, graduate and postdoctoral researchers to pursue their research and training goals. The following are highlights of three major programs Wayne State University received training grant support in 2021.

Initiative for Maximizing Student Development (IMSD) – T32 Training Program Christine Chow, Ph.D., Michele Cote, Ph.D, and Stephen Lanier, Ph.D.

Wayne State University received an Initiative for Maximizing Student Development (IMSD) T32 training program grant from the National Institute of General Medical Sciences of the National Institutes of Health in 2021. This \$2.5 million grant will aid in growing Wayne State’s successful IMSD R25 graduate training program in biomedical sciences and behavioral research, which existed for many years and was led by Joseph C. Dunbar, Ph.D., professor of physiology and director of medical student research and innovation in Wayne State’s School of Medicine, along with Rasheeda Zafar, Ph.D., IMSD program administrator.

The IMSD T32 program will provide 10 graduate students a year with a structured academic community, additional career-development activities and individualized mentoring, allowing the diverse trainees to cultivate highly sought-after skills that will lead to successful careers in the biomedical sciences.

Maximizing Access to Research Careers (MARC) – T34 Training Program Matt Allen, Ph.D. and Lori Pile, Ph.D.

The university received a \$1.97 NIH grant from the National Institute of General Medical Sciences for a T34 program, Maximizing Access to Research Careers. The program will support

approximately 20 undergraduate students each year in a structured academic community that will provide additional career development activities and individualized mentoring to cultivate highly sought-after skills and prepare students to enter into Ph.D. and M.D./Ph.D. programs and careers in the biomedical sciences.

Chemistry Biology Interface – T32 Training Program
Christine Chow, Ph.D. and Mary Kay Pflum, Ph.D.

The university received a \$1.2 million NIH grant from the National Institute of General Medical Sciences for a T32 program, Chemistry Biology Interface Training Program. The biomedical culture has placed greater emphasis on quantitative data analysis, rigor and reproducibility, and transparency to ensure quality and accuracy of research findings and safety to minimize risk to scientists and the environment. To take advantage of this unprecedented opportunity to thoroughly dissect biological systems with high standards of rigor and many career perspectives, a biomedical work force capable of multi-disciplinary, team-driven, and problem-focused thinking is needed. In total, this modern world of biomedical research requires a rethinking of the Ph.D. training experience. To address the changing needs in biomedical work force training, Wayne State is utilizing this T32 training program for a Chemistry Biology Interface (CBI) training program to train the next generation of Ph.D. graduates that will form a strong scientific identity with discipline-specific skills and informed multi-disciplinary perspectives.

MAJOR EQUIPMENT GRANTS FUNDING HIGHLIGHTS

The Research Development office worked with various faculty to prepare and submit federal grant proposals for major research equipment that is designed to improve the capabilities of U.S. institutions of higher education to conduct research. This equipment is often specialized, state-of-the-art instrumentation aimed at enhancing and modernizing research operations. The following are examples of major equipment grants that the Research Development office helped prepare in 2021 that were funded.

500 MHz NMR Spectrometer; NIH Shared Instrumentation Grant [S10]; \$600,000 total project NIH budget. Principal Investigator: Matthew J. Allen, Ph.D., Chair, Department of Chemistry

Orbitrap Tribrid Mass Spectrometer for Wayne State Proteomics – NIH Shared Instrumentation Grant [S10]; \$1,289,466 total project NIH budget. Principal Investigator: Paul M. Stemmer, Ph.D., Director, Proteomics Core

Acquisition of a Nanoscale 3D Printer for Fundamental and Applied Research at Wayne State University and Southeast Michigan – NSF Major Research Instrumentation program grant [MRI]; \$623,250 total project NSF budget. Principal Investigator: Amar S. Basu, Ph.D., Professor, Department of Electrical and Computer Engineering

Acquisition of a Magnetic Property Measurements System for Multidisciplinary Research and Training in Detroit – NSF Major Research Instrumentation program grant [MRI]; \$364,080 total project NSF budget. Principal Investigator: Peter M. Hoffmann, Ph.D., Chair, Department of Physics

INTERNAL FUNDING OPPORTUNITIES

To support and encourage research endeavors at the university, the Office of the Vice President for Research offers a variety of internal research funding opportunities for which faculty are eligible to compete. The following are some of the awards made through the OVPR in 2021.

Arts and Humanities Research Support

The Arts and Humanities Research Support program for research, creative, and scholarly projects is aimed at funding projects that engage the arts, design, and/or humanities in carrying out the university's research mission. Some of the goals of the projects include extending the reach of creative projects to underserved populations, investigate cultural expression through the humanities and/or the arts and design, transform cultural, economic or social attitudes and expectations, explore components of artistic and cultural literacy, and more. The following are awards made for the 2021 Arts and Humanities Research Support program.

Principal Investigator: Adrienne Jankens, English Department

Project: Gatekeeping or Linguistic Justice? Investigating How an Urban Research University Views and Works with Students' Diverse Language and Literacy Practices

Amount Awarded: \$40,460

Principal Investigator: Rahul Mitra, Communication Department

Project: Trans-Media Oral Histories of BIPOC Creative Entrepreneurs' Resilience during COVID-19

Amount Awarded: \$37,705

Principal Investigator: Elena Past, Classical and Modern Languages, Literatures and Cultures

Project: Ferrania and the Lives of Analog Film in the Digital Age

Amount Awarded: \$31,030

SPECIAL RESEARCH SEMINARS AND WORKSHOPS

The following are a sampling of special research seminars and workshops hosted by the Research Development office in 2021.

- National Endowment for the Humanities – Research Division – presented October 14, 2021 - Geoff Burrows, PhD, Senior Program Officer, NEH Research Division
- National Endowment for the Humanities – Education Programs Division – presented October 26, 2021 - Julia Huston Nguyen, PhD, Senior Program Officer, NEH Division of Education Programs
- NIH K Award proposal writing – February 2021 half-day webinar; Atkisson Training Group Inc.
- NSF Career proposal writing – February 2021 half-day webinar; Atkisson Training Group Inc.
- Arts & Humanities proposal writing – March 2021 half-day webinar; Presented by WSU faculty
- NIH General grant writing – November 2021 full-day seminar; Atkisson Training Group Inc.
- NIH K Award proposal writing – November 2021 half-day webinar; Atkisson Training Group Inc.

HUMAN PARTICIPANT RESEARCH/INSTITUTIONAL REVIEW BOARD (IRB) HIGHLIGHTS MONICA MALIAN, DIRECTOR, HUMAN RESEARCH PROTECTION PROGRAM

The Institutional Review Board oversees all human participant research at Wayne State University and its affiliates registered under the Wayne State University Federal Wide Assurance. There are two IRBs that review medical protocols involving adult and pediatric participants, and a behavioral IRB that is responsible for reviewing all behavioral, education and social science research with adults and minors. The following are important IRB highlights from 2021.

- Wayne State received a five-year re-accreditation in FY 2021 from the Association for the Accreditation of Human Research Protection Programs – AAHRPP.
- The IRB continues to improve efficiencies including:
 - In March 2021, the number of Medical IRB Boards was reduced from 3 to 2 to better reflect the current IRB submission portfolio and to improve efficiency.
 - The B3 IRB convened meeting schedule was revised to better reflect the current B3 IRB submission portfolio.
- In July 2021, the IRB fees for industry/for-profit funded research were updated.
- In 2021, the IRB operations continued to be fully functional as a remote model, as well as the hybrid model (on-site/remote) that was implemented in August 2021.
- The DMC Research and IRB Services Agreement was renewed for one year.

DIVISION OF ANIMAL LABORATORY RESOURCES (DLAR) HIGHLIGHTS

MICHAEL BRADLEY, DVM, ASSISTANT VICE PRESIDENT FOR THE DIVISION OF LABORATORY ANIMAL RESOURCES

The Division of Laboratory Animal Resources is responsible for administering the university's laboratory animal care and use program. Oversight for the program is the joint responsibility of the DLAR and the Institutional Animal and Care Use Committee. The DLAR directly operates and maintains animal facilities at the university and John Dingell Veteran's Administration Center. Under contractual agreement, the DLAR also provides veterinary care services to the Detroit VA Medical Center which has a major affiliation with the Wayne State University School of Medicine. The following are some important highlights of the DLAR in 2021.

- The Division of Laboratory Animal Resources successfully recruited another ACLAM Boarded veterinarian to join DLAR.
- Navigated the significant flooding event in June 2021, which impacted all animal facilities with significant HVAC failures and flooding in vivaria.
 - Coordinated efforts between DLAR, OEHS, and FP&M resulted in no loss of animal life.
- Completed renovations to Kresge Eye Institute vivarium to upgrade animal facilities in accordance with AAALAC International accrediting standards.
- Broke ground on renovations to our largest vivarium, Scott Hall. Anticipated competition in 2022.
- Maintained successful daily operations in DLAR throughout the pandemic, despite the pandemic and significant staffing challenges.
- Wayne State University received full re-accreditation from the AAALAC International Council on Accreditation for providing and maintaining an excellent program of laboratory animal care and use.

OFFICE OF ENVIRONMENTAL HEALTH AND SAFETY

PHIL CUNNINGHAM, PH.D., ASSOCIATE VICE PRESIDENT FOR RESEARCH INTEGRITY

The Office of Environmental Health and Safety (OEHS) is dedicated to providing quality services that assure health and safety to the entire Wayne State University campus. They provide services related to hazardous materials management, radiation safety, food safety, dangerous goods shipping, and many other environmental health and safety services. The following are important OEHS highlights from 2021.

The Office of Environmental Health and Safety functioned and continue to function at near normal levels throughout the entire pandemic. They have played a critical role in providing oversight to the entire research community with COVID-19 Biosafety research guidelines. In addition, they continued to serve the research community with hazardous materials

management, all environmental health and safety needs, critical laboratory training, ensuring radiation safety training, and more to the assure research activities can continue as near normal and as safely as possible.

In addition to continuing their critical daily roles as normal as possible, OEHS worked to assure that critical units on campus were provided with ample PPE and other safety equipment, including public safety, throughout the pandemic.

The Office of Environmental Health and Safety staff not only play a critical role in the health and safety of our research community, but to the remainder of our campus community as well. They have worked tirelessly throughout the pandemic.

SPONSORED PROGRAM ADMINISTRATION

GAIL RYAN, PH.D., ASSOCIATE VICE PRESIDENT FOR SPONSORED PROGRAM ADMINISTRATION

The Sponsored Program Administration (SPA) office within the Division of Research is responsible for the institutional oversight for Wayne State University's external sponsored programs. In this capacity, SPA provides service to three distinct groups: 1) faculty, 2) the University, and 3) the sponsors. SPA plays a role throughout the lifecycle of the sponsored project that includes:

- Proposal preparation and submission.
- Award acceptance.
- Successful completion of the project objectives.

The following is a detail of sponsored projects awards in FY2021.

Sponsor Type	2021
NIH	\$100,185,713
NSF	\$10,473,480
Other Federal	\$40,507,629
State	\$51,227,519
Other	\$17,431,013
Corporations	\$91,189,739
Foundations	\$9,098,809
Grand Total	\$320,113,902

Some of the top sponsored research awards received in 2021 include the following:

Principal Investigator: Leslie Lundahl, Psychiatry
Sponsor: State of Michigan
Award Amount: \$7,020,950
Award Title: 2021 Veteran Marijuana Research (VMR) Grant Program

Principal Investigator: Jeffrey Kline, Emergency Medicine
Sponsor: Centers for Disease Control and Prevention
Award Amount: \$5,701,171
Award Title: Enhancing U.S. Surveillance of Laboratory Confirmed SARS-CoV-2, Influenza, and other Respiratory Viruses through a Network of Emergency Departments

Principal Investigator: Phillip Levy, Emergency Medicine
Sponsor: National Institute on Minority Health and Health Disparities
Award Amount: \$3,669,218
Award Title: ACHIEVE GreatER: Addressing Cardiometabolic Health Inequities by Early PreVention in the Great LakEs Region

Principal Investigator: Matthew Allen, Chemistry
Sponsor: U.S. Army Corps of Engineers
Award Amount: \$3,130,353
Award Title: Rare Earths from US Extractions (REUSE)

Principal Investigator: Lawrence Grossman, Center for Molecular Medicine and Genetics
Sponsor: U.S. Department of Defense
Award Amount: \$1,618,480
Award Title: Role of MNRR1 as a Therapeutic Target in Mitochondrial Disease Models

TRANSLATIONAL RESEARCH HIGHLIGHTS

PHILLIP LEVY, M.D., M.P.H., ASSISTANT VICE PRESIDENT FOR TRANSLATIONAL SCIENCES AND CLINICAL RESEARCH INNOVATION

The following are highlights of important translational research activities in 2021.

Addressing Cardiometabolic Health Inequities by Early PreVention in the GREAT LakEs Region (ACHIEVE GREATER) Center

In October 2021, The National Institute on Minority Health and Health Disparities of the National Institutes of Health awarded Wayne State University \$18.15 million over five years to establish a Center for Multiple Chronic Diseases Associated with Health Disparities: Prevention, Treatment, and Management that will use community-based interventions deployed from three research institutions to fight hypertension, heart failure and coronary heart disease in the Black population. The Center

The Center is a proactive versus reactive approach to reducing overwhelming cardiometabolic health disparities and downstream Black-White lifespan inequality in Detroit and Cleveland, two uniquely comparable cities.

Building upon existing collaboration and resources across Wayne State University/Wayne Health, and the Henry Ford Health System in Detroit, and Case Western Reserve University/University Hospitals in Cleveland, ACHIEVE GREATER will include three distinct but related projects that focus on interrupting early stages of pathogenesis by addressing multiple domains of influence that contribute to disparate health outcomes in the Black population, specifically biological, behavioral, physical/built environment, sociocultural environment and the health care system.

Each ACHIEVE GREATER primary project will be led by a principal investigator from one of the three participating institutions. All three will be supported by an administrative core led by Dr. Levy; a community engagement core, co-led by WSU Professor of Family Medicine Deborah Ellis, Ph.D., Assistant Professor of Family Medicine and Public Health Sciences, Division of Behavioral Sciences Elizabeth Towner, Ph.D., and WSU Assistant Professor of Family Medicine and Public Health Sciences Rhonda Dailey, M.D.; and an investigator development core, led by WSU Department of Internal Medicine Professor and Chair Safwan Badr, M.D.

Linkage, Empowerment, and Access to Prevent Hypertension (LEAP-HTN)

On July 29, 2021, the American Heart Association announced \$20 million in research awards to address the need for early interventions for high blood pressure and hypertension in black adults – a population that has a higher incidence of hypertension and a greater risk of hypertension-related cardiovascular disease compared to white adults – by supporting health equity in high blood pressure prevention known as the Health Equity Research Network (HERN) on the Prevention of Hypertension. The program is designed to fast track science in preventing high blood pressure among underrepresented populations in an attempt to aggressively address social determinants while working to support and improve the equitable health of all communities.

Teams of scientists from Wayne State University, Beth Israel Deaconess Medical Center in Boston, Johns Hopkins University School of Nursing in Baltimore, New York University School of Medicine in New York City and University of Alabama at Birmingham will lead the community-based research interventions.

Phillip Levy, M.D., M.P.H., professor of emergency medicine and assistant vice president of translational research, will lead Wayne State's nearly \$2.64 million, four-year project, Linkage, Empowerment, and Access to Prevent Hypertension (LEAP-HTN).

LEAP-HTN will deploy mobile health units to provide direct, personalized health care and coaching to Black people with high blood pressure living in select under-resourced neighborhoods in Detroit. Community health workers will help people in the study develop and follow a personalized, flexible health plan. Throughout the year, researchers will regularly compare hypertension and other health factors of people in the program to those of people in the community who also have high blood pressure but didn't take part in the personalized health plan. They anticipate people receiving care from the community health workers will have lower or better control of their blood pressure compared to those who are not in the program.