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## A MESSAGE FROM GARY M. POLLACK

August 2018

Health professions programs embraced the concept of “evidenced-based care” long ago. A core belief we all hold is that careful observation of the world around us informs decision-making, and acting on sound observational data is more prudent than simply “following our gut.” We teach evidenced-based philosophy and we emphasize the value of informing health care with carefully-conducted biomedical science. The “evidenced-based” mantra has permeated everything we do in the academic sector, from business decisions to student recruitment to instruction in the classroom. In many respects, this is the “golden age” of data-supported decision making, at least from the perspective of the academy.

Despite its obvious value, the evidenced-based approach to addressing issues of importance in the public sphere is under continuous assault. The latest example of this assault, one that is directly relevant to the health professions, is the recent decision of the federal government to no longer fund the [National Guideline Clearinghouse](#), an information repository of the Agency for Healthcare Research and Quality. Given the enormous volume of information related to the provision of health care and the rapid pace of new developments in therapeutic approaches of all kinds, a searchable database allowing clinicians to weigh different treatment options based on their merits would seem to be of some importance. Given the number of dollars flowing through U.S. health care (more than \$3 trillion) and biomedical research (more than \$30 billion) annually, linking research to health care decision-making in a digestible format would seem to make business sense as well. Given the modest costs of the NGC (just over \$1 million per year), maintaining the clearinghouse would seem to be as close to a no-brainer as you can get.

A question for the academic sector, and especially those of us in science-based disciplines, is why have we failed to convince the broader community of the value of using information to make decisions? One reason is, perhaps, the tendency for optimistic scientists to over-promise and underproduce. Fifty years ago, my mother (mothers are, of course, the most consistent bellwethers we have) became convinced that jetpacks would become the dominant mode of transportation within her lifetime. When the end of her life neared, she felt personally betrayed by our jetpack-free society and placed the blame squarely on the shoulders of “those scientists”. A perhaps more relevant example is the health care sector’s inability to adequately address (and to some extent its [enabling of](#)) the ongoing opioid crisis. The failure of science and technology to improve people’s lives, regardless of whether the expectation for improvement is a reasonable one, erodes confidence in science and, by extension, the reliability of data.

So, what can we do? Canada perhaps serves as a useful model. Our neighbors to the north have successfully integrated science and science communication with public policy. At minimum, all of us need to be more engaged with our communities, be committed to telling our stories clearly and comprehensively, and take every opportunity to demonstrate the value of data and information in making individual decisions and formulating broader policy.

Gary M. Pollack  
Dean, College of Pharmacy  
Washington State University



## UPCOMING EVENTS



**Research Day**  
9:00 a.m. – 4:00 p.m.  
WSU Health Sciences  
Spokane, Wash.



**White Coat Ceremonies**  
August 16–17  
Yakima, Wash. &  
Spokane, Wash.



**Dean's Annual  
Welcome Back! BBQ**  
11:30 a.m. – 1:30 p.m.  
PBS building patio, Spokane



**Pharmacy Homecoming  
Weekend**  
September 28–29  
Spokane, Wash. &  
Pullman, Wash.

[More college events >>](#)

## COLLEGE NEWS

### **New study reveals how shift work disrupts metabolism** [WSU Insider article by Judith Van Dongen, WSU Spokane Office of Research](#)

SPOKANE, Wash. – Working night shifts or other nonstandard work schedules increases your risk of becoming obese and developing diabetes and other metabolic disorders, which ultimately also raises your risk of heart disease, stroke and cancer.

Exactly why this happens has been unclear, but a new study conducted at Washington State University has brought scientists closer to finding the answer.

Published in this week's online edition of the [Proceedings of the National Academy of Sciences](#), the study dispels the belief that the



*Gaddameedhi*



metabolic disruption in shift workers is driven primarily by the brain's master clock, which normally keeps our bodies on a day-night cycle and uses light cues to synchronize the rhythms of the body's organs and tissues. Instead, the study revealed that separate biological clocks (so-called peripheral oscillators) in the liver, gut and pancreas have a mind of their own.

Working with colleagues at the University of Surrey, the WSU team collected blood samples from healthy volunteers who had just completed either a simulated day shift schedule or a simulated night shift schedule. The investigators analyzed the blood samples for metabolites — products of chemical reactions involved in digestion, such as the breakdown and oxidization of food molecules, as well as in other metabolic processes in cells and organs. They found that, following the night shift schedule, 24-hour rhythms in metabolites related to the digestive system shifted by a full 12 hours, even though the master biological clock in participants' brains had only moved by about 2 hours.

### **Biological clocks in digestive organs**

“No one knew that biological clocks in people's digestive organs are so profoundly and quickly changed by shift work schedules, even though the brain's master clock barely adapts to such schedules,” said co-senior author Hans Van Dongen, director of the WSU Sleep and Performance Research Center and a professor in the Elson S. Floyd College of Medicine. “As a result, some biological signals in shift workers' bodies are saying it's day while other signals are saying it's night, which causes disruption of metabolism.”

Van Dongen said the next step is to find out whether the shifted metabolite rhythms are driven by the shift workers' altered sleep/wake schedules, the changed timing of their food intake, or both. Once that is known, scientists could try to pinpoint the underlying cellular and/or hormonal processes, which would support the development of new treatments to resynchronize shift workers' brain and body clocks to prevent negative long-term health consequences.

### **Long-term health consequences**

The research team's work may also have implications for the study of other chronic diseases shift workers are more susceptible to, including chronic kidney disease and breast, prostate and skin cancer.

“We believe ours is the first study to suggest a mechanism for the connection between shift work and chronic kidney disease,” said co-senior author Shobhan Gaddameedhi, an assistant professor in the WSU College of Pharmacy and Pharmaceutical Sciences. He noted that the simulated night shift group had altered rhythms in two metabolites commonly associated with chronic kidney disease — tryptophan and kynurenine.

However, as a cancer biologist, Gaddameedhi first and foremost wants to unravel the link between shift work and cancer.

“It's possible that changes in the metabolism of shift workers are associated with altered activity of cellular processes that may be involved in cancer development later in life,” Gaddameedhi said. “Once we understand those cellular processes, we could potentially identify the genes involved and use that knowledge to find ways to prevent cancer in shift workers.”

### **Metabolomics used to study rhythms**

The study included 14 participants who each spent seven days inside the sleep laboratory at the WSU Health Sciences Spokane campus. First, half of them completed a three-day simulated night shift schedule, while the rest were on a three-day simulated day shift schedule. Then, after completing

their simulated shifts, all participants were kept in a constant routine protocol used to study humans' internally generated biological rhythms independent of any external influences.

During this protocol, they were kept awake for 24 hours in a semireclined posture. They received identical snacks every hour and were kept under constant light exposure and room temperature. Every three hours a blood sample was drawn.

The blood samples were analyzed at the University of Surrey's Metabolomics Core Facility for 132 different metabolites related to metabolism and the digestive system.

"Twenty-seven metabolites followed a 24-hour rhythm during both the simulated night and day shift schedules," said first author Debra Skene, professor of neuroendocrinology at the University of Surrey. "Of these, 24 displayed a dramatic 12-hour shift in rhythm following the simulated night shift schedule, which was not observed following the day shift schedule. This indicated that just three days of being on a night shift schedule has the potential to disrupt metabolism. Pinpointing the disrupted metabolic pathways will help unravel the mechanisms underlying shift work and metabolic disorders."

In addition to Skene, Van Dongen, and Gaddameedhi, co-authors include Elena Skornyakov, Rajendra Gajula, Briann Satterfield, and Kenneth Porter of WSU and Namrata Chowdhury and Benita Middleton of the University of Surrey.

Support for the study came from internal funding from the WSU College of Pharmacy and Pharmaceutical Sciences, as well as grants awarded to WSU by the Congressionally Directed Medical Research Program and National Institutes of Health and to the University of Surrey by the UK Biotechnology and Biological Sciences Research Council and the European Union's Seventh Framework Programme.

## Two post-graduate fellows join CPPS faculty ranks

Two of the WSU College of Pharmacy and Pharmaceutical Sciences' (CPPS) post-graduate pharmacy fellows will join the college as faculty this August.

Taylor Bertsch and Jennifer (Czapinski) Miller move from fellows to clinical assistant professors, and will teach in the college's Doctor of Pharmacy program. Both completed two-year fellowship programs this summer.

Bertsch is from Auburn, Washington. He chose WSU because he believes it promotes a progressive mindset. Bertsch completed his Doctor of Pharmacy degree in 2016 at WSU before going into the Academic Fellowship Program under faculty advisor [Kim McKeirnan](#).

"I have grown more confident in changing environments and comfortable with promoting a paradigm shift towards current pharmacy practices," Bertsch said in describing his fellowship experience.

His area of expertise is focused on qualitative and quantitative research in community pharmacy practice, including technician immunization training, tuberculin skin test training, point-of-care training, physical assessment, and team-based learning. At WSU, Bertsch will teach the physical assessment portion of the curriculum in the Applied Patient Care Lab.

"Washington State University has an excellent group of faculty and students who are positive and progressive thinkers. I believe this great group of minds has boundless potential," he said.



*Taylor Bertsch*

Miller is originally from Pleasanton, California, and grew up in Woodinville, Washington. She completed a Doctor of Pharmacy degree at WSU in 2015 and then completed a one-year pharmacy research residency. Following her residency she completed a two-year research fellowship under faculty advisor [Julie Akers](#). Community pharmacy is Miller's area of expertise as well, with an interest in interprofessional collaboration. Her previous work involved training student pharmacists to provide clinical patient care services using collaborative drug therapy agreements.

"My research focus will be on advancing pharmacy practice through innovative pharmacist-provided patient care services in the community pharmacy setting," she said.

Miller will teach the Introductory Pharmacy Practice Experiences (IPPE) courses three through five. IPPE are a series of five courses that give student pharmacists hands-on learning in clinical settings and run through the first three years of the Doctor of Pharmacy program. Bertsch will teach the first two.

"These courses are designed to prepare our students for their clinical rotations during the summer and their fourth year in the program," Miller said. "I think the best part of this job will be facilitating the growth and development of our pharmacy students."

The College of Pharmacy and Pharmaceutical Sciences mission to advance human health through excellence in collaborative research, scholarship, and clinical education, and develop outstanding health care professionals and scientists.



*Jennifer (Czapinski) Miller*

### **Graduate student recognized for excellence in scholarship**

The Washington State University (WSU) College of Pharmacy and Pharmaceutical Sciences (CPPS) has a reputation for developing outstanding scientists and leaders in research. The college continually strives to provide opportunities for students to engage with preeminent faculty and globally-recognized researchers, and gain national recognition in the process.

Yadira Xitlalli Pérez-Páramo is a graduate student in the Pharmaceutical Sciences Graduate Program at WSU in Spokane. She recently received recognition from several international research organizations for excellence in collaborative research and scholarship.

Pérez-Páramo is from Morelia, Michoacán, Mexico. She studied chemistry at the Universidad Michoacana de San Nicolás de Hidalgo in her hometown, and completed her master's degree in molecular biology and genetic engineering at the Universidad Autónoma de Nuevo Leon in Monterrey, Mexico. She is a Fulbright Scholar, and came to WSU because of the pharmacogenomics research happening in Spokane.

"When I came to WSU-Spokane for the interview I fell in love with the city, the surroundings and the affordability to live here on a graduate student stipend," Pérez-Páramo said.

She works in the research lab of [Philip Lazarus](#), and together they are studying how genetics effect the body's reactions to and removal of nicotine, the addictive agent in tobacco products, and tobacco



*Yadira Pérez-Páramo*

carcinogens, and if these genetic factors can be used as markers of tobacco addiction or cancer risk. If her research is successful, Pérez-Páramo could be able to determine how likely a smoker will develop nicotine addiction or cancer based on his or her own DNA.

“I love the translational part of my research,” Pérez-Páramo said. “Especially, the ability to generate knowledge that will impact public health in the future.”

This past February she received a travel award from the Society for Research on Nicotine & Tobacco (SRNT) to attend the SRNT Annual Meeting in Baltimore, Maryland. This SRNT travel award is a significant recognition. A total of 12 graduate students, and only six from the U.S., receive such a travel award each year.

“Being able to participate in an interdisciplinary meeting of scientists involving different fields working towards the same goal—nicotine addiction and tobacco related diseases—makes my research at WSU feel more like I’m a part of the team effort,” Pérez-Páramo said.

At the beginning of March she received a travel award sponsored by the Burroughs Wellcome Fund and NASA Astrobiology to attend Science Talk in Portland, Oregon. This is an annual conference with the mission to increase the promotion of science and scientific activities through better communication of the scientific process and its achievements to a broader audience.

“I learned how to be a better science communicator,” Pérez-Páramo said.

Also this spring, Pérez-Páramo was selected for the American Society for Pharmacology and Experimental Therapeutics (ASPET) National Mentoring program. Around 15 students get selected nationally for this program every year that pairs young scientists with research mentors for career training through a coaching model. The program focuses on topics important to professional growth such as work/life balance, interview skills, communication, and networking. The mentor program also provided Pérez-Páramo with a travel award to attend the ASPET Annual Meeting at Experimental Biology 2018 in San Diego in April. She will be working with [Janet Clark](#), the Director of Fellowship Training with the National Institute of Mental Health, as her mentor over the next year.

“I am looking forward to these professional development opportunities and being able to obtain direct advice from an experienced person that has worked in academia, industry and government institutes,” Pérez-Páramo said.

This is not the first time WSU has been represented in the ASPET National Mentoring program. Pharmaceutical sciences graduate student [Ana Vergara](#), also from Lazarus’ laboratory, was selected for the same program last year.

Also while at Experimental Biology 2018, Pérez-Páramo won two poster presentation awards.

“I think the mentoring program will help me to define my career path in the future,” Pérez-Páramo said. After completing her Ph.D., she is considering pursuing a postdoctoral research position, or exploring pharmaceutical or biotech industry in the area of drug metabolism

In addition to her studies in pharmaceutical sciences, Pérez-Páramo is active in her local community and the scientific community. She has served as a judge for the Alaska Imagine Tomorrow high school competition, hosted by Voiland College of Engineering and Architecture at WSU. She also serves as a mentor for the NY Academy of Sciences program, “1000 Girls, 1000 Dreams,” that helps to empower high school girls that are interested in STEM from undeserved areas in Mexico.





Dear Friends,

The lazy, hazy days of summer mean that September is just around the corner! Please put Friday, September 28 on your calendar and join us in Spokane for the second annual Crimson Gala to celebrate the contributions of our preceptors, mentors and alumni!

Additionally, we will be honoring the legacy and contributions of Dean Emeritus Larry Simonsmeier, who served in leadership roles at the college for over two decades. I hope you will consider sponsoring the gala as proceeds will name a space in our building for Larry Simonsmeier and help support our student pharmacists.

A perspective provided by Larry Simonsmeier in "The WSU Pharmacist" from 1980 articulates the value and quality of our program and describes how our graduates will make a difference in the profession. Highlighted in this issue are award winners who are still leading and advancing practice: Margo Wallace Hollenbeck, Karen Samels, Lisa Lybecker (Stagaman), Dennis Hoover, Susan Marchi (Kellogg), and Steven Smith.

I believe the class of 1980 is proud to have been led by Dean Simonsmeier!

Sue Merk (class of 1976) has signed up as a Cougar sponsor of the gala and I wanted to share her testimonial with you:

*"Pharmacy is a great career and attending the WSU College of Pharmacy was an awesome experience. The personal relations and lifelong friends I met at WSU are what make me honor the College of Pharmacy and great leaders like Larry Simonsmeier, who had a lasting impact on my education and career."*

John Nguyen (class of 1989), and his wife Nam-Phuong, are also Cougar sponsors of the Crimson Gala and said they feel "honored to be a part of the WSU family." Their son, Tyler, will begin his second year of pharmacy school in Yakima later this month.

And here is more good news! (Drumroll, please.) I am proud to announce that this year every pharmacy student who qualified for a scholarship was awarded one! In fact, we awarded 276 scholarships this year.

How did we get here? There are many aspects associated with being able to award these funds to our students, including:

- Scholarship endowments: These endowments provide a perpetual source of funding for scholarships, as well as the college and WSU, on a yearly basis. One of these donors is Professor Danial Baker (class of 1978), who established the Arby and Cathaline Baker scholarship to honor his parents.

- Annual events: Proceeds raised from events such as our Crimson Gala are also part of the equation.
- Annual scholarships: Donors who support individual scholarships and/or give to the “alumni scholarship fund” round out the picture.

I also want to share the story about how we funded the final \$21,000 needed to support all students with a scholarship this year. When our scholarship committee realized we were just short of the money needed to fund all of our qualified scholarship applicants, a “last push” effort was launched. Within a week, we met our goal and I am pleased to say that Cougar pharmacists are the best!

Our website lists all of our [scholarship endowments and annual scholarship donors](#) , but you can view a list of the individuals who came through for us during this “last push” appeal for scholarships on our [Facebook page](#). And, thank you to our anonymous donor as well!

Finally, our name change is complete! As Dean Pollack discussed in his comments last month, our move to become the College of Pharmacy and Pharmaceutical Sciences is strategic and describes the structure that makes us strong. You can watch his [eloquent remarks](#) from the celebration we hosted for faculty and staff [online](#).

With Cougar Pride,



Linda Garrelts MacLean, BPharm, RPh  
Vice Dean of External Relations  
Clinical Professor

## ALUMNI NEWS



### 2018 EXPRESS SCRIPTS SCHOLAR

Masooma Zehra, class of 2019, was selected as one of four Express Scripts Scholars this year. The program supports dual-degree students. Zehra is in the WSU Pharm.D./MBA program. [Read more »](#)



### WSU RANKS IN TOP 3 FOR NCPA BUSINESS PLAN

Our student pharmacists Frank Nenninger, Chad Schmitt and Peter Tang will be representing WSU as a top-three finalist team in the NCPA Student Business Plan Competition this October! [More details »](#)



### CREATE YOUR LEGACY, SUPPORT EXCELLENCE

“Because Cougs help Cougs,” is what Manpreet (class of 2010) and Lindsey Chahal told us. They are new Legacy donors to WSU! We featured them in a #PhilanthropyFriday post on our Facebook page recently. [More details »](#)

## ALUMNI UPDATES

- Celeste Tabon, daughter of **Patrick** and **Cassie Tabon**, who are both class of 2012, keeps them on their toes! Patrick and Cassie said they feel grateful they had the past 14 months for Celeste to get to know her grandfather, who recently passed. Patrick is now working as a professor at the USC School of Pharmacy while Cassie runs the family's independent pharmacy in Southern California. [View photo »](#)
- **Justin Ruffridge**, class of 2008, was elected to fill an open city council seat in Soldotna, Alaska, this April. Congratulations Justin! [Read more »](#)
- We were sad to hear recently about two of our alumni who have passed away: **Gary Damiano**, class of 1955, died on July 18 in Coeur d'Alene, Idaho. He was 84. [Read more »](#)

And **Elmer Schorzman**, class of 1950, died in June at his home in Hopkinsville, Kentucky, at the age of 93. [Read more »](#)

Want to be listed in our alumni updates? Send us your career information or let us know what you've been up to! [gocougs@pharmacy.wsu.edu](mailto:gocougs@pharmacy.wsu.edu)



## FACULTY SCHOLARSHIP

### Publications

- Pharmaceutical Sciences Assistant Professor **Shobhan Gaddameedhi**, Pharmaceutical Sciences Research Technologist **Kenneth I. Porter** and seven co-authors published, "Separation of circadian- and behavior-driven metabolite rhythms in humans provides a window on peripheral oscillators and metabolism," in the peer-reviewed scientific journal Proceedings of the National Academy of Sciences of the United States of America (PNAS) in July 2018. [View abstract »](#)
- Allen I. White Distinguished Associate Professor **Joshua J. Neumiller** published the book chapter titled, "Drugs for diabetes mellitus," in Lehne's Pharmacology for Nursing Care, 10<sup>th</sup> Edition, a publication from Elsevier, 2018 (p. 674-710).

### Presentations

- **Joshua Neumiller** presented, "Management of hyperglycemia in Type 2 diabetes," at the American Diabetes Association's 78<sup>th</sup> Scientific Sessions on June 22, 2018, in Orlando, Florida.

### Service

- **Shobhan Gaddameedhi** participated in the 770 CHQR Global News Radio program in Calgary, Alberta, Canada, with Danielle Smith on July 20, 2018, to discuss his recent research.

## Grants

- Pharmaceutical Sciences Assistant Professor **Boyang (Jason) Wu** received \$120,000 over two years from the [Concern Foundation](#) for the project, “Dissecting stromal signals to target prostate cancer microenvironment.”
- Pharmaceutical Sciences Professor **Jiyue Zhu** and **Shobhan Gaddameedhi** received a Pennsylvania State University team science sub-award in the amount of \$255,000 over three years for the project, “Regulation of telomerase and telomere homeostasis during acral melanoma development.” This funding originates from the Melanoma Research Alliance.
- Pharmacotherapy Professor **K. Michael Gibson** and Pharmacotherapy Clinical Professor **Jean-Baptiste Roulet** received an R01 grant in the amount of \$3,199,718 over five years from the Eunice Kennedy Shriver National Institute of Child Health and Human Development, one of the National Institutes of Health, for the project, “Natural history of Succinic Semialdehyde Dehydrogenase Deficiency (SSADHD), a heritable disorder of GABA metabolism.”

## STUDENT ACHIEVEMENT

### Ph.D.

- **Panshak Dakup** (pharmaceutical sciences, Gaddameedhi lab) was awarded \$750 from the Environmental Mutagenesis and Genomics Society (EMGS) Student and New Investigator Travel Award to attend its annual meeting in San Antonio, Texas, in September 2018.

### Pharm.D.

- **Masooma Zehra** was selected as one of four Express Scripts Scholars this year. The program supports dual-degree students. Zehra is in the WSU Pharm.D./MBA program. [Read more »](#)
- **Frank Nenninger**, **Chad Schmitt** and **Peter Tang** will be representing WSU as a top-three finalist team in the NCPA Student Business Plan Competition this October. [Read more »](#)



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# Pharmacy and Pharmaceutical Sciences

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