2014

Discovery: Research Annual Report 2014

Office of Vice President for Research

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You

The hill the lakes the shorelines only
Three thousand years old. Some faces
have this same settled freshness every time.
Few voices do. I have been trying to walk
Out of my body all my life. The flesh
doesn’t belong to itself. Not a breath
we can understand so why this trust?
Understanding itself is a shape-shifter.
Even if I must accept your mortality,
I stay in love like nowhere else I stay.


Dr. Olsen is a professor of creative writing.
Sand Storm is his collection of poetry about the Leelenau Penninsula.

On the cover
This map was digitized along with all of the 7.5 USGS quadrangles for the entire
country, approximately 57,000 map sheets. The W.E. Upjohn Center for the
Study of Geographical Change scanned that series because it is a standard
base map used for a whole range of purposes. The maps are GPS enabled
products available for sale in Avenza’s PDF Maps application on iOS and Android
platforms for uses such as field work, recreation and public safety. The center
is currently negotiating a contract with another vendor to make the maps available
for custom prints using a decollared version of the product.
Discovery initiatives are advancing on several fronts. WMU faculty members and research staff are envisioning discovery plans with specific focus areas, creating larger collaboratives and building discovery communities. These efforts spring from a broad tradition of research that has been, and will continue to be, applied locally, regionally and globally. The stories and successes of our esteemed faculty and research partners speak to the mission of a research institution in community—to discover, to educate and to transfer knowledge through people, publications, creative works, patents, commercialization and technology.

Connections to and among experts at WMU are enhanced by our new WMU Discovery Experts system that is now online. It brings research partners, industry and larger collaboratives together with our researchers to discover answers to complex problems. Working collaboratively with peer institutions or industry partners, we seek to impact the Michigan economy, license our research and expand our overall scholarship footprint. Throughout, we remain true to Western Michigan University’s mission as a learner centered, discovery driven and globally engaged research institution.

This year’s annual report showcases some of these discovery initiatives at Western Michigan University. As you read the accomplishments of our faculty members, research staff and students—both graduate and undergraduate—know that this is the tip of the iceberg of all that is underway in the classrooms, studios, research communities, labs and commercial areas.

One example involving WMU’s Center for Research on Instructional Change in Postsecondary Education illustrates how collaboration can cultivate success and help build discovery communities. When the Department of Education issued a Request for Proposals for the First in the World grant program, the Office of the Vice President for Research convened researchers from across the University to spur discussions for a possible submission. Because of the expertise and leadership at WMU, we had a competitive advantage. WMU can be proud to know that out of nearly 500 proposals, ours was one of 24 selected for funding—and the only university in Michigan chosen to participate. This model of discovery communities is taking root, and we look forward to many more successful results.

We invite you to join in the efforts to discover, to educate, and to translate new knowledge for the benefit of our community, Michigan, the nation, and the world.

To learn more about Western Michigan University and our outstanding research, visit us at wmich.edu/research.

John M. Dunn, Ed.D.
President

Daniel M. Litynski, PhD
Vice President
Office of the Vice President for Research
WMU boosts its autism research and professional training initiatives

Western Michigan University will receive $4 million from the State of Michigan to boost its autism research and professional training initiatives, announced State Rep. Margaret O’Brien this summer at a news conference on campus.

The University, which has a national reputation for its work in behavior analysis as a treatment for autism, will use the funding to tackle the growing national incidence of the brain development disorder by:

Increasing the number of new professionals in the field each year and developing a training model that can be disseminated and replicated at other colleges and universities.

• Developing innovative on-campus support networks for college students on the autism spectrum.

• Directing and overseeing a community daycare and treatment center for young children.

• Directing, developing and maintaining community consultation resources, using such technology as podcasts and teleconsultation.


O’Brien noted that she and her two colleagues were among Michigan legislators who worked earlier to secure insurance coverage for autism services in Michigan. Once that was accomplished in 2012, she said, they began to hear too many stories about the shortage of service providers and long waits for families to get assistance. Allowing the situation to evolve over time and waiting for the supply of trained professionals to grow to match the need was not an option.

“By the time we built that capacity, it was going to be too late for too many children,” O’Brien said. “We know that the earlier we reach them the better it is for families and kids.”

The solution, she noted was “in my own backyard,” where Western Michigan University already has an internationally known program in training people in behavioral health—especially those who serve those families that are dealing with autism.

Autism spectrum disorder and autism are general terms for a group of complex disorders of brain development. These disorders are characterized—in varying degrees—by difficulties in social interaction, verbal and nonverbal communication, and repetitive behaviors. Earlier this year, the Centers for Disease Control and Prevention indicated the prevalence of autism is rising and now affects one in 68 American children. Breaking this number down, the CDC estimates one in 42 boys have autism compared with one in 189 girls.
W.E. Upjohn Center internationally known for its topographical innovation

The W.E. Upjohn Center for the Study of Geographical Change was singled out last year by the International Map Industry Association (Americas) for development of outstanding map products and service. The association selected the center to receive its gold award for Best Digital Map Product of the year as well as its Americas Award for the year’s overall most outstanding map product or service.

The Upjohn Center bested public and private organizations including the National Geographic Society and U.S. Geological Survey.

The Upjohn Center was recognized for its Authoritative U.S. Topos map initiative, which includes a Topographic Maps series and a hybrid sub-series called GeoChange maps. The hyper-accurately georeferenced maps in the two series can be used with GPS-enabled mobile devices and software based on Apple’s iOS and Google’s Android.

Each map is self-contained in the tablet or smartphone, so no wireless connection is required. This means the maps can be used in wilderness areas and on large water bodies out of range of cell towers. They can also be used for navigation and location finding, because a blue dot displays the user’s location on the maps and moves across the maps as the user moves.

“Our maps have an elegant simplicity even though they are based on cutting edge technology” says Dr. Benjamin Ofori-Amoah, chair of geography.

“The maps have incredible accuracy, but not only that; they are fast and easy to use in Avenza’s PDF maps application. Users can easily add information and share it using Google Earth.”

Professional and student staff members in the center began the Authoritative U.S. Topos map initiative in 2007 and have put years of effort into scanning, georeferencing, image processing and related work necessary to bring its maps to market.

Available so far are some 35,000 maps of U.S. places, primarily Michigan and the East and West coasts. In addition, the center is beginning to release maps of various Asian countries.

Invaluable for making comparisons, the Topographic Maps series consists of digitized and georeferenced versions of the U.S. Geological Survey’s most recent fully quality-assured maps, the bulk of which were produced 25 to 35 years ago.

The GeoChange maps series combines those enhanced USGS topographic maps with digital aerial images of the same areas. Readers see through the maps transparently to the aerial images, most of which were taken in 2011 to 2013, so it is easy see where changes such as road construction, river diversions and urban sprawl have occurred.
“Maps are scientific documents that allow us to compare areas over time and allow us to monitor, study and predict what happens next, and where it will occur,” says Ofori-Amoah.

“GeoChange maps are useful for a variety of applications, from environmentalists monitoring the health of a watershed, planners monitoring land uses and engineers monitoring roads and streets, to researchers investigating variations in human health issues across neighborhoods. Because the maps are stored on mobile devices they are useful during power outages and emergencies for a variety of purposes.”
An Interactive Online Notch Fatigue Analysis Tool
Principal Investigator: Dr. Daniel Kujawski  Award amount: $12,400

There is a need for low-cost online software tool designed to predict the fatigue life of notched components for users who need to easily obtain accurate data about how a material would react to external loading, even when several input conditions change at once. The goal is to help decision-making by design engineers who are not necessarily experts in fatigue disciplines.

Next Generation Information Systems for Pilots
Principal Investigator: Lori Brown; Co-Principal Investigator: Dr. Ala Al-Fuqaha  Award amount: $18,500

This project focuses on creation of a low cost mobile training solution for the airline industry to enhance aircraft system knowledge. The mobile apps build a bridge between high cost simulation and theory taught in classrooms. These low-cost apps for iPads and smart phones modernize the curriculum at WMU and position the University to be the leader in education and hands on interaction for pilots. The apps aid in learning and retention of specific aircraft systems and procedures, like hydraulics or de-icing before pilots enter the expensive simulator or aircraft.

Composite Matrix Material Development for low-cost, disposable, reagent-free, resistance-based multiplex, point-of-use immunodiagnostics biosensor platform technology
Principal Investigator: Dr. Brian Young  Award amount: $19,000

A revolution in clinical testing is taking place, wherein blood, serum, saliva and urine can be tested using very small sample volumes (microliters), with results provided immediately at the point of sample collection. This work will identify inexpensive, accurate, test chips and how to produce them. The test chips will be used in a hand-held, test-chip reader, and will test for multiple disease markers simultaneously in the field. Different chips will each contain an array of tests for different diseases. The TD funding provides for screening of a matrix of materials and methods for identification of optimal chip conformations and manufacturing. The candidate chips identified in the screening will then be extensively tested for reliability and accuracy. The optimal test chips will allow immunodiagnostic manufacturers to provide inexpensive, accurate, portable disease testing for hospitals and clinics, even in remote locations of the world.

Mobile Counselor
Principal Investigator: Scott Puckett; Co-Principal Investigator, Michael Sisk  Award amount: $10,000

The Mobile Counselor Web Application is designed to replace the Admissions Office student inquiry paper card and the ensuing data entry process at WMU with a customer relationship management-type system. Designed to be a mobile electronic data gathering system for Apple iPads, the mobile counselor will be a one-stop tool for admissions counselors to collect data, perform job tasks, and speed up recruitment efforts while traveling on the road and working on campus. The iPad interface will allow prospective students to provide their own information to the school, while the counselor is interacting with others. The goal is to create a commercialized and cloud-based version of Mobile Counselor.
Faculty receive awards

DISTINGUISHED FACULTY SCHOLAR AWARD

This is the University's highest annual award for a faculty member. It pays tribute to an individual whose work constitutes a significant body of achievement that is widely recognized within the national and international academic communities.

E. Rozanne Elder is a professor of history and the director of what is now the Center for Cistercian and Monastic Studies. She has directed the center and organized its Cistercian Studies Conference since 1973 as well as been the primary editor for Cistercian Publications since 1979.

Nominators lauded Elder for elevating the University's international reputation in the fields of Cistercian and monastic studies, along with related fields. In addition, they praised her for her remarkable work bringing some 300 texts to publication, as well as for participating fully in teaching and research and contributing to the ongoing development of the Medieval Institute’s academic program.

Many also noted that she is well known for her own rigorous scholarship and the support she gives to students and colleagues on and off campus.

John Allen Jellies has been a faculty member since 1995 and is a professor of biological sciences. He uses experimental approaches with model systems to answer questions related to brain function, or more specifically, how the nervous system controls behavior.

Jellies’ career-long work has generated nearly $4 million in grant funding from national funding agencies. His nominators noted that he is a world-renowned researcher with remarkable ingenuity who has made cutting-edge discoveries.

They also praised him as an inspired teacher, advisor and mentor for his students, as well as someone who has provided exemplary service to WMU, his discipline and academia.

That service has included leading the WMU Faculty Senate and the Michigan Chapter of the Society for Neuroscience, in addition to being a grant reviewer for the National Science Foundation and an editorial board member or manuscript reviewer for several leading journals.

EMERGING SCHOLAR AWARD

This award acknowledges the accomplishments of WMU faculty members who are among the rising stars in U.S. higher education. It celebrates the contributions of those who are in the first decade of their WMU careers and have achieved national recognition and demonstrated outstanding promise to achieve renown in their continuing work.

Fritz Allhoff is a professor of philosophy and an ethicist as well as a philosopher whose research has broken new ground in the areas of cyberwarfare, torture and nanotechnology. He was cited for not only the incredible quantity of his research output, but also its quality, breadth and reach.

Nominators also praised his boundless energy. A prolific writer and editor, Allhoff has numerous books and journal articles to his credit. He also has been managing editor for 13 different publication series as well as a reviewer for multiple journals and presses.

Allhoff joined the faculty in 2005 and has served as director of graduate studies for his college since 2008. He recently earned a juris doctorate and took a professional development leave fall semester to serve as a judicial clerk for an Alaska Supreme Court justice.
Center for Research on Instructional Change in Postsecondary Education

The center was created at the University with the vision of becoming a nationally-recognized interdisciplinary research center focused on transformative change in post-secondary education.

Co-directed by Dr. Andrea Beach, educational leadership, research and technology and director of faculty development, and Dr. Charles Henderson, physics and the Mallinson Institute for Science Education, the center provides a focal point for WMU faculty to engage collaboratively in interdisciplinary research. It also functions to provide support and build capacity for principal investigators writing grants related to instructional change in post-secondary education.

Just recently, that goal was realized when the U.S. Department of Education’s “First in the World” grant program awarded $75 million to 24 universities in the nation. WMU was awarded $3.2 million to build an institutional culture focused on increased access and degree completion for underrepresented, underprepared or low-income students. The work will be done with the input of students for whom the problem of affordability of college has been largely eliminated—Kalamazoo Promise students.

The grant will create and validate through ongoing research student success programs that can tackle the problem of low rates of degree completion. The goal is to create programs that other universities can adopt, knowing there is evidence-based research behind the strategies embraced and replicated.
Ahmed, Mohamed  
Civil Engineering  
NEESR: Near Collapse Performance of Existing Reinforced Concrete Frame Buildings  
Faculty mentor: Dr. Xiaoyun Shao

Avildsen, Hans  
Mechanical Engineering  
Heat Reduction & Improved Efficiency in the M-Lam Laser Beam Delivery System  
Faculty mentor: Dr. John Patten

Bayne, Tyler  
Computer Engineering  
Creating Virtual Reality 3D Simulations of Engineering Laboratory Experiments  
Faculty mentor: Dr. Prina Ari-Gur

Bayne, Tyler  
Computer Engineering  
Developing Virtual Reality 3D Simulations of Engineering Laboratory Experiments  
Faculty mentor: Dr. Prina Ari-Gur

Booker, Troy  
Aviation Management and Operations  
Kites for Change: Flying High with Math and Science  
Faculty mentor: Professor Lori Brown

Bootha II, Anthony  
Mechanical Engineering  
Mechanical Engineering Heat Reduction & Improved Efficiency in the M-Lam Laser Beam Delivery System  
Faculty mentor: Dr. John Patten

Brand, Garrett  
Mechanical Engineering  
Design of a Supercharging Mounting System for a Single Cylinder Engine  
Faculty mentor: Dr. Claudia Fajardo-Hansford

Brown, Raphae  
Manufacturing Engineering Technology  
Implementing an Energy Management System Based on ISO 50001  
Faculty mentor: Dr. David Meade

Brownell, Mitchell  
Mechanical Engineering  
Cold Gas Propulsion System for High Altitude Research Balloons  
Faculty mentor: Dr. Kristina Lemmer

Carp, Nicole  
Biomedical Sciences and Exercise Science  
The Effect of Moderate Versus Low Intensity Involuntary Exercise on GDNF Expression and Neuron-Muscular Junction Morphology in Rat Diaphragm and Pectoralis  
Faculty mentor: Dr. John Spitsbergen

Carter, Theodore  
Physics  
The Use of Hybrid Perovskite (CH3NH3PbI3) in Low Cost Photovoltaic Cells  
Faculty mentor: Dr. Clement Burns

Cumpio, Genalou  
Aeronautical Engineering  
Controlled Retrieval of a Suborbital Weather Balloon Instrumentation  
Faculty mentor: Dr. Jennifer Hudson

Donovan, Erin  
Biomedical Sciences  
Walk Training Increases Expression of Gliotrophic Cell Line-Derived Neurotrophic Factor in Pectoralis Muscle But Not Diaphragm From Mice  
Faculty mentor: Dr. John Spitsbergen

Hartman, Christian  
Chemistry  
Large Molecular Panel Based Metal- Organic Architectures for Gas Storage and Catalysis  
Faculty mentor: Dr. Gellent Mezen

Heinze, Kevin  
Biomedical Sciences  
Investigating the Involvement of Caspase-3 in the Apoptotic Pathway Associated with in vivo Gaucma Model  
Faculty mentor: Dr. Cindy Liu

Hodgell, Brenda  
Civil Engineering  
NEESR-CR: NEESSoft Seismic Risk Reduction for Soft Story Wood Frame Buildings  
Faculty mentor: Dr. Xiaoyun Shao

Ihling, John  
Manufacturing Engineering Technology  
Implementation of an Energy Management System  
Faculty mentor: Dr. David Meade

Ives, Jacob  
Engineering Management Technology  
Hybrid 3D Printing and Machining Using Metal  
Faculty mentor: Dr. Pavel Ikonomov

Johnson, Ashley  
Engineering Design Technology  
Urban Three-Wheel Cycle Body Design  
Faculty mentor: Dr. Pavel Ikonomov

Lewandowski, Andrew  
Physics  
Ion Beam Irradiation Induced Defects in Superconductors  
Faculty mentor: Dr. Ashgar Kayani

Masika, Noah  
Chemistry  
Nanostructured Materials for Catalytic Conversion of Biowastes into Value-Added Chemicals  
Faculty mentor: Dr. Sherline Obare

Maslanka, Veronica  
Civil Engineering  
Evaluation of Michigan’s Engineering Improvements for Older Drivers  
Faculty mentor: Dr. Valerian Kwizigile

Matar, Simon  
Civil Engineering  
Extracting Useless Fatigue Monitoring Information for Practicing Engineers  
Faculty mentor: Dr. Upul Attanayaka

McQueen, James  
Manufacturing Engineering Technology  
Hybrid 3D Printing and Machining Using Metal  
Faculty mentor: Dr. Pavel Ikonomov

Neff, Greg  
Mechanical Engineering  
High Altitude Research Balloon  
Faculty mentor: Dr. Kristina Lemmer

Ong, Daoshen  
Aerospace Engineering  
The Aero-Shop Project  
Faculty mentor: Dr. Tianshu Liu

Putnam, Macey  
Sales and Business Marketing  
What Can Be Gleaned About the Outcomes of NSF STEP-Funded Projects Based On Publicly Available Data?  
Faculty mentor: Dr. Mary Ann Sydlik

Simpson, Kyle  
Physics  
ZnSn2ZnH2ED Sample Analysis and Characterization  
Faculty mentor: Dr. Steve Durbin

Quainoo, Andreas  
Aeronautical Engineering  
The Crystallography Base Cubic System of Cubic Alloys  
Faculty mentor: Dr. Prina Ari-Gur

Rahimi, Ahmad  
Civil Engineering  
NEESR-CR: NEESSoft Seismic Risk Reduction for Soft Story Wood Frame Buildings  
Faculty mentor: Dr. Xiaoyun Shao

Roberts-Perazza, Ramon  
Civil Engineering  
Evaluation of Shape Memory Alloys Used at Junction of Steel Column Under Seismic Loading  
Faculty mentor: Dr. Xiaoyun Shao

Savard, Ryan  
Mechanical Engineering  
Cold Gas Propulsion System for Hypersonic Flight Balloons  
Faculty mentor: Dr. Kristina Lemmer

Schnell, Timothy  
Civil Engineering  
Noninvasive Cervical Grunting or Motor for Prefabricated Connections  
Faculty mentor: Dr. Upul Attanayaka

Shah, Richa  
Biochemistry  
Developing Biosensors for Bacteria Using Well-Defined Allosteric Nanoparticles  
Faculty mentor: Dr. Sherline Obare

Spriet, Kurt  
Aerospace Engineering  
Development of CFD Model for a Supercharged Single-Cylinder Engine  
Faculty mentor: Dr. Claudia Fajardo-Hansford

Subramanyam, Shubram  
Aerospace Engineering  
The Aero-Shop Project  
Faculty mentor: Dr. Tianshu Liu

Thomas, Wade  
Aviation Management and Operations  
FAA PEGASAS Project B: Unexpected Transition From VFR to IFR  
Faculty mentor: Professor Lori Brown

Thompson, Walker  
General University Studies (Pre-Med)  
GDNF-Mediated Effects of Exercise on Motor Neuron Survival in Elderly Rats  
Faculty mentor: Dr. John Spitsbergen

Walser, Olivia  
Biology  
Characterization of cytochrome c oxidase in Sinorhizobium meliloti  
Faculty mentor: Dr. Silvia Rossbach

Williams, Cory  
Mathematics  
Maker-Breaker Games in Ramsey Theory  
Faculty mentor: Dr. Andrezj Dudek

Ziemer, Dan  
Manufacturing Engineering Technology  
Hybrid 3D Printing and Machining Using Metal  
Faculty mentor: Dr. Pavel Ikonomov

Ziemer, Matt  
Manufacturing Engineering Technology  
Hybrid 3D Printing and Machining Using Metal  
Faculty mentor: Dr. Pavel Ikonomov
2013-14 RECIPIENTS OF GRADUATE STUDENT RESEARCH AND TRAVEL GRANTS

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

+Adams, Clara P. Chemistry Travel Sustainable synthetic approaches toward shape-controlled nanoscale materials

Ajlafreh, Ibtessam Y. Chemistry Travel Probing Stability and Unfolding of the Most C-Terminal Metal-Binding Domains of ATP7B

Aljadeff-Abergel, Elan Psychology Research The Evaluation of Two Feedback Schedules on Teaching Performance of Undergraduate Applied Behavior Analysis Students Delivering Direct Instruction Lessons

Armbruster, Ann Music Research The Status Of, Teacher Attitudes Toward, and the Effect of Music Therapy on Inclusive Music Education in Michigan

Aslakson, Jared Philosophy Travel Compassion and extending justice to non-human animals

Avuthu, Sai Guruva Reddy Electrical and Computer Engineering Research Development of fully printed organic thin film transistors (OTFT) based flexible humidity sensors

*Bano, Abida Political Science Research Democratization and Pro Women Legislation in Pakistan

Barthelemy, Ramon S. Mallison Institute for Science Education Travel (1) The Demographics and Experiences of Graduate Students in Physics: A Closer Look at Gender, (2) Gender and Sexual Diversity Issues in Physics

Bentz, Amy E. Mallison Institute for Science Education Travel Using Scenarios to Identify Preservice Teachers’ Ideas Regarding Formative Assessment

Bierema, Andrea M. Mallison Institute for Science Education Travel Teaching Fruit Fly Genetics with Cards

Borton, Hannah Biological Sciences Research Determining the Impacts of Land Use and Anthropogenic Nitrogen Inputs on Sediment Bacterial Community Structure and Denitrification Rates in the River Raisin Watershed

Bre’z, Skylar J. History Travel Examining the Cultural and Political Limitations of Women’s History Month

Burns, James Daniel Industrial and Manufacturing Engineering Travel Opportunity costs for non-capital resources in job sequencing: A TSP approach for improved outcomes

Clark, Matthew L. Civil and Construction Engineering Travel Cultural, Perceptual and Educational Factors on Non-Motorized Traffic Safety

Denby, Eric W. History Research Gay Radicalism at the University of Michigan

Depuydt-Goodlock, Amber Interdisciplinary Health Sciences Travel “The Association Between Physical Activity, History of Sexual and Mental Health: Findings from the 2011 BRFSS”

*Dobek, Peter P. History Research The Transition of Poland from Late Medieval to Early Modern: Society and Politics

Dudek II, Richard Geosciences Research Investigation of Surface Water-Groundwater Interactions Using Natural Variations in Stable Oxygen and Hydrogen Isotopes

Edson, Alden J. Mathematics Travel Implications of Deeply Digital Materials for TPACK

Eskheidt, Ali Electrical and Computer Engineering Research Fabrication of Electronic Circuit Board on Different Substrates Using Screen Printing

Endicott, Ali Electrical and Computer Engineering Research Screen printed flexible capacitive pressure sensor

*Fara, Abotalib Geosciences Research Palaeohydrology of Sinai Peninsula, Egypt- a link to the palaeoclimatic circulation over the Middle East using isotopic, luminescence dating and remote sensing constraints


Fuller, Nathaniel Geography Research Michigan’s Clay Bluffs Natural Community Description

Gayman, Catherine Psychology Research Deposit Contracts in Contingency Management for Smoking Cessation

*Gomez, Jamie Anthropology Travel A Biocultural Investigation of Rates and Location of Dental Disease and Treatment in a Turn of the Century Low SES Sample from the Hamann-Todd Collection

Goss, Joshua M. Mathematics Research Assessing and categorizing students’ informal inferential reasoning

Griffey, Denisha Geosciences Research The Effect of Road Salt Deicers on Eutrophication and Salinization of Rattles in Southwest, MI, USA

Harvey, Eric Psychology Research Discriminative Stimulus Properties and Neuropsychological Mechanisms of Action of Synthetic “Bath Salt” Cathinone Derivatives

Haynes, Jonathan Geosciences Research Evaluation of the Sturgeon Falls Sill in Michigan’s Upper Peninsula as a Prospective Target for Sulfide Mineralization

Hinz, Krista L. Psychology Travel The Effects of Altering Response Effort During Data Collection on Observer Accuracy: Data Collection Procedures on Hand Hygiene Compliance

*Hirsh, Jamie Psychology Travel Functional Assessment for Colic

Hobson, Kristin Ann Interdisciplinary PhD in Evaluation Travel Make a difference. Help validate the metaevaluator qualifications checklist

Howard, Krystal English Travel A Diversity of Forms in Young Adult Literature: Exploring the Isolated Protagonist in Contemporary Verse, Film, and Fictions

Izumi, Mitsuyu Educational Leadership, Research and Technology Research Family Resilience and Sojourning Japanese Families in the U.S.

*Kadiri, Racha El Geosciences Research Remote Sensing Applications for Assessing, Modeling and Mitigating Environmental Hazards in Mountainous Areas: A Case Study from Jazan, Saudi Arabia

Kapenga, Ian Philosophy Travel Moral hesitance: Deriving an obligation from the skepticism of famous modern philosophers

Kipa, Robert John Mathematics Travel Optimality conditions for problems of geometric optimal control
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<tr>
<th>Name</th>
<th>Department</th>
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<td>Adkison-Bradley, Carla</td>
<td>Counselor Education and Counseling Psychology</td>
<td>Perceived Severity of Parent Discipline Practices: A Study of Professional Counselors</td>
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<td>A Sustainable Approach to Building Design</td>
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<td>Orkuchi Shimo and The Book of the Dead</td>
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<td>Frostic School of Art</td>
<td>Kith and Kii Catalogue</td>
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<td>History</td>
<td>Charles Osnstat, the National Jewish Welfare Board, and American Jewish Sportswomen in the Boycott of the 1936 Summer Olympics</td>
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<td>Coryell, Janet</td>
<td>History</td>
<td>Standing By: The Women of Ripcord</td>
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<td>Docherty, Kathryn</td>
<td>Biological Sciences</td>
<td>Belowground Effects of Fire as a Restoration Tool in Michigan Tallgrass Prairies</td>
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<td>Eng, Jacqueline</td>
<td>Anthropology</td>
<td>Bioarchaeological Study of Gender-Related Activity Among Ancient Populations of China</td>
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<td>Family and Consumer Sciences</td>
<td>Evaluating the Effectiveness of Storytelling with Children with Behavioral and Emotional Challenges</td>
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<td>Hillenbrand, James</td>
<td>Speech Pathology and Audiology</td>
<td>Software for Experiment Design and Control</td>
<td>$2,000</td>
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<td>Hoffmann, Susan</td>
<td>Political Science</td>
<td>Housing Finance Reform in the U.S.: Acquisition of Proprietary Data</td>
<td>$787</td>
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<td>Keele, Denise</td>
<td>Political Science and Environmental Studies</td>
<td>Environmental Litigation: Understanding Judicial Review of the U.S. Environmental Protection Agency</td>
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<td>Speech Pathology and Audiology</td>
<td>Describing Mismatches in Reading Comprehension Performance Predicted By the Simple View of Reading Model</td>
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<td>Kiddle, James</td>
<td>Chemistry</td>
<td>Unexpected Reaction of N-heterocyclic Carbenes in Water</td>
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<td>Machiorlatti, Jennifer</td>
<td>School of Communication</td>
<td>Peace During War - Documentary Short Film</td>
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<td>Maury, Nichole</td>
<td>Frostic School of Art</td>
<td>Fine Art Publication for Printmaking</td>
<td>$1,996</td>
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<td>Meng, Lei</td>
<td>Geography</td>
<td>Examining the Relationship Between Soil Moisture and Precipitation in CIMP5 Simulations</td>
<td>$1,960</td>
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<td>Steuer, Susan</td>
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<td>Tripp, Brian</td>
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**External Funding Year-to-Date Award Recipients**

**July 1, 2013 to June 30, 2014**

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<th>Unit</th>
<th>Amount</th>
<th>Percentage</th>
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<td>College of Arts and Sciences</td>
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<td>College of Education and Human Development</td>
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<td>The Graduate College</td>
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<tr>
<td>TOTAL (as of 6/30/2014)</td>
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<td>100%</td>
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**External Funding Year-to-Date Award Sources**

**July 1, 2013 to June 30, 2014**

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**Distribution of Facilities and Administrative Funds Recovered**

**June 1, 2013 to May 31, 2014**

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EXTERNAL AWARDS TO FACULTY AND STAFF IN 2013-14 (JULY 1, 2013 TO JUNE 30, 2014)

Abubakr, Said M.
Chemical and Paper Engineering
Newell Rubbermaid
$49,000

Abubakr, Said M.
Chemical and Paper Engineering
Newell Rubbermaid
$21,935

Aktan, Haluk M.
Civil and Construction Engineering
Michigan Department of Transportation
$249,163

Aktan, Haluk M.
Civil and Construction Engineering
Michigan Department of Transportation
$36,542

Aktan, Haluk M.
Civil and Construction Engineering
Michigan Department of Transportation
$19,999

Al-Fuqaha, Ala I.
Computer Science
Traumasoft, Inc.
$27,593

Allhoff, Fritz
Philosophy
National Science Foundation
$69,620

Anderson, Mary
Counselor Education and Counseling Psychology
Michigan College Access Network
$10,000

Angles, Jeffrey Matthew
World Languages and Literatures
Comparative Religion
Japan Foundation New York
$60,630

Ari-Gur, Pnina
Mechanical and Aerospace Engineering
Newell Rubbermaid
$20,437

Ari-Gur, Pnina
Mechanical and Aerospace Engineering
The Kazoo School
$3,896

Atashbar, Massood Zandi
Electrical and Computer Engineering
Michigan Space Grant Consortium
$10,000

Atashbar, Massood Zandi
Electrical and Computer Engineering
University of Michigan
$6,000

Atashbar, Massood Zandi
Electrical and Computer Engineering
Michigan Space Grant Consortium
$1,200

Attanayake, Upul Bandara
Civil and Construction Engineering
Wisconsin Department of Transportation
$84,999

Baker, Lisa E.
Psychology
University of Michigan
$20,000

Baker, Lisa E.
Psychology
Tetra Discovery, LLC
$20,000

Barnes, David A.
Geosciences
Batelle Memorial Institute
$525,666

Barnes, David A.
Geosciences
University of Illinois at Urbana-Champaign
$100,000

Barnes, David A.
Geosciences
Batelle Memorial Institute
$44,300

Barnes, David A.
Geosciences
Batelle Memorial Institute
$22,525

Barnes, David A.
Geosciences
Batelle Memorial Institute
$7,509

Bautista, Manuel A.
Physics
National Science Foundation
$602,160

Bennett, David
Vice President for Research
The Michigan Initiative
for Innovation and Entrepreneurship (MIIE)
$42,000

Bennett, David
Vice President for Research
University of Michigan
$12,500

Bensley, Robert J.
Human Performance and Health Education
Michigan Department of Community Health
$196,065

Bensley, Robert J.
Human Performance and Health Education
North Carolina Department of Health and Human Services
$67,900

Bensley, Robert J.
Human Performance and Health Education
Washington State Department of Health
$35,500

Bensley, Robert J.
Human Performance and Health Education
State of Colorado
$22,600

Bensley, Robert J.
Human Performance and Health Education
North Carolina Department of Health and Human Services
$21,252

Bensley, Robert J.
Human Performance and Health Education
State of Utah
$19,583

Bensley, Robert J.
Human Performance and Health Education
Iowa Department of Public Health
$19,200

Bensley, Robert J.
Human Performance and Health Education
North Carolina Department of Health and Human Services
$16,875

Bensley, Robert J.
Human Performance and Health Education
State of Oklahoma WIC Services
$16,000

Bensley, Robert J.
Human Performance and Health Education
State of Vermont Vermont Department of Health
$10,000

Bensley, Robert J.
Human Performance and Health Education
Kansas Department of Administration
$9,500

Bensley, Robert J.
Human Performance and Health Education
North Dakota Department of Health
$9,300

Bensley, Robert J.
Human Performance and Health Education
Alaska Department of Health and Social Services
$7,440

Bensley, Robert J.
Human Performance and Health Education
State of South Dakota
$3,300

Bensley, Robert J.
Human Performance and Health Education
Inter Tribal Council of Nevada WIC
$3,000

Bergman, Karen
School of Nursing
Bronson Healthcare Group
$26,255

Black-Pond, Connie
School of Social Work
Michigan Department of Community Health
$16,500

Blair, Kevin L.
Chemistry
Stryker Instruments
$20,000

Bolivar, Gordon M.
WMU Radio Corporation for Public Broadcasting
$133,959

Bolivar, Gordon M.
WMU Radio Corporation for Public Broadcasting
$7,399

Burns, Clement
Physics
U.S. Department of Energy
$100,000

Bush, Jonathan
English
National Writing Project Corporation
$10,000

Carr, Erika Ann
Division of Multicultural Affairs
U.S. Department of Education
$250,000

Carr, Erika Ann
Division of Multicultural Affairs
State of Michigan Workforce Development Agency
$148,530

Carr, Erika Ann
Division of Multicultural Affairs
State of Michigan Workforce Development Agency
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Carr, Erika Ann
Division of Multicultural Affairs
Michigan Campus Compact
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Carr, Erika Ann
Division of Multicultural Affairs
State of Michigan Workforce Development Agency
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Carr, Steven
Computer Science
Michigan Technological University
$30,737
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<td>Fetters, Marcia K.</td>
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RESEARCH AND CREATIVE ACTIVITIES
POSTER DAY 2014 GRADUATE STUDENT PARTICIPANT WINNERS

First Place:
WMU Graduate Brass Quintet
Ray Bazz, trumpet
Elizabeth Glasser, horn
Anibal Hernandez, trombone
Adam Phillips, trumpet
Chance Trottman-Huie, tuba
School of Music, College of Fine Arts
“A Morning with the Graduate Brass Quintet: Selections from David Sampson’s Morning Music”
Sponsor: Dr. Martha Councell-Vargas

Second Place:
Hongyan Cui
Educational Leadership, Research and Technology, College of Education and Human Development
“A Monte Carlo Study of Optimal Rank Order Relationships with Criterion Scores”
Sponsor: Dr. Brooks Applegate

Third Place:
Tetiana Petrachkova
Biological Sciences, College of Arts and Sciences
“Is a Mutation in the Cell Cycle Gene CDC20 Causing the Zombie Mutant Phenotype in Zebrafish?”
Sponsor: Dr. Ekkehard Sinn

WMU Graduate Wind Quintet
School of Music, College of Fine Arts
Lucas Florin, oboe
Jeremy Larson, horn
Whitney Miller, bassoon
Carmen Ritchie, flute
Elisabeth Waldburger, clarinet
“Roaring Fork: Eric Ewazen’s Tribute to the Landscapes of the American West”
Sponsor: Dr. Martha Councell-Vargas

Walters, J.L
Harvey, Eric
Zimmerman, Zach J.
Psychology, College of Arts and Sciences
“The Neurobehavioral Consequences of Chronic Atrazine Exposure During Early Development in Male and Female Sprague-Dawley Rats”
Sponsor: Dr. Lisa E. Baker

Viraj D. Thanthirige
Chemistry, College of Arts and Sciences
“Optical Properties of Bi-icosahedral Au25 and Au24 Clusters: Influence of Central Gold Atom”
Sponsor: Dr. Ekkehard Sinn

Bridget Dooley
English, College of Arts and Sciences
“They are All Turning to Sand”
Sponsor: Dr. Ramakrishna Guda

TECHNOLOGY DEVELOPMENT FUND 2014 AWARDS
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 IP Management and Commercialization Faculty Advisory Committee awarded three proposals for 2014.

Brown, Lori
Aviation Flight Science
Next Gen Information Systems for Pilots: Low Cost Mobile Training Solutions
$18,531

Kujawski, Daniel
Mechanical and Aerospace Engineering
An Interactive Online Fatigue Expert Design Tool
$12,401

Puckett, Scott
Sisk, Michael
Enrollment Management
Mobile Counselor
$10,000

Young, Brian
Chemical and Paper Engineering
Composite Matrix Material Development for Low Cost, Disposable, Reagent Free, Resistance-Based Multiplex, Point-of-Use immunodiagnostic Biosensor Platform Technology
$19,000
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<td>Giving Pattern Dimension: A Study in Encaustic Painting</td>
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WMU CENTERS AND INSTITUTES*

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*Submitting annual reports to the Office of the Vice President for Research
To learn more about WMU research or how to expand your participation, visit wmich.edu/research or contact us directly.

Daniel M. Litynsk
Vice President for Research
(269) 387-8294
dan.litynski@wmich.edu

Paula Kohler
Associate Vice President for Research
(269) 387-8283
paula.kohler@wmich.edu

While every effort has been made for accuracy, there is still the possibility for errors or omissions. We apologize for any that might occur. Please contact us with any corrections for our next issue.

Editor
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diana.hearit@wmich.edu

Designers
Kim Nelson

Photography
Mike Lanka
MLIVE.COM /Landov