

THE PURDUE PHARMACIST

SUMMER/2022

CREATING OPPORTUNITY:

Emerging Leaders Scholarship

BALANCING ACT:

Student-Athletes in Pharmacy

IN PRACTICE:

Professional Skills Labs



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INNOVATING
HEALTH CARE

Molly Youse, a PhD student and graduate research assistant from New Cumberland, Pennsylvania, chose Purdue because of the variety of research opportunities in the medicinal chemistry and molecular pharmacology program. Read more about Youse's research on page 8.

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FROM THE DEAN



Near the start of the May 2021 Purdue Commencement ceremony, President Daniels began introducing the University administration on the stage, including the various college deans. While most deans received polite and reserved applause, when the president introduced me, the PharmD and BSPS Class of 2021 erupted in loud and vociferous cheers, catching the president a bit off-guard. Each subsequent dean was then greeted by equally loud cheers from the students from their respective colleges. President Daniels then quipped, “Leave it to pharmacy to get something started.”

What was an off-the-cuff comment has really stuck in my mind — getting things started is the hallmark of leaders. We’ve been clear that our mission is to prepare the next generation of leaders in pharmacy and the pharmaceutical sciences. So, what have we gotten “started” over the past year or so?

- In January 2020, we started the Center for Health Equity and Innovation (CHEI) under the leadership of Dr. Jasmine Gonzalvo. CHEI is already making a huge difference in Indianapolis bringing innovative programs to address health disparities and public health. The 20th U.S. Surgeon General, Dr. Jerome Adams, joined the College in Fall 2021 to further help lead campus-level health equity initiatives.
- We’ve invested in new programs to help diversify our student body. Emerging Leaders is a campus-wide program to assist with recruitment and retention of under-represented students. Pharmacy is proud of our participation with seven students currently in the Emerging Leaders program with an anticipated seven to ten more joining us in Fall 2022. We are also restarting the Pharmacy Educational Program (PEP), a program designed to assist underrepresented students in bridging from high school to college and then focusing on continued student success.
- Under the leadership of Drs. Eric Munson (IPPH) and Alina Alexeenko (engineering), we’ve started a campus-level collaboration focused on pharmaceutical manufacturing. The Advanced Manufacturing of Pharmaceutical Institute is a collaboration between the Colleges of Pharmacy, Engineering and Science. They are off to a terrific start with engagement from industry and the state of Indiana.
- We continue to move forward with planning for new facilities. The clinical learning building for pharmacy and nursing is still the number one capital priority for the campus, and we are exploring innovative approaches to addressing the aging research facilities in the Heine Pharmacy Building.

These are just a few highlights of the many great things that our faculty, staff and students having been “getting started.” We continue to look forward, renewing our commitment to preparing leaders — persistently pursuing Pharmacy’s Next Giant Leap!

Eric L. Barker, PhD
Jeannie and Jim Chaney Dean of Pharmacy

EMERGING LEADERS

PROGRAM PROVIDES SCHOLARSHIP SUPPORT FOR UNDERREPRESENTED STUDENTS

Purdue's Board of Trustees established the Equity Task Force in fall 2020 with Trustee Don Thompson (EE'84) serving as chair. Thanks to more than \$25 million in donations, the University is introducing more scholarship opportunities for underrepresented minority students. The Emerging Leaders Scholarship, an existing program being expanded thanks to an injection of alumni support, builds on Purdue's land-grant mission by growing access for underrepresented students in fields across campus.

"Emerging Leaders is a program that's been around for a while but emerging from the Equity Task Force came a renewed interest in revitalizing programs that provide opportunities for students as well as solidify student success," says Eric Barker, the Jeannie and Jim Chaney Dean of the College of Pharmacy. "We've been able to energize the program thanks to the generosity of alumni donors passionate about the College and the University's work to continue to recruit a diverse student body."

The College of Pharmacy has always been able to recruit a diverse student body. In fact, Purdue's first Black graduate, George W. Lacey, completed his pharmacy degree in 1890. According to the University Archives, at the time, Pharmacy was an academic organization separate from the University, and as a result, Lacey's success is sometimes overlooked. Other early Black Purdue graduates include pharmacy students Richard Wirt Smith 1904 and John Henry Weaver 1905.

WHAT DOES IT TAKE TO BE AN EMERGING LEADER?

The requirements for maintaining the scholarship award throughout four years are:

Maintain a 3.0 GPA

Attend the Summer Scholars experience

Continuous full-time enrollment each semester (minimum of 12 credit hours)

Continue to pursue first undergraduate degree

"The College of Pharmacy was graduating students of color and women in the late 1800s and early 1900s when many other disciplines were not," Barker says. "These were early pioneers of health equity work who would oftentimes return to serve their communities to address health disparities that existed 220 years ago, some of which are still in place today. It's really important for hospitals, community pharmacies and industry to have a diverse workforce that can connect well with patient populations. Emerging Leaders is one program that helps us recruit diverse students to help achieve that."

The College of Pharmacy's Emerging Leaders Program makes a six-year financial commitment to underrepresented minority students, providing resources for leadership development and academic success with the goal of graduating more pharmacists that reflect state and national demographics.

The University-wide Emerging Leaders initiative offers scholarship recipients support through Emerging Leaders Scholars, a comprehensive experience designed to maximize student potential for recipients of the Emerging Leaders Scholarship. The Scholars participation criteria include: participation in Early Start during their first summer on campus and engagement in a high-impact educational experience each successive summer. These activities include academic coursework, study abroad, research, internships and student learning.

“There are so many students interested in studying pharmacy at Purdue,” Barker says. “The more resources we have, the more we can address that demand. We have many loyal alumni and friends of the College who are passionate about seeing pharmacy continue our long-standing legacy of graduating diverse healthcare professionals. Emerging Scholars provides a very concrete way for those donors to connect with a group of students that they feel passionate about.”

CONTINUING A LEGACY

Warren (PharmD’02) and Aneasha Moore (PharmD’02) met as students in the pharmacy program. In honor of the impact Purdue has had on their lives together, they are motivated to give back to the University and the College, believing that “when you’re blessed, you should be a blessing to others.”

Aneasha, a South Bend native, began attending science programs at Purdue the summer of her seventh-grade year. She returned every year thereafter, ultimately developing a keen interest in pharmacy. After participating in that program for five summers and other recruitment programs, she knew Purdue was the right choice for her.

Recruited to play football, Warren chose Purdue because of the University’s strong academic reputation, the opportunity to play in the Big Ten and the enthusiasm for pharmacy displayed by his academic counselor Jackie Jimerson (BS’73, MS’78), director of the Office of Multicultural Programs.

The rigor of academics and athletics motivated Warren to be steadfast in his efforts while pursuing challenging goals and navigating being a minority student while maintaining his cultural identity in a community where very few people looked like him.

“My two fondest memories of my time at Purdue can be classified as triumphant — winning the Big Ten Football title and playing the Rose Bowl and being hooded at Elliott Hall while receiving my Doctor of Pharmacy degree,” Warren says. “As I reflect on these moments, I also reflect on my perseverance and commitment to get there. It is the journey, not the destination.”



Warren (PharmD’02) and Aneasha Moore (PharmD’02)

“

“Our affinity for Purdue continues because we see it aiming to be intentional and create opportunities for all to achieve.

”

The Moores now live in Arkansas, and both work for Walmart. Aneasha is a Walmart pharmacist and Warren is vice president of social determinants of health actions, leading the company's efforts to improve health equity.

"Our affinity for Purdue continues because we see it aiming to be intentional and create opportunities for all to achieve," Warren says.

Aneasha adds, "As the University keeps tuition affordable and creates inclusive initiatives — like the Emerging Leaders Program — we find giving back to be a great way to champion Purdue's efforts to make a positive difference."

That positive difference wouldn't be possible without the generosity of donors such as the Moores. Their support is vital to the success of the Emerging Leaders Program.

"We're very grateful for Aneasha and Warren and their loyalty and friendship to the college," Barker says. "We're very proud of them both and they're the perfect example of students who benefited from the multicultural program while they were here and were positively

influenced by Jackie Jimerson who led that program. They now feel called to give back and provide support to those students who come after them."

EXPANDING ACCESS TO EDUCATION

Howard Atlas (BS'84) had never set foot on Purdue's campus when he arrived as a freshman in 1980. West Lafayette was only two hours from his hometown of Munster. Both of his parents had gone to Purdue, his father was a pharmacy graduate who enjoyed a long business career, retiring as senior vice president of Walgreens. There was never a question of where Atlas would go to school. The question was what field of study he'd pursue.

"I was deciding between business and pharmacy school," Atlas says. "That was the decision I was trying to make. I really liked business and was planning to head in that direction, when my father opened my eyes to the fact that if I got a pharmacy degree, I could always add on business. But when you have that pharmacy degree, no one can ever take that away from you



Howard Atlas (third from right) and the Atlas family

“As a family, we really believe that the key to overcoming many challenges we face as a country, it all starts with access to education.”

and you can always feed your family. That was his philosophy, and it's held true."

In 2020, Atlas retired as regional vice president for Walgreens having followed his father's advice and developing his business prowess after earning a pharmacy degree. A desire to see industry leadership better reflect the makeup of the country motivated Atlas to support the Emerging Leaders program.

"For a long time, diversity in the business world was about numbers," Atlas says. "It didn't hit me until much later that it's much more than that, it's about diversity of thought. Developing diversity of leadership isn't just about giving underrepresented students a better chance, which in and of itself is wonderful, but it's about creating a future where the people who make the decisions look like this country. That's what's really important to me. When we have diversity of thought, the profession wins. The country wins. People win."

Atlas now serves as president of the Robert and Judith Atlas Family Foundation, named for his parents. Robert immigrated with his parents to northwest Indiana from Hungary in 1938. He had little growing up and worked in the steel mills to put himself through pharmacy school.

"My grandparents understood that my dad needed a college education in this country," Atlas says. "That was paramount to them. As a family, we really believe that the key to overcoming many challenges we face as a country, it all starts with access to education."

In April, Purdue celebrated the grand opening of the Atlas Family

MEET AN EMERGING LEADER



Daisy Castaneda will start her second year of pre-pharmacy this fall. She is a first-generation college student from East Chicago, Indiana, whose parents immigrated from Mexico. While she's still exploring her career options, she's interested in ambulatory care, working in a hospital setting or opening her own pharmacy one day.

What does it mean to you to be a recipient of the Emerging Leaders Scholarship?

It means Purdue has offered me a chance and believes I can be a leader in pharmacy. That motivates me to work harder.

How has the scholarship impacted your educational experience?

The scholarship has relieved the stress of paying for college. The path of becoming a pharmacist can be very costly and I appreciate the support I receive through Emerging Leaders.

What have you learned from the Emerging Leaders Program?

The summer experience allowed me to get accustomed to college life and experience college course prior to starting the academic year.

What would you say to the alumni who fund this scholarship?


Your generosity is not taken for granted. I am grateful for the support given to me in my journey to pharmacy. I hope that you can continue to impact other students like me in the future.

Marketplace, part of an 18-month renovation of the ground floor of Purdue Memorial Union. At the ceremony, Atlas remarked, "Our foundation started about a year ago. Our main focus is on education and so this fit perfectly for us. It was a combination of my parents being here and myself being here. There's no better place to get a great education."

Thanks to the Atlas Family Foundation's support of the Emerging Leaders Program, even more students will realize the benefits of a Purdue pharmacy degree.

"We know there are qualified students who would like to come to Purdue," Barker says. "One of the biggest barriers is financial resources. Emerging Leaders removes that barrier. Coupled with the fact that we have so many donors who are passionate about the program who come alongside us and support the students in achieving their goals, we have the opportunity to make a tremendous impact over the next five to 10 years." ●

**Personal
experience
inspires graduate
student's passion
for protein
therapeutics**



IN PURSUIT OF MODERN DRYING TECHNIQUES

His personal experience of growing up with a father who is diabetic inspired Tarun Mutukuri (MS E'16, PhD P'22) to pursue a career in the pharmaceutical industry.

“My father has been on insulin since I was three or four years old,” says Mutukuri, who worked under Qi (Tony) Zhou, associate professor of industrial and physical pharmacy, as a graduate student. “I saw how modern medicine actually improves a patient’s quality of life.”

For the past four years, Mutukuri’s work centered on understanding formulation components and modern drying techniques to produce solid state protein therapeutics. The traditional process of lyophilization — freeze drying that allows ice to change directly from solid to vapor without passing through the liquid stage — is time consuming and expensive. Developing faster drying techniques would enable pharmaceutical companies to prepare product in bulk rather than working with individual vials.

“Many protein therapeutics are high in cost right now because of the expense of the manufacturing, not the cost of the actual drug,” Mutukuri says. “Reducing the amount of materials needed to produce pro-

tein therapeutics will reduce the manufacturing costs and enable medicines to be shipped across the world as quickly as possible.”

Consumers don’t always understand that the drug discovery process can take 10 to 15 years before a product comes into the market. Pharmaceutical companies must invest in the research and development of the initial components or compounds, which can mean hundreds of attempts before a drug is approved for patient use.

“A competitive manufacturing method that’s patient compliant and increases manufacturing efficiency can reflect savings in terms of the cost of the medicine for the consumer,” Mutukuri says. “Because the pharmaceutical industry is heavily regulated, it takes time to adopt new methods and processes. My research is one small step in the right direction to help future researchers understand how novel drying techniques might one day change the industry.”

After defending his thesis this spring, Mutukuri relocated to New Haven, Connecticut, to work as a scientist for Alexion Pharmaceuticals. His research in Zhou’s lab will be continued by other graduate students.

“It takes a long time to develop new methodologies,” Mutukuri says. “It’s a good thing that different minds come into play during the process. You always learn from your predecessor and bring your own insight to the projects you work on so there’s a transfer of knowledge that takes place, all for the betterment of the research.”

Research that will one day improve delivery and reduce cost for protein therapeutics like the insulin Mutukuri’s father and nearly 75 million other diabetics worldwide depend on. According to the World Health Organization, another 325 million more people living with diabetes aren’t able to take insulin due to inadequate access and affordability. WHO issued a report in November 2021 marking 100 years since the discovery of insulin and highlighting disturbing inequities in global access to insulin and associated devices.

“Insulin is one of the most in-demand medicines in the world,” Mutukuri says. “I chose to work in protein therapeutics because I believe it’s important for the world to have. What we see in the lab is not ideal. It’s not perfect. But the data we’re collecting is promising. Improving drying techniques will have a direct effect on patient care. This research has the potential to drastically change the industry.”

COMBATING ANTIBIOTIC RESISTANCE

As a graduate student in medicinal chemistry and molecular pharmacology, Molly Youse conducts chemistry in the lab to create molecules that have potential to inhibit carbonic anhydrase, a protein found in *Neisseria gonorrhoeae*, the bacteria that causes the venereal disease gonorrhea.

“I test the efficacy of these molecules with the end goal of making a drug that will exhibit antimicrobial activity against the bacteria,” says Youse, who works as a research assistant in the lab of Daniel Flaherty, assistant professor of medicinal chemistry and molecular pharmacology. “It’s a fascinating project because antibiotic resistance is becoming a big problem for treating gonorrhea, so we’re hoping to combat that through this research by essentially making a new antibiotic.”

When Youse, a third-year PhD student from New Cumberland, Pennsylvania, came to Purdue she knew she wanted to work in a lab that focused on medicinal chemistry. She was also interested in working with biological assays to test her molecules as well. In Flaherty’s lab, she has an opportunity to do both.

“Studying at Purdue appealed to me because there are so many different labs and areas of research within the program, depending on what kind of specialty I wanted to work on,” she says. “Working on this project and learning more about the drug development process has confirmed my interest in working for a pharmaceutical company to continue doing similar

work developing drugs to treat infectious diseases after I graduate.”

Even though the work she’s doing now won’t result in a new FDA-approved drug on the market by the time she earns her PhD, Youse remains optimistic that the research she’s contributing to during her time at Purdue will eventually reach its overarching goal.

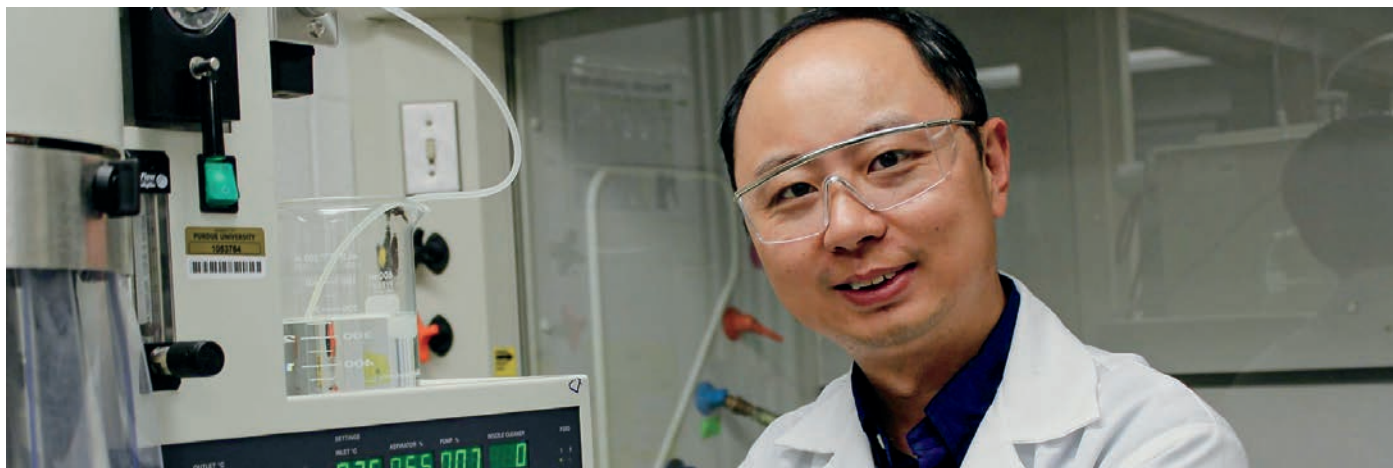
“The drug discovery and development process is a long one,” she says. “Handling failures is part of the process. You have to go through a lot of failure to achieve even a small success. It can be disheartening. But I try to acknowledge the small things and really celebrate them when something works out in my favor.”

One recent small celebration of success: Youse spent a few months this spring diving into a surface plasmon resonance experiment that she initially knew little about. After determining how to run the experiment to test her molecules, she began conducting trial runs to reevaluate and optimize conditions. She’s now become an expert on running the experiment with a bit of input from other grad students.

“I’m very proud of being able to independently develop this experiment and test some of my molecules,” Youse says. “Working in science, with its cycle of failure, it’s easy to get down on yourself but you have to keep looking at the big picture and know that your efforts in the lab could really make an impact. That’s what keeps me motivated every day.”

**Celebrating
small successes
keeps graduate
research assistant
motivated**





EXCELLENCE IN INNOVATION

PROFESSOR CREATES LIFE-SAVING TECHNOLOGIES

Qi “Tony” Zhou, associate professor of industrial and physical pharmacy, was selected as the recipient of the 2019-20 Teaching and Learning Innovation Award in the College of Pharmacy. The award recognizes his innovation in the teaching of PHRM828, Dosage Forms I. Specifically, he has implemented an interactive virtual learning platform to provide training in pharmaceutical manufacturing. Such active learning via interactive virtual tools not only stimulates students’ interests, but also circumvents limited resources.

Zhou’s team received \$5.6 million in grants from the National Institutes of Health for its work to treat antibiotic-resistant lower respiratory infections — the fourth-leading cause of death worldwide.

How do you feel about receiving the Teaching and Learning Innovation Award?

I am so excited! This is the first time I have received a teaching award. I love teaching because it allows me to interact with students. I am so proud that I can help them learn something important for their career, and sometimes get interesting ideas from them. My teaching philosophy is “give a man a fish and you feed him for a day; teach a man to fish and you feed him for a lifetime.” With passion and self-motivation, students can succeed in the college, and shine in their future career.

Why do you enjoy the teaching and innovation aspects of being a professor at Purdue?

There is a lot of technical and logistical challenges to teach a class with approximately 200 students. Traditional lectures with lots of text in slides could be boring to students who are surrounded by new media and fancy technologies these days.

I implemented an interactive virtual learning platform to provide training in pharmaceutical manufacturing. It virtually simulates a plant containing all necessary pharmaceutical manufacturing and testing elements. Using the software, students can virtually manufacture the tablets, and test their quality, at anytime, anywhere. This helps students practice and understand the lectures in dosage forms. Students learn pharmaceutical manufacturing like playing video games, which is a very interesting way to learn. The feedback shows students love such new formats of learning which attract their interest in studying dosage forms.

What are your current research focus areas?

My research focuses on exploring innovative manufacturing and formulation technologies to improve the quality and functionality of pharmaceutical products, particularly inhalation products. Respiratory diseases such as asthma, chronic obstructive pulmonary diseases, bacterial and viral lung infections are deadly and very difficult to treat. A typical example is the antiviral drug Remdesivir which is very potent against SARS-CoV-2 virus in vitro, but it is not very effective in the clinical use. This is because many drugs cannot be delivered to the disease site on the lung surface by traditional dosage forms of tablets or injectables. In contrast, inhalation products can deliver medications directly to the human lower airways; but it is not easy because lower airways have very small size. Majority commercial inhalation products have poor delivery efficiency with less than 40% of drug delivered into the lungs.

My research is to explore emerging technology such as spray drying, spray freeze drying, and electrostatic spray drying to produce inhalation products of both small and large molecules with superior delivery efficiency. Our systems can double the drug delivery efficiency from around 40% to 80%. Another important part of my research is to use advanced characterization techniques such as X-ray Photoelectron spectroscopy and Time-of-Flight Secondary Ion Mass Spectrometry (ToF-SIMS) to understand and ensure the quality of the pharmaceutical products.

How will NIH funding support your research?

Antimicrobial resistance is one of the greatest threats to human health. Unfortunately, the progress to develop novel antibiotics is slow. Lung infections caused by resistant-bacteria are extremely difficult to treat, reflected by the fact that lung infections are the fourth leading cause of death in the world. Therefore, new treatment strategies are urgently needed to save lives. The federal governments, including NIH, have realized the urgency of developing new medications based on old drugs due to the dry development pipeline for innovative antibiotics.

My research is reinventing the old injectable drug, polymyxins, into a new inhalation therapy. Polymyxins have been often used as the last-resort for resistant-infections; but parenteral polymyxin is not effective for

lung infections due to pharmacokinetics. We have developed innovative nanoparticle and microparticle formulations, and deliver them directly to the deep lungs, which maximize the therapeutic efficacy. In addition, our research also examines the mechanism of drug-induced pulmonary side effects and tries to find out how to protect the airways from such side effects. A novel 3D human lung epithelial tissue model and advanced live cell imaging will be used to better understand the toxicity and drug delivery of inhalation medicines.

Why do you enjoy this research?

I believe the knowledge and technologies derived from my research will benefit the patients. Respiratory diseases (including respiratory infections, chronic obstructive pulmonary diseases and lung cancer) are the leading cause of death worldwide in 2020, according to WHO. Many potent medications do not have satisfactory clinical efficacy due to poor drug delivery to the lungs by traditional oral or parenteral administrations. I believe through our efforts in pulmonary drug delivery, the therapeutic efficacy of many COVID-19 medications will be largely improved, which can save millions of lives.

Why are commercialization and innovation important to you as a researcher and professor?

Commercialization is one of the important ways to translate research ideas into products. We have filed several provisional patents through Purdue Research Foundation and are actively seeking commercialization partners. Although I understand it is not easy to develop a product (probably 95% of product development will fail), I will pursue the commercialization as my career goal.

Innovation is tough for pharmaceutical products due to the conservative attitude of regulatory agencies. However, new therapies and technologies are essential to combat new diseases. One example is the use of mRNA for the COVID-19 vaccine with non-viral lipid nanoparticles as carriers. No mRNA vaccine has been approved prior to COVID-19; now it is approved to be a safe and efficient way to develop vaccines, which largely shortened development of a new vaccine from years to months. My research has applied novel manufacturing technologies such as spray freeze drying and electrostatic spray drying to develop new formulations of biologics such as protein products and vaccines, with much improved efficiency and quality. 🍷



**Student-athletes
juggle sports
commitments with
rigorous academics**

Adversity met its match with Ajah Stallings. Born with damage to her brachial plexus due to complications at birth, her right arm functions at about 20%. The brachial plexus is a network of nerves that sends signals from the spinal cord to the shoulder, arm and hand.

Because of her brachial plexus injury, she can't flatten or rotate her palm. She can't tuck her hand behind her back. She can't raise her arm. She can't fully straighten it. And that's after three major surgeries to improve range of motion.

So how did Stallings walk-on to a Big Ten basketball team when she can't dribble? It took perseverance, dedication, optimism, a winning attitude and a lot of confidence.

"Growing up, people doubted I could play basketball," says Stallings, a third-year professional student. "I have a close-knit family who are very supportive. And an older brother who never treated me differently and never let me feel sorry for myself."

Stallings excelled at basketball despite her disability. Her junior year at North Central High School in Indianapolis, she helped lead her team to a No. 2 ranking in the country. She was ranked in the top 75 guards in the nation. But no Power Five Division I scholarship offers materialized.

"Coaches who were recruiting me would say, 'She's good. But how will she make it in college if she can't use her right arm?'" Stallings says. "Even though I could prove to them that I was capable of playing on that level. Nobody would take a chance on me. That was definitely a big hurdle."

Without an enticing scholarship offer, Stallings began assessing her options for college. Purdue was close to home, offered one of the nation's top pharmacy programs and had the potential to fulfill her dream to play Division I basketball, if she could convince the coach to allow her to join the team.

"I wanted to play college basketball and pursue a pharmacy major," Stallings says. "I didn't have an athletic scholarship from Purdue, but I'd been on campus and they knew me. There was a strong sense of family. I liked the culture and the team. I had a conversation with Coach [Sharon] Versyp (BA'89) and she told me I could walk-on."

BALANCING ACT

Her senior year, Stallings earned a full athletic scholarship. She also decided it will be her final year playing basketball. With two more years of professional pharmacy school, Stallings will now have more time to enjoy college life. Her athletic obligations — team meals, weightlifting, strength conditioning, practices, games and travel — consumed around 30 to 35 hours each week.

"In order to balance everything, I sacrificed my free time," Stallings says. "Some of my early coursework was really challenging. I was getting lower grades than I ever had. I had to study all the time. I was studying on the bus or on the plane. If we had 30 minutes before pre-game, I'd study. I'd wake up early in the morning and study. Finding all those little study blocks was vital for me to keep up. I was drained at times, but I had to make certain sacrifices to make it possible. And I'm glad I made those sacrifices because of where I am today."

She's not slowing down, however. Stallings will begin working as a resident assistant this fall. With her collegiate basketball career behind her, she looks forward to more opportunities to engage in conventions, rotations and internships.

"I've always been the one who pals basketball," Stallings says. "This year will be a big change. I'm proud of myself for getting through four years of basketball while in pharmacy school. It's definitely been the most challenging experience of my life."



BOUNCING BACK

A standout soccer star from West Caldwell, New Jersey, Leanna Rebimbas started her recruiting process in eighth grade. She spent two months away from high school in each of her junior and senior years to play for the Portugal national football team, so attending college 750 miles away from her home town was no big deal. She fell in love with Purdue while attending a spring soccer camp. Initially intending to major in engineering, she quickly switched to kinesiology.

“I knew I wanted to do something in medicine and work with people,” Rebimbas says. “I’m not the type of person to sit at a desk all day.”

Then, the COVID-19 pandemic struck and the 2020 soccer season was abruptly canceled. Looking for a way to give back to the community, Rebimbas began volunteering at the Tippecanoe County Health Department’s COVID-19 vaccination clinic in January 2021.

“Our season was at a halt,” Rebimbas says. “I just wanted to use my time and help as much as I could. I ended up volunteering to work every afternoon.”

The experience working in the vaccine clinic inspired Rebimbas to change her major again, this time to pharmacy. She’ll begin her first year of professional pharmacy school in the fall. Her favorite pre-professional courses included hands-on labs.

“I really enjoy microbiology,” Rebimbas says. “Streaking the plates, all the different tests you can run to find specific bacteria just intrigued me. I really liked biochemistry,

talking about DNA and metabolism. Organic chemistry was fun, too.”

Rebimbas suffered a hip injury — an impingement and labral tear — that required two surgeries to repair and kept her sidelined last season. Even though activity restrictions kept her on the bench, she was still required to attend all team activities, including practices and games. She also completed an hour of physical therapy every day. Because of her experience playing in Portugal while completing schoolwork, she was ready for the challenge of managing her collegiate athletic obligations with her academic responsibilities.

“I’m fortunate to have a great support system,” Rebimbas says. “I talk with my parents every day and I talk with my sister frequently. Even my grandparents call me to check in. I wouldn’t be who I am today without the support of my family.”

Rebimbas credits Wally Becker, associate director of strength and conditioning, and Kirsten Lueken, athletic trainer, with helping her rebuild her strength through her recovery. With the support of her teammates who have stood by her during her rehabilitation, she’s excited to return to the pitch this fall.

“I’m really looking forward to getting on the field again,” Rebimbas says. “We have a lot of engineering and nursing majors on the team, so we’re all in the same boat when it comes to demanding academics. But when we step on to the field together, we forget about all the schoolwork and the stress that we carry during the day. It’s fun to laugh together and just play soccer.”



FLYING HIGH

All-around athlete Alison Casey started playing soccer when she was little, followed by 10 years of gymnastics. In high school in Fishers, Indiana, she competed on the diving team, won first in state and placed fourth at nationals as part of the cheerleading squad and discovered her passion for pole vaulting. Standing at 5 feet, 8 inches, Casey jumped more than twice her height to clear her record mark of 12 feet, 3 inches.

“You get three tries to clear a bar,” Casey says. “It feels so good when you clear it. You just keep going higher and higher. It’s kind of like thrill-seeking.”

One of the most beautiful, graceful sports is also among the most dangerous, especially among individual sports. Her background in gymnastics gave Casey the body awareness to excel as a jumper. Her love of the sport inspired the confidence to walk-on to Purdue’s track and field team.

“Not having a junior competition year in high school due to the pandemic made recruitment almost impossible,” Casey says. “I was already coming to Purdue, so I approached the jumps coach at the time and asked if I could walk-on.”

Casey enrolled as a genetics major but after shadowing a pharmaceutical oncologist at Riley Hospital for Children, she opted to switch her major to pharmacy with a minor in nutrition. Entering her second year of pre-professional school this fall, she looks forward to exploring the various aspects of the profession and available career paths. Her competitive streak keeps her motivated with academics, too.

“The friends I’ve made help make studying fun,” Casey says. “They really push me to do the best I can. We have a healthy competition among each other to see who can earn the best grade on an exam. After my job shadow experience, I know that pharmacy is what I really want to do. So that’s a huge motivator, too.”

600

STUDENT-
ATHLETES

Participate
in NCAA
Division I sports

SORG ACTS WITH DETERMINATION AND COMPASSION

Sometimes lessons from college hit you in unexpected ways. For Elaine Kazacoff Sorg (BS'89), that realization comes when she finds herself thinking in biochemistry mechanisms applied to business problems.

“Who would have thought that the Krebs cycle would have a role in my professional life,” she says.

As senior vice president for AbbVie and president of its U.S. commercial operations, Sorg leads an organization with nearly 7,500 employees focused on creating and commercializing therapeutics.

“I feel truly lucky and blessed to be able to help get our industry-leading therapies to people who need them.”



PURDUE PERSEVERANCE

Sorg recalls her time at Purdue fondly, saying the education was invaluable and attending the University was one of the best decisions she ever made.

“It taught me to persevere, to act with determination, and center my career around patients as my North Star and advocate for their needs,” she says. “Purdue’s College of Pharmacy has long been one of the top schools in the country. I find that the critical thinking skills I learned during my time at Purdue have been a very strong foundation to my professional success. Finally, my Purdue experience taught me to work effectively with others to achieve more than I could alone — to dream big both personally and professionally.”

Among her many fond memories as an undergraduate are experiences in laboratories and classes, along with time spent with friends studying and attending football games. She also co-chaired a fair to bring manufacturers and students together.

COMPASSIONATE WORK

In 2020, AbbVie grew to become the 4th largest pharmaceutical company in the world when it acquired Allergan.

“What’s truly exciting about this is that in bringing the strengths of these two pharmaceutical companies together, it gives us even greater reach and more opportunity to change people’s lives for the better,” Sorg says.

The AbbVie product portfolio is vast and includes some of the world’s most widely prescribed therapies treating a variety of disease areas: immunology, oncology, neuroscience, eye care, virology and gastroenterology.

“The biggest highlight is helping lead and develop people so that they can pursue their ambitions,” Sorg says. “At the same time, I’ve had the privilege to help bring lifesaving and life-changing medicines to patients in times of great need. One of the most moving and inspiring moments from this work is when I have been able to meet and hear from patients who have benefited from our medicines.”

SORG'S ADVICE FOR WOMEN PURSUING PHARMACY STUDIES:

1

Be curious and determined.

2

Dig into the facts from all angles.

3

Understand patients as people, and the lives they live.

4

Speak up. Your voice counts.

5

Be yourself; don't underestimate your contributions or value.

6

Have fun and enjoy your journey!

One patient who has been in remission for several years shared how they were able to celebrate their 40th wedding anniversary because of AbbVie’s medicine.

Sorg says, “Equally moving are stories of rheumatoid arthritis patients who got their lives back. We heard from one young mother who was able to hold her newborn baby, which she attributed to our medicine. These make it all worthwhile!”

Sorg draws on her experience as a pharmacist to better connect doctors and patients in really important ways.

“For as much as medicine has progressed in the last few decades, patients still struggle to take their medicines correctly,” she says. “We all recall being behind the pharmacy counter, astounded by how patients are unable to correctly administer their medicine. As a result, our industry, including AbbVie, has made large strides with nurse educators and other methods to help support the patient to achieve the optimal outcome from their prescribed medicine.”

Broadly across the pharma industry, Sorg says it has been very gratifying to see an evolution from being very transactional — making and selling medicines — to playing a much stronger role supporting both physicians, caregivers and patients.

This evolution was especially evident with the critical role that pharma and biotech played in the COVID-19 pandemic. “Never has our industry risen to the challenge as we did during COVID, developing treatments and vaccines in an amazingly short time frame.”

Sorg has seen significant improvements in breadth of opportunities for women in the workplace, but much more work needs to be done.

“Not just for women,” she says. “But I would say one significant change regardless of industry, is the serious commitment of companies to creating a workplace that embraces equity, equality, diversity and inclusion.”



A LIFE OF SERVICE

YOU NEVER KNOW WHEN THAT ONE ENCOUNTER CAN IMPROVE A PERSON'S HEALTH STATUS OR SAVE A PERSON'S LIFE.

This lesson hit close to home for Joanne Murphy-Woods (BS'88) when her efforts as a pharmacist saved a patient's life.

"This was my most memorable encounter as a pharmacist," Murphy-Woods says. "It involved a kidney transplant patient seeking a remedy for back pain. I contacted the nephrologist on call which led to immediate hospitalization. The nephrologist said the patient would otherwise not have survived without my intervention."

THE PURDUE PATH

Murphy-Woods was exposed to the pharmacy profession when she participated in a summer program for high school students interested in the medical field. After visiting various schools within medicine at Purdue and Indiana University, she determined that pharmacy was her career of choice.

Growing up in a predominantly African American environment in Gary, Indiana, Murphy-Woods said Purdue was a cultural shock.

"There were few people at Purdue that looked like me or could relate to my experiences," she says. "Purdue exposed me to various cultures that helped prepare me for the workplace."

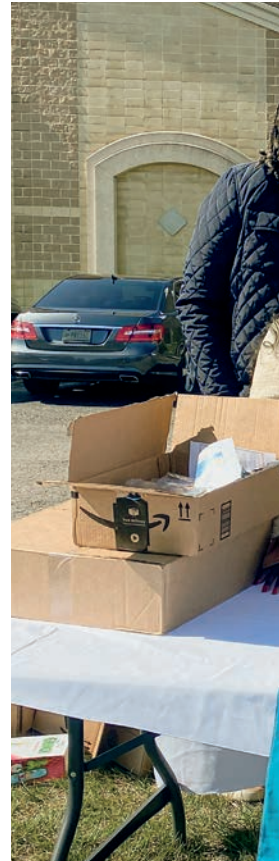
As an undergraduate, Murphy-Woods treasured her involvement with the Student National Pharmaceutical Association (SNPhA).

"SNPhA members were my family while at Purdue," she says. "SNPhA fostered a community for African American students. We easily related to each other, encouraged one another and believed in each other. I am forever grateful for the enduring friendships that were built as a result."

Summer internship experience enabled Murphy-Woods to determine her career path.

"Those experiences helped me determine that due to my entrepreneur spirit and desire to work on teams, the pharmaceutical industry was the best fit for starting my career and accomplishing long-term goals," she says. "I encourage students to get as many experiences as possible that enable them to learn, build transferable skills, maintain a competitive advantage and separate themselves from others. Strive to be the best at what you do, and the rewards will pay off."

Murphy-Woods serves on the Purdue College of Pharmacy Minority Advocacy Council and the Pharmacy Women for Purdue Steering Committee.





Joanne Murphy Woods, Rophe Free Clinic director of pharmacy, with Purdue University College of Pharmacy students that helped serve the Pike Township children and residents during the launch of a "Stay Safe, Stop the Spread, Clean Hands Save Lives" campaign

opening of the Rophe Free Clinic in Indianapolis and now serves as its pharmacy director.

"I am living my passion to address health care disparities, serve the most vulnerable population and provide pharmacy students with unique experiences they can embrace throughout their careers," she says. "Pharmacy students' engagement has been a win-win for the clinic and students."

Murphy-Woods has structured pharmacy operations in a manner that volunteering at Rophe Free Clinic is a professional development opportunity for pharmacy students to develop additional skills while serving the uninsured and underinsured population.

"Patients served at Rophe Free Clinic are suffering the most from COVID-19 related impacts and disproportionately impacted by COVID-19," she says. "When forced to choose between food, shelter and health care, this population is the most likely to forgo needed medical care. I am delighted to be part of a team that assists in closing transitional gaps of health care. Provided services are always wrapped around love, patience and respect. These tenets make Rophe's care model different."

Murphy-Woods played a major role in the clinic's community response to the pandemic. This includes spearheading the development and execution of a "Stay Safe, Stop the Spread" campaign and a Vitamin D3 Initiative that educates patients on the importance of vitamin D3 and provides supplementation to Vitamin D3 deficient and suboptimal patients to strengthen their immune systems.

"There's increasing clinical involvement of pharmacists in integrated health care models with pharmacists being recognized as valued members of the health care team," she says. "Women continue to advance to decision-making and leadership roles. Reality is gender differences still persist. These changes have enabled women to receive more candid feedback that contributes to their professional growth." 🍷



LIVING A PASSION

Murphy-Woods joined Eli Lilly and Company upon graduation and worked for 16 years in various facets of sales, marketing and management. She then pursued her ambition to help others achieve financial freedom while practicing pharmacy in the retail sector. She is the founder and managing director of Secure Future, LLC Tax and Financial Planning Services.

Dedicated to addressing health care needs in the community, she led the

IT'S ALL
**ORGANIC
CHEMISTRY**

Pharmacy
education
established
scientific
foundation for
Isenhower Cellars
winemaker

Searching for an ideal location to establish their winery, Brett (BS'92) and Denise Isenhower fell in love with Walla Walla — “the prettiest town in eastern Washington,” he says. Known as one of the nation’s finest wine regions, the Walla Walla Valley features idyllic rolling hills, meandering rural roads and views of the sprawling Blue Mountains.

“Wine is a combination of soil, sun, grapes, microbiology, human intervention and oak, if you store the wine in oak,” Isenhower says. “But the permutations are almost infinite. My goal is to make wines that reflect the region as well as the people who make it. There are 1,000 little steps and as a winemaker, I am constantly tasting, evaluating and adjusting the process.”

Isenhower didn’t plan to become a winemaker when he enrolled at Purdue, although he was always destined to be a Boilermaker — “I don’t think I applied to any other college.” Both of his parents are graduates, his father a civil engineer and his mother an English and history major. Isenhower considered pursuing history himself before his mother told him she read in the Wall Street Journal that pharmacy grads were among the highest earners.

“I knew I didn’t want to sit at a desk,” Isenhower says. “I liked chemistry and I liked working with my hands. I worked as a pharmacist for 10 years but I realized I don’t have a corporate personality and I didn’t like working for someone else.”

Isenhower Cellars was founded in 1999 and Isenhower became a full-time winemaker in 2003. His pharmacy training laid the groundwork for establishing a successful winery where he still gets to work with his hands every day. A self-described experimental winemaker, Isenhower enjoys trying new varietals and creating unique blends.

“You only get one shot per year to get it right,” Isenhower says. “I don’t follow a formula but I do have a style. But you have to be flexible when you’re making wine. You have to listen to what the vines are telling you.”

He learned to read the vines by walking the rows, tasting the grapes, examining the plants, speaking with the growers and building up a reservoir of knowledge. Although he didn’t enter pharmacy school intending to become a winemaker, Isenhower draws parallels between his education and his vocation.



Brett and Denise Isenhower with their daughters, Eliana, Keegan and Olivia

“I have a maniacal focus on cleanliness,” he says. “I learned that in pharmacy school. It was drilled into me to double check my work and other people’s work because lives were at stake. In pharmacy, you cannot make a mistake. There’s more variability in the wine business but I still have the same mentality to work carefully and get it right the first time. Then double check. Triple check if you have to.”

The scientific training he received earning his pharmacy degree also laid the foundation for his entrée into the wine business.

“I learned a tremendous amount about organic chemistry at Purdue,” Isenhower says. “Making wine is all about organic chemistry. You have to understand concepts like pH, titratable acidity and structural relationships. You’re looking at complex carbon molecules and extracting them from a plant. My scientific background informs my winemaking art.”

He also draws inspiration from the words of Marc Loudon, who retired in 2015 as the Gustav E. Cwalina Distinguished Professor of Medicinal Chemistry after 38 years of service to the College. When Isenhower was a sophomore, he remembers Loudon telling him, “I’m excited to come to work every day and sometimes I’m disappointed to leave.” Judging his workday in that regard helped Isenhower realize he needed to be his own boss.

“It’s a great way to live life when you’re excited to go and deal with the challenges you face in your work every day,” Isenhower says. “And that’s what Purdue enabled me to do.” ●



Did you know?
It takes 600-800 individual grapes to make a single bottle of wine.

Purdue Education Key to Career Success

Joanne Barrick (BS'84) says she was a rather shy teen when she began her education at Purdue. In fact, she had originally chosen another university closer to home, but found that environment a mismatch for a student from a small farming community in New Jersey.

She did not want to take a chance transferring to another unknown, so she followed her brother to Purdue where she “gained confidence addressing the challenges of a Purdue education. My pharmacy background and inherent focus on patient impact have accelerated my success in every phase of my career.”

Today, Barrick serves as a global validation advisor within the technical services/manufacturing sciences area, at Eli Lilly and Company. Her team provides process, cleaning and packaging validation guidance, training and support to Lilly sites throughout the world.

LEADERSHIP

Prior to joining Lilly in 2003, Barrick worked in various operations and technical services leadership roles at Upjohn/Pharmacia which was acquired by Pfizer.

She also has served in various team and conference leader roles for the International Society for Pharmaceutical Engineering (ISPE), leading practical implementation of new regulatory expectations intended to improve control strategy for pharma manufacturing processes.

Barrick says COVID-19 had a significant impact on the pharmaceutical manufacturing industry. The





As a student, Joanne Barrick (BS'84) always made time for football and men's basketball games, which she still enjoys attending.

use of rRNA technology opens the door to new cancer treatments and improvements and lessons learned in biomanufacturing may accelerate development of personalized cell and gene therapies.

Another significant change is the level of collaboration between the industry and regulatory authorities. The unprecedented development of the COVID-19 vaccine in mere months has shown that multiple stages in product development can occur in parallel fashion. "Innovation and technological advances also are greatly accelerating, which will lead to even more consistent pharmaceutical quality and greater supply chain reliability and security," she says.

"This is an extremely exciting time for the pharma manufacturing industry. We are definitely seeing major steps forward in developing new avenues to cancer treatment and ability to address rare genetic diseases. There will be a talent shortage very soon and we need to attract emerging talent in bioproduct manufacturing. It is a challenging career choice with true opportunity to positively impact lives."

EXPLORING ALL OPTIONS

"I spent much of my time at Purdue studying or working part time jobs, but I always made time for football and men's basketball games," Barrick says. "I appreciated Purdue's support of my long-term desire to work in

pharma manufacturing by allowing me to take graduate level industrial pharmacy courses and work in one of Dr. Peck's research labs."

Barrick strongly encourages pharmacy students to explore all facets of employment opportunities early in their progression through pharmacy school. Lilly frequently hosts students for four-week rotational assignments in their final student year, and Barrick often has the opportunity to speak with these students.

"Almost invariably the students tell me they really like their assignment and have enjoyed their time at Lilly," she says. "Many say that they are now very interested in a career in the pharma industry but if you don't start until then, the path to an industry job is extremely difficult.

"There are numerous internship and fellowship opportunities available during the earlier years of a Purdue education. Regardless of your area of pharmacy interest, I suggest seeking a mentor to help you explore and map potential career paths." Barrick also highly recommends the ISPE Women in Pharma (WIP) program. She says it is a great way to acquire leadership skills and glean career advice.

She says, "This group is open to men and women, and includes mentor circles, book clubs, sunrise-to-sunset educational events (where you can drop in and out and collaborate with members around the globe) and panel discussions at major ISPE events." 🍷

NEW OPTIONS FOR BATTLEFIELD INJURIES

Imagine being able to prevent more members of the armed forces from dying after suffering injuries on the battlefield.

A Pharmacy alumnus and entrepreneur is working to do just that. Through his company, Open Your Eyes (OYE) Therapeutics, Brett Dines (BS '92) is leading efforts to reduce the mortality and morbidity resulting from injuries on the battlefield through the development of new lifesaving strategies.

RESEARCH COLLABORATION

OYE, located in the Purdue Research Park of Northwest Indiana, has entered into a Cooperative Research and Development Agreement (CRADA) with the Uniformed Services University of the Health Sciences (USU), an institution of higher learning within the U.S. Department of Defense and the Henry M. Jackson Foundation for the Advancement of Military Medicine Inc. (HJF).

“This collaboration is an important milestone for OYE, as the company has been working on and filed patent applications to extend the capabilities of our current lead candidate, OYE-001, for both civilian and government use,” says Dines, CEO of OYE Therapeutics. “It is intended that the results of the work on OYE-002 will support our continued effort to expand OYE’s pipeline and potential to speed the development and accelerate drug product approvals for innovative indications addressing gaps in medical care under the U.S. FDA’s 505(b)2 regulatory approval process for civilian and DoD clinical use.”

The partnership includes researching the effectiveness of OYE-002 to enhance acute pain control at the point of injury, cognitive processing, psychomotor resilience and mission capabilities.

“An aspect of this CRADA is to evaluate peer-reviewed medical literature to assess OYE’s drug product pipeline for potential in military medicine,” says Jong Lee, an assistant professor of anesthesiology at USU.

Capt. Arlene Hudson, chair of anesthesiology at USU, says, “This project seeks to address a medical gap in care and meet the unique demands of war fighters.”



Brett Dines (BS '92), pictured at left attending The BoilerX Golf Classic, is the founder of OYE Therapeutics.



OYE Therapeutics is focused on bringing health care innovation to market to meet gaps in care through the US FDA's 505(b)2 regulatory approval process.

The collaboration between USU and HJF has the potential to encompass multiple future projects, with the ultimate objective of enabling drug development to save the lives of American military personnel worldwide and translating the results to civilian care. Target indications for OYE include adjunctive pain control, restoration of cognitive and psychomotor function, anesthesia, trauma and acute respiratory distress syndrome.

ENTREPRENEUR PARTNERS

To move his work forward, Dines partnered with another innovator and entrepreneur with deep ties to Purdue. Stephen Byrn has helped launch several startups, including some that operate in the Purdue Research Park in West Lafayette.

“I have known Brett for about two decades,” says Byrn, The Charles B. Jordan Professor of Medicinal Chemistry. “I knew when he came to me with this plan to help address battlefield injuries that we were going to find success.”

Byrn says Dines is a great example of the innovative and entrepreneurial spirit he has seen in alumni and students over his five decades as a professor at Purdue.

“Purdue is really a special environment where innovation can thrive,” Byrn says. “You have so many important factors: outstanding students, innovative professors, novel research facilities and a spirit of collaboration.”

CENTER STAGE

SOPHOMORE SHARES PASSION FOR MUSIC BY PERFORMING WITH PMO



Sophomore Carter McCullough chose Purdue before he decided to major in pharmacy. Both his mother and his sister are Boilermakers. After arriving on campus, McCullough joined Purdue Musical Organizations where he performs with University Choir.

Why Pharmacy?

I've always been fascinated with chemistry. When I was a little kid, I would pour milk and water together or pour liquid in cups back and forth. I wanted a major that included chemistry but also allow me to use communication and leadership skills. Pharmacy encompasses all of those aspects.

What inspires you about working in health care?

My mom has always told me, "You're going to make a difference someday." Working in health care provides the opportunity to make a difference in people's lives.

What branch of pharmacy interests you most?

I'm minoring in biotechnology, which is along the lines of drug development. As a freshman, I took Pharm 100, which introduces us to a ton of different career options in the pharmacy in industry. I picked up my minor after starting that course because I was so excited about one day working in the drug development pipeline.

What do you enjoy about being a part of PMO?

I've found a community of friends who share my passion for music. One thing I love about the audition process is that everybody in PMO has worked so hard and deserves to be there. It's awesome to get together with all these people who perform at a high level.

Are you involved in any other clubs or organizations on campus?

I'm part of the Pre-Pharmacy Club and the Christian Pharmacists Fellowship International, of which I'm the student development chair. My role is to focus on engaging the members of our club as much as possible.

How do you balance your academic obligations with your student organization responsibilities?

It takes a level of organization and discipline. You have to realize that not everything will always go according to plan. But if you're involved in things you love, it doesn't feel like a burden.

What excites you about your next five years?

Honestly, I like the really hard courses. I'm looking forward to organic chemistry and immunology. I'm super excited for therapeutics, which is a class that professional students often say is their hardest class. I like to be challenged. 🍷



300

Students participate in PMO ensembles every year.

IN PRACTICE

PROFESSIONAL SKILLS LABS
BOLSTER CONFIDENCE, PREPARE
STUDENTS FOR EXPERIENTIAL
ROTATIONS AND CAREERS





Fourth-year professional (P4) students begin their experiential learning rotations well-prepared thanks to three years of didactic training in the Professional Skills Laboratories.

Six required skills labs over the course of three years cover many scenarios a pharmacist might encounter in practice such as demonstrating how to use medical devices, informing patients about their medications, electronically documenting medical records, taking vital signs and compounding medications.

“The labs are constantly evolving to align with changes in the profession,” says Jamie Woodyard (PharmD ’11), clinical assistant professor of pharmacy practice and director of the Professional Skills Labs. “For example, with pharmacists playing a significant role in vaccination against preventable diseases, particularly during the COVID-19 pandemic, we now incorporate immunization certification as a required component of the program.”

In addition to teaching practical pharmacy skills, the lab also focuses on developing communication skills. Actors pose as patients or prescribers, allowing students to interact and practice educating patients on taking a new medication or using an inhaler or blood glucose meter.

“Students must identify drug interactions the prescriber wasn’t aware of and then call the mock prescriber

to communicate their findings as well as recommend another course of therapy,” Woodyard says. “We see tremendous growth in confidence through these communication exercises. Students learn about motivational interviewing and how to show empathy which are critical to providing individualized care.”

Allison Smitherman (PharmD ’22) spent a four-week experiential rotation working with Woodyard to instruct students in the lab. Smitherman evaluated students on their counseling abilities and facilitated small groups discussing topics including leadership, psychiatry and self-reflection.

“I have always had a passion for teaching and mentoring which motivated me to complete an academic rotation in the Professional Skills Lab,” Smitherman says. “It’s inspiring to see the ‘light bulb’ come on for students when they grasp a new concept or technique. I remember near-peers helping me when I was in pharmacy school and I only hope that I am as impactful to the students now.”

Her experience teaching in the lab solidified Smitherman’s future goals. She plans to remain in academia and become a clinical professor.

“I still want to practice clinically because serving patients is extremely valuable,” she says. “But helping others to grow and be the best they can be is incredibly rewarding.”

Over the five years she’s directed the lab, Woodyard has continuously adjusted the curricula. Her team receives constant feedback from students, faculty and preceptors on ways to modify the lab and make the didactic student experience as realistic as possible. In 2021, the College of Pharmacy recognized her dedication to students with the Dr. Aziz Outstanding Teacher of the Year Award.

“My goal is to bridge the classroom and practice by simulating realistic scenarios that require students to practice skills they will need as pharmacists,” she says. “The skills labs provide a safe and constructive space for students to receive feedback on these skills before they are demonstrating them as practicing pharmacists.”



PEER SUPPORT

Mentoring program provides connections to student success

To support the College of Pharmacy’s commitment to student learning, the Peer Mentoring Program is an initiative that seeks to enhance first-year students’ experiences by providing all interested students dynamic, focused peer-mentoring relationships in which mentors and mentees can learn and grow together.

Piloted in the fall of 2018, the program serves to connect students to the college through a rich variety of experiences shaped by each students’ needs as addressed in their peer mentoring relationship with a peer mentor in the first year of attending the College of Pharmacy.

PEER POWER

Marie Martin-Murphy, the director of diversity initiatives, sees the power of the Peer Mentoring Program in providing students access to resources to empower them throughout their journeys.

“Being a part of this program is more of a life purpose for me and not just a job,” she says. “I love making a difference in the life of so many. Giving our students access to more information and access to individuals with diverse skill sets can empower them to become successful throughout their educational and career journey.”

Martin-Murphy says the mentorship program can be particularly beneficial for specific groups, such as first-year students, first-generation students, and underrepresented minority students.

“Transition times, such as making a move from high school to college,

can be daunting,” she says. “Research shows that for first-year and African American students, the mentoring relationship can provide academic, social and career guidance invaluable during the undergraduate years.”

Martin-Murphy says the program has several key goals:

- To provide a variety of social and intellectual activities.
- To promote leadership among students.
- To promote activities that will assist with student retention and adjustment to college.
- To enhance relationships between students, administrators, faculty, staff and the community.
- To promote personal, academic and social success.

STUDENT SUCCESS

Yasmin and Samuel Siwy are twins and students in the College of Pharmacy. They have been on both sides of the program — first as mentees and now as mentors.

“Having a mentor during my first year of pre-pharmacy truly stimulated my personal and professional growth,” Yasmin says. “Mentoring has been very rewarding because I get the opportunity to listen to my mentees passionately talk about the organizations they are involved in and see their growth throughout the semester.”

During the pandemic, Yasmin says she and her mentee met virtually to keep in touch about what was going on.

“This actually turned into a really great thing,” Yasmin says. “We have been able to interact more often because it’s easier to match schedules.”

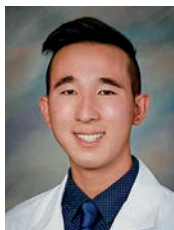
According to Samuel, the best part about being a mentee was having someone to answer questions and provide tips for class challenges.

“The most important thing I learned while being in the program was the value of accountability and vulnerability,” Samuel says. “By having a mentor to guide me,

PEER MENTORS



Nicholas Howard



Samuel Siwy



Yasmin Siwy

I was able to feel more confident with the steps I took.

“I realized that I enjoy building deep connections with my mentees just like my mentor did for me. He helped me learn how to network with different pharmacists and get a better understanding about how wide this profession is.”

Nicholas Howard serves as a supervisor for the program. After being a mentee and mentor, he knows the value the program brings to the College and to students.

“My experiences with the peer-mentoring program have been overwhelmingly positive,” he says. “Serving in this role is easily one of my most favorite extracurricular activities because I am super passionate about helping others reach their goals, and I truly believe that mentorship can play a huge role in an individual’s success.”

Howard says serving as a mentor has always allowed him to reflect on his own experiences as he transitioned to Purdue, and it has helped him continue to find ways to be an effective advocate and support system for fellow students.

“I have truly loved having the opportunity to help my mentees reach some of their goals, and I love seeing the mentors in our program assist students in their transition to Purdue,” Howard says. “Furthermore, our advisor, Marie Martin-Murphy, is exceptional at using a hands-off approach to truly empower students to strive for their goals, and she has always helped me feel more confident and proud to be a part of this program.”

Now, as a program supervisor, Howard has direct supervision of eight lead mentors and 40 others who serve as mentors to more than 100 first-year students in the College of Pharmacy.

“I am responsible for creating any training workshops for our mentors and mentees, and I am helping gather research information about the overall effects of mentors on students in our College of Pharmacy,” he says. “One of my favorite things about this role is that I am able to craft many programs and events that I am passionate about and that I believe will benefit our first-year students and mentors.”

A MODEL FOR RESEARCH

Scientists receive worldwide attention for SARS-CoV-2 model

One of the challenges for researchers and scientists working on SARS-CoV-2 studies has been the safety risk level associated with the virus. Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) was first discovered in December 2019 in Wuhan, China, and expeditiously spread across the globe causing a global pandemic.

While a select agent designation was not initially made for SARS-CoV-2, closely related SARS-CoV-1 and MERS coronaviruses are classified as Risk Group 3 select agents, which restricts use of the live viruses to BSL-3 facilities. Such BSL-3 classifications make SARS-CoV-2 research inaccessible to the majority of functioning research laboratories in the U.S.; this becomes problematic when the collective scientific effort needs to be focused on such in the face of a pandemic.

A research team from the College of Pharmacy has received global attention for the development of a model that opens the door to more research laboratories studying this coronavirus.

VIRUS EXPERTS

For more than a decade, Robert Stahelin and his lab team members have been studying virus replication and the processes by which

new virus particles are formed from cells. As the Retter Professor of Pharmacy, Stahelin and his team have made advances in understanding the replication processes of Ebola, Zika and other viruses.

“When SARS-CoV-2 started to emerge as a growing public health threat, we thought there were ways we could take what we have done with other viruses and apply some of that work to this coronavirus threat,” Stahelin says. “Viruses replicate for a living in order to survive, and we have done previous published work on creating solutions to stop some of these replications.”

The Purdue team faced one major challenge — research on the virus was restricted to BSL-3 facilities. Stahelin and the other labs in the College were BSL-2 facilities. Working with other researchers across Purdue, including Richard Kuhn, a distinguished professor in the College of Science, Stahelin and his team found ways that SARS-CoV-2 could be adapted BSL-2 models using virus-like particles.

In this work, they assessed the four structural proteins from SARS-CoV-2 for their ability to form virus-like particles from human cells to form a competent system for BSL-2 studies of SARS-CoV-2. They provided methods and resources of producing, purifying, fluorescently and APEX2-labeling of SARS-CoV-2 VLPs for the evaluation of mechanisms of viral budding and entry as well as assessment of drug inhibitors under BSL-2 conditions.

In this work, they also present for the first time a realistic model of SARS-CoV-2 viral entry available in a BSL-2 setting. The work was published in the *Journal of Biological Chemistry* and was selected as an Editors’ Pick.

“It’s very exciting not only to be chosen as a top article by the editors but also to work on an evolving public health issue,” Stahelin says. “We wanted to make this



CAROLINE PLESCIA

Primary research areas: Molecular virology and pharmacology



**ROBERT
STAHELIN**

Primary research areas: Virus replication, antiviral drug discovery and lipids in health and disease

virus accessible to those researchers not in high containment labs or those who lacked access to BSL-3 or higher facilities.”

Stahelin says his team’s system should be useful to those looking to circumvent BSL-3 work with SARS-CoV-2 yet study the mechanisms by which SARS-CoV-2 enters and exits human cells.

“Two big areas where our work can help are creating compounds to battle this virus and learning ways to inhibit the virus from harming human cells,” Stahelin says. “The model we created will be useful for screening drugs to see how they work against COVID-19.”

Stahelin and his team observed how SARS-CoV-2 interacts with cells in the human body. Similar to other coronaviruses, this one has a crownlike structure that enables the protein to gain entry into human cells. This discovery is important to developing drugs that inhibit such entry to stop the virus from replicating within the body and creating vaccines against the virus.

“Our work is very much in line with Purdue’s goal of moving research and innovations to the world and people in need,” Stahelin says. “Being able to do that in the midst of a global pandemic has been truly thrilling.”

STUDENT SCIENTIST

Caroline Plescia, a PhD student in Stahelin’s lab, was the first author on the published paper. When the pandemic started emerging, she wanted to ease the frustrations of researchers who were in facilities that were not suited for studying SARS-CoV-2.

“Given our lab’s expertise and past success with viruses like Ebola and Zika, I knew there had to be a way we could help in understanding and fighting this virus,” Plescia says. “I definitely did not enter graduate school thinking I would ever have the opportunity to do work on an emerging global health threat.”

Plescia led the development of the model using virus-like particles. She gathered data about the virus and the known information from around the world about how it interacts with cells in the body. Plescia and the team created particles that mimic the structure and function of the virus behind the pandemic without the genome. This method was used to create a model that other BSL-2 facilities could use to study this virus, including its structure, function and possible processes to stop the virus from spreading in the body.

“It really makes research more accessible,” Plescia says. “I am excited about all of the possibilities for this model, since our lab could not possibly take on all of the ways to use it.”

Plescia says the work they have done also aligns with the College’s mission to perform translational research that can make an impact on the world.

“This was very special,” Plescia says. “As a bench scientist, you are not always working on projects and research that will translate quickly to help people in need. In this case, we used data to create a model that can have immediate impact on the ability to tackle this global pandemic.” 🍷

CLOSING THE GAP on Health Inequities

**CENTER FOR HEALTH, EQUITY AND
INNOVATION ADDRESSES THE NEEDS
OF DISPARATE POPULATIONS**

Launched in January 2020, the College of Pharmacy established the Center for Health, Equity and Innovation (CHEqI) to address the needs of disparate populations locally and globally and reduce health inequity through innovative strategies. The COVID-19 pandemic underscored the gap in access to health care faced by populations who have been historically marginalized.

“Opportunities for early intervention and prevention impact an individual’s ability to achieve optimum health,” says Jasmine Gonzalvo, clinical professor of pharmacy practice and the Chris and Theresa Dimos Director of CHEqI. “For people who are uninsured, have a lower socioeconomic status or are perhaps undocumented immigrants, there are so many barriers to obtaining health care.”

Through her 15 years of clinical pharmacy practice, Gonzalvo helped navigate the challenges populations who have been historically underserved face in accessing health care and the resulting health disparities. Many times, these obstacles are perpetuated by underlying systemic social issues that require time and resources to effect substantial change to inequities for long-suffering communities.

“Intervention at early ages with laying a foundation in education can be predictive of an individual’s health outcomes,” Gonzalvo says. “If a child lacks accessible nutrition at home or at school, that can negatively affect so many things later in life.”

The U.S. Department of Health and Human Services defines social determinants of health (SDOH) as “the conditions in which the environments where people are born, live, work, play worship and age that affect a wide range of health, functioning and quality-of-life outcomes and risks.” The five domains of SDOH are economic stability, education access and quality, health care access and quality, neighborhood and built environment, social community and context.

Structural elements within a neighborhood can influence health positively or negatively. In safe neighborhoods with sidewalks, a person can get physical activity by walking around pretty easily. But for neighborhoods without sidewalks and busy streets, that can be a social determinant of health.

The opportunity for economic stability through employment in a good job with sustainable wages can also affect physical health significantly because of the relationship of access to quality health care and availability and affordability of insurance.

“Addressing these inequities is the focus of CHEqI’s work,” Gonzalvo says. “We’re very fortunate to have strong partnerships across the University and throughout communities that enable us to implement innovative strategies.”



EXCELLENCE IN ENGAGEMENT

Jasmine Gonzalvo was recognized with the Excellence in Engagement Award in 2020 for her work establishing the Center for Health Equity and Innovation.

The award honors faculty in the College of Pharmacy who have demonstrated dedication and excellence in scholarly engagement endeavors that have impacted college’s constituents by addressing a community, professional and/or societal need.

Gonzalvo maintains her clinical practice through Eskenazi Health in Indianapolis, one of the largest safety net health systems in the nation. Safety net medical centers provide health care for individuals regardless of their insurance status or ability to pay. CHEqI relies on a strong network of interdisciplinary faculty and partners to execute the center’s initiatives. Donors play an integral part of achieving its mission, too.

“We are grateful for the generosity of our donors who enabled us to get our initiatives off the ground,” Gonzalvo says. “Support from Chris and Theresa Dimos, the Chaney family and the McKinney Family Foundation has been instrumental in achieving our early successes.”

LEAVING A LEGACY: LET'S DREAM TOGETHER

“
Life’s most persistent and urgent question is, ‘What are you doing for others?’”

—Martin Luther King, Jr.



Dan Bolsen
Chief Development Officer

We are in the midst of the greatest wealth transfer in the history of the world. Over the next couple of decades, more assets will pass amongst children, grandchildren, and loved ones than at any previous point. In the midst of these critical conversations with our advisors, lawyers, and most trusted confidants, have you considered your Purdue Family? Your Pharmacy Family?

If the COVID-19 pandemic has taught us anything, it has shown life can turn on a dime. Our most certain plans can be changed instantly. These past couple of years have led all of us to re-focus on what is most important to us. Where do we want to spend our time with the years we have left on this earth? With whom or with what organizations do we want to share our time, talent, and treasure?

There are no uniform answers to the questions above. However, there is one common denominator: Planning. As plans are made, I hope you will allow the organizations most important to you to have a seat at the table with your team. Many times, the result of such an endeavor is watching your life’s assets do more than you ever imagined.

Planning doesn’t have to be a decision between family or philanthropy. It can become a discussion of family and philanthropy.

When you reflect on “What are you doing for others?” in the short-term and long-term, I hope you will choose to consider the legacy question. What will your legacy be? What is your dream? It’s a privilege for all of us in the development office to serve this world-class institution. The Pharmacy Family is second-to-none. I am so grateful to the many of you reading this who make a difference in the lives of our students, faculty, and staff. When you are ready to open a discussion on your Pharmacy Family legacy, our team is a call, email, or text away.

Let’s dream big. Most importantly, let’s dream together. 🌟

\$6 MILLION GIFT FUELS PHARMACY'S NEXT

GIANT LEAP

The Purdue College of Pharmacy's most generous donors made history by funding the first-ever termed deanship at the University.

Jeannie (BS'61) and Jim Chaney have pledged \$6 million to benefit the College of Pharmacy. Effective July 1, 2022, their gift will establish the Jeannie and Jim Chaney Dean of Pharmacy for the next five years as well as the Jeannie and Jim Chaney Dean's Excellence Fund Endowment for Pharmacy. At the end of the initial term, the donors will have the option to extend, renew, pivot away from or make permanent their named deanship.

Together, these gifts immediately elevate the prestige of the college while allowing the dean to make strategic investments in areas of emerging priority and jump-start new initiatives that impact faculty, staff and students.

"There's a huge need for pharmacists right now, and for that need to be fulfilled, people need to step up to the plate," Jeannie Chaney said. "Dean Barker has a vision of where the college needs to go in the years to come. We saw that play out as he led the Protect Purdue committee to walk the narrow line of keeping the students safe while continuing their education."

Jeannie Chaney served as a pharmacist in Ohio for nearly 50 years before retiring in 2011. She has

served as chair of the President's Council and as a member of the steering committee of Pharmacy Women for Purdue and the Pharmacy Alumni Board.

Flexibility and creativity have been hallmarks of the Chaney's giving to Purdue. In 2018, the couple donated an additional \$8 million to their Pacesetter Endowment for Pharmacy, which provides student scholarships now and ultimately will support the proposed Nursing and Pharmacy Education Building. This dual-purpose endowment appealed to the Chaney's because their investment created an impact from the start. In a similar way, the Chaney's 2022 pledge has the flexibility to address the college's biggest current need — strategic investment funds for the dean — with the opportunity to pivot as the college's needs or the donors' long-term interests evolve.

"Having these types of discretionary funds allows us to make real-time investments of priority, such as our Emerging Leaders program as well as health equity, drug discovery and pharmaceutical manufacturing efforts," said Eric Barker, dean of the College of Pharmacy. "Jeannie and Jim have once again demonstrated extraordinary generosity. This latest gift reflects their deep friendship with the college and their commitment to making Purdue's College of Pharmacy the best in the nation."

The Chaney's have supported a wide range of strategic opportunities at Purdue, including a lead gift for the Chaney-Hale Hall of Science, which opened in 2020, and a variety of student and faculty support funds and awards. Overall, the Chaney family has supported the college and the university for 44 years with a combined total of nearly \$25.5 million in philanthropic support.

"Jim and Jeannie are models of philanthropy and generosity who love Purdue and understand how to affect strategic change through their giving," Purdue President Mitch Daniels said. "Their gifts elevate all of Purdue as they continue to invest in our students and faculty. We are ever grateful for their vision for our College of Pharmacy and beyond."





Purdue College of Pharmacy Dean Eric Barker (left) presents Jeannie and Jim Chaney with the crystal Boilermaker Special in 2018.

Great things happen when our Purdue Pharmacy Family comes together!

With your support, not only do you invest in the future of our students but you invest in the future of our College. Every gift, regardless of size, allows us to fully realize our vision of being bold leaders, moving together to the highest level of excellence in learning, discovery and patient care.

Fiscal year 2021-22 was another outstanding one for the College of Pharmacy at Purdue University. Your continued support is the best prescription for our success.

\$32 MILLION

RAISED TO IMPACT THE COLLEGE OF PHARMACY

\$11 MILLION

RAISED FOR PROGRAMS AND PROJECTS OUTSIDE THE COLLEGE

\$700

AVERAGE GIFT*

1,400

NUMBER OF DONORS

*for non-major gifts

#7

PHARMACY PROGRAM

U.S. NEWS & WORLD REPORT

#6

TOTAL RESEARCH FUNDING

AMONG U.S. PHARMACY COLLEGES

#1

IN PERCENTAGE
OF BIG TEN STUDENTS

MATCHING IN
NATIONAL RESIDENCY

#1

LOWEST SELF-REPORTED DEBT

IN THE BIG TEN



From left: Yasmin Siwy, Aubrey Stolte and Danielle Simpson, PharmD students and supervisors of the pre-pharmacy Peer Mentoring Program.



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27TH ANNUAL

BOILERX GOLF CLASSIC

FRIDAY, JUNE 2, 2023

Join us at the Birck Boilermaker Golf Complex-Kampen Golf Course for a fun-filled event, which supports Pharmacy Alumni Scholarships. Lunch included.

SAVE THE DATE!

For more information, contact Erin VanEmon, Manager of Alumni Relations and Special Events
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