



Physiology

MSU College of Natural Science | Newsletter for Alumni and Friends

From the Department Chair...

Greetings from the MSU Department of Physiology. First and foremost, I would like to acknowledge the leadership of professor Dave Kreulen, who served as interim chair for the department for two years. During this time, Dave guided the department through some significant changes and shepherded an influx of highly talented faculty. After a dozen years at the University of Illinois, I became the physiology chair here in July 2013, and have spent this first year settling into the Michigan State system and acquiring a new wardrobe with substantial amounts of green and white!

These are exciting times for the department. Over the next several years, although the faces of the department will change, the long-standing reputation of our research strengths will continue to grow. Our current and forthcoming retirements represent a great loss to the department in experience and talent but, at the same time, present a great opportunity to shape the department to meet the demands of modern physiological research in the coming decades.

As the new chair of the department, my primary role is to promote scholarly activity and help build a strong, collegial department with a high-profile research program. Check out pages 4, 6 and 7 in this newsletter for a sampling of some of the fantastic work for which the department is so widely recognized. As we move forward, we plan to target future faculty hires to enhance existing strengths and launch new directions, facilitate faculty hires with integrative approaches that foster the collaborative nature of research at MSU, and strike a balance between academic research and teaching.

There have been a number of faculty member additions to the department over the past two years. In addition to me, we welcomed four new, highly talented research faculty members—Brian Gulbransen, Gina Leininger, A.J. Robison, Jr., and Michelle Mazei-Robison all joined us as assistant professors in 2012. You can read more about each of them on page 3.

“These are exciting times for the department.”

We also hired five excellent, energetic new faculty members who contribute considerably to our teaching and pedagogical missions: Erica Wehrwein (Mayo Clinic), Anthony Paganini (Michigan State), Bill Wonderlin (West Virginia University), Marty Spranger (Wayne State University) and Paul Kowalski (Wayne State University). And as part of the ongoing Biology Initiative in the College of Natural Science, Lori Seischab (Western Carolina University) was appointed as our full-time undergraduate advisor.

The department has also had a couple of faculty promotions. Chengfeng Yang was promoted to associate professor with tenure in 2013. Chengfeng’s research involves the understanding of the molecular mechanisms by which humans develop cancer and how environmental toxicant exposure affects human cancer risk. He has been carrying out pioneering work delineating the role of micro RNAs in lung and mammary cancers produced by certain pollutants. In addition, Robert Wiseman was promoted to professor in 2013. Bob’s research interests involve understanding how energy metabolism

is regulated by exercise. His research is highly integrative with the use of cutting-edge imaging approaches, coupled with quantitative physiology and computational modeling to understand metabolic systems that provide insight into conditions such as diabetes.

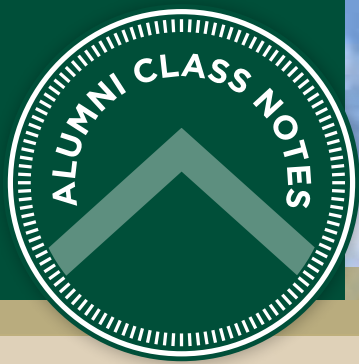
As the complexion of our department changes with new additions, I want to recognize our faculty members who have recently moved on to new stages of their lives. Harvey Sparks, former chair of physiology (1979-1989) and University Distinguished Professor, retired after 36 years of service here in May 2014. Professor Stephen Schneider, who joined the faculty in 1995, retired in July 2014. And next May will bring the retirement of professor Steven Heidemann after 37 years at MSU. Read more about these outstanding outgoing faculty members on page 3.

Our alumni are important to us, and we want to hear from you. The research activities of our department are dependent on the efforts of talented undergraduate students, graduate students and postdoctoral fellows. I encourage all alumni and friends of physiology to keep in touch with department news by visiting our website (<http://www.psl.msu.edu>). I also encourage you to contact me with any questions, comments and suggestions that you may have.

I hope you enjoy our newsletter and, as always, we would love to hear from you. ☺



C. Lee Cox, Ph.D.
Chair
Department of Physiology



Barbara (White) Boone, Ph.D., physiology, '85, is a program director at The Ohio State University, College of Education and Human Ecology, Center on Education and Training for Employment. Boone specializes in family, school and community partnerships and program evaluation.

Lisa Hales, physiology, '85; purchasing management, '88, is part of a team of women working to make *PiNK Corner Office* magazine—a national women's business magazine—a groundbreaking publication. Her role as partner, with responsibility over content, allows the team to focus on delivering high-quality current business intelligence for businesswomen.

Patrick O'Neill, physiology, '89; Ph.D., physiology, '93, joined West Valley Hospital in Goodyear, Ariz., as associate trauma medical director in June.

Kristen Herman-LaMacchia, physiology, '94, graduated from the Wayne State University School of Medicine in 1999 and is a pediatrician at Northeast Pediatrics in Rochester Hills, Mich.

Eric Powell, physiology, '97, is currently a research physiologist at the U.S. Air Force (USAF) School of Aerospace Medicine

in Dayton, Ohio. He recently had an article posted on the USAF's Inside the 445th Airlift Wing website about a biotechnology-related experiment that he is working on: <http://www.445aw.afrc.af.mil/news/story.asp?id=123362034>.

Brett Lockman, D.O., physiology, '98; D.O., '03, is president and CEO of Advanced Wellness Sports & Spine in Davenport, Iowa. He and his staff are expanding the business to a new location in Davenport. Slated to open in November, the new facility, Advanced Wellness Medical Center, is the first independent interventional physiatry clinic in the state of Iowa.

Stephen Swistak, physiology, '04; M.D. '08, has completed his residency and fellowships in general surgery (St. John's Hospital, Detroit, Mich.) and colorectal surgery (Louisiana State University, Shreveport, La.). During his chief year of residency, he was diagnosed with esophageal cancer. He is now a year-and-a-half out from chemo and surgery with no evidence of disease. Swistak will be starting a Colorectal Surgery Division at Detroit Medical Center in Detroit, Mich., this September. Swistak was a member of the MSU hockey team.

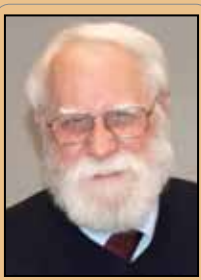
Paul Furlow, Ph.D., M.D., physiology, '05, received an M.S. in neurobiology from Northwestern University in 2007, and entered the Weill Cornell/Rockefeller/Sloan-Kettering Tri-Institutional M.D.-Ph.D. program in New York City in 2008. In August 2013, he completed his Ph.D. within the program at Rockefeller University, where he studied mutational drivers of cancer metastasis. Furlow returned to medical school and is now in his final year of the program. He will be applying to general surgery residency programs this fall.

Chris Hausbeck, physiology, '05, is a tenure-track faculty member and program director of the Physical Therapist Assistant Program at Delta College in Bay City, Mich.

Nicole Messenger, physiology, '11, is finishing her final year of medical school at Wayne State University, Detroit, Mich., and will be applying for an emergency medicine residency in the near future. She will also be rotating at Emory University in Atlanta, Ga., but will always be a Spartan at heart!

STAY CONNECTED. *Recently started a new job, moved or received an award? Submit your news via bit.ly/cnsalumni and we'll share it with students and alumni.*

In Memoriam



Thomas Adams died in August 2011. He taught at MSU for 44 years. His research focused on body temperature regulation and the effects of heat and cold stress on the

body. Adams had a special affinity for teaching undergraduate students, and served as an academic advisor to students

in the department, as well as in the College of Human Medicine, the Honors College, Lyman Briggs College and the American Medical Student Association. He retired in December 2010 at the age of 80. To honor his lifelong desire to help students, his family has established the Thomas Adams Memorial Scholarship for undergraduates studying physiology.

Seth Hootman died in September 2012, a year after retiring in August 2011 as Professor Emeritus. Hootman taught at MSU for 24



years. Work in his laboratory focused on the underlying physiological processes that regulate growth and secretory responsiveness in the mammalian pancreatic excretory duct system and on understanding the molecular mechanisms of pathogenesis in cystic fibrosis, pancreatitis and pancreatic cancer.

Retirements

Professor Steven Heidemann will retire in May 2015 after 37 years at MSU. Heidemann is a pioneer in the cellular mechanics of neural/axonal growth. His work has established that mechanical tension is the proximate and limiting stimulus for axonal elongation. He has published more than 60 peer-reviewed publications of which 12 have been cited by others more than 100 times. Heidemann received his Ph.D. from Princeton University, Princeton, N.J.



Professor Stephen Schneider retired in June 2014 after 19 years at MSU. Schneider's research centered on sensory and integrative function in the spinal cord. Schneider received his Ph.D. from Emory University, Atlanta, Ga. He and his wife have resettled back to their East Coast roots in New England.



University Distinguished Professor Harvey V. Sparks retired in May 2014 after 36 years at MSU. Sparks's research focused on the regulation of blood flow to the heart, skeletal muscle and kidneys. He served as department chairperson from 1979 to 1989 and as MSU vice provost for human health programs. Sparks received his M.D. from the University of Michigan, Ann Arbor.



New Faculty

The physiology department has welcomed five new faculty members over the past two years:



Charles "Lee" Cox joined the department as professor and chairperson in May 2013. His research focuses on the cellular mechanisms altered in epilepsy and Fragile X syndrome, concentrating on the neurophysiology and pharmacology of neocortical and thalamic neurons in the mammalian central nervous system. Cox came to MSU from the University of Illinois at Urbana-Champaign. He received his Ph.D. in psychology/neuroscience from the University of California, Riverside.



Brian Gulbransen joined the department as an assistant professor in August 2012. Gulbransen's research focuses on the enteric nervous system in the gastrointestinal (GI) tract, especially how enteric glial cells contribute to the failure of intestinal function in GI motility disorders like irritable bowel syndrome (IBS) and chronic constipation. Prior to coming to MSU, he was a postdoctoral fellow at the University of Calgary in Alberta, Canada. Gulbransen received his Ph.D. in neuroscience from the University of Colorado Denver School of Medicine.



Gina Leininger came to MSU in June 2012 as an assistant professor. Leininger's research centers on obesity-linked diabetes (type 2 diabetes)—especially how neurons in the brain balance the desire to eat and move that regulates body weight. Before joining MSU, she was a postdoc and research investigator in the Department of Internal Medicine at the University of Michigan, Ann Arbor. Leininger received her Ph.D. in neuroscience from the University of Michigan.



Michelle Mazei-Robison came to MSU in October 2012 as an assistant professor. Mazei-Robison's research concentrates on the underlying mechanisms of depression and addiction and trying to understand the molecular mechanisms underlying changes in ventral tegmental area dopamine neuron signaling, morphology and activity induced in neuropsychiatric disorders. Prior to joining MSU, she was a postdoc in the Department of Neuroscience at the Mt. Sinai School of Medicine in New York, N.Y. Mazei-Robison received her Ph.D. in pharmacology from Vanderbilt University.



A. J. Robison, Jr., joined the department as an assistant professor in October 2012. His research focuses on how models of drug addiction and chronic stress alter gene expression in discrete brain regions, particularly the hippocampus, part of the limbic system associated with consolidation of memories in humans. Robison comes to MSU from the Mt. Sinai School of Medicine, New York, N.Y., where he was conducting postdoctoral research in the Department of Neuroscience. He also served as an adjunct assistant professor at Queens College, New York, N.Y., from January 2011 until he joined MSU. Robison received his Ph.D. in molecular physiology and biophysics from Vanderbilt University.



Studying the brain for clues to curb obesity

Obesity is the leading preventable cause of death worldwide, with increasing rates in adults and children. Health authorities view it as one of the most serious public health problems of the 21st century. In the United States, more than one-third of the population is clinically obese. One reason is that food is easy to get, calorically dense and tasty.

Gina Leininger calls it the “dessert phenomenon.”

“You may be full and your body has all the energy that it needs, but that chocolate cake looks so delicious. So, we are taking in more calories than we need,” said Leininger, an assistant professor in the Department of Physiology and MSU’s Neuroscience Program. Through her research, she wants to find ways to decrease the desire to eat and increase the desire to move around, especially in people who are clinically obese.

Although there are aesthetic issues with obesity, the major problem is that obesity predisposes individuals to type 2 diabetes as well as heart disease, stroke and certain types of cancer.

“Diet and exercise do not work long-term for people who are obese, and there are no effective treatments,” said Leininger, whose research focuses on how neurons in the lateral hypothalamic area (LHA) of the brain may contribute to obesity and a lack of a desire to move around.

“The LHA is a crucial area of the brain for regulating feeding, drinking, sleep and locomotor behaviors that directly affect weight,” she continued. “We believe there are neurons in a particular part of the brain that are activated by stimuli that cause you to eat less but move more. If we activate those neurons, we can suppress the desire to eat but increase actions to move around. If we could perpetuate that, it would promote weight loss.”

Leininger and her team have developed tools using Cre-lox techniques that allow manipulation of only certain populations of neurons at one time.

“That allows us to specifically say what these neurons do compared to other



Gina Leininger (right), assistant professor of physiology, and Juliette Anne Brown, a Ph.D. student, work on one of the steps in molecular cloning to create new mouse models, which can ultimately be used to study certain populations of neurons in the brain.

“Diet and exercise do not work long-term for people who are obese, and there are no effective treatments.”

neurons,” she explained. “Cre-lox techniques have been used for 10 to 15 years, but we developed specific Cre-lox tools and applied them to our research.”

In the past, the theory was that all neurons in the LHA promoted feeding. Now the idea is that there might be different kinds of neurons in that part of the brain, which might be manipulated for specific effects. Leininger’s research was the first time that someone described neurons in this part of the brain that did something different.

“It has changed our theories on how the brain works,” she said. “It also has made it more complicated because, in some cases, we have neurons that do two things. It’s a cool, dynamic part of the brain.”

Leininger’s long-term goal is to understand how the neuronal circuit should work, then design strategies to increase the activation of specific neurons in that circuit that will decrease the desire to eat and increase the desire to move around.

“A lot of people think obesity is just a will power issue, but it isn’t,” explained Leininger, who is also a member of MSU’s Molecular Metabolism and Disease research program. “The brain circuits have changed, and they actively prohibit weight loss. That is why we need something to make it easier for people to make lifestyle changes to promote weight loss. However, even with significant advances in research in this area, it will take time to figure out how to rewire the brain.”

Adams Memorial Scholarships promote student success

Three College of Natural Science students have received Thomas Adams Memorial Scholarships. They are Kevin Kelly, Rachel Brock and Jonathon Skurya.

The scholarship program was established by Professor Thomas Adams' family, in support of juniors and seniors majoring in physiology, to honor his lifelong desire to help students.

Adams, a faculty member in the Department of Physiology for 44 years, had a special affinity for teaching undergraduate students, and served as an academic advisor to students in the department, as well as in the College of Human Medicine, the Honors College, Lyman Briggs College and the American Medical Student Association. More than 16,000 students attended courses taught by Adams, and he received numerous accolades and awards for teaching and advising. He retired in December 2010 at the age of 80, and died Aug. 17, 2011.

The first scholarship was awarded in fall 2013 to Kevin Kelly, who graduated from the Honors College in spring 2014 and is currently in the department's M.S. program.

Kelly spent one year in Kathy Gallo's lab studying hypertension and cardiac hypertrophy. In addition, he worked as an undergraduate learning assistant, first in general chemistry lab courses and then in a neuroscience lab course. He volunteers at Sparrow's Hospice House and gives science presentations to 7th-graders at a middle school in Waterford, Mich. He also minored



Jon Skurya and Rachel Brock, both physiology seniors, are the 2014 recipients of the Adams Memorial Scholarship. The first Adams scholarship was awarded in 2013 to Kevin Kelly, a 2014 Honors College graduate who is pursuing a master's in the physiology department's graduate program.

in Spanish and spent two months studying in Ecuador.

Spring 2014 scholarship recipients were Rachel Brock and Jonathon Skurya.

Brock is a senior in the Honors College and is applying to pathologists' assistants master's programs. She was a professorial assistant for two years in Laura McCabe's lab, studying calcium-binding protein expression in the jejunum of diabetic mice. She also shadowed the Macomb County Medical Examiner for more than two years, and has also

been volunteering in the Forensic Pathology Department at Sparrow Hospital in Lansing, Mich., where she has assisted in autopsies.

Skurya, a senior, is currently applying to medical schools. He is a crisis counselor at the Listening Ear Crisis Intervention Center in Lansing, Mich., and is treasurer of the MSU Physiology Society (student club).

Beginning in 2015, one scholarship will be awarded each spring. Selection criteria include intellectual curiosity, financial need and demonstrated academic promise.

Undergraduate Awards

Jeffrey Cross, physiology senior, received the 2014 Joseph and Mable Meites Award. The award is given annually to a senior who demonstrates academic excellence and outstanding contributions in research, departmental service and community service.

David Hurley (mentored by associate professor Jill Slade, Department of Radiology), Jason Unold (mentored by professor Robert Maleczka, Department of Chemistry) and Brandon Coughlin (mentored by associate professor Susanne Mohr, Department of Physiology), received

Physiology Undergraduate Research Awards. These awards are given to seniors majoring in physiology and are based on recommendation letters from their mentors.

Three physiology students received first-place awards at the 2014 University Undergraduate Research and Arts Forum:

- Lauren Newhouse, senior (mentored by assistant professor Eran Andrechek, Department of Physiology). Oral presentation: Implications of purvate kinase isoform expression on metabolism of pancreatic cancer.

- Kasey Pryg, junior (mentored by professor Evangelyn Alocilja, Department of Biosystems and Agricultural Engineering). Poster: Using magnetic nanoparticles to extract pathogenic bacteria.
- Lestella Bell, senior (mentored by associate professor Karen Williams, Department of Obstetrics, Gynecology and Reproductive Biology). Poster: Bridging the knowledge gap: Does biological HIV knowledge acquisition in the classroom correlate with increased HIV knowledge?

Using the gut's "brain" to prevent GI disorders

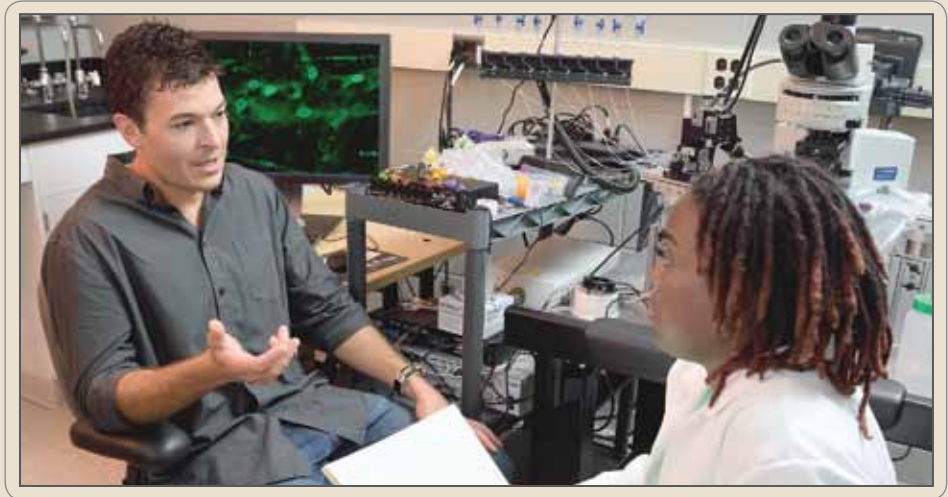
The human digestive tract contains as many neurons as a cat's brain. This mesh-like system of neurons within the intestinal wall, called the enteric nervous system, is responsible for controlling gastrointestinal functions.

Brian Gulbransen and his team are studying this "gut-brain" to identify causes of gastrointestinal (GI) motility disorders such as constipation, diarrhea and irritable bowel syndrome. GI motility disorders affect approximately 25 percent of humans worldwide and can be debilitating, embarrassing and extraordinarily expensive. There currently are no treatments for these disorders.

"We are interested in how these glial cells affect neuron function in health and during disease."

"An underlying cause of GI motility disorders is inflammation in the gut, but little is known about how inflammation affects the enteric nervous system," said Gulbransen, an assistant professor in the Department of Physiology and MSU's Neuroscience Program.

The enteric nervous system is made up of neurons and non-neuronal cells called enteric glia. These glial cells were originally thought to function as support cells but



Brian Gulbransen (left), assistant professor of physiology, and Isola Brown, a Ph.D. student, discuss data that suggests enteric glial cells may be killing neurons during inflammations. Some of the data was obtained by imaging fluorescent indicator dyes in live tissue with the microscope behind them.

Gulbransen's research has shown that they can "talk" to neurons and vice versa, forming signaling loops.

"We are interested in how these glial cells affect neuron function in health and during disease," said Gulbransen, who is also a member of MSU's Molecular Metabolism and Disease research program.

His most recent research found that when the glial cells are activated by certain mediators, they kill off neurons.

"We discovered that inflammation can change the properties of the glial cells, disrupting signaling loops and causing neuron deaths in the gut," Gulbransen explained. "So you lose a significant portion

of enteric neurons and disrupt the balance of excitatory and inhibitory neurons controlling the gut smooth muscle. The resulting loss of control causes the muscles to contract too much or too little."

Gulbransen's work relies on cutting-edge technology to investigate glial cells, such as advanced fluorescent microscopy and targeted gene manipulation.

"We have been able to identify signaling pathways involved in neuron death," he said. "We believe that by investigating these mechanisms, we will identify targets for therapeutics to either reverse or prevent the long-term effects of inflammation on the enteric nervous system and preserve gut function." ◆

Faculty Honors

Department of Physiology faculty members continue to distinguish themselves, landing a number of prestigious honors and awards over the past two years:

Assistant professor **Eran Andrechek** received the 2013 Outstanding Graduate Advisor Award from the College of Natural Science. The award is given annually to acknowledge advisors who demonstrate excellence in providing useful educational and career advice to NatSci students.

Assistant professor **Brian Gulbransen** was honored as the 2013 New Investigator of the Year by the American Physiological Society, Gastrointestinal & Liver Physiology Section. This recognition, which comes with a \$1,000 monetary award, recognizes an outstanding investigator in the early stages of his/her career that has made meritorious contributions to the field represented by the section.

Professor **Steve Heidemann** received the 2014 College of Natural Science Alumni Association Meritorious Faculty Award. The award is

presented annually to a faculty member who has demonstrated excellence in the areas of teaching and research.

Assistant professor **Erica Wehrwein** received the 2013 Dale Benos Early Career Professional Service Award from the American Physiological Society (APS). The award honors an early career stage APS member who has made outstanding contributions to the physiology community and demonstrated dedication and commitment to furthering the broader goals of the physiology community.

Finding novel therapeutic targets to treat depression and drug addiction

Depression and addiction affect millions of adults in the United States; and oftentimes, there is overlap between these two dysfunctions. Yet, little is known about the underlying mechanisms.

Michelle Mazei-Robison, assistant professor of physiology, is working to understand more about these disorders.

“We know there is significant comorbidity between psychiatric mood disorders, such as depression and post-traumatic stress disorder (PTSD), and addiction. But we don’t know how each is influencing the other,” Mazei-Robison said.

“We know that stress is a powerful modulator of addiction . . .”

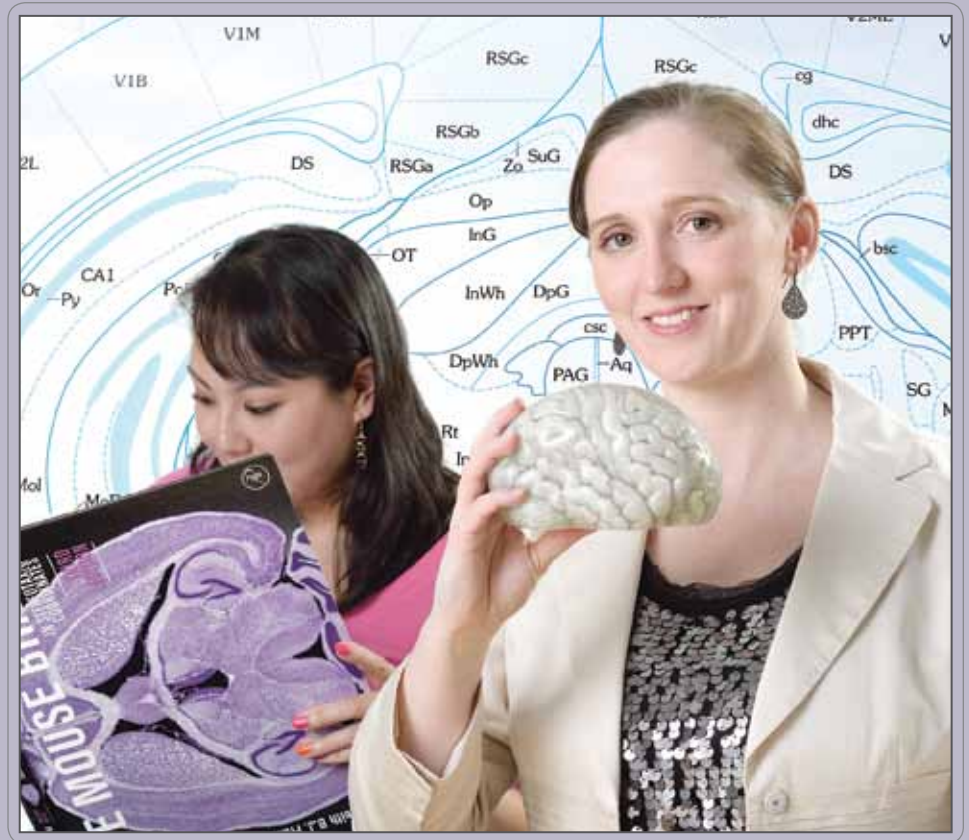
Her group is studying how the dysfunction of dopamine neurons in the ventral tegmental area (VTA) of the brain influences mood disorders and addiction.

“We are studying this ‘pleasure center’ region of the brain at a microscopic level, looking at the neurons that make up the VTA—their shape and structure, and how they connect to other parts of the brain,” she said.

Her recent work utilizes a chronic social defeat model in mice that induces symptoms relevant to depression and PTSD.

“We’re also interested in understanding what’s happening in the VTA in response to drugs. We want to find out what makes an addict’s brain different from a person who hasn’t experienced drugs—or someone who has experienced drugs but doesn’t develop addiction,” Mazei-Robison said.

“We know that stress is a powerful modulator of addiction,” she continued, “so we put mice through a stress situation to see how that affects their drug intake and behavior. We then study



Sophia Kaska (left), a pharmacology and toxicology graduate student, and Michelle Mazei-Robison, assistant professor, study the ventral tegmental area (VTA) of the brain—which is shown in the background illustration.

their brains to see what these neurons look like.”

Opiate drugs change the shape of the neurons in the VTA, causing them to shrink.

“This seems to affect how they work, their output and, we believe, how pleasurable feelings are processed,” she said. “We also look at the protein and gene changes within the neurons.”

In Mazei-Robison’s study, even though all of these genetically identical mice were exposed to the same stressors, not all of them were affected in the same way; some were “resilient.”

“We know the same is true with humans. When individuals go through horribly traumatic events, some seem more able to cope,” she said.

Mazei-Robison’s study could help scientists tap into this “active coping” mechanism in the human brain. The

discovery of novel therapeutic targets could lead to treatment to prevent depression and dependence on drugs. ♡

Contact Us

The Department of Physiology newsletter is published annually by the College of Natural Science for alumni and friends. Copyright 2014 Michigan State University. MSU is an affirmative-action, equal opportunity employer.

Send correspondence to:

MSU College of Natural Science
288 Farm Lane, Room 5
East Lansing, MI 48824

(517) 432-4561 | natsci4you@msu.edu

Contributing writers: Lee Cox, Jane L. DePriest, Val Osowski and Laura Seeley.

Photographs courtesy of: Harley Seeley, Margaux Forster/ The State News and the Department of Physiology.

c/o College of Natural Science
288 Farm Lane, Room 103
East Lansing, MI 48824-1115

Kids just want to have PhUn!

Each November, area school children spend at least one day having PhUn while learning.

For the past two years, MSU's Department of Physiology has organized Physiology Understanding (PhUn) Day, an outreach event that coincides with the American Physiological Society's (APS) PhUn Week, which was first held in 2006.

PhUn Week is a nationwide outreach program that promotes building connections between scientists and their local schools to increase student interest in, and knowledge of,

physiology. Last year, more than 11,000 K-12 students across the country participated in PhUn Week activities.

Lead organizers for MSU's PhUn Day are Erica Wehrwein, assistant professor of physiology, and James Poteracki, instructional technologist in the department.



James Poteracki, instructional technologist, shows Bloomfield Hills, Mich., resident Kaelin McNulty strawberry DNA at last year's PhUn Day at the Impression 5 Science Center. A lab was held to teach kids how to extract DNA from strawberries.

The MSU event takes place at Impression 5 Science Center (I5) in Lansing, Mich.

"We enjoy bringing our excitement about the many functions of the human body to the community," Wehrwein said. "Our outreach team loves to interact with kids and families while teaching about physiology. PhUn Day

is our largest event and we also visit many local schools during the year. These events are very important to supplement the science curriculum in elementary schools and to build enthusiasm for science at a young age."

More than a dozen activities have been created to teach a variety of physiological principles, including thermoregulation, lung function, DNA extraction and atherosclerosis. The event typically draws more than 1,600 children and other visitors. More than 100 MSU undergraduate students, graduate students, and faculty members serve as volunteers, and

numerous staff members from I5 are involved with PhUn Day. Support is provided by the physiology department, MSU's Department of Radiology and the APS.

MSU's PhUn Day 2014 will be held Nov. 15 from 10:00 a.m. to 3:00 p.m. at Impression 5 Science Center. 