2017

Discovery: Research Annual Report 2017

Office of Vice President for Research

Follow this and additional works at: https://scholarworks.wmich.edu/research_reports

Part of the Higher Education Commons

WMU ScholarWorks Citation
Office of Vice President for Research, "Discovery: Research Annual Report 2017" (2017). Research Annual Reports. 7. https://scholarworks.wmich.edu/research_reports/7

This Annual Report is brought to you for free and open access by the Office of the Vice President for Research at ScholarWorks at WMU. It has been accepted for inclusion in Research Annual Reports by an authorized administrator of ScholarWorks at WMU. For more information, please contact maira.bundza@wmich.edu.
CENTER FOR RESEARCH ON INSTRUCTIONAL CHANGE IN POSTSECONDARY EDUCATION (CIRCE)

THE OFFICE OF THE VICE PRESIDENT INITIATED A NEW PROGRAM—UNDERGRADUATES DISCOVER DISCOVERY

NSF CAREER AWARD WINNERS FAHAD SAEED, ELENA LITVINNOVA AND WENDY BEANE

FACULTY SCHOLAR AWARD

FROM INVENTION TO COMMERCIALIZATION

EXTERNAL FUNDING

WMED RESEARCH ACTIVITIES

UNDERGRADUATE RESEARCH EXCELLENCE AWARD RECIPIENTS

SUPPORT FOR FACULTY SCHOLARS AWARD

GRADUATE STUDENT RESEARCH AND TRAVEL GRANTS

EXTERNAL AWARDS TO FACULTY AND STAFF

RESEARCH AND CREATIVE ACTIVITIES POSTER DAY GRADUATE STUDENT PARTICIPANT WINNERS

TECHNOLOGY DEVELOPMENT FUND AWARDS

FACULTY RESEARCH AND CREATIVE ACTIVITIES AWARD

WMU CENTERS AND INSTITUTES
Discovery Driven — that is our foundation that inspires the research and creative scholarship conducted by our faculty, staff and students at Western Michigan University. The breadth of our research and creative scholarship reflects our status as a comprehensive research university that aims to find new solutions to local, regional, national and global problems. WMU’s researchers are engaged in solving some of today’s most complex and pressing challenges and bringing innovation to emerging research themes spanning environmental sciences, medieval studies, behavioral sciences with an emphasis on autism, sustainability, blindness and low vision, mobility, aviation sciences, and improving learning in K-12 systems.

This year has also seen several transitions in the Office of the Vice President for Research. In August 2017, we said goodbye to Dr. Daniel Litynski who had served as the Vice President for Research since 2010. Dr. Litynski is currently a visiting scholar at the University of Central Florida and will return to the faculty at WMU in 2018. His many years of service and dedication will be missed. OVPR welcomed three new and dynamic research officers: Megan Derksen, Kay Mortellaro and Denise Wheatley. The office also underwent staff reorganization, creating a senior research officer position that is held by Sarah Pratt, the addition of Dr. Jennifer Coyle who currently serves as a compliance research officer, and Karen DeVries who serves as the administrative assistant in charge of funding opportunities. Together, we produced a new strategic plan that will enable us to continue to fulfill our primary mission of service to WMU researchers, and furthermore, to launch new initiatives that will help WMU thrive as it builds the research enterprise.

WMU received $27 million in extramural research awards in fiscal year 2016-17, representing a steady increase in research funding over the past five years. One of the largest grants awarded to WMU in the amount of $12.5 million was granted to Dr. Patricia Reeves and Dr. Jianping Chen in the College of Education and Human Development from the U.S. Department of Education. This grant will enable our faculty to make significant strides in improving the quality of education in K-12 systems. Three assistant professors at WMU, Drs. Wendy Beane in biological sciences, Elena Litvonia in physics and Fahad Saeed in electrical, computer engineering and computer science, were among the few honored nationally as winners of the prestigious National Science Foundation CAREER award. The NSF CAREER Program recognizes faculty members who are early in their career and have demonstrated the potential to be academic role models in research and education.

In addition to supporting faculty and staff members with their research endeavors, OVPR has extended its services to all WMU undergraduate students by launching the Undergraduate Research program. The program provides students with access to research opportunities internal and external to WMU. In addition, the program also hosts the Undergraduates Discover Discovery seminar series that helps undergraduates learn various strategies required for research including research compliance, safety, and critical thinking.

As a learner centered, discovery driven and globally engaged University, WMU continues to be a leader in finding solutions that impact the lives of others. Our researchers not only transform the world we live in through research and creative scholarship, but they also engage students in their research. Together they create the world we want to leave for future generations. The passion, creativity, imaginative projects and scholarship of our faculty, research staff and students can be seen in this year’s annual report. We invite you to look inside to see the accomplishments of our faculty, research scholars and students. To learn more about the University and our research endeavors, please visit wmich.edu/research.

Sherine O. Obare, PhD
Interim Vice President for Research
Western Michigan University’s Center for Research on Instructional Change in Postsecondary Education is a University-level research center that conducts and supports interdisciplinary research focused on promoting transformative change in postsecondary education. The center was co-founded by Dr. Andrea Beach, professor in education, leadership and technology, and Dr. Charles Henderson, professor in physics and director of the Mallinson Institute for Science Education.

Interdisciplinary collaborative research is the heartbeat of this center, which builds on WMU research strengths in higher education and STEM education.

In three years the center has expanded to 13 projects totaling $7.1 million dollars in grants, employing three staff members, six post-doctoral research associates, three graduate students and buying out time for four faculty members (this includes the center co-directors). Since its beginning, two projects have been completed, bringing the current project portfolio total to 11.
JULY
AWARDED THE COMPUTER SCIENCE TEACHING FACULTY WORKSHOPS SUBCONTRACT THROUGH UC SAN DIEGO
This award is $128,609 over the next two years
The Center now has six total grant projects that total $4,410,501

SEPTEMBER
AWARDED THE ONLINE TECHNICAL EDUCATION IN ADVANCED TECHNOLOGICAL EDUCATION PROGRAMS GRANT THROUGH THE NSF
This award is $228,765 over the next two years
The center now has seven total grant projects that total $4,639,266

MARCH
AWARDED THE ACCELERATING SYSTEMATIC CHANGE GRANT FROM THE HELMSLEY FOUNDATION
The Center now has nine projects totaling $5,397,347

JULY
AWARDED THE COLLABORATIVE RESEARCH: EVALUATING THE UPTAKE OF RESEARCH BASED INSTRUCTIONAL STRATEGIES FROM NSF-IUSE
This award is $622,992 over the next three years
This Center will have accumulated a total of 12 total grant projects totaling $6,213,531

MAY
AWARDED A TRAVEL GRANT FROM THE NSF TO HOST THE ACCELERATING SYSTEMIC CHANGE NETWORK INAUGURAL MEETING
The Center now has 10 projects totaling $5,442,864

SEPTEMBER
AWARDED EVALUATION SUBCONTRACT THROUGH UNIVERSITY OF COLORADO BOULDER TO EVALUATE THE DEPARTMENTAL ACTION TEAMS
The Center now has 11 projects totaling $5,590,539

JANUARY
AWARDED ACCELERATING SYSTEMIC CHANGE NETWORK FROM NSF. THIS AWARD IS $905,141 OVER THE NEXT FIVE YEARS
CRICPE will have accumulated a total of 13 total grant projects totaling $7,118,672
The Office of the Vice President initiated a new program—Undergraduates Discover Discovery—designed to support undergraduate research. The program, which was in the planning stages during the last fiscal year, focuses on directing students to find a mentor and to give guidance on ways to get started in research and creative activities.

“Our goal is to be a resource for all undergraduate students in all disciplines at WMU seeking to enrich their undergraduate experience through participation in research and creative scholarship,” says Sarah Pratt, senior research program officer and UDD program coordinator.

Throughout the academic year, more workshops will educate and guide undergraduates as they work to enhance their undergraduate education beyond their coursework. Topics for the workshops range from research compliance and safety to summer research programs and dissemination of findings. Students will be coached on effective ways to market their research and discovery skills. The skills students learn in research transition a student into graduate studies and translate well into the workplace.

“There is obviously a real need for the undergraduate research program based on the reaction we are getting from faculty, staff and students,” says Pratt. “People are excited when we tell them what we are doing. I think the word is already getting out that our office is the central resource for undergraduate research at the University.”

In April students will come together to celebrate their successes during an Undergraduate Research Day.
CAREER Award

The National Science Foundation’s most prestigious awards for junior faculty and these highly selective grants are given to members who are likely to become academic leaders of the future. Awardees have the flexibility to explore unexpected new terrain uncovered in the course of their research.

Fahad Saeed
Assistant Professor
Department of Electrical and Computer Engineering

Elena Litvinova
Assistant Professor
Department of Physics

Wendy Beane
Assistant Professor
Department of Biological Sciences
A computational scientist, Dr. Saeed’s research projects are all about big numbers, big data, and big ambitions. His recent $500,000 NSF CAREER award grant builds on some of the biggest breakthroughs in biological sciences. He is a computational scientist, based in WMU’s College of Engineering and Applied Sciences as an assistant professor both in computer science and in the department of electrical and computer engineering, who is making an impact. Saeed’s computer algorithms help life sciences researchers tease out important information about genes and proteins that may lead to advances in drug development and individualized medical treatment.

An assistant professor of physics, Elena Litvinova’s project, “From fundamental interactions to emergent phenomena: geometrical aspects of nuclear dynamics,” explores three major questions. First, how complex many-body dynamics generate nuclear shapes; second, how atomic nuclei behave at high temperatures; and third, in atomic nuclei, what mechanism underlies superfluidity – the property of flowing without friction or viscosity. Her grant is for $475,000 from the NSF as part of her CAREER award.

Beane is gratified her NSF CAREER award’s $800,000 grant will support her study of the extraordinary regenerative abilities of certain organisms. Equally important for the assistant professor of biological sciences are the research opportunities she will offer students. “What this award does is it gives me one large grant that goes on for a long time. I have more security, more time to build my reputation, to build my research, and to get things done. It gives me a leg up in my career, research-wise.”

African American and African Studies

Interdisciplinary Majors and Minors
Focus on Social Sciences, Humanities and Arts

Students in Western Michigan University’s African American and African Studies programs have the opportunity to engage in critical study of the black diasporic cultural traditions, conditions, race and ethnic relations in Africa, the Caribbean basin, and especially North America. Studies focus on the essential, organic role black people and their cultures have played in shaping the societies in which they live.

The program offers opportunities for internships, study abroad and independent study of special topics. Students gain critical thinking skills linked to rigorous historical and contemporary knowledge regarding the social, economic and political process that peoples of African descent have faced and continue to face.

Collaboration with the community is a key element of the programs, which also support local events and activities to deepen and enliven knowledge of experiences and cultures of peoples of African descent.
Gorzyca, professor of physics, is a first-rate theoretical atomic physicist with keen physical insight and unquestioned scientific integrity for work in the area of photon and electron initiated collisions. He has theoretical collaborators in Scotland, Northern Ireland and Sweden, and experimental collaborations with scientists from Columbia University and universities in Germany and Greece.

His impressive publication record lists more than 110 peer-reviewed articles in top-rated physics journals, as well as more than 30 invited talks at conferences, institutions and other universities. To support his research, he has had continuous funding for more than 15 years, largely from NASA as the Principal Investigator. He has supervised three postdoctoral research associates, and he continues to supervise graduate students at the Ph.D. and master’s degree levels.

Notably, Gorzyca was elected to Fellowship in the American Physical Society last year, a recognition awarded to less than 1 percent of the active members.

As a fellow scholar puts it, “while it is possible to publish papers where the only new thing done is to change the charge state or the ion used before rerunning codes that have been run multiple times, Tom Gorzyca is not this kind of physicist.” Instead, he develops new methods for or emphasizes improvements to the qualitative understanding of different systems.

Another of his colleagues notes admiringly, “Although a theorist, he is one of the few that engages well with experimentalists, as witnessed by his many joint theory-experiment papers.”
Xiong, professor of history, has done more than perhaps any other scholar to elevate the status of medieval Chinese history in the international community. He has written seven books in English and another five in Chinese, edited 10 journal volumes, contributed 26 articles and chapters, and reviewed 60 books.

He launched the highly regarded journal “Early Medieval China” and he was chosen to review the Metropolitan Museum’s blockbuster exhibition, “China: Dawn of a Golden Age.” His “Historical Dictionary of Medieval China,” reissued in a paperback edition under the title, “A to Z of Medieval China,” is a remarkable encyclopedia for scholars and students. Surprisingly, his new work includes a historical novel, “Heavenly Khan” (2014), which earned 4.5 stars on Amazon and GoodReads.

Fellow scholars admire his work, including one nominator who sees him as master of structural and narrative history, weighing contradictory evidence, extracting the relevant information from sprawling and often obscure texts, and classifying information succinctly and helpfully.

His languages include English, Chinese and Japanese; and he is “a wizard in new-media based pedagogy.” Another scholar quips: “How many of us can single-handedly write an encyclopedia of medieval China? Or encyclopedia of anything?”

He admires Xiong’s scholarly range: “Xiong takes up the entirety of middle-period history, ranging from city planning, institutions, intellectual, social, economic, and cultural histories. Reading Xiong is always a humbling experience.”
Zhang, professor of mathematics, has contributed greatly to the mathematical community. Her research is in combinatorics and primarily in classical and structural graph theory. She has authored or co-authored 270 research articles and five textbooks on graph theory, discrete mathematics and proofs. “The Fascinating World of Graph Theory,” published by Princeton University Press and translated into Chinese and Japanese, was named a 2015 Choice magazine Outstanding Academic Title in Mathematics, one of only nine books selected. Two of her books on graph colorings, published by Springer in 2015 and 2016, have been downloaded more than 4,000 times worldwide. Her co-edited book “Handbook of Graph Theory” (2013) is the most comprehensive single-sourced guide to graph theory and has originated major areas of research.

Her colleagues see themselves as grateful beneficiaries of her work. One nominator stated that over the past 40 years, he has “never known of anyone who has been as active in any one field of study, and brought more recognition to her University.” Another scholar notes Professor Zhang “is an extraordinarily hard-working gifted researcher who has contributed greatly to the continuing growth of graph theory.” While a third educator wrote, “How she has the time to do the multitude of things is a mystery.”

She is often invited to speak at international conferences and to referee articles for journals. As another nominator puts it, “Western Michigan University must be very proud to have someone with her reputation on the faculty.”
Mezei, a faculty member since 2007 as an assistant then associate professor of chemistry, has developed a novel class of compounds called “nanojars,” research that could potentially assist in purifying water.

A recipient of a 2014 National Science Foundation grant for $284,833, Mezei’s team has shown that nanojars can reduce levels of arsenic and chromate from water to those acceptable to the Environmental Protection Agency.

He was published in several peer-reviewed journals and featured on the cover of several prestigious journals.

Mezei has been a mentor and supervisor for numerous graduate and undergraduate students and active with the American Chemical Society’s Project SEED for economically disadvantaged high school students, the Science Olympiad, “Chemistry Day at the Museum” in Kalamazoo, events for WMU student orientation and advising, and the American Chemical Society since 2000.

He has received numerous awards at WMU, including the 2012 Arts and Sciences Teaching and Research Award, 2016 and 2012 Discovery and Dissemination Award, 2017, 2010 and 2008 Faculty Research and Creative Activities Award and 2010 Impacting Communities by Advancing Chemistry Award.

He earned his bachelor’s and master’s degrees in chemistry from Babes-Bolyai University in Romania and a Ph.D. from the University of Puerto Rico.

Mezei’s work was recognized by fellow scientists around the globe who recommended him for the award. His “creative approach to a stunning range of research problems has led to significant advancements in scientific knowledge as well as to practical applications in different fields of chemistry...” said a professor of chemistry at another university and a Nobel Laureate in chemistry.
FROM INVENTION TO COMMERCIALIZATION

Technology Development Funds awarded in 2017 provided researchers with support to move their discoveries along the pipeline from invention to commercialization. Four projects received $60,000 in internal support.

AN INTERACTIVE PERFORMANCE FEEDBACK SYSTEM FOR EXERCISE EQUIPMENT
Principal Investigator: Dr. Neil Deochand
Award amount: $15,556

There are few devices or solutions that offer real-time, instantaneous feedback for exercise equipment users when they are performing at, above or below their baseline exercise performance. The Interactive Performance Feedback System motivates users to achieve their exercise training goals by changing music speed, volume and pitch based on their baseline performance on the exercise machine they are using. Under-performance results in their playlist playing slower, while meeting or exceeding their set exercise goal results in their playlist music being played at a normal speed while they exercise. In addition, the force or resistance in performance of an exercise alters the volume of the music up or down based on the users baseline performance. For exercise machines with visual displays the visibility/blurriness of the readout/picture is also altered based on users’ performance. This device allows users to easily monitor performance while staying “in the zone” while training.

THE WIGGLETRON FOR RAPID MEASUREMENT OF BLOODBORNE MICROFILARIA POPULATIONS IN STANDARD BLOOD COLLECTION MICROCAPILLARY TUBES
Principal Investigator: Dr. Robert Eversole
Award amount: $10,000

There are over a billion people in the world who are at risk for filarial disease caused by nematode infections. Mass drug treatment programs to treat filarial diseases exist in almost every endemic area in the world. Program effectiveness is limited by the high cost for clinical monitoring of treatments. Present monitoring, microscopic analysis of nematodes is expensive and motility measurement of late stage, large worms, is inaccurate. An experimental device, called a Wiggletron, converts the motion of early and late stage nematodes into electrical waveforms. The waveforms can provide an accurate estimate of the number of viable parasites present in the sample. This project will automate the output to provide graphical presentation of nematode numbers and to modify the Wiggletron to create a dual sample testing chamber that can hold and analyze standard blood collection tubes that are used everywhere, making field testing of blood and water samples a one step process using the Wiggletron.

3D METAL PRINTING DEVICE AND PROCESS
Principal Investigator: Dr. Pavel Ikonomov
Award amount: $20,000

Many 3-D prototyping technologies (additive manufacturing) print thermoplastic parts. The global 3D printing market for metal parts is expected to grow five times by 2020. At present, there are two main 3-D metal printing technologies, which use expensive techniques to print metal parts. In contrast, this new 3D printer utilizes a well-known and deployed technology, Gas Metal Arc Welding (GMAW, also known as Metal Inert Gas MIG), to print metal part layers. It then machines each layer using Computer Numerical Controlled (CNC) Machining to create a reliable metal part quickly and efficiently. The additive welding technology (the build-up of metal layers) is integrated with the subtractive/machining capabilities of CNC machines into the same device. The deposition welding (additive) and machining process (subtractive) is repeated multiple times until the part is produced in a finished form. This cutting-edge technology allows users to eliminate the additional steps and costs of machining parts on separate stations, e.g., machining immediately after each layer of metal is deposited enables the manufacture of 3D printed parts with complex geometries (including overhangs and cavities) without using support structures required for most 3D printing.

AUTOMATED QUANTITY TAKEOFF FROM ARCHITECTURE, ENGINEERING, AND CONSTRUCTION OBJECTS LEVERAGING FUNDAMENTAL CARTESIAN POINTS GEOMETRIC REPRESENTATION
Principal Investigator: Dr. Jiansong Zhang
Award amount: $14,444

Cost estimation (quantity takeoff estimations) is an important process for the success of a construction project. Accurate quantity takeoff estimation is a time consuming, manual, error prone activity for many construction contractors. There are a large number of construction cost estimation software programs, but incompatibility with databases require human estimators to invest significant time into the software-based estimation. The new software being funded will use Industry Foundation Classes (IFC), which are a comprehensive standard for construction industry data, to provide data for compilation of quantity takeoff estimations. It will use building plans, created by building design software that can convert designs to IFC, to automate the cost estimation process for construction.
WMU’s Parkview campus has 323,000 square feet of teaching and research space, with 75 undergraduate and graduate labs. It shares space in the Business Technology and Research Park with 44 high-tech companies.

Startup and Patent Data for WMU and WMURF

120 WMU startups; 2014-17

WMU STARTUPS
BUSINESS STARTUPS
107

HIGH TECH STARTUPS
13

SUPPORT FOR HIGH TECH STARTUPS*
$685,000

*External and internal sources

DISCLOSURES AND GRANTED PATENTS

<table>
<thead>
<tr>
<th>Year</th>
<th>Disclosures</th>
<th>Patents granted</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>2015</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>2016</td>
<td>15</td>
<td>5</td>
</tr>
<tr>
<td>2017</td>
<td>15</td>
<td>5</td>
</tr>
</tbody>
</table>
All Faculty Publications from July 2013 to June 2017 by Academic year and Publication Type

- **2014-15**
  - 7 AWARDS
  - $310,443 in awards
  - $374,725 in expenditures

- **2015-16**
  - 18 AWARDS
  - $3,010,387 in awards
  - $558,891 in expenditures

- **2016-17**
  - 22 AWARDS
  - $4,245,145 in awards
  - $2,320,787 in expenditures

---

**med.wmich.edu/research-activities**

---

wmich.edu/research 17
UNDERGRADUATE RESEARCH EXCELLENCE AWARD
RECIPIENTS, 2016-17

The Undergraduate Research Excellence Award provides undergraduates with research experience. Selected students receive $500 toward a stipend, travel, or supplies for a mentored research project or creative activity experience with externally funded faculty. Under the program, faculty subsequently may apply for up to $200 for additional supplies to support the student’s work.

Alhouz, Odai  
Civil Engineering  
Effectiveness of Bicycle Signals for Improving Safety and Multimodal Mobility at Urban Intersections  
Faculty Mentor: Dr. Jun-Seok Oh

Anderson, Adam  
Aerospace Engineering  
Preventing Concussion with Innovative Smart Helmet  
Faculty Mentor: Dr. Pnina Ari-Gur

Aurand, Andrew  
Mechanical Engineering  
3D Printer Plastic Recycler  
Faculty Mentor: Dr. Lee Wells

Black, Dustin  
Civil Engineering  
Developing Policies and Guidelines for Enhancing Non-Motorized Mobility within Construction Zones  
Faculty Mentor: Dr. Upul Attanayake

Bliss, Mark  
Mechanical Engineering  
BCM Espresso Machine  
Faculty Mentor: Dr. Richard Meyer

Bolliet, Marine  
Biomedical Sciences  
A Comparative Analysis of Regeneration Among Various Planarian Species  
Faculty Mentor: Dr. Wendy Beane

Bosma, Gregory  
Mechanical Engineering  
Development of a CubeSat Separation Mechanism  
Faculty Mentor: Dr. Kristina Lemmer

Brower, Christian  
Mechanical Engineering  
Plastic Recycler Project  
Faculty Mentor: Dr. Lee Wells

Carlo, Eric  
Industrial and Entrepreneurial Engineering  
Laser Augmented Diamond Drilling  
Faculty Mentor: Dr. John Patten

Caruso, Joseph  
Manufacturing Engineering Technology  
SLA 3D Printer  
Faculty Mentor: Dr. Pavel Ikonomov

Chantrenne, Tyler  
Mechanical Engineering  
CubeSat ADCS Validation and Testing Apparatus  
Faculty Mentor: Dr. Jennifer Hudson

Cole, Ian  
Mechanical Engineering  
Compressor for Portable Biogas Purification System  
Faculty Mentor: Dr. Muralidhar Ghantasala

Cook, Eric  
Manufacturing Engineering Technology  
SLA 3D Bio Printer  
Faculty Mentor: Dr. Pavel Ikonomov

Curle, David  
Mechanical Engineering  
BCM Espresso Machine  
Faculty Mentor: Dr. Richard Meyer

Drumm, Robert  
Mechanical Engineering  
Use of a Magnetotheoretical Fluid for System Actuation  
Faculty Mentor: Dr. Claudia Fajardo-Hansford

Drummond, Andrew  
Mechanical Engineering  
WALI (Western Aerospace Launch Initiative) CubeSat Separation Mechanism  
Faculty Mentor: Dr. Kristina Lemmer

Griffith, Matthew  
Aerospace Engineering  
Separation and Orbital Propagation  
Faculty Mentor: Dr. Jennifer Hudson

Haji, Magreth  
Aerospace Engineering  
Shape Memory Alloys (Nano-Composite)  
Faculty Mentor: Dr. Pnina Ari-Gur

Hartman, Christian  
Chemistry  
Reactivity and Ligand Exchange Potential of Nanoparticles  
Faculty Mentor: Dr. Gellert Mezei

Henning, Spencer  
Physics  
Type la Supernova Models and Galactic Chemical Evolution  
Faculty Mentor: Dr. Michael Famiano

Hiller, Ross  
Mechanical Engineering  
Design and Kinematic Analysis of CubeSat Separation Mechanism  
Faculty Mentor: Dr. Kristina Lemmer

Hiltner, Samuel  
Aerospace Engineering  
LAASS Unmanned Aerial System  
Faculty Mentor: Dr. William Liou

Hughey, Logan  
Chemical Engineering  
Periphyton-Fungi Co-Culture Systems for Capturing Non-Point Phosphorus  
Faculty Mentor: Dr. Andre Mondala

Izaguirre, Gregory  
Aerospace Engineering  
Propellant Tank and Feed System  
Faculty Mentor: Dr. Kristina Lemmer

Kerber, Thomas  
Aerospace Engineering  
NEON-EAGER Air Microbiome Sampler  
Faculty Mentor: Dr. Kristina Lemmer

Kirkendall, Jacob  
Chemistry  
Syringe Spray Mass Spectrometry to Determine α- and β-Acids in Hops  
Faculty Mentor: Dr. Andre Venter

Kurth, Robin  
Mechanical Engineering  
Compressor for Biogas Purification System  
Faculty Mentor: Dr. Muralidhar Ghantasala

Lerner, Kevin  
Aerospace Engineering  
Magnetorquer Controller  
Faculty Mentor: Dr. Jennifer Hudson

Lloyd, Nathan  
Construction Engineering  
Laboratory Evaluation of a Bridge Field Monitoring System  
Faculty Mentor: Dr. Upul Attanayake

Malprhus, Jason  
Mechanical Engineering  
Cooling System Development for an Automotive Application  
Faculty Mentor: Dr. Claudia Fajardo-Hansford

McNamara, Dylan  
Aerospace Engineering  
BCM Espresso Machine  
Faculty Mentor: Dr. Richard Meyer

Melton, Andrew  
Mechanical Engineering  
Fatigue Testing of Materials  
Faculty Mentor: Dr. Daniel Kujawski

Miller, Cole  
Engineering Management Technology  
SLA 3D Bio Printer  
Faculty Mentor: Dr. Pavel Ikonomov

Mirshab, Ramin  
Mechanical Engineering  
Advanced Materials and Manufacturing Techniques for IC Engine Induction Systems  
Faculty Mentor: Dr. Claudia Fajardo-Hansford

Mohsini, Ali Akbar  
Aerospace Engineering  
Magnetorquer Controller  
Faculty Mentor: Dr. Jennifer Hudson

Molina, Roberto  
Aerospace Engineering  
3-Axis Magnetorquer for CubeSat  
Faculty Mentor: Dr. Jennifer Hudson

Mooney, Margaret  
Aerospace Engineering  
Airborne Microbiome Project  
Faculty Mentor: Dr. Kristina Lemmer

Nitz, Brandon  
Mechanical Engineering  
Biogas Separator and Storage Tank  
Faculty Mentor: Dr. Muralidhar Ghantasala

Nye, Jacob  
Mechanical Engineering  
Design of Computerized Surgical Screwdriver  
Faculty Mentor: Dr. Peter Gustafson

Ostrow, Greg  
Computer Science  
Sampling Criteria for Monitoring Influenza Emergencies  
Faculty Mentor: Dr. Diana Prieto

Pines, Wilson  
Engineering Design Technology  
SLA 3D Bio Printer  
Faculty Mentor: Dr. Pavel Ikonomov

Pokorzynski, Vincent  
Mechanical Engineering  
Piezoelectric Energy Harvesting for White Cones  
Faculty Mentor: Dr. Pnina Ari-Gur

Pool, Michael  
Aerospace Engineering  
LAASS Unmanned Aerial System  
Faculty Mentor: Dr. William Liou

Preston, Mackenzie  
Mechanical Engineering  
Plastic Recycler  
Faculty Mentor: Dr. Lee Wells

Richardson, Trevor  
Mechanical Engineering  
Biogas Separator and Storage Tank  
Faculty Mentor: Dr. Muralidhar Ghantasala

CONTINUED ON NEXT PAGE
## Support for Faculty Scholars Award Recipients, 2016-17

The Support for Faculty Scholars Award provides up to $2,000 in support of creative activities and research that may not lead to external funding but that enhance and sustain the scholarship of WMU and faculty investigators.

### Undergraduate Research Excellence Award Recipients

<table>
<thead>
<tr>
<th>Name</th>
<th>Department</th>
<th>Project Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Berto, Luigi</td>
<td>History</td>
<td>Religion and Politics in Early Medieval Naples (8th-9th Centuries)</td>
</tr>
<tr>
<td>Biggs, Christopher</td>
<td>School of Music</td>
<td>Letter to the Moon Recording Project for CD Release</td>
</tr>
<tr>
<td>Crotchett, Cat</td>
<td>Frost School of Art</td>
<td>Pattern and Dimension</td>
</tr>
<tr>
<td>Durham, Lofton</td>
<td>Theatre</td>
<td>Demonstration Productions of Middle Dutch Drama</td>
</tr>
<tr>
<td>Garza Mitchell, Regina</td>
<td>Educational Leadership, Research and Technology</td>
<td>Feminist Critical Discourse Analysis of Presidential Job Postings in the Chronicle of Higher Education</td>
</tr>
<tr>
<td>Gray, Lori</td>
<td>School of Interdisciplinary Health Programs</td>
<td>Exploring the Impact and Lasing Outcomes of Mindfulness Training for College Student Populations</td>
</tr>
<tr>
<td>Hanson, Nicholas</td>
<td>Human Performance and Health Education</td>
<td>Effect of Coffee on 10km Running Performance in the Heat</td>
</tr>
<tr>
<td>Henning, Andrew</td>
<td>Frost School of Art</td>
<td>Visualizing the Camps: Architecture and Migration</td>
</tr>
<tr>
<td>Hillenbrand, James</td>
<td>Speech, Language and Hearing Sciences</td>
<td>Software Simulation of a New Model of Auditory Frequency Analysis</td>
</tr>
<tr>
<td>Kiddle, James</td>
<td>Chemistry</td>
<td>Biomimetic Synthesis of 3-Substituted Pyridines</td>
</tr>
<tr>
<td>Krishnamurthy, R.V.</td>
<td>Geosciences</td>
<td>Are Unusual Isotopic Effects Produced in Precipitation a Byproduct of Unusual Atmospheric Processes?</td>
</tr>
<tr>
<td>Macfarlane, Daniel</td>
<td>Institute of the Environment and Sustainability</td>
<td>The Power of Niagara Falls: Hydro-Electricity, Beauty, and the Manipulation of a Border Waterscape</td>
</tr>
<tr>
<td>Patterson, Kelley</td>
<td>Bronson School of Nursing</td>
<td>Assessing Caregiver Burden in Heart Failure Patients Who Are Caregivers of Family Members</td>
</tr>
<tr>
<td>Simpson, Mary</td>
<td>Family and Consumer Sciences</td>
<td>The Effect Team Learning has on the Development of Creativity in a College Classroom</td>
</tr>
<tr>
<td>Ruther, Joshua</td>
<td>Mechanical Engineering</td>
<td>Investigation of Magnetorheological (MR) Fluids for Device Actuation in Automotive Systems</td>
</tr>
<tr>
<td>Ruesink, Timothy</td>
<td>Mechanical Engineering</td>
<td>Design of Computerized Surgical Screwdriver</td>
</tr>
<tr>
<td>Saad, Marwa Ahmed</td>
<td>Biomedical Sciences</td>
<td>The Role of the HSP 70 Signaling Pathway in Planarian Regenerative Outgrowth</td>
</tr>
<tr>
<td>Salazar, David Moussa</td>
<td>Aerospace Engineering</td>
<td>Energy Harvesting Power for the Smart White Cane</td>
</tr>
<tr>
<td>Santiago, Marcos</td>
<td>Biomedical Sciences/Biochemistry</td>
<td>Preliminary Data Suggest ROS Accumulation for Regenerative Outgrowth</td>
</tr>
<tr>
<td>Schweiger, Jeremy</td>
<td>Electrical Engineering</td>
<td>6U CubeSat Power System and Cathode Design Prototype for WMU WALI Initiative</td>
</tr>
<tr>
<td>Sene, Silmang</td>
<td>Aerospace Engineering</td>
<td>3-Axis Magnetorquer for CubeSat</td>
</tr>
<tr>
<td>Solterman, Turner</td>
<td>Civil Engineering</td>
<td>Specifications and Guidelines for Bridge Constructability Analysis</td>
</tr>
<tr>
<td>Spring, Allison</td>
<td>Biology/Environmental Studies</td>
<td>Atmospheric Microbiome Project</td>
</tr>
<tr>
<td>Stevens, Jacob</td>
<td>Aerospace Engineering</td>
<td>CubeSat ADCS Validation and Testing Apparatus</td>
</tr>
<tr>
<td>Theoret, Nicolas</td>
<td>Mechanical Engineering</td>
<td>CubeSat ADCS Validation and Testing Apparatus</td>
</tr>
<tr>
<td>Vargo, Kaleb</td>
<td>Electrical Engineering</td>
<td>6U CubeSat Power System and Cathode Design Prototype for WMU WALI Initiative</td>
</tr>
<tr>
<td>Villalobos, Cole</td>
<td>Civil Engineering</td>
<td>Michigan Truck Strategic Plan for 2016-2019</td>
</tr>
<tr>
<td>Vogel, Kenton</td>
<td>Mechanical Engineering</td>
<td>Biogas Separator/Storage Tank</td>
</tr>
<tr>
<td>Watson, Gabrielle</td>
<td>Biomedical Sciences</td>
<td>The Effects of PCP Knockdown on Neural Subtypes in Planarians</td>
</tr>
<tr>
<td>Weese, Evan</td>
<td>Mechanical Engineering</td>
<td>FSAE Exhaust Header</td>
</tr>
<tr>
<td>Wyman, Matthew</td>
<td>Electrical Engineering</td>
<td>6U CubeSat Power System and Cathode Design Prototype for WMU WALI Initiative</td>
</tr>
<tr>
<td>Zapata, Morgan</td>
<td>Civil Engineering</td>
<td>Steel Multi-Barrier Bridge Construction Process Documentation</td>
</tr>
</tbody>
</table>

wmich.edu/research
GRADUATE STUDENT RESEARCH AND TRAVEL GRANTS
RECIPIENTS, 2016-17

The Graduate Student Research Fund and Travel Grant, fully funded and administered by the Graduate College, supports graduate students engaged in independent scholarly research, scientific inquiry, inventive technology and original artistic activity. The fund is intended to help students pay extraordinary or unusual costs incurred in research projects. Grants range up to $1,000 and students may apply for up to $600 of additional support to defray the cost of international travel.

*Indicates student received additional funding for international travel.

*Aardsma-Benton, Ruth A.
History
Research
Punks in the Church: The Relationship between the Punk Subculture and Church in East Germany

Akram, Ayaz
Electrical and Computer Engineering
Travel (Jan 17)
X86 Computer Architecture Simulators: A Comparative Study

Akram, Ayaz
Electrical and Computer Engineering
Travel (Sep 16)
X86 Computer Architecture Simulators: A Comparative Study

Alcantara, Jerico
Chemical and Paper Engineering
Research
Direct Succinic Acid Production from Lignocellulosic Biomass Using Sequential Solid-State and Slurry Fermentation with Mixed Fungal Cultures

Aledhari, Mohammed A.
Computer Science
Research
A New Obstacle Avoidance Algorithm In Support of Visually Impaired Individuals

Alves, Gabriel
Biological Sciences
Research
The Effects of Exercise, Aging, and Hypertension on the Expression of Neurotrophic Factors and Innervation Pattern Expression of Neurotrophic and Hypertension on the

Aledhari, Mohammed A.
Computer Science
Research
Design and Implementation of Eye-Like Smart Wearable Device for Blind and Visually Impaired People

Anguiano, Jesse
Interdisciplinary Studies
Research
Yo Soy Bien Sexy Y Culto: A Y'Brooke Project

Awan, Muazz Gul
Computer Science
Research
Accelerating Proteomics Software Pipeline Using Graphical Processing Units for Speeding Up Protein Analysis for Systems Biology Studies

*Bansode, Subodh
Electrical and Computer Engineering
Research
Travel
Design and Implementation of Regulated Pressure Brake with On-Board Control and Monitoring Abilities for the Treatment of Scoliosis

Bilal, Ghassan
Electrical and Computer Engineering
Research
Travel
Network Reduction for Frequency-Domain Transient Analysis of Power Components

*Borchering, Carolyn
Music
Research
Analysis of the Japanese Koto's Compositional and Performance Techniques for Musical Integration and Multiculturalism

Brown, Katherine
Sedology
Research
A Program Evaluation of Domestic Violence Shelter Programs and Research Best Practices and Policies

Bulla, Andrew
Psychology
Research
Self-Management as a Class-Wide Intervention: An Evaluation of the "Self & Match" System Embedded Within a Dependent Group Contingency

Butler, Mainie
Counselor Education and Counseling Psychology
Research
Transgender and Gender Non-Conforming People of Color – A Call for Research and Action

Carrol-Alfano, Miriam A.
Interdisciplinary Health Science
Research
Travel
Assessment of Concussion Education and Knowledge of Concussion Symptoms in Student Athletes

Cheng, Li
Public Affairs and Administration
Research
Flint, Michigan: Water Crisis, Intergovernmental Disaster, or Gubernatorial Campaign?

Chilaihawi, Amer
Abdulmahdi
Electrical and Computer Engineering
Travel
Novel Screen Printed and Flexible Low Frequency Magneto-Electric Energy Harvester

Clay, Andrew
Counselor Education and Counseling Psychology
Research
The Grief Experience of Spousal Dementia Following Facility Placement

*Cole, Rowan
Geography
Research
An Analysis of Deforestation along the Amur River, Khabarovsky Krai, Russia

*Conway, Alissa
Psychology
Research
Travel
Immediate Effects of a One-Day Training on Writing Behavior Support Plans

Current, Kelley
Chemistry
Travel
The Influence of Nanoparticles, Antibiotics, and Humic Acids on Bacterial Growth

Dawson, James
Educational Leadership, Research and Technology
Research
Travel
Justice Involved Veterans' Post Employment Experiences

Deochand, Neil
Psychology
Research
Evaluation of Human Performance Using a Punching Bag Feedback Device

Drager, Elise
Speech, Language and Hearing Sciences
Research
Effects of Developmental Exposure to E-Cigarette Constituents, Nicotine and Vegetable Glycerin, on Conween 43 Expression in the Frog Hindbrain

Dupuis, Danielle Geosciences
Research
Spatial Analysis of Water Use for the City of Kalamazoo, Michigan

Emil, Mustafa
Geosciences
Travel
Nature, Timing, and Origin of Wet Climate Periods in Arabia

Feeman, Meghan
Music Therapy
Research
The Effect of Auditory Stimuli on the Arousal Hypothesis as Measured by EDA Testing Through Verbal Processing

Ferguson, Alexandria
Electrical and Computer Engineering
Research
Using Experimentally-Informed Neuron Models to Find Optimal Neural Stimuli in the Medicinal Leech

Grabarczyk, Erin E.
Biological Sciences
Research
The Impact of Antidepressive Noise on Avian Communication and Reproductive Success

Groves, Thomas
Biological Sciences
Research
Travel
Spectral-Spatial Mapping By Primary Photoreceptors Organized In A Somatotopic Array

Harvey, Eric
Psychology
Research
The Effects of Adolescent Exposure to Amphetamine or Methylphenidate on Nicotine Reward in Adulthood

Honavar, Elahe
Chemistry
Travel
1. Comparing the Effects of Additives on Protein Analysis between DESI and ESI 2. Delayed Desorption Improves Protein Analysis By Desorption Electrospray Ionization Mass Spectrometry; 3. Amino Acids Desalt Protein Samples during DESI-MS Analysis

Hurst, Shelby H.
Geosciences
Research
Stable Isotope Ratios of Thunderstorms: Implications to the Nature of Atmospheric Processes

Hussain, Mohammed
Electrical and Computer Engineering
Travel
Equivalent Representation of Machine Winding in a Frequency Domain Model for Fast Transient Studies

Jenssen, Kayla
Psychology
Research
Now Hiring: Practical Tips for Obtaining and Maintaining Paid Employment for Individuals with Developmental Disabilities

Jianrattanasawat, Sarut
Chemistry
Research
Exploring the Scope of Enantioselective Trifluoromethylation

Kaur, Jagjit
Physics
Research
Near-Threshold Dielectric Reconditioning Studies of Silicon Like Ions

Kells, Ian
Music Therapy
Research
The Effect of Auditory Stimuli on Test Performance: Testing the Arousal Hypothesis
Kennedy-Mendez, Angela I.  
Bogdalian Sciences 
Research  
Characterization of Pivalol Degradation in Sphingomonas Meliloti

Kirkton, Kate S.  
Speech, Language and Hearing Sciences  
Travel  
It is Not Just Spelling! Word Level Errors of Students with Language Learning Disabilities When Writing

*La Mantia, David S.  
Physics  
Travel (2016)  
Single and Double Capture Resulting in Target K-Shell Ionization for F9+ + Ar Collisions

Li, Ziqian  
Geosciences  
Research  
Characterizing Groundwater-Surface Water Interaction by Water Sampling and Analysis in the Headwaters of the White River, Manistee National Forest, Michigan

Luck, Alexander  
Speech, Language and Hearing Sciences  
Research  
Development Effects of E-Cigarette Compounds, Nicotine and Propylene Glycol on Connexin 43 Expressing Glial Cells in the Frog Hindbrain

Ma, Ruoxi  
Chemical and Paper Engineering  
Travel  
Hemicellulose-Based Barrier Coatings for Packaging

MacDonald, James  
Mechanical and Aerospace Engineering  
Travel  
Two-Point Velocity Correlations in the Near-Wall Region of a Reciprocating Internal Combustion Engine

Marcoux, Patrick  
Counselor Education and Counseling Psychology  
Travel  
Transgender and Gender Non-Conforming People of Color – A Call for Research and Action

Martin, Nicholas W.  
Biological Sciences  
Research  
Do Plants Attract the Right Kind of Predators?

Maser, Tara  
Chemistry  
Travel  
Delayed Desorption Electrospray Ionization Mass Spectrometry to Improve Protein Analysis

McNeal, Peggy M.  
Malinich Institute for Science Education  
Research  
Spatial Thinking in Meteorology: A Task Analysis of the Forecasting Process (Pilot Phase)

Mohammadi, Mehdi  
Computer Science  
Travel  
Implementing an Internet of Things Infrastructure and Applications

Moelina, Danielle  
Geography  
Research  
Spatial Analysis of Water Use for the City of Kalamazoo, MI

Olejniczak, Drake  
Mathematics  
Travel  
A New Look at Bipartite Ramsey Numbers in Graphs

*Pankratz, Hannah  
Geosciences  
Research  
Geophysical and Remote Sensing Applications to Better Understand the Distribution and Deformation Associated with Salt Domes Along the Red Sea, Saudi Arabia

Pokharna, Piyush  
Mechanical and Aerospace Engineering  
Research  
Simulation and Experimental Study of Biofunctionalized Magnetic Nanoparticle Motion In-Vivo and In-Vitro

Pozzuto, Joanna  
Biological Sciences  
Travel  
Mitral Cell Dendritic Arbor Recovery Morphology after Chronic Differentiation in the Adult Zebrafish Olfactory Bulb

Ratkos, Thomas  
Psychology  
Research  
Frequency and Nature of Elementary School Teacher-Student Interactions

*Rensch, Colin  
Music  
Research  
Jazz in Vienna: The Interplay of Viennese Culture and Jazz During World War II

Richardson, Hilary  
Psychology  
Research  
Examination of an Internet Program to Improve Discipline Strategies for Parents

Roberts, Kristin  
Counselor Education and Counseling Psychology  
Travel  
Transgender and Gender Non-Conforming People of Color – A Call for Research and Action

Roodbar, Sam  
Geography  
Research  
Spatial and Temporal Change in Halal Food Sales and Consumption: A Case Study of the City of Dearborn, Michigan

Samarakoon, Jaliya  
Chemistry  
Travel  
Conversion of Carbon Dioxide to Formic Acid Mediated By Light Driven Electron Storage Systems

Schlau, Erica  
Councilor Education and Counseling Psychology  
Travel  
Bring Your Dog to Work Day: What Animal Assisted Therapy Is NOT

Schoenborn, Paige  
Educational Leadership, Research, and Technology  
Travel  
Studying Abroad in Malaysia and Singapore: Graduate Student Perspectives

Sprague, Emily  
Biological Sciences  
Research  
The Impact of Road Salt Runoff on the Prokaryotic Communities of Northern Lakes

Straple, Rebecca  
English  
Travel  
The Gendering of Movement in Anglo-Saxon Literature

Suryawanshi, Yogesh  
Biological Sciences  
Travel  
Induction of Mononuclear Immune Cell Response by Oncolytic Tumor Viruses Expressing Monocyte Chemoattractant Protein-1 and Interleukin-2 to Suppress Human Breast Tumor Growth in Nude Mice

*Trude, Brian  
English  
Research  
The Night Watchman

*Turkani, Vikram  
Biological Sciences  
Travel  
To Implement a Lattice-Boltzmann Lattice-Spring Method by Using CUDA

Yavuz, Funda  
Civil and Construction Engineering  
Travel  
Urban Land Use and Urban Form: A Case Study of Istanbul

Wall, Tyler  
Mechanical and Aerospace Engineering  
Travel  
A Survey of Hybrid Electric Propulsion for Aircraft

Williams, Cody T.  
Malinich Institute for Science Education  
Travel  
How Deep is Your Network? A Social Network Analysis of Collaborations for Faculty Development

Willison, Angela M.  
Malinich Institute for Science Education  
Travel  
Understanding College Students’ Exam Process in a General Chemistry Course

*Wu, Tai-Hsien  
Chemical and Paper Engineering  
Travel  
To Implement a Lattice-Boltzmann Lattice-Spring Method by Using CUDA

Yavuz, Funda  
Civil and Construction Engineering  
Travel  
Economic Impact Analysis of Accelerated Bridge Construction

wmich.edu/research
## EXTERNAL AWARDS TO FACULTY AND STAFF

(JULY 1, 2016 THROUGH JUNE 30, 2017)

Funding provided by government, foundations, and industry to support discovery at the University.

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Department</th>
<th>Funding Provided</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abdel-Qader, Ikhlia</td>
<td>Electrical and Computer Engineering</td>
<td>National Science Foundation</td>
<td>$19,997</td>
<td>техника и компьютерный инжиниринг</td>
</tr>
<tr>
<td>Gomez, Pablo</td>
<td>Electrical and Computer Engineering</td>
<td>National Science Foundation</td>
<td>$52,226</td>
<td>техника и компьютерный инжиниринг</td>
</tr>
<tr>
<td>Atashbar, Massood</td>
<td>Electrical and Computer Engineering</td>
<td>National Science Foundation</td>
<td>$200,000</td>
<td>техника и компьютерный инжиниринг</td>
</tr>
<tr>
<td>Bennett, David Clark</td>
<td>Electrical and Computer Engineering</td>
<td>University of West Georgia</td>
<td>$20,139</td>
<td>техника и компьютерный инжиниринг</td>
</tr>
<tr>
<td>Bennett, David Clark</td>
<td>Electrical and Computer Engineering</td>
<td>SafeSense Technologies, LLC</td>
<td>$8,640</td>
<td>техника и компьютерный инжиниринг</td>
</tr>
<tr>
<td>Beach, Andrea L.</td>
<td>Center for Research on Instructional Change in Postsecondary Education</td>
<td>University of California, San Diego</td>
<td>$42,927</td>
<td>техника и компьютерный инжиниринг</td>
</tr>
<tr>
<td>Beach, Andrea L.</td>
<td>Center for Research on Instructional Change in Postsecondary Education</td>
<td>University of Colorado, Boulder</td>
<td>$35,006</td>
<td>техника и компьютерный инжиниринг</td>
</tr>
<tr>
<td>Beane, Wendy Scott</td>
<td>Biological Sciences</td>
<td>National Science Foundation</td>
<td>$160,000</td>
<td>техника и компьютерный инжиниринг</td>
</tr>
<tr>
<td>Bennett, David Clark</td>
<td>Vice President for Research</td>
<td>University of Michigan</td>
<td>$25,000</td>
<td>техника и компьютерный инжиниринг</td>
</tr>
<tr>
<td>Bennett, David Clark</td>
<td>Vice President for Research</td>
<td>University of Michigan</td>
<td>$10,410</td>
<td>техника и компьютерный инжиниринг</td>
</tr>
<tr>
<td>Bennett, Patrick</td>
<td>Mathematics</td>
<td>Simons Foundation</td>
<td>$35,000</td>
<td>техника и компьютерный инжиниринг</td>
</tr>
<tr>
<td>Bensley, Robert J.</td>
<td>School of Interdisciplinary Health Programs</td>
<td>State of California</td>
<td>$242,000</td>
<td>техника и компьютерный инжиниринг</td>
</tr>
<tr>
<td>Bensley, Robert J.</td>
<td>School of Interdisciplinary Health Programs</td>
<td>Iowa Department of Public Health</td>
<td>$19,200</td>
<td>техника и компьютерный инжиниринг</td>
</tr>
<tr>
<td>Bensley, Robert J.</td>
<td>School of Interdisciplinary Health Programs</td>
<td>State of Nebraska</td>
<td>$14,880</td>
<td>техника и компьютерный инжиниринг</td>
</tr>
<tr>
<td>Bensley, Robert J.</td>
<td>School of Interdisciplinary Health Programs</td>
<td>State of South Dakota</td>
<td>$17,360</td>
<td>техника и компьютерный инжиниринг</td>
</tr>
<tr>
<td>Bensley, Robert J.</td>
<td>School of Interdisciplinary Health Programs</td>
<td>State of Colorado</td>
<td>$21,824</td>
<td>техника и компьютерный инжиниринг</td>
</tr>
<tr>
<td>Bensley, Robert J.</td>
<td>School of Interdisciplinary Health Programs</td>
<td>State of Nevada WIC Program</td>
<td>$21,328</td>
<td>техника и компьютерный инжиниринг</td>
</tr>
<tr>
<td>Bensley, Robert J.</td>
<td>School of Interdisciplinary Health Programs</td>
<td>State of Colorado</td>
<td>$18,164</td>
<td>техника и компьютерный инжиниринг</td>
</tr>
<tr>
<td>Bensley, Robert J.</td>
<td>School of Interdisciplinary Health Programs</td>
<td>State of Kentucky</td>
<td>$63,040</td>
<td>техника и компьютерный инжиниринг</td>
</tr>
<tr>
<td>Bensley, Robert J.</td>
<td>School of Interdisciplinary Health Programs</td>
<td>State of Florida</td>
<td>$55,120</td>
<td>техника и компьютерный инжиниринг</td>
</tr>
<tr>
<td>Bensley, Robert J.</td>
<td>School of Interdisciplinary Health Programs</td>
<td>Missouri Department of Health and Human Services</td>
<td>$33,480</td>
<td>техника и компьютерный инжиниринг</td>
</tr>
<tr>
<td>Bensley, Robert J.</td>
<td>School of Interdisciplinary Health Programs</td>
<td>Missouri Department of Health and Senior Services</td>
<td>$32,240</td>
<td>техника и компьютерный инжиниринг</td>
</tr>
<tr>
<td>Bensley, Robert J.</td>
<td>School of Interdisciplinary Health Programs</td>
<td>State of Oregon</td>
<td>$22,002</td>
<td>техника и компьютерный инжиниринг</td>
</tr>
<tr>
<td>Bensley, Robert J.</td>
<td>School of Interdisciplinary Health Programs</td>
<td>Michigan Department of Health and Human Services</td>
<td>$196,065</td>
<td>техника и компьютерный инжиниринг</td>
</tr>
<tr>
<td>Bensley, Robert J.</td>
<td>School of Interdisciplinary Health Programs</td>
<td>Michigan Department of Health and Human Services</td>
<td>$196,065</td>
<td>техника и компьютерный инжиниринг</td>
</tr>
</tbody>
</table>

*Discoveries*
Bensley, Robert J.
School of Interdisciplinary Health Programs
State of Maine Department of Health and Human Services
$11,169

Bensley, Robert J.
School of Interdisciplinary Health Programs
State of South Dakota
$11,160

Bensley, Robert J.
School of Interdisciplinary Health Programs
North Dakota Department of Health
$11,160

Bensley, Robert J.
School of Interdisciplinary Health Programs
Alaska Department of Health & Social Services
$8,379

Bensley, Robert J.
School of Interdisciplinary Health Programs
Inter Tribal Council of Nevada WIC
$3,720

Bensley, Robert J.
School of Interdisciplinary Health Programs
Ute Mountain
$3,720

Bensley, Robert J.
School of Interdisciplinary Health Programs
State of Oregon
$800

Bergman, Karen
School of Nursing
Bronson Healthcare Group
$59,119

Black-Pond, Connie
School of Social Work
Wheatley, Denise
School of Social Work
Michigan Department of Health and Human Services
$16,500

Blyth, Jane
Hamline Institute for International Studies
U.S. Department of Education
$107,321

Bush, Jonathan
English
National Writing Project Corporation
$15,000

Bush, Jonathan
English
Memorial Library
$6,600

Butt, Steven E.
Industrial and Entrepreneurial Engineering and Management
Fredericks, Tycho K.
Industrial and Entrepreneurial Engineering and Management
Haworth, Inc.
$35,000

Carr, Erika Ann
Enrollment Management
King, Keenan A.
Enrollment Management
U.S. Department of Education
$257,500

Carr, Erika Ann
Enrollment Management
Michigan Department of Talent and Economic Development
$163,530

Carr, Erika Ann
Enrollment Management
State of Michigan Workforce Development Agency
$158,030

Carr, Erika Ann
Enrollment Management
Michigan Department of Talent and Economic Development
$91,346

Carr, Erika Ann
Enrollment Management
State of Michigan Workforce Development Agency
$1,940

Chapleau, Ann
Occupational Therapy
Eastside Youth Strong
$20,000

Ciccarelli, Laura R.
Academic Advising
U.S. Department of Education
$226,600

Covell, Ying Zeng
Hamline Institute for International Studies
Confucius Institute Headquarters
$70,000

Coyle, Jennifer L.
Vice President for Research
California State University-Northridge
$146,372

Coyle, Jennifer L.
Vice President for Research
University of Massachusetts Boston
$11,314

Crumpton, Teresa
Speech, Language and Hearing Services
Wayne State University
$16,000

Curtis, Amy B.
Center for Health Data Research, Analysis and Mapping
Baker, Kathleen M.
Geography
Paul, Rajib
Statistics
Charlotte County, Florida
$95,001

Curtis, Amy B.
Center for Health Data Research, Analysis and Mapping
Public Policy Associates
$77,713

Curtis, Amy B.
Center for Health Data Research, Analysis and Mapping
Public Policy Associates
$19,565

Curtis, Amy B.
Center for Health Data Research, Analysis and Mapping
Calhoun County Public Health Department
$9,613

Damashek, Amy L.
Psychology
Western Michigan University
$8,848

Davis, Tamara J.
Haworth College of Business
$800

Deshpande, Satish
Haworth College of Business
Grand Valley State University
$214,200

Davis, Tamara J.
Haworth College of Business
Grand Valley State University
$33,334

DeCamp, Whitney
Sociology
City of Kalamazoo
$11,645

DeDoncker, Elise
Industrial and Entrepreneurial Engineering and Management
National Science Foundation
$5,000

Dennis, Tony O.
The Graduate College
State of Michigan Workforce Development Agency
$102,708

Dudek, Andrzej
Mathematics
Bennett, Patrick
Mathematics
National Science Foundation
$10,000

Ellis, Todd D.
Mallinson Institute for Science Education
Jet Propulsion Laboratory
$20,000

Ellis, Todd D.
Mallinson Institute for Science Education
Jet Propulsion Laboratory
$20,000

Eversole, Robert R.
Biological Sciences
Western Michigan University Research Foundation
$10,000

Famiano, Michael A.
Physics
Los Alamos National Laboratory, LLC
$60,000

Farrer, Lori B.
Teaching, Learning and Educational Studies
State of Michigan Workforce Development Agency
$53,700

Flamme, Gregory A.
Speech, Language and Hearing Services
Tasko, Stephen M.
Speech, Language and Hearing Services
Geneva Foundation
$427,889

Fleming III, Paul D.
Chemical and Paper Engineering
National Science Foundation
$50,000

Frieder, Jessica E.
Psychology
Summit Pointe
$223,048

Frieder, Jessica E.
Psychology
Van Buren ISD
$88,710

Fuqua, Wayne R.
Psychology
Georgia State University
$23,000

Fuqua, Wayne R.
Psychology
Western Michigan University Research Foundation
$15,556

Garcia, Lisa R.
Haworth College of Business
University of Michigan
$60,000

Garcia, Lisa R.
Haworth College of Business
University of Michigan
$3,500

Gauthier, Bethany W.
Broadway League Inc
$5,000
Gauthier, Bethany W.  
Miller Auditorium  
Arts Midwest  
$4,000

Gilbert, Kathryn Marie  
Parent and Family Programs  
Kalamazoo Regional Educational Service Agency  
$62,010

Gilbert, Kathryn Marie  
Parent and Family Programs  
Kalamazoo County Ready 4S  
$21,890

Gilbert, Kathryn Marie  
Parent and Family Programs  
Great Start to Quality  
$1,957

Gilbert, Kathryn Marie  
The Children's Place  
Michigan Department of Education  
$6,465

Gilbert, Kathryn Marie  
The Children's Place  
Michigan Department of Education  
$4,516

Gilbert, Kathryn Marie  
The Children's Place  
Michigan Department of Education  
$3,824

Gilbert, Kathryn Marie  
The Children's Place  
Michigan Department of Education  
$2,739

Gill, Sharon  
Biological Sciences  
Vonhof, Maarten  
Biological Sciences  
U.S. Army Engineer Research and Development Center  
$81,459

Glasser, Harold  
Office for Sustainability  
U.S. Environmental Protection Agency  
$14,536

Gorczyca, Thomas W.  
Physics  
Bautista, Manuel A.  
Physics  
National Aeronautics and Space Administration  
$163,154

Gothberg, June E.  
Vice President for Research  
University of Central Florida  
$228,993

Grunert, Megan Leanne  
Chemistry  
Stapleton, Susan R.  
The Graduate College  
Steinke, Joelyn D.  
School of Communication  
National Science Foundation  
$14,500

Gustafson, Peter A.  
Mechanical and Aerospace Engineering  
Western Michigan University  
Homer Stryker M.D. School of Medicine  
$47,537

Hahn, Janet S.  
Center for Excellence in Gerontology  
Baker, Jonathan  
Psychology  
Michigan Department of Health and Human Services  
$103,171

Hahn, Janet S.  
Center for Excellence in Gerontology  
Kalamazoo County  
$2,500

Hahn, Janet S.  
Center for Excellence in Gerontology  
Sixty Plus, Inc. Elder Law Clinic  
$2,000

Hansford, Claudia M.  
CAIDS Center  
Various Industries  
$34,125

Hansford, Claudia M.  
CAIDS Center  
Various Industries  
$34,125

Hansford, Claudia M.  
Mechanical and Aerospace Engineering  
Meyer, Richard T.  
Mechanical and Aerospace Engineering  
Deno North America Foundation  
$48,102

Harrison III, William B.  
Geosciences  
Battelle Memorial Institute  
$52,957

Harrison III, William B.  
Geosciences  
U.S. Geological Survey  
$37,289

Hartmann, David J.  
Geosciences  
County of Kalamazoo  
$11,380

Hartmann, David J.  
Geosciences  
County of Kalamazoo  
$11,332

Hartmann, David J.  
Geosciences  
County of Kalamazoo  
$10,339

Kaczmarek, Stephen E.  
Geosciences  
Caruthers, Andrew H.  
Geosciences  
National Science Foundation  
$76,772

Kaczmarek, Stephen E.  
Geosciences  
Exxon Mobil Research Qatar  
$60,000

Kayani, Asghar  
Physics  
Fraunhofer Center for Coatings and Laser Applications  
$20,000

Kayani, Asghar  
Physics  
Argonne National Laboratory  
$15,000

Kelew, Alan  
Geosciences  
U.S. Geological Survey  
$15,950

Kim, Dae Shik  
Blindness and Low Vision Studies  
U.S. Department of Education  
$148,823

Kujawski, Daniel  
Mechanical and Aerospace Engineering  
National Science Foundation  
$87,515

Kuzma, Patrick  
Mechanical and Aerospace Engineering  
National Science Foundation  
$50,000

Kwigizile, Valerian  
Civil and Construction Engineering  
Akamnu, Abiola A.  
Civil and Construction Engineering  
$10,576

Kwigizile, Valerian  
Civil and Construction Engineering  
Michigan Office of Highway Safety Planning  
$24,809

Lee, Helen  
Blindness and Low Vision Studies  
U.S. Department of Education  
$139,015

Lee, Tiffany  
Physician Assistant  
Craig, Stephen E.  
Counselor Education and Counseling Psychology  
$125,000

Lemmer, Kristina  
Mechanical and Aerospace Engineering  
Air Force Office of Scientific Research  
$120,000

Lemmer, Kristina  
Mechanical and Aerospace Engineering  
National Aeronautics and Space Administration  
$71,076

Lemmer, Kristina  
Mechanical and Aerospace Engineering  
National Aeronautics and Space Administration  
$67,208

Lemmer, Kristina  
Mechanical and Aerospace Engineering  
Michigan Office of Highway Safety Planning  
$129,868

Lemmer, Kristina  
Mechanical and Aerospace Engineering  
Utah State University  
$95,780

Lou, William W.  
Mechanical and Aerospace Engineering  
National Science Foundation  
$203,804
Liou, William W.
Mechanical and Aerospace Engineering
Sabesan Orthopaedics
$45,000

Liou, William W.
Mechanical and Aerospace Engineering
National Aeronautics and Space Administration
$30,000

Maatman, Janice Wassenaar
School of Public Affairs and Administration
Grandview Medical Care Facility
$3,607

Mallak, Larry A.
Industrial and Entrepreneurial Engineering and Management
Stryker Medical
$129,414

Malott, Richard W.
Psychology
Kalamazoo Regional Educational Service Agency
$141,926

Manley, Robert Adam
Family and Consumer Sciences
Thompson, Raymond College of Aviation

Zinser, Richard W.
Family and Consumer Sciences
Federal Aviation Administration
$64,350

Manley, Robert Adam
Family and Consumer Sciences
Bruce, Charles R.
Family and Consumer Sciences
Michigan Department of Education
$17,000

Mansberger, Nancy B.
Educational Leadership, Research and Technology
Shen, Jianping
Educational Leadership, Research and Technology
Burt, Walter L.
Educational Leadership, Research and Technology
U.S. Department of Education
$1,033,974

McMorrow, Shannon L.
School of Interdisciplinary Health Programs
Association for Prevention Teaching and Research
$14,637

Meade, David J.
Industrial and Entrepreneurial Engineering and Management
Patten, John A.
Industrial and Entrepreneurial Engineering and Management
Various Industries
$25,000

Means, Stephanie N.
The Evaluation Center
Magura, Stephen
The Evaluation Center
Literacy Center of West Michigan
$4,623

Merati, Parviz
Mechanical and Aerospace Engineering
Stryker Medical
$10,000

Metro-Roland, Dennis P.
Center for the Humanities
National Endowment for the Humanities
$27,650

Meyer, Donald J.
Economics
The W.E. Upjohn Institute for Employment Research
$6,000

Miller, Michael G.
Human Performance and Health Education
Bronson Orthopedic and Sports Medicine
$247,800

Miller, Michael G.
Human Performance and Health Education
West Michigan Rehabilitation, PC
$35,400

Miller, Michael G.
Human Performance and Health Education
Kalamazoo College
$35,400

Miller, Michael G.
Human Performance and Health Education
Bronson Orthopedic and Sports Medicine
$4,200

Miller, Michael G.
Human Performance and Health Education
West Michigan Rehabilitation, PC
$600

Miller, Michael G.
Human Performance and Health Education
Kalamazoo College
$600

Miller, Robert G.
Vice President for Business and Finance
U.S. Department of Commerce
$2,098,000

Mondala, Andro
Chemical and Paper Engineering
Hospital Network Ventures
$23,985

Mondala, Andro
Chemical and Paper Engineering
City of Kalamazoo
$4,645

Moser, Christine
Economics
National Science Foundation
$198,200

Patten, John A.
Industrial and Entrepreneurial Engineering and Management
National Science Foundation
$5,889

Pekarovicova, Alexandra
Chemical and Paper Engineering
Gravure Education Foundation
$5,000

Petcovic, Heather L.
Malinson Institute for Science Education
Bertman, Steven B.
Environmental Studies
Ellis, Todd D.
Geography
Kaczmarek, Stephen E.
Geosciences
Vellom, Paul R.
Teaching, Learning and Educational Studies
National Science Foundation
$365,883

Peterson, Stephanie M.
Psychology
Frieder, Jessica E.
Psychology
Fusqua, R. Wayne
Psychology
Michigan Department of Health and Human Services
$150,000

Peterson, Stephanie M.
Psychology
Frieder, Jessica E.
Psychology
Fusqua, R. Wayne
Psychology
Michigan Department of Health and Human Services
$75,000

Peterson, Stephanie M.
Psychology
Kalamazoo Community Mental Health Services
$63,142

Peterson, Stephanie M.
Psychology
Kalamazoo Community Mental Health Services
$42,952

Peterson, Stephanie M.
Psychology
Kalamazoo Community Mental Health Services
$27,344

Peterson, Stephanie M.
Psychology
Portage Public Schools
$25,659

Peterson, Stephanie M.
Psychology
Bakalyar, Kurtney K.
Psychology
Michigan Rehabilitation Services
$24,714

Peterson, Stephanie M.
Psychology
The Children’s Center of Wayne County
$22,000

Peterson, Stephanie M.
Psychology
Bakalyar, Kurtney K.
Psychology
Michigan Rehabilitation Services
$8,136

Pschigoda II, Lon
Auxiliary Enterprises
Various Industries
$642,531

Pschigoda II, Lon
Auxiliary Enterprises
Various Industries
$482,004

Ramrattan, Sam N.
Engineering Design, Manufacturing and Management Systems
The American Foundry Society, Inc.
$124,280

Reeling, Carson
Economics
University of Delaware
$3,473

Reeves, Donald M.
Geosciences
Desert Research Institute
$71,595

Reeves, Donald M.
Geosciences
Enterprise Charlotte Foundation, Inc
$6,307

Robertson, Carolyn K.
Sindecuse Health Center
Crawford, Felicia Taylor
Institutional Equity
Smith, Alecia
Sindecuse Health Center
Michigan Department of State Police
$60,617

Robertson, Kelly N.
The Evaluation Center
Grand Rapids Urban League
$30,000

Robertson, Kelly N.
The Evaluation Center
Urban Core Collective
$9,543.22

Robertson, Kelly N.
The Evaluation Center
Goodwill Industries of Southwest Michigan
$9,000

Robertson, Kelly N.
The Evaluation Center
Goodwill Industries of Southwest Michigan
$5,000
Rossbach, Silvia
Biological Sciences
Enbridge Energy Partners, LP
$4,983

Ruhl, Robert J.
SAMPI
Muskegon Area ISD (MAISD)
Math & Science Center
$21,012

Saeed, Fahad
Computer Science
Venter, Andre
Chemistry
U.S. Department of Health and Human Services
$418,533

Saeed, Fahad
Electrical and Computer Engineering
National Science Foundation
$499,999

Schieman, Karen
School of Nursing
Rea, Alan I.
Business Information Systems
Society of Trauma Nurses
$9,500

Simmons, Jamaul
Center for Academic Success Programs
U.S. Department of Education
$293,297

Stapleton, Susan R.
Provost and Vice President for Academic Affairs
Fetters, Marcia K.
Teaching, Learning and Educational Studies
Mingus, Tabitha Young
Mathematics
The Woodrow Wilson National Fellowship Foundation
$40,000

Stark, Mary Ann
School of Nursing
U.S. Department of Health and Human Services
$472,070

Straight, Bilinda
Anthropology
National Science Foundation
$25,522

Sultan, Mohamed
Geosciences
Ahmed, Mohamed
Geosciences
The National Academy of Sciences
$70,507

Sultan, Mohamed
Geosciences
National Authority for Remote Sensing and Space Sciences
$40,000

Sultan, Mohamed
Geosciences
National Aeronautics and Space Administration
$30,000

Sultan, Mohamed
Geosciences
Ahmed, Mohamed
Geosciences
The National Academy of Sciences
$3,660

Sundberg, Carl
Center for Disability Services
Kalamazoo Community Mental Health Services
$865,245

Sundberg, Carl
Center for Disability Services
Kalamazoo Community Mental Health Services
$580,474

Sundberg, Carl
Center for Disability Services
Kalamazoo Community Mental Health Services
$505,025

Sundberg, Carl
Center for Disability Services
Kalamazoo Community Mental Health Services
$330,308

Sydlik, Mary Anne
College of Education and Human Development
Everett, Kristin
SAMPI
University of Arizona
$50,144

Sydlik, Maryanne
College of Education and Human Development
National Science Foundation
$117,986

Sydlik, Maryanne
College of Education and Human Development
National Science Foundation
$93,728

Sydlik, Maryanne
SAMPI
Michigan Department of Education
$6,078.75

Tanis, John A.
Physics
Kayani, Asghar
Physics
National Science Foundation
$35,090

Tasko, Stephen M.
Speech, Language and Hearing Services
Centers for Disease Control and Prevention
$73,707

Thakur, Joyashish
Geosciences
Altius Resources Inc.
$20,000

Thompson, Raymond
College of Aviation
Federal Aviation Administration
$83,000

Thompson, Raymond
College of Aviation
Whittles, James H.
College of Aviation
General Electric Company
GE Aviation
$13,616

Thompson, Raymond
College of Aviation
Nicolai, Dominic
College of Aviation
General Electric Company
GE Aviation
$11,724

Tsang, Edmund
College of Engineering and Applied Sciences
Kline, Andrew A.
Chemical and Paper Engineering
University of Michigan
$55,187

Van Zee, Laura R.
Mathematics
National Science Foundation
$621,851

Van Der Bos, Joseph C.
Sincere Health Center
Alana’s Foundation
$2,357

Vidic, Zejka
Human Performance and Health Education
St Martin, Mark W.
School of Interdisciplinary Health Programs
Association for Applied Sport Psychology
$2,139

Vonhof, Maarten
Biological Sciences
Wildlife Management Institute
$39,943

Vonhof, Maarten
Biological Sciences
Eversole, Robert R.
Biological Sciences
The Nature Conservancy
$25,000

Vonhof, Maarten
Biological Sciences
Eversole, Robert R.
Biological Sciences
Bat Conservation International
$22,510

Wagenfeld, Amy
Occupational Therapy
Toto Corporation
$10,418

Wall Emerson, Robert
Shawn
Blindness and Low Vision Studies
U.S. Department of Health and Human Services
$587,055

Wall Emerson, Robert
Shawn
Blindness and Low Vision Studies
Anderson, Dawn L.
Blindness and Low Vision Studies
U.S. Department of Education
$249,704

Warfield, Martha B.
Vice President for Diversity & Inclusion
Kalamazoo Promise
$212,524

Washington, Earlie M.
College of Health and Human Services
Early Learning Neighborhood Collaborative
$75,000

Watts, Bradley R.
The Evaluation Center
Michigan Supreme Court
$49,814

Watts, Bradley R.
The Evaluation Center
Delaware State University
$56,400

Watts, Bradley R.
The Evaluation Center
Kalamazoo Public Library
$39,338

Watts, Bradley R.
The Evaluation Center
SRSLY Stockbridge
$26,000

Watts, Bradley R.
The Evaluation Center
Central Michigan University
$22,000

Watts, Bradley R.
The Evaluation Center
Delaware State University
$14,336

Watts, Bradley R.
The Evaluation Center
Wingate, Lori A.
The Evaluation Center
Mobile Health Resources, L.L.C.
$7,378

Wells, Lee
Industrial and Entrepreneurial Engineering and Management
Virginia Polytechnic Institute and State University
$19,265

Wells, Lee
Industrial and Entrepreneurial Engineering and Management
Virginia Polytechnic Institute and State University
$16,368

Wertkin, Robert A.
School of Interdisciplinary Health Programs
Wayne State University
$208,738

Wertkin, Robert A.
School of Interdisciplinary Health Programs
Michigan Department of Health and Human Services
$34,200
Wertkin, Robert A.  
School of Interdisciplinary Health Programs  
Wayne State University  
$9,892  

Wertkin, Robert A.  
School of Interdisciplinary Health Programs  
Fremont Area Community Foundation  
$2,500  

Whitehurst, Geoffrey Richard  
College of Aviation  

Rantz, William G.  
College of Aviation  

Risukhin, Vladimir N.  
College of Aviation  

Brown, Lori J.  
Purdue University  
$319,973  

Wiebold, Jennipher  
Counselor Education and Counseling Psychology  

Munley, Patrick H.  
Counselor Education and Counseling Psychology  

U.S. Department of Education  
$4,253.44  

Williams, Cody  
SAMPI  
Michigan Mathematics & Science Centers UCI Division  
$30,563  

Williams, Cody  
SAMPI  
Wayne County Regional Educational Services Agency  
$30,000  

Williams, Stephen A  
WMUK Radio  
Corporation for Public Broadcasting  
$107,248  

Williams, Stephen A.  
WMUK Radio  
Corporation for Public Broadcasting  
$37,820  

Wingate, Lori A.  
The Evaluation Center  
Gullickson, Arlen R.  
The Evaluation Center  
Perk, Emily Anne  
The Evaluation Center  
National Science Foundation  
$1,599,872  

Wingate, Lori A.  
The Evaluation Center  
Perk, Emily Anne  
The Evaluation Center  
U.S. Geological Survey  
$124,687  

Yellich, John  
Geosciences  
Kehew, Alan  
Geosciences  
U.S. Geological Survey  
$72,524  

Yellich, John  
Geosciences  
Michigan Department of Environmental Quality  
$22,000  

Zhang, Jiansong  
Civil and Construction Engineering  
Western Michigan University Research Foundation  
$14,444  

Yellich, John  
Geosciences  
Kehew, Alan  
Geosciences  
Thakurta, Joyashish  
Geosciences  
U.S. Geological Survey  
$12,768  

Zhang, Jiansong  
Civil and Construction Engineering  
Western Michigan University Research Foundation  
$14,444
The Technology Development Fund is an internal grant program to provide funding to further develop faculty inventions. As such, it represents the significant investment WMU has made to enhance the impact of WMU’s research through commercialization. The WMU Technology and Innovation Advancement Management and Commercialization Faculty Advisory Committee awarded four proposals for 2017.

\[\text{FUND AWARDS 2017}\]

<table>
<thead>
<tr>
<th>Participant</th>
<th>Project Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deochand, Neil; Fuqua, R. Wayne; Gregory, Dale</td>
<td>\text{Psycho}logy \text{An Interactive Performance Feedback System for Exercise Equipment} $15,556</td>
</tr>
<tr>
<td>Eversole, Robert</td>
<td>\text{Biological Sciences \ WiggleTron Development to Rapid Determination of Bloodborne Microfilaria Populations in Clinical Blood Collection Tubes} $10,000</td>
</tr>
<tr>
<td>Ikonomov, Pavel</td>
<td>\text{Engineering Design, Manufacturing and Management Systems Department 3D Metal Printing Device and Process} $20,000</td>
</tr>
<tr>
<td>Zhang, Jiansong</td>
<td>\text{Civil and Construction Engineering Automated Quantity Takeoff from Architecture, Engineering, and Construction Objects Leveraging Fundamental Cartesian Points Geometric Representations} $14,444</td>
</tr>
</tbody>
</table>

\[\text{PARTICIPANT WINNERS 2017}\]

RESEARCH AND CREATIVE ACTIVITIES POSTER DAY
GRADUATE STUDENT PARTICIPANT WINNERS 2017

Ama Agyeiwaah
Mentor: Dr. Christine Moser
Economics
“Why Do Women Delay in Seeking Prenatal Care? A Discrete-time Survival Analysis”

Ahmed Sulaiman M Alharbi
Mentor: Dr. Elise de Doncker
Computer Science
“Deep Neural Network Model for Twitter Sentiment Analysis by Incorporating User-Level Information”

Hasnaa Imam Al-Shaikhli
Mentor: Dr. Elise de Doncker
Computer Science
“An Approximation Algorithm for Motif Finding in DNA Sequences”

Ruth Bates-Hill
Mentor: Dr. Daniela Schroeter
Public Affairs and Administration
“Authorship Revealed: Findings from a Systematic Review of Key Public Administration Membership Association Journals”

Andrew Phillip Keller
Mentor: Dr. Bill Cobern
Science Education
“The Relationship between Anthropogenic Climate Change Acceptance and Agreement with Authentic Dissector Messages”

Ryan P. Castillio
Mentors: Drs. Susan Carlson and Whitney DeCamp
Sociology
“People You May (or May Not) Know: Usage Intensity, Status Motivation, and Intimate Self Disclosure as Predictors of Bridging Social Capital on Facebook”

Cynthia Anne Cooley-Thomm
Mentor: Dr. Cindy Linn
Biological Sciences
“Characterization of a Neuroprotective Retinal Synapse after Inducing Glaucoma in Long Evans Rats”

Ryan Filbin
Mentor: Dr. Laiyin Zhu
Geography
“Modeling Channel Response to Dam Removal in Lansing, Michigan, using SWAT”

Katie Gaviglio
Mentor: Dr. Andrea Mondala
Chemical and Paper Engineering
“Phosphorus Speciation of Riverbed Sediments from a Eutrophic Watershed in SW Michigan: Assessment of Phosphorus Recovery Potential”

Erin Grabarczyk
Mentor: Dr. Sharon Gill
Biological Sciences
“The Impact of Anthropogenic Noise on Asian Communication and Fitness”

Jagjit Kaur
Mentor: Dr. Thomas Gorczyca
Physics
“Dyelectric Recombination of Si-like Ions and the Orion Nebula SZ+ Abundance Conundrum”

Megan Kuk
Mentor: Dr. Steven E. Butt
Industrial and Entrepreneurial Engineering and Engineering Management
“Analysis of Emergency Medical Services Response Continuum for Motor Vehicle Crashes in Michigan”

Robert Makin
Mentor: Dr. Steven Durbin
Electrical and Computer Engineering
“Exploiting Disorder in Novel Semiconductors for Optoelectronic Devices”

Daniel Abraham Mengistu
Mentor: Dr. Mark Wheeler
Economics

Frank Ofori
Mentor: Dr. Matthew Higgins
Economics
“A Markov Regime Switching Model with Time-varying Transition Probabilities for Identifying Asset Price Bubbles”

Lusanni Acosta Rodriguez
Mentor: Dr. Valerian Kwizula
Civil and Construction Engineering
“Evaluation of the Effectiveness of CleanviewFont and Fluorescent Yellow Sheeting on Michigan’s Freeways”

QI Zhang
Mentor: Dr. Jessica Spybrook
Education Leadership, Research and Technology
“An Examination of the Design and Statistical Power of Impact Evaluations in Low- and Middle-Income Countries”

Ran Shi
Sponsor: Dr. Donna Talbot
Education Leadership, Research and Technology
“Progress in the Past Decade: An Examination of the Precision of Cluster Randomized Trials Funded by the U.S. Institute of Education Sciences”

Viraj D. Thanthirige
Sponsor: Dr. Sherine Obare
Chemistry
“Solvent and Ligand Effect on Ultraviolet and Temperature-dependent Optical Properties of Bi-cosahedral Au25 Clusters”

Patrick Vail
Sponsor: Dr. Susan Pozo
Economics
“Returns to Global Human Capital: Evidence from the US Labor Market”

Tai-Hsien Wu
Sponsor: Dr. William Rantz
Chemical and Paper Engineering
“A Numerical Approach to Investigate the Influence of Deformable Blockages on Blood Flow in an Elastic Vessel”

\[\text{$10,000}\]

\[\text{$20,000}\]

\[\text{\$14,444}\]
### FACULTY RESEARCH AND CREATIVE ACTIVITIES

**RECIPIENTS, 2016-17**

The purpose of the Faculty Research and Creative Activities Award is to encourage and support faculty in significant research, rigorous scientific inquiry, original artistic activity, and inventive technology. Awards are made for up to $10,000 and require submission of an external funding proposal.

* Recipients were named in Jan. 2017; period of award funding is July 1, 2017 through June 30, 2018.

<table>
<thead>
<tr>
<th>Name</th>
<th>School/Department</th>
<th>Project Description</th>
<th>Funding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bade Shrestha, S. O.</td>
<td>Mechanical and Aerospace Engineering</td>
<td>A Portable Biogas Separation and Storage System</td>
<td>$10,000</td>
</tr>
<tr>
<td>Biggs, Christopher</td>
<td>School of Music</td>
<td>Creative Projects, Recording, and Album Release</td>
<td>$7,050</td>
</tr>
<tr>
<td>Burns, Clement</td>
<td>Physics</td>
<td>Studies of Lead Based Semiconductors for Energy Research</td>
<td>$10,000</td>
</tr>
<tr>
<td>Councell-Vargas, Martha</td>
<td>School of Music</td>
<td>Winged Messenger: Uniting the Americas in Artistic Flight</td>
<td>$10,000</td>
</tr>
<tr>
<td>Davis, William</td>
<td>Frostic School of Art</td>
<td>No Dark in Sight: Light and the Night It Transforms</td>
<td>$9,995</td>
</tr>
<tr>
<td>Docherty, Kathryn</td>
<td>Biological Sciences</td>
<td>Strategies for Belowground Soil Restoration</td>
<td>$10,000</td>
</tr>
<tr>
<td>Durbin, Steven</td>
<td>Electrical and Computer Engineering</td>
<td>Earth-Abundant Element Semiconductor Compounds for Short Wavelength Optoelectronic Applications</td>
<td>$10,000</td>
</tr>
<tr>
<td>Fajardo-Hansford, Claudia</td>
<td>Mechanical and Aerospace Engineering</td>
<td>Development of Heat Transfer Correlations for Improved System Design</td>
<td>$10,000</td>
</tr>
<tr>
<td>Famiano, Michael</td>
<td>Physics</td>
<td>Origins of Amino Acid Chirality in Stellar Environments</td>
<td>$5,360</td>
</tr>
<tr>
<td>Ghantasala, Muralidhar</td>
<td>Mechanical and Aerospace Engineering</td>
<td>Drug Delivery and Validation Using Invitro Lab on Chip Device</td>
<td></td>
</tr>
<tr>
<td>Gomez, Pablo</td>
<td>Electrical and Computer Engineering</td>
<td>Optimized Design of Distribution Transformers</td>
<td>$10,000</td>
</tr>
<tr>
<td>Jeng, Cassie; Rowe, Jill; McMorrow, Shannon</td>
<td>School of Interdisciplinary Health Programs</td>
<td>Seeking at the Margins (RHS)</td>
<td>$9,955</td>
</tr>
<tr>
<td>Lemmer, Kristina</td>
<td>Mechanical and Aerospace Engineering</td>
<td>Investigating the Applicability of C12A7 Electrode Material for Use in Electric Propulsion Hollow Cathodes</td>
<td>$10,000</td>
</tr>
<tr>
<td>Mezei, Gellert</td>
<td>Chemistry</td>
<td>Addressing Challenging Areas of Chemical Synthesis and Anion Encapsulation Using Nanopores</td>
<td>$10,000</td>
</tr>
<tr>
<td>Owen, Ginger</td>
<td>Frostic School of Art</td>
<td>Heritage Habitats: A Photographic Installation Project</td>
<td>$9,987</td>
</tr>
<tr>
<td>Ravotas, Doris</td>
<td>School of Interdisciplinary Health Programs</td>
<td>Does the Crystal Clear Mark Quality Recognition Program</td>
<td></td>
</tr>
<tr>
<td>Rossbach, Silvia</td>
<td>Biological Sciences</td>
<td>Bacteria to the Rescue: A “Compass” for Cleaning Up Oil Spills?</td>
<td>$9,939</td>
</tr>
<tr>
<td>Straight, Bilinda</td>
<td>Anthropology</td>
<td>Children of Disaster: Drought, Lived Experience, and Health</td>
<td>$10,000</td>
</tr>
<tr>
<td>Suarez, Michelle</td>
<td>Occupational Therapy</td>
<td>Measuring the Effectiveness of the “Zones of Regulation” Curriculum for Increasing Engagement in Activities of Daily Living</td>
<td>$9,981</td>
</tr>
<tr>
<td>Veeck, Gregory</td>
<td>Geography</td>
<td>Investigating Agricultural Permanence in Large Asian Cities: A Case Study of Nanjing, China</td>
<td>$6,437</td>
</tr>
<tr>
<td>White, Robert</td>
<td>School of Music</td>
<td>The Better Angels of Our Nature – Western Brass Quintet Recording Project</td>
<td>$8,987</td>
</tr>
</tbody>
</table>
WMU
CENTERS AND INSTITUTES*

*Submitting annual reports to the Office of the Vice President for Research.

College of Engineering and Applied Science
Center for Advanced Smart Sensor and Systems
Center for Advanced Vehicle Design and Simulation
Center for Advancement of Printed Electronics
Center for Coating Development
Center for Excellence in Engineering Education
Human Performance Institute
Center for Information Technology and Image Analysis
Center for Ink and Printability
Center for Integrated Design
Manufacturing Research Center
Center for Recycling Technology
Transportation Research Center for Livable Communities

College of Arts and Sciences
Center for African Development Policy Research
Rawlinson Center for Anglo-Saxon Studies and Manuscript Research
Biological Imaging Center
Light Center for Chinese Studies
Center for Cistercian and Monastic Studies
Great Lakes Center for Environmental and Molecular Sciences
Center for the Study of Ethics in Society
Upjohn Center for the Study of Geographical Change
University Center for the Humanities
Medieval Institute
Michigan Geological Repository for Research and Education
Science and Mathematics Program Improvement (SAMPI)
Mallinson Institute for Science Studies
Kercher Center for Social Research
Soga Japan Center

Haworth College of Business
Center for Entrepreneurship and Innovation
Global Business Center
Center for Health Information Technology Advancement (with the College of Health and Human Services)
Center for Sustainable Business

College of Education and Human Development
National Research Center for Grandparents Raising Grandchildren

College of Health and Human Services
Center for Disability Services
Center for Gerontology
Center for Health Information Technology Advancement (with the Haworth College of Business)
Center for Health Data Research, Analysis and Mapping
Center for Fostering Success
University-Community Empowerment Center

Office of the Provost and Vice President for Academic Affairs
Center for Research on Instructional Change in Postsecondary Education
Haenicke Institute for Global Education (includes the Confucius Institute and the Center for English Language and Culture for International Students)
Walker Institute for the Study of Race and Ethnic Relations

Office of the Vice President for Research
Biosciences Research and Commercialization Center Evaluation Center