Discovery: Research Annual Report 2013

Office of Vice President for Research

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Western Michigan University has been engaged in strategic planning for discovery on many fronts. Based upon leadership, scholarship, collaboration, and resources, we have created Discovery Plans and identified specific Discovery Focus Areas. The Discovery Plans from our departments and units have identified more than 200 current and emerging areas of research and creative activities while the Discovery Focus Areas have crystallized our strengths in evaluation and assessment, health, education, sustainability, STEM, and entrepreneurship. Our new WMU Discovery Experts system will be linked to the other Michigan research universities through a Michigan-created portal. This effort will facilitate collaboration and help bring our faculty and staff together with research partners, industry and larger collaboratives as they jointly seek to discover answers to complex problems.

WMU faculty and staff continue a strong research tradition that ensures our local, regional, and global reach. From individual scholarship to the creation of team-based collaboratives both here and throughout the nation, the stories you’re about to read speak of the successes of our esteemed faculty and research partners. We understand the importance of a research institution’s contribution to the global community—to generate new knowledge and to transfer knowledge through education, technology development and commercialization to advance the wellbeing of people and society. Our faculty and researchers also contribute to our community, which is a culturally rich epicenter of the visual arts, theatre and music.

Kalamazoo leads in biomedical and pharmaceutical research and innovative start-ups as evidenced by the BRCC’s success in the Business Technology Research Park. Our commitment to Starting Gate, a business accelerator for students, helps nurture the entrepreneurial spirit in our students and our impact in Michigan’s economy and industry. We invite you to join us in our efforts to strengthen industry partnerships.

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

In all we do, we remain true to Western Michigan University’s mission as a learner centered, discovery driven and globally engaged research institution. To learn more about Western Michigan University and our outstanding research, visit us at wmich.edu/research.

John M. Dunn
President

Daniel M. Litynski, PhD
Vice President
Office of the Vice President for Research
A decade ago then-Gov. Jennifer Granholm traveled to Kalamazoo with a $10 million ceremonial check representing a special appropriation from the Michigan Legislature and designed to stave off the loss of human and financial resources that threatened to derail a 125-year-old engine of economic development—West Michigan’s preeminent role in the life sciences industry.

It was a sound investment.

That $10 million check, dated Aug. 6, 2003, supported the establishment of Western Michigan University’s Biosciences Research and Commercialization Center. That center, in turn, has used Kalamazoo’s unique history and expertise in pharmaceutical and medical device development to help fund the startup of 33 new companies from across the state. The center has leveraged that original state investment into more than $160 million in new capital funds and supported the creation of more than 240 new high-paying technical jobs in Michigan.

This fall, celebrating its 10th anniversary, the BRCC continues its work, having secured an additional $3.8 million in state funding to support the life sciences field throughout the state. WMU also has contributed $3.45 million in BRCC funding since its establishment. The center is embarking on a new relationship as well, as part of the apparatus in place to support the enormous research potential of WMU’s new School of Medicine.

The BRCC focuses on:

- Early-stage technology transfer,
- Pre-seed gap funding, and
- Support for Contract Research Organizations—CROs

“Most companies we invest in don’t have a product yet,” says BRCC Executive Director Stephen Haakenson. “They’re in the early stages—typically too early for a venture capitalist to support.”

Nearly 50 percent of the center’s funding has supported drug discovery and development. Pharmaceutical services represent more than a third of the work, while a smaller portion covers the development of medical devices and diagnostic tools.

Kalamazoo and the state of Michigan were natural locations to support talented scientists who wanted to launch their own successful businesses. The original vision for the BRCC was to support such talent when West Michigan was faced with dimming economic prospects due to the withdrawal of Pfizer’s major research and development functions. The funding of these early-stage technologies, pre-seed companies and CRO businesses has produced a network for supporting the commercialization of life science products throughout the state.

Today, located at the life sciences incubator known as the Southwest Michigan Innovation Center, the center has lived up to both the promise of that vision and the state’s investment.
MDOT Collaborates with WMU, a leading public research university, to extend its research impact in 2013 by investing $1.29 million regionally

**Commercial Vehicle Enforcement**

*Principal Investigator: Dr. Valerian Kwigizile, construction and civil engineering*

*Award: approximately $268,000*

The growth in truck traffic in Michigan has resulted in the need for expanded commercial vehicle enforcements in order to maintain safety and minimize pavement damage caused by overweight trucks. The goals of this project: define the benefits of each of the 14 weigh stations in Michigan; assess the cost of upgrading and maintaining those stations; and identify the cost of alternative solutions in place of or as an enhancement of the stations.

**Pedestrian Crossings**

*Principal Investigator: Dr. Ron Van Houten, psychology*

*Award: approximately $219,000*

There is a need for low-cost countermeasures to increase yielding to pedestrians at crosswalks on multi-lane roads with moderate-to-high average traffic. Initial studies have demonstrated that in-street signs used as a gateway treatment (three signs for each two-lane approach) can produce yielding levels comparable to those produced by much more costly treatments. This study determines conditions favorable for this treatment in place of others. The results of the study will assist MDOT in determining how to maximize pedestrian safety benefits with limited financial resources.

**Engineering Improvements for Older Drivers**

*Principal Investigator: Dr. Valerian Kwigizile, construction and civil engineering*

*Award: approximately $296,000*

By 2030 adults age 65 and older will comprise 20 percent of the population in Michigan and in the nation. Since Michigan began considering this segment of the population in 2004, a number of engineering improvements have been installed. The objectives for this project include evaluation of the safety benefits of each of these improvements and to develop safety performance functions for each improvement.

**Accelerated Bridge Construction**

*Principal Investigator: Dr. Haluk Aktan, civil and construction engineering*

*Award: approximately $250,000*

The primary focus of this research is related to Accelerating Bridge Construction implementations of Self-Propelled Modular Transports (SPMT) and bridge slides. Prefabricated Bridge Elements and Systems implementations will also be in part integrated with the proposed work in order to allow MDOT to make ABC decisions with site specific data for comparing multiple ABC technologies. In addition to PBES progresses, the study will document and evaluate those progressions that will positively impact projects in Michigan.

**Intelligent Transportation System Deployment**

*Principal Investigator: Dr. Jun-Seok Oh, civil and construction engineering*

*Award: approximately $234,000*

MDOT has invested significantly in Intelligent Transportation System (ITS) deployments across the state over the past six years. This research is to review the benefits and costs of individual ITS devices and systems in Michigan.
Aspiring student entrepreneurs have a new resource dedicated to their ventures at Starting Gate, a business accelerator open to all Western Michigan University students and operated by the Haworth College of Business Center for Entrepreneurship and Innovation in partnership with the WMU Office of Community Outreach. The accelerator tests students’ business ideas, provides mentorship from faculty and members of the business community, and helps participants build a network of contacts to support their growing businesses.

In order to be accepted into the accelerator, students participate in a competitive application process where they must demonstrate a promising idea for a product or service, which can be launched within a short period of time.

“Limitless possibility,” is what Dr. Kay Palan, dean of the Haworth College of Business, sees in the 12 companies that have already taken part in Starting Gate. “This is a valuable opportunity for students interested in starting their own companies,” she says. “Research shows us that companies that start their ventures with resources, mentors and support are much more likely to succeed. And Western students are very entrepreneurial in nature. We are excited to provide another avenue to nourish our students’ passion for entrepreneurship.”

Starting Gate is founded on the principle of mentorship, and the students have access to an array of resources, including faculty members from across campus, successful entrepreneurs from the local community, experts in areas such as manufacturing, commercial law and venture capital as well as organizations like the Small Business and Technology Development Center and WMU Business Connection. Writing business plans, adjusting business models, considering potential markets, and research and development are just some of the areas in which Starting Gate mentors offer their expertise.

The student teams themselves offer another valuable resource. With students from a variety of disciplines, the makeup of individual teams and the entire accelerator is cross-disciplinary. Since Starting Gate is designed to be collaborative in terms of programming and physical space, students have the benefit of diverse approaches to problem solving and creative thinking.

And creativity abounds in the accelerator. From the development of technologies that can provide everything from remote
aquarium maintenance to assistance for adults and children with speech disorders to connections among motorcycle enthusiasts, the companies in Starting Gate are as varied as the students working in it. Five companies that have graduated from the accelerator have patents pending.

The hope is that some of these young companies will choose to remain in Michigan and contribute to both the local economy and the local entrepreneurial community. Dr. Robert Landeros, interim director of the Haworth College of Business Center for Entrepreneurship and Innovation, says, “If we can help students test their business ideas so they are more successful, that is the goal, and if they choose to remain a local business that can help the economy, it’s a win-win.”
The third class of the W.K. Kellogg Foundation’s Woodrow Wilson Michigan Teaching Fellows brings 13 new math and science professionals to Western Michigan University to be part of a program designed to provide Michigan’s high-need urban and rural schools with teachers who offer both cutting-edge preparation and real-world expertise in math and science.

The 13 fellows selected to attend WMU are among this year’s 51 Michigan Teaching Fellows. Each will receive $30,000 to complete a specially designed, cutting-edge master’s degree program based on a yearlong classroom experience. In return, fellows commit to teach for three years in Michigan’s high-need urban and rural secondary schools.

The 2013 class is the third group of fellows named in Michigan since the W.K. Kellogg Foundation launched this initiative, providing $18 million in funding for it. The statewide program recruits recent college graduates or career-changers with strong backgrounds in science, technology, engineering or mathematics.

The 2013 fellows attending WMU include, among others, a professional ornithologist, two former Peace Corps members, a pharmaceutical industry professional and a wireless consultant. Each has already earned at least a bachelor’s degree from universities around the nation. Four have received master’s degrees as well, and one fellow already has earned a doctoral degree.

The Woodrow Wilson Teaching Fellows program ultimately will impact more than 100,000 Michigan high school students, providing them with the level of instruction they need to participate in the state’s rapidly changing economy and workforce. Numerous studies have demonstrated that students in high-need schools are significantly less likely to have access to such teachers, particularly in the STEM fields—science, technology, engineering and math.

“Michigan’s economic future will be driven by the STEM fields,” says Arthur Levine, president of the Woodrow Wilson National Fellowship Foundation. “Getting strong math and science teachers into Michigan’s high-need schools means both creating opportunities for the young people who most need them and building the state’s workforce. There’s no greater need in Michigan education today, and we think these fellows will do a tremendous job in helping to meet that need. They are amazing people, and they will change tens of thousands of lives.”

In addition to WMU, five other state universities hosting fellows are the Eastern Michigan, Grand Valley State University, Michigan State, Wayne State as well as the University of Michigan.
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.

Daneen Wardrop is a professor of English and an internationally known poet-scholar. Wardrop joined the faculty in 1990 and has paired research and creative writing throughout her career. She has written three scholarly books focusing on major 19th-century literary figures and has finished a book-length research project concerning Civil War narratives.

The winner of a National Endowment for the Arts creative writing fellowship, Wardrop was cited by her nominators as a talented poet, an excellent teacher and an internationally recognized scholar whose work has been vastly influential. Her contributions have been so great that one literary journal editor categorized her WMU award as a long-deserved acknowledgement of her significance to her field.

DISTINGUISHED 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.

Chris L.S. Coryn is an associate professor and director of WMU’s Interdisciplinary Doctor of Philosophy in Evaluation and an internationally known evaluation specialist. Coryn joined the faculty in 2003 as a research associate in evaluation and became director of the Interdisciplinary Ph.D. in Evaluation in 2008. He is the author of some 80 scholarly papers and the leader or methodologist for grants and contracts totaling nearly $5 million.

Coryn was lauded by colleagues for modeling what it is to be a scholar and having amassed an international record of accomplishment. He has been the executive editor of the *Journal of MultiDisciplinary Evaluation* since 2010; has been an invited lecturer at The Evaluators’ Institute, a prestigious national venue for workshops on evaluation; and earned the American Evaluation Association’s 2008 Marcia Guttentag Award for contributions to his field.

Michael A. Famiano is an associate professor of physics and an expert in nuclear and astrophysics. Famiano joined the faculty in 2005 and recently entered the private sector after eight years at WMU. He has written 47 refereed publications and has been the recipient of more than $2 million in research grants and contracts to support his work.

He was cited for contributing to breakthrough research and for mentoring students, taking many of those he was mentoring to the National Superconducting Cyclotron Lab at Michigan State University, where he carried out much of his research. Famiano also spent extensive time in Japan, collaborating there with that nation’s leaders in the field of nuclear astrophysics.

Kristina Wirtz is an associate professor of anthropology and a linguistic and cultural anthropologist whose focus on linguistics has attracted global attention. Wirtz joined the faculty in 2005, and emphasizes Cuba, the Caribbean, Latin America and African diaspora in her work. She is the author of two books, with a third one in progress, as well as book chapters, book reviews and peer- and editor-reviewed journal articles.

Scholars around the globe lauded Wirtz for having an enviable academic record even though she is in the early stages of her academic career. They noted that her first book suggests new directions for the broad study of religion and understanding the relationships between religious communities and their larger national and transnational contexts.
Rediscovery of a long-forgotten mineral deposit located under two West Michigan counties could spark a new multibillion industry in Michigan that will quickly position the state as the nation’s leading source for a critical agricultural tool that is in demand internationally.

Potash—potassium chloride—is an essential plant nutrient and critical ingredient in fertilizer. Currently mined in only three locations in the nation, supplies are dwindling and prices skyrocketing. Now, one of the highest-quality potash ore deposits in the world has been identified below the surface of West Michigan.

The discovery of potash in Michigan was made with the use of the geologic data housed at Western Michigan University’s Michigan Geological Repository for Research and Education. The result of the rediscovery, say geologists, will be the introduction of a new industry in Michigan worth as much as $65 billion, easily surpassing the state’s historical oil and gas production revenues and triggering explosive job growth in Osceola and Mecosta counties.

“This is conceivably one of Michigan’s most valuable resources,” says Theodore A. Pagano, a potash geologist, engineer and general manager of Michigan Potash Co. LLC. That firm now controls the rediscovered potassium ore reserve called the Borgen Bed that lies under more than 14,500 acres in the two counties. His company has worked quietly over the past three years to ensure the reserve could be technically, economically and logistically put into production and compete head to head with the New Mexico and western Canadian mines that are now the major North American sources of potash.

“This is the United States’ only shovel-ready potash project,” Pagano says. “Michigan is New Mexico untapped. What we’re looking at is the introduction of an industry that is critical to the economic health of the state. We’ll be producing a Michigan product for Michigan farmers that would dramatically reduce the expensive transport costs on the more than 300,000 tons of potash consumed in our state annually.”

Verification of the quality and amount of the potash in the Borgen Bed was done by using core samples provided by WMU geologists under the direction of Dr. William B. Harrison III, professor emeritus of geosciences and former director of the department’s Geological Repository for Research and Education.

WMU came into possession of geologic core samples collected in the early 1980s when a Canadian company was prospecting for potash in Michigan. That company established a mine and small processing plant in Michigan, but pulled back from fully commercializing the deposit. Over the years, changing business plans and corporate mergers pushed the Michigan operation into the background, and mineral leases for the area lapsed. The sample cores came to WMU by chance and were added into the University’s statewide collection of such core samples.
Potash is found in just a few areas once covered by inland seas. The seas evaporated and the potassium and sodium chloride deposits crystallized into potash ore and were covered by successive layers of rock and soil.

The Michigan deposit is the purest and highest-grade potash being produced globally—600 percent higher than that being produced in New Mexico’s vast Permian Basin, according to Harrison. It is also twice the grade of deposits found in Canada and Russia, the two nations that control more than 80 percent of the world’s potash reserve.

“One of the things that makes this so valuable is that it is an incredibly rich deposit that is in easy reach of the enormous demand from Midwest corn and soybean farmers who operate within a 500-mile radius of this deposit,” Harrison says. “This is an opportunity for new wealth to come from the use of natural resources never tapped before.”

Pagano has been working with investors and state and national officials to move forward with the capital-intensive establishment of manufacturing and processing facilities. He estimates an initial demand for more than 300 workers employed in an enterprise that will produce more than a million tons of potash annually.

Bringing Michigan potash to market, Pagano says, will provide a domestic source of the element at reduced cost to Midwest farmers as well as to the national agriculture industry. It will reduce imports and improve the nation’s trade.
UNDERGRADUATE RESEARCH EXCELLENCE AWARD RECIPIENTS, 2012-2013

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.

Acuna, Miguel
Manufacturing Engineering Technology
Multi-Purpose Desktop Machine for Prototyping and Machining
Faculty mentor: Dr. Jorge Rodriguez

Alvey, Joel
Aeronautical Engineering
Integration of Tablet Technology into Flight Training
Faculty mentor: Professor Lori Brown

Brown, Rapheal
Manufacturing Engineering Technology
Implementation of an Energy Management System
Faculty mentor: Dr. David Patten

Castelino, Avin Weith
Mechanical Engineering
The Crystallographic Base of Ductility in Novel Magnesium Alloys
Faculty mentor: Dr. Pnina Ari-Gur

Corder, Billy I-Shone
Aviation Administration and Flight Science
Kites for Change: Flying High with Math and Science
Faculty mentor: Professor Lori Brown

Donovan, Erin
Biomedical Sciences
Activity Dependent Regulation of Neurotrophic Factor Expression in Mouse Skeletal Muscle
Faculty mentor: Dr. John Spitsbergen

Galas, Anthony
Biomedical Sciences
Anaerobic Science Evolved: Growing Geobacter Sulfitoreducens in an Aerobic Fuel Cell
Faculty mentor: Dr. Silvia Rossbach

Gold, David
Geology
Faculty mentor: Dr. David Barnes

Grieve, Austin
Engineering Design Technology
Multi-Purpose Desktop Machine for Prototyping and Machining
Faculty mentor: Dr. Jorge Rodriguez

Gwaltney, Bryn
Mechanical Engineering
Design and Creation of a Hydrogen-Electric Vehicle
Faculty mentor: Dr. Bade Shrestha

Hartman, Christian
Chemistry
Selective Anion Encapsulation by Multimetalloc Nanorods
Faculty mentor: Dr. Giliert Mezei

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

Ingold, Jeff
Manufacturing Engineering Technology
Desktop 4 Axis Computer Numerical Control Milling Machine with 3D Printing Capability
Faculty mentor: Dr. Pavel Ikonomov

Jerger, Stephanie
Biomedical Sciences
Age-Related Changes in GDNP Content of Skeletal Muscle
Faculty mentor: Dr. John Spitsbergen

Klingler, Kenneth
Engineering Design Technology
Multi-Purpose Desktop Machine for Prototyping and Machining
Faculty mentor: Dr. Jorge Rodriguez

Mattson, Travis
Engineering Design Technology
Design and Creation of a Hydrogen-Electric Vehicle
Faculty mentor: Dr. Bade Shrestha

Miller, Scott
Mechanical Engineering
Design and Creation of a Hydrogen-Electric Vehicle
Faculty mentor: Dr. Bade Shrestha

Mouch, Nicole
Biomedical Sciences
A Hydrometallurgical Alternative to the Extraction of Platinum Group Metals from Spent Automotive Catalytic Converters
Faculty mentor: Dr. Giliert Mezei

Musaev, Damir
Biomedical Sciences
Is Mutation in CDC20 Gene Causing Zombie Phenotype in Zebrafish?
Faculty mentor: Dr. Donald Kane

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

O’Hagan, David
Engineering Design Technology
Urban Three-Wheel Cycle Body Design
Faculty mentor: Dr. Pavel Ikonomov

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

Sattler, Frank
Hydrogeology
Faculty mentor: Dr. David Barnes

Subramaniam, Shubram
Aeronautical Engineering
The Crystallographic Base of Ductility in Novel Magnesium Alloys
Faculty mentor: Dr. Pnina Ari-Gur

Talcott, Devin
Engineering Design Technology
Implementation of an Energy Management System Using ISO 50001
Faculty mentor: Dr. David Meade

Urech, Alexander
Chemistry
Computational Study of Boron Nitrogen Dative Bonds Using the Block Localized Wavefunction (BLW) Method and the Density Functional (DFT) Level of Theory
Faculty mentor: Dr. Yirong Mo

Walser, Olivia
Biology
Characterization of Scylo-Inositol Catabolism in Sinorhizobium Meliloti
Faculty mentor: Dr. Silvia Rossbach

Warning, Ryan
Aeronautical Engineering
Analysis of TiNi Cu Mult-Spun Ribbons
Faculty mentor: Dr. Pnina Ari-Gur

Zanotti, Maren
Chemistry
The Role of Oxidation of BVOCs in SOA Production
Faculty mentor: Dr. Steve Bertman
2012-2013 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 student funding for international travel

Baird, Joseph
Computer Science
Travel
TAIR0. Trust-aware Automatic Incremental Routing for Opportunistic Resource Utilization Networks

Barthelemy, Ramon
Malinsson Institute for Science Education
Travel
Women’s Choice of Graduate Research Field in Academic Physics and Astronomy

Beagley-Ray, Molly
Counselor Education and Counseling Psychology
Travel
Fostering resilience as a protective factor in a college suicide prevention program

Bechtel, Nathan
Psychology
Research
The Effects of the Temporal Placement of Feedback on Performance and Skill Acquisition of a Medical Data Entry Task

Bohra, Humam
PhD in Engineering and Applied Sciences
Travel
New light cured media for use with cast prototypes

Bolandi, Ali
Chemistry
Travel
Multi-electron transfer from charged semiconductor surfaces to quantized bimetallic nanoparticles

Borges, Lauren
Clinical Psychology
Research
The effects of environmental context on mood induction and emotion regulation behaviors

Byczynski, John
History
Travel
City of Certainty: The Making of Crosby, Minnesota, 1910-1913

Callahan, Caitlin
Malinsson Institute for Science Education
Travel
Use of Time and Space in Geologic Mapping: A Video Log Study

Choong, Ee Leng
Biological Sciences
Research
Characterization of a putative inosose isomerase in Sin诺aszium meliodi

Conard, Anna
Psychology
Research
Using normative messages and incentives to improve organizational performance

*Courtney, Donna
Biological Sciences
Travel
The Ecological Correlates of Parasite Species Richness in Phyllostomid Bats

Cox, Kyle
Geosciences
Research
Spatial Distribution of Thermal Alteration of Inorganic Minerals in the Michigan Basin

*D’Elia, Erica
Anthropology
Travel
Educational Benefits of Youth Collaborative Archaeological Programs

DiStefano, Daren
Mechanical and Aerospace Engineering
Travel
Development of laboratory testing apparatus and fatigue analysis for tracked vehicle rubber backer pads

Edson, Alden J.
Mathematics
Travel
Transition to College Mathematics and Statistics Project

*El Kadi, Racha
Geosciences
Travel
Radar interferometry for the detection and monitoring of Mass movement over Southern Red Sea Hills, using ERS-SAR and ENVISAT-ASAR Datasets

Enicks, April
Special Education and Literacy Studies
Travel
Findings on the Use of TeachLIVE, a mixed-Reality Teaching Environment, to Prepare Special Educators

Fernando, Isurika
Chemistry
Travel
Metal binding properties and dichromism of linear, rigid-axle (2) pseudorotaxanes

Garrett, Larry
Interdisciplinary Health Sciences
Travel
Using Box-Jenkins modeling techniques to forecast future disease burden and identify abbe

*Ghime, Shankar
Economics
Travel
Impact of Foreign Aid on Trade: Examining the Existence and Variation of this Relationship across Sectors

*Gong, Roland
Chemical and Paper Engineering
Travel
Application of Wet Image Analysis on Recycled Paper Ink Elimination Evaluation

Graf, Patricia
Occupational Therapy
Research
Child Trauma Knowledge, Attitude and Practice Among Michigan Pediatric Occupational Therapists

Hagge, Marlies
Psychology
Travel
Using Behavioral Interventions Among Unionized Workers to Increase Attendance

Hamam, Khalil
Physics
Travel
Organic photovoltaic based on copper phthalocyanine with high open circuit voltage and significant current and voltage stability

Harrison, Jennifer
Interdisciplinary Health Sciences
Research
Peers in Integrated Dual Disorder Treatment: Impact on Clinical Outcomes and Model Fidelity

Haskell, Christine
English
Travel
Rethinking the War Poets

Henriksen, Nicole
Psychology
Research
Impulsive Choice in Children and Adolescents Diagnosed with ADHD: Comparisons across Reward Type and Medication Status

Hiscox, Elizabeth
English
Travel
AWP Panel. Yoga and the life of the writer

Howard, Krystal
English
Travel
(a)Truth and Dare, The Intersection of Girls, Risk, and Discovery in Children’s Literature; (b) Playing at the Impolite: Risks Discourse Between Girl and Cat in Carroll’s Alice And Gaiman’s Coraline

Husovska, Veronika
Chemical and Paper Engineering
Travel
Graphite Inks and their Application
**SUPPORT FOR FACULTY SCHOLARS AWARD IN 2012-2013**

**Wildman, Ashley**  
Counselor Education and Counseling Psychology  
Travel  
When A Student's Personal Values Conflict with Training Needs

**Wright, Benjamin**  
Medieval Studies  
Travel  
The Untranslatable Feeling: Jan van Ruusbroeck's un-translation of William of St. Thierry's Latin Discourse on Mystical Experience

**Wyman, Davina**  
Geosciences  
Research  
Effect of road salt on Asylum Lake geochemistry

**Yaqoob, Muthanna**  
Geosciences  
Research  
Detection of Fractures and Joints Beneath Cover: Geophysical Approaches to an Engineering Geology Problem

**Zhang, Tiantian**  
Biological Sciences  
Research  
Biotherapy of human colorectal cancer in nude mice

**Zheng, Wei**  
Chemical and Paper Engineering  
Travel  
Toward Decinking of LEP Inks Printed on Different Substrates

**Zhou, Baochun (JoJo)**  
Counselor Education and Counseling Psychology  
Travel  
(a) Infusing cultural sensitivity to work with LBT Asians. Asian Americans. (b) Understanding the meaning of Hijab and Muslim Arab American women: Implications for counseling.
**External Funding Year-to-Date Award Recipients**

*July 1, 2012 to June 30, 2013*

- **College of Arts and Sciences** $7,018,763, 29.03%
- **College of Education and Human Development** $3,070,863, 12.7%
- **College of Engineering and Applied Sciences** $3,214,075, 13.29%
- **College of Health and Human Services** $5,978,371, 24.72%
- **Vice President for Business and Finance** $602,765, 2.49%
- **Vice President for Research** $2,062,485, 8.53%
- **Vice President for Business and Finance** $142,828, 0.55%
- **Vice President for Research** $131,764, 0.55%
- **TOTAL (as of 6/30/2013)** $24,180,349, 100%

**External Funding Year-to-Date Award Sources**

*July 1, 2012 to June 30, 2013*

- **Federal** $10,551,486, 43.64%
- **State** $3,180,111, 13.15%
- **Local** $2,859,190, 11.82%
- **International** $289,931, 1.2%
- **Industry/Corporation** $1,957,360, 8.10%
- **Educational Institution** $2,176,663, 9%
- **Foundation** $370,441, 1.53%
- **Other** $2,795,168, 11.56%
- **TOTAL (as of 6/30/2013)** $24,180,349

**Distribution of Facilities and Administrative Funds Recovered**

*June 1, 2012 to May 31, 2013*

- **TOTAL FUNDS RECOVERED** $3,378,498
  - **Academic Units Research Support** $1,351,400, 40%
    - Principal Investigators: $337,850, 10%
    - Departments: $337,850, 10%
    - Colleges and Other: $675,700, 20%
  - **University Research Support** $1,351,399, 40%
    - OVPR Research Support: $1,013,549, 30%
    - Research Development: $168,925, 5%
    - WMU Research Foundation: $168,925, 5%
  - **University Cost Recovery** $875,700, 20%
    - General Fund: $875,700, 20%
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<tr>
<th>Name</th>
<th>Department</th>
<th>Organization/Authority</th>
<th>Amount</th>
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<td>Aktan, Haluk M. Attanayake, Upul Bandara</td>
<td>Civil and Construction Engineering Michigan Department of Transportation</td>
<td>$135,736</td>
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Vonhof, Maarten
Biological Sciences
U.S. Fish and Wildlife Service
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Vonhof, Maarten
Biological Sciences
Grand Valley State University
$4,291

Wall Emerson, Robert
Anderson, Dawn
Blindness and Low Vision Studies
U.S. Department of Education
$277,833

Wall Emerson, Robert
Shawn
Blindness and Low Vision Studies
University of Oregon
$150,654

Washington, Earlie M.
College of Health and Human Services
Cousins, Linwood H.
School of Social Work
Early Learning Neighborhood Collaborative
$125,456

Wiedbold, Jennifer
Counselor Education and Counseling Psychology
Leja, James A.
Blindness and Low Vision Studies
Munley, Patrick H.
Counselor Education and Counseling Psychology
U.S. Department of Education
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Wilson, Brian
Comparative Religion
American Academy of Religion
$3,000

Wingate, Lori A.
Guillickson, Arlen R.
The Evaluation Center
National Science Foundation
$536,036

Wingate, Lori A.
The Evaluation Center
Deboule Consulting, LLP
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Wingate, Lori A.
Martens, Krystin S.
The Evaluation Center
Delaware State University
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Wingate, Lori A.
Martens, Krystin S.
The Evaluation Center
New York City College of Technology
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Wingate, Lori A.
Schroeter, Daniela
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Centers for Disease Control and Prevention
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Centers for Disease Control and Prevention
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Wingate, Lori A.
Schroeter, Daniela
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Centers for Disease Control and Prevention
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Wirtz, Kristina
Anthropology
Wenner-Gren Foundation for Anthropological Research, Inc.
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Zhang, Jiabei
Human Performance and Health Education
U.S. Department of Education
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Zielinski, Ruth
School of Nursing
University of Michigan
$14,945

Zoeller, Linda H.
Bergman, Karen
School of Nursing
Bronson Healthcare Group
$25,000

RESEARCH DAY AND CREATIVE ACTIVITIES POSTER DAY
2013 GRADUATE STUDENT PARTICIPANT WINNERS

Bedoor, S.
Lighthall, J.C.
Marley, S.T.
Sponsor: Dr. Alan Wusmaa
Physics, College of Arts and Sciences
“Study of 14B Using (d,p) Reaction in Inverse Kinematics”

Callahan, Caitlin
Sponsor: Dr. Heather Petovic
Mallinson Institute for Science Education, College of Arts and Sciences
“From Map to Mind: Using Video Logs to Explore the Process of Geologic Mapping”

Chen, Ting
Sponsor: Dr. Margaret Joyce
Chemical and Paper Engineering
“Can Coating Composition Influence Infections in Quickset Ink Setting Profiles to Improve Sheet-fed Print Quality and Efficiency”

Christensen, Nathan
Glass, Marilyn
Sponsor: Dr. David Meade
Industrial and Manufacturing Engineering, College of Engineering and Applied Sciences
“Landfill Audits”

Ghuzini, Diny
Sponsor: Dr. Susan Pazo
Economics, College of Arts and Sciences
“Bank Leverage and Asset Positions: Cross Country Evidence”

Gyorkos, Amy Morrison
Sponsor: Dr. John Spitsbergen
Biological Sciences, College of Arts and Sciences
“GDNF’s Expression in Slow- and Fast-Twitch Muscle Fibers are Dependent on Exercise Intensity”

Hosbon, Kristin A.
Sponsor: Dr. Chris Cryn
Interdisciplinary Ph.D. in Evaluation, The Evaluation Center
“Meta-Analysis as a Method of Multi-Site Evaluation of International Development Projects and Programs”

McCuen, Robert
Sponsor: Dr. Chris Cryn
Interdisciplinary Ph.D. in Evaluation, The Evaluation Center
“An Evaluation of the Overall Quality Assurance and Transparency of Evaluation at the Swiss National Science Foundation”

Mohamed, Lamees
Zaki, Abotalib
Sponsor: Dr. Mohamed Sultan
Geosciences, College of Arts and Sciences
“Towards a Better Understanding of Modern and Paleo-hydrologic Settings in Arid Lands”

Mohammed, Abdul Wahed
Ibraheem, Rusthi Mohammed
Sponsor: Dr. Upul Attanayake
Civil and Construction Engineering, College of Engineering and Applied Sciences
“Remote Monitoring of Fatigue Sensitive Details on Steel Bridges”

Strong, Katie
Sponsor: Dr. Nickola Nelson
Speech Pathology and Audiology, College of Health and Human Services
“Supporting Identity in Aphasia: A Survey of Speech-Language Pathologists”

O’Donnell, James P.
Maison, David P.
Clark, Teresa J.
Wessendorf, Ryan L.
Sponsor: Dr. Yan Lu
Biological Sciences, College of Arts and Sciences
“Functions of a Thylakoid Zinc-Finger Protein, ZFP2, in Thylakoid Biogenesis”

Rusthi, Mohamed
Sponsor: Dr. Upul Attanayake
Civil and Construction Engineering, College of Engineering and Applied Sciences
“Greening Cement-Based Products with Waste Powder Paints (WPP)”

TECHNOLOGY DEVELOPMENT FUND
2013 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 (IPMCC) awarded three proposals for 2013.

Liu, Tianshu
Mechanical and Aerospace Engineering
Design and Testing of a Scaled Prototype Wind Oscillator for Power Generation
$10,000

Mezei, Gellert
Chemistry
Selective, High Efficiency Anion Extracting Agents for Solvent Extraction
$19,576

Ramrattan, Sam
Industrial and Manufacturing Engineering
3D Rapid Prototyping System Utilizing Focused Light Energy
$20,000
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<td>Physics</td>
<td>Time Dependent Photoionization of Quasar Outflows</td>
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<td>Effects of Light Exposure on Flight Crew Alertness Levels</td>
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<td>Integrating Models of Reciprocity</td>
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<td>The Study of Technical Education in Russia Since the Ending of the Soviet Era</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. Litynski  
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  
Diana Berkshire Hearit

Designer  
Kim Nelson

Photographer  
Mike Lanka

Contributors  
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Cheryl Roland