A NOTE FROM JULIE AKERS

Dear Friends and Colleagues,

What an exciting start to fall for the WSU College of Pharmacy and Pharmaceutical Sciences! Students are back on campus and the energy is palpable. The introductions for this newsletter will be authored by yours truly in the next couple of months as the Dean is taking a much-needed break after a busy year. We had a great orientation week for our incoming PY1 students that culminated in the White Coat Ceremony at the Fox Theater. Thank you to the staff, students, and faculty who did an exceptional job planning, organizing, and speaking during the week. I would like to give special recognition to the Walgreens Company for funding the white coats that our incoming PY1 students will use during their four years in the program. We were fortunate to have two Walgreens pharmacists coating the students this year, Steven Webbenhurst and Danielle Shook ('08). Great job, Steve and Danielle!
The Dean’s Welcome Back BBQ was a great success (students show up for free food!) and we are so fortunate to have STCU as a local partner. Thank you to Erik Puthoff and the entire STCU team for your sponsorship of not only the Welcome Back BBQ but also for sponsoring the Career Seminar Series. Our first seminar of the fall semester was presented by Dr. Randy Legg (‘87) this week who serves as the National Clinical Account Director for AstraZeneca. We are excited for Dr. Legg to share his experience in industry with our students.

Thank you to those who were able to attend the CougaRx Nation virtual meeting on August 11. Your input toward events that bring value to alums and the college is appreciated! The CougaRx Nation also serves as the host committee for the Crimson Gala and Pharmacy Reunion Weekend and there was much to discuss.

Did I say Gala? Yes, we are about one week away from the Crimson Gala, which is on Friday, October 7. We will be honoring two incredible people in the pharmacy community: John Oftebro (‘65) and Linda Garrelts MacLean (‘78). Don’t forget to RSVP if you haven’t already! It will be a night to remember after pressing pause on the event for two years.

Last month we told you about our student team (Kennedy Erickson, Jeannie Ko, Michael Asfha, and Kayla Huber) who made the top 10 in the Good Neighbor Pharmacy NCPA Pruitt-Schutte Student Business Plan competition. Kennedy Erickson (Class of 2023) will be in Kansas City, Missouri at the NCPA annual meeting to present the team poster. If you are there make sure to stop by and give her a Coug hello. And while at the NCPA annual meeting, make sure to come to the CougaRx Nation Alum and Friends Social on October 2. Enjoy appetizers, beverages, and a lot of Coug spirit! Thank you to Prescryptive for sponsoring the event.

It was great seeing some of you at the National Association of Chain Drug Stores (NACDS) Total Store Expo in Boston last month. I was able to spend time with the NACDS Foundation Faculty Scholars Program and was happy to see Huy Hoang (‘14) there as a recent scholar graduate. Dr. Hoang teaches in the pharmacy program at Pacific University in Oregon and has accomplished a lot since graduation.

With my best and, as always, Go Cougs!

Julie Akers, Associate Dean of External Relations
WSU College of Pharmacy and Pharmaceutical Sciences
Sixth Avenue Pharmacy, located in the heart of Spokane’s health care hub, reflects the monumental development the city has undergone over the last two decades. The former QualMed Plaza, which houses the nearly 60-year-old pharmacy, has laid vacant for 50 years. The medical building is now being renovated into high-rise luxury apartments touting amenities such as a dog spa and a rooftop sky lounge. Yet, Sixth Avenue Pharmacy has stood the test of time since it opened its doors in 1964. The frenzy of construction outside mirrors the frenetic pharmacy inside where roughly a dozen employees busily fill prescriptions, compound tailor-made medicines, and prepare orders ready to be shipped out to long-term care facilities and clients.

“Living and working in a smaller city like Spokane is more rewarding than bigger cities because you are really part of the community and you can work to your full potential,” said Sixth Avenue Pharmacy co-owner Alex Heyfetz, who grew up in Los Angeles, and graduated from the WSU doctor of pharmacy program in 2014. He and his wife have lived in the Inland Northwest since he began pharmacy school at WSU in 2010. Prior to attending WSU, Alex completed his bachelor’s degree in microbiology, immunology and molecular genetics at UCLA and says that he chose WSU’s PharmD program because it had all the resources and opportunities California schools offered, but at a much more affordable price.

“I’m very happy with the choice I made. Not only did I get a better education but I also felt there were more resources available to me in the community,” said Alex who co-owns the pharmacy with college alum Erik Nelson, who graduated in 2013 and took over the business that same year. Over the years, Sixth Avenue Pharmacy has evolved to meet the demands of their clients, with automated dispensing machines, custom compounding, veterinary compounding, and specialty packaging. But one thing remains the same: patient care and serving the community is at the center of their business model. Alex says that as an independent
Alex says that the next phase of growth for the pharmacy is reaching out to underrepresented and vulnerable populations such as refugees and new immigrants in the Spokane area. He and his wife Ella Kotelovich are now paying it forward by helping the influx of Ukrainian refugees who started arriving to Spokane in early June following the invasion of Ukraine by Russian forces in February earlier this year. Ella, an account manager for Community Health Plan of Washington, has been working with both Ukrainian and Russian refugees who have resettled in Spokane. Ella who grew up in Latvia before her family moved to Los Angeles in 2003 says that there was a need for Russian-speaking health care providers, and Sixth Avenue Pharmacy naturally stepped up to fulfill this need. Alex, a certified medical interpreter for Russian speakers, has been translating for the Russian-speaking population in Spokane. He says that though Ukraine has its own language, Russian has been the default language as many relocating to the region also understand it. As a Russian refugee with grandparents from Ukraine, he is sensitive to the cultural nuances that many Ukrainian refugee families face once they arrive in the US.

“There is a lot of stigma surrounding behavioral health in former Soviet Union countries. I hope that by counseling these families and being able to speak to them in their own language, it will help them to seek the therapies they need,” said Alex, who said his family left Russia in 2000 when he was 15 years old to escape persecution as Jews. “At the very least, we can help them find the care that they need.”

Alex, who precepts WSU doctor of pharmacy students every year, and currently employs four interns and one resident at the pharmacy, says that he hopes to get the word out that Sixth Avenue Pharmacy is a place where immigrants and refugees can turn to if they need help translating medical advice, have questions, or just need a medical provider to speak in their own language.
“I want our patients to know that as pharmacists we tend to have better rapport with patients than medical doctors do since they don’t have to make an appointment to see us for advice. We can point people in the right direction if they need to seek care, or counsel them on their medications,” said Alex.

His current resident, Jolyslene Robles Mendoza, who graduated from WSU in 2022, is a resident at Sixth Avenue and has been working with Alex to engage Spanish-speaking populations. Alex has been mentoring Jolyslene on how to do community outreach events and roll out vaccination clinics for underrepresented populations. The 2020 Preceptor of the Year recipient says that he tries to instill in his students that pharmacists are highly educated and valuable members of a health care team. It’s important to play a bigger part in helping the communities that they serve.

“The biggest highlight for me as a pharmacist is being able to work with students and the next generation of pharmacists,” said Alex. “I learn from them as much as they learn from me.”
Leader in pharmacy practice Linda Garrelts MacLean, class of 1978, will receive the R. Keith Campbell Lifetime Achievement Award from the Washington State University College of Pharmacy and Pharmaceutical Sciences (CPPS) on October 7. The award will be presented at the college's Crimson Gala in Spokane attended by alums, faculty, students, and supporters of the college.

Garrelts MacLean retired from the college on July 1, 2021, after a 20-year career as a professor, department chair, vice dean, and ultimately serving as interim dean from 2018 through 2020. She is the first female to hold the position of dean at the college.

Garrelts MacLean mentored hundreds of student pharmacists and helped build a strong professional program at the college. She also served as the advisor for the National Community Pharmacists Association’s business plan competition, helping lead WSU students and the college to national recognition with several first-place and top 10 wins. She is nationally and internationally recognized in the pharmacy community for expanding pharmacist and technician immunization training developed by the college.

Garrelts MacLean, and her husband R. Grant MacLean, class of 1973, are both WSU pharmacists, although they never met while in college. They became acquainted while both worked as pharmacists two blocks away from each other on the South Hill in Spokane. Grant was working for Rosauers supermarket, while Linda was working for Jones Pharmacy. The couple has been married for 39 years and have three daughters. Their careers have always been about community pharmacy, and both were visionary
pharmacists. Grant served as Director of Pharmacy for Rosauers, where he was responsible for putting pharmacies into grocery stores in the four northwest states where Rosauers operates in Washington, Idaho, Montana and Oregon. Linda eventually purchased Jones Pharmacy with business partner Rick Jones, and then expanded to own three independent pharmacies until selling in 2000. Grant retired from Rosauers, which was an employee-owned company when it sold in 2000.

Garrelts MacLean said she is very grateful to have had the opportunity for a second career (post-pharmacy ownership) in academia with the WSU CPPS. She especially enjoyed being a part of the profession on the academic side because it was so fulfilling as she watched and mentored so many young pharmacists, scientists, and faculty members to become leaders in the profession.

The MacLean’s recently established a scholarship endowment at the CPPS that mirrors their philosophy on clinical pharmacy, leadership, and innovation in pharmacy practice. The **Linda Garrelts MacLean and Grant MacLean Future Leader in Community Pharmacy Scholarship** will recognize a fourth-year student pharmacist who has demonstrated a commitment to community pharmacy practice transformation where the pharmacist is responsible for optimizing drug therapies, delivering enhanced patient-centered services, and achieving improved patient health outcomes collaboratively. This future pharmacy leader recognizes that the pharmacist innovator of the future will move practice away from a transactional, point-in-time patient encounter, to a longitudinal and consistent patient-level care process. Funds raised through the Crimson Gala will benefit this new scholarship endowment.

Garrelts MacLean said that while she was on faculty at WSU, she always taught student pharmacists to “work at the top of their license.”

“This scholarship will recognize that the future of pharmacy is about patient care and optimizing drug therapy management in a consistent way with the most accessible health care provider: the pharmacist,” said Garrelts MacLean.

“I’m so pleased to be honored with the R. Keith Campbell award, as he was a true visionary in clinical pharmacy and also a mentor to me,” she added.
The R. Keith Campbell Lifetime Achievement Award was established in 2017 to honor Professor Keith Campbell, class of 1964, who served as a professor at the CPPS for 40 years. Professor Campbell was the first recipient of the award, which was subsequently named for him. The prestigious award recognizes a track record of excellence in pharmacy, patient care, advocacy, research, service and mentoring or teaching. In 2019, William Gaskins, class of 1969, was named as the second recipient of the award. John Oftebro, class of 1965, will also be honored on October 7 along with Garrelts MacLean. The Crimson Gala takes place as part of the college’s Reunite Pharmacy Reunion Weekend on October 7-8, 2022. Class reunions will take place during the Crimson Gala, with pharmacy building tours on Saturday, October 8 and a viewing party for the WSU vs. USC game later that day at Flatstick Pub. Full details can be found here or by calling 509-368-6675.
Scientists have identified a protein known as sulfatase-2 that plays a critical role in the damage caused by rheumatoid arthritis. A chronic disease in which the immune system attacks the body’s own joint tissues, rheumatoid arthritis affects an estimated 1.5 million Americans.

Published in the journal Cellular & Molecular Immunology, the discovery sheds new light on the molecular processes that drive inflammation seen in rheumatoid arthritis. It could also someday lead to improved treatment of the disease, which currently has no cure.

“Tumor necrosis factor-alpha — or TNF-alpha for short — is one of the main inflammatory proteins that drive rheumatoid arthritis and is targeted by many currently available therapies,” said senior author Salah-Uddin Ahmed, a professor in Washington State University’s College of Pharmacy and Pharmaceutical Sciences. “However, over time patients can develop a resistance to these drugs, meaning they no longer work for them. That is why we were looking for previously undiscovered drug targets in TNF-alpha signaling, so basically proteins that it interacts with that may play a role.”

Though sulfatases such as sulfatase-2 have been extensively studied for their roles in different types of cancer, Ahmed said no one had looked at how they might be involved in inflammatory or autoimmune
diseases such as rheumatoid arthritis.

The research team first explored this idea using cells called synovial fibroblasts, which line the joints and keep them lubricated to ensure fluid movement.

“In rheumatoid arthritis, these normally quiescent cells get activated by TNF-alpha and other inflammatory molecules, and they take on this aggressive character,” said first author Ruby J. Siegel, a PhD graduate in the WSU College of Pharmacy and Pharmaceutical Sciences. “They are not dying when they should, and they proliferate in a way that is almost tumor-like, forming this massive synovial tissue that should not be anywhere near that size and at the same time activating proteins that destroy cartilage and bone.”

Using the joint-lining cells of rheumatoid arthritis patients, they removed sulfatase-2 from one group of cells before stimulating all cells with the inflammatory TNF-alpha. What they found was that cells lacking sulfatase-2 did not show the same exaggerated inflammatory response to TNF-alpha as cells that were left intact.

“Looking at sulfatases for their potential role in inflammation was an educated guess, but once we did we saw a very consistent pattern of increased sulfatase-2 expression throughout different tissues and samples we studied,” Ahmed said. “This tells us that TNF-alpha relies on sulfatase-2 to drive inflammation, because as soon as we removed sulfatase-2 the inflammatory effects of TNF-alpha were markedly reduced.”

Resulting from a series of experiments spanning four years, the researchers’ findings open the door to future animal studies to test the effectiveness of inhibiting sulfatase-2 to ease rheumatoid arthritis symptoms. This could someday lead to the development of new combination therapies that along with other inflammatory proteins would also target sulfatase-2 to prevent bone loss, cartilage damage and deformed joints. Such therapies could help address the shortcomings of currently available rheumatoid arthritis drugs, many of which come with significant side effects.
“These drugs shut off TNF-alpha in your whole body, but it does have important immune functions,” Siegel said, adding that patients who take these types of drugs are more susceptible to infection and have an increased risk of developing cancer with long-term use. She also noted that TNF-alpha inhibitors are not effective in all people and are not recommended for patients with certain other health conditions.

Funding support for the study came from the National Institutes of Health and the Rheumatology Research Foundation.
On August 19, Washington State University College of Pharmacy and Pharmaceutical Sciences welcomed the incoming class of 2026. The class is comprised of 46 talented, well-rounded, and thoughtful students who come from across Washington state, around the country and world, including California, Nevada, Oklahoma, Wisconsin, Idaho, Canada and China. Their ages range from 20 to 44 years old, and they are a diverse group of students in every way.

“When admitting future student pharmacists, our faculty want to see people with a passion for health care, and folks who will become positive forces in the communities they serve. These students have that,” said College of Pharmacy and Pharmaceutical Sciences Dean Mark Leid.

The ceremony marks the symbolic induction of students into the professional ranks. The students donned their white coats at the historical art deco theater The Fox in Spokane.

Third-year student pharmacist Garrett Reynolds welcomed the students with heartfelt advice about paving one’s career through pharmacy, recognizing opportunity, and relying on classmates to overcome challenges.

“As student pharmacists, we are blessed with the gift of variety. Pharmacy is an ever-expanding and evolving profession. And whether your passion is patient care, advocacy, research, or community service, the opportunity to discover your calling is here,” he told the first-year students who were accompanied by friends and family.

Chris Greer, former president of the Washington State Pharmacy Association and Spokane Pharmacy Association President, and Pharmacy Manager at Providence St. Luke’s Rehabilitation Medical Center, gave
an inspiring keynote. Chris emphasized the position of trust pharmacists play in their communities and the health care team.

“I believe the key to greatest impact lies in this trust relationship that you will have with your patients, other health care team members and the community. You will receive excellent preparation for this vocation here at Washington State University. You will be trained by our very best,” said Chris, who graduated from the college in 1991.

The ceremony marked the end of Pharmacy Prep Week which was organized by student ambassadors to introduce first-year students into the doctor of pharmacy program at Washington State University.
On August 12, current and future scientists gathered to show off their work at the College of Pharmacy and Pharmaceutical Sciences (CPPS) Research Day. The all-day event is a celebration of the broad range of research that is ongoing in the college, and an opportunity for trainees to obtain valuable presentation experience and feedback on their research.

“This day really shows the breadth of the cutting-edge research that is happening at the college,” said Pharmaceutical Sciences Interim Chair Kathryn Meier. “The energy and care that these students and their faculty mentors have put into their research really offers a glimpse into the future possibilities for improving human health. It is always rewarding to see how the students progress into scientists over the summer.”

The day began with keynote speaker Yadira Perez-Paramo who graduated from Washington State University with a PhD in pharmaceutical sciences in 2021. Her presentation was about the plethora of opportunities in science and how students can make the most out of their research careers.

Following the keynote, Summer Undergraduate Research Fellowship (SURF), Summer Research Fellowship (SRF) and current CPPS graduate and professional students presented posters describing their research projects. In total, 24 posters were presented including two Research Honors students, Kenisha Garcia-Torres and Frederick Liendhard, who received feedback but were not judged. The posters are evaluated in three categories – 1) undergraduate, 2) professional and 3) graduate. Prizes are awarded for first and
second place. Postdoctoral trainees and PharmD fellows give oral presentations which are also eligible for awards.

This year’s poster topics ranged from drugs to treat neurodegenerative diseases to prediction of drug response to the effects of death certificate misclassification.

The college would like to thank the following contributors who make Research Day possible through their generous donations:

Louise F. Holzer Darden Memorial Quasi-Endowment Research Fund

James & Diann Robbers Student Research Fund

Louise F. Holzer Darden Memorial Quasi-Endowment Research Fund

The SURF program is supported by a grant from the American Society for Pharmacology and Experimental Therapeutics.

**Oral presentations**

**Charles Mariasoosai** “Allosteric modulation of Integrins by oxysterols”

**Dilip Kumar Singh** “Quantitative Proteomics for Characterizing Inter-tissue and Inter-individual Variability in Drug Metabolism and Response”

**Sandhya Subash** “Proteomics-informed improved IVIVE of aldehyde oxidase mediated drug metabolism”

**SURF student poster winners:**

**Alexis Daniels** received first place for the poster, “TNF-α Utilizes the Fn-14 Receptor in Human Rheumatoid Arthritis Synovial Fibroblast-induced Inflammation”

**Abigail Edwards** received second place for the poster, “Sex differences in the expression of hippocampal GluA1/GluA2 mRNA following ischemia/reperfusion”

**Professional student poster winners:**

**Logan Wiley** received first place for the poster, “In silico analysis of biased signaling in the serotonin 2A receptor.”
Malik Donlic received second place for the poster, “Understanding the effects of fluorine-containing fragments on physicochemical and pharmacokinetic properties of FDA-approved drugs.”

Graduate student poster winners:

Sheena Sharma tied with Paul Panipinto. Their research posters were “Poor and variable oral bioavailability of dimethandrolole (DMA), an investigational male hormonal contraceptive, is likely associated with UGT2B17 mediated first-pass metabolism” and “Pentagalloyl Glucose Inhibits MSU-Induced Inflammation via Transforming Growth Factor-β-Activated Kinase 1 (TAK1)” respectively.

Research Day serves as the culminating event for the SURF program. According to Meier, who serves as the director of the SURF/SRF program, SURF is an incredible opportunity for students to gain valuable experience in federally-funded research groups.

SURF provides a hands-on research experience for college students with demonstrated scientific aptitude who have expressed an interest in pursuing graduate studies and/or research careers in pharmaceutical, biomedical or health sciences. SURF students are given the opportunity to work with CPPS scientists on a project.

In recent years, Research Day has been expanded beyond just SURF students to include all trainees in the college, including Summer Research Fellowship (SRF), graduate, and professional students in the doctor of pharmacy program.
WAVE THE FLAG FOR PHARMACY!

Congratulations to the winner of the Wave the Flag for Pharmacy competition!

A huge shout out to everyone who sent in pictures for Wave the Flag for Pharmacy. All the photos were awesome! Congratulations to Katie Cashman Maslo ('19) and Thomas Maslo ('19) for submitting the winning photo (below) of them waving the flag for pharmacy at the Mount Everest base camp! A quick career update about the couple. They are now living and working in La Grande, Oregon, and working at Grande Ronde Hospital. Thomas is an ambulatory care pharmacist in one of the clinics and Katie is an inpatient pharmacist at the hospital. And they are working on getting back to Spokane for the Crimson Gala.
PHILANTHROPY FOCUS

We just completed our annual scholarship cycle and thanks to the generosity of our donors, we were able to award over $350,000 in scholarships to more than 200 student pharmacists. This year we increased the minimum scholarship amount to $2,000 for PY2-PY4s, which is significant since tuition is almost $25,000 per year. A great big thank you to everyone who contributes to scholarship endowments, the pharmacy alum scholarship fund, and annual scholarships. Your support makes a tremendous difference, and we are truly grateful for investment in our college and our students. We wanted to share one student’s story with you. This letter, written by Taylor Brunett, a PY4, who received the Russell and Sheri Crawford scholarship is exemplary of all our outstanding students. If you would like to learn about opportunities for scholarship endowments, professorships, and ways you can have an impact at the college, please contact Kelly Sylvester at Kelly.Sylvester@wsu.edu or call 509-368-6675.

Alum Updates

Sue Merk (’76) has volunteered to serve as President of the Washington State Pharmacy Foundation, taking over under tragic circumstances. Mike Donohue, a well-respected independent pharmacy owner from the Seattle area, died unexpectedly earlier this summer. Our condolences to his family and colleagues. He will be greatly missed. Sue has kindly offered to assist with the WSP Foundation in the interim. Thank you, Sue!

Boris Zhang (’19) has started a new job with WSPA as program director. Congratulations, Boris!

Want to be listed in our alum updates? Send us your career information or let us know what you’ve been up to at pharmacy.gocougs@wsu.edu!
Other News

Rural suicide a focus of WSU research, outreach
The suicide rate in rural America is higher than in urban America. WSU is working towards new approaches to suicide prevention. Among these approaches is mental health first aid training received by all WSU student pharmacists and a new rural health track at the College of Pharmacy and Pharmaceutical Sciences.
Read more from the WSU Insider

WSU researchers study risks of mixing drugs
A recent NIH grant will aid in pharmaceutical sciences and molecular medicine student-led research in drug-drug interactions between hydrocodone and cannabis.
Read more from the Daily Evergreen
FACULTY & STUDENT SCHOLARSHIP

PUBLICATIONS

Ashley Rittenhouse (PharmD ’23) and J. Roberts and Marcia Fosberg Distinguished Regents Professor of Pharmacotherapy and Director of the Drug Information Center Danial Baker published, “Drug evaluation – vutrisiran (Amvuttra),” in Wolters Kluwer Health's The Formulary Monograph Service (FMS) in October 2022. Wolters Kluwer Health is a drug and health information publisher, the FMS is a resource used in the formulary decision making process for hospitals and managed care systems on recently released and investigational drugs.


Pharmacotherapy Clinical Professor and Director of Quality Assurance Improvement & Accreditation Preparation Terri Levien and Danial Baker published, “Drug evaluation – tecovirimat (TPOXX),” in the FMS in October 2022.


United States Transuranium and Uranium Registries (USTUR) Director and Professor Sergei Tolmachev and two co-authors published, “ICP-MS analysis of actinides in brain tissue of an occupationally exposed individual,” in Journal of Radioanalytical and Nuclear Chemistry.


**PRESENTATIONS**

**John White** and one other presented, “GLP-1 receptor agonists: metabolic effects and their role in managing T2DM,” at the Tennessee Academy of Physician Assistants (TAPA) August 12, 2022, in Nashville, Tennessee.

**Joshua J. Neumiller** and one other presented, “Chronic kidney disease (CKD) in type 2 diabetes (T2D): an update for the DCES,” at the 2022 Annual Meeting of the Association for Diabetes Care and Education Specialists (ADCES) August 12, 2022, in Baltimore, Maryland.

**Joshua J. Neumiller** and two others presented, “Peripheral neuropathy: an update for the diabetes care & education specialist,” at the 2022 Annual Meeting of the ADCES.

**SERVICE**

The **Denton** lab finalized a material transfer agreement with Genentech to begin an Academic-Industry collaboration. Genentech will be providing pre-clinical *in vitro* and *in vivo* analyses on novel compounds recently developed in the Denton lab.

**Josh Neumiller** served as a Special Issue Editor for the journal Kidney and Dialysis on the topic of Diabetic Kidney Disease.