Greetings from THE DEPARTMENT HEAD

2017 was a highly productive year for the Department of Pharmacology!

We continue to attract outstanding students to our graduate and undergraduate programs, our research portfolio is strong with $6 million dollars in peer-reviewed grant support, and our faculty members serve at the local and national levels as respected scientific and educational advisors. Despite the challenging climate for research funding, all of our full-time faculty members are principal investigators on a peer-reviewed grant. We continue to make important contributions to the scientific literature, and our students were authors on 44 papers over the past year. Our areas of research strength include cell signaling, neuropharmacology and drug addiction, and cancer pharmacology. Through our primary and graduate faculty members, we partner with the Clinical and Translational Science Institute, the Masonic Cancer Center, the Center for Immunology, and the newly created Medical Discovery Team on Drug Addiction.

The values we are encouraging through our faculty, staff, and students include embracing diversity and inclusion, and dedicating ourselves to excellence in academic achievement. We are proud to be sending critical thinkers with well-honed research skills out to the greater scientific community, who are a credit to our Department and university. We are particularly pleased to report that applications for our graduate program continue to increase. In mid-February, we will host 20 applicants for the 2018 incoming class during our interview weekend.

The Department of Pharmacology has also been active in recruiting at the faculty level over the past year, and we look forward to adding three new faculty members in 2018, one in each of our areas of strength. We also look forward to increased engagement across departments and research centers, so that we can compete for collaborative, transformative multi-disciplinary research grants. As scientific research becomes more complex, we want to position ourselves on the front lines of new technologies such as computational biology, bioinformatics, and gene editing. To these ends, we are implementing new forums to give faculty members opportunities to share their work in progress through our bi-monthly Faculty Research Club (which combines data updates with lunch), and our new Mock Study Sections, where faculty can give each other feedback on impending grant submissions. For our students, we are implementing more active learning in our coursework, such as creating short videos to highlight and convey our ongoing research in an approachable manner. At our 2017 departmental retreat, we hosted return visits of alumni for a career panel, where they shared their experiences in science from their varying perspectives with our students.

While the current national climate – where science seems often to be disregarded – can be discouraging, it presents an opportunity for us to more actively disseminate the importance of biomedical research and the achievements of our discipline. We want our students and postdoctoral trainees to have access to the best opportunities in the public and private sectors after completing their training. Our alumni are the most valuable asset we have to make this a reality. Looking forward, we hope to strengthen our connection to you, and, through you, to strengthen our programs and the futures of our graduates.
The Graduate Program in Pharmacology (GPP) currently consists of 39 students in the PhD and Masters tracks, conducting research in 22 labs distributed across 4 colleges and 9 departments in the Academic Health Center.

GRADUATE PROGRAM

We would like to begin by acknowledging the hard work of Dr. Jonathan Marchant and Dr. Jill Siegfried, who served as co-Directors of Graduate Studies (DGS) for the GPP during the 2016-2017 academic year. Jonathan and Jill assumed this role following the relocation of Dr. Sundaram Ramakrishnan (Professor of Surgery, University of Miami/Miller School of Medicine), who served in this capacity in 2015-2016. We are also grateful to Dr. Colin Campbell, who began his 3rd term as DGS in July 2017. We would like to recognize the commitment to training of our 50 graduate faculty members, and we are proud of the hard work and achievements of our students. Finally we would like to thank our exceptional GPP coordinator - Jim Shoemaker - for all of the work he does behind the scenes to make our program run smoothly!

Graduations

Erica Schnettler (advisor: Dr. Sundaram Ramakrishnan) defended her thesis entitled, “The functional role of miR-210 in hypoxia-induced angiogenesis” in February 2017, and is currently working at OneOme as a medical science liaison. Jie Ying Chan (advisor: Dr. Douglas Yee) defended her thesis entitled, “Targeting insulin receptor in human breast cancer using engineered protein scaffolds” in April 2017, and she is currently working in the Yee lab for her postdoctoral training. Bryant Moeller (advisor: Dr. Steve Patterson) defended his thesis entitled, “Characterization of the preclinical cyanide antidote sulfanogen” in July 2017, and is currently working at WuXi AppTec as a toxicologist. Yan Yan (advisor: Dr. Ameeta Kelekar) defended her thesis entitled, “Regulation and function of the phosphatase PHLPP2 in leukemia” in July 2017, and will begin postdoctoral training at the Winship Cancer Institute at Emory University in January 2018. Jessica Martin (advisor: Dr. Lou Mansky) defended her thesis entitled, “Comparative studies of HTLV-1 particle assembly and morphology” in November 2017, and has recently established her own business as a freelance medical writer. Congratulations also go out to Abdulaziz Almotlak (advisor: Dr. Jill Siegfried), Aditi Bapat (advisor: Dr. Ameeta Kelekar), Yijian Cai (advisor: Dr. Aaron LeBeau), Jennifer Nhieu (advisor: Dr. Li-Na Wei), Zaid Temrikar (advisor: Dr. Marco Pravetoni), and Dake Wang (advisor: Dr. Lou Mansky) for earning their Masters Degrees in Pharmacology in 2017. We wish all of our graduates much success in their future endeavors!

Honors & Awards

Allison Anderson (advisor: Dr. Kevin Wickman) was awarded an individual NRSA predoctoral fellowship from the NIH (National Heart, Lung, and Blood Institute) for a project entitled, “Targeting the parasympathetic regulation of the heart to treat arrhythmias.” Dustin Chernick (advisor: Dr. Ling Li) was awarded the Roth-Steer Award for Research related to Alzheimer’s Disease. Christian Njatcha (advisor: Dr. Jill Siegfried) was awarded an individual NRSA predoctoral fellowship from the NIH (National Cancer Institute) for a project entitled, “Developing a novel STAT3 inhibitor for non-small cell lung cancer therapy.” Christopher Richards (advisor: Dr. Reuben Harris) earned a 2017-2018 Doctoral Dissertation Fellowship from the University of Minnesota Graduate School. Artur Serebrenik (advisor: Reuben Harris) was the graduate student runner-up at the 2017 Louise M. Nutter Poster Session. Mariya Shapovalova (advisor: Dr. Aaron LeBeau) was awarded a predoctoral fellowship from the Department of Defense (Prostate Cancer Research Program) for a project entitled, “The detection of prostate cancer using biomarker-driven magnetic resonance imaging.” Yan Yan (advisor: Dr. Ameeta Kelekar) earned a 2016-2017 Doctoral Dissertation Fellowship from the University of Minnesota Graduate School.

New Graduate Faculty

We are pleased to welcome 2 new faculty members to the GPP: Richard Nho (Department of Medicine), and Patrick Rothwell (Department of Neuroscience). We hope our incoming and future graduate students consider rotations with these excellent scientists, and we look forward to working our new colleagues to help our program reach its full potential!
3-Minute Thesis (3MT) Competition

The GPP was well-represented in the 3-minute thesis (3MT) competition at the 10th annual Biomedical Sciences Graduate Programs Research Recognition Day, on May 25, 2017. The 3MT competition is an excellent opportunity for students to work on communication skills, requiring participants to explain concisely, to an audience of non-specialists, the context and significance of their research without heavy reliance on slides, jargon, and props. The GPP has fared well in this competition since the inaugural event in 2014. In 2016, Dustin Chernick (advisor: Dr. Ling Li) won the competition, and Lisa Chesner (advisor: Dr. Colin Campbell) earned Honorable Mention. In 2017, Ben Brian (advisor: Dr. Tanya Freedman) and Baovi Vo (advisor: Dr. Kevin Wickman) advanced to the finals, and Zahra Masoud (advisor: Dr. Cheuk Leung) earned a 2nd-place finish. We hope our students continue to challenge themselves in this rewarding event. Learn more about the 3MT competition. You can also view the recent presentations of our GPP students at the following links:

Ben Brian
Dustin Chernick
Lisa Chesner
Zahra Masoud
Baovi Vo

Pharmacology Graduate Student Organization (PGSO)

Several of our graduate students established the PGSO in 2017 to promote the professional development of GPP students, with a particular emphasis on providing students with academic, networking, and social opportunities. Current leadership of the PGSO includes: President Mariya Shapovalova (advisor: Dr. Aaron LeBeau), Vice President Paige Smith (advisor: Dr. Aaron LeBeau), Treasurer Eric Lake (advisor: Dr. Nick Levinson), Secretary Abir Majumdar (advisor: Dr. Nick Levinson), Event Planning Coordinator Hallie Hintz (advisor: Dr. Aaron LeBeau), and Faculty Advisor Dr. Tanya Freedman. The group has secured financial support from the Department of Pharmacology and from the Council of Graduate Students (COGS), and has sparked a great sense of community within the department and has warmly welcomed all of the incoming students with new initiatives. Since its inception, the PGSO has organized several social, outreach, and professional development events for students in the GPP:

Twins Game: GPP students made their way to Target Field to enjoy a baseball game in early September! While some watched the game, others had a great time catching up with their peers and meeting the incoming students.

Holiday Card-Making Sessions: Another well-attended volunteer event to benefit the Angel Foundation consisted of painting holiday cards that were sent out by the Angel Foundation to their care.

Incoming Class

Our 2017 incoming class included 6 new students in the PhD track: Abdulaziz Almotlak (BS in Pharmaceutical Sciences, King Saud University), Alkaya Masalsal (BA in Chemistry, City University of New York – Hunter College), Jennifer Nhieu (BS in Biochemistry, University of Minnesota – Twin Cities), Stephanie Ortiz-Valle (BS in Chemical Engineering, Universidad de Puerto Rico at Mayaguez), Ralph White (BS in Chemistry, Furman University), Andrej Zivanovic (BS in Biology and Chemistry, Shenandoah University). We also welcomed 2 new students to our Masters track: Malavika Chandrashekar (BS in Biochemistry, University of Minnesota – Twin Cities) and Jenna Robinson (BS in Neuroscience, University of Pittsburgh). Welcome to the GPP!
respondents. The 2 sessions were productive and a great stress reliever for the GPP students.

**Lunch and Learn:** This series of educational lunches is open to GPP students who want to present on whatever topic they desire, with attendees coming to offer their support while munching on some delicious food. “Lunch and Learn” events were implemented to give students an opportunity to practice public speaking, to discuss issues (e.g., their own struggles in the lab), and to share topics they find interesting with their colleagues. These events become whatever the speakers want them to be. Presentations can range from practicing for a very formal seminar to an informal chalk talk describing an experiment.

**Happy Hours:** These events are just pure fun with no educational strings attached. Even graduate students need to socialize and have fun once in a while!

The PGSO will continue putting together new and recurring events in 2018, and we hope for continued support and participation from the students and faculty.

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**Alumni Relations**

_We are proud of our alumni and the ways they have translated their training in pharmacology into successful careers in academia, industry, government, law, and medicine._

We hope to forge stronger relationships with our alumni community over the next several years, a key motivation being to help our current trainees develop a stronger awareness and appreciation for the type of careers they can aspire to, and to help them build a professional network that can support them in the years to come. As part of this effort, we have established an unlisted LinkedIn Group for past and present trainees and trainers affiliated with the Department of Pharmacology at the University of Minnesota. If you have a LinkedIn account and are not currently a member of this group, you can request access.

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**Camp Angel Volunteer Event**

The officers of PGSO participated in a 3-day camp for children who have a parent affected by cancer. This was an eye-opening experience and fulfilling for all parties involved. PGSO hopes to recruit more participants in the summer of 2018!

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**Travel Awards**

The Department of Pharmacology provides a limited number of travel awards to students and postdoctoral trainees who present their research at scientific conferences. Interested students should contact GPP Coordinator Jim Shoemaker. In 2017, travel awards supported conference attendance for Dustin Chernick (Annual meeting of the Society for Neuroscience), Jessica Martin (18th International Conference on Human Retrovirology), Chris Gallardo (Gordon Research Conference on Oxidative Stress & Disease), Amanda Salzwedel (Annual meeting of the American Society for Pharmacology and Experimental Therapeutics), Erika Dahl (International Society for Heart Research – North American Section Meeting), and Lisa Chesner (Federation of European Biochemical Societies Workshop: Nucleotide excision repair and crosslink repair – from molecules to mankind). The Council of Graduate Students (COGS) also provides financial support for graduate students to attend conferences (up to $1,200) or workshops (up to $250). Learn more.
POSTDOCTORAL News

Postdoctoral trainees are critical to the success of our research programs, often working behind the scenes to mentor students, recruit new students and faculty, teach classes, and represent our department through their service efforts. At present, there are 12 postdoctoral trainees working in 9 labs of primary faculty in the Department of Pharmacology.

Honors & Awards

Dr. Megan Tipps (advisor: Kevin Wickman) received a Mentored Research Scientist Development (K01) award from the NIH (National Institute on Alcohol Abuse and Alcoholism) entitled, “Mechanisms and relevance of the ethanol-induced suppression of inhibitory signaling in the basolateral amygdala.” Dr. Jill Touchette (advisor: Anna Lee) was the postdoctoral winner at the 2017 Louise M. Nutter Poster Session.

Departures

Dr. Salmaan Khan (advisor: Dr. Cheuk Leung) accepted a position at Celcuity, as a Cell Assay Scientist. Emily Ruff (advisor: Dr. Nick Levinson) accepted an Assistant Professor position in Biochemistry at Winona State University. Dr. Kyu Young Song (advisor: Dr. Horace Loh) is now working in the Department of Lab Medicine and Pathology (Surgical Pathology). Dr. Yadav Wagley (advisor: Dr. Horace Loh) accepted a position at the University of Michigan as a Research Area Specialist. We thank you for your contributions to our department, and we wish you well in your new positions!

Arrivals

We would like to welcome Dr. David Burban from the University of California in San Diego; David is now working with Dr. Nick Levinson to study the role of protein dynamics in the regulation of the cyclin-dependent kinases using NMR spectroscopy. We would also like to welcome Dr. Yemarshet Gebreyohannes. Yemarshet earned her BS in Pharmacy from Addis Ababa University in Ethiopia, and worked as a pharmacist in Ethiopia prior to earning her PhD in Biomedical Sciences from Katholieke Universiteit Leuven in Belgium. Yemarshet is now working as a postdoctoral associate with Dr. Cheuk Leung to develop a therapeutic strategy to target drug-tolerant “persister” breast cancer cells.

UNDERGRADUATE Minor

We currently offer 10 undergraduate courses, and the total enrollment in these courses in 2017 surpassed 300 students!

Dr. Hiroshi Hiasa currently serves as the Director of Undergraduate Studies (DUGS) for our Pharmacology Minor program, which began in September 2011. Presently, the Pharmacology Minor attracts undergraduate students from 10 colleges, schools, and centers (i.e., CBS, CLA, CSE, CFAN, CCE, Nursing, EHD, CSOM, CAH, and CLI). At the end of the last academic year (May 2017), 103 students were enrolled in the Pharmacology Minor program, 12 of whom are in the University of Minnesota Honors Program and are actively working on their thesis research projects. Learn more.

Honors & Awards

Ella Borgenheimer (advisor: Dr. Yasushi Nakagawa) was the undergraduate winner at the 2017 Louise M. Nutter Poster Session. Kristen Woodhouse (advisor: Dr. Jonathan Marchant) received an American Society for Pharmacology and Experimental Therapeutics (ASPET) Undergraduate Travel Award to present her research at the Experimental Biology meeting in Chicago.

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Pharmacology Club

The Pharmacology Club welcomes undergraduate students from diverse backgrounds who share an interest in pharmacology. The club organizes 2 types of events: science-oriented presentations of state-of-the-art research in the area of pharmacology, and career-development presentations from researchers in the field, experts in industry, or current students at the professional or graduate level. Club members also organize volunteer events and tours of research and educational facilities. In March, they volunteered with MATTER!, packing over 160 boxes of medical supplies that were destined to provide relief to thousands in Zambia. In October, the Pharmacology Club toured the Science Museum of Minnesota with a GPP alumnus, Dr. Laurie (Kleinbaum) Fink (advisor: Dr. Frank Burton), who currently serves as Vice President for Science at the museum. The 2017 Executive Board includes: President Sarah Lentz, Vice-President Kevin Blake, Co-Chair Mikaela Leifeld, Treasurer Asima Meskic, Secretary Hailey Held, Event Planning Coordinator Alyssa Butterfield, and CLA Faculty Advisor Dr. Hiroshi Hiasa. Learn more about the Pharmacology Club at the University of Minnesota, and associated events and achievements, on their Facebook page.

Graduations

In 2017, 34 students listed, right graduated with an undergraduate minor in Pharmacology. Many of these students have advanced to medical, pharmacy, and graduate schools. Congratulations students, and best of luck to you!

Kelsey Abington
Eva Carlson
Hailey Haugen
Fredy Kurniawan
Maggie Mason
Ajay Ramnarayan
Aaron Tipcke
Lammi Aga
Nic Cook-Rostie
Ryan Herzig
Jenny Lam
Dahila Maxon
Frances Rossini
Cher Ling Tong
Kasey Ah Pook
Katrina Diaz
Daniel Hofstetter
Shelby Litchy
Maia Otness
Mitchel Ryan
Gabriel Walker
Allison Bauman
Ben Dougen
Kaitlyn Hubbs
Zahra Mahamed
Rachael Pearson
Jessica Shaklee
Ava Malnati
Maggie Mason
Dahlia Maxon
Maija Otness
Rachael Pearson
Madeline Prosser
Atlee Thompson

Viral Vector Core

In May 2017, Dr. Kevin Wickman and Dr. Ezequiel Marron established a new Internal Service Organization to provide custom molecular biology (sub-cloning) and high-titer viral packaging services to investigators in the University of Minnesota biomedical research community.

Dr. Ezequiel Marron

To date, the Viral Vector Core has completed 16 custom sub-cloning and 40 viral (adeno-associated virus, AAV) packaging projects for 11 different clients, including Dr. Stan Thayer, within the Academic Health Center and on the Duluth campus. Dr. Thayer noted, “We have purchased several items from the Viral Vector Core. The core prepared custom constructs that were then used to produce AAV. These viral tools improved the efficiency of gene transfer for our in vitro studies. The custom constructs incorporated cell-selective promoters that enabled us to study individual cell types in a mixed brain culture. The core was fast and less expensive than commercial services. However, Ezequiel’s help to design the new constructs was most valuable.” Please contact Dr. Marron for more information about this service, timeline, and fee structure.
Faculty

Honors & Awards

While we appreciate the efforts (seen and unseen) of all of our faculty members to make our department and graduate program strong, we would like to highlight the noteworthy achievements of our junior faculty in 2017. Dr. Aaron LeBeau received a 2nd year of NIH (National Cancer Institute) K12 support from the Mayo Clinic Cancer Center, which fosters faculty development in the area of clinical/translational cancer research; Dr. LeBeau also published his first 2 papers (Scientific Reports and Cancer Research Treatments) as an independent investigator. Dr. Anna Lee published a review article in Oncotarget, her 2nd publication as an independent investigator - and a 3rd publication is on the way. Dr. Cheuk Leung earned his first NIH (National Cancer Institute) R01 award for a project entitled, "Control of quiescence and outgrowth in latent breast preneoplastic cells." Dr. Nick Levinson secured his first NIH R21 ("A novel time-resolved fluorescence-based high-throughput screening technology for discovering allosteric kinase inhibitors"); National Cancer Institute) and R01 ("Decoding the dynamic mechanism of allosteric activation in the cyclin-dependent kinase Cdk2"; National Institute of General Medical Sciences) awards, and published his first research paper as an independent investigator in Nature Chemical Biology.

Departures

Dr. Ping-Yee Law retired in the summer of 2017 after 28 years of service to the Department of Pharmacology. Dr. Law’s contributions to the research, teaching, and service missions of our department are numerous and substantial. Dr. Law earned a strong international reputation for his contributions to the field of opioid receptor biology, which were disseminated in over 200 research publications! He served as advisor for 11 PhD students and 11 postdoctoral trainees, and was an informal mentor to many other students and faculty. Dr. Law was an active contributor to service missions of our department and graduate program, and he played a particularly critical leadership role in the NIH/NIDA-funded Basic Research Center on Molecular and Cell Biology of Drug Addiction. Enjoy your well-earned retirement, Ping!

Dr. Fang Li transitioned to the College of Veterinary Medicine at the University of Minnesota in the summer of 2017. Dr. Li joined the Department of Pharmacology as an Assistant Professor in 2007, and he quickly established a well-funded and high-profile research program in structural virology. Since joining our department, Dr. Li has trained 3 PhD students, as well as a Masters student, and he has been a key contributor to our undergraduate teaching mission. We wish Dr. Li well in his new home, and we look forward to further important findings emanating from his lab over the years to come.

Dr. Jonathan Marchant was appointed Chair of the Department of Cell Biology, Neurobiology and Anatomy at the Medical College of Wisconsin and the Marcus Professor of Human and Molecular Genetics, effective on September 1, 2017. Dr. Marchant joined the Department of Pharmacology in 2002, and his contributions to our department were substantial in breadth and impact. He served as Interim Head of Pharmacology from 2012-2013 and Vice Head from 2013-2015. Jonathan was a key contributor to our teaching mission, and he earned the Outstanding Medical School Teaching Award in 2009. He mentored 7 PhD and 4 Masters students, several of whom earned awards for their research. Dr. Marchant served 2 terms as Director of Graduate Studies, and he was Director of the T32 Training Grant in Stem Cell Biology from 2016 until his departure. Dr. Marchant will be missed, but we wish him all the best on his new adventure!

Dr. Tanya Freedman was promoted to an Assistant Professor (tenure-track) position in the Department of Pharmacology in July 2017. Dr. Freedman earned her AB in Biochemistry from Bowdoin College and PhD in Molecular and Cell Biology from the University of California - Berkeley. She joined our department in 2014 as an Assistant Professor (non-tenure track), after completing postdoctoral training with Dr. Art Weiss at the University of California - San Francisco. Dr. Freedman is interested in the signal transduction mechanisms that regulate the responsiveness of macrophages and other immune cells to inflammatory and anti-tumor signaling. Her office and research lab is located in Wallin Medical Biosciences Building, which is currently host to 3rd-year graduate student Ben Brian, who was enthusiastic about joining the lab because “…it integrates cutting animal genetics, cell-based assays and pure biochemistry to tease apart the processes that govern how the cells of our immune system decide what to do in a wide array of diseases.” Since Dr. Freedman’s arrival in 2014, she has established herself as an integral contributor to the teaching missions of our department. In 2017, she provided instruction in our "Toolkit" 1 and 2 courses, while serving as a member of the Committee on Graduate Studies for the GPP and faculty advisor to the Pharmacology Graduate Student Organization (PGSO). In 2018, Dr. Freedman will Chair the newly formed Student and Postdoctoral Awards Committee. You can read more about Dr. Freedman and her research program on her lab website.
ALUMNI PROFILES

Alumni in Academia

Linda Dwoskin

UMN training period: 1976 - 1983 (PhD)
UMN advisor: Dr. Sheldon Sparber
Position: Professor of Pharmaceutical Sciences & Associate Dean for Research
Institution: University of Kentucky
Career overview: I have conducted research in the field of neuropharmacology and substance use disorders (SUD) for over 30 years. My research is aimed at contributing to a greater understanding of the underlying neurochemical mechanisms mediating the pharmacological effects of abused substances, including nicotine and methamphetamine, and to the discovery and development of novel pharmacotherapies for nicotine and methamphetamine use disorders. I have been funded continuously by the NIH for the past 30 years, including as the Director/PI of a National Cooperative Drug Discovery Group grant (U19) on new treatments for nicotine addiction (2003-2009), and a cooperative U01 grant on novel therapies for methamphetamine abuse (2000-2018). I have authored over 270 publications, and am an inventor on 24 issued patents, and I have served as a member of a number of NIH study sections. I also serve as the Director of a NIDA T32 on drug abuse-related research (2006-2018), and I am Director of the Training and Education Core of a drug abuse-focused P50 center grant (2007-2018). Over the course of my career, I have mentored 8 junior faculty members, 23 postdoctoral fellows, 16 PhD students, 1 MS student, 16 undergraduate research trainees, and 2 high school research scholars. My trainees are currently on the faculties of universities in the United States, India, Belarus, Thailand, and France. All of the junior faculty members whom I mentored have either attained or are progressing to the rank of associate professor or professor with tenure.

Favorite UMN memories: Evening ice skating on the frozen lakes followed by hot chocolate in the warming house after a long day in the lab running assays... cross-country skiing into the lab on cold snowy days when the roads were not passable, and then peeling off boots, multiple layers of clothes and long-underwear once arriving at the lab for the days effort... after failing my first attempt at the written qualifying exam, passing with flying colors both my second attempt at the written exam and my oral qualifying exam, which I remember completing in 45 minutes.

Yuriy Usachev

UMN training period: 1995 - 2000 (postdoctoral)
UMN advisor: Dr. Stan Thayer
Position: John P. Long Endowed Professor, Professor of Pharmacology & Anesthesia
Institution: University of Iowa Carver College of Medicine
Career overview: One major direction in my lab focuses on mitochondrial Ca^{2+} transport and mitochondrial dynamics and their roles in neuronal excitability and plasticity as well as in neurological disorders such as epilepsy and peripheral diabetic neuropathy. The second major focus of our research is on the mechanisms of chronic pain with emphasis on neuro-immune interactions in modulating pain processing in the periphery and in the spinal cord. Our research papers on these topics were selected as "paper of the week" by the Journal of Neuroscience (Medvedevat et al., 2008) and the Journal of Biological Chemistry (Ulrich et al., 2012), were recommended by Faculty of 1000 (Medvedeva et al., J. Neurosci. 2008; Shutov et al., J. Neurosci. 2016) and were highlighted by Pain Forum (Inagaki et al., Neuron 2014 and Shutov et al., J. Neurosci. 2016). As a dedicated educator and mentor, I am very proud of my current and former pre-doctoral and postdoctoral trainees, 6 of whom have received individual fellowships from the funding agencies such as the American Heart Association, NIH and PhRMA Foundation, and two of them are now Assistant Professors, one at Washington University Medical School (USA) and another at the College of Pharmacy at Inje University (South Korea). 

Favorite UMN memories: My great mentor Dr. Stan Thayer and the excellent learning and research environment in the Department of Pharmacology...many research seminars and workshops, as well as meeting top experts both within the University of Minnesota and outside guest speakers...meeting with Noble Prize laureate and UMN Pharmacology alum Dr. Louis Ignarro, during a lunch that he had with a small group of trainees from the Department of Pharmacology...playing soccer at our annual picnics at Stan Thayer’s home, skiing at Afton Alps and listening to Garrison Keillor’s Prairie Home Companion show every week.
The work was challenging, and the weather was brutal — but I'll forever be grateful for all of the amazing people I met at UMN. — J. Michael Underwood

**Alumni in Industry**

**Ron Shebuski**

**UMN training period:** 1981 – 1985 (PhD)
**UMN advisor:** Dr. Ben Zimmerman
**Position:** President & CEO
**Company:** Cylerus, LLC

*Career overview:* I am the co-founder, President, and CEO of Cylerus, Inc., Melbourne, FL, developing novel drug delivery technology (currently NIH SBIR Fast Track funded) to prolong the survival of prosthetic (i.e., ePTFE) vascular grafts, particularly for patients requiring chronic hemodialysis. Previous to directing the Cardiovascular Therapeutics group at Pharmacia & Upjohn, where I managed the team responsible for FDA approval in 1995 of the Class III anti-arrhythmic agent, Convert®, I was a Senior Scientist responsible for leading cardiovascular drug discovery teams at Merck Research Laboratories and Smith Kline & French. My primary field of research has focused on platelet and coagulation activation in thrombosis and the development of effective new therapies. At Merck, I led the in vivo discovery and development effort that culminated in the identification and eventual FDA approval of the anti-platelet GPIIb/IIa antagonist, Aggrastat®.

*Favorite UMN memories:* Getting to know the faculty and hearing their “war stories”, such as Dr. Gil Mannering (who was world-renowned in drug disposition circles) telling us how the first centrifuges for biomedical use were developed and – as only Gil could – describing the scene to 1st-year pharmacology students as one of almost combat, with sand bags scattered throughout the room and anxious scientists lying on the floor in wait as their precious samples whirled at rpm levels they never dreamed of before...

**Dr. Aki Takemori** (when he wasn’t discussing sports) demonstrating the powerful anti-opioid actions of naloxone which he discovered with Dr. Portoghese and most of all...working with Dr. Ben Zimmerman (my mentor) who taught many of us valuable life and science lessons...being honored with the Bacaner Basic Science Award in 1985 and the inaugural F. E. Shideman Distinguished Alumnus Award in 1994 were the academic highlights of my career at Minnesota.

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**Matthew Hearing**

**UMN training period:** 2010 - 2013 (post-doctoral)
**UMN advisor:** Dr. Kevin Wickman
**Position:** Assistant Professor of Biomedical Sciences
**Institution:** Marquette University

*Career overview:* My lab seeks to understand how modifications in cellular signaling and the strength of synaptic connections in specific neuron populations can control behavior in normal and diseased states. A major focus of my research is to understand how drugs of abuse promote changes in areas of your brain responsible for decision-making, reward perception, and habit behavior and how that contributes to the development of addiction. Parallel to these interests is exploring how abnormalities in synaptic signaling underlie psychological disorders with strong cognitive and affective components such as PTSD and depression. My research is supported by a K99/R00 “Pathway to Independence” Award, a Young Investigator/NARSAD award from the Brain & Behavioral Research Foundation, a Mental Health Research Grant (Marquette University), and a Dean’s Award for Research (Marquette University).

*Favorite UMN memories:* The lasting friendships that I made with graduate students and postdocs, not only in the Wickman lab but also other labs in the department, some of which continue to be fruitful even at the professional level.

**Michael Ahlijanian**

**UMN training period:** 1980 - 1985 (PhD)
**UMN advisor:** Dr. Akira Takemori
**Position:** Chief Scientific Officer, Pinteon Therapeutics
**Company:** Head of Neurosciences, FORMA Therapeutics

*Career overview:* Six years and two post-docs after completing training in the Department of Pharmacology at UMN (Aki Takemori, Fred Shideman, Chair), I began my biopharma career at Pfizertm (May 1991) in Groton, CT, in the Department of Neuroscience, fully believing that I would stay a few years until I could find the academic position I wanted. I stayed for 15 years, accepting increasing responsibilities for both Research/Discovery teams as well as Early Clinical Development Teams. In 2006, I left for a completely different experience; as VP of Research at what was then Envivo Pharmaceuticals, a 40-person, neuroscience-focused, privately funded biotech company for 4 years, followed by 7 years in the Neuroscience/Genetically Defined Disease group at what is now Ani Consulting, LLC.

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at Bristol-Myers Squibb. I left BMS in May of 2017 and now work part-time leading Neuroscience-focused R&D efforts at 2 small companies in addition to consulting for non-profit organizations (e.g., Target ALS), small biotech companies, and private investors.

**Favorite UMN memories:** The ad hoc scientific conversations with my mentor, Aki Takemori, that would occur as I was doing experiments in the lab next to his office (guinea pig ileum and mouse vas deferens; classic pharmacology!). Those spontaneous discussions were very formative in my training as a scientist…the camaraderie of our graduate school class and my good friends Rich Heyman, Patty Mackie (now deceased), Beth Neal, and others and the Friday afternoons and evenings we would spend at a local pub just down the street from the labs discussing (arguing) science and the department.

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**Cheryl (Marker) Schmidt ✉**

**UMN training period:** 2001 - 2005 (PhD)

**UMN advisor:** Dr. Kevin Wickman

**Position:** Senior Scientist & Study Director

**Company:** American Preclinical Services

**Career overview:** After graduate school, I started at a smaller Contract Research Organization (CRO) that focused on pain pharmacology as a scientist and doing all of the hands-on work (surgery, behavior, data entry, etc). I have had to learn the difference between academic research and the needs of industry. I now run large bio-compatibility panels, design toxicology studies, and run large animal "Surgical and Interventional" studies. I analyze and interpret data to help companies develop medical devices and assess new compounds. Life in a CRO is very fast-paced and requires a very broad knowledge base, as well as a willingness to keep learning.

**Favorite UMN memories:** The day the Wickman lab spent on the water…it was fun to take people skiing and just have some fun!

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**Navneet Sharma ✉**

**UMN training period:** 2004 - 2007 (MS)

**UMN advisor:** Dr. Paulo Kofuji

**Position:** Associate Director (Marketing Operations)

**Company:** Bayer Pharma AG

**Career overview:** I started my career in the pharmaceutical industry with a role in early clinical development at Genentech Inc. after graduating from UMN. Since then, I have had the opportunity to work across various global functions (clinical, commercial & business development) at Novartis, and now at Bayer, contributing to global launches of key new products to help patients with cardiovascular diseases.

**Favorite UMN memories:** Various holiday celebrations...in particular, one Halloween when I and two other trainees/staff – Dezz (Haluk) Pietrangelo and Kelsey (Newell) Mirkovic - dressed up as the mechanism of action of a GPCR, complete with props...the feel of community in our department, and the willingness of everyone to have some lighthearted fun after the workday was done.

**Note:** Dr. Brunner says, "...always happy to network with other department trainees. I received a lot of kindness in my career path from other UMN grads and I am happy to pay it forward!"

**Favorite UMN memories:** Standing in the hall outside of the conference room adjacent to Dr. Shideman’s office waiting to begin my preliminary oral exam. There had been miscommunication with one member of the committee, amplifying the candidate’s normal discomfiture. Norm Sladek walked by, perceived the situation instantly, stopped, put his hand on my shoulder, looked me in the eye, and said, “Mal (he’s the only person ever to call me that), just remember, they want you to pass.”

**Career overview:** As a trained scientist previously.

**Alumni in Government/Regulatory affairs**

**Malcolm Moos**

**UMN training period:** 1982 – 1985 (PhD)

**UMN advisor:** Dr. Nelson Goldberg

**Position:** Medical Officer & Senior Investigator

**Agency:** US Food and Drug Administration

**Career overview:** My first 1st author paper led to the NuPage line of pre-cast gels now marketed by Invitrogen, and related expertise in analytical biochemistry enabled me to help establish FDA and international guidance for recombinant DNA derived therapeutic proteins and monoclonal antibodies and formulate the concept of the “Well-Characterized Biotechnology Product.” This experience in turn allowed me to draft the initial guidance documents for cell-based/regenerative medicine therapies and related activities including liaison with external groups and criminal investigations, during which I helped execute federal search warrants and/or served as a prosecution witness leading to multiple convictions. During this period, I also have directed an exploratory research program seeking to identify Quality Attributes for cell-based therapies and related activities including liaison with external groups and criminal investigations, during which I helped execute federal search warrants and/or served as a prosecution witness leading to multiple convictions.

**Sarah Donahue, right**

**Sarah Donahue**

**UMN training period:** 1998 – 2003 (PhD)

**UMN advisor:** Dr. Colin Campbell

**Position:** Deputy Chief of Staff

**Agency:** US Army Medical Research and Material Command (Department of Defense)

**Career overview:** As a trained scientist (thank you, Dr. Campbell!), I have transitioned my career from one conducting novel science to one where I help funders and decision-makers prioritize and support scientific research and medical product development programs. After gaining exposure to the world of science regulation (through conducting FDA-regulated research involving human and animal subjects, as well as serving on IRBs), and seeing how medical research in the Department of Defense is aimed at quickly developing innovative medical products that save lives and limbs, I knew I needed to be part of this world. I spent time working for the Army helping them develop regulatory oversight systems that allowed them to conduct rigorous science that was compliant with FDA and other regulations and laws, then transitioned to serve as the Deputy Chief of Staff of a 7,500-person command with worldwide locations. In this role, I get to help prioritize our scientific pursuits, hire talent, guide decision- and policy-makers at all levels of government, field new medical products around the world, work with industry and academics, and most importantly, help the talented men and women of the U.S. military protect and restore their health while they do their jobs in dangerous and remote places.

**Favorite UMN memories:** So many great memories...I recall fondly many late-night study sessions, holding the chickens while my fellow student Laura immunized them, Dr. Campbell pounding his wooden clog on the desks while yelling “I want data!”, and the overall wonderful camaraderie that our student body had - it was truly a supportive group.

**Tri Bui Nguyen**

**UMN training period:** 2002 – 2007 (PhD)

**UMN advisor:** Dr. Sundaram Ramakrishan

**Position:** General Health Scientist/Safety Regulatory Health Project Manager

**Agency:** US Food and Drug Administration

**Career overview:** I began considering a career in regulatory science after attending a special seminar by a Pharmacology alumnus – Dr. Molly Shea (advisor: Dr. Hiroshi Hiasa) – entitled, “Careers in Drug Development and the FDA,” which was organized by the Department of Pharmacology. After earning my PhD, I pursued postdoctoral training at the MD Anderson Cancer Center in Houston, Texas, and then at Fort Detrick, Maryland with the US Army Center for Environmental Health Research. In parallel, I attained a Masters Degree in Regulatory Science from Johns Hopkins University. I subsequently joined continued on page 12

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the FDA as a Consumer Safety Officer in the Office of Policy and Risk Management within the Office of Regulatory Affairs. I am currently responsible for planning, coordinating, and evaluating the Dermal, Dental, and Imaging Products Review Program and activities of the Office to assess the safety profiles of drugs available to consumers. I believe the training and additional knowledge in regulatory science have allowed me to serve effectively and flexibly in various positions. While it has been interesting and challenging working on numerous FDA laboratory-related policy and regulatory issues such as guidance for industry, new rules for the FDA Food Safety Modernization Act, the implementation of the FDA Menu Labeling Rule, I miss the support and encouragement of my UMN mentors – Dr. Ramakrishnan, Dr. Norman Sladek, Dr. Greg Connell, Dr. Ameeta Kelekar, Dr. Colin Campbell, Dr. Duanqing Pei, Dr. Doug Yee, Dr. Tim Walseth, Dr. Amy Skubitz, and Dr. Kevin Wickman – as well as the care of program scientists and supporting/administrative staff, and the congenial company of my fellow graduate students.

Favorite UMN memories: Running back and forth between the Department of Pharmacology Holiday party and the lab to resect tumors from athymic mice with my mom, a staff member in the Ramki lab… nothing beats good food and positive data!

J. Michael Underwood
UMN training period: 2004 – 2009 (PhD)
UMN advisor: Dr. Peter Bitterman
Position: Team Lead & Health Scientist

Agency: Centers for Disease Control
Job summary: I’ve always enjoyed pharmacology and cancer research, but early in grad school realized that a career in academia/big pharma would not be a good fit. After prelims, I took elective classes in UMN’s School of Public Health, and became a community outreach volunteer with the MN Masonic Cancer Center. Before those experiences, I had no idea of the huge demand for research scientists within public health. Eventually, I applied to become a “disease detective” in the CDC’s Epidemic Intelligence Service (thankfully, I was accepted). After graduating with a PhD in Pharmacology (spring 2009), I moved to Atlanta to begin a career in public health.

Favorite UMN memories: The work was challenging, and the weather was brutal — but I’ll forever be grateful for all of the amazing people I met at UMN.

In this era of limited funding for biomedical research and training, we increasingly rely on donations to support our mission.

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