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 Leelanau Peninsula.
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.
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.”

From invention to commercialization

Technology Development Funds awarded in 2014 provided researchers with support to move their discoveries along the pipeline from invention to commercialization. Four projects received nearly $60,000 in internal support.

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 immunodiagnostic 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
Flights for Change: Flying High with Math and Science
Faculty mentor:
Professor Lori Brown

Bookta II, Anthony
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, Raphael
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 Immobilization Exercise on GDNF Expression and Neuromuscular 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 Gland Cell Line-Derived Neurotrophic Factor in Pectoralis Muscle But Not Diaphragm From Mouse
Faculty mentor:
Dr. John Spitsbergen

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

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

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. Asghar Kayani

Masika, Noah
Chemistry
Nanostructured Materials for Catalytic Conversion of Biomass into Biofuels
Faculty mentors:
Dr. Shermie Obarai

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

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

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

Neff, Greg
Mechanical Engineering
Cold Gas Propulsion System for 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 Spriet

Quainoo, Andreas
Aeronautical Engineering
The Crystallinity Base of Ductility in Novel Magnesium Alloys
Faculty mentor:
Dr. Prina Ari-Gur

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

Robert-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 High Altitude Research Balloons
Faculty mentor:
Dr. Kristina Lemmer

Schnell, Timothy
Civil Engineering
Nonshrinking Cementsitious Grout or Mortar for Prefabricated Connections
Faculty mentor:
Dr. Upul Attanayake

Schnell, Timothy
Civil Engineering
Digital Image Correlation for Strain Measurement of a Fatigue Sensitive Steel Bridge Detail
Faculty mentor:
Dr. Upul Attanayake

Shah, Richa
Biochemistry
Developing Biosensors for Bacteria Using Well-Defined Nonyl Nanoparticles
Faculty mentor:
Dr. Shermie Obarai

Simpson, Kyle
Physics
Programmable Pulse Motor Controller with Feedback Control for an Electric Vehicle
Faculty mentor:
Dr. Clement Burns

Simpson, Kyle
Physics
ZnSnN2 RHEED Sample Analysis and Characterization
Faculty mentor:
Dr. Steve Durbin

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

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

Talcott, Devin
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)
GGN-Mediated Effects of Exercise on Motor Neuron Survival in Elderly Rats
Faculty mentor:
Dr. John Spitsbergen

Walser, Olivia
Biology
Characterization of scyllo-Inosital Catalabolism in Sphingobium mellitii
Faculty mentor:
Dr. Silvia Rossbach

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

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

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

UNDERGRADUATE RESEARCH EXCELLENCE AWARD RECIPIENTS, 2013-14
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.
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

**Ajla’afreh, Ibtessam Y.**
Chemistry
Travel
Probing Stability and Unfolding of the Most C-Terminal Metal-Binding Domains of AQP7

**Aljadeff-Abergel, Eliah**
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

**Barthelemys, 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

**Benton, 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 Anthropogenenic 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

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

**Eskeiti, 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

**Field, Sean**
Psychology
Travel

**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
Travel
The Effect of Road Salt Deicers on Eutrophication and Salinization of Rattles in Southwest, MI, USA

**Harvey, Eric**
Psychology
Research
Discriminative Stimulus Properties and Neuromarksmaceutical 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

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

**Kadiri, Racha E.**
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

**Kipka, Robert John**
Mathematics
Travel
Optimality conditions for problems of geometric optimal control
**Kothari, Catherine L.**<br>Interdisciplinary Health Sciences<br>Travel<br>Racial Disparity in Birth Outcomes: Diversity between Local Communities

**Krakty, James Lyle**<br>Mathematics<br>Travel<br>Connecting and Reconnecting to What It Means to Understand Mathematics

**Kyle, Catherine Elizabeth**<br>English<br>Travel<br>Thawing Frozen Hearts: How Disney’s Latest Film Radically Redefines True Love

**Laurent, Vanessa**<br>Counselor Education and Counseling Psychology<br>Travel<br>Navigating Two Worlds: How Multiracial Identity Development Informs the Counseling Process

**Lichtenberger, Sarah**<br>Psychology<br>Travel<br>Job Experiences and Community Engagement Learning Portfolio: Communication of Young People’s Part-Time Understanding Work Socialization

**McDowell, Christine Marie**<br>English<br>Travel<br>(Re) Inventing the methods course: Moving beyond exemplar texts towards mentor texts

**Mghanga, Edwin**<br>Chemistry<br>Travel<br>ACAC as an Anchoring Group: Does Surface Morphology Influence Charge Transfer Dynamics

**Mghanga, Edwin**<br>Chemistry<br>Research<br>Solar Cells from Natural Curcumin Dyes: Dynamics and Mechanism

**Mohamed, Lamees M.**<br>Geosciences<br>Research<br>Structural Control of the Distribution of Groundwater in Wadi Feiran, Egypt: Constraints from Geophysical and Remote Sensing Observations

**Mohammed, Abdel Mawgoud**<br>Geosciences<br>Travel<br>Structural control of the deep nubian sandstone aquifer system constrained by Hydrochemical, stable isotope and noble gas data

**Mutambuki, Jacinta**<br>Malison Institute for Science Education<br>Research<br>Increasing chemistry relevance by integrating nanotechnology into the undergraduate chemistry curriculum: Authentic learning

**Narakathu, Binu Baby**<br>Electrical and Computer Engineering<br>Travel<br>Opto-Electrochemical based dual detection of heavy metal compounds using a novel flow cell

**Ouellette, Katie**<br>Psychology<br>Travel<br>1. The Operant Conditioning Laboratory (Rat Lab) Experience at Western Michigan University. 2. Psychological Assessment and Treatment Services: A Practicum Opportunity at Western Michigan University

**Petty, Iris**<br>History<br>Travel<br>Hilbert’s Deductivism and the Fruitfulness of Mathematics in the Sciences

**Reid, Matt**<br>Sociology<br>Travel<br>This Isn’t Christian Mingle: Gay Men Dating Online

**Revala, Madhuri**<br>Computer Science<br>Travel<br>On providing user-level data privacy in cloud

**Sandor, Katelyn**<br>Communication<br>Travel<br>Understanding Work Socialization Through Young People’s Part-Time Job Experiences and Community Learning Portfolio: Communication and Community Engagement Through Selfies

**Schenk, Yannick**<br>Psychology<br>Travel<br>1. Establishing and Testing Conditioned Reinforcers—Comparison of the Pairing vs. Discriminative Stimulus Procedures With Individuals With Disabilities 2. A Model and Discussion of a Parent Training Workshop for Parents Raising Children With Autism 3. Presenting Western Michigan University’s Psychological Assessment and Treatment Services

**Sundberg, Daniel**<br>Psychology<br>Travel<br>Goal Setting and Incentive Research Outside Behavior Analytic Literature

**Taibu, Rex Nyadaufe**<br>Malison Institute for Science Education<br>Research<br>Recent Seismicity on Basement Faults and Regional Extension in Southwestern Montana, USA

**Vanfosson, Jason**<br>Psychology<br>Travel<br>“Just Words. No More Pictures.”: Queer Narrative Techniques in Winger

**Wei, Wan**<br>Economics<br>Research<br>The Effects of Unconventional U.S. Monetary Policy on Exchange Rate Volatility

**Wyman, Davina Allie**<br>Geosciences<br>Travel<br>Salinization of Asylum Lake: Effects on turnover and lake geochemistry

**Yahamed, Azem Khalifa**<br>Chemical Engineering and Paper Engineering<br>Research<br>Three dimensional printing in Medical applications

**Zhou, Baochun**<br>Counselor Education and Counseling Psychology<br>Travel<br>(1) Will You Be My Chair? The Important Yet Overlooked Role of Doctoral Advisors; (2) Phenomenological Examination of Doctoral Students’ Experiences in the Doctoral Advising Relationship
Adkison-Bradley, Carla
Counselor Education and Counseling Psychology
Perceived Severity of Parent Discipline Practices: A Study of Professional Counselors
$2,000

Akanmu, Abiola
Civil and Construction Engineering
A Sustainable Approach to Building Design
$2,000

Angles, Jeffrey
World Languages and Literatures
Orikuchi Shinobu and The Book of the Dead
$2,000

Beane, Wendy Scott
Biological Sciences
Establishing Planaria as a Model for Whole Eye Regeneration
$2,000

Blickle, Peter
World Languages and Literatures
Research for Novel
$1,912

Bondarchuk, Karen
Frostic School of Art
Kith and Kin Catalogue
$2,000

Borish, Linda
History
Charles Ornstein, the National Jewish Welfare Board, and American Jewish Sportswomen in the Boycott of the 1936 Summer Olympics
$1,994

Coryell, Janet
History
Standing By: The Women of Ripcord
$2,000

Docherty, Kathryn
Biological Sciences
Belowground Effects of Fire as a Restoration Tool in Michigan Tallgrass Prairies
$2,000

Eng, Jacqueline
Anthropology
Bioarchaeological Study of Gender-Related Activity Among Ancient Populations of China
$2,000

Gullon-Rivera, Angel
Family and Consumer Sciences
Evaluating the Effectiveness of Storytelling with Children with Behavioral and Emotional Challenges
$2,000

Hillenbrand, James
Speech Pathology and Audiology
Software for Experiment Design and Control
$2,000

Hoffmann, Susan
Political Science
Housing Finance Reform in the U.S.: Acquisition of Proprietary Data
$787

Keele, Denise
Political Science and Environmental Studies
Environmental Litigation: Understanding Judicial Review of the U.S. Environmental Protection Agency
$1,973

Kersting, Jessica
Speech Pathology and Audiology
Describing Mismatches in Reading Comprehension Performance Predicted by the Simple View of Reading Model
$2,000

Kiddle, James
Chemistry
Unexpected Reaction of N-heterocyclic Carbenes in Water
$2,000

Machiorlatti, Jennifer
School of Communication
Peace During War - Documentary Short Film
$2,000

Maury, Nichole
Frostic School of Art
Fine Art Publication for Printmaking
$1,996

Meng, Lei
Geography
Examining the Relationship Between Soil Moisture and Precipitation in CMIP5 Simulations
$1,960

Obare, Sherine
Chemistry
Catalyst Development for the Photocatalytic Conversion of Biomass into Commodity Chemicals
$2,000

Schoffers, Elke
Chemistry
Novel Receptor Agonists in Medicinal Chemistry
$2,000

Smith, Jesse
Sociology
The Church of Unbelief: Understanding the Interactional Basis of America’s Non-Believer’s
$2,000

Steuer, Susan
University Libraries
A Step Toward Grace: Widows and Religious Life in Late Medieval York (1300-1536)
$2,000

Tripp, Brian
Biological Sciences
Investigation of C-Terminal Core Flagellin Residues on Export and Assembly of Flagella
$2,000

Wirtz, Kristina
Anthropology
Ethnographic Research in Cuba on Shifting Moral Narratives in a Time of Reform
$1,995
External Funding Year-to-Date Award Recipients
July 1, 2013 to June 30, 2014

College of Arts and Sciences $6,776,479 24.93%
College of Education and Human Development $3,093,539 11.38%
College of Engineering and Applied Sciences $5,470,020 20.13%
College of Health and Human Services $5,240,151 19.28%
Vice President for Business and Finance $1,747,930 6.43%
Vice President for Research $2,346,864 8.63%
College of Aviation $208,166 0.77%
The Graduate College $213,803 0.79%
Provost and Vice President for Academic Affairs $1,055,563 3.88%
Haworth College of Business $81,349 0.30%
Vice President for Student Affairs $26,303 0.10%
TOTAL (as of 6/30/2014) $27,179,910 100%

External Funding Year-to-Date Award Sources
July 1, 2013 to June 30, 2014

Federal $13,338,619 49.08%
State $3,550,557 13.06%
Local $2,289,260 8.42%
International $177,058 0.65%
Industry/Corporation $1,915,609 7.05%
Educational Institution $3,130,796 11.52%
Foundation $409,681 1.51%
Other $2,368,330 8.71%
TOTAL (as of 6/30/2014) $27,179,910 100%

Distribution of Facilities and Administrative Funds Recovered
June 1, 2013 to May 31, 2014

TOTAL FUNDS RECOVERED $3,216,071 100%
Academic Units Research Support $1,286,429 40%
Principal Investigators $321,607 10%
Departments $321,607 10%
Colleges and Other Units $643,214 20%
University Research Support $1,286,429 40%
OVPR Research Support $964,821 30%
Research Development $160,804 5%
WMU Research Foundation $160,804 5%
University Cost Recovery $643,214 20%
General Fund $643,214 20%
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
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

Bolar, Gordon M.
WMUK Radio
Corporation for Public Broadcasting
$133,959

Bolar, Gordon M.
WMUK Radio
Corporation for Public Broadcasting
$250,000

Bolar, Gordon M.
WMUK Radio
Corporation for Public Broadcasting
$5,233

Brown, Lori J.
College of Aviation
Texas A&M University
$77,072

Brown, Lori J.
College of Aviation
Western Michigan University
Research Foundation
$18,531

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
$87,451

Carr, Erika Ann
Division of Multicultural Affairs
Michigan Campus Compact
$15,000

Carr, Erika Ann
Division of Multicultural Affairs
State of Michigan Workforce Development Agency
$1,666

Carr, Steven
Computer Science
Michigan Technological University
$30,737
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<th>Name</th>
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<td>Geosciences</td>
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<td>National Science Foundation</td>
<td>$37,845</td>
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Meyer, Donald J.  
Economics  
The W. E. Upjohn Institute for  
Employment Research  
$10,000

Mezei, Gellert  
Chemistry  
National Science Foundation  
$284,833

Miller, Michael G.  
Human Performance and Health Education  
Allegan General Hospital  
$38,000

Miller, Michael G.  
Human Performance and Health Education  
Bronson Orthopedic and Sports Medicine  
$1,000

Miller, Michael G.  
Human Performance and Health Education  
Allegan General Hospital  
$600

Mondala, Andro  
Chemical and Paper Engineering  
SmithBucklin Corporation  
$75,476

Mueller, John M.  
Management  
Charles Koch Foundation  
$7,000

Nelson, Nickola W.  
Speech Pathology and Audiology  
American Heart Association  
$26,000

Oh, Jun-Seok  
Civil and Construction Engineering  
U.S. Department of Transportation  
$1,414,100

Oh, Jun-Seok  
Civil and Construction Engineering  
U.S. Department of Transportation  
$1,402,200

Olsen, William C.  
English  
National Endowment for the Arts  
$10,000

Palan, Kay M.  
Haworth College of Business  
University of Michigan  
$35,000

Palmer, Jodie G.  
Teaching, Learning and Educational Studies  
State of Michigan Workforce Development Agency  
$53,700

Peterson, Stephanie M.  
Psychology  
Michigan Department of Community Health  
$500,000

Peterson, Stephanie M.  
Psychology  
Kalamazoo Community Mental Health Services  
$64,018

Peterson, Stephanie M.  
Psychology  
Residential Opportunities Incorporated  
$47,925

Puckett, Scott A.  
Enrollment Management  
Western Michigan University Research Foundation  
$10,000

Ramrattan, Sam N.  
Industrial and Manufacturing Engineering  
Sintokogio, LTD  
$60,000

Ramrattan, Sam N.  
Industrial and Manufacturing Engineering  
Pekarovic, Jan  
Chemical and Paper Engineering  
The American Foundry Society, Inc.  
$10,000

Razi, Muhammad A.  
Business Information Systems  
Kellogg Company  
$15,000

Robertson, Kelly N.  
The Evaluation Center  
International Labor Organization  
$12,001

Rodriguez, Jorge  
Industrial and Manufacturing Engineering  
Denso North America Foundation  
$50,000

Rossbach, Silvia  
Biological Sciences  
Oklahoma State University  
$9,921

Rossbach, Silvia  
Biological Sciences  
Enbridge Energy Partners, LP  
$3,750

Saeed, Fahad  
Computer Science  
Illinois Institute of Technology  
$40,000

Sultan, Mohamed  
Geosciences  
National Aeronautics and Space Administration  
$100,724

Sultan, Mohamed  
Geosciences  
National Aeronautics and Space Administration  
$97,744

Sydlik, Mary Anne  
SAMPI  
National Science Foundation  
$75,000

Sydlik, Mary Anne  
SAMPI  
Michigan State University  
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Sydlik, Mary Anne  
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Michigan State University  
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SAMPI  
Michigan State University  
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Sydlik, Mary Anne  
SAMPI  
Michigan State University  
$102,400

Van Houten, Ron  
Psychology  
Michigan Department of Transportation  
$218,513

Van Houten, Ron  
Psychology  
Battlefield Memorial Institute  
$132,402

Vandiver, Beverly  
Counselor Education and Counseling Psychology  
Pennsylvania State University  
$33,798

Wall Emerson, Robert  
Shawn Anderson  
Dawn  
Blindness and Low Vision Studies  
U.S. Department of Education  
$298,227

Wall Emerson, Robert  
Shawn Anderson  
Dawn  
Blindness and Low Vision Studies  
University of Oregon  
$133,044

Wang, Yuan-kang  
Sociology  
Chiang Ching-Kuo Foundation  
$15,000

Way, Ineke F.  
School of Social Work  
Fordham University  
$9,002

Whitehurst, Geoffrey  
Richard  
College of Aviation  
Texas A&M University  
$65,804
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-Huiz, 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 Specter a Mutation in the Cell Cycle Gene Cyclin B1?”
Sponsor: Dr. Don Kan

WMU Graduate Wind Quintet
School of Music, College of Fine Arts
Lucas Florim, 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. Thisbe Nissen

Sponsor: Dr. Ramakrishna Guda

SECOND PLACES:

David Sellers
Chemistry, College of Arts and Sciences
“Synthesis and Characterization of Novel 1,10-phenanthroline Derivatives as Sensors for Nerve Agents”
Sponsor: Dr. Elke Schoffers

Saad H. Al-Daihib
Chemistry, College of Arts and Sciences
“Two-photon Absorption Spectroscopy to Differentiate Chromophore-DNA Binding Interactions”
Sponsor: Dr. Ramakrishna Guda

Tetiana Petrachkova
Biological Sciences, College of Arts and Sciences
“Is Specter a Mutation in the Cell Cycle Gene Cyclin B1?”
Sponsor: Dr. Don Kan

Third Place:

Saad H. Al-Daihib
Chemistry, College of Arts and Sciences
“Two-photon Absorption Spectroscopy to Differentiate Chromophore-DNA Binding Interactions”
Sponsor: Dr. Ramakrishna Guda

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 immunodiagnostics Biosensor Platform Technology
$19,000
## FACULTY RESEARCH AND CREATIVE ACTIVITIES AWARD 2014 RECIPIENTS

### Baker, Lisa
Psychology
Impact of Stress on Abuse
Liability of Illicit Drug Mixtures
$10,000

### Daffary, Dolly
School of Social Work
The Impact of Market-Driven Development on Dryland Communities in India
$10,000

### Essani, Karim
Biological Sciences
Oncolytic Tanapoxavirus and Ovarian Cancer
$10,000

### Harkness, Edward
Frostic School of Art
15 New Sculptures Inspired by 50,000 Year-Old Aboriginal Art
$10,000

### Linn, Cindy
Biological Sciences
Oncolytic Potential of Tanapoxvirus for Retinoblastoma
$10,000

### Obare, Sherine
Chemistry
Catalyst Design and Evaluation for the Production of High Value Chemicals From Biorenewable Resources
$10,000

### Ohanna, Natalio
Spanish
The Captives of Algiers, Lope de Vega and the Moriscos
$10,000

### Pekarovicova, Alexandra
Chemical and Paper Engineering
Biomass Based Food Packaging Films
$10,000

### Shao, Xiaoyun
Civil and Construction Engineering
Smart Real-Time Hybrid Simulation to Advance Earthquake Engineering Experimental Methods
$9,935

### Solomon, Paul
Frostic School of Art
Boundaries of Eden
$9,918

### Veeck, Ann
Marketing
Food Choice Influences of Urban Chinese Teenagers
$9,836

### Veeck, Ann
Marketing
Food Choice Influences of Urban Chinese Teenagers
$9,836

### Wardrop, Daneen
English
Persona Poems: Feral
$3,700

### Yun, Zee-Sun
Family and Consumer Sciences
Motivating Sustainable Consumption and Disposal of Clothing
$2,028

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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.

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