I hope everyone had a great Halloween. The past month has been very eventful. The gala to launch the public part of the “Rise. Shine.” Campaign for Wright State University was, as promised, a night to remember. To see everyone in spectacular outfits, enjoying talking together, and then to sit back and watch a fabulous show, was simply awe-inspiring.

Highlights were the testimonials from three very poised, very accomplished Wright State students, current and recently graduated. Each came from a completely different background, each with different and sometimes difficult pathways to their present high achievements. It was very inspiring, and there were many teary eyes in the audience. This is our unique place in the world of higher education, to provide the means that students ultimately use to triumph and accomplish their dreams. Along this theme, this CoSM newsletter introduces a new feature that we are rolling out, Student Spotlight, in which students tell their stories, describing their path and their goals. These stories can be seen on the website and will also be appearing in print media. I hope you enjoy reading Kayla Fryman’s story here, but I’d also like to encourage you to make the College of Science and Mathematics web page your opening page on your browser. There you can not only browse through student and alumni stories, but also keep up to date by viewing the events calendar, which lists seminars, graduate student defenses, and other CoSM and department-specific events.

Other new ways you can connect with CoSM include visiting our Facebook page, where you can find all the latest news on the college and our students. And join us on LinkedIn, to grow your network with other Wright State faculty, students and alumni.

Finally, check out new personnel in the dean’s office, on page 6. Dr. Ivory Berry is the new assistant director for student success, Jeffrey Cowgill is our manager for multimedia and technology, and Mike Hall is the electronic design technician, both will support functions, as a college funded service, that used to be carried out by the electronics shop for a fee. Our office is here to facilitate faculty and student success, so please let us know if there are other key areas you would like to see addressed. Remember, stay connected!

Best,

Yi Li, Ph.D., Dean
CoSM Feature

Wright State researcher finds emerald ash borer may have spread to different tree

Wright State biology professor Don Cipollini found that the emerald ash borer, which is destroying ash trees in a large part of the country, has spread to a different tree. Read more about Cipollini’s research>>

Native to Asia, emerald ash borer was introduced to the United States near Detroit in 2002. It is believed to have been in ash wood used to stabilize crates during shipping. So far, the insect has spread in all directions, killed tens of millions of ash trees and threatens to kill most of the 8.7 billion ash trees throughout North America. It is estimated that the borer will have caused $10 billion in economic damage by 2019.

Biology professor Don Cipollini, Ph.D., director of the Environmental Sciences Ph.D. Program, has found that the invasive green beetle has begun to attack white fringetree.

White fringetree is native to the United States and grows wild from New Jersey south to Florida and west to Oklahoma and Texas. It is an ornamental tree, growing in popularity, that has been planted in other parts of the country, including Ohio.

“It appears that emerald ash borer is eating more than ash trees,” Cipollini said. “It may have a wider host range than we ever thought in the first place, or it is adapting to utilize new hosts. This biological invasion is really something to worry about. It’s having drastic ecological and economic consequences, and you can’t always predict what’s going to happen.”

The borers attack trees by laying their eggs on the bark. The serpentine feeding galleries of the larvae inside the bark disrupt the flow of nutrients and water and starve the tree. Cipollini, who has studied emerald ash borer for nearly 10 years in his position with the Environmental Sciences Ph.D. program, has been working with colleagues to come up with new strains of ash trees that would be resistant to the insect. With colleagues and students, he has co-authored seven publications on the insect, with several others in review or preparation.

“I am grateful to be in a position at Wright State University that affords me the academic freedom to explore,” he said. “If you have an interesting question and can find the appropriate resources, you can study it.”

Don Cipollini, who has studied emerald ash borer for nearly 10 years, presented his findings to government officials and researchers at an emerald ash borer research review meeting October 15, 2014.
Nature journal features Wright State researcher’s study on mercury in oceans

Chad Hammerschmidt, Ph.D., is part of a research team whose findings on the mercury levels in the oceans are reported in the August 6, 2014 issue of the journal *Nature*.

Mercury levels in the ocean have more than tripled in some regions as a result of human activity, the report suggests. Estimates of the amount of mercury that have reached the ocean as a result of anthropogenic perturbations remain uncertain and are largely based on model studies.

The new study presents an observation-based estimate of the total amount of anthropogenic mercury present in the global ocean, with almost two-thirds of the mercury residing in water shallower than 1,000 meters.

Hammerschmidt, Ph.D., Associate Professor in the Department of Earth and Environmental Sciences at Wright State, is part of a research group that also includes researchers from the Woods Hole Oceanographic Institution (WHOI), Observatoire Midi-Pyréneés in France and the Royal Netherlands Institute for Sea Research.

Their work was funded by the U.S. National Science Foundation and the European Research Council and led by WHOI marine chemist Carl Lamborg. Their findings suggest that human disturbances to the global mercury cycle have led to an approximately 150 percent increase in the amount of mercury in thermocline waters and have more than tripled the mercury content of surface waters.

Mars mission science team includes Wright State Physics professor

Wright State University Research Professor Jane L. Fox, Ph.D., is waiting eagerly for MAVEN—short for Mars Atmosphere and Volatile EvolutioN—to swing gently into the orbit of Mars. A faculty member in the Department of Physics since 1995, Fox has been studying planetary atmospheres since the 1970s. Her computer models have helped explain the observed particle behavior in the ionospheres of Mars and Venus, and frame questions for subsequent missions, including MAVEN’s.

Along the way, Wright State and OhioLINK together provide Fox with the materials she needs for this reading-intensive research.

“More than 100 people working on the mission will celebrate a great triumph when MAVEN safely enters orbit,” Fox said. Team members hail from the University of Colorado Boulder/Laboratory for Atmospheric and Space Physics, the University of California, Berkeley/Space Sciences Laboratory, and NASA’s Goddard Space Flight Center.
KAYLA FRYMAN

APPLIED PHYSIOLOGY

SENIOR

I am a transfer student from University of Dayton, and chose Wright State University after learning about the advanced biology program, which was recommended to me by several mentors. I knew Wright State would provide me with a better academic background for future graduate opportunities. Ever since I was in middle school, I knew I wanted to pursue a career in the medical field. The College of Science and Mathematics has allowed me to expand my knowledge from just biology to other applications, such as exercise science and physiology.

My favorite thing about Wright State University is the freedom given within major and minor requirements. I was able to take various classes that were diverse, and still apply them as credit to my major; the sheer range that Wright State has to offer within their course catalog is more than I ever could have imagined. There are tons of options too when it comes to scheduling, and I appreciated the flexibility. Also, being able to follow the Honors program and meet their requirements has been one of my biggest rewards throughout my time here. I have met a lot of people along the way who have bettered me as a person, and aided me in making important decisions in my education. The professors here are more than I could’ve asked for. They encourage you and work with you to make sure you excel in their classes. I was never afraid to ask questions, which has allowed me to get the most out of my time at Wright State.

My advice to incoming college freshman would be to not take your studies lightly. Make your education your top priority. It is easier to lower your GPA than to raise it, so start off strong and you won’t have any regrets. (Also, remember that coffee can be one of your best study buddies!) Get involved in volunteering as soon as possible. I waited until my junior year, and wish I would have started sooner because there are so many great opportunities out there! There are endless student organizations you can join, not just pertaining to your major but also for your other hobbies and interests as well. Finally, know that a college education in the sciences is a lot of work, but it is worth it! If you enjoy school and are serious about your studies, you will not be disappointed. Make sure you enjoy what you are doing; you will be more motivated to do well and focus on your education if you are learning about things you love and are challenged by.

Get to know more of our students>>
Physics’ Alumna finds a unique life-path

As many as 3000 chemicals are reported to be found in exhaled human breath. Last spring recent physics’ graduate, Daniela Branco, carefully monitored the readings on her computer screen for any changes between the infrared and microwaves. The study Daniela was working on correlated blood and breath for diabetes research to detect chemical changes in the human breath. Terahertz is more sensitive than electromagnetic waves, making it easier to identify a wider range of chemical molecules. Ivan Medvedev, Ph.D., Assistant Professor in the Department of Physics, is leading the terahertz laboratory where Daniela worked until spring 2014 graduation when she was awarded her BS in Physics.

 Daniela started her college career at Northern Michigan University (NMU), where she was an athlete on the volleyball team. During her second year she found her passion for medical physics and began her search for a unique life-path. It was then that she transferred to Wright State University, Department of Physics. During her first campus visit, she was sold and found the support she was seeking. She said “Dr. Foy in the Physics department was so welcoming...and the program was larger than NMU. The Department of Physics is really good at mentoring.”

Entering her junior year at Wright State, she decided to plan ahead for graduate school by taking an extra semester to expand her resume in medical imaging, anatomy and communications by participating in an internship at Kettering Medical Center.

As an international student, a native of Brazil, Daniela discovered she would need to take extra steps before landing her internship at Kettering Medical Center (KMC). She would need a car and a driver’s license, but first she needed a social security card, and before that a permanent address.

Determined, she navigated the bus system downtown to the Federal Building and applied for her Social Security card. She found a roommate, leased an apartment and started car shopping. Jason Deibell, Ph.D., Associate Professor in the Department of Physics, and Director of Research and Experiential Learning, provided a connection to a paid research assistant position, and after an intensive search she purchased the car that would lead to independence and transportation to KMC. Her 5th year was packed with 3 classes in medical physics, her job as a research assistant and applying for graduate school.

Daniela’s diligence was rewarded with an acceptance letter to The University of Texas, MD Anderson Cancer Center in their Medical Physics Graduate Program. Medical physics combines the principles of physics and engineering with those of biology and medicine to improve the diagnosis and treatment of disease. They play a vital role in medical research teams and often are involved in the development of new diagnostic technology of both static and dynamic images.

Last July Daniela packed her car and traveled to Houston, Texas to prepare for her program. “The University of Texas in Houston is a shiny new and famous program that prepares graduate students for a two year accredited residency,” said Daniela. She will work in medical imaging research and radiation therapy-treatment plans in a hospital setting. Daniela is well on her way to achieving a unique life-path.

Daniela’s tips for success:
• Plan ahead
• Be disciplined and a self-starter
• Set priorities, you have time if you plan
• Seek out research opportunities with hands-on experience

Read more research news>>
Dr. Berry earned his Ph.D. and Master of Arts in Educational Policy Studies from the University of Illinois at Urbana-Champaign and a Bachelor of Science in Mathematics from Southern University and A&M College in Baton Rouge, Louisiana.

The College of Science and Mathematics appoints
Ivory M. Berry, Ph.D.
Assistant Director of Student Success

As the Assistant Director of Student Success, Dr. Berry will work to ensure that the promise of access is met with success. In this position, he will develop and assess student success programming and First Year Experience initiatives geared towards increasing persistence of STEM majors and at-promise students. Additionally, he will oversee college and departmental advising and transfer advising, manage learning communities for the college, and perform student services functions.

Jeffrey L. Cowgill Jr. is named Manager, Multimedia & Technology

Jeffrey L. Cowgill Jr. has been a staff member in the Department of Psychology since 1999. His work at Wright State includes over 15 years of experience in developing applications and supporting technology for research. He has interests in computer graphics, virtual environments, human machine interfaces, website design, and modeling and simulation. Jeff’s new position in the college will include supporting existing research technology and helping faculty, staff, and students implement new technology to expand research activity. Jeff obtained his bachelor degree in Computer Engineering and his Masters of Business Administration from Wright State University. He is the recipient of the 2011 President’s Award for Excellence in Human Relations and volunteers as the treasurer of the non-profit Fairborn Performing Arts and Cultural Association.

Michael Hall re-assigned in CoSM as Electronic Design Technician

Michael Hall has been with Wright State University for 29 years as a technician in the Electronics Repair Shop. He has experience with a wide variety of laboratory instrumentation, from simple stirrers and heaters to complex analytical instruments, incubators, etc. He has designed and built special prototype circuitry for research applications.

Prior to coming to WSU, Mike spent 10 years with the C.F. Kettering Research Laboratory in Yellow Springs servicing lab instruments and prototyping new experimental instrumentation, and was a Field Service Engineer for Raytheon Corp.
Announcements

**Congratulation to Ivan Medvedev, Ph.D. on receiving the Early Career Achievement Award**

Since joining the Department of Physics in 2010, Ivan Medvedev, Ph.D., has established a highly active and externally funded research program focused on biomedical applications of terahertz spectroscopy.

Medvedev, an Assistant Professor, recently received a three-year award from Samsung to investigate the capabilities of this technology in accessing blood glucose levels based on concentrations of chemicals present in expired breath. The technology will enable the development of future generations of compact terahertz analytical chemical instrumentation, which will impact applications in medical, environmental, occupational chemical detection, and intelligence fields.

Over the course of his time at Wright State, Medvedev has garnered more than $600,000 in external funding, with a broad portfolio including both government and industrial services.

“Ivan is very productive and has an amazing career record,” said Yi Li, dean of the College of Science and Mathematics. “What makes him stand out is his strong desire to combine theoretical study with real-world applications.”

Medvedev has published more than 40 peer-reviewed articles in top-tier journals like *Applied Physics Letter* and *Astrophysical Journal*. His research is strongly integrated with his keen teaching and mentoring abilities at both the graduate and undergraduate level, and a number of his students have received awards and have made national presentations.

Throughout his career at Wright State, he has actively adapted new pedagogy to teaching in his large physics courses. He has consistently received favorable student and peer evaluations in his annual faculty development reports, chair’s annual evaluations, student comments and statistical summary of teaching evaluations.  

**Read more about Medvedev’s terahertz research>>**

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**CoSM is getting social...**

Rachel Kessie is the Digital Media Coordinator for CoSM and a member of our Online Media and Communications Team, with Jeff Cowgill and Debbie Garber. Share your announcements and good news with us and be sure to like CoSM on Facebook and follow us on LinkedIn.
Up-Coming Events

**College Events:**

**Pre-Health Student Orientation**
Sunday, November 9, 2014 - 7:00pm to 8:00pm
135 Oelman Hall
Meet the Pre-Health advisor and learn what you need to do NOW to start building a strong application to professional school.

**EES Colloquium: Dr. Rebecca Teed -- Cooperative Learning: Who Benefits?**
Thursday, November 13, 2014 - 3:30pm to 4:45pm
103 Biological Sciences
Dr. Rebecca Teed, Associate Professor of Earth & Environmental Sciences at Wright State describe her recent research on aspects of cooperative learning.

**Biochemistry & Molecular Biology Seminar: Dr. Moray Campbell -- Targeting the epigenome in prostate cancer.**
Thursday, November 20, 2014 - 11:00am to 12:00pm
165 Brehm Lab
Dr. Moray Campbell, Department of Pharmacology & Therapeutics, Roswell Park Cancer Institute. Host Dr. Madhavi Kadakia