

OAKLAND UNIVERSITY » Fall 2013

# OU RESEARCH

Volume 6, No.1





**On the cover:** Fruit bats like the one on our cover were one of 19 bat species studied by OU assistant professor Jennifer Vonk in a study supported by the Organization for Bat Conservation on the campus of Cranbrook Institute of Science in Bloomfield Hills, Mich., the largest grassroots bat conservation organization in North America. Read more about her research on page 16.

## Message from James Lentini

Dear Friends,

Standing in the simulation labs at Oakland University's School of Nursing, it is difficult to distinguish the space from an actual health care facility. The rooms look like hospital rooms, the equipment you see could be found in a hospital or clinical setting, the patients are true-to-life simulated models — or actual people. As our nursing students use the numerous simulation techniques to become comfortable with patient situations prior to actual clinical experiences, they gain valuable hands-on, real-world know-how.



At OU, we are extraordinarily proud of the level of technology we can offer students. However as you read through this magazine, you'll also learn that we don't stop there. Our research asks real questions to determine if what we — or others — are doing offers the most accurate and effective results. Is it a best practice? For example, professor of nursing Karen Dunn and her colleague at Oakland University, Cheryl Riley-Doucet, associate professor of nursing, are developing a study to see if our simulated clinical experiences are as effective as we hope they are in giving the students the understanding they would gain in real-life encounters — and, if not, what's the best next step?

It's just one way OU uses research to find solutions to real-life challenges.

Every day in our laboratories, life-changing investigations are being conducted. Every year Oakland University invests more than \$40 million in research to find those answers.

And it isn't just our faculty who are achieving great things. Our accomplished researchers also serve our students as leaders and mentors in the classrooms, instructional research laboratories, and field work. Numerous faculty-sponsored student projects have gained regional and national recognition. Both undergraduate and graduate students enjoy a multitude of opportunities to learn through one-on-one interaction with noted and accomplished faculty. And they win awards for their efforts; you can read about some of their accomplishments in this issue as well.

At Oakland University, we are extraordinarily proud of the research accomplishments of our faculty and students. It's why we are consistently named by the Carnegie Foundation as one of only 85 designated doctoral/research universities in the country.

I hope you enjoy reading about some of these achievements and are inspired as I am by their promise to make our world a better place.

A handwritten signature in black ink that reads "James B. Lentini". The signature is written in a cursive, flowing style.

James Lentini, Senior Vice President for Academic Affairs and Provost

**James Lentini** is the senior vice president for Academic Affairs and provost at Oakland University. Formerly the dean of the School of Creative Arts at Miami University in Ohio, he has also served as the founding dean of the School of Art, Media and Music at the College of New Jersey and as acting chair of Wayne State University's Department of Music. A native Detroit, Lentini earned his Doctor of Musical Arts degree from the University of Southern California, his Master of Music degree from Michigan State University and his Bachelor of Music degree from Wayne State University. His other studies include management in leadership and education at Harvard University.



# OUR RESEARCH

OAKLAND UNIVERSITY » Fall 2013 » Volume 6, No.1

## RESEARCH AT OAKLAND UNIVERSITY

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## Connected to discovery

*CURL illustrates OU commitment to undergraduate research*

# CURL

**U**ndergraduate research has long been a focus at Oakland University, and earlier this year an organization was created to support and sustain the goals and projects of undergraduate researchers.

The Center for Undergraduate Research and Leadership (CURL), launched in January, will advance the idea that strong undergraduate research is the future of higher education, according to Graeme Harper, DCA Ph.D., dean of The Honors College, where CURL is housed. “It builds on the considerable success of Oakland University in developing and supporting undergraduate research — something that has always been at the heart of Oakland.”

“The establishment of CURL formalizes our commitment to promoting and funding undergraduate participation in research,” said Dorothy Nelson, Ph.D., vice provost for research. “We believe that involvement in research benefits both the student and the faculty mentor. Students feel more connected to the university community. They experience how knowledge in a given field is collected and built upon, and they find role models among other research personnel and their mentors. Students ask important questions and often spark new directions for research and other scholarly activities at OU, and they take these experiences into the community as they pursue their careers.”

Following the launch, CURL hosted its first event, “The Challenges Forum,” at the Integrated Research Center (IRC) at the OU INC, Oakland’s SmartZone Business Accelerator. Students and faculty explored many aspects of global citizenship and global exchange. Some of the ideas brought up at the forum were discussed at April’s “Creating Global Citizens” symposium, a collaboration between The Honors College and the School of Business Administration.

“The forum exhibited what happens when students and professors from across the disciplines gather in open dialogue — an enlightened collective understanding,” said Honors College student Evan Jones in a departmental newsletter.

CURL also took part in “What is the Purpose of Education?” in February. The program explored aspects of higher education including ranking, ethics and technology, and featured keynote

speaker Sarah Winchell Lenhoff, assistant director of policy and research at the Education Trust Midwest.

CURL was one of the partners in Oakland University’s recent bid to the National Institutes of Health to develop a program to increase diversity in biomedical research. CURL also was involved in a proposal to the Fulbright Program to create an esteemed visiting scholar program at Oakland University in early 2014.

In September, CURL will collaborate with Department of English, the Department of History and the American Studies program to host Andrew Delbanco, director of American Studies at Columbia University, whose recent book, *College: What it Was, Is, and Should Be*, is a challenging exploration of the ideal of higher education.

CURL will also take part in the process for developing papers to present at the National Conference on Undergraduate Research (NCUR) at the University of Kentucky in early 2014.

“Oakland University has, at its outset, a vision of higher learning that focuses on developing opportunities from freshman year onward,” Harper said. “It’s always been ambitious for its students, and alumni from even the very earliest days of Oakland talk about how important the experience of working with notable professors and researchers was to them in their careers and their lives.”

**By Ann Marie Aliotta**

*“... undergraduate research [is] something that has always been at the heart of Oakland.”*



As a member of Britain's Arts and Humanities Research Council, **Graeme Harper**, dean of The Honors College, has widely assessed research proposals in the humanities and the creative arts, including what is often referred to as "practice-led research," in which he is an internationally recognized specialist. He has also assessed research proposals for research in the social sciences, in medicine and in relation to new technologies. In the wider academic world, he has examined undergraduate and graduate work for more than 40 institutions worldwide, and research and new teaching programs for organizations in the United States, continental Europe, Africa and Asia. To date, he has published 25 books and more than 140 articles and chapters.

### The GRASP TEAM

The faculty at the core of GRASP represent a cross section of OU professionals: Dalton Connally, co-investigator and OU assistant professor; Michael MacDonald, Ph.D., principal investigator, a nationally renowned suicidologist and associate professor of teacher development and educational studies; Patricia Wren, Ph.D., associate professor and program director in health sciences; and Lisa Hawley, Ph.D., associate professor of education and chair of the counseling department. *(Not pictured)* Erica Wallace, MPH, is GRASP program manager, and Brian Wummel, M.A., a graduate doctoral assistant in the Department of Counseling, also works with the program.



## Team works for understanding

### *Getting a GRASP on mental health*



**T**he small group plies through the PowerPoint presentation with focus and great care. The weighty material they tackle at their weekly meetings essentially could mean the difference between life and death.

These are the forces behind GRASP — Grizzlies Response: Awareness and Suicide Prevention — a grant-funded team that aims to educate OU staff, faculty, students and even the community beyond about the warning signs and protocol to follow when someone may be in crisis.

Dalton Connally, Ph.D., knows too well the need for a program of this caliber. For Connally, grant co-principal investigator and assistant professor of social work in the sociology and anthropology department, the need became immediate after OU student Corey Jackson committed suicide in 2010. Connally spoke at his memorial.

“One of the things that I said was that we were committed to making a difference in peoples’ lives,” Connally says. “We love our students and they need help, and that was the impetus for it. Unfortunately, because of Corey there was a demonstrated need, and the four of us sat down and wrote this grant.”

The faculty at the core of GRASP represent a cross section of OU: Connally; principal investigator Michael MacDonald, Ph.D., a nationally renowned suicidologist and associate professor of teacher development and educational studies; Patricia Wren, Ph.D., associate professor and program director in health sciences; and Lisa Hawley, Ph.D., associate professor of education and chair of the counseling department. Erica Wallace, MPH, is GRASP program manager, and Brian Wummel, M.A., a graduate doctoral assistant in the Department of Counseling, also works with the program.

In fall of 2012, the group received the three-year Garrett Lee Smith Suicide Prevention Grant offered by the Substance Abuse and Mental Health Services Administration (SAMHSA), part of the U.S. Department of Health & Human Services. The \$612,000 grant’s purpose is to address, educate and raise awareness of mental health issues throughout OU and the community by creating campus crisis protocol, training gatekeepers and others, building an informative website, and providing programming to promote greater awareness of mental health issues and suicide prevention.

OU is one of 40 colleges and universities to receive such a grant, but GRASP’s approach differs from the others, says MacDonald, in its determined research aspect. From the concept, the GRASP team wanted research as a component to tailor the program to best serve OU.

“It’s more about identifying, for our specific campus, what are the risk factors. What is it that’s causing our students on our campus the most stress?” questions Connally.

To answer that question, the GRASP team conducted a campus-wide survey in which they received more than 2,100 responses. The results — including 13 percent of the respondents saying they had considered taking their own life within the past month — gave a sense of not only how the community feels, but what people know about how to handle a potentially crisis-level situation, and if they know where to refer people for appropriate mental health attention on and off campus. GRASP used the data to develop a comprehensive crisis response plan to guide faculty, staff and students. Before, says Connally, the majority of the staff and faculty didn’t know what the procedures were to get help for someone who may be in crisis.

“Our approach is unique relative to other grantees in that we conducted a comprehensive needs assessment prior to developing and implementing interventions,” says MacDonald, who presented GRASP’s findings at a conference earlier this year. He adds that while others host workshops, they don’t necessarily study their community. “I quickly learned we are very much considered a measured model approach that looks at decisions at programming rather than just throwing programming out there and hoping that it meets the need.”

With the new plan, GRASP identified about 30 caregivers from campus groups: personnel from student affairs, academic affairs, and various faculty, staff and administrators — people considered most likely to be in contact with those most at-risk for self-harm — to receive Assessing and Managing Suicide Risk (AMSR) training. Next, GRASP plans to run workshops to address suicide prevention, intervention, risk factors, and procedures for other OU faculty, staff and students. The grant’s goals are to educate at least 20 percent, though GRASP hopes its information ultimately reaches the entire campus.

**By Cara Catallo**

*“We love our students and they need help, and that was the impetus for it.”*

# The good, the bad, the stem cell

## *Exploring the world of cancer and stem cells*



**G**erard Madlambayan, assistant professor of biological sciences at Oakland University, has a certain amount of respect for cancer. Not for its devastating effects on the body, but for its ability to thrive.

“I tell people that cancer is a really smart disease. It finds ways to work around treatments,” says Madlambayan, who joined the OU faculty in 2010 from the University of Florida, where he was a faculty member in the Division of Hematology/Oncology.

Yet the Toronto native, who received his undergraduate degree from Rose-Hulman Institute of Technology in Indiana, his master’s degree from the University of Michigan and his Ph.D. degree from the University of Toronto in the areas of chemical and biomedical engineering, is looking at ways to outsmart the disease. “Understanding how cancer works is the key to developing better treatment strategies.”

In his lab, he describes his work as looking at the good and bad of stem cells. “We work on trying to understand the role of stem cells as they relate to cancer biology,” says Madlambayan, whose work has resulted in two patents and an ongoing clinical trial at the University of Florida.

Acute myeloid leukemia (AML) is a blood-based cancer that originates from leukemic stem cells, a mutated form of hematopoietic stem cells, which are responsible for producing all blood cell types. When a patient is diagnosed and completes chemotherapy treatment, there may be remission, but 80 percent or more eventually relapse. The question is, “What keeps the leukemic stem cells safe from current chemotherapy?”

“One of the things we are starting to show is that the interaction between leukemic stem cells and endothelial cells that line our blood vessels seems to protect these cells from chemotherapy. They survive treatment and can be mitigators of subsequent relapse,” Madlambayan says. By understanding that relationship, it may be possible to somehow block it as a way to augment current chemotherapy.

At OU, Madlambayan’s research has led to the insight that the mechanism of interaction is adhesion-based, in that the endothelial cells and the leukemic cells cling to one another. Bahareh “Mida” Pezeshkian is a Ph.D. candidate working on this project.

“We know that chemotherapy can work, but it does not eliminate all the cells, and we think it is because they are protected by

these endothelial cells. What we would like to do is test different agents and develop them to prevent that interaction so that chemotherapy can target all of the leukemia cells, including leukemic stem cells,” Madlambayan says.

In collaboration with Brian Marples, Ph.D., radiation oncologist at Beaumont Health System, Madlambayan is also looking at how normal hematopoietic stem cells in our body behave badly by participating in tumor regrowth following radiation therapy.

“What we have shown is as tumors grow, hematopoietic stem cells in our bone marrow migrate to these growing tumors. That is interesting in itself. Why do they go there? Even more impressive is that, after you irradiate these tumors, there is a drastic increase in the number of these stem cells within the tumor, and the number of stem cells correlates directly to the rate of tumor regrowth after therapy,” says Madlambayan, whose study was one of the first to recognize the tumor regrowth rate correlation.

Madlambayan believes that as the tumor is dying it calls out for the stem cells, which generate an environment that helps the tumor regrow. He, along with Marples and Jonathan Kane (Ph.D. candidate), are looking at how this process works in the hopes that they can develop novel radiation-based therapies or can combine radiation with other therapies that may block stem cell migration to the tumors to achieve better patient treatment outcomes.

They are now showing that if you change the amount or cycles of radiation, it decreases the number of stem cells that migrate to tumors, which may ultimately limit tumor regrowth. “We are also starting to test methods to inject tumors with agents that will block stem cells from migrating there, and then combining that with radiation. Now that we understand how it works, we are looking at how we can prevent it from happening,” he says, noting that translating this to clinical trials may still take years.

While stem cells gone wrong can do bodily harm, they are mostly thought of as potential healers in the cellular world. In collaboration with Ann Arbor-based Aastrom Biosciences, Inc., Madlambayan is helping to develop and better understand a stem cell product being used to treat peripheral arterial disease-based disorders. Using mouse models, it’s been shown that the product helps with blood flow recovery and decreases muscle necrosis. While it is already in clinical trials, Madlambayan’s research is helping determine why the product is effective. Eryn Slankster (Ph.D. candidate) has led efforts on this project.

By Alice Rhein

*“Understanding how cancer works is the key to developing better treatment strategies.”*

Gerard Madlambayan is internationally recognized for his contributions in defining the biological mechanisms underlying the role of BM-derived stem and progenitor cells in solid tumor growth and the role of endothelial cells in the progression of leukemia. An assistant professor of biological sciences at Oakland University, he received his master's degree from the University of Michigan and his Ph.D. degree from the University of Toronto in the areas of chemical and biomedical engineering. In addition to his research results appearing in a number of publications, Dr. Madlambayan's work has resulted in two patents, one being a bioprocess for the growth of stem cells that has been approved for use in clinical trials.





**Kenneth P. Mitton**, who joined OU's faculty in 2001, received his Ph.D. in biochemistry from the University of Western Ontario in 1994. Prior to joining OU, he completed postdoctoral training Fellowships at Virginia Tech (Biochemistry, 1994-95); the National Institutes of Health, National Eye Institute (Cell Biology, 1995-97); and the Kellogg Eye Center, Department of Ophthalmology and Visual Sciences, the University of Michigan (Molecular Biology, Control of Gene Expression, 1997-2001).

## Eye-catching results

*OU scientist sounds warning bell about an old drug in consideration for eye disease*



**T**he eyes of the world are on the work of Oakland's Dr. Kenneth Mitton, a professor of biomedical sciences in the Eye Research Institute (ERI) and a member of its Pediatric Retinal Research Laboratory (PRRL). Mitton has discovered that an FDA-approved drug in clinical trials to treat retinitis pigmentosa (RP) could help preserve vision in some patients but make others go blind quicker.

Mitton's research demonstrates how valproic acid (VPA), an FDA-approved antiseizure drug for epilepsy, could impact RP, a genetic condition where photoreceptor cells die. While some researchers proposed that VPA might increase the expression of "beneficial" genes to boost the survival of photoreceptor cells, Mitton's team, including undergraduate students, thought that this was a premature assumption.

The team found one mouse strain (rd1), with retinal degeneration similar to human RP benefits from VPA treatment, but another strain (rd10) goes blind faster. Both strains have a different DNA mutation of the same gene. This suggests that in humans, a benefit or harm will depend on the patient's specific mutation.

"VPA received FDA approval in the early 1970s for epilepsy" Mitton said. As a gene expression scientist, Mitton knew that VPA also causes genes to "unpack" and become more active — an epigenetic effect. VPA is used in this way to treat some leukemia by reactivating tumor-suppressor genes that are turned off in the cancer cells. "It's easier to start testing on humans when the drug already has FDA approval for a different use," he said. "While VPA does not have detrimental effects on people with a healthy retina, it does decrease blue color vision in teenage epileptics who take the drug."

Mitton has crossed the globe warning ophthalmologists to refrain from premature testing of VPA on their patients. He presented his findings at two Association for Research in Vision and Ophthalmology (ARVO) meetings, and presented a plenary talk at the 17th Congress of the Chinese Ophthalmological Society in Nanjing, China, in August 2012.

"It's important to get the information out. English and Chinese covers most of the world's ophthalmologists. It's premature to test VPA on humans with RP," he said. Mitton notes current clinical trials for VPA only require a patient to have RP, but they

do not require that their specific genetic mutation be known. Similar to mice, we may find that VPA slows retinal degeneration in some patients, while accelerating it in others. "That result will cause VPA to be rejected for RP therapy. Then, we will miss the opportunity to treat patients whose disease could benefit from VPA, and could accelerate degeneration in other patients," he says.

With little interest from medical research bodies to fund animal testing of VPA, Mitton turned to OU's Center for Biomedical Research for funding and installed new equipment in the PRRL. Two grants from the Vision Research ROPARD Foundation (VRRF) based in Novi, Mich., including a recent award of \$500,000, made the construction of the PRRL possible, as well as the acquisition of ERG (electroretinogram) and retinal imaging systems to support ERI research. "We are extremely grateful to VRRF for equipping the ERI with very specialized equipment, sometimes before any other facility in the world," Mitton said.

That doesn't surprise Dr. Shikun He, associate professor of pathology and ophthalmology at the University of Southern California's Doheny Eye Institute. He's followed Mitton's research for several years. "This work on VPA coming from Oakland University is raising the reputation of the school," He said. Dr. He, who has a similar interest in epigenetics, has helped Mitton spread his VPA caution message, as well as facilitated international collaboration between Oakland's ERI and ophthalmology research centers throughout China.

One collaboration has Mitton and two of ERI's clinical faculty-pediatric retinal surgeons — Kim Drenser, M.D., Ph.D.; and Michael Trese, M.D. — testing ways to prevent retinal damage in retinopathy of prematurity, a condition in premature babies. This work is in concert with Dr. Qi Yan, M.D., Ph.D., of Seattle, who travels between the U.S. and a lab she directs at the Henan Eye Research Institute & Henan Eye Hospital, Zhengzhou, China.

For Mitton, his vision for curing eye diseases spans the globe.

**By Rene Wisely**

*"It's important to get the information out."*

## Testing the waters

### *Simulated clinical situations help nursing students gain experience*



**F**or nursing students, gaining experience with real patients while in school is one of the most important parts of their education. But in recent years, it has been increasingly difficult to find clinical placements. So Oakland University School of Nursing professor Karen Dunn is trying to do the next best thing — create simulated situations where students can gain the experience they need.

“A major objective of the School of Nursing’s undergraduate program is to provide students clinical experiences that will foster complex competencies in chronic illness and disease management, clinical reasoning, assessment, diagnosis, and interventions,” Dunn said. “But the challenges of finding clinical placements have made it hard to provide this necessary experience.”

Dunn and her colleague at Oakland University, professor Cheryl Riley-Doucet, are developing a study to see if simulated clinical experiences will be effective in giving the students the understanding they would gain in real-life encounters.

“The purpose of this study is to examine whether the use of a strategically designed, complex, student-led clinical simulation will foster competencies in the assessment and management of medical and psychiatric symptoms,” Dunn said. “The study will also assess whether these role-play scenario exercises are perceived by student participants as an effective alternative to clinical placement experiences.”

This particular study will focus on chronic mental and physical illnesses common among the elderly. “With the rapid growth of the aging population, the need for knowledgeable nurses to manage older adult patients with complex, chronic medical conditions is essential,” Dunn said. “Normal age-related changes, comorbidities, cognitive impairments and altered responses to medications and other medical treatments increase the vulnerability of this population. To integrate the complexity of treating a patient with a chronic illness along with a mental health illness is essential to meet the needs of this growing population.”

The first step in the study is to develop the scenarios. Dunn is developing the physical health scenarios, and Riley-Doucet will create the mental health scenarios. The scenarios will be critiqued by two School of Nursing simulation experts, professors Megan Harris and Ronald Piscotty, in the summer of 2014. The simulations will then be run using senior level undergraduate

nursing students in the fall of 2014 and winter of 2015. About 200 students will be involved, including some master’s degree candidates who will be research assistants.

The simulations will be student-led, according to Dunn, with the students working in pairs or dyads; one will be the patient and other will be the nurse. Both will be given a scenario and checklist of behaviors they need to exhibit. When they have been given enough time to practice, the dyads will then present their simulation to the other students within the clinical group. The students viewing the simulation are blinded to what diseases the patients are exhibiting and the interventions the nurse is doing. The students will be given a participant observation sheet that asks them what are the diagnoses (both mental health and physical), what did the nurse do right, what did the nurse do wrong, and what other strategies could the nurse have used. The students and their clinical faculty will discuss this in the debriefing part of simulation. The students will then evaluate the simulation strategy and whether they feel more confident in their abilities to care for patients such as these.

The simulations will be done at the Riverview Institute in downtown Detroit, which has 50,000 square feet of clinical education space with five multi-purpose classrooms, four clinical skills development labs, a state-of-the-art Clinical Simulation Center, computer labs and faculty offices.

This former hospital facility will provide an ideal setting both in space and location. Aside from being spacious, this renovated facility has an intensive care unit, step-down unit, recovery room and an operating room, providing students an authentic hospital setting. There are more than 20 patient beds where students can practice their assessment and fundamental skills. Each practice area is positioned in front of wall mounts that hold oxygen, suction and patient call lights, which are similar to what they will use at the hospitals during clinical rotations. To date, hundreds of nursing students have used this facility to practice skills within a safe environment.

In addition to providing students with valuable experience, these studies could help other nursing schools. Once the scenarios and checklists are copyrighted, they would be available for purchase for a minimal fee to institutions that are interested in replicating them, Dunn said. She and Riley-Doucet also hope to publish the results and present them at conferences.

**By Ann Marie Aliotta**

*With the rapid growth of the aging population, the need for knowledgeable nurses to manage older adult patients with complex, chronic medical conditions is essential.”*



Cheryl Riley-Doucet

Karen Dunn

Karen Dunn's clinical practice and research is focused on improving the lives and well-being of community-dwelling older adults. A Ph.D. graduate of Wayne State University, her research has been selected for recognition and awards given by two nursing organizations: the Midwest Nursing Research Society and Sigma Theta Tau, the International National Honor Society for Nursing. Cheryl Riley-Doucet's primary research interests include geriatric and family nursing, environmental interventions for patients with Alzheimer's disease and other dementias, and education for nurse preceptors. Riley-Doucet has published an article in the *Journal of Family Nursing* and has another in press in the *Journal for Nurses in Staff Development*. She co-authored an article with Dunn that was accepted for publication in the *Journal of Holistic Nursing*. Riley-Doucet also received her Ph.D. from Wayne State University. Both Dunn and Riley-Doucet are Fellows of the Gerontological Society of America.



**Mary Dereski, Ph.D.**, joined the Oakland University William Beaumont School of Medicine in September 2012 as an associate professor of biomedical sciences and director of the capstone program. As capstone program director, she engages with medical students in all stages of their research initiatives throughout their four years of medical school. Before arriving at the OUWB School of Medicine, Dr. Dereski was an associate professor in the Department of Family Medicine and Public Health Sciences at the Wayne State University School of Medicine.

## Transition time

### *Extending the bridge of health care support for young adults with autism*



**H**ow difficult would it be to abruptly be plopped down in a foreign country, with no knowledge of the culture and language — no translation handbook — while learning how to drive for the first time?

Once hitting age 18, this is the type of pressure and confusion often felt by those with autism spectrum disorder (ASD), as they're suddenly expected to act as independent adults in managing their own health care.

What a difference a day makes.

In turning from 17 to 18, the difficulty for those with ASD is that although their legal status changes to “adult,” their developmental age lags behind chronological age. Those with ASD are challenged by abnormal development of communication, social skills and reasoning that impacts independence.

Whether calling for appointments, filling out forms, dealing with pharmacies or interacting with physicians and their staff, it can be overwhelming for those with ASD. Depending on the age limit in pediatric offices, those with ASD may also face having to find a new physician. At the same time, their caregivers may hit unexpected obstacles helping their loved ones because of health care legalities and privacy issues.

Mary Dereski understands.

“Autism awareness within pediatrics has been tremendous and has resulted in children being accurately diagnosed much quicker,” says Dereski, associate professor of biomedical sciences. “But now, in terms of sensitivity to their different situation, we’re hearing of young adults with ASD falling off the cliff within the health care system. This is yet another stressor for those already dealing with so much.”

Dereski is also director of the OU William Beaumont (OUWB) School of Medicine’s capstone program. As director, she engages with medical students in the program’s research initiatives. It’s in this capacity that she hopes to facilitate some changes to help the young adult ASD population more comfortably navigate the health care system.

About one in 88 children has ASD, according to estimates from the Centers for Disease Control and Prevention’s Autism and Developmental Disabilities Monitoring Network.

“In ever-increasing numbers, our medical students will see ASD patients in their practices,” says Dereski. “They can be attuned

to making their health care experience less stressful.”

Oakland University is on the cutting edge in its efforts on behalf of those with autism. The OU Center for Autism Research, Education and Support (OUCARES) integrates academic coursework and research with hands-on community work to prepare professionals to be leaders in the autism community.

“It’s inspiring,” says Dereski, “and it makes for an ideal foundation for this particular ASD research.”

How can this be accomplished? First stop: team up with OUCARES for outstanding support. Next stop: go to the source.

“We need to gather information from those with ASD and their caregivers,” says Dereski. “We want to know the difficulties they’re experiencing at physicians’ offices.”

Often, those with ASD don’t appear outwardly different, so they may blend into the crowd in a busy physician’s office.

But not understanding their differences can have unintended consequences.

“If someone with ASD gives incorrect information or answers questions [verbally or on forms] based on misunderstandings, this impacts care,” Dereski says. “Additionally, their perspective may differ from their caregiver’s perspective, so that caregiver input is vital to nurses and physicians.”

Sensory issues can also be a problem.

“Many with ASD get overwhelmed by too much stimuli,” adds Dereski. “For some, waiting for a long time in a crowded, noisy waiting room can be excruciating.”

After compiling feedback like this from ASD families, the next step in the research process will be making office calls.

“We need to consult with area physicians,” Dereski says. “In bringing concerns and ideas to them, I think some very reasonable changes can be made to better accommodate this population with medical directives.”

To create greater awareness, Dereski plans to produce an online continuing education module regarding this issue.

“The changes that can be made to help this special group can be of global benefit because the need exists everywhere,” Dereski says. “That’s a goal worth pursuing.”

**By Mary Gunderson-Switzer**

*“In ever-increasing numbers, our medical students will see ASD patients in their practices.”*

# Batty behavior

## *An OU professor seeks answers on bats' social behavior*



In the classroom, sometimes a student ends up teaching the professor.

For Dr. Jennifer Vonk, associate professor of psychology and an animal cognition expert, that happened in her first few months at Oakland University in 2011.

One of her PSY 487 — Research Apprenticeship students, Callie Pederson, told her about her favorite place to volunteer. New to the state, Vonk had never heard of the Organization for Bat Conservation (OBC) on the campus of Cranbrook Institute of Science in Bloomfield Hills, Mich., the largest grassroots bat conservation organization in North America.

The OBC knew all about her, however. Pederson had talked her up, relaying many of the animal cognition studies Vonk completed as an assistant professor at the University of Southern Mississippi, her postdoctoral research fellowship at University of Louisiana, and through her schooling in Canada. She attended York University for her doctoral degree, Wilfrid Laurier University for her master's degree, and McMaster University for her bachelor's degree.

Before becoming a Golden Grizzly, Vonk studied the mental capacities and behavior of American black bears, gerbils, orangutans, gorillas and chimpanzees. "Would she like to come by for a tour?" asked Rob Mies, OBC's executive director and founder.

"Absolutely," Vonk said. At the end of the tour, she asked Mies if he was interested in her doing some behavioral research there, and she quickly got the green light. "It's usually difficult to do animal research, but the OBC has been so helpful, so welcoming. It's been very refreshing," she said.

The first research project was based on questions the OBC staff asked predicated on observing their own 150 bats. When they put up a mirror as a source of enrichment play, they thought they noticed the bats lingering in front of the mirrors, performing flips, watching their own actions. Was this, indeed, what was happening?

Vonk and Mies went to work creating research modules to see if their anecdotes could be tested in a scientific way.

"We couldn't go to existing literature to see how this has been done before because no one has tested bats like this before," explained Mies, a longtime bat expert. "Dr. Vonk is on the cutting edge as far as bats are concerned."

Vonk collected data from 19 bats of six different species — Egyptians, Jamaicans, straw-colored, Malayans, vampire and Rodriguez bats, videotaping their behavior. She marked each bat's ear, so they might see it in the reflection and want to explore it. She used two types of mirrors, a traditional one and one that had a non-reflective coating that allowed for bats to see shadows rather than a clear image.

"We're still coding all of the video, but we did not observe any strong evidence for mirror self-recognition," Vonk explained. "The Rodriguez, the straw-colored and the Malayan fruit bats appeared the most interested in interacting with the mirrors. It also appeared that bats were more likely to touch the reflective mirror."

That study prompted more questions. Did Vonk get those results because she isolated each bat as she tested it, rather than keeping it together with its preferred colony?

Now, they are setting up a new study to gauge their pro-social behavior. They wonder, given the opportunity to provide food items to themselves or group mates, which do they choose more often? It's modeled after a study Vonk did with chimpanzees, but building the apparatus to see if the bats release food into an adjacent enclosure more often when another bat is present, has proven difficult. They are tweaking its design to allow the bats to free a partner from an enclosure.

When they are done with that study, they will monitor cooperation among bats by modifying the apparatus to see if bats prefer to work alone or in pairs to procure food rewards or release other bats in and out of enclosures. They'll take it a step further and see if the bats prefer specific mates to take on the task.

"Every time Rob Mies and I talk, we come up with another study idea," Vonk said. "Bats are smarter than we believe."

**By Rene Wisely**

*"... No one has tested bats like this before."*



Jennifer Vonk received her Ph.D. from York University in Toronto, Ontario. In addition to teaching at Oakland University, she is a comparative/cognitive psychologist with primary research interests in two overlapping areas: animal cognition and cognitive development. The underlying goal of her work is to examine cognitive continuities and discontinuities between humans and both closely and distantly related species.





# Measuring entrepreneurial success

*Research lends support to those starting new business ventures*



**P**opular advice for entrepreneurs often equates success to money, but for Mark Simon, a researcher and professor teaching Oakland University students the skills of successful entrepreneurship, his research shows otherwise.

“We know for a fact that the major reason why an entrepreneur starts a venture is not to achieve greater economic success. While it is a reason, it is not the main reason,” says Simon, professor, management and entrepreneurship for OU’s School of Business Administration.

Before now, most research looked at what does it take to achieve economic success. While a base amount of financial success is important, amassing great wealth is often not the most important goal for entrepreneurs. Simon notes that things like gaining freedom and flexibility, doing activities you like, pursuing a passion, not working for someone else, and controlling risk can be far more important.

“Almost no one is looking at what it takes to achieve these other goals,” says Simon. “The degree to which different strategies and different kinds of ventures achieve that is something we still know very little about. This is what I have currently started researching and plan to continue.”

In addition to research into what helps entrepreneurs achieve their financial and lifestyle goals, Simon is also looking into a newer method of entrepreneurship. Through his own and the research of others, he has found that there is little or no correlation between success and time spent developing a lengthy business plan.

“It used to be, and to an extent it still is, that writing a detailed business plan of how to execute an idea was the first step in any business venture. There is really a growing movement away from this,” says Simon.

Instead, getting real market feedback and testing assumptions prior to having the process fully fleshed out is a far more practical way to determine whether or not an idea will succeed. As one line of his research, Simon and his colleague, OU marketing professor John Kim, have been analyzing data from hundreds of entrepreneurial ventures accumulated and posted to various websites.

“People who have been pursuing this method talk about what they have encountered and what changes they made to their

idea or model. What we are doing is seeing what patterns help people progress the furthest,” says Simon, who began teaching at OU in 1996.

Simon’s research also looks into entrepreneurial decision-making and what, if any, are common personality traits. His work indicates that entrepreneurs share very few personality traits. Their desire to begin a new venture is not due to willingness to take risks, but that they view making decisions as less risky.

“They make decisions differently than others and are often overconfident in their judgments. This allows them to proceed where others don’t. Later, hopefully, they make needed adjustments along the way,” says Simon, who studied at Babson College, one of the first colleges to offer entrepreneurship as a concentration, before earning a master’s and Ph.D. at Georgia State University.

His research studies have resulted in dozens of papers in multiple publications, including *Academy of Management Journal*, *Entrepreneurship: Theory and Practice*, *New England Journal of Entrepreneurship*, *Journal of Small Business Management*, and *Journal of Business Venturing*.

In 2011, Simon parlayed much of his research and life experience as an entrepreneur into a book, *The Balanced Entrepreneur: Finding and perfecting ideas to generate financing, freedom, fun and fortune* (Entrepreneurial Life Publications).

“I love playing with ideas, and also relaying those ideas to others. That is why I made the transition from a practitioner of entrepreneurship to teaching entrepreneurship,” says Simon, who started an import company and an adventure trip business, and managed a health club prior to his academic achievements.

This fall, OU will add non-business students with existing business students who are taking the entrepreneurship minor, which Simon notes will bring another set of skills and ideas to the classroom. The program will also expand to include a course in corporate entrepreneurship. “We are going deeper and developing a core competence and also gaining a wider audience,” he says. “It is a very exciting time.”

**By Alice Rhein**

*“What we are doing is seeing what patterns help people progress the furthest.”*

# Energized

*Clean Energy Research Center is national model for renewal revolution*



Imagine a building that uses the earth for all its heating and cooling needs.

Supplying its electrical needs around the clock, it captures and stores the sun's energy during the day. On winter days when heat's needed, its engineers fire up a gas turbine to supply that heat, while generating additional electricity.

Ideally, this environmentally debt-free building wouldn't need an amp of commercial power.

Jim Leidel is energized about making this happen at Oakland — one system at a time.

"We're a work in progress," says Leidel, director of the School of Engineering and Computer Science's Clean Energy Research Center (CERC).

Leidel helped create the 22,000-square-foot CERC, home to clean (renewable) energy research and development (R&D). Multiple projects are completed or in various stages of development.

The CERC is uniquely situated in "Automation Alley" (Macomb/Oakland/Wayne counties), which comprise 40 percent of the state's population and a majority of its economic activity. The CERC fosters commercial partnerships and allows for technology transfer within OU's R&D community.

That's good news for Michigan.

Buildings consume about 40 percent of the nation's energy; in Michigan, that's about \$12 billion annually in energy costs, much flowing out of state.

With a background in mechanical engineering and years working within industry, Leidel also served 10 years as energy manager for OU's Facilities Management Department.

His research projects demonstrate technologies that can serve as national models in energy-efficient buildings; utilization of solar power; wind and biomass (organic materials) energy; and combined heat and power systems.

Detroit Edison provides electricity to Oakland, but OU has its own micro-grid, allowing distribution of power generated by these new clean energy technologies.

For instance, CERC's steam boiler was replaced with a woodchip boiler fed from on-campus urban waste wood. Bioethanol/biomass pelletization equipment will also be installed so students can learn more about biofuel technologies production.

Leidel works every angle of energy independence. He's currently focused on developing a natural gas-driven combined heat and power (CHP) system. The CHP uses a gas turbine to generate electricity; the waste heat is then used to generate steam/hot water.

Wind is another power-generating alternative. Leidel has studied utility-sized, multi-megawatt wind installations on campus and submitted a proposal for this new technology.

Back in 2003, Leidel designed a 10kW integrated photovoltaic (PV) system for OU's student apartment roof. Electricity produced from the Uni-Solar shingles is used by the building or fed back to the university's power grid.

Today, in addition to using solar capabilities to generate electricity, OU has something new under the sun.

Oakland's geothermal/solar thermal Human Health Building (HHB) is a first among firsts.

It's not only Michigan's first college campus green building, but it has also achieved an LEED Platinum rating — the highest rating — due, in part, to a \$2.7 million U.S. Department of Energy grant.

A majority of the grant was used for two components: a desiccant dehumidification system and a newer-tech variable refrigerant flow heat pump system. The HHB project is the first of its type or size in the nation to use both systems.

The heat pump system uses the ground to cool water circulating within the building. The pump can be used both in heating the building in wintertime and as a heat sink in cooling it in summertime. This revolutionary dehumidification cooling system is powered by one of the nation's largest solar thermal energy systems.

The HHB carbon footprint will be reduced, and energy costs are expected to be cut in half.

What originally brought him to Detroit was a patent for a low-heat rejection automotive engine design. This entrepreneurial spirit makes for additional good, clean fun. His students enjoy CERC projects that include solar and fuel cell golf carts and electric car conversion.

Clearly, Leidel's expertise on energy efficiency — much like sunlight falling on the buildings he modifies — isn't being wasted.

**By Mary Gunderson-Switzer**

*"We're dedicated to an overall clean energy infrastructure at OU."*



**Jim Leidel** has been involved in the energy and energy management industries since his graduation from Purdue University with a B.S. in mechanical engineering in 1990. From 1991 to 2001, he worked in various positions with Invensys Building Systems (formerly Barber-Colman) and Detroit Edison, followed by 10 years as energy manager for Oakland University's Facilities Management Department. In 2011, Jim helped create the Clean Energy Research Center within the School of Engineering and Computer Science at OU and moved over to be the director of Clean Energy Systems.





- SHOW BUSINESS
- NETWORK
- MUSIC
- CINEMA
- BUSINESS/FINANCE
- WORLD NEWS

- INTERNET
- LIVE CHAT
- MEDIA
- PHOTOS
- VIDEOS
- MUSIC



The WISE team (from left to right) includes Brad Roth, professor of physics; Julie Walters, associate professor of public administration; Jo Reger, professor of sociology and director of women's studies; Kathleen Moore, director of WISE@OU and professor emerita of chemistry; Leanne DeVreugd, program assistant; Laila Guessous, associate professor of engineering; and Sarah Blanchette, grant assistant. Not pictured Joi Cunningham, director of inclusion and intercultural initiatives.

- CULTURE
- ECONOMY
- BUSINESS
- PEOPLE
- CREATIVE
- TURNKEY
- INVESTMENT
- NETWORKING

- STRATEGY
- EACH
- INVESTMENT
- INCOME
- MONEY

## Wise intentions

*Even the most solid workplace leaves some room for improvement*



**T**he Women in Science and Engineering at Oakland University (WISE@OU) program sets out to create the best possible work environment for science, technology, engineering and math (STEM) faculty members. Funded by a Partnerships for Adaptation, Implementation, and Dissemination (PAID) grant through the National Science Foundation (NSF) ADVANCE program, WISE@OU works to pave the way for better representation of women and underrepresented populations in STEM, as well as building better understanding of sometimes complicated and misunderstood faculty work-life issues.

“We are starting conversations across campus that will hopefully make things even better,” says Kathleen Moore, Ph.D., director of WISE@OU and professor emerita of chemistry at the College of Arts and Sciences.

The multidisciplinary WISE@OU leadership team includes Moore; Joi Cunningham, attorney and director of inclusion and intercultural initiatives; Laila Guessous, Ph.D., associate professor of engineering; Brad Roth, Ph.D., physics professor; Julie Walters, Ph.D., associate professor of public administration; and Jo Reger, Ph.D., associate professor of sociology and director of the women and gender studies program.

In May, the group released its detailed climate summary report, a baseline from which to address concerns and a start in creating a comprehensive program to improve recruitment, retention and career development of women and other underrepresented populations in STEM. The information in the report came from a broad climate survey and focus groups consisting mostly of female OU STEM faculty members, plus university records and data.

“When we talk about issues like climate we kind of rely on anecdotal data, and we’re trying to move past that,” says Reger, a leadership team member and WISE@OU’s internal evaluator to track how well they’re meeting their NSF benchmarks.

Faculty respondents provided not only answers, but also suggestions about what they’d like to see, says Leanne DeVreugd, MPA, WISE@OU program assistant. She facilitates activities and manages the website, oakland.edu/advance, the group’s main information channel. Suggestions included supplying lab equipment lists so new faculty members have a sense of what may be available already nearby; clarifying

benefits; and improving opportunities to network, mentor and recruit.

“Most people were happy with our recruitment process,” says Moore. The university recently implemented anti-bias training as a requirement for search chairs. “That’s a very good first step.”

The group also stresses the importance of working in coordination with other campus organizations. In April 2012, the OU chapter of the American Association of University Professors (AAUP) asked WISE@OU to partner with them for workshops about tenure.

“We were glad to,” says Moore, adding WISE@OU even arranged to have the workshop filmed, edited and made available to faculty members who missed it. The two groups held a second workshop in November. “Any changes or anything we initiate is not going to live beyond the life of the grant unless it’s partnered with someone at the university who will sustain it.”

WISE@OU also partnered with Academic Human Resources to host a Q-and-A about maternity leave and other issues that may affect the tenure track.

“It became clear, for instance, that faculty didn’t even understand that they had the option in requesting an extension of the tenure clock, but they have to know to ask for it,” Moore explains.

Data like that, drawn from the survey, supported changes in the university’s AAUP contract, making medical leaves of more than six weeks automatically extend the tenure clock.

“It’s very complicated,” Moore says. “Anything we feel we can do to help this process be better is a good thing.”

Future workshops will address funding opportunities on campus, university research committee fellowships, mentoring in sciences and engineering, and balancing teaching and research.

“I think there are things that will come out of this grant that will benefit the entire university, and I believe that is one of the strongest things about this,” explains Reger.

Especially with the sciences, where making connections with other faculty members can be challenging, says DeVreugd: “This is something that can last after the grant is finished. The program and the relationships keep going.”

**By Cara Catallo**

*“Anything we feel we can do to help this process be better is a good thing.”*

## OU researchers acknowledged with distinguished awards

OU professors are regularly acknowledged for their contributions to science. The following professors received OU's top honors in 2013:



### Andrei Slavin

Andrei Slavin, Ph.D., professor and chair of the Department of Physics, has been named Oakland University's 2013 Distinguished Professor. The rank is awarded based on achievements in the areas of teaching, intellectual contributions and service to the university.

Dr. Slavin joined the OU community as an assistant professor in 1991. He was promoted to associate professor with tenure in 1994 and named a full professor in 1998. Throughout his career, he has demonstrated exceptional leadership in a department widely recognized for exemplary service and scholarly contributions.

Dr. Slavin's achievements have been immense and far-reaching. In 2006, he coauthored "Bose-Einstein condensation of quasi-equilibrium magnons at room temperature." The article was later published in *Nature*, one of the most prestigious scientific journals in the world. In 2008, he published five articles in *Physical Review Letters*, a top physics research journal. In recognition of his efforts, Dr. Slavin received the 2009 Research Excellence Award from Oakland.

In 2010, Dr. Slavin was elected a Fellow of the American Physical Society (APS), one of the world's pre-eminent organizations in the field of physics. Although no more than one-half of 1 percent of APS members achieve this honor annually, Dr. Slavin became the third member of OU's Department of Physics to receive it, joining colleagues Dr. Bradley Roth and Dr. David Garfinkle.



### Libin Rong

Assistant professor Libin Rong is the 2013 recipient of OU's New Investigator Research Excellence Award. Dr. Rong specializes in the area of mathematics biology.

Since joining Oakland University in January 2010, he has published more than a dozen peer-reviewed articles. His research is supported by both the National Science Foundation and the National Institutes of Health.

Dr. Rong brings important expertise in infectious disease modeling as well as prestige and positive recognition to Oakland University. His research in HIV dynamics has important implications for treatment of those individuals infected. He predicted that simply adding more drugs to current HIV treatment could not eradicate the virus, and this was found to be consistent with later clinical results.

Dr. Rong holds bachelor's and master's degrees in mathematics from Fudan University in Shanghai, and he earned his Ph.D. in applied mathematics from Purdue University. His research efforts are currently funded by the National Institutes of Health, and he has used mathematical models to investigate drug therapies of diseases, such as Hepatitis C virus and HIV. Portions of his findings were published in *Science Translational Medicine* in 2010.

### ***Hoda Abdel-Aty-Zohdy***

Professor of engineering Hoda Abdel-Aty-Zohdy received the OU University Research Committee (URC) 2013 Research Excellence Award. She is an exemplary researcher in the fast-moving field of integrated circuits and devices, including bio-inspired integrated system chip design and neural networks for signal processing.

A keynote and plenary speaker at five Institute of Electrical and Electronics Engineers Inc. (IEEE) conferences throughout the world, Dr. Zohdy's research activities focus on biotechnology submicron electronics for realizing bio-inspired intelligent computation and signal perception algorithms.

Dr. Zohdy has established an international reputation in the specialized area of bio-inspired integrated systems on chips. Her work on the bio-inspired electronic nose for chemical and explosive sensing and detection has attracted much interest and sustained funding from the Department of Defense. It has resulted in great reduction in the size of such devices for military and space mission use.

In addition, Dr. Zohdy was recently named the Oakland University School of Engineering and Computer Science John F. Dodge Endowed Chair in recognition of her scholarly achievements.





## Research centers and institutes

### ***The Automotive Tribology Center***

The Automotive Tribology Center in the School of Engineering and Computer Science (SECS) tests the science of lubrication, friction and wear on a vehicle's engine. Faculty and student researchers analyze materials so that automakers can lower friction to improve fuel efficiencies in vehicles. Research partners include General Motors Powertrain Division, Chrysler Corporation, Ford Motor Company, the Tank and Automotive Research Development and Engineering Center (TARDEC), ConocoPhillips and Argonne National Laboratory. The center is one of the only tribology centers in the country dedicated to automotive tribology research and uniquely positioned to advance the reliability, mobility and efficiency of automotive components.

### ***Center for Applied Research in Musical Understanding (CARMU)***

The mission of the Center for Applied Research in Musical Understanding (CARMU) is to build and advance a research-based pedagogy of teaching for musical understanding, as well as support pre-K-12 music educators in Michigan, the United States and internationally. The center seeks national and international eminence in applied research in musical understanding and supports faculty, graduate and undergraduate research in musical understanding.

### ***Oakland University Center for Autism Research, Education and Support (OUCARES)***

OUCARES integrates academic coursework, knowledge and research with hands-on work to prepare professionals to be leaders in the autism community. Through these academic and service programs, OU also provides supportive individual and family programs. OUCARES encourages the exchange of ideas relating to the education and support of individuals with autism spectrum disorder as well as providing services and support needed to improve daily living.

### ***Center for Biomedical Research***

The mission of the Center for Biomedical Research is to vigorously promote and support biomedical research and education at Oakland University and allied institutions, to recruit and retain outstanding biomedical scientists, to facilitate collaborative biomedical research projects and to develop gift, grant, and contract support for biomedical research programs, graduate and undergraduate training, as well as core facilities and equipment.

### ***Center for Creative and Collaborative Computing***

The mission of the center is to provide an environment for students, faculty and participating industry professionals to

collaborate and create novel information technology applications to keep our industry competitive and at the forefront of technology. The center is seen as an integral component of the future success of the computing and information technology-related undergraduate and graduate programs.

### ***Center for Integrated Business Research and Education***

CIBRE at the School of Business Administration connects business professionals, students and academics to address and shape the future of business research and business education locally, regionally and globally. CIBRE provides a place where business leaders, researchers, professionals and students can share resources and ideas and identify actions to address organizational issues, educate current and future professionals, and support economic development in the community and the world.

### ***Center for Robotics and Advanced Automation***

The Center for Robotics and Advanced Automation (CRAA) in the School of Engineering and Computer Science (SECS) was established in 1981 and is at the forefront in research and development in the areas of automatic controls, robotics, automotive engineering, machine vision and related fields.

### ***Clean Energy Research Center***

The School of Engineering and Computer Science is home to the Clean Energy Research Center (CERC). The CERC engages in multiple, clean energy research, development and educational activities. The CERC also will create an environment that will foster commercial partnerships and provide an educational platform for student research and clean energy curricula development, while cultivating an entrepreneurial atmosphere within the OU research and development community to allow technology transfer and commercialization of new technologies.

### ***Counseling Center***

The School of Education and Human Services Counseling Center is a teaching and research facility for the Counselor Education program that offers personal and career counseling to the community. The center enables graduate students to integrate and apply counseling theory with practice, as well as provide supervised professional counseling assistance to persons in need at no cost.

### ***The English as a Second Language Center (ESL)***

The ESL at Oakland University offers an intensive program to improve students' skills in English and to help each student reach his or her English language proficiency goals. The courses are designed to embrace the main areas of ESL education:

reading, writing, listening and speaking. Courses are offered to meet the needs of all language proficiency levels, from beginning through advanced. Courses are available to international students, the general public, and business professionals and their families.

### ***Eye Research Institute***

The ERI has a greater than 40-year history in vision research and has received more than \$50 million from external agencies such as the National Eye Institute (NEI). The institute conducts research in visual sciences, to enhance understanding of fundamental processes in ocular tissue related to health and disease. Each year the ERI, in conjunction with the Center for Biomedical Research, awards competitive Summer Vision Research Fellowships to OU undergraduates. In addition to conducting vision research, the ERI is formally associated with Beaumont Health System, Department of Ophthalmology and Associated Retinal Consultants.

### ***Fastening and Joining Research Institute (FAJRI)***

FAJRI is the only known facility of its kind in the world: an academic, nonprofit research facility dedicated solely to the fastening and joining of materials. This one-of-a-kind facility pursues fundamental and applied research to develop and disseminate new technologies in fastening and joining of materials, composites and polymers. Through its research, FAJRI helps improve the safety and reliability of equipment, machinery and mechanical structures. The research conducted also significantly improves the mobility and combat-readiness of military vehicles.

### ***Galileo Institute for Teacher Leadership***

The Galileo Institute for Teacher Leadership is dedicated to improving the learning of all students, elevating the education profession, enhancing the leadership skills of teachers, and fulfilling the vital role of public education in achieving a civil, prosperous and democratic society. The commitment to the concept of developing teacher leaders, to defining what teacher leadership is and why it is so important is at the heart of the institute.

### ***Ken Morris Center for the Study of Labor and Work***

The Ken Morris Center for the Study of Labor and Work is a division of the Department of Human Resources Development. Founded in 1972 as a labor education program, the center was renamed in 1983 for Ken Morris, a charter member of the OU Boards of Trustees. Its primary goal is to help develop potential leaders who possess the analytic, interpersonal and organizational skills to respond to human needs in an era of rapid social change. The program seeks to join education, skill development and service in the pursuit of this goal.

### ***Lowry Center for Early Childhood Education***

The Lowry Center offers early childhood education programming to children from 18 months to 5 years old using the newest

innovative equipment, materials and practices to cultivate the development of young children. The center's mission is to provide an exemplary laboratory center for early childhood education for the university and the neighboring communities.

### ***Prevention Research Center***

The Prevention Research Center is designed to promote community health through education, promotion and translational research. Translational research discovers which strategies work in the community: the community of youth, the community of women, or the community of senior citizens — all at high risk. The center brings experts from OU and the community together to make a difference in people's lives.

### ***Public Affairs Research Laboratory***

The Public Affairs Research Laboratory (PARL), affiliated with the Master of Public Administration program, is housed in the Department of Political Science. PARL provides services to local governments and municipalities, as well as research opportunities for our students.

### ***Reading Clinic***

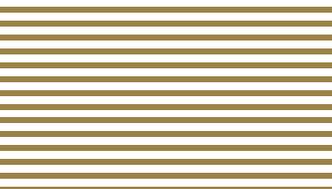
The Reading and Language Arts Department has operated reading clinics for the better part of five decades and has helped more than 15,000 children overcome reading difficulties. Reading clinics are dedicated to helping children between the ages of 6 and 17 with any type of reading or writing difficulties including learning disabilities, dyslexia, attention deficit disorder (ADD), and attention deficit hyperactivity disorders (ADHD). The clinic diagnoses the nature and extent of a child's reading and writing capabilities and works to improve them.

### ***Macomb-OU INCubator (Mac-OU INC)***

Oakland University's SmartZone Business Incubator located in Macomb County promotes economic development in Southeast Michigan by supporting high-tech businesses, academic innovation, and research & development. The incubator's focus areas include: defense, homeland security, advanced manufacturing and technology. Mac-OU INC administers Michigan's first Defense Advanced Research Project Agency's (DARPA) federal matching program.

### ***OU SmartZone Business Incubator (OU INC)***

OU INC is a SmartZone Business Accelerator, in collaboration with the City of Rochester Hills, Michigan Economic Development Corporation (MEDC), and various industry partners. OU INC's focus is in the energy, medical device and information technology sectors. OU INC provides entrepreneurial resources and strategic business solutions to develop intellectual property. The incubator supports existing and grows new technology-based and life science businesses with university resources, decision support technology, business counseling services, and financial/capital acquisition assistance.



## Student Research Award Recipients, 2012-13

Student award recipients receive financial assistance to support their research as well as the opportunity for travel support to present their research at a professional conference. The program is sponsored by the Office of the Provost.

### ***University Research Committee Student Research Awards***

#### ***Hyperelliptic Curves of Genus 3 with Extra Involutions***

**Student Researcher:** Lubjana Beshaj  
**Faculty Mentor:** Tony Shaska, Mathematics and Statistics

#### ***The Occurrence of Multidrug Resistant Bacteria in Polychlorinated Biphenyl contaminated Soil-Groundwater System***

**Student Researcher:** Natasha Bhutani  
**Faculty Mentor:** Satish Walia, Biological Sciences

#### ***Student Physical Therapists Knowledge and Self-Efficacy Following a High Fidelity Human Simulation Lab Experience: A Pilot Study***

**Student Researcher:** Rachel Bruce  
**Faculty Mentor:** Beth Black, Physical Therapy

#### ***The Connection Between Impulsivity and Motives for Food Choice***

**Student Researcher:** Ryan Brown  
**Faculty Mentor:** Andrea Kozak, Psychology

#### ***Intercultural Relations in Germany***

**Student Researcher:** Sean Cannady  
**Faculty Mentor:** Christian Cantir, Political Science

#### ***Literacy Instruction for Autism Spectrum Disorder Students in Midwestern School Districts: A Qualitative Case Study — Research Award***

**Student Researcher:** Yeaton Clifton  
**Faculty Mentor:** Linda Pavonetti, Reading & Language Arts

#### ***Beyond the Contributions of Empathy: The Role of Narcissism, Psychopathy, and Need for Approval in Adolescent Pro-social Behavior***

**Student Researcher:** Taryn Coetzee  
**Faculty Mentor:** Mary Lewis, Psychology

#### ***Private Military and Security Companies and American National Interests***

**Student Researcher:** Marc DuBuis  
**Faculty Mentor:** Christian Cantir, Political Science

#### ***Intolerance of Homosexuality in Developing Nations: How the “It gets better” Theory Actually Works for the Poor and Marginalized***

**Student Researcher:** Benjamin Eveslage  
**Faculty Mentor:** Byungwon Woo, Political Science

#### ***Linking Social Support and Adolescent Pro-social Behavior in Close Relationships: Mediation Through Empathy and Need for Approval***

**Student Researcher:** Jacenta Gabriel  
**Faculty Mentor:** Mary Lewis, Psychology

#### ***Toward Multicultural Narratology: How Can Multicultural Children’s Literature Criticism Benefit from Narrative Theory?***

**Student Researcher:** Taraneh Matloob Haghanikar  
**Faculty Mentor:** Linda Pavonetti, Reading and Language Arts

#### ***Adaptive Back-Stepping Control Based on Estimation of Dominant Parameters for Brushless DC Motor***

**Student Researcher:** Safa Hasan  
**Faculty Mentor:** Ka C. Cheok, Electrical and Computer Engineering

***Characterizing the Facets of Multiple All-different Predicates of Size Two Arranged in a Cycle Structure***

**Student Researcher:** Thomas Hayman

**Faculty Mentor:** Laszlo Liptak, Mathematics and Statistics

***In the Thrall of the IMF: Income Inequality and Program Recidivism***

**Student Researcher:** Evan Jones

**Faculty Mentor:** Byungwon Woo, Political Science

***Optical Spectra of Gold Clusters with Tuned Range-Separation Functionals***

**Student Researcher:** Jessica Koppen

**Faculty Mentor:** Maria Bryant, Chemistry

***Physical Therapy Screening Outcomes from Individuals Receiving Radiation Treatment for Cancer: A Descriptive Study***

**Student Researcher:** Melanie Lahrman

**Faculty Mentor:** Deborah Doherty, Physical Therapy

***Loading Has Significant Influence on Glycosaminoglycan Contents of the Cartilage Sub-Tissue Zones Using  $\mu$ MRI at 17.6  $\mu$ m Resolution***

**Student Researcher:** Ji Hyun Lee

**Faculty Mentor:** Yang Xia, Physics

***Physical Therapy Screening Outcomes from Individuals Receiving Radiation Treatment for Cancer: A Descriptive Study***

**Student Researcher:** Stacy Linn

**Faculty Mentor:** Deborah Doherty, Physical Therapy

***Endothelial Progenitors Derived from Human Umbilical Cord Blood Stem Cells***

**Student Researcher:** Christopher Lucier

**Faculty Mentor:** Rasul Chaudhry, Biological Sciences

***Alternative Usage of Splice Sites Augments the Transcript Diversity of Helitron Captured Genes Between Different Maize Inbred Lines***

**Student Researcher:** Brian Lynch

**Faculty Mentor:** Shailesh Lal, Biological Sciences

***Self-assembling Scaffold Up-regulated Pluripotent Genes and Promoted Self-renewal of Embryonic Stem Cells***

**Student Researcher:** Christina McKee

**Faculty Mentor:** Rasul Chaudhry, Biological Sciences

***Are Young Women at Special Risk of Rape-Murder Across Victim-Offender Relationships?***

**Student Researcher:** Stacy Memering

**Faculty Mentor:** Todd Shackelford, Psychology

***The Effect of Age on Conceptual Priming***

**Student Researcher:** Katherine Moore

**Faculty Mentor:** Cynthia Sifonis, Psychology

***Urban Clinton River in Michigan Is a Reservoir of Extended Spectrum Beta-Lactamase, Tetracycline and Ciprofloxacin Resistance Genes***

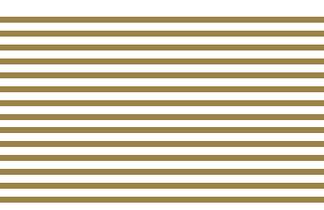
**Student Researcher:** Chithra Muraleedharan

**Faculty Mentor:** Satish Walia, Biological Sciences

***A Comparison of C7 Facet Joint Gliding to C7 Facet Joint Distraction in Patients with Restricted and Painful Active Cervical Rotation: A Two-Group Pre-test/Post-test Design***

**Student Researcher:** Nancy Murphy

**Faculty Mentor:** Douglas Creighton, Physical Therapy



## Student research award recipients *continued*

***Academic and Social Integration in the Basic Communication Course: Gateways to Students' Other Curriculum***

**Student Researcher:** Meghan Nyeste  
**Faculty Mentor:** Robert Sidelinger, Communication and Journalism

***Structural Adjustment, Democracy, and Attitudes Toward the West in Africa's New Democracies***

**Student Researcher:** Dana Parke  
**Faculty Mentor:** Matthew Fails, Political Science

***Presenting a Paper at the American Anthropological Association Annual Meeting***

**Student Researcher:** Kristen Pierce  
**Faculty Mentor:** Micah Boyer, Sociology and Anthropology

***American Dance Festival 2012-13, New York City***

**Student Researcher:** Alexandra Plaskey  
**Faculty Mentor:** Alison Woerner, Music, Theatre and Dance

***A Novel CMOS-MEMS Scanning Micro-Mirror Using Vertical Comb Drives***

**Student Researcher:** Peng Qu  
**Faculty Mentor:** Hongwei Qu, Electrical and Computer Engineering

***Examining the Existence of Mirror Self-Recognition in Bats***

**Student Researcher:** Jonathan Saulter  
**Faculty Mentor:** Jennifer Vonk, Psychology

***Cobalt-Dithiolene Electrocatalysts for Hydrogen Production***

**Student Researcher:** Teresa Serwick  
**Faculty Mentor:** Greg Felton, Chemistry

***URC Student Travel Award: American Dance Festival***

**Student Researcher:** Alissa Sharp  
**Faculty Mentor:** Thayer Jonutz, Music, Theatre and Dance

***Digital Data Acquisition System for the Low Energy Neutron Detector Array***

**Student Researcher:** Matthew Solt  
**Faculty Mentor:** George Martins, Physics

***Biopolitics and the Erasure of Meaning***

**Student Researcher:** Jason Storms  
**Faculty Mentor:** Graeme Harper, English

***Student Physical Therapists Knowledge and Self-Efficacy Following a High Fidelity Human Simulation Lab Experience: A Pilot Study***

**Student Researcher:** Jennifer Stanton  
**Faculty Mentors:** Beth Black and Christopher Wilson, Physical Therapy

***Antibiotic Resistance and Molecular Characterization of Ocular Isolates of Acinetobacter Baumannii***

**Student Researcher:** Deepa Talreja  
**Faculty Mentor:** Satish Walia, Biological Sciences

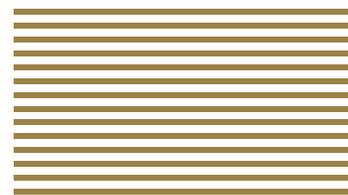
***Hyperelliptics Curves of Genus 3 with Extra Involutions***

**Student Researcher:** Fred Thompson  
**Faculty Mentor:** Tony Shaska, Mathematics and Statistics

***Composing and Sharing as an Integral Part of a School Instrumental Performance Curriculum***

**Student Researcher:** Spiros Xydas  
**Faculty Mentor:** Jacqueline Wiggins, Music, Theatre and Dance

## 2013 postdoctoral scholars at Oakland University



### *Sreenivasulu Gollapudi*

**Current Projects:** (1) Functionally Graded Ferroics and Magnetolectric Interactions; (2) Self-assembled Multiferroic Nanostructures and Studies on Magnetolectric Interactions

**Department:** Physics

**Faculty Mentor:** Gopalan Srinivasan

### *Rakesh Pathak*

**Current Project:** Mechanisms of RSC Recruitment and its Role in Transcription

**Department:** Biological Sciences

**Faculty Mentor:** Chhabi Govind

### *Nian Wang*

**Current Project:** Degradation of Articular Cartilage Detection by Micro-MRI

**Department:** Physics

**Faculty Mentor:** Yang Xia

### *Zhe Wang*

**Current Project:** Autonomous Electrochemical Gas Detection Microsystem for Mine Safety

**Department:** Chemistry

**Faculty Mentor:** Xiangqun Zeng

### *Anil Kumar*

**Current Project:** Mechanisms for Radiation Damage to DNA

**Department:** Chemistry

**Faculty Mentor:** Michael Sevilla

### *Amitava Adhikary*

**Current Project:** Radiation Damage to DNA — Effects of Modifiers and LET

**Department:** Chemistry

**Faculty Mentor:** Michael Sevilla

### *Chunhui Xiao*

**Current Project:** Ionic Liquid Electrochemical and Piezoelectric Sensors for Standoff Explosive Detection

**Department:** Chemistry

**Faculty Mentor:** Xiangqun Zeng

### *Roman Khymyn*

**Current Project:** Materials World Network: Dynamically Controlled Artificial Magnonic Materials Based on Arrays of Nano-sized Magnetic Dots

**Department:** Physics

**Faculty Mentor:** Andrei Slavin

### *Jing Li*

**Current Projects:** (1) Development and Laboratory Implementation of an Accelerated Testing Method for Vehicle Systems Using Time-dependent Reliability/Durability Principle; (2) Enhancements to the Chrysler Door Closing Effort Model and Development of a Liftgate Closing Effort Model

**Department:** Mechanical Engineering

**Faculty Mentor:** Zissimos Mourelatos

### *Alexander Mamutov*

**Current Project:** Numerical Modeling of Electrohydraulic Forming Processes

**Department:** Mechanical Engineering

**Faculty Mentor:** Lorenzo Smith

### *Vijitashwa Pandey*

**Current Projects:** (1) A Novel Integrated Approach for a Resource- efficient Design Validation Co-process; (2) Reliability Assessment and Optimization of a Smart Charging Microgrid

**Department:** Mechanical Engineering

**Faculty Mentor:** Zissimos Mourelatos

### *Ilias Efthymiopoulos*

**Current Project:** High Pressure Behavior of Spinel as well as A2B3 compounds

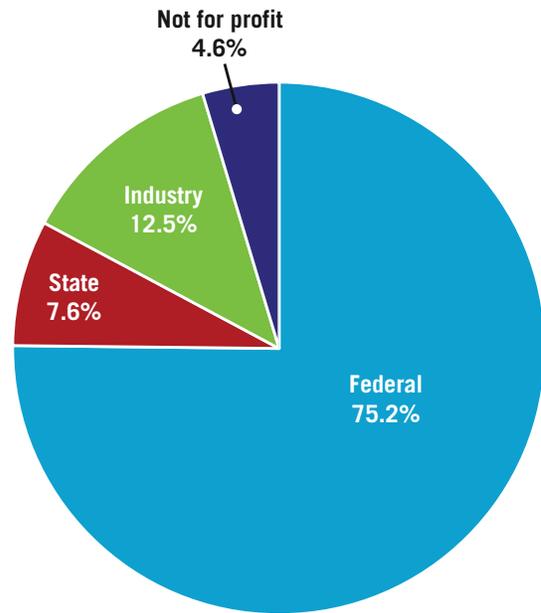
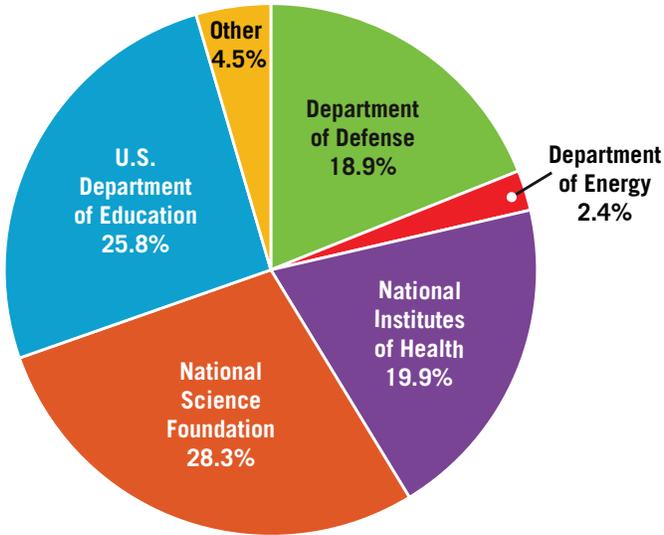
**Department:** Physics

**Faculty Mentor:** Yuejian Wang

# By the numbers

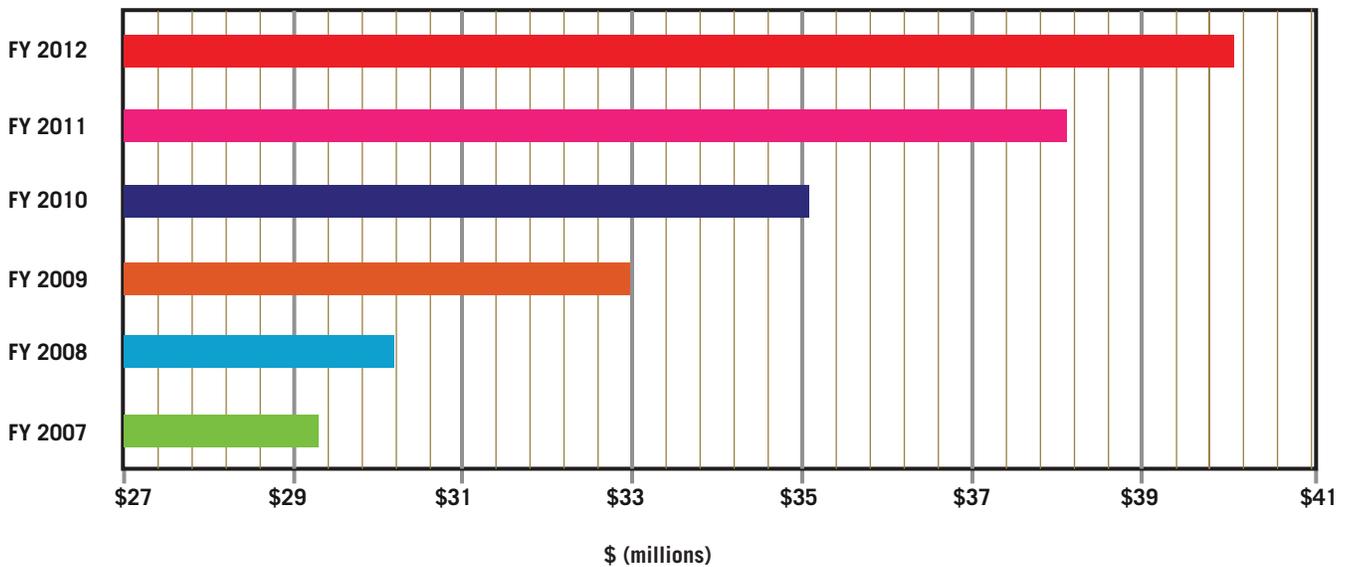
*Fiscal Year 2012*

*Federal research awards by agencies*

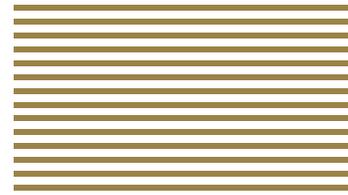


*Research awards current dollars received by source*

*Research expenditures from all sources (external and internal)*



# Office of Research Administration agency list — FY 2012



Aastrom Biosciences, Inc.	Infogation Corporation	Oak Ridge National Laboratory
Academy of Applied Science	Intelligent Automation, Inc.	Oakland Schools
American Chemical Society	International Joint Commission	Office of Naval Research
Auto/Steel Partnership	International Writing Centers Association	OptimizeRx
Battelle Memorial Institute	Intrepid Control Systems	Pharaoh Industries
Battelle Pacific Northwest Division	International Joint Commission	Procter & Gamble Pharmaceuticals, Inc.
Bayer CropScience	Kellogg Foundation	Reading Recovery Council of North America
Beaumont Health System	Korea Institute of Energy Technology Evaluation and Planning	RHK Technologies
Beta CAE Systems USA, Inc.	Macomb County Government	RNET Technologies, Inc.
Blue Cross Blue Shield of Michigan	Macomb Intermediate School District	Ropard Foundation
Camille and Henry Dreyfus Foundation	Macomb School District	Sigma Theta Tau International
Centers for Disease Control	Magna International, Inc.	Southeast Michigan Resource Conservation & Development
Chrysler Company LLC	Michigan Campus Compact	SpinDance, Inc.
City of Detroit	Michigan Council for Arts and Cultural Affairs	St. John Health System
Clinton River Watershed Council	Michigan Department of Community Health	State of Michigan
Community Foundation for Southeastern Michigan	Michigan Department of Education	The E. Matilda Ziegler Foundation for the Blind, Inc.
Chrysler Corporation	Michigan Department of Labor and Economic Growth	The Kresge Foundation
Defense Advanced Research Projects Agency	Michigan Economic Development Corporation	The Templeton Foundation
Department of Veterans Affairs	Michigan Humanities Council	ThromboGenics
Detroit Area Pre-College Engineering Program	Michigan Initiative for Innovation and Entrepreneurship	Trier University of Applied Sciences
DTE Energy	Michigan Space Grant Consortium	U.S. Army
East Michigan Environmental Action Council	Michigan State University	U.S. Army – TACOM
Economic Development Administration	Michigan Universities Commercialization Initiative	U.S. Army Research Office (USARO)
Elsa U. Pardee Foundation	Microstar Technologies LLC	U.S. Automotive Materials Partnership
Faurecia Interior Systems	Midwest Campus Compact STEM Consortium	U.S. Civilian Research and Development Foundation
Federal Aviation Administration	Midwest Eye-Banks	U.S. Department of Agriculture
Fisheries and Oceans Canada	Myongji University, South Korea	U.S. Department of Education
Ford Motor Company	Nano Electronics Research Corporation	U.S. Department of Energy
Foster-Miller, Inc.	National Eczema Association	U.S. Department of Health and Human Services
General Dynamics Land Systems, Inc.	National Inclusion Project	U.S. Department of Labor
General Motors Corporation	National Institutes of Health	U.S. Environmental Protection Agency
Harley-Davidson Motor Co.	National Science Foundation	U.S. Small Business Administration
Harvard Medical School	National Security Agency	U.S. Navy
Health Resources and Services Administration	National Writing Project	Vision Research Foundation
Henry Ford Health System		Vistakon Pharmaceuticals
Hughes Research Laboratories		Wayne County Regional Educational Service Agency
Huron Mountain Wildlife Foundation		



**OAKLAND  
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