

Agendum  
Oakland University  
Board of Trustees Formal Session  
December 4, 2023

**ACCEPTANCE OF GRANTS AND CONTRACTS TO OAKLAND UNIVERSITY**  
**FOR THE PERIOD OF JULY 1 - OCTOBER 31, 2023**  
**A Recommendation**

1. **Division and Department:** Academic Affairs/Research Office
2. **Introduction:** Oakland University contributes to our national agenda as a contributor to the nation's scientific and technological progress, both through the generation of new knowledge and ideas and the education and training of its students. Grants and contracts awarded to Oakland University play a critical role in the advancement of new research findings, and current research trends gives emphasis to inter-disciplinary, technology-driven, and product-oriented team efforts.

The Board of Trustees (Board) has authorized the President, or his or her designee, to receive and acknowledge grants and contracts to the University, but such grants and contracts must be reported to the Board not less often than quarterly for acceptance on behalf of the University.

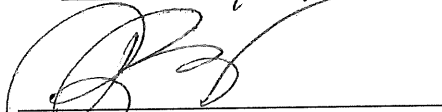
At this time, we request that the Board accept the grants and contracts reported on the attached Grants and Contracts Report, Attachment A, for the period of July 1 through October 31, 2023.

3. **Previous Board Action:** The Board accepts grants and contracts to Oakland University on a regular basis at its Formal Sessions.
4. **Budget Implications:** Grants and contracts contribute to the University through the recovery of direct and indirect expense incurred in support of research projects.
5. **Educational Implications:** Grants and contracts enhance the training and education of students.
6. **Personnel Implications:** Grants and contracts awards may provide salary support for faculty, post-doctoral fellows, undergraduate and graduate students, technicians, lab managers, and other personnel, as required by the funded research project or program.

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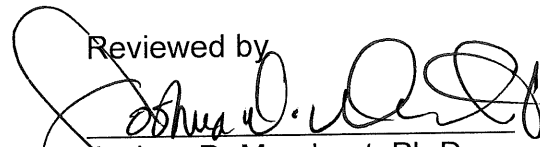
7. **University Reviews/Approvals:** All grants and contracts are reviewed by the Research Office prior to submission to the Board to ensure compliance with federal and state laws and regulations and University policies and procedures, when applicable, and with assistance from the Office of Legal Affairs when requested.
8. **Recommendation:** RESOLVED, that the Board of Trustees accept grants and contracts to Oakland University identified in the attached Grants and Contracts Report, Attachment A, for the period of July 1 - October 31, 2023.
9. **Attachments:** A. Grants and Contracts Report.

Submitted to the President  
on 11/21, 2023 by

  
\_\_\_\_\_  
Britt Rios-Ellis, M.S., Ph.D.  
Executive Vice President for  
Academic Affairs and Provost

Recommended on 11/28, 2023  
to the Board for approval by

  
\_\_\_\_\_  
Ora Hirsch Pescovitz, M.D.  
President

Reviewed by  
  
\_\_\_\_\_  
Joshua D. Merchant, Ph.D.  
Chief of Staff and  
Secretary to the Board of Trustees

**Grants and Contracts Report for Period July 1 - October 31, 2023**

<b>Principal Investigator</b>	<b>Awarding Agency</b>	<b>Title and Project Abstract</b>	<b>Award Amount</b>	<b>Total Award All Years</b>
<b>Scott Tiegs</b> Department of Biological Sciences	National Science Foundation	<b>Graduate Research Fellowship Program (GRFP).</b> This program recognizes and supports outstanding graduate students in NSF supported science, technology, engineering, and mathematics disciplines who are pursuing research based master's and doctoral degrees.	\$49,000	\$95,000
<b>Fabia Battistuzzi</b> Department of Biological Sciences	National Science Foundation	<b>NRT-HDR: Using a Data Analytics Framework to Merge STEM and Entrepreneurial Training.</b> This program will focus on the integration of Omics research projects with data analytics and entrepreneurship training. Through targeted recruitment and layered mentoring strategies this program will increase diversity and retention of underrepresented minorities in STEM.	\$414,166	\$1,999,947
<b>Dao-Qi Zhang</b> Eye Research Institute	National Institutes of Health	<b>Pacemakers of Cholinergic Wave Activity in the Developing Retina.</b> The goal of this research is to understand the identity and features of pacemaker starburst amacrine cells and the ionic mechanisms of cholinergic retinal wave generation to advance our knowledge of how retinal waves mediate vascular and neuronal development of the retina as well as eye-specific segregation and retinotopic map refinement in the visual centers of the brain.	\$137,503	\$429,016
<b>Mary Jamieson</b> Department of Biological Sciences	United States Fish and Wildlife	<b>Investigating the Role of Fire and Invasive Species Management on Plant-Pollinator Interaction Networks in Vulnerable Grassland Habitats.</b> This research will be conducted in Southeast Michigan in an interface between urban and wildland habitats with surrounding agroecosystems. The overarching goal of this project is to inform pollinator conservation efforts in the region by investigating the influence of habitat management activities on bees and butterflies as well as the plant communities that support these pollinators.	\$15,000	\$32,445

Principal Investigator	Awarding Agency	Title and Project Abstract	Award Amount	Total Award All Years
Xiangqun Zeng Department of Chemistry	National Institutes of Health	<b>Implantable Real-Time Troponin Biosensor for Early Diagnosis of Silent Cardiac Injuries.</b> In this project, we will use a radically new biosensor approach to develop highly sensitive, specific, and self-sustaining biosensors for detection of cTn in vivo.	\$427,370	\$427,370
Ngong Kodiah Beyeh Department of Chemistry	National Science Foundation	<b>CAREER: CAS: Structured Assemblies of Block Copolymers and Macrocycles with the Novel Halogen Bond.</b> Our published paper in Macromolecular Rapid Communications in 2019 laid the groundwork for the systematic construction of hybrid materials between a macrocycle and different block co-polymers via halogen bond interactions. This project will expand on this knowledge to a) understand the in-depth role of halogen bonds in these systems, b) create new co-assembled polymeric halogen-bonded materials, and c) establish the functional application of these materials for guest uptake and molecular recognition.	\$551,720	\$551,720
Ilias Cholis Department of Physics	National Science Foundation	<b>Dark Matter Primordial Black Holes Under the Scrutiny of LIGO's Observations.</b> The goal of this research is to develop new probes to search for signals of primordial black hole (PBH) dark matter at gravitational-wave observations.	\$56,302	\$150,000
Michael Kranak Department of Human Development and Child Studies	Hazel Park Schools	<b>Mi-GUIDES: Michigan Groups United to Inspire, Drive, and Educate Students.</b> Hazel Park School District (HPSD) has several students and classrooms in need of more intensive and specialized behavioral interventions. We will provide behavioral assessments and support for students and educators in HPSD. They will also supervise a team of two graduate OU students to support this project.	\$75,428	\$75,428

Principal Investigator	Awarding Agency	Title and Project Abstract	Award Amount	Total Award All Years
<p><b>Melissa Reznar</b> Department of Interdisciplinary Health Sciences</p>	<p>Johns Hopkins University / NIH</p>	<p><b>Developing and Testing a Mobile App to Optimize Food Pantry Capacity, Food Quality and Client Food and Nutrition Security Among Low-Income Households.</b> This project will include formative data collection in the Detroit area to evaluate the SAFPAS app. SAFPAS is a mobile phone application to support food bank and food pantry operations.</p>	\$32,054	\$32,054
<p><b>Zacharias Kinney</b> Department of Chemistry</p>	<p>National Science Foundation</p>	<p><b>Launching Early-Career Academic Pathways in the Mathematical and Physical Sciences.</b> This project centers on understanding the structure-property relationships of two isomeric naphthodithiophenes in organic macrocycles and metallomacrocycles to elucidate their potential applications as photoactive materials.</p>	\$250,000	\$250,000
<p><b>Sunny Raj</b> Department of Computer Science and Engineering</p>	<p>National Science Foundation</p>	<p><b>CRII: SHF: IMMENSE: In-Memory Machine Learning using Sneak-Paths in Crossbars for Robustness and Energy Efficiency.</b> This project seeks to create a completely new approach to crossbar computing that transcends current neuromorphic approaches and counterintuitively leverages sneak paths in 3-D crossbars of emerging devices for performing computations.</p>	\$174,861	\$174,861
<p><b>Khalid Malik</b> Department of Computer Science and Engineering</p>	<p>National Science Foundation</p>	<p><b>PFI-TT: Development of an Explainable and Robust Detector of Forged Multimedia and Cyber Threats using Artificial intelligence.</b> The focus of this project will be improving the scalability, generalizability, and robustness of the developed detectors in the presence of anti-forensic attacks using neuro-symbolic AI and game theory. The goal is to extend the current research, clearly demonstrating the feasibility of combining the already developed algorithms into a single neurosymbolic framework, yielding a multimodal forensic report.</p>	\$272,896	\$549,156

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<b>Huirong Fu</b> Department of Computer Science and Engineering	National Security Agency	<b>2023 GenCyber Program.</b> Building upon the success of our 2018, 2019, and 2022 GenCyber teacher camps, Oakland University (NCAE-C) will host an immersive GenCyber teacher program for a cohort of twenty-five (25) middle and high school teachers with a diversity of socio-economic status, gender, and ethnicity at entry level in the Detroit Urban Area.	\$284,553	\$284,553
<b>Yang Xia</b> Department of Physics	Binational Science Foundation	<b>Investigation of Microstructure of Neuronal and Collagenous Tissues by NMR and MRI Techniques.</b> The goal of this project is to develop new MRI techniques that provide accurate microstructural information in tissues that the current MRI tools cannot, without harmful radiation. New MRI modalities will offer powerful tools in diagnostics of bone, brain, joint, and lung diseases and will be beneficial to the entire society.	\$40,000	\$160,000
<b>Kenneth Mitton</b> Eye Research Institute	Caeregen Therapeutics / NIH	<b>Noregen, A Regenerative Medicine Ocular Therapeutic.</b> The goal of this project will be to evaluate several concentrations of Norgen protein for activity using the mouse oxygen-induced retinopathy model and test Noregen's effects on primary human retinal microvascular endothelial cells. This data will form part of the preclinical research data for an FDA new investigational drug application.	\$223,458	\$442,351
<b>Kelly Berishaj</b> School of Nursing	Academy of Forensic Nursing	<b>Quantification of Manual, External Pressure Required to Occlude Neck Vasculature.</b> The goal of this project is to create an environment of scientific inquiry and engagement that helps to improve health and legal outcomes in patients affected by trauma, violence, and maltreatment and advances the specialty of forensic nursing through innovations in education, practice, scholarship, and research.	\$5,000	\$5,000

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<p><b>Aycil Cesmelioglu</b> Department of Mathematics and Statistics</p>	<p>National Science Foundation</p>	<p><b>Collaborative Research: Development of Reduced Order Models for Poroelasticity and Related Problems.</b> This research will address a significant barrier to finding numerical solutions of large scale poroelasticity problems. Some of these problems are related to hydrocarbon extraction in petroleum engineering, physiological processes, and modeling magma and mantle migration in geophysics. We will develop certified reduced basis methods for parametric poroelasticity and related problems and create exponentially fast numerical algorithms that can be applied to such problems.</p>	<p>\$87,642</p>	<p>\$198,305</p>
<p><b>Christina Papadimitriou</b> Department of Interdisciplinary Health Sciences</p>	<p>George Washington University / NIH</p>	<p><b>Developing a Standardized Process Assessment for Relationship-Centered Shared Decision-Making (SPARCSdm).</b> The goal of this project is to develop a new research measure to study shared decision making with persons who cannot self-report due to severe disabilities.</p>	<p>\$62,840</p>	<p>\$169,041</p>
<p><b>Ilias Cholis</b> Department of Physics</p>	<p>Department of Energy</p>	<p><b>Searching for Dark Matter Signals in Cosmic-Ray and Gamma-Ray Observations.</b> The goal of this research is to minimize astrophysical background uncertainties and suggest probes to discriminate from astrophysical sources that could mimic dark matter-like signals.</p>	<p>\$131,000</p>	<p>\$191,000</p>
<p><b>Dao-Qi Zhang</b> Eye Research Institute</p>	<p>National Institutes of Health</p>	<p><b>The Underlying Mechanisms of Visual Impairment and Myopia in Prematurity.</b> This project is relevant to public health because preterm birth and oxygen therapy in premature infants causes myopia—incurable vision impairment and even blindness. Results from the study will advance our understanding of why myopia of prematurity occurs in almost 1 of every 10 infants born in the United States. Our ultimate goal is to develop preventive and therapeutic strategies to preserve vision in premature infants.</p>	<p>\$436,297</p>	<p>\$1,632,209</p>

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<b>Mi Hye Song</b> Department of Biological Sciences	National Institutes of Health	<b>Proteolytic Regulation of Centrosome Assembly.</b> This research will contribute to advances in fundamental understandings of centrosome biology in humans and therapeutic interventions for human diseases and conditions such as cancers and microcephaly associated with abnormal centrosomes.	\$99,900	\$549,900
<b>Luca Cucullo</b> School of Medicine	Parabon Nano Labs, Inc / DOD	<b>A System for Engineering Nanocarriers Able to Transport Across the Blood-Brain Barrier.</b> The main scope of this project revolves around the development and testing of DNA-based nanocarriers for the delivery of drugs targeting the brain. Our lab will primarily focus on testing the permeability of such compounds using various in vitro cell-based platforms.	\$24,999	\$24,999
<b>Christopher Cooley</b> Department of Mechanical Engineering	Army Research Laboratory	<b>Damage-Induced Nonlinear Dynamics of Rotorcraft Planetary Gears.</b> Planetary gears are crucial elements of rotorcraft transmissions that impact the vehicle's overall capability, maneuverability, reliability, and range. This research aims to create a new predictive analytical framework for nonlinear dynamics in planetary gears with tooth root crack and surface pit damage.	\$66,951	\$321,479
<b>Tomoko Wakabayashi</b> Department of Human Development and Child Study	Oakland Livingston Human Service Agency (OLHSA)	<b>OUIECE.</b> This research project will continue to empower Pontiac youth as trauma and HOPE-informed future community leaders.	\$7,250	\$7,250



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<p><b>Sarah Beetham</b> Department of Mechanical Engineering</p>	<p>American Society for Engineering Education</p>	<p><b>Planting SEEDS (Sustainable Engineering Educational Development and Support) at Oakland University (OU).</b> This project will be a three-pronged approach to magnifying the focus on sustainability within the School of Engineering and Computer Science at OU. (1) Developing two new courses focused on sustainability, (2) Establishing a new Minor in Sustainable Engineering and a new Master of Science program in Sustainable Energy Engineering, and (3) Adapting existing laboratory curriculum to undergraduate engineering coursework to emphasize sustainability concepts.</p>	\$8,000	\$8,000
<p><b>Tomoko Wakabayashi</b> Department of Human Development and Child Study</p>	<p>Flinn Foundation</p>	<p><b>Empowering Pontiac Youths as Michigan ACE Community Champions.</b> This funding will be used to expand on Oakland University Pontiac Initiative Early Childhood Education's (OUIECE) existing youth effort, to further empower our Youth Michigan ACE Initiative Community Champions (Youth MACCs).</p>	\$4,996	\$4,996
<p><b>Fabia Battistuzzi</b> Department of Biological Sciences</p>	<p>National Science Foundation</p>	<p><b>NRT-HDR: Using a Data Analytics Framework to Merge STEM and Entrepreneurial Training.</b> This program will focus on the integration of Omics research projects with data analytics and entrepreneurship training. Through targeted recruitment and layered mentoring strategies this program will increase diversity and retention of underrepresented minorities in STEM.</p>	\$838,675	\$1,999,947
<p><b>Ali Malik</b> Department of Industrial and Systems Engineering</p>	<p>National Institute for Standards and Technology</p>	<p><b>Intelligent Digital Twins to Build Resilient Smart Factories.</b> This project will make a deep dive in the development and application of digital twins to address the challenges of present-day manufacturing systems and achieve scalable, transparent and digitalized manufacturing base.</p>	\$95,888	\$95,888

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<b>Stephen Goody</b> Department of Art and Art History	Michigan Arts and Culture Council	<b>Nostalgia &amp; Outrage: An Exhibition by Mary Fortuna and Adrian Hatfield.</b> This project features two Michigan artists: Mary Fortuna and Adrian Hatfield. Each artist will showcase recent works made that relate to their mutual interests and shared experiences having worked as educators and professional artists in the Detroit area for twenty years. The exhibition will run from January 13 - March 24, 2024.	\$11,066	\$11,066
<b>Krzysztof Kobus</b> Department of Mechanical Engineering	State of Michigan	<b>MICUP - Michigan College/University Partnership Program 2023-2029.</b> Through our HTech program, we will leverage existing resources from the Center for Multicultural Initiatives, other KCP programs, the School of Engineering and Computer Science, and relationships with community colleges and industry partners to sustain the proven successful strategies. Oakland will evaluate economies of scope and scale to support, financially and with human resources, the continuation of the KCP program. Institutionally, Oakland will continue to support and enhance transfer agreements with community college partners and clearly define programs of study that begin with course offerings at the community college level. Oakland will also identify industry partners to serve on an Industry Advisory Committee for this program and seek funding to sustain the HTech initiative.	\$75,563	\$453,378
<b>Omar Brown-EI</b> Center for Multicultural Initiatives	State of Michigan	<b>4S - KCP Select Student Support Services.</b> CORE is a multicultural residential academic program that pairs underrepresented students with resources that focus on their specific needs. Students in the target population are required to attend a week-long summer enrichment program, tutoring, major/career exploration workshops, and meet with a financial aid advisor, program coordinator and peer ambassador. This program is a collaboration between the divisions of Student and Academic Affairs, facilitated by the Center for Multicultural Initiatives.	\$94,691	\$568,146

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<b>Jun Chen</b> Department of Electrical and Computer Engineering	North Carolina Agricultural and Technical State University / Coastal Studies Institute	<b>Ocean Energy Supported Multi-Energy System Planning and Operation Optimization for Sustainable Coastal Community.</b> This project involves development of high-fidelity models for various components of an ocean energy-supported multi-energy system.	\$30,721	\$30,721
<b>Melissa Kempski</b> Educational Resource Laboratory	State of Michigan / Institute of Museum and Library Services (IMLS)	<b>Library of Manipulatives.</b> The Library of Classroom Manipulatives aims to acquire classroom manipulatives to support the educational needs of pre-service students in the School of Education and Human Services at Oakland University's Educational Resources Laboratory.	\$25,000	\$25,000
<b>Sayed Nassar</b> Department of Mechanical Engineering	National Science Foundation	<b>IUCRC Phase I Oakland University: Center for Composite and Hybrid Materials Interfacing (CHMI).</b> This research will involve interdisciplinary teams to address the emerging need to transform current labor-intensive, experience-based CHMI practice into science-based, automated CHMI processes.	\$140,000	\$730,000
<b>Vardan Karamyan</b> School of Medicine	National Institutes of Health	<b>Development and Characterization of Peptidomimetic Small Molecule Activators of Peptidase Neurolysin for Stroke Therapy.</b> With this research we seek to develop potent and selective 'drug-like' small molecule activators of peptidase neurolysin (Nln) which will be used as research tools and lead chemical entities to move the drug discovery process forward for development of a novel class of drugs.	\$138,625	\$348,008
<b>Geraldine Graham</b> Upward Bound	U. S. Department of Education	<b>Oakland University Project Upward Bound College Prep Academy.</b> The Project Upward Bound College Preparatory Academy at Oakland University will serve 133 Upward-Bound-eligible participants from one target area encompassing the communities of Pontiac and Royal Oak Charter Township, Michigan.	\$739,409	\$3,554,850

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<b>Sayed Nassar</b> Department of Mechanical Engineering	Georgia Tech Research Corporation	<b>Industry-University Cooperative Research Center (IUCRC) Program.</b> The IUCRC program generates breakthrough research by enabling close and sustained engagement between industry innovators, world-class academic teams and government agencies.	\$125,806	\$236,129
<b>Scott Tieg</b> Department of Biological Sciences	Michigan Department of Natural Resources	<b>New Zealand Mudsnaills and Didymo: Developing a Single and Effective Decontamination Protocol for Wading Anglers.</b> We will compare the effectiveness of two different chemical decontaminants at causing mortality to New Zealand mudsnails and Didymo on the gear of recreational anglers, such as waders and wading boots.	\$34,817	\$34,817
<b>Yang Xia</b> Department of Physics	Henry Ford Health System	<b>Graduate Student Support for Medical Physics Research at Henry Ford Hospital.</b> This funding will support Oakland University graduate students to perform cutting-edge biomedical research.	\$8,339	\$105,025
<b>Luis Villa Diaz</b> Department of Biological Sciences	Colorado School of Mines / NIH	<b>Sugar-Coating Our Way to Genetically Modified Mesenchymal Stem Cells: Glycocalyx-inspired Cell Culture Substrates that Prime Mesenchymal Stem Cells for Polycation-Mediated pDNA Delivery.</b> The goal of this research is to improve the genetic manipulation of human mesenchymal stem cells using bioengineer substrates that will increase the proliferation of these cells.	\$128,173	\$128,173
<b>Melissa Reznar</b> Department of Interdisciplinary Health Sciences	American College of Lifestyle Medicine	<b>Lifestyle Medicine Integration in Health Systems: A Qualitative Case Series.</b> This project will involve qualitative data analysis on the American College of Lifestyle Medicine's "Lifestyle Medicine Integration in Health Systems: A Qualitative Case Series" research project. To date, 66 interviews have been conducted. The work covered by this contract will include qualitative data coding and analysis of all completed interviews	\$10,448	\$10,448

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Daniel Clark Department of History	Michigan Humanities Council	<b>Native Perspectives on Firekeeper's Daughter.</b> Michigan Humanities' Great Michigan Read creates a statewide discussion around a Michigan themed book. Through partnerships with libraries, schools, book clubs, and a wide range of other non-profit organizations, the Great Michigan Read facilitates statewide reading and programs to bridge communities around a common conversation.	\$750	\$750
<b>Total Awards</b>			<b>\$6,437,157</b>	<b>\$17,098,426</b>