Our Mission

The Ohio State University College of Pharmacy advances the pharmacy profession and patient-centered care across Ohio and around the globe through innovative teaching and practice, ground-breaking research, and transformative outreach and engagement.

Our Vision

The College of Pharmacy will lead in drug discovery, development and training in the optimal use of medications to improve health and well-being.
The Ohio State University College of Pharmacy provides an abundance of opportunities for students and practitioners at all levels of personal development. Every day our faculty open doors for those in pursuit of knowledge, training and unique experiences. We are one of the most comprehensive colleges of pharmacy in the world. This past year we increased our research funding 13 percent and completed our But for Ohio State campaign with a record amount of support raised in one year.

The collaborative nature of higher learning—among our students, our alumni, our faculty, our staff—is alive and well at the college. It allows each of us to thrive in an environment that both challenges and inspires. From the earliest days, our college has built its foundation on rigorous academics, top-quality students and forward-thinking faculty. Today we continue to pioneer new methods of teaching, research, practice and outreach. These efforts have made us one of the top pharmacy schools in the world. This year we have initiated a new PharmD curriculum while continuing to implement the new BSPS and MS in Health System Pharmacy curricula.

Students who come to our college want to make a difference, be it in their community, their country or their world. In turn, we provide opportunities that build leaders and change agents. Our graduates leave as strong practitioners, ready to take what they have learned and apply it to further study, career or community work. Our students are among the most successful in passing the national board exams, obtaining advanced placement residency opportunities, and assuming local and national leadership positions.

The pages that follow highlight the vast array of academic, educational, research and outreach activities that have transpired in the past year. It reminds me that every staff person, faculty, student and friend of the college is essential to our success and I thank each of you for your contributions.

I hope you will take the time to read our story and to learn more about how the College of Pharmacy is raising the bar for pharmacy education, practice, outreach and research.

Henry J. Mann, PharmD, FCCP, FCCM, FASHP
Dean and Professor of Pharmacy Practice and Science
College of Pharmacy
The Ohio State University
## Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Highlights</td>
<td>4</td>
</tr>
<tr>
<td>Faculty Profile: Sharyn Baker</td>
<td>5</td>
</tr>
<tr>
<td>Student Profile: Michael Murphy</td>
<td>6</td>
</tr>
<tr>
<td>Academic Highlights</td>
<td>7</td>
</tr>
<tr>
<td>Community Outreach and Engagement Highlights</td>
<td>8</td>
</tr>
<tr>
<td>Pharmacy Researcher Studies, Implements Antimicrobial Stewardship Program in South Africa</td>
<td>9</td>
</tr>
<tr>
<td>Development Highlights</td>
<td>10</td>
</tr>
<tr>
<td>College of Pharmacy Installs Nanobiotechnology Expert Peixuan Guo as First Sylvan G. Frank Endowed Chair in Pharmaceutics and Drug Delivery Systems</td>
<td>11</td>
</tr>
<tr>
<td>Alumni Engagement</td>
<td>12</td>
</tr>
<tr>
<td>Volunteer Profile: Tiffany Kaiser</td>
<td>13</td>
</tr>
<tr>
<td>Students Provide Classes on U.S. Medication System to Newly Resettled Refugees</td>
<td>14</td>
</tr>
<tr>
<td>Academic Divisions</td>
<td>15</td>
</tr>
<tr>
<td>New Faculty</td>
<td>16</td>
</tr>
<tr>
<td>Kinghorn Honored with University's Distinguished Scholar Award</td>
<td>17</td>
</tr>
<tr>
<td>Faculty and Staff Recognitions</td>
<td>18</td>
</tr>
<tr>
<td>Ohio State Researchers Uncover New Approaches for Combating HIV</td>
<td>19</td>
</tr>
<tr>
<td>College of Pharmacy by the Numbers</td>
<td>20</td>
</tr>
<tr>
<td>Faculty/Staff Listing</td>
<td>24</td>
</tr>
</tbody>
</table>
Research Highlights

The college’s NIH funding has grown to $8.6 million, a 13.6 percent increase from FY15. The college is ranked 20th in NIH funding among more than 130 schools of Pharmacy for FY15.

The Ohio State University Office of Research selected Robert Lee, PhD as its Innovator of the Year. Lee, professor in the Division of Pharmaceutics and Pharmaceutical Chemistry, focuses his research on the design and development of novel targeted drug delivery systems based on lipid and/or polymer-based nanoparticles. Lee has invented a series of novel liposome and lipid nanoparticle formulations, resulting in numerous patent applications, invention disclosures, licensing agreements, sponsored research agreements and business startups that have resulted in new and more effective ways to diagnose and treat prostate, ovarian, colon and lung cancers.

Mamuka Kvaratskhelia, PhD, Kimberly Professor at the Ohio State College of Pharmacy, and his research group have uncovered a new mechanism for halting the spread of infectious viruses that could pave the way for therapies to combat emerging HIV-1 strains resistant to currently available treatments.

Research assistant professor, Division of Pharmaceutics and Pharmaceutical Chemistry Christina Drenberg (Guttke), PhD and her colleagues have uncovered new data that suggests genetic variants affect the way chemotherapy is transported through the system, making the case for more personalized therapies.

Yizhou Dong, PhD, assistant professor in the Division of Pharmaceutics and Pharmaceutical Chemistry, uncovered efficient mRNA delivery systems for potential treatment of genetic disorders via new lipid-like nanoparticles.

Sylvan G. Frank Chair in Pharmaceutics and Drug Delivery Systems, Division of Pharmaceutics and Pharmaceutical Chemistry Peixuan Guo, PhD is finding ways to reshape RNA so that it may transport any number of therapies, a discovery that may have implications for treatment of cancers and other diseases.
Faculty Profile:

Sharyn Baker, PharmD, PhD
Professor and Chair of Pharmaceutics and Pharmaceutical Chemistry, Gertrude Parker Heer Chair in Cancer Research

Though translational scientist Sharyn Baker, PharmD, PhD, is somewhat new to Ohio State’s College of Pharmacy, she has long-been a friend and highly regarded colleague. College associate professor Mitch Phelps, PhD, first met Baker—then at St. Jude Children’s Hospital—several years ago. “We had some research in common,” said Baker. “My colleagues invited him to an international meeting on pharmacodynamics of anticancer agents, he brought me in to Ohio State for some seminars, and we just kept our communication going, and looked for areas of collaboration.”

This search for collaboration led to a coup for Ohio State. Last year, Baker was named professor and chair of Pharmaceutics and Pharmaceutical Chemistry and the Gertrude Parker Heer Chair in Cancer Research. She is the first woman in the college’s history to head a division.

Baker’s NIH-funded research program focuses on understanding drug efficiency and toxicity in anti-cancer therapy. She applies findings from her research directly into practice to improve therapeutic outcomes for patients.

Baker’s lab has turned its focus to the treatment of acute myeloid leukemia (AML), which causes a rapid growth of abnormal white blood cells to accumulate in bone marrow, disrupting production of normal blood cells. Her lab is investigating tyrosine-kinase inhibitors (TKI), which have proved to be effective in treating other forms of leukemia. Baker is working on finding combinations that are most effective in treating AML. She has already seen first-hand effects of her research while at St. Jude. Baker and her team were able to give new TKI combinations to pediatric AML patients. “Pediatric AML survivor rates have flattened out,” she explained. Yet, the results of the new therapies were immediately apparent: “We saw kids slated for hospice care running around after the new chemo. It was so exciting seeing our research come full circle like that.”

What drew Baker to Ohio State? “All the exciting opportunities in cancer research,” she said. It’s (The James) one of the best leukemia and cancer centers in the U.S.” Baker also mentioned the many opportunities for collaboration. Besides her work at the college and The James, she is looking forward to exploring collaborations with Nationwide Children’s Hospital.

Baker received her PharmD from the University of California at San Francisco in 1991, and she completed her clinical residency at the University of Nebraska Medical Center. She completed two fellowships/research associateships at St. Jude Children’s Research Hospital and Johns Hopkins University School of Medicine before joining the Cancer Therapy and Research Center, Institute for Drug Development in San Antonio, Texas as an assistant member and head of their Pharmacokinetics Section in the Department of Clinical Research. Baker returned to Johns Hopkins as an assistant professor and later as an associate professor of Oncology. She completed her PhD in 2004 from Erasmus University, The Netherlands and became an associate member at St. Jude.

Before coming to Ohio State, Baker taught in courses focused on chemistry/drug development, pharmacokinetics/pharmacodynamics and medical oncology at The University of Tennessee, Rhodes College and Johns Hopkins. She has also mentored several PharmD and PhD fellows who have now developed successful clinical and research careers.
Student Michael Murphy sees life as a long game. The central Ohio native began seriously considering what his career path should be while still in his teens. Early on, he began setting goals to get him there. Despite setbacks and losses, Murphy persevered. Now in his third year of Ohio State's PharmD program, Murphy is beginning to see the payoff of his hard work. He has excelled at the university and has taken advantage of the opportunities afforded him. In fact, last spring, Murphy was elected National President-elect of the American Pharmacists Association Academy of Student Pharmacists (APhA-ASP), the student arm of the venerable professional organization.

A Columbus native with an alumnus father, Murphy had close ties to Ohio State. He knew he wanted to do something in the medical field, so at 16, he volunteered at the Wexner Medical Center. The death of his pharmacist grandfather caused him to wonder if a career in pharmacy was the path for him, too. So at 17, he met with Pharmacy staffer Nikki Herbert to discuss what it would take to be a competitive candidate in the school’s BSPS undergraduate program. “I remember being pleasantly surprised about the fact that he was able to clearly articulate his passion for pharmacy at such a young age,” said Herbert. “With all of the professions out there, he knew that pharmacy was what he wanted.”

Murphy finds Ohio State a perfect fit. “I think the opportunities are diverse, you can work at a top hospital, you can work with faculty,” he said. He says that his success was buoyed by those who encouraged him along the way. “My high school chemistry teacher was a great mentor,” he said. “Even though I was not the best student, she supported me because she knew I was interested in science.”

Now that his aspirations are within reach, Murphy has had time to reflect. “I have immense pride in this institution. It’s surreal to believe that I’ve been here seven years, but it’s hard to imagine being anywhere else.” He’s been especially grateful for his experience at the College of Pharmacy. “I like that the faculty here are so open to work with students. There’s mutual respect among faculty and students, and with leaders of the college. They all want to work with you and see you grow.”
Academic highlights

The Ohio State University College of Pharmacy Doctor of Pharmacy (PharmD) program is ranked 6th in the nation, according to the U.S. News & World Report 2017 edition of America’s Best Graduate Schools. The college is the top rated pharmacy program in the state of Ohio.

The College of Pharmacy and the Wexner Medical Center joined forces to form The Ohio State University Pharmacy Residency Programs. The programs have more than 75 years of combined experience in training residents, making its breadth and scope of residency training one of the most comprehensive in the nation. The residency programs offer training in a variety of practice settings and patient populations. Opportunities are offered in traditional pharmacy practice and other unique settings, including the emergency department, academia, transplant, charitable pharmacy and information technology.

The college’s revised BSPS curriculum is now being implemented. Faculty, staff, students, alumni and community partners worked extensively to create a state-of-the-art undergraduate program that meets the current job market needs and the career interests of students. In the new framework, students complete degree requirements through one of two tracks: the Healthcare Professions Pathway, for students intending to pursue clinical careers in pharmacy, medicine, veterinary medicine, dentistry and others, and the Drug Discovery and Development Pathway, for students intending to pursue graduate school and/or research-based careers in the pharmaceutical sciences. Innovative coursework with an increased focus on integrated science learning, hands-on laboratory experiences, career exploration and science communication are emphasized in both tracks.

A minor in Pharmaceutical Sciences was approved by the Office of Academic Affairs last winter. This innovative, customizable program offers training for students pursuing careers in health care and the pharmaceutical industry. Flexible in design, this minor permits students from science or non-science majors to learn about drug science in a variety of contexts.

With fewer than two years since its inception, the Master of Applied Clinical and Preclinical Research (MACPR) program has grown to 107 actively enrolled students. MACPR is an interdisciplinary graduate degree program offered entirely online by the colleges of Nursing, Pharmacy and Medicine. Twelve students graduated from the program as of spring 2016.

The college underwent a successful academic program review. The external reviewers met for two days with various representatives of the university and with College of Pharmacy leadership, faculty, students and staff. The reviewers concluded that the college is a valued and respected member of the university community and noted its national recognition for innovative research and education.
Community Outreach and Engagement Highlights

The college’s **Generation Rx Initiative**, the country’s leading anti-prescription-drug-abuse program, has been endorsed for utilization in every K-12 school in Ohio by the Office of the Governor. The program is used in 80 pharmacy schools nationwide, and in all 50 states.

The college’s **Partner for Promotion (PFP)** program was named recipient of this year’s Ohio State Distinguished Service-Learning Award. PFP is a one-year educational experience that partners students with community-based pharmacy practices to create or expand patient services.

In collaboration with the universities of Michigan and Minnesota, a **memorandum of agreement was signed with a consortium of five colleges of Pharmacy in China** (China Pharmaceutical University, Fudan University, Peking University, Shenyang Pharmaceutical University and Sichuan University) to train future clinical partners at US consortium member institutions.

A collaboration among the College of Social Work, the College of Pharmacy, the Office of Student Life and the Collegiate Recovery Community, with major funding from the Hilton Foundation, has resulted in the **Higher Education Center for Alcohol and Drug Misuse Prevention and Recovery (HECAOD)**. The center provides colleges and universities with the tools and resources to launch alcohol and drug misuse prevention and recovery programs on their campuses.

The **Institute for Therapeutic Innovations and Outcomes Medication Management Program (ITIO/MMP)** has grown from one pharmacist, one technician, and one student in 2014, to 9 full time equivalent pharmacists, 6 full time equivalent techs, 85 part-time student interns, and a 0.6 full time equivalent program assistant. ITIO develops and evaluates therapeutic innovations, leveraging expertise to provide education, research and the dissemination of knowledge to impact patients and clinicians. The MMP program impacts some 1.2 million lives and has generated approximately $2.1 million in revenue for FY16.

Pharmacy students volunteered with the Reach Out and Read Program through Nationwide Children’s Hospital.
Pharmacy Researcher Studies, Implements Antimicrobial Stewardship Program in South Africa

Until recently, available data on antimicrobial stewardship programs in South Africa was scarce. But a pharmacist-driven antibiotic stewardship program in a South African hospital has seen an 18 percent reduction in antibiotic consumption, demonstrating that such programs can work in settings where expertise and resources are limited. So says The Ohio State University Wexner Medical Center’s Department of Pharmacy’s Debra Goff, PharmD. Findings by Goff and her South African colleagues were recently published in The Lancet Infectious Diseases.

Antimicrobial stewardship (AMS) promotes the appropriate use of antimicrobials (including antibiotics). It seeks to improve patient outcomes, reduce antimicrobial resistance, and decrease the spread of infections caused by multidrug-resistant organisms.

This study was focused on Netcare Hospitals, a private network with 47 urban and rural facilities across South Africa. Most of the hospitals were not previously involved in an AMS program.

Researchers focused on preventing long antibiotic treatment courses and using antibiotics with overlapping spectrums of activity concurrently. The team studied process measures that could contribute to overprescription of antibiotics. Pharmacists recorded interventions and provided monthly reports to the project manager, who provided monthly consumption data and individualized goals.

The effect on antibiotic consumption was assessed with the WHO index of defined daily doses per 100 patient-days. The AMS program led to a reduction in antibiotic-defined daily doses per 100 patient-days from 101.38 in the pre-implementation phase to 83.04 in the post-implementation phase, thus showing that health-care facilities with limited infectious diseases expertise can achieve substantial returns through pharmacist-led antimicrobial stewardship programs and by focusing on basic interventions.

Other authors of the study include Adrian J Brink, MD; Angeliki P Messina, BPharm; Charles Feldman, DSC; Guy A Richards, PhD; Piet J Becker, PhD; Karri A Bauer, PharmD; Dilip Nathwani, MBChB; and Dena van den Bergh, PhD on behalf of the Netcare Antimicrobial Stewardship Study Alliance.

Debbie Goff (center) receives the University’s Emerging International Engagement Award for her work in South Africa.
Development Highlights

The College of Pharmacy exceeded its $20 million *But for Ohio State* campaign goal six months ahead of schedule. Some $6.4 million has been set aside for scholarships. The College of Pharmacy Alumni Society made one of the largest single Ohio State alumni society gifts ($158,000). This generous gift will be used to establish the new Ohio Scholarship Challenge Fund.

The college received a $500,000 cash gift from Dr. Jinn Wu to renovate his advisor’s laboratory; it is the largest facilities gift ever received by the college.
The Ohio State University College of Pharmacy installed Peixuan Guo, PhD as its first ever Sylvan G. Frank Endowed Chair in Pharmaceutics and Drug Delivery Systems at a ceremony at the university’s Faculty Club last summer. Presiding over the event were President Michael V. Drake, Provost Bruce McPheron, Executive Vice President of Health Sciences Sheldon M. Retchin, and Dean and Professor Henry J. Mann.

Guo, one of the top nanobiotechnology experts in the world, joined the college last January. He was recruited in collaboration with Ohio State’s Dorothy M. Davis Heart and Lung Research Institute (DHLRI) and holds a joint appointment in the College of Medicine’s Department of Physiology & Cell Biology.

“Guo’s focus on nanobiotechnology has opened doors to new discoveries. He constructed the first viral DNA packaging motor in vitro; discovered phi29 motor pRNA; assembled infectious dsDNA; discovered pRNA hexamer; and pioneered RNA nanotechnology.”

The Sylvan G. Frank Chair is funded by a $2.5 million endowment given to the college by alumnus Chih-Ming Chen (PhD ’81), and his wife, Virginia. The gift is the largest in college history. It honors Sylvan Frank, former professor of Pharmaceutics and Pharmaceutical Chemistry and associate dean for Professional Programs, who retired in 2013 as professor emeritus after 43 years with the college.

“It is my greatest pleasure to donate this chair in honor of Professor Sylvan G. Frank, said Chen. “He is my mentor and former PhD adviser at the College of Pharmacy. Without the teaching assistantship from the college and the research assistantship from Dr. Frank, I would not have been able to come to the United States, to study and get my PhD and land my first job there. Most important, I would not have achieved the American Dream...It is my hope that this chair will continue the legacy of Professor Frank and his passion to improve drug delivery systems in the years to come.”

Virginia and Chih-Ming Chen
Alumni Engagement

This year, the College of Pharmacy and College of Pharmacy Alumni Society hosted more than 700 alumni at events ranging from the Homecoming Tailgate to the annual Pharmathon 5K. The Alumni Society completed calendar year 2015 with 521 members. The Society started 2016 with a new sustaining membership model. In order to become members of the society, alumni now give a $75 donation to any fund at the college instead of dues.
Volunteer Profile: Tiffany Kaiser

If you were one of the many who participated in the College of Pharmacy Pharmathon 5K walk/run, you probably were struck by the dynamism of its founder and leader, Tiffany Kaiser, PharmD ’03. Ohio State has taken notice, too. Kaiser was awarded The Ohio State University Alumni Association’s 2016 Pay it Forward award, in recognition of her service and achievements.

The Pharmathon was launched in 2015 to promote health and wellness and provide education on prescription drug misuse prevention. To date, the event has drawn more than 500 participants and raised more than $8000 to promote awareness and education regarding prescription drug abuse via the Generation Rx Initiative.

Planned collaboratively among the Pharmacy Alumni Society’s Public Relations and Publicity Committee, Generation Rx and pharmacy students, the event was created with a goal of getting far-flung alumni involved and back on campus. “Being on campus was key,” said Kaiser. “We wanted an event that focused on health and was community-oriented, but also find a way to have pharmacists be experts.” After conferring with Ken Hale, Pharmacy clinical professor and co-director of the Generation Rx Initiative, the team decided to raise money for prescription drug misuse-related grants.

The Pharmathon not only had a successful outcome, it had success in every measure throughout its planning. “Our goal was to be sure at each part of the process, that it brought students and alumni together,” Kaiser said. From its initial planning, to publicity, to logistics, to event day, students and alumni worked together. The result was an event that drew unheard of numbers for a first-time endeavor and cemented relationships between seasoned alums and students.

The ability to make something successful and meaningful is not new for Kaiser. A clinical pharmacist and research associate professor of Digestive Diseases at The University of Cincinnati College of Medicine, Kaiser also oversees its transplant quality program. It is the first position of this type at UC, and possibly the nation. Kaiser sees it as a perfect fit for someone educated in Pharmacy: “I think the pharmacists have the skill set for quality control, it’s (Pharmacy) a very protocol-based discipline.”

Pharmacy was not at the top of career choices when Kaiser was growing up. “I grew up in Columbus and was born a Buckeye,” she said. Kaiser got her bachelor’s at Ohio State. “Initially, I was interested in going to med school” But family friend, Marialice Bennett, then Pharmacy faculty, steered her in a new direction. “The PharmD program was just starting. I was in the second class. Marialice made me see that the program had a lot to offer,” she said. Kaiser became entrenched in the college, becoming part of the Pharmacy Council and serving as a student rep on the search committee to hire a new dean.

From there, Kaiser did a residency at UC’s Intensive Care Unit, where she developed an interest in transplant medicine. A second residency in transplant medicine set the course for her career: “I do so many different things now. I feel like I went a non-traditional route. You’re told in Pharmacy school you’ll be hospital pharmacy or retail, but I’m both. I knew when I left Ohio State I had a lot of options, even if they weren’t spelled out. I’m proud of Ohio State. It got me where I am today.”

When not working, Kaiser likes to focus on family time with her husband and two boys, including many walks in her Hyde Park neighborhood. She’s a proud participant in two Boston Marathons, and looks forward to the next Ohio State Pharmathon this spring.
Students Provide Classes on U.S. Medication System to Newly Resettled Refugees

For many refugees and immigrants new to the United States, the American healthcare system can be confusing and daunting. If they are not fluent in English, this can compound the problem. Pharmacy students at Ohio State are trying to help these refugees through targeted health system classes offered at the Kroger Pharmacy on Columbus' northside.

Each month students meet with refugees, resettlement staff and an interpreter to explain topics such as how medicine is classified, how to read a prescription label, and how to use a pharmacy in the United States. Information is also distributed on how to obtain translation services when they visit the pharmacy. This class allows the attendees to not only learn the process, but also offers a chance to ask questions in a friendly environment.

Laura Smith from US Together, a refugee resettlement agency that helps refugees find employment, said the experience is valuable to the refugees’ introduction to America.

“Many of the refugees come from Bhutan and have been living in camps. They have not had the chance to use a pharmacy like we have here in the United States. This is something that people tend to overlook. It is something they all need, especially for those with families. It’s helpful to come first when they don’t need services, so when they do need that help they are able to access it.”
Academic Divisions

Medicinal Chemistry & Pharmacognosy
The Division of Medicinal Chemistry and Pharmacognosy is composed of faculty members with diversified research interests representing synthetic organic, analytical, natural products, and biological chemistry as well as computerized data acquisition control systems. Its graduate program and research interests are strongly tied to interdisciplinary approaches to the solution of chemical and biochemical problems. Faculty are also active participants in The Ohio State University Comprehensive Cancer Center and are responsible for the operation and research of the Radiochemistry and Instrumentation Laboratory of the Cancer Center. Some of our faculty also participate in the Ohio State Biochemistry Program on campus. The research within the Division involves interaction with all other units of the College of Pharmacy as well as studies involving the colleges of Biological Sciences, Medicine, Veterinary Medicine, and Dentistry.

Pharmaceutics & Pharmaceutical Chemistry
The Division of Pharmaceutics and Pharmaceutical Chemistry aims to translate the science of drug delivery through education and cutting edge research. Topics such as pharmacodynamics, pharmacokinetics, designing of advanced drug delivery systems, formulation of biotechnological therapeutics, and identifying new therapeutic targets are included in this division. Its world-renowned research program includes collaborative efforts with other units on campus such as the Comprehensive Cancer Center, Mass Spectrometry and Proteomics Facility, and Center for Affordable Nanoengineering of Polymeric Biomedical Devices. It collaborates with several colleges across the university including Medicine, Biological Sciences and Veterinary Medicine. Division members teach drug delivery systems, pharmacokinetics, and biopharmaceutics to BSPS, PharmD, and graduate students. PhD graduates of the division enter careers in the pharmaceutical industry, academia, and governmental agencies like the U.S. Food and Drug Administration. Faculty transform drug delivery research and education to advance the field of pharmaceutics.

Pharmacology
The mission of the Division of Pharmacology is to advance and disseminate knowledge relating to the science of drug effects on biological systems. In research activities, students and faculty explore the mechanisms by which drugs work, study disease models to find new drug targets, and contribute to optimization of therapeutic drug regimens. Specialty focus areas include cancer, cardiovascular, and neuro pharmacology. In teaching activities at the undergraduate, professional, and graduate student level, faculty provide instruction regarding the mechanism of action of drugs, pharmacological research methods, and the latest pharmacological discoveries.

Pharmacy Practice & Science
The Division of Pharmacy Practice and Science aims to elevate the standards of patient care through innovations, discovery and dissemination of teaching, practice and research. The division educates and trains students, residents, and fellows about the prevention and treatment of illnesses with medications; develops innovative pharmacy programs through interprofessional partnerships at a variety of practice sites; and leads in translational science through collaborative research from the bench to the bedside for the safe, personalized and cost-effective use of medications in patients.
New Faculty

Peixuan Guo, PhD, one of the top nanobiotechnology experts in the world, was selected as the first Sylvan G. Frank Endowed Chair in Pharmaceutics and Drug Delivery in the College of Pharmacy (joint hire with Department of Physiology and Cell Biology). Guo is focused on growing nanobiotechnology at the university by enhancing and expanding both internal and external collaborations and partnerships. He previously served as the William Farish Endowed Chair in Nanobiotechnology at the University of Kentucky, and was director of the university’s Nanobiotechnology Center and the National Cancer Institute Cancer Nanotechnology Platform Partnership Program in RNA Nanotechnology for Cancer Therapy.

Sharyn Baker, PharmD, PhD was named professor and chair of the college’s Pharmaceutics and Pharmaceutical Chemistry Division and the Gertrude Parker Heer Chair in Cancer Research. Previously at St. Jude Children’s Hospital, Baker is the first woman in the college’s history to head a division. Known for her work with acute myeloid leukemia, Baker’s NIH-funded research program focuses on understanding drug efficiency and toxicity in anti-cancer therapy.

Lara Sucheston-Campbell, PhD joined the college as an associate professor in the Division of Pharmacy Practice & Science. Coming from the Department of Cancer Prevention and Population Sciences at Roswell Park Cancer Institute in Buffalo NY, Sucheston-Campbell was recruited through Ohio State’s Translational Data Analytics Discovery Themes initiative. A genetic epidemiologist, her appointment is shared between the College of Pharmacy and the College of Veterinary Medicine Department of Veterinary Biosciences.

Alex Sparreboom, PhD joined the college as a professor of Pharmaceutics and Pharmaceutical Chemistry. Previously at St. Jude Children’s Hospital, Sparreboom studies transporters and transport modulators for use in cancer therapy. He has identified several protein kinases and membrane transporters as therapeutic targets for renal disorders.

Other Discovery Themes hires include Mark Mitton-Fry, PhD, assistant professor in the Division of Medical Chemistry and Pharmacogosy, who conducts research in the area of anti-bacterial drug discovery, and Kou-San Ju, PhD, an assistant professor who conducts genomics-driven research to discover new natural products with antimicrobial activity.

Also joining the college’s faculty was Navjot Pabla, PhD, an assistant professor in Pharmaceutics and Pharmaceutical Chemistry who studies renal disease; Dan Shu, PhD, research associate professor in Pharmaceutics and Pharmaceutical Chemistry; Moray Campbell, PhD, a research associate professor in the Division of Pharmaceutics and Pharmaceutical Chemistry who is focused on nuclear receptor signaling and epigenetic gene regulation in prostate cancer; and Raj Govindarajan, DVM, PhD, an associate professor in Pharmaceutics and Pharmaceutical Chemistry, who studies pancreatic cancer.
Kinghorn Honored with University’s Distinguished Scholar Award

The Ohio State University College of Pharmacy’s A. Douglas Kinghorn, PhD, DSc, was selected as one of this year’s recipients of The Ohio State University Distinguished Scholar Award. The award was given by Ohio State president Michael Drake, provost Bruce McPheron, vice president of Research Carol Whitacre, senior associate vice president of Research Janet Weisenberger, and previous Distinguished Scholar Award recipient Wolfgang Sadee.

Established in 1978, The Distinguished Scholar Award recognizes exceptional scholarly accomplishments by senior professors who have compiled a substantial body of research. The award is supported by the Office of Research. Recipients are nominated by their departments and chosen by a committee of senior faculty, including several past recipients of the award. Distinguished Scholars receive a $3,000 honorarium and a research grant of $20,000 to be used over the next three years. The honor is the second for the College of Pharmacy, with the first being awarded to Ching-Shih Chen in 2010.

Kinghorn, the Jack L. Beal Chair of Natural Products Chemistry and Pharmacognosy at the college, is an internationally renowned researcher, teacher and scholar in pharmacognosy, the field of developing new medicines from plants or other natural sources. Kinghorn’s research focuses on the extraction, isolation and structural characterization of novel molecules from higher plants to aid cancer prevention and the development of anti-cancer therapies and plant-based high-potency, non-caloric sweeteners.

Kinghorn’s research has resulted in more than 400 peer-reviewed publications and 51 review articles in prestigious publications such as Science, Cancer Research, the Journal of the American Chemical Society, the Journal of Natural Products, Phytochemistry and the Journal of Organic Chemistry. He has co-edited 17 books, 75 book chapters and holds 15 patents.

His research has received continuous support from the National Institutes of Health since 1980. His national and international awards and honors include Fellow of the American Association for the Advancement of Science, Fellow of the American Association of Pharmaceutical Scientists, and the Norman R. Farnsworth Research Achievement Award of the American Society of Pharmacognosy.

According to one colleague, “Professor Kinghorn’s scientific and editorial contributions to the fields of pharmacognosy and natural products drug discovery are coupled with his strong and lasting commitment to teaching and mentorship. There are very few professors of his caliber, and he has brought distinction to himself, his laboratory and students, as well as to the university and academic communities.”

Kinghorn received his BPharm from the University of Bradford, U.K.; his MSc from the University of Strathclyde, Glasgow, U.K.; and his PhD and DSc from the University of London, U.K. He joined Ohio State in 2004.
Faculty and Staff Recognitions

The American Pharmacists Association (APhA) Foundation selected Pharmacy’s Stuart Beatty, PharmD, BACAP, CDE, associate professor of Clinical Pharmacy and Neeraj Tayal, MD, FACP, director of General Internal Medicine and Geriatrics as honorees of the APhA 2015 Pinnacle Award in Group Practice–Health System–Corporation. The Pharmacy/Medicine partnership began in 2006 and since that time, the pharmacy team has grown from one shared faculty member at one clinic to four shared faculty members, one full time pharmacist, and three pharmacy residents practicing at five National Committee for Quality Assurance tier 3 patient-centered medical homes (PCMH) across the network.

Yizhou Dong was one of 17 recipients from nine countries to be awarded a Bayer Hemophilia Award, an initiative that supports basic and clinical research and education in hemophilia. Dong was awarded the Early Career Investigator Award, which provides salary support and research funds for junior faculty members to undertake mentored and/or basic research projects. This funding helps Dong investigate the potential of mRNA nanomedicines, a novel platform for the production of factor VIII, that addresses the missing Factor VIII in hemophilia A patients.

Marcia Worley, BS Pharm, PhD, RPh was selected as an American Pharmacists Association (APhA) Fellow. The APhA Awards and Honors Program is the profession’s most comprehensive recognition program.

Debra Barnette, PharmD was inducted as a Fellow of the American College of Clinical Pharmacy. This distinct honor demonstrates substantial commitment to the organization and profession through exceptional contributions in service, education, and scholarship.

Nicole Cartwright Kwiek, PhD was inducted into the Academy of Pharmacology Educators by The American Society for Pharmacology and Experimental Therapeutics (ASPET).

Jack Yalowich, PhD was elected as 2016 Secretary/Treasurer-Elect for the Division of Cancer Pharmacology of the American Society for Pharmacology and Experimental Therapeutics (ASPET).

Kenneth Hale, RPh, PhD was honored with the Cardinal Health Pillar of Strength Award for his Generation Rx collaboration with Cardinal Health. In addition to receiving the Pillar of Strength Award, the Generation Rx Champion Award was renamed in Hale’s honor.

Human Relations manager Gail Vornholt was awarded the Special Recognition Award by the university’s Campus Campaign. The award is given to those who have demonstrated exceptional dedication to the campaign’s success in their unit or campus-wide over two or more years.

Alix F. Leblanc, PhD and Christina Drenberg (Gutke), PhD were recipients of The American Society for Clinical Pharmacology and Therapeutics’ 2016 Presidential Trainee Award. Each year ASCPT selects top-scoring abstracts submitted by clinical pharmacologists in training.

Partner for Promotion
Distinguished Service-Learning Award
The Ohio State University

Deborah Goff / OSU-South Africa Partnership
Emerging International Engagement Award
The Ohio State University

The Ohio State University College of Pharmacy
Finalist, AACP Transformative Community Service Award
American Association of Colleges of Pharmacy

Staff awards/honors
Mary Higginbotham
Staff Employee of the Year 2016

Student Awards/Honors
Michael Murphy
American Pharmacists Association
Academy of Student Pharmacists
National President-elect
APhA-ASP
National First Runner Up Division AA
Chapter Achievement Award
American Pharmacists Association
Academy of Student Pharmacists
Student Community Engaged Service Award

Nira Kadakia, Joe Cusimano, and Eun Jeong Park
Ohio State P12 Initiative
A Little Goes a Long Way Student Mini-Grant

Mary Vincent
American Society of Health-System Pharmacists
Student Leadership Award

Jorge Ng Zheng, PharmD/MBA student
Schweitzer Fellowship (new)

Andrea Lee, PharmD, Godsfavour Umoru, PharmD
Schweitzer Fellowship (completed)

Having completed all the requirements for a Scarlet Society, the Pharmacy Alumni Society received an Outstanding Alumni Society award for 2016.
Ohio State Researchers Uncover New Approaches for Combating HIV

The AIDS epidemic remains a key global health issue, with approximately 36 million people worldwide currently infected with HIV, the causative agent of AIDS. Use of antiretroviral therapy (ART) has enabled healthcare professionals to transform a once deadly infection into a chronic illness for patients with access to them. Yet being an ART patient means life-long treatments and the threat of increasingly resistant HIV-1 strains that compromise drug therapy. Mamuka Kvaratskhelia, PhD, Kimberly Professor at The Ohio State College of Pharmacy and Center for Retrovirus Research, and his research group have uncovered a new mechanism for halting the spread of infectious viruses that could pave the way for therapies to combat emerging HIV-1 strains resistant to currently available treatments. These findings are reported in a recent issue of Cell, the eminent life sciences journal.

Kvaratskhelia and his team sought to alter the structure of integrase, a key HIV-1 protein, using small molecules called allosteric integrase inhibitors, or ALLINIs. These studies have resulted in discovery of a new and unexpected role for integrase in HIV-1 biology and revealed the mechanism that causes ALLINIs to impair HIV-1 replication.

HIV-1 life cycle is broadly divided into two phases: the early phase, when the virus invades human cells to establish the infection; and the late phase, when infected cells make new virus particles that infect other cells. Historically, it was thought that integrase acts only during the early phase of HIV-1 infection by integrating the viral copy DNA into the human genome. Yet in this study Kvaratskhelia’s team, in collaboration with Sebla B. Kutluay, PhD, Washington University School of Medicine and Paul D. Bieniasz, PhD, The Rockefeller University, found that integrase is also essential for the late phase where it ensures that viral RNA, which is the genetic code of HIV-1, is correctly positioned within the infectious virus particles.

Furthermore, these investigators found that ALLINIs altered the structure of integrase and impaired its ability to bind the viral RNA, thus yielding non-infectious particles. The outer shells of the newly formed particles were normal, but the internal components were profoundly altered with the viral RNA genome being misplaced.

“Normally, scientists first try to understand biological processes for how viruses replicate and then drugs are developed to block specific biochemical steps in the virus life cycle,” said Kvaratskhelia. “In this case, ALLINIs helped us to uncover a previously unknown biological role of integrase for making infectious virus particles.” Kvaratskhelia’s team is currently working with medicinal chemists at Ohio State to develop ALLINIs that can be used to treat AIDS patients.

Other authors of the study include Jacques J. Kessl, Dana Townsend, Stephanie Rebensburg, Alison Slaughter, Ross C. Larue, Nikoloz Shkriabai, Nordine Bakouche and James R. Fuchs. These studies where supported by National Institutes of Health grants.
College of Pharmacy by the Numbers

Students

Scholarships awarded

BSPS: 28 ($34,675)
PharmD: 247 ($750,841)

Graduate students: 6
- The Professor Sylvan G. Frank Graduate Fellowship in Pharmaceutics and Pharmaceutical Chemistry (1)
- The Raymond W. Doskotch Graduate Fellowship Fund in Medicinal Chemistry and Pharmacognosy (1)
- Eli Lilly Fellowship in Pharmaceutics (2)
- The Popat N. Patil Graduate Fellowship Fund in Pharmacology (1)
- University Fellowship (1)

281
Scholarships
Awarded in FY16

Passing boards percentage

North American Pharmacist Licensure Examination:
97.5 percent

Multistate Pharmacy Jurisprudence Examination:
100 percent
Number in graduating class

BSPS: 95
PharmD: 117
Residency: 26
Graduate school: 13
  • Summer 2015 – 2 (PhD)
  • Autumn 2015 – 2 (PhD)
  • Spring 2016 – 7 (MS) and 2 (PhD)
MACPR: 22
  • Summer 2015 – 1
  • Autumn 2015 – 7
  • Spring 2016 – 14

Match rate
(American Society of Health-System Pharmacists Residency Match Rate)
  • 40 percent of our students pursued a residency
  • 83 percent of those students matched
  • 69 percent is the national ASHP match rate

Incoming class statistics

BSPS
  • 61 percent were in the top 10 percent of their graduating class
  • Average ACT score was 29.4
  • Average state of Ohio ACT score is 22
  • Average national ACT score is 21
  • 30 percent under-represented minority
PharmD
  • GPA 3.4
  • 80 PCAT composite percentile for incoming PharmD students
  • 33 percent under-represented minority
Graduate students
  • MS GPA: 3.32
  • PhD GPA: 3.58 GRE: Verbal 59 percentile
    GRE: Quantitative: 71 percentile
  • 71 percent domestic
  • 29 percent international
  • 14 percent under-represented minority

95 percent
Five year graduation rate

29.4
Average ACT score for incoming BSPS students

80
PCAT composite percentile for incoming PharmD students

71 percentile
GRE quantitative score for graduate students
Research

Total FY 2016:

$8,595,132
(13.6 percent increase)

Patents

Applied
• FY15: 61
• FY16: 27

Granted
• FY15: 10
• FY16: 22

NIH: $7,464,911
87 percent of total
(18 percent increase)

Foundations: $853,517
10 percent of total

Industry: $276,704
3 percent of total

Total FY 2016: $8,595,132
(13.6 percent increase)

Patents granted in FY16
College Budget

$23 million

Total funds for FY16

Donor Impact

- Total number of gifts
  1,193 total donors, 702 alumni donors (highest alumni participation in last 5 years)
- Total amount raised
  $5.89 million
- Scholarships
  $1.88 million in privately funded student aid, directed toward a mixture of Pharmacy and graduate student aid
  - $206,810 in cash & securities
  - $957,000 in 5-year pledges
  - $717,750 in deferred estate commitments
- Total amount raised in the But for Ohio State campaign
  $23.3 million

Gifts raised for FY16
Henry J. Mann  
Dean and Professor of Pharmacy Practice and Science

**Advancement**

Thomas Dauber  
Senior Director of Advancement

Alyssa Grovemiller  
Director of Alumni & Constituent Engagement

Ben Miller  
Associate Director of Development

Andrew Storch  
Office Associate

**Business Operations**

Adam Betz  
Assistant Director of Business Operations

Tami L. Boldman  
Facilities Manager

Linda Emmenegger  
Procurement Coordinator

Tesia Forbes  
Business Manager

Kristin Genchi  
Fiscal/HR Associate

Emily Howard  
Fiscal/HR Generalist

Ren Leaflight  
Business Intelligence Analyst

Maggie Merry  
Chief Administrative Officer

Joy Scott  
Service Center Manager

Gail Vornholt  
Human Resources Manager

**Medication Management Program**

Ashley Coleman  
Medication Management Specialist

Kathryn Forte  
Patient/Pharmacy Support Technician

Kelly Heal  
Program Assistant

Ellen Kaercher  
Patient/Pharmacy Support Technician

Bruce Minto  
Medication Management Specialist

Adah Monroe  
Patient/Pharmacy Support Technician

Patti Morris  
Medication Management Specialist

Margaret Mulligan  
Patient/Pharmacy Support Technician

Julianne Peck  
Patient/Pharmacy Support Technician

Christine Prusa  
Medication Management Specialist

Kristine Schumacher  
Medication Management Specialist

Michelle Tilley  
Patient/Pharmacy Support Technician

Erin Vance  
Medication Management Specialist

**Medicinal Chemistry and Pharmacognosy**

Ching-Shih Chen  
Professor

Hsiao-Ching Chuang  
Senior Researcher

Mark E. Drew  
Assistant Professor

Lisa Dush  
Associate Editor, Journal of Natural Products

James R. Fuchs  
Associate Professor

Alice S. Gardner  
Division Coordinator

Kou-San Ju  
Assistant Professor

A. Douglas Kinghorn  
Professor and Jack L. Beal Chair

Samuel Kulp  
Research Scientist

Pui-Kai (Tom) Li  
Associate Professor

Mark Mitton-Fry  
Assistant Professor

Harinantenaina  
Liva Rakotondraibe  
Assistant Professor

Yulin Ren  
Senior Researcher

Jinhua Song  
Senior Researcher

Werner Tjarks  
Professor

Karl A. Werbovetz  
Professor and Chair

Jennifer L. Whetstone  
Senior Lecturer

**Pharmaceutics and Pharmaceutical Chemistry**

Sharyn Baker  
Professor and Gertrude Parker Heer Chair

Daelynn Buelow  
Research Scientist

Moray Campbell  
Research Associate Professor

Christopher Coss  
Research Assistant Professor

Yizhou Dong  
Assistant Professor

Alice Gibson  
Senior Research Specialist

Rajgopal Govindarajan  
Associate Professor

Peixuan Guo  
Professor and Sylvan G. Frank Chair

Yingshi Guo  
Research Assistant 2

Christina Drenberg Guttke  
Research Assistant Professor

Shuiying Hu  
Research Scientist

Jeffrey S. Johnston  
Senior Lecturer

Mamuka Kvaratskhelia  
Kimberly Professor in Pharmacy

Ross Larue  
Research Assistant Professor

Robert J. Lee  
Professor

Hong Li  
Senior Researcher

Radhika Manoharan  
Laboratory Supervisor

Jay McKirnan  
Administrative Associate

Navjot Singh Pabla  
Assistant Professor

II-Kyoo Park  
Research Scientist

Mitch Phelps  
Associate Professor

Dan Shu  
Research Associate Professor

Alex Sparreboom  
Professor

Hongyan Wang  
Research Scientist

Nancy Wardle  
Lab Administrative Associate

Zhiliang Xie  
Research Associate 2-B/H

Hui Zhang  
Research Assistant Professor

Xiaohua Zhu  
Research Scientist

**Pharmacology**

Betsy Bulgrin  
Division Coordinator

Molly Downing  
Clinical Instructor

Terry S. Elton  
Professor

Dale G. Hoyt  
Associate Professor

Kari R. Hoyt  
Associate Professor

Keli Hu  
Associate Professor

Ragukanagasabai  
Research Scientist

Nicole C. Kwiek  
Director of Undergraduate Studies

Nam Lee  
Assistant Professor
Leslie Newman
Assistant Professor - Practice

Jack C. Yalowich
Professor and Chair

Anthony P. Young
Professor

Pharmacy Practice and Science
Sarah Adkins
Clinical Pharmacist

Kelli Barnes
Assistant Professor of Clinical Pharmacy

Debra Barnette
Assistant Professor of Clinical Pharmacy

Stuart J. Beatty
Associate Professor of Clinical Pharmacy

Donald Bennett
Clinical Assistant Professor

Thallia Blight
Program Manager

Carolyn Brackett
Associate Professor of Clinical Pharmacy

Esperanza J. Carcache de Blanco
Associate Professor

Cynthia A. Carnes
Senior Associate Dean for Research and Graduate Education

Kristin A. Casper
Associate Professor of Clinical Pharmacy

Colleen Dula
Clinical Assistant Professor

Ruth Emptage
Clinical Assistant Professor

Cari Fink
Assistant Professor - Practice

Anna Haas-Gehres
Clinical Assistant Professor

Kenneth M. Hale
Clinical Professor

Laura E. Hall
Clinical Assistant Professor

Katherine A. Kelley
Associate Dean for Assessment and Strategic Initiatives, Associate Professor of Clinical Pharmacy

Stacy King
Pharmacy Practice Lab Coordinator

Ashley Knackstedt
Program Assistant

Julie E. Legg
Clinical Assistant Professor

Cynthia Mann
Pharmacy Practice Lab Coordinator

Katherine Marks
Program Coordinator

David Matthews
Assistant Professor-Practice

James W. McAuley
Associate Dean for Academic Affairs and Professor

Bella H. Mehta
Director of Continuing Professional Development, Professor of Clinical Pharmacy

Jay M. Mirtallo
Director of Master’s in Health Systems Pharmacy, Professor of Clinical Pharmacy

Milap Nahata
Director, Institute of Therapeutic Innovations and Outcomes (ITIO)

Kristina Naseman
Clinical Pharmacist

Kristian Navickas
Clinical Pharmacist

Marjorie Neidecker
Assistant Professor - Clinical

Vinita B. Pai
Assistant Professor of Clinical Pharmacy

Ming Poi
Assistant Professor

Maria C. Pruchnicki
Associate Professor of Clinical Pharmacy

Przemyslaw Radwanski
Research Assistant Professor

Jennifer L. Rodis
Assistant Dean for Outreach and Engagement, Associate Professor of Clinical Pharmacy

Jennifer Seifert
Director, PGY1 Community Care Residency Program

Alexa Sevin
Assistant Professor - Clinical

Bonnie Spiers
Assistant Director of IPPE

Lara Sucheston-Campbell
Associate Professor

Sue Young
Director of Experiential Program Development

Katherine Watkins
Academic Counselor & Staff Assistant

Marcia Worley
Professor of Clinical Pharmacy and Chair

Student Affairs
Zayd Abukar
Academic Counselor & Staff Assistant

Kelly Crum
Coordinator of Admissions & Financial Aid

Natalie Fox
Career Counselor

Shawn M Levstek
Psychologist

Leigh Mascolino
Manager of Career Services

Julie Miller
Program Manager

Jose Orozco
Director of Student Services

Joshua Roush
Coordinator of Recruitment

Beth Stiles
College Registrar

Katherine Watkins
Academic Counselor & Staff Assistant

Teaching, Learning and Assessment
Christina Archer
Instructional Designer

Justin Habash
Program Director

Mary Higginbotham
Program Coordinator

Jeremy Huffer
Instructional Designer

Technology Services
Jennifer Bartlett
PC Workstation Support

The Ohio State University College of Pharmacy 2015-16 Year in Review