

ANNUAL REPORT
2014-2015



PittPharmacy

Fall 2015

Dear Friends,

PittPharmacy is truly one of the finest schools of pharmacy in the nation—in every way. A great school makes its impact through exceptional education, research, and patient care programs—and PittPharmacy is great. What may not be obvious is that we have accelerated our progress because together, the faculty and staff developed and evolved our Long Range Plan. The process that began in 2001 continues to the present time: the current plan is Long-Range Plan 2018. Our shared vision and goals guide our actions, and as new opportunities arise and our environment changes, we respond with new goals.



We personalize the education of our students—and to a student, they would use that term to describe their PittPharmacy experience. “Personalizing education” and “getting to expert faster” happens because we purposefully engage students in defining their personal paths in the first semester of P1 year, and facilitate the development of knowledge of opportunities and networks of professionals. I share a quote from our first-ever Fulbright Scholar (2015):

“I am honored to represent our school and profession through the Fulbright Grant. Your support, and the opportunity to “personalize” my experience in the PharmD program, certainly provided the foundation for a competitive application. I cannot fully express my gratitude for the hard work of faculty members . . . and their contributions during the Fulbright application process.”

Ranking ninth in NIH funding marks us as a “research school of distinction.” We stated that we would develop a translational pharmacogenomics program—and I am pleased to share that we have implemented a clinical pharmacogenetics program, with a research foundation, for patients at UPMC Presbyterian. We have also developed an award-winning (from AACCP) educational program that enables practitioners—pharmacists, and other healthcare professionals, enabling to utilize genetic information in selecting medications.

In Long Range Plan 2018, we stated that we would build a PittPharmacy Innovation Lab—and we have. This annual report includes a first-time summary of accomplishments. Those accomplishments include developing a course into a semester-long Drug Development game to be implemented in January 2016, creating an advisory board, and offering a two semester creativity and innovation curriculum.

Finally, this academic year was truly historic. In May 2015, many of our faculty, staff and graduate students moved their research laboratories into Salk Pavilion—the first-ever new construction for our 137-year-old school. The Commons provides gathering space, and the vacancies in Salk Hall provide opportunities to provide office spaces for more of our faculty and additional learning spaces for students.

True to our mission, we are “excellent,” we are “innovative,” and we are “leaders.”

Hail to Pitt!

A handwritten signature in black ink that reads "Patricia Kroboth". The signature is written in a cursive, flowing style.

Patricia D. Kroboth, Dean

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Extending Our Global Reach

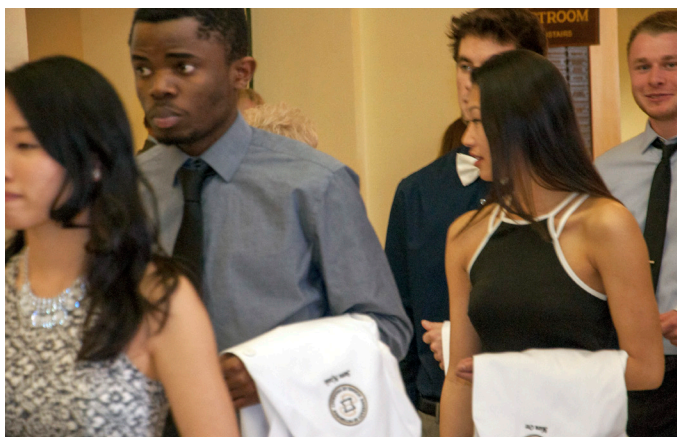
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Long-Range Plan 2018

Long-Range Plan 2018	
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Leading Pharmacy Education





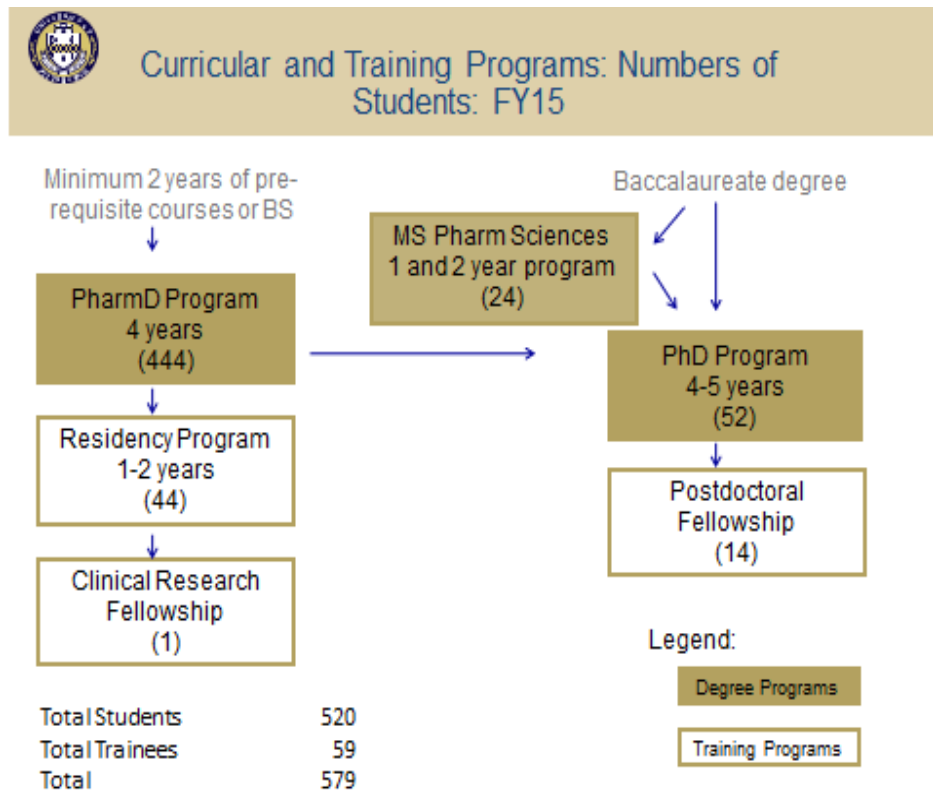
Leading Pharmacy Education

The School builds on its rich tradition of excellence in education, producing innovators to solve the complex medication-based problems of today and tomorrow and enhance the health and well-being of individuals and communities. The School prepares pharmacists of the future through the PharmD program and advanced practice residencies and prepares future scientists through its graduate program.

The School of Pharmacy has adopted two broad goals for our PharmD, residency, and graduate programs:

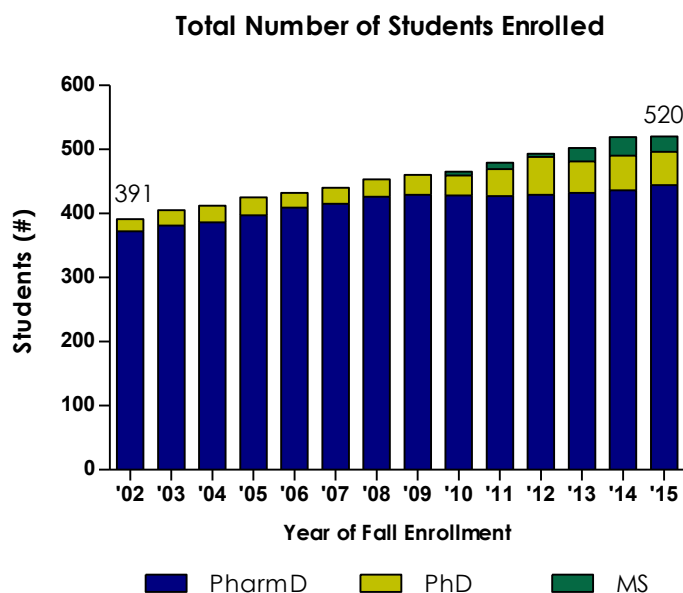
- Personalizing Education and
- Getting to Expert Faster.

The chart below shows the number of students and trainees in each of our programs; it also shows the usual pathways to each degree or training program.



EDUCATION BY THE NUMBERS FOR FY15

- Our total number of students in degree granting programs has reached the all-time high of **520**. The student body is 22% higher than a decade ago and 33 % higher than FY02.
- The students were taught by **77** full-time faculty members.



PharmD Program

In FY15:

- **114** students matriculated for the PharmD class of 2019; average SAT score of **1410** and GPA and PCAT scores of 3.58 and 81%, respectively.
- **3.3** –The number of applicants per seat through open admission.
- **231** scholarships totaling **\$479,700** were awarded to **191** PharmD students.
- University of Pittsburgh pharmacy student organizations won **5** national or regional awards.
- PharmD students presented **58** posters at national and regional meetings.
- **314** pharmacists in **23** states and **9** countries provided **756** APPE rotations for **108** fourth professional year students.
- **106** students in the class of 2015 received PharmD degrees and
- **82** students elected to receive the Bachelor of Science in Pharmaceutical Sciences after their second professional year.
- **70 (21%)** of 331 students in the P2, P3, and P4 years were enrolled in Areas of Concentration.

Residency Program

In FY15:

- **44** residents (**31** PGY1 and **16** PGY2) came from **23** schools of pharmacy in **17** states.
- Our **13** programs were in partnership with **14** institutions/entities.
- **36** residents presented their research results at national or regional meetings.
- **23** residents participated in training programs to enhance their teaching and clinical precepting—**12** residents completed the “Mastery of Teaching Program” and **11** completed “Orientation to Learning and Teaching Program.”
- **16** residents were accepted into PGY2 specialty residency programs and **2** were accepted into a fellowship or stewardship programs.
- **8** residents accepted faculty positions at schools of pharmacy.
- **5** residents achieved board certification as pharmacotherapy specialists during their residencies.
- **8** PGY2 residents accepted a clinical position at an academic medical center, 4 of which were at the UPMC Health System.
- 2 residents earned Master of Health Administration degrees from the University of Pittsburgh School of Public Health.

Graduate Program

In FY15:

- **76** students were enrolled: **52** PhD students; **13** Master of Science students; **11** Non Thesis Master of Science students.
- **42** received degrees in pharmaceutical sciences; **12** PhD students; **13** Master of Science students; **17** Non Thesis Master of Science students.
- **28% (15/52)** of the full-time PhD students are U.S. citizens or permanent residents.
- **50% (26/52)** of the full-time PhD students have degrees from schools of pharmacy; **9 of 52 (17%)** have PharmD degrees.
- **9** students received regional or national awards for excellence in research.
- **34** peer-reviewed manuscripts or book chapters were published by graduate students.
- Graduate students gave **35** presentations at regional and national scientific meetings.
- **14** postdoctoral fellows were engaged in research in School of Pharmacy laboratories.

BS IN PHARMACEUTICAL SCIENCES

In April 2015, 82 students elected to receive the Bachelor of Science in Pharmaceutical Sciences at the end of their second professional year.

THE PHARM D PROGRAM

As a recognized national leader in pharmacy education, the School of Pharmacy offers world-class learning opportunities for students. The School of Pharmacy:

- contributes to the national dialogue about the scholarship of teaching, learning, and assessment through publications and presentations;
- provides students with a rich array of opportunities to personalize their education, including areas of concentration; elective courses; independent study; research engagement; experiential rotations; travel to state, regional, and national meetings; and international pharmacy travel;
- empowers students to become practitioners with the necessary skills and knowledge to be leaders in patient-centered care and key contributors on the health care team; and
- provides student pharmacists and graduate pharmacists with support and resources through a lifetime of professional development.

Accreditation from the Accreditation Council for Pharmacy Education for the PharmD Program

The School's doctor of pharmacy program is fully accredited by the Accreditation Council for Pharmacy Education (ACPE). The accreditation term granted extends until January 31, 2017.

Increasing the Value of a PharmD Education: Getting to Expert Faster

Members of the faculty and staff have taken steps to increase the value of a PharmD education at Pitt through five mechanisms:

- A. Adopting the philosophy of “cost of PharmD education” vs. the credit-based tuition. Students are permitted to take courses above a standard credit limit and during the summer with no additional tuition.
- B. “Personalizing education.” See next major section.
- C. Accelerating learning through active engagement.
 1. Facilities enhance active engagement. The Novo Nordisk Learning Center, which opened in fall 2013, is a state-of-the-art classroom that facilitates active and small-group learning in a large group setting. Up to 126 students can work in groups of six, each with its own work table and video monitor. Contemporary technology allows the instructor to project to the monitors while also allowing students to connect laptops and mobile devices to the monitors for targeted group work.
 2. Setting expectations and assessing performance. The FY15 implementation of a blended-simulation, readiness assessment sets student expectations and assesses student progress and readiness for Advanced Pharmacy Practice Experiences. P1 and P3 students plus PGY1 residents participate. Foundational knowledge, clinical decision making, patient communication skills, interprofessional communication skills, and attitudes of ownership for patient outcomes are all assessed in the performance-based assessment.

This assessment is now part of PittPharmacy's comprehensive assessment program. Data are used to inform student-specific education plans, as well as improvements to the curriculum to accelerate student development.

- D. Developing, implementing, and increasing the number of learning situations that engage students in simulated clinical environments and with simulated patients and health care providers to accelerate the development of clinical decision-making, patient education, and interprofessional communication skills.
1. Standardized patients (trained actors)
 2. Standardized colleagues (trained actors and faculty volunteers)
 3. Computer cases with branched algorithms that utilize game theory
 4. Human patient simulators (mannequins)

Simulated patient experiences have tremendous value for learning because each of the above:

- Provides immediate feedback to the student on performance.
- Protects patients from medication errors or students practicing first-time communication skills.
- Provides a known safe environment for student learning.
- Has “known correct” answers to patient situations.

1. Standardized Patients. Students gain skills in patient interviewing, clinical reasoning, and therapeutic decision making through a variety of simulated patient care experiences that are woven throughout the curriculum. Actors trained as standardized patients provide students opportunities to practice patient care in a safe environment and to receive detailed feedback from faculty focused on continued development and refinement of skills.

2. Standardized Colleagues. Faculty and residents trained as standardized physicians and other health professionals provide student opportunities to practice communication skills to effectively engage in collaborative team-based care delivery and navigate potentially difficult conversations. All P1 students also participate in the fall Interprofessional Forum to learn alongside first-year students in other health sciences programs on campus about the emerging importance of interprofessional collaborative care in the current era of health care reform.

3. Virtual Patient Simulation. PittPharmacy faculty members are nationally recognized for their development and use of computer-based, virtual patients to integrate case-based teaching of complex therapeutic concepts and clinical decision-making processes into the curriculum. Their award-winning work with a branched-outcome decision-making model is based on game theory. These cases have enhanced clinical decision making in the therapeutics component of the curriculum.

4. Human Patient Simulators. The Peter M. Winter Institute for Simulation, Education and Research (WISER) Center remains a valuable resource for use in pharmacy courses. Equipped with 16 full-sized simulators in a bank of simulated environments, control centers, and debriefing rooms, the WISER center is staffed with full-time technicians and serves students across the health sciences as well as practitioners across the UPMC system. In addition, the School has invested in a full-time director of simulation, two simulation mannequins, four arms to train in blood pressure monitoring, and a wound care foot that are housed in Salk Hall for students’ use to improve their clinical skills.

- E. Optimizing the use of required Introductory Pharmacy Practice Experiences (IPPEs) and Advanced Pharmacy Practice Experiences (APPEs), which require interactions with patients and other health care providers.

FY 15 REAL PATIENT CARE EXPERIENCES: INTRODUCTORY PHARMACY PRACTICE EXPERIENCES (IPPEs)

Student experiences with patients depend greatly on preceptors, some of whom are faculty.

- 42 preceptors supervised 114 P1 students.
- 77 preceptors supervised 111 P2 students.
- 104 preceptors supervised 109 P3 students

Students interact with real patients in the P1, P2 and P4 year; the focus in the P3 year is on operational aspects of pharmacy.

SilverScripts is a program through which Pitt student pharmacists interact with seniors at senior centers throughout the Pittsburgh. During the first visit, students talk with patients about their drug therapy. Two weeks later, after developing and reviewing a plan for the patient, each student pharmacist returns to visit with the same senior to talk with them and make recommendations. Students meet their patients in the spring of the P1 year, see them again in the fall of their P2 year, and then transition the patients to the P3 students in the following spring.

SilverScripts Program Impact during FY15

SilverScripts Spring 2015 P1 Students		
Blood Pressure Checks	730	
Total Med Reviews	316	
Medication Education w/out med review	59	
Drug Therapy Problems (DTPs) Identified	Unnecessary Drug Therapy	48
	Needs Additional Drug Therapy	208
	Needs Different Drug Product	49
	Dosage Too Low	24
	Adverse Drug Reaction	41
	Dosage Too High	18
	Noncompliance	117
Referral to other health care provider	52	
Total # Drug Therapy Problems Identified	505	

P2 Community IPPE Patient Interactions and Collective Impact on Patients

Year	# Students	# Patient Encounters	# Drug Therapy Problems Identified	# Interventions
2015		6,762	3720	4,006

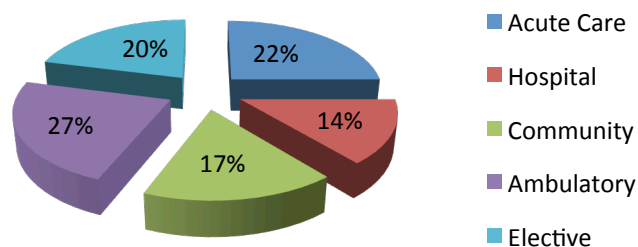
REAL PATIENT CARE EXPERIENCES: ADVANCED PHARMACY PRACTICE EXPERIENCES (APPEs)

In their P4 year, students interact with patients in a variety of settings. Results from the PITT form for tracking show the impact of students on patients in various settings.

P4 Class Patient Impact FY15	
Patient Interactions	20,385
Drug Therapy Problems Identified	14,296
Drug Therapy Recommendations	14,857
Adverse drug events identified	1,482
Adverse drug events averted	1,233

In FY15, 314 preceptors supervised 108 P4 students during 756 five- or six-week rotations. The types of proportions of rotations are shown in the pie chart below.

APPE Distribution by Rotation Type



Increasing the Value of a PharmD Education: Personalizing Education

We believe that personalized education will enrich individual student experiences and will better prepare them for success as they navigate the rapidly changing health care landscape and post-graduate environment.

Long Range Plan 2018

The faculty is enabling students to personalize their education through a growing array of opportunities.

- Areas of Concentration
- Special Topics
- Presentations of Research at Regional or National Meetings
- International Rotations
- Professional Development through Advising

A. AREAS OF CONCENTRATION (ARCOs)

During FY15, three additional areas of concentration (ARCOs) were approved, bringing the total number offered to six. Seventy (70) or 21% of 331 students in the P2, P3, and P4 years were enrolled in Areas of Concentration.

By spring 2015, a total of 70 students were enrolled, including 34 new students. Enrolled are:

- Ten students in the ARCO-Global Health (2 P2, 4 P3, 4 P4).
- Fourteen students in the ARCO-Research (1 P2, 8 P3, 5 P4).
- Twelve students in the ARCO-Pharmacy Business Administration (6 P3, 6 P4).
- Four students in the ARCO-Pediatrics (1P3, 3 P4).
- Twenty students in the ARCO-Community Leadership, Innovation, and Practice (10 P3, 10 P4).
- Ten students in the ARCO-Pharmacotherapy Scholars (10 P4).

B. SPECIAL TOPICS

Special Topics elective courses allow students the opportunity to personalize their education by engaging in a mentored experience in a particular area of pharmaceutical science, pharmacy practice, or pharmacy education through individual or small group work under the direction of a faculty member. Special Topics may take the form of immersion in a laboratory, a defined literature review, or other longitudinal experience, activity, or course co-designed by a student and a faculty mentor. Special Topics courses may be designed for one, two, or three credits each, depending on the nature of the experience, expected commitment of the student, and stated outcomes of the course.

C. STUDENT PRESENTATIONS AT NATIONAL AND REGIONAL MEETINGS

Student Presentations at National and Regional Meetings

American College of Clinical Pharmacy Annual Meeting	
Primary Author	Poster Title
Nick Farina, Kevin Ordons, Marissa Csovelak, Melissa Shook (P4's)	Characterization of delirium in a medical ICU that emphasizes frequent delirium screening at a tertiary, academic medical center
American Society of Health-System Pharmacists Midyear Clinical Meeting	
Primary Author	Poster Title
Anthony Boyd (P4)	USP chapter <795> gap analysis: Improving non-sterile compounding of pharmaceutical products in a tertiary academic medical center
Anthony Boyd (P4) John Lyons (P4)	Evaluation of argatroban in patients with suspected or confirmed heparin-induced thrombocytopenia (HIT) in a large academic health system
Anthony Boyd (P4) Jamie Eckardt (P4) Carlo Iasella (P4) Tyler Chanas (P4) Kiersten Williams (P4)	Comparative effectiveness of aspirin based dual-antiplatelet therapies on major adverse cardiovascular events in the healthcare system
Laura Bredenberg (P4)	Evaluating the impact of incentives on smoking cessation success in a substance abuse population
Julia DiNardo (P3) Valerie Nolt (P3)	Safety of intravenous ketorolac and acetaminophen in laparoscopic donor nephrectomy

Jamie Eckardt (P4)	Pharmacy collaboration with nursing staff to increase HCAHPS scores at a large academic institution
Nicholas Farina (P4)	Observation and analysis of inpatient pharmacist interventions regarding patients at an off-site ambulatory surgery center
Rachel Filiaggi (P4) Kevin Ordons (P4)	Antipsychotic use in delirious medical ICU patients
Michelle Hayes (P4) Timothy Stimach (P4)	Safety evaluation of triple antithrombotic therapy at a large, academic medical center
Shea Liput (P3)	A UPLC-MS/MS method for determination of serum phenytoin and levetiracetam concentrations in pediatric CA patients receiving therapeutic hypothermia
John Lyons (P4)	Comparative safety analysis of aspirin-based dual antiplatelet therapies on incidence of major and minor bleeding events in a healthcare system
Cara Mazzarisi (P4)	Concordance across published severity of illness criteria for clostridium difficile colitis and implications for initial therapy selection: Does it all add up?
Cameron Ninos (P3)	Examining the strength of evidence associated with off-label drug use in the ICU setting
Valerie Nolt (P4) Alexandra Warble (P4)	Assessment of second-generation antipsychotic utilization and metabolic parameter monitoring in an inpatient pediatric population
Timothy Stimach (P3)	Development of a nomogram for nurse assessment of ertapenem dose appropriateness in an outpatient parenteral antimicrobial therapy clinic
Timothy Stimach (P3)	Development of a standardized and effective technician training model at a large academic teaching facility
Robert Sutton (P3)	Automated medication dispensing cabinets: Optimized
Georgina Waldman (P3)	Development of a nomogram for nurse assessment of ertapenem dose appropriateness in an outpatient parenteral antimicrobial therapy clinic
Nan Wang (P4)	Assessment of learner-perceived rigor and quality characteristics of advanced pharmacy practice experiences
Chelsea Zavilla (P3)	Development of a system-wide hospital policy for anticoagulation laboratory monitoring
American Pharmacists Association Annual Meeting	
Primary Author	Poster Title
Svetlana Avshalumov (P3)	Why are patients late to refill their maintenance medications?
Cassandra Bloor (P3)	Collaborative practice agreements: Potential for community pharmacists to more effectively resolve drug therapy problems
Aaron Devanathan (P3)	The evaluation of student-provided online resources for second-year student pharmacists to supplement classical didactic learning
Chelsea Henderson (P3)	Evaluating and improving a pharmacy student-led community outreach program at local senior centers
Brittney Knass (P3)	Patient attitudes toward pharmacogenomics testing in an independent community pharmacy
Jon Kovac (P3)	Blood pressure self-monitoring: Factors affecting compliance in community-dwelling hypertensive patients
Arthi Kumar (P3)	Characterizing patient experiences to out-of-stock medications in two community pharmacies

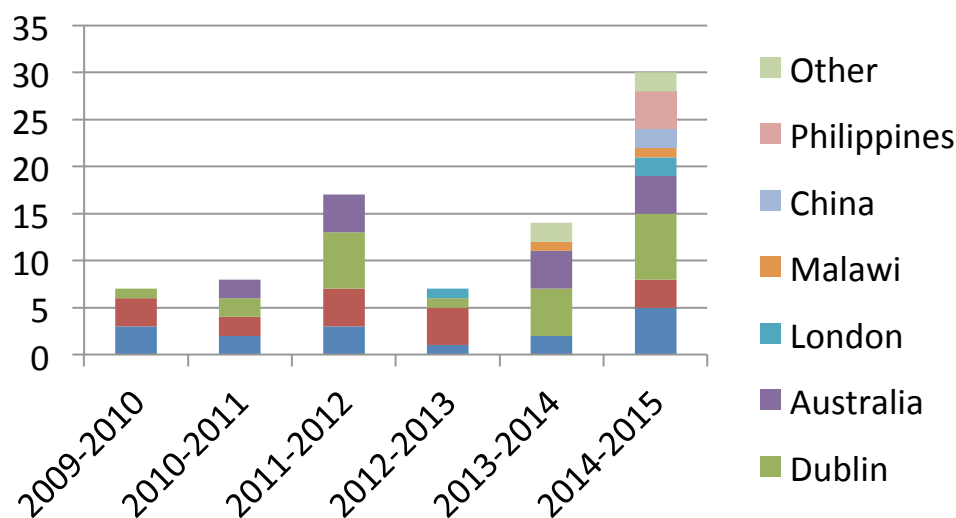
Alyssa Kunkel (P3)	Exploring the relationship between patient activation and medication-related problems for patients with chronic diseases
Emily Linville (P3)	A comparison of hospital clinical pharmacist roles and attitudes in Shanghai, China and Pittsburgh, Pennsylvania
Emily Linville (P3)	Patient and community pharmacist perceptions regarding appropriate antibiotic use
Michelle (Myers P3)	Improving care coordination for patients on long-acting injectable antipsychotics transitioning from hospital to home: A work systems approach
Andrew Nguyen (P4)	Disparities in depressive symptoms and antidepressant and anxiolytic medication use among Asian American subgroups
Emily Smith (P3)	Patient perceptions and satisfaction with pharmacist integration in a physician-run cardiology clinic
Georgina Waldman (P3)	Characterizing medication needs and transitions of care process for newly discharged cardiology patients
Ryan Winstead (P3)	Exploration of clinical pharmacy practice and its relation to health care expenditure
American Public Health Association Meeting	
Primary Author	Poster Title
Kate Harrigan (P2)	Racial and ethnic disparities in analgesic prescribing for migraine in U.S. emergency departments
Pennsylvania Pharmacists Association Mid-Year Conference	
Primary Author	Poster Title
Maddie Adams (P2) Hunter Busansky (P2)	Outpatient pharmacy - conducted discharge medication bedside delivery service
Svetlana Avshalumov (P3)	Why are patients late to refill their maintenance medications?
Brandon Barry (P1) Dylan Ahrens (P1) Caroline Beck (P1) Carrece Faulknor (P1) Tyler Graham (P1) Bradley Wong (P1)	Thrifty White Pharmacy: Providing services via med sync
Nayanika Basu (P1)	What do pregnant females and mothers of newborns need from community pharmacists?
Cassandra Bloor (P3) Kelsey Moss (P3)	Collaborative practice agreements: Potential for community pharmacists to more efficiently resolve drug therapy problems
Rebecca Campbell (P3) Sophia Yang (P3) Danielle Bellen (P3) Christina Vaghetto (P3)	Medical marijuana: a pharmacist's perspective
Gabby Dziuba (P1) Nicolette Diehl (P1) Olivia Marchionda (P1)	The age of the expanding pharmacist: partnering with the underserved
Katlyn Grossman (P3) Sophia Yang (P3) Elena Schaller (P3) Danielle Bellen (P3)	Pharmacy student outcomes in an underserved population setting
Kaleen Hayes (P3) Meera Vacchani (P3) Alyssa Kunkel (P3)	Perceptions and attitudes toward HPV vaccination among college students
Harvey He (P2), Stephanie Tchen (P2)	Use of mobile technology to improve patient education and medication adherence in pharmacy practices

Chelsea Henderson (P3)	Evaluating and improving a pharmacy student-led community outreach program at local senior centers
Linda Huang (P1)	Improving health outcomes for pediatric patients: potential interventions for community pharmacies
Brittany Knass (P3)	Patient attitudes towards pharmacogenomic testing in an independent community pharmacy
Jonathan Kovac (P3)	Blood pressure self-monitoring: Factors affecting compliance in community-dwelling, hypertensive patients
Arthi Kumar (P3) Michelle Meyers (P3)	Characterizing patient experiences with out-of-stock medications in two community pharmacies
Alyssa Kunkel (P3)	Exploring the relationship between patient activation and medication-related problems for patients with chronic diseases
Alexandria Lavella (P2) Ashley Lovas (P2)	Staff diabetes education
Emily Linville (P3)	Patient and community pharmacists perceptions of appropriate antibiotic use
Alex Marshall (P2) Tael'r Eason (P2) Dylan Atkinson (P2) Ingrid Pan (P2)	Script your future: a University of Pittsburgh interprofessional medication adherence initiative
Kasey Martik (P2) Meredith Bollinger (P2) Hayley Fedorek (P2)	Implementing drug disposal in community pharmacies
Rebecca Wytiaz (P1) Marissa Badzik (P1) Karen Quach (P1)	A glance at patient care at Gatti Pharmacy

D. INTERNATIONAL APPE ROTATIONS

P4 students may complete APPE rotations at international sites as long as they are fulfilling an elective experience. This year a total of 29 students had international APPE rotation experiences, more than double the number the previous year.

P4 International Rotations FY10 – FY15



Locations of the P4 rotations and students who participated:

- Ashraf Pharmacy in West Bank, Palestine (1 student, Amanda Jaber).
- Austin Health in Australia (2 students, Rebecca Tokarski and Kathryn Wersosky).
- Malawi Children's Village in Malawi (1 student, Leah Williams).
- Shanghai Hospital in Shanghai, China (2 students, Tyler Chanas and Andrew Nguyen).
- ISMETT in Palermo, Italy (3 students, Rebecca Fletcher, Rachel Jansen and Lindsay Rihtarchik).
- Farmer's Pharmacy in Dublin, Ireland. (7 students, Courtney Colpo, Allison Doherty, Annie Haddad, Ruth Lidoshore, Alyssa Miller, Hillary Navy, and Kiersten Williams).
- Hombro a Hombro, Honduras. (5 students, Anna Bondar, Stephanie Cotugno, Danielle Mayer, Katie McGuire, and Judy Ugwuegbu).
- Sir Charles Hospital in Australia (2 students, Hope Nakazato and Julia Zacchini).
- Philippine general Hospital in Manila, Philippines (4 students, Lauren Cirrincione, Trey Draude, Cara Mazzarisi and Natalie Valentino).
- King's College in London, England (2 students, Laura Bredenburg and Michelle Hayes).

Students may also travel after their P1 and P2 years. Those data are not included here.

E. STUDENT PROFESSIONAL DEVELOPMENT

Advising and career development are key to the School's goal of personalizing education. The School has a tradition of students using portfolios to demonstrate achievement since the 1990s. The School maintains a customized e-portfolio platform in which students build an assessment portfolio to show integration of learning across courses and progressive development across the curriculum. Students also use the platform to create a professional portfolio as they approach graduation and prepare for interviews. Robust processes for faculty and peer evaluation of portfolios have been implemented, including rubrics to clearly communicate expectations and direct feedback. Standardized training is provided for individuals serving as portfolio reviewers. Each term, every student in the P1 and P2 years meets individually with a faculty member to discuss progress in the curriculum. Every P3 and P4 student meets with either a faculty member or practitioner for focused career planning and mentoring.

Career Learning and Mentoring groups were established in FY14 to expand the School's commitment to student advising. Groups of six P1 students meet with faculty advisors to work with the students throughout the four years of the curriculum. Every fall, six students from the P1 class are added to each group to establish a community of learners and near-peer mentors.

INDICATORS of EXCELLENCE

CURRICULAR IMPROVEMENT AND OVERSIGHT

The School has become nationally recognized for its assessment approaches and commitment to a culture of assessment. School faculty members received the Award for Excellence in Assessment from the American Association of Colleges of Pharmacy in 2012. In addition, three projects were selected over two years (2013 and 2014) for presentation at the annual Assessment Institute, the nation's oldest and largest event focused exclusively on outcomes assessment in higher education. The School's Curriculum Assessment Committee is responsible for monitoring the effectiveness of the PharmD curriculum and the achievement of student learning outcomes.

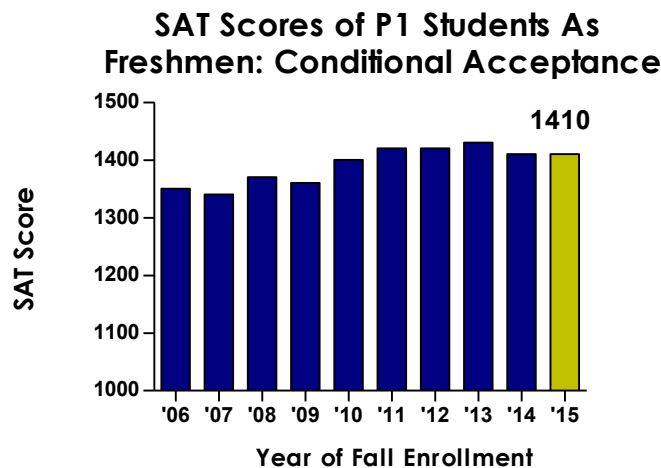
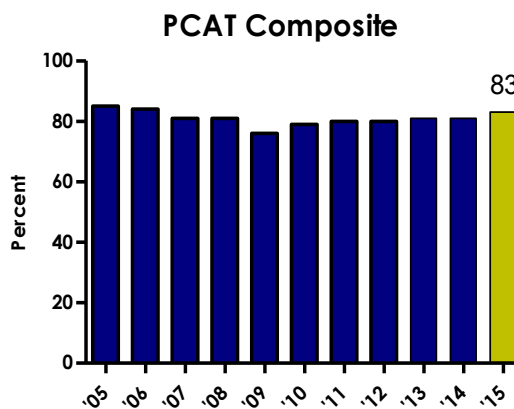
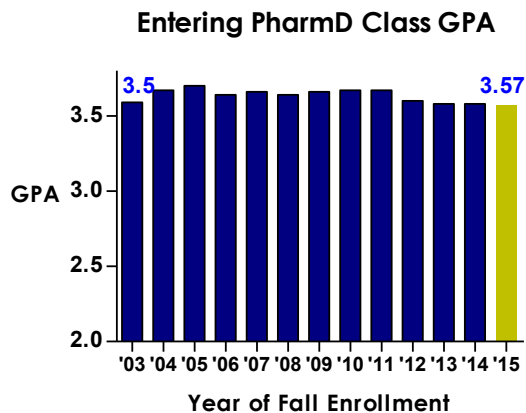
Through the efforts of the Curriculum Committee, the faculty evaluates all courses over a cycle of four years. Thus, each year one fourth of the courses are subjected to an in-depth course evaluation process. We have expanded our use of curricular mapping for curricular design, scheduling of courses, tracking of content and curricular assessment. The curricular mapping infrastructure and database are expanding and evolving into valuable tools for the tracking and organization of curricular content across the four years of the professional program. Faculty and staff are in the process of adapting our curricular map so that it can be used to generate course syllabi.

Students

RECRUITMENT AND ENROLLMENT

Great programs start with great students, and we continue to find the best and brightest to be the future leaders of pharmacy. Our faculty and staff are committed to ensuring a fair review and selecting students that fit with our strategic goal of graduating student pharmacists who will become innovators and leaders in pharmacy. Thirteen faculty and staff members participate on the PharmD admissions committee.

Two-thirds of our full-time faculty participated in interviewing applicants. Their work resulted in the selection of an excellent group of 114 students for the class of



In previous years, the Annual Report captured the average SAT scores for the entering PharmD students who submitted SAT scores. Since the SAT is not required for our open admission application, we have chosen to report the average scores for the early assurance matriculated students.

During FY15, we recruited the class of 2019 for fall enrollment.

- Early assurance admission to the class of 2019
 - 1 student applied for the PharmD program after freshman year.
 - 62 students applied for PharmD program after sophomore year.
 - 62 were interviewed.
 - 47 were qualified and were offered admission.
 - 46 accepted the offers.

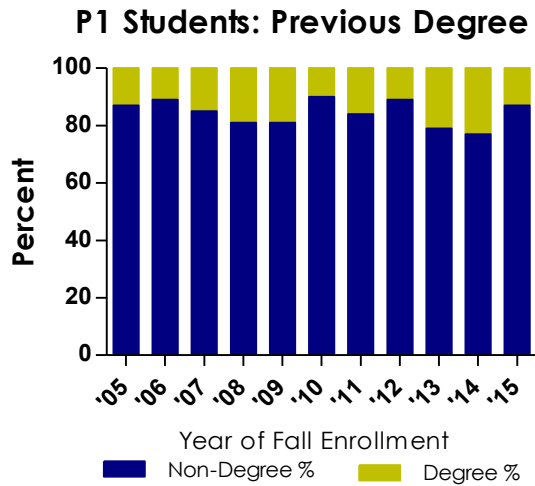
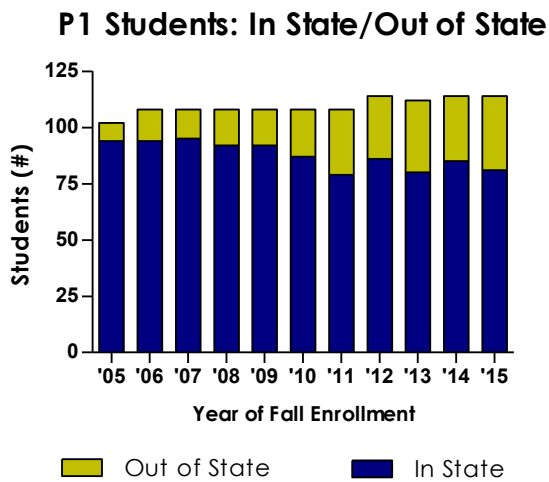
- Open admission to the class of 2019
 - 490 applied to the PharmD program.
 - 148 were interviewed.
 - 101 were offered admission.
 - 71 accepted the offers.

Data for entering classes over time are summarized in the table below. Of the students in the class of 2019, 37% are men and 63% are women (31% and 69%, respectively, in the class of 2018); and 6% are from an underrepresented minority (5% in the class of 2018).

First-Year (P1) Class Enrollments 2002-2015

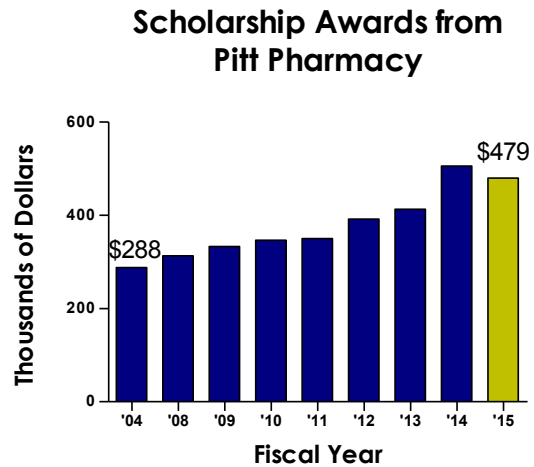
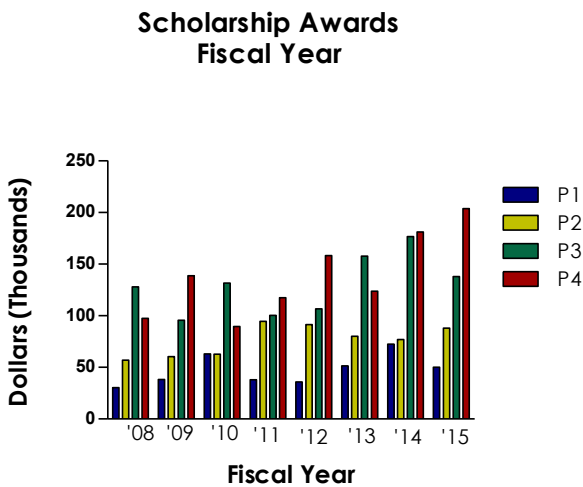
Fall Term	Residency Status		Application Pathway*					Students with 4-Year Degree (% of class)
			Early Assurance	Educational Institution or Type for Students Accepted through Open Admission				
	PA (%)	Non-PA (%)		Pitt	Community College	AAU-member Institution	Other	
2002	92	8	37	37	5	5	12	16
2003	86	14	36	38	3	7	18	13
2004	85	15	52	28	0	4	13	15
2005	92	8	60	28	0	8	6	13
2006	87	13	50	44	1	3	10	11
2007	88	12	42	53	0	4	9	15
2008	86	14	47	42	0	2	17	19
2009	85	15	51	39	0	4	11	19
2010	81	19	47	51	0	2	9	11
2011	73	27	49	44	0	5	9	16
2012	77	23	54	46	0	1	11	8
2013	71	29	45	50	1	7	9	21
2014	75	25	43	46	0	10	14	23
2015	71	29	46	56	1	5	6	*15

*Total across Applications Pathway sums to the total students enrolled



SCHOLARSHIP SUPPORT FOR STUDENTS

The amount of scholarship funds awarded by the School of Pharmacy in FY15 was 167% more than the amount awarded FY04 as shown in the figure below.



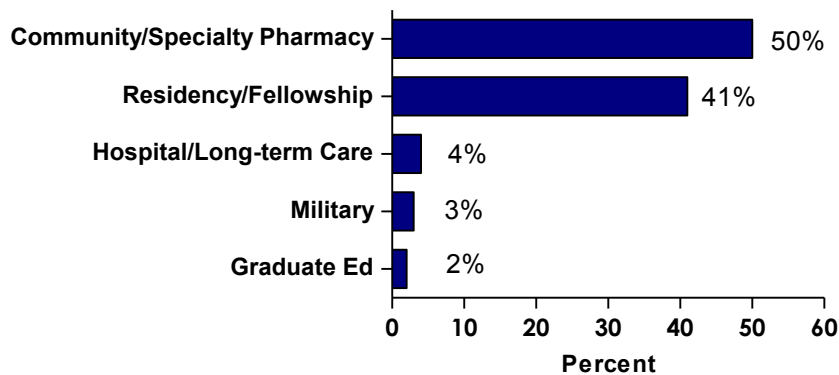
GRADUATING CLASS OF 2015

106 students received their PharmD diplomas at the April 2015 Commencement Ceremony.

99% of students in the Graduating Class of 2015 passed the North American Pharmacist Licensure Exam on their first attempt and 98.8% passed the Multistate Pharmacy Jurisprudence Examination on their first attempt. School graduates have consistently exceeded state and national averages for scores and pass rates on these two examinations.

Forty-one percent (41%) of the class of 2015 continued training in a post-PharmD residencies or fellowships. Other graduates obtained employment in a variety of pharmacy practice settings.

Class of 2015



Comparison of NAPLEX Pass Rates: First-Time Candidates

Year	Pitt Candidates Pass/Total	Pitt Pass Rate (%)	State Pass Rate (%)	National Pass Rate (%)
2015+	103/104	99.0	95.8	93.7
2014	102/102	100	95.9	94.4
2013	104/107	97.2	96.9	95.4
2012	106/106	100	98.0	96.4
2011	103/105	98.0	97.8	96.6
2010	104/107	97.2	87.6	91.5
2009	102/102	100	98.0	97.5

+Jan-Aug scores

Comparison Multistate Pharmacy Jurisprudence Examination® (MPJE®) Results:

Year	Pitt Candidates Pass/Total*	Pitt Pass Rate (%)	State Pass Rate** (%)	National Pass Rate** (%)
2015+	82/83	98.8	95.2	93.5
2014	95/96	99.0	95.0	93.15
2013	83/84	98.8	95.0	92.8
2012	91/91	100	95.1	92.5
2011	89/89	100	96.6	95.6
2010	70/73	95.9		93.9
2009	77/77	100		92.1

* Includes University of Pittsburgh School of Pharmacy graduates taking the MPJE® in Pennsylvania as a first-time candidate.

** State pass rates by calendar year not able to be calculated prior to 2011.

+ Jan-Aug scores

RECOGNITIONS AND AWARDS

Recognition and Awards: Student Organizations

Organization	Award
Student Societies of Health-System Pharmacy (SSHPh)	Outstanding Professional Development Project Award from American Society of Health-System Pharmacists
PittPharmacy Students	Student Government Relations Award by the Pennsylvania Pharmacists Association
PittPharmacy Students	Achieving Independence Competition by the Pennsylvania Pharmacists Association
PittPharmacy Students	National Challenge Award Medication Adherence Team Challenge. Part of the national <i>Script Your Future</i> public awareness campaign coordinated by the National Consumers League

Recognition and Awards: Individual Students

Student	Award	Description
Lauren Cirincione (P4)	Selected for 2015-2016 Fullbright US Student Award	Highly competitive and based on factors that include quality and feasibility of an individually designed research project proposal, academic record, and personal qualifications. Fullbright scholars represent the US as cultural ambassadors
Sophia Yang (P3)	Awarded the George F. Archambault Scholarship	Awarded during the 2015 American Pharmacists Association Annual Meeting in recognition of active involvement in the School's American Pharmacists Association-Academy of Student Pharmacists Chapter
Karen Quach (P1) Nicolette Diehl (P1)	Elected to participate in the 2015 Bridging the Gaps Summer Internship	Selected by Pitt Public Health to participate in an intensive eight-week community experience
Michelle Myers (P3)	Recipient of the 2015 Walmart Scholars Program	Selected at the American Association of Colleges of Pharmacy
Dylan Atkinson (P2)	Paul G. Cano Legislative Intern	Chosen from 100 applicants across the country throughout the American Society of Consultant Pharmacists
Lauren Woolley (P2)	Selected as the Pittsburgh Schweitzer Fellows	One-year fellowship focusing on implementing medication management and education services at a free health clinic
Natalie Valentino (P4) Rebecca Campbell (P3)	Awarded travel grants and registration to Annual Meeting	College of Psychiatric & Neurologic Pharmacists Foundation
Andrea Evankovich (P2)	Awarded a Nationality Rooms Scholarship	Selected by the Polish Room Committee
Keito Hoshitsuki (P2)	Pediatric Oncology Education summer internship	St. Jude Children's Research Hospital in Memphis, Tennessee

Student	Award	Description
Daisy Zhu (P2)	American Pharmacists Association-Academy of Student Pharmacists National Communications Standing Committee	Selected as a member of the American Pharmacists Association-Academy of Student Pharmacists National Communications Standing Committee
Michelle Myers (P3)	Awarded a Pennsylvania Pharmacists Association Project Grant	"Pharmacist-led Improvements to Care Coordination for Patients on Long-Acting Injectable Antipsychotics Transitioning from Hospital to Home"
Chelsea Henderson (P3)	Elected as Region 2 Midyear Regional Meeting Coordinator	Elected at the American Pharmacists Association-Academy of Student Pharmacists Region 2 Midyear Regional Meeting
Karen Hoang (P3)	Elected as Regional Vice Satrap	Elected at the Kappa Psi Mountain East Province Fall Assembly
Karen Hoang (P3)	Honored with the Kappa Psi Recognition Pin	Recognized for her work a Mountain East Province Planning Committee Co-chair
Karen Hoang (P3)	W. Bruce Philip Certificate of Commendation	Recipient for serving as Parliamentarian
Madeline Chavara (P2)	Elected International Pharmaceutical Students federation Corporate Relations Committee	
Nick Farina (P4) Kevin Ordons (P4) Rachel Filiaggi (P4) Marissa Csovelak (P4) Melissa Shook (P4)	American College of Clinical Pharmacy Best Student Poster Competition finalists	American College of Clinical Pharmacy'
Cassandra Bloor (P3) Kelsey Moss (P3)	Awarded the American Pharmacists Association-Academy of Pharmacy Practice and Management Presentation Merit Award	Recognized exceptional poster presentation
Aaron Devanathan (P3) Madison Adams (P2)	Travel award to attend the American College of Clinical Pharmacy Annual Meeting.	Awarded to selected student pharmacists across the nation

Student Awards at Graduation

Award Title	Student Awardee
Lilly Achievement Award	Gordon Watkins
John Herman Wurdack Award	Tyler Chanas
TEVA Pharmaceuticals Outstanding Student Award	Erin Resetar
American Pharmacists Association-Academy of Students of Pharmacy Senior Recognition Certificate	Joshua Niznik
Pennsylvania Pharmacists Association Outstanding	Kyle McGrath

Award Title	Student Awardee
Pharmacy Student Award	
Mylan Pharmaceutical Excellence in Pharmacy Award	Anthony Boyd
University of Pittsburgh, School of Pharmacy, Advancement of Patient Care Services Award	Rachel Jansen
Robert W. Taylor Award for Outstanding Performance in Patient Care Rotation	Andrew Nguyen
University of Pittsburgh, School of Pharmacy, Innovations in Community Practice Award	Ukwen Akpoji
Facts and Comparisons Award of Excellence in Clinical Communication	Nan Wang
Merck Award	Eric Hilty Lauren Cirrincione Cara Mazzarisi
US Public Health Service–Excellence in Public Health Pharmacy Practice Award	Trey Draude
Natural Medicines Comprehensive Database Recognition Award	Kiersten Williams

Student Selections of Faculty for Awards

Students in the P4 year select a preceptor who is an exceptional role model and who has made outstanding teaching contributions during the year for the University of Pittsburgh School of Pharmacy Preceptor of the Year Award. The Experiential Learning Committee reviews nomination letters and makes the final selection. The 2014-15 awardees were:

- Dr. Christopher R. Ensor, Assistant Professor, Department of Pharmacy and Therapeutics. Dr. Ensor provides acute care rotations in the thoracic transplantation program at UPMC Presbyterian. He is a founding faculty member of the Pharmacotherapy Scholars Area of Concentration. Dr. Ensor offers rotations for P3 and P4 students.
- Dr. Luis S. Gonzalez offers acute care rotations in the medical/surgical intensive care unit, coronary care unit, and general medical/surgical areas of Conemaugh Memorial Medical Center in Johnstown, PA. An exemplary teacher, this is the second time he has been chosen to receive this award. Dr. Gonzalez offers rotations for P3 and P4 students.

P4 students also elect a Stanford I. Cohen Teacher of the Year.

- Dr. James J. Pschirer, Assistant Professor, Department of Pharmacy and Therapeutics, was the 2014-2015 recipient.

All students vote on a faculty member of the year and present it at the American Pharmacists Association-Academy of Student Pharmacists student formal.

- Dr. Lucas A. Berenbrok, Assistant Professor, Department of Pharmacy and Therapeutics, was the 2014-2015 recipient.

PROFESSIONAL DEVELOPMENT: EDUCATING THE NEXT GENERATION OF PRACTITIONERS

DM Educate® - 3rd Edition: Comprehensive Diabetes Management

After significantly updating DM Educate® to the 3rd edition in FY14, revised content was distributed to over 1,000 individuals. Approximately 128 health professionals registered for continuing education credit: 106 pharmacists, 14 nurses, 7 registered dietitians, and 1 other. Over 889 students were reached by the program at 46 different schools in the US and abroad.

Continuing Education for Practitioners

The School of Pharmacy partnered with the UPMC Center for Continuing Education in the Health Sciences (CCEHS) to deliver live continuing education programs in FY15:

Fall Continuing Education Seminar

“Therapeutic Updates” featured presentations by Adrienne Cervone, PharmD, Heather Johnson, PharmD, BCPS, and Amy Calabrese Donihi, PharmD, BCPS. The program was attended by 66 pharmacists. The intent of this continuing education program was to educate attendees about new treatment options for diabetes and hepatitis C, as well as the latest recommendations on a variety of vaccines.

Spring Continuing Education Seminar

“Topics in Infectious Disease Management” featured presentations by Alison L. Galdys, MD, and Brian A. Potoski, PharmD. The program was attended by 70 pharmacists. The intent of this continuing education program was to educate attendees about the management of disease outbreaks caused by emerging infectious pathogens, and advances in the management of infectious diseases caused by gram negative antibiotic-resistant bacteria.

CLIP Workshop Series

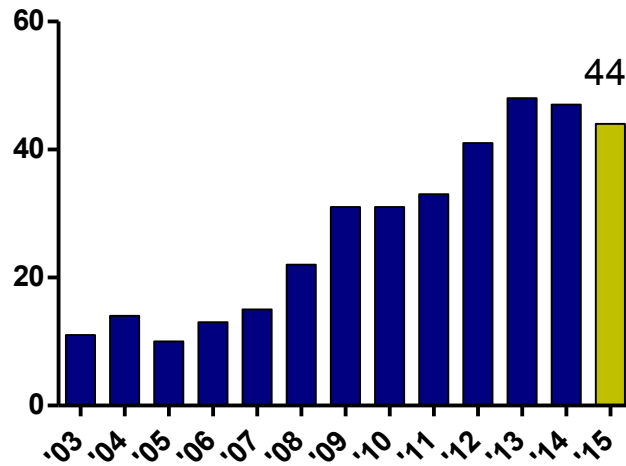
- Feb. 6, 2015: “The Role of the Pharmacist in Advancing Public Health” featured a presentation by Krista Pedley, PharmD, MS, CDR, US Public Health Service. 130 pharmacists and student pharmacists attended.
- March 6, 2015: “The Future Is Now: Pharmacists Providing Care in their Communities” featured presentation by Troy Trygstad, PharmD, MBA, PhD, VP Pharmacy Services, Community Care of North Carolina. 135 pharmacists and student pharmacists attended.
- April 10, 2015: “The Future of Pharmacy: Headwinds, Tailwinds and the Long Term Outlook” featured presentation by Alex Adams, PharmD, VP Pharmacy Services, National Association of Chain Drug Stores. 141 pharmacists and student pharmacists attended.

RESIDENCY PROGRAM: EDUCATING THE NEXT GENERATION OF PRACTITIONERS

The School of Pharmacy partners with health care provider organizations to support outstanding residency training programs in research and teaching. The School provides three programs to enhance the training provided at each residency site:

- Resident Seminars – Develop good presentation skills and present a seminar summarizing information on an important drug-related topic.
- Teaching Mastery – Develop and deliver effective educational programs including presentation of lectures in the PharmD program.
- Resident Research Series – Develop knowledge of the research process including the design, conduct and publication of results of a project.

Residency Program-FY15



Residents 2014-2015

Total Residents: 44

Total Number of Types of Residency Programs: 13

Locations for the 3 PGY1 programs: 13

Locations for the 10 PGY2 programs: 4

Last Name	First Name	Pitt Residency Program	Year	PharmD School	Plans for FY15
Antinopoulos	Brandon	Community	PGY1	University of Pittsburgh	Director of Clinical Services, Hometown Apothecary Drugs
Ather	Ayesh	Pharmacy	PGY1	University of Montana	PGY2 Cardiology, University of Maryland
Breslin	Teresa	Geriatrics	PGY2	Wayne State University	Transitions of Care Faculty, Manchester University, Fort Wayne, Indiana
Brown	Maxwell	Pharmacy	PGY1	Northeastern University	PGY2 Oncology Residency, UPMC Shadyside
Buehrle	Deanna	Infectious Diseases	PGY2	Duquesne University	Clinical Pharmacist – Infectious Diseases, UPMC Presbyterian
Cadwalader	John Carroll	Medication Safety	PGY2	Massachusetts College of Pharmacy and Health Sciences-Worcester	Pharmacy Supervisor, UPMC Presbyterian
Campbell	Ashley	Pharmacy	PGY1	University of North Carolina Eshelman School of Pharmacy	PGY2 Geriatrics-UPMC St. Margaret
Chan	Emily	Ambulatory Care	PGY2	State University of New York at Buffalo	Assistant Professor, Touro University of California, College of Pharmacy

Last Name	First Name	Pitt Residency Program	Year	PharmD School	Plans for FY15
Cope	Rebecca	Underserved Care	PGY2	Albany College of Pharmacy and Health Sciences	Assistant Professor, Touro College of Pharmacy, New York, NY
Countway	Anne	Pharmacy	PGY1	Duquesne University	PGY2-Pediatrics, Monroe Carell Jr Children's Hospital of Vanderbilt, Nashville, TN
Delic	Justin	Pharmacy	PGY1	Duquesne University	PGY2-Critical Care Residency, University Hospitals Case Medical Center, Cleveland, OH
Durigan	Raymond	Pharmacy	PGY1	University of Rhode Island	PGY2-Ambulatory Care, UPMC St. Margaret
Emerson	Eric	Managed Care	PGY1	University of Pittsburgh	Clinical Pharmacist, Independence Blue Cross, Philadelphia, PA
Gahbauer	Alice	Pharmacy	PGY1	University of California-San Francisco	Assistant Professor, University of Charleston, West Virginia
Garmong	Gale Edward	Community	PGY1	Lake Erie College of Osteopathic Medicine	Clinical Pharmacist, Rite Aid, Pittsburgh, PA
Graham	Emily	Pharmacy	PGY1	University of Pittsburgh	PGY2-Oncology, Allegheny General Hospital
Henderson	Stephen	Pharmacy	PGY1	Ohio Northern	Clinical Specialist – UPMC Hamot
Higbea	Ashley	Ambulatory Care	PGY2	Virginia Commonwealth University	Assistant Professor, Texas Tech University – Dallas/Fort Worth, TX
Hill	Lucas	Ambulatory Care	PGY2	University of Missouri-Kansas City	Assistant Professor-University of Texas-Austin College of Pharmacy
Jordan	Christine	Community	PGY1	University of Pittsburgh	Clinical Pharmacist-Giant Eagle, Pittsburgh, PA
Joseph	Matthew	Pharmacy	PGY1	University of Pittsburgh	PGY2-Geriatrics, UPMC St. Margaret
Kitts	Hollie	Pharmacy	PGY1	Wingate University	Clinical Pharmacist-New Hanover Regional Medical Center, Wilmington, NC
Korenski	Amanda (Johnson)	Critical Care	PGY2	University of Pittsburgh	Assistant Professor and Managing Director, University of Pittsburgh School of Pharmacy and Pittsburgh Poison Center
Lichvar	Alicia	Solid Organ Transplant	PGY2	University of Pittsburgh	Clinical Transplant Research Fellow, University of Cincinnati
Lyons	Pamela	Pharmacy	PGY1	University of Pittsburgh	Clinical Pharmacist –UPMC Mercy
Marini	Rachel	Pharmacy	PGY1	Duquesne University	PGY1 Infectious Diseases – UPMC Presbyterian

Last Name	First Name	Pitt Residency Program	Year	PharmD School	Plans for FY15
McCormick	Kyle	Community Pharmacy	PGY1	University of Pittsburgh	Clinical Pharmacist, Gatti Pharmacy and RxHealthConnect, Indiana, PA
Moore	Cody	Pharmacy	PGY1	University of Pittsburgh	Clinical Transplant Research Fellow, University of Pittsburgh School of Pharmacy
Patel	Miral	Pharmacy	PGY1	Albany College of Pharmacy and Health Sciences – Vermont Campus	Clinical Pharmacy Specialist, Nanticoke Memorial Hospital, Seaford, DE
Payette	Nicole	Pharmacy	PGY1	Philadelphia College of Pharmacy	PGY1-Ambulatory Care-UPMC St. Margaret
Rindfuss	Sarah	Ambulatory Care	PGY2	University of Pittsburgh	Clinical Pharmacy Specialist, Ambulatory Care, West Penn Hospital, Pittsburgh, PA
Rivosecchi	Ryan	Critical Care	PGY2	University of Pittsburgh	Clinical Pharmacist- UPMC Presbyterian
Roberts	Katherine	Pharmacy	PGY1	Duquesne University	PGY2-Critical Care, Barnes Jewish Hospital, St. Louis, MO
Shah	Anand	Oncology	PGY2	State University of New York at Buffalo	Clinical Pharmacist-Ohio State University James Cancer Center, Columbus, OH
Shick	Angela	Pharmacy	PGY1	Lake Erie College of Osteopathic Medicine	Pharmacist, Saint Vincent Hospital, Erie, PA
Tang	Vivian	Pharmacy	PGY1	Oregon State University	PGY2-Ambulatory Care, UPMC Presbyterian Shadyside
Tran	Tina	Pharmacy	PGY1	University of California-San Francisco	PGY2-Global Health, Purdue University
Trietley	Greg	Pharmacy	PGY1	University of Pittsburgh	PGY2-Ambulatory Care, UPMC St. Margaret
Verlinden	Nathan	Cardiology	PGY2	Drake University	Clinical Specialist – Allegheny General Hospital
Vu	Anh	Pharmacy	PGY1	University of Colorado	PGY2 Solid Organ Transplant Pharmacy, UPMC Presbyterian
Weaver	Cory	Pharmacy	PGY1	West Virginia University	PGY2-Critical Care, UPMC Presbyterian
Wilberg	William	Managed Care	PGY1	University of Minnesota	Pharmacist, ShopKo, Stevens Point, WI
Wilkening	Gwendolyn (Lucy)	Psychiatric Pharmacy	PGY2	Southwestern Oklahoma State University	Assistant Professor, University of the Incarnate Word Feik School of Pharmacy,
Zielke	Megan	Pharmacy	PGY1	Duquesne University	PGY2-Critical Care Residency, University Hospitals Case Medical Center, Cleveland, OH

Residents Recruited for 2015-2016

Total Residents: 44

Total Number of Types or Residency Programs: 13

Locations for the 3 PGY1 programs: 13

Locations for the 10 PGY2 programs: 5

Program Type	Location		Resident	Education
PGY1 Community Pharmacy	University of Pittsburgh School of Pharmacy	Rite Aid	Kristen Hart	State University of New York at Buffalo
		Gatti Pharmacy /University Pharmacy	Nicole Nierste	Purdue University
		Giant Eagle	Damika Watley	Howard University
PGY1 Managed Care Pharmacy	CVS-Caremark		Danfeng Ni	Wayne State University
	UPMC Health Plan		Namita Mainthia	Northeastern University
PGY1 Pharmacy Practice	UPMC Presbyterian		Hua (Sherry) Chen	University of Maryland
			Nicole Durie	Northeastern University
			Arlene Gao	University of Maryland
			Carlo Iasella	University of Pittsburgh
			Kristen Knoph	University of Rhode Island
			Kyle Strnad	Thomas Jefferson University
	UPMC Mercy		Emily Brown	Ohio Northern University
			Nicole Farabaugh	West Virginia University
			Joy Olivia Jakubek	Duquesne University
			Alexa Maria Szalc	Duquesne University
			Evan Venturella	Thomas Jefferson University
	UPMC Hamot		Xinwei (Nancy) Chen	University of Michigan
			Seth McCleary	Lake Erie College of Osteopathic Medicine
			Susan Marie Miller	Duquesne University
	Children's Hospital of Pittsburgh of UPMC		Shannon Giddens	Mercer University College of Pharmacy, Atlanta
	Magee Women's Hospital of UPMC		Rebecca Tokarski	University of Pittsburgh
	UPMC St. Margaret		Anna Bondar	University of Pittsburgh
			Maria Felton	University of Pittsburgh
			Nicholas Giruzzi	Albany College of Pharmacy and Health Sciences
			Nathan John Lamberton	Albany College of Pharmacy and Health Sciences
			Sydney Springer	University of Rhode Island
	UPMC Shadyside		Ronald Heisel	University of Pittsburgh
			Katrina Skarda	University of California-
UPMC McKeesport		Nicholas Skezas	Duquesne University	
PGY2 Ambulatory Care Pharmacy	UPMC Presbyterian-Shadyside		James Montgomery	University of Pittsburgh
			Vivian Tang	Oregon State University
PGY2 Cardiology Pharmacy	UPMC Presbyterian-Shadyside		Ashley Modany	Duquesne University
PGY2 Critical Care Pharmacy	UPMC Presbyterian-Shadyside		Bethany Shoulders	University of Tennessee Health Science Center College of Pharmacy

Program Type	Location	Resident	Education
		Cory Weaver	West Virginia University
PGY2 Ambulatory Care	UPMC St. Margaret	R. Christopher Durigan	University of Rhode Island
		Nicole Payette	Philadelphia College of Pharmacy
		Gregory Trietley	University of Pittsburgh
PGY2 Geriatrics	UPMC St. Margaret	Ashley Campbell	University of North Carolina Eshelman School of Pharmacy
		Matthew Joseph	University of Pittsburgh
PGY2 Infectious Disease Pharmacy	UPMC Presbyterian-Shadyside	Rachel Marini	Duquesne University
PGY2 Oncology Pharmacy	UPMC Presbyterian-Shadyside	Maxwell Brown	Northeastern University
PGY2 Psychiatric Pharmacy	Western Psychiatric Institute and Clinic of UPMC	Lauren Kohley	Southwestern Oklahoma State University
PGY2 Solid Organ Transplant Pharmacy	UPMC Presbyterian-Shadyside	Anh Vu	University of Colorado
PGY2 Specialized Area of Pharmacy: Underserved Care	University of Pittsburgh School of Pharmacy	Ferealem (Fray) Assefa	Wingate University

GRADUATE PROGRAM: EDUCATING THE NEXT GENERATION OF SCIENTISTS

Graduate Program in Pharmaceutical Sciences

This program prepares students for positions in academia, government, and industry. The School of Pharmacy offers three degrees: the PhD, the thesis-based Master of Science (MS), and the 12-month, non-thesis-based MS (NTMS). The PhD program provides students with the foundation to become independent researchers as either basic scientists or clinical pharmaceutical scientists. The MS provides students the opportunity to develop basic and/or clinical research skills preparing them for entry into a PhD program or employment. The NTMS degree is a one-year program designed to prepare students for employment in the pharmaceutical and biotechnology fields. Each degree program offers five tracks: biochemical pharmacology, medicinal chemistry, pharmaceuticals, and clinical pharmaceutical sciences (a specialized program to train students in clinical and translational science).

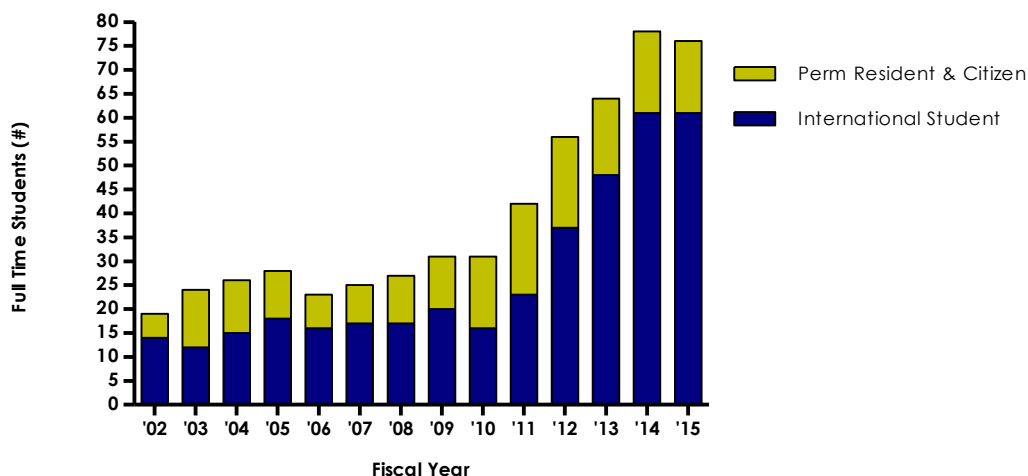
ADMISSION AND ENROLLMENT DEMOGRAPHICS

The total number of students enrolled in the graduate program for FY15 included **76** full-time and **3** part-time students enrolled in the pharmaceutical sciences graduate program. The part-time students included two in the MS program, and one in the non-thesis MS program.

Of the 76 full-time students: **52** are PhD students; **13** are Master of Science students; **11** are non-thesis MS students.

- **28% (15/52)** of the PhD students are U.S. citizens or permanent residents.
- **50% (26/52)** of the PhD students have degrees from schools of pharmacy.
- **8** students passed their comprehensive examination and achieved PhD candidate status.

Full-Time PhD and MS Students



At the beginning of the FY15, 79 students were enrolled in the graduate program: **76** full-time and **3** part-time students. Part-time students include 2 in the MS program and 1 in the non-thesis MS program.

Of the 76 full-time students: **52** are PhD students; **13** are Master of Science students; **11** are non-thesis MS students.

- **28% (15/52)** of the PhD students are U.S. citizens or permanent residents.

2014-2015 (FY15) Admission Demographics

For the class that enrolled in the fall of 2014:

- The school received 92 applications for the PhD program, 47 for the MS program and 6 for the non-thesis MS.
- 6 PhD students received admission offers and 5 enrolled (83% yield).
 - 1 of the 6 is a US citizen.
 - 1 of the 6 has a PharmD degree.
- 12 MS students received admission offers and 9 students enrolled.
- 14 NTMS students received admission offers (2 had applied through the PhD application, 8 through the MS and 4 through the NTMS); 6 enrolled.

2015-2016 (FY16) Admission Demographics

- The school received 60 applications for the PhD program, 43 for the MS program and 3 for the non-thesis MS.
- 10 PhD students were offered admission and 9 accepted for fall 2015 (90% yield).
 - 2 of the 9 are either a US citizen or permanent resident.
 - 1 holds a PharmD degree.
 - 1 holds a PhD degree
- 10 MS students were offered admission and 7 accepted for fall 2015 (70% yield).
- 17 NTMS students were offered admission (6 applied through the PhD application, 9 through the MS application, 2 through the NTMS); 4 accepted for fall 2015.

2014-2015 Pharmaceutical Sciences Graduate Students

Name	Advisor	Track	Enrollment	Degree
Adams, Solomon	Poloyac, Samuel	CPS*	13-Aug	PhD
Al Busaysi, Salwa	Fabian, Tanya	Pharmaceutics	11-Jan	PhD
Almazroo, Omar	Venkataramanan, Raman	Pharmaceutics	11-Aug	PhD
Almehizia, Abdulrahman	Xie, Sean	Medicinal Chemistry	9-Aug	PhD
Almowalad, Jamal	Undecided	Non-Thesis Master	13-Aug	NTMS
Alqarni, Mohammed	Xie, Sean	Pharmaceutics	11-Jan	PhD
Alshabi, Ali Mohamed	Venkataramanan, Raman	CPS*	11-Aug	PhD
AlShogran, Osama	Nolin, Thomas	CPS*	10-Aug	PhD
Altawalbeh, Shoroq	Thorpe, Joshua	CPS*	12-May	PhD
Alvarez, Celeste	Wipf, Peter	Medicinal Chemistry	11-Aug	PhD
Anderson, Kacey	Poloyac, Sam	CPS*	10-Aug	PhD
Bi, Yuhan	Xie, Wen	Pharmacology	13-Aug	PhD
Chen, Yichao	Li, Song	Pharmaceutics	12-Aug	MS
Chen, Yuzhe	Sant, Shilpa	Pharmaceutics	13-Aug	MS
Cheng, Haizi	Xie, Sean	Medicinal Chemistry	13-Jan	PhD
Donnelly, Mark	Poloyac, Samuel	CPS*	6-Aug	PhD
Eichinger, Katherine	Empey, Kerry	CPS*	11-Aug	PhD
Fancher, Ashley	Xie, Sean	Medicinal Chemistry	13-Aug	PhD
Feturi, Firuz	Venkataramanan, Raman	Pharmaceutics	11-Aug	PhD
Ghazwani, Mohammed	Li, Song	Pharmaceutics	10-Jan	PhD
Gong, Tiantian	Rohan, Lisa	CPS*	10-Aug	PhD
Grab, Sheila	Rohan, Lisa	Pharmaceutics	11-Aug	PhD
Hagos, Fanuel	Empey, Phillip	CPS*	12-Aug	PhD
Hu, Guanxing	Undecided	Non-Thesis Master	13-Aug	NTMS
Hu, Minlu	Rohan, Lisa	Pharmaceutics	11-Aug	PhD
Hu, Ziheng	Undecided	Non-Thesis Master	13-Aug	NTMS
Jhunjhunwala, Kunal	Rohan, Lisa	Pharmaceutics	13-Aug	NTMS
Joshi, Rujuta	Venkataramanan, Raman	Pharmaceutics	11-Aug	PhD
Kalluri, Hari Varun	Venkataramanan, Raman	CPS*	11-Aug	PhD
Kiesel, Brian	Beumer, Jan	Pharmaceutics	14-Aug	MS
Kim, Sung Tae	Kwon, Yong Tae	Pharmacology	8-Aug	PhD
Kirshner, Ziv	Gibbs, Bob	Pharmacology	11-Aug	PhD
Kochanek, Stanton	Johnston, Paul	Pharmacology	13-Aug	PhD
Kramzer (Ferguson), Lyndsay	Rohan, Lisa	CPS*	8-Aug	PhD
Li, Hewen	Undecided	Non-Thesis Master	13-Aug	NTMS
Li, Jing	Undecided	Pharmaceutics	13-Aug	PhD

Name	Advisor	Track	Enrollment	Degree
Li, Junyi	Gibbs, Robert	Pharmacology	12-Aug	MS
Li, Lingjue	Poloyac, Samuel	CPS*	13-Aug	PhD
Lin, Ying Yu	Folan, Maggie	Non-thesis Master	14-Aug	NTMS
Liu, Shinlan	Ma, Xiaochao	Pharmacology	13-Aug	PhD
Long, Tao	Yao, Jeff	Pharmacology	11-Aug	PhD
Lu , Jianqin	Li, Song	Pharmaceutics	12-Aug	PhD
Lu , Peipei	Xie, Wen	Pharmacology	11-Aug	PhD
Lyu, Yafei	Sant, Vinayak	Non-thesis Master	14-Aug	NTMS
Ma , Shifan	Xie, Sean	Medicinal Chemistry	13-Aug	MS
Mehrens, Jennifer	Gold, Barry	Medicinal Chemistry	12-Aug	NTMS
Mukundan, Shilpaa	Sant, Shilpa	Pharmaceutics	13-Aug	PhD
Patel, Akhil	Sant, Shilpa	Pharmaceutics	13-Aug	NTMS
Pouland, Timothy	Day, Billy	Medicinal Chemistry	8-Aug	PhD
Press, Ellen	Shields, Ryan/Poloyac, Samuel	CPS*	12-Aug	MS
Prokopienko, Alexander	Nolin, Thomas	CPS*	14-Aug	PhD
Regev, Galit	Rohan, Lisa	Pharmaceutics	11-Aug	PhD
Sachar, Madhav	Ma, Xiaochao	Pharmacology	13-Aug	PhD
Shan, Feng	Gold, Barry	Medicinal Chemistry	14-Aug	MS
Shehu, Amina	Undecided	Non-Thesis Master	13-Aug	NTMS
Sun, Tianyu	Folan, Maggie	Non-Thesis Master	14-Aug	NTMS
Tang, Chenxiao	Sant, Vinayak	Non-thesis Master	14-Aug	NTMS
Thanukrishnan, Harisudhan	Venkataramanan, Raman	CPS*	12-Aug	PhD
Venkatakrishnan, Harini	Sant, Shilpa	Pharmaceutics	14-Aug	MS
Walsh, Dustin	Nolin, Thomas	CPS*	11-Aug	PhD
Wang , Liwei	Undecided	Non-Thesis Master	13-Aug	NTMS
Wang , Nuozhou	Xie, Sean	Medicinal Chemistry	13-Aug	PhD
Wei, Yuan	Sant, Vinayak	Non-thesis Master	14-Aug	NTMS
Whetstone, Ryan	Gold, Barry	Medicinal Chemistry	7-Aug	PhD
Xie, Yang	Xie, Wen	Pharmacology	14-Aug	PhD
Xing, Changrui	Xie, Sean	Medicinal Chemistry	14-Aug	MS
Xu, Jieni	Li, Song	Pharmaceutics	13-Aug	MS
Xu, Ruichao	Folan, Maggie	Non-thesis Master	14-Aug	NTMS
Xu, Xiaomeng	Sant, Vinayak	Non-Thesis Master	13-Aug	NTMS
Xue, Yingfei	Sant, Shilpa	Medicinal Chemistry	13-Aug	PhD
Yan, Jiong	Xie, Wen	Biochemical Pharmacology	12-Aug	PhD
Yang , Xiaole	Undecided	Non-Thesis Master	13-Aug	NTMS

Name	Advisor	Track	Enrollment	Degree
Zhai, ZuWei	Tarter, Ridenour	CPS*	8-Aug	PhD
Zhang, Hongfei	Undecided	Non-Thesis Master	13-Aug	NTMS
Zhang, Peng	Li, Song	Pharmaceutics	10-Aug	PhD
Zhang, Xiaolan	Li, Song	Pharmaceutics	11-Aug	PhD
Zhang, Yang	Xie, Sean	Medicinal Chemistry	14-Aug	MS
Zhou, Tian	Rohan, Lisa	Pharmaceutics	11-Aug	PhD
Zhou, Xiang	Yao, Jeffrey	Biomedical Pharmacology	13-Aug	PhD

*CPS – Clinical Pharmaceutical Scientist Program

Students Selected for the Pharmaceutical Sciences PhD and Research-based MS Graduate Program, Beginning in Fall 2015

Name	Advisor	Track	Degree
Franchetti, Yoko	Nolin, Thomas	CPS*	PhD
Jhunjunwala, Kunal	Rohan, Lisa	Pharmaceutics	PhD
Ma, Shifan	Xie, Sean	Medicinal Chemistry	PhD
Niznik, Joshua	Thorpe, Joshua	Pharmaceutical Outcomes and Policy Research	PhD
Patel, Akhil	Sant, Shilpa	Pharmaceutics	PhD
Shehu, Amina	Ma, Xiaochao	Pharmacology	PhD
Silva Barbosa, Anne	Xie, Wen	Pharmacology	PhD
Xu, Jieni	Li, Song	Pharmaceutics	PhD
Zhang, Hongfei	Venkataramanan, Raman	CPS*	PhD
Bian, Yuemin	Xie, Sean	Medicinal Chemistry	MS
Kondiparthi, Lavanya	Sant, Shilpa	Pharmaceutics	MS
Pitale, Yohann	Sant, Shilpa	Pharmaceutics	MS
Vasudevan, Vignesh	Venkataramanan, Raman	CPS*	MS
Wang, Nanyi	Xie, Sean	Medicinal Chemistry	MS

Name	Advisor	Track	Degree
Zhang, Zhaojia	Xie, Sean	Medicinal Chemistry	MS

*Clinical Pharmaceutical Scientist Program and Pharmaceutics Track

Students Selected for the Pharmaceutical Sciences Non-Research Based MS Graduate Program, Beginning in Fall 2015*

Cai, Xinran	Pradhan, Komal
Chen, Janice	Rothenberger, Natalie

*All Non-Researched Based MS are advised by Dr. Vinayak Sant

STUDENTS COMPLETING GRADUATE DEGREES IN 2014-2015

Master of Science Graduates

Ellen Press, MS

Advisor: Ryan Shields, PharmD and Samuel Poloyac, PharmD, PhD

Graduation: December 2014 (Defense completed October 2014)

Thesis Title: Biofilm Production and Susceptibility Among Candida albicans Isolates from Various Clinical Sites

Junyi Li, MS

Advisor: Robert Gibbs, PhD

Graduation: April 2015 (Defense completed)

Thesis Title: Effect of Ovariectomy, Estrogen and Cholinergic Input on Aromatase in Different Brain Regions

Kunal Jhunjunwala, MS

Advisor: Lisa Rohan, PhD

Graduation: August 2015 (Defense completed May 2015)

Thesis Title: Design and Evaluation of a Topical Rectal Specific Microbicide for HIV prevention

Shifan Ma, MS

Advisor: Xiang-Qun (Sean) Xie, PhD, MBA

Graduation: April 2015 (Defense completed March 2015)

Thesis Title: Chemogenomics Knowledgebase and Targethunter for Polypharmacology Analysis of A Traditional Chinese Herbal Formula, "Sini Decoction".

Xiaomeng Xu, MS

Advisor: Xiang-Qun (Sean) Xie, PhD, MBA

Graduation: April 2015 (Defense completed March 2015)

Thesis Title: Chemogenomics Knowledgebase and Systems Pharmacology for Hallucinogen Target Identification -Salvinorin A as a Case Study

Xiaole Yang, MS

Advisor: Xiang-Qun (Sean) Xie, PhD, MBA

Graduation: April 2015 (Defense completed March 2105)

Thesis Title: CRC Platform: A Colorectal Cancer Domain-specific Chemogenomics Knowledgebase for Polypharmacology and Target Identification Research

Yuzhe Chen, MS

Advisor: Shilpa Sant, PhD

Graduation: August 2015 (Defense completed July 2015)

Thesis Title: A 3D Spheroid Model as a Platform to Study Non-Viral Gene Delivery System

Akhil Patel, MS

Advisor: Shilpa Sant, PhD

Graduation: April 2015 (Defense completed March 2015)

Thesis Title: Carbon Nanotube Functionalization and Scaffold Topography Guide Differentiation of Myoblasts

Amina Shehu, MS

Advisor: Xiaochao Ma, PhD

Graduation: August 2015 (Defense completed June 2015)

Thesis Title: The Role of Pregnane X Receptor In Ritonavir-Induced Liver Injury

Jieni Xu, MS

Advisor: Song Li, MD, PhD

Graduation: August 2015 (Defense completed May 2015)

Thesis Title: Preparation of Peg-Derivatized Pump as a Dual-Functional Carrier for Anticancer Drugs.

Hongfei Zhang, MS

Advisor: Raman Venkataramanan, PhD

Graduation: August 2015 (Defense completed July 2015)

Thesis Title: Posaconazole Pharmacokinetics in Lung Transplant Recipients with and Without Cystic Fibrosis.

Shilpaa Mukundan, MS

Advisor: Shilpa Sant, PhD

Graduation: August 2015 (Defense completed May 2015)

Thesis Title: A 3D Spheroid Model as a Platform to Study Non-Viral Gene Delivery System

Yuzhe Chen, MS

Advisor: Shilpa Sant, PhD

Graduation: August 2015 (Defense completed July 2015)

Thesis Title: A 3D Spheroid Model as a Platform to Study Non-Viral Gene Delivery System

PhD Graduates

Almehizia, Abdulrahman, PhD

Advisor: Xiang-Qun (Sean) Xie, PhD, MBA

Graduation: April 2015 (Defense completed March 2015)

Thesis Title: Design, Synthesis and Biological Evaluation of Novel Selective Cannabinoid Receptor 2 (Cb2) Ligands with Therapeutic Potentials

Alshabi, Ali, PhD

Advisor: Song Li, PhD

Graduation: August 2015 (Defense completed June 2015)

Thesis Title: Regulation of Phase I, II, and III Pathways by Pregnancy Related Hormones.

Alshogran, Osama, PhD

Advisor: Song Li, PhD

Graduation: December 2014 (Defense completed November 2014)

Thesis Title: Characterization of the Effect of Chronic Kidney Disease on Hepatic Drug Reduction: In-Vitro and In-Vivo Studies of Warfarin

Donnelly, Mark K., PhD

Advisor: Samuel M. Poloyac, PharmD, PhD

Graduation: December 2014 (Defense completed September 2014)

Thesis Title: Role of Cytochrome P450 Fatty Acid Metabolism in the Pathophysiology of Subarachnoid Hemorrhage

Ihunnah, Chibueze, PhD

Advisor: Wen Xie, MD, PhD

Graduation: August 2014 (Defense completed May 2014)

Thesis Title: The Role of Estrogen Sulfotransferase in Human Adipogenesis

Jiang, Mengxi, PhD

Advisor: Wen Xie, MD, PhD

Graduation: August 2014 (Defense completed July 2014)

Thesis Title: The Role of Steroid Sulfatase in Energy Homeostasis and Inflammation

Lu, Jianqin, PhD

Advisor: Song Li, PhD

Graduation: December 2014 (Defense completed November 2014)

Thesis Title: Targeted Delivery of Anticancer Agents to Cancer

Shawaqfeh, Mohammad S., PhD

Advisor: Raman Venkataramanan, PhD

Graduation: August 2014 (Defense completed July 2014)

Thesis Title: Potential Contributors to the Decreased Vitamin B6 Levels after Transplantation

Whetstone, Ryan, PhD

Advisor: Barry Gold, PhD

Graduation: December 2014 (Defense completed November 2014)

Thesis Title: The Effect of Inflammation on Stem Cell Mutagenesis and Carcinogenesis Induced by Azoxymethane in Wild type and Immune Compromised Mice

Zhai, Zu Wei, PhD

Advisor: Ralph Tarter, PhD

Graduation: April 2015 (Defense completed February 2015)

Thesis Title: The Role of Attachment to Parents in the Etiology of Substance Use Disorder

Zhang, Yifei, PhD

Advisor: Song Li, PhD

Graduation: August 2014 (Defense completed May 2014)

Thesis Title: Targeted Therapy for Liver Fibrosis and Cancer

Zhang, Peng, PhD

Advisor: Song Li, PhD

Graduation: August 2014 (Defense completed July 2014)

Thesis Title: Rational Design of Nanocarriers with Enhanced Carrier-Drug Interaction for Improved Cancer Therapy.

Non-Thesis MS Graduates**Graduation: August 2014**

Ziheng Hu, MS
Daniel Mason, MS
Danfeng Shen, MS
Liwei Wang, MS
Xinyan Xie, MS

Bibissara Kulmanova, MS
Odunze Uchechukwu, MS
Xiaohuan Sun, MS
Yijun Wu, MS

Graduation: December 2014

Jennifer Mehrens, MS

Graduation: April 2015

Jamal Almowalad, MS
Hewen Li, MS

Guanxing Hu, MS
Nouzhou Wang, MS

Graduation: August 2015

Ying-Yu Lin, MS
Tianyu, Sun, MS

Shin Lan Liu, MS

AWARDS TO GRADUATE STUDENTS**Research or Presentation Awards**

- Sung Tae Kim won the Best Poster Award at the KSBMB International Conference 2015, Seoul, South Korea for his poster “Role of UBR4, a Substrate Recognition Component of the N-End Rule Pathway, in the Endo-Lysosomal System.”

- Minlu Hu was selected as one of five New Investigator Award recipients for the HIV Research for Prevention 2014: AIDS Vaccine, Microbicide and ARV-based Prevention Science (HIV R4P), the first global scientific conference focused exclusively on HIV prevention research, held on October 28 – 31 in Cape Town, South Africa. Her presentation was entitled “Expression, Activity, and Regulation of Phosphorylating Enzymes in Genital and Colorectal Tissues and Immune Cells.”
- Katie Eichinger won a travel award to attend the National Multiple Sclerosis Society 2014 Autumn Immunology Conference 2014 in Chicago, IL. The title of her presentation was “Immunity Facilitates Interferon- γ (Ifn γ) Mediated Clearance of Respiratory Syncytial Virus (RSV) Independent of Cellular Immunity”.
- Xiaolan Zhang won one of five Best Poster Awards at the School of Pharmacy Research Retreat for her poster "Targeted Delivery of Anticancer Agents via a Dual Functional Nanomicellar Carrier".
- Mohammed Alqarni won one of five Best Poster Awards at the School of Pharmacy Research Retreat for his poster “Structural and Functional Study of Human Cannabinoid Receptor 2 Expressed from Insect Cells ”.
- Rujuta Joshi won one of five Best Poster Awards at the School of Pharmacy Research Retreat for her poster “Continuous Infusion Dosing of Mycophenolate Mofetil for Graft versus Host Disease Prophylaxis in Pediatric Hematopoietic Stem Cell Transplant Recipients”.
- Lingjue Li won one of five Best Poster Awards at the School of Pharmacy Research Retreat for her poster “The Alterations of Cerebral Microcirculation after Asphyxial Cardiac Arrest in Developing Rats”.
- Jiong Yan won one of five Best Poster Awards at the School of Pharmacy Research Retreat for his poster “CAR Promotes Cullin1-mediated Ubiquitination and Degradation of PGC1 in PML Nuclear Bodies”.
- Akhil Patel was a member of the First Place Team in Pitt's 1st Annual Student Startup Competition sponsored by the Innovation Institute. The title of the winning product was ‘myHealth’.
- Harini Venkata Krishnan won the 2014-2015 Global Academic Competition (Pharmaceutical Sciences) from the Catalent Applied Drug Delivery Institute for her project entitled “Three Dimensional Cell Cultures: Opportunities for Drug Discovery and Development”.
- Firuz Feturi won the Best Poster Awards at the 3th Annual Regional Pharmacy Research Forum West Virginia University and 6th Annual Pittsburgh AAPS Student Chapter Research Symposium for her poster, “Locally Implantable Tacrolimus loaded Disc for Allograft Targeted Immunosuppression after Vascularized Composite Tissue Allotransplantation”.
- Lingjue Li won the Young Investigator Travel Bursary to attend the XXVIIth International Symposium on Cerebral Blood Flow, Metabolism and Function in Vancouver, Canada. Her poster was entitled “Alterations of the Cerebral Microvascular Circulation after Asphyxial Cardiac Arrest in Developing Rats”.
- Firuz Feturi won the TERMIS A_M Travel Award to attend the 2014 Tissue Engineering and Regenerative Medicine World Congress in Washington, DC.
- Rujuta Joshi won the Best Poster at the 2015 Regional Pharmacy Research Forum sponsored by the AAPS Student Chapter West Virginia University for her poster entitled “Pharmacokinetic based MMF dosing in Pediatric Hematopoietic Stem Cell Transplant Recipients”.

Competitive Fellowships

- Kacey Anderson received an AFPE Pre-Doctoral Fellowship in Pharmaceutical Sciences for her proposal "Drug Disposition in Critical Illness: Effects of Disease and Targeted Temperature Management" Mentor-Samuel Poloyac PharmD, PhD. (September 2015-August 2016).
- Kacey Anderson was awarded the Jonas Salk Fellowship from the Jewish HealthCare Foundation for the 2014-15 academic year.
- Katherine Eichenger received an AFPE Pre-Doctoral Fellowship in Pharmaceutical Science for her proposal "Immunomodulation of the neonatal response to Respiratory Syncytial Virus (RSV) using inhaled interferon gamma (IFN γ)" Mentor-Kerry Empey, PharmD, PhD. (September 2014-August 2015).
- Tao Long was awarded the Jonas Salk Fellowship from the Jewish HealthCare Foundation for the 2014-15 academic year.

Other Awards

- Peipei Lu won the Pharmaceutical Sciences Graduate Student Excellence Award from the University of Pittsburgh, School of Pharmacy.
- Xiaolan won the Norman R. and Priscilla A. Farnsworth Student Award from the University of Pittsburgh, School of Pharmacy.
- Dustin Walsh won the Randy and Renee Juhl Pharmacy Graduate Scholar Award from the University of Pittsburgh, School of Pharmacy.
- Hari Kalluri won the Graduate Student Teaching Assistant Award from the University of Pittsburgh, School of Pharmacy.
- Solomon Adams won the School of Pharmacy Dean's award for his professional and academic accomplishments in the Graduate Program.

Travel Awards

- Jiong Yan received a Graduate Program Council travel award to attend the 6th Great Lakes Nuclear Receptor Conference Program at the University of Wisconsin, Madison.
- Akil Patel received a Graduate Program Council travel award to attend the Biomaterials 2015 Annual Meeting and Exposition in Charlotte, NC.
- Osama Alshogran received a Graduate Program Council travel award to attend the American Society of Nephrology (ASN) Annual Meeting 2014 in Philadelphia, PA.
- Hari Kalluri received a Graduate Program Council travel award to attend the 2014 World Transplant Congress Meeting in San Francisco, CA.
- Jianqin Lu received a Graduate Program Council travel award to attend the 2014 Annual Meeting and Exposition of the Controlled Release Society in Chicago, IL.
- Peipei Lu received a Graduate Program Council travel award to attend the Experimental Biology 2015 Meeting in Boston, MA.

- Ryan Whetstone received a Graduate Program Council travel award to attend the 16th Annual Midwest DNA Repair Symposium in Detroit, MI.
- ZuWei Zhai received a Graduate Program Council travel award to attend the 2014 Meeting of the Society for Prevention Research in Washington, DC.
- Peng Zhang received a Graduate Program Council travel award to attend the 41st Annual Meeting and Exposition of the Controlled Release Society in Chicago, IL.
- Tian Zhou received a Graduate Program Council travel award to attend the 41st Annual Meeting and Exposition of the Controlled Release Society in Chicago, Illinois.

Graduate Student Publications and Presentations

PUBLICATIONS

- **Alqarni M**, Myint KZ, Tong Q, Yang P1, Bartlow P, Wang L, Feng R, Xie XQ. Examining the critical roles of human CB2 receptor residues Valine and Leucine 5.41 (192) in ligand recognition and downstream signaling activities. *Biochem Biophys Res Commun*. 2014 Sep 26;452(3):334-9
- Feng Z, **Alqarni MH**, Yang P, Tong Q, Chowdhury A, Wang L, Xie XQ. Modeling, molecular dynamics simulation, and mutation validation for structure of cannabinoid receptor 2 based on known crystal structures of GPCRs. *J Chem Inf Model*. 2014 Sep 22;54(9):2483-99
- Zhao Y, **Alshabi AM**, Caritis S, Venkataramanan R. Impact of 17-alpha-hydroxyprogesterone caproate on cytochrome P450s in primary cultures of human hepatocytes. *Am J Obstet Gynecol*. 2014 Oct;211(4):412
- Benedict N, Felbinger M, Ridenour T, Anthes A, **Altawalbeh S**, Kane-Gill S. Correlation of patient-reported outcomes of sedation and sedation assessment scores in critically ill patients. *J Crit Care*. 2014 Dec;29(6):1132
- Zhang X, Huang Y, Zhao W, **Chen Y**, Zhang P, Li J, Venkataramanan R, Li S. PEG-farnesyl thiosalicylic acid telodendrimer micelles as an improved formulation for targeted delivery of paclitaxel. *Mol Pharm*. 2014 Aug 4;11(8):2807-14.
- Gao Y, Yang P, Shen H, Yu H, Song X, Zhang L, Zhang P, **Cheng H**, Xie Z, Hao S, Dong F, Ma S, Ji Q, Bartlow P, Ding Y, Wang L, Liu H, Li Y, Cheng H, Miao W, Yuan W, Yuan Y, Cheng T, Xie XQ Small-molecule inhibitors targeting INK4 protein p18(INK4C) enhance ex vivo expansion of haematopoietic stem cells. *Nat Commun*. 2015 Feb 18;6:6328
- Feng R, Tong Q, Xie Z, **Cheng H**, Wang L, Lentzsch S, Roodman GD, Xie XQ. Targeting cannabinoid receptor-2 pathway by phenylacetamide suppresses the proliferation of human myeloma cells through mitotic dysregulation and cytoskeleton disruption. *Mol Carcinog*. 2015 Jan 16. [Epub ahead of print]
- Smith MA, Hibino M, Falcione BA, **Eichinger KM**, Patel R, Empey KM. Immunosuppressive aspects of analgesics and sedatives used in mechanically ventilated patients: an underappreciated risk factor for the development of ventilator-associated pneumonia in critically ill patients. *Ann Pharmacother*. 2014 Jan;48(1):77-85

- Zhang P, Li J, **Ghazwani M**, Zhao W, Huang Y, Zhang X, Venkataramanan R, Li S. Effective co-delivery of doxorubicin and dasatinib using a PEG-Fmoc nanocarrier for combination cancer chemotherapy. *Biomaterials*. 2015 Oct;67:104-14
- **Zhang X**, Huang Y, **Ghazwani M**, **Zhang P**, Jiang L, Thorne SH, Li, S. Tunable pH-Responsive Polymeric Micelle for Cancer Treatment. *ACS Macro Lett.*, 2015, 4 (6), pp 620–623.
- Lu J, Liu C, Wang P, **Ghazwani M**, Xu J, Huang Y, Ma X, **Zhang P**, Li S. The self-assembling camptothecin-tocopherol prodrug: An effective approach for formulating camptothecin. *Biomaterials*. 2015 Sep;62:176-87.
- Zhang W, Hu M, Shi Y, **Gong T**, Dezzutti CS, Moncla B, Sarafianos SG, Parniak MA, Rohan LC. Vaginal Microbicide Film Combinations of Two Reverse Transcriptase Inhibitors, EFdA and CSIC, for the Prevention of HIV-1 Sexual Transmission. *Pharm Res*. 2015 Sep;32(9):2960-72
- Feng Z, **Hu G**, **Ma S**, Xie XQ. Computational Advances for the Development of Allosteric Modulators and Bitopic Ligands in G Protein-Coupled Receptors. *AAPS J*. 2015 Sep;17(5):1080-95.
- Feng Z, **Ma S**, **Hu G**, Xie XQ. Allosteric Binding Site and Activation Mechanism of Class C G-Protein Coupled Receptors: Metabotropic Glutamate Receptor Family. *AAPS J*. 2015 May;17(3):737-53.
- **Zhou T**, **Hu M**, Pearlman A, Patton D, Rohan L. Expression and localization of p-glycoprotein, multidrug resistance protein 4, and breast cancer resistance protein in the female lower genital tract of human and pigtailed macaque. *AIDS Res Hum Retroviruses*. 2014 Nov;30(11):1106-16
- Zhang W, **Hu M**, Shi Y, **Gong T**, Dezzutti CS, Moncla B, Sarafianos SG, Parniak MA, Rohan LC. Vaginal Microbicide Film Combinations of Two Reverse Transcriptase Inhibitors, EFdA and CSIC, for the Prevention of HIV-1 Sexual Transmission. *Pharm Res*. 2015 Sep;32(9):2960-72
- Cha-Molstad H, Sung KS, Hwang J, Kim KA, Yu JE, Yoo YD, Jang JM, Han DH, Molstad M, Kim JG, Lee YJ, Zakrzewska A, Kim SH, **Kim ST**, Kim SY, Lee HG9, Soung NK, Ahn JS, Ciechanover A, Kim BY, Kwon YT. Amino-terminal arginylation targets endoplasmic reticulum chaperone BiP for autophagy through p62 binding. *Nat Cell Biol*. 2015 Jul;17(7):917-29.
- Feng Z, **Kochanek S**, Close D, Wang L, Srinivasan A, Almehizia AA, Iyer P, Xie XQ, Johnston PA, Gold B. Design and activity of AP endonuclease-1 inhibitors. *J Chem Biol*. 2015 Apr 19;8(3):79-93.
- Cheng Q, Inaba Y, **Lu P**, Xu M, He J, Zhao Y, Guo GL, Kuruba R, de la Vega R, Evans RW, Li S, Xie W. Chronic activation of FXR in transgenic mice caused perinatal toxicity and sensitized mice to cholesterol toxicity. *Mol Endocrinol*. 2015 Apr;29(4):571-82.
- **Lu P**, Yan J, Liu K, Garbacz WG, Wang P, Xu M, Ma X, Xie W. Activation of aryl hydrocarbon receptor dissociates fatty liver from insulin resistance by inducing fibroblast growth factor 21. *Hepatology*. 2015 Jun;61(6):1908-19
- Chai X, Guo Y, Jiang M, Hu B, Li Z, Fan J, Deng M, Billiar TR, Kucera HR, Gaikwad NW, Xu M, **Lu P**, Yan J, Fu H, Liu Y, Yu L, Huang M, Zeng S, Xie W. Oestrogen sulfotransferase ablation sensitizes mice to sepsis. *Nat Commun*. 2015 Aug 10;6:7979

- Koharudin LM, Wu Y1, DeLucia M, **Mehrens J**, Gronenborn AM, Ahn J. Structural basis of allosteric activation of sterile \square motif and histidine-aspartate domain-containing protein 1 (SAMHD1) by nucleoside triphosphates. *J Biol Chem*. 2014 Nov 21;289(47):32617-27.
- Shields RK, Nguyen MH, Potoski BA, **Press EG**, Chen L, Kreiswirth BN, Clarke LG, Eschenauer GA, Clancy CJ. Doripenem MICs and ompK36 porin genotypes of sequence type 258, KPC-producing *Klebsiella pneumoniae* may predict responses to carbapenem-colistin combination therapy among patients with bacteremia. *Antimicrob Agents Chemother*. 2015 Mar;59(3):1797-801.
- Bremmer DN, Clancy CJ, **Press EG**, Almaghrabi R, Chen L, Doi Y, Nguyen MH, Shields RK. KPC-producing *Klebsiella pneumoniae* strains that harbor AAC(6')-Ib exhibit intermediate resistance to amikacin. *Antimicrob Agents Chemother*. 2014 Dec;58(12):7597-600.
- Shields RK, Nguyen MH, **Press EG**, Clancy CJ. Abdominal candidiasis is a hidden reservoir of echinocandin resistance. *Antimicrob Agents Chemother*. 2014 Dec;58(12):7601-5.
- Almaghrabi R, Clancy CJ, Doi Y, Hao B, Chen L, Shields RK, **Press EG**, Iovine NM, Townsend BM, Wagener MM, Kreiswirth B, Nguyen MH. Carbapenem-resistant *Klebsiella pneumoniae* strains exhibit diversity in aminoglycoside-modifying enzymes, which exert differing effects on plazomicin and other agents. *Antimicrob Agents Chemother*. 2014 Aug;58(8):4443-51.
- Shields RK, Clancy CJ, Hao B, Chen L, **Press EG**, Iovine NM, Kreiswirth BN, Nguyen MH. Effects of *Klebsiella pneumoniae* Carbapenemase Subtypes, Extended-Spectrum \square -Lactamases, and Porin Mutations on the In Vitro Activity of Ceftazidime-Avibactam against Carbapenem-Resistant *K. pneumoniae*. *Antimicrob Agents Chemother*. 2015 Sep;59(9):5793-7.
- Lu P, **Yan J**, Liu K, Garbacz WG, Wang P, Xu M, Ma X, Xie W. Activation of aryl hydrocarbon receptor dissociates fatty liver from insulin resistance by inducing fibroblast growth factor 21. *Hepatology*. 2015 Jun;61(6):1908-19.
- **Yan J**, Chen B, **Lu J**, Xie W. Deciphering the roles of the constitutive androstane receptor in energy metabolism. *Acta Pharmacol Sin*. 2015 Jan;36(1):62-70
- **Zhang X**, Huang Y, Zhao W, Liu H, Marquez R, **Lu J**, **Zhang P**, Zhang Y, Li J, Gao X, Venkataramanan R, Xu L, Li S. Targeted delivery of anticancer agents via a dual function nanocarrier with an interfacial drug-interactive motif. *Biomacromolecules*. 2014 Nov 10;15(11):4326-35.
- Zhang Y, Huang Y, Zhao W, **Lu J**, **Zhang P**, **Zhang X**, Li J, Gao X, Venkataramanan R, Li S. Fmoc-conjugated PEG-vitamin E2 micelles for tumor-targeted delivery of paclitaxel: enhanced drug-carrier interaction and loading capacity. *AAPS J*. 2014 Nov;16(6):1282-91.
- **Zhang X**, Liu K, Huang Y, Xu J, Li J, Ma X, Li S. Reduction-sensitive dual functional nanomicelles for improved delivery of paclitaxel. *Bioconjug Chem*. 2014 Sep 17;25(9):1689-96.
- **Zhang X**, Huang Y, Zhao W, Chen Y, **Zhang P**, Li J, Venkataramanan R, Li S. PEG-farnesyl thiosalicylic acid telodendrimer micelles as an improved formulation for targeted delivery of paclitaxel. *Mol Pharm*. 2014 Aug 4;11(8):2807-14.

- **Zhang P**, Huang Y, Liu H, Marquez RT, Lu J, Zhao W, Zhang X, Gao X, Li J, Venkataramanan R, Xu L, Li S4. A PEG-Fmoc conjugate as a nanocarrier for paclitaxel. *Biomaterials*. 2014 Aug;35(25):7146-56.

PRESENTATIONS, POSTERS, AND PODIUM PRESENTATIONS

- Society of Neuroscience, Washington, DC. Cholinergic Regulation of Aromatase in Brain. **Li, J**. November 10, 2014.
- 54th Interscience Conference on Antimicrobial Agents and Chemotherapy, Washington DC. Biofilm Production Among *Candida Albicans* Isolates From Various Clinical Sites. **Press, E**. January 19, 2015.
- Society of Critical Care Annual Congress, Phoenix, AZ. UPLC-MS/MS Method for Assessing Phenytoin and Levetiracetam Concentrations in Pediatric CA Patients. **Anderson, K**. January 19, 2015.
- American Heart Association Fellows Research Day, Pittsburgh, PA. UPLC-MS/MS Method for Assessing Phenytoin and Levetiracetam Concentrations in Pediatric CA Patients. **Anderson, K**. January 23, 2015.
- 2015 KSBMB International Conference, Seoul, South Korea. N-terminal Arginylation of Endoplasmic Reticulum Chaperone BiP Generates an Autophagy Degrons that Binds to the Autophagic Adaptor p62/SQSTM1. **Kim, S**. May 14, 2015.
- 2015 KSBMB International Conference, Seoul, South Korea. Role of UBR4, a Substrate Recognition Component of the N-end Rule Pathway, in endo-lysosomal System. **Kim, S**. May 14, 2015.
- International Conference on Protein Metabolism and Diseases, Yangyang, South Korea. Role of UBR4, a Substrate Recognition Component of the N-end Rule Pathway, in endo-lysosomal System. **Kim, S**. July 10, 2014.
- HIV Research for Prevention 2014: AIDS Vaccine, Microbicide and ARV-based Prevention Science, Cape Town, South Africa. Expression, Activity, and Regulation of Phosphorylating Enzymes in Genital and Colorectal Tissues and Immune Cells. **Hu, M**. October 30, 2014.
- 6th Annual Pittsburgh AAPS Student Chapters' Research Symposium, Pittsburgh, PA. Development and Optimization of an Androgen Receptor Radioligand Binding Assay to Characterize Hits from a High Throughput Screen for Novel Prostate Cancer Drugs. **Francher, A**. October 17, 2014.
- HIV Research for Prevention Conference, Cape Town, South Africa. Design of Biodegradable Nanoparticles for Vaginal Delivery of the anti-HIV Protein Griffithsin. **Li, J**. October 23, 2014.
- HIV Research for Prevention Conference, Cape Town, South Africa. Imaging and Visual Evaluation for the Confirmation of Vaginal Film Spreading and Retention. **Grab, S**. October 29, 2014.

- 2015 SFB Annual Meeting, Charlotte, NC. PEGylated Poly (ester amide) Elastomers with Tunable Physico-chemical, Mechanical and Degradation Properties. **Xue, Y.** April 16, 2015.
- 2015 McGowan Institute for Regenerative Medicine Annual Retreat, Farmington, PA. Synthesis and Characterization of Nover APS-Based Elastomer for Soft Tissue Engineering. **Xue, Y.** March 9, 2015.
- 2015 McGowan Institute for Regenerative Medicine Annual Retreat, Farmington, PA. Biodegradable, Elastomeric APS-PEG/PCL Electrospun Scaffolds for Tissue Engineering. **Xue, Y.** March 9, 2015.
- Science 2014, Pittsburgh, PA. Synthesis and Characterization of Nover APS-Based Elastomer for Soft Tissue Engineering. **Xue, Y.** October 1, 2014.
- 6th Annual Pittsburgh AAPS Student Chapters' Research Symposium, Pittsburgh, PA. Synthesis and Characterization of Nover APS-Based Elastomer for Soft Tissue Engineering. **Xue, Y.** October 6, 2014.
- 6th Annual Pittsburgh AAPS Student Chapter Research Symposium, Pittsburgh, PA. Inhaled Interferon α (IFN α) During Primary Respiratory Syncytial Virus (RSV) Infection Induces Airway Hyperresponsiveness (AHR) After RSV Re-challenge. **Eichinger, K.** October 17, 2014.
- Autumn Immunology Conference, Chicago, IL. Innate Immunity Facilitates Interferon- α (IFN α) Mediated Clearance of Respiratory Syncytial Virus (RSV) Independent of Cellular Immunity. **Eichinger, K.** November 21, 2014.
- Society of Critical Care Medicine, Phoenix, AZ. ABCG2 rs2231142 c.421C>A is Associated with Outcomes Following Severe Traumatic Brain Injury. **Adams, S.** January 17, 2015.
- 2015 School of Pharmacy Annual Retreat, Pittsburgh, PA. Structural Studies of p18INK4C with its Inhibitors Using X-ray Crystallography. **Hu, Z.** June 2, 2015.
- 6th Annual Pittsburgh AAPS Student Chapter Research Symposium, Pittsburgh, PA. Small Molecule Perturbogens of the Motor Protein Cytoplasmic Dynein Heavy Chain 1. **Pouland, T.** October 17, 2014.
- 3th Annual Regional Pharmacy Research Forum, Morgantown, WV. Locally Implantable Tacrolimus loaded Disc for Allograft Targeted Immunosuppression after Vascularized Composite Tissue Allotransplantation. **Feturi, F.** June 20, 2015.
- Resident Research Day, University of Pittsburgh Department of Plastic Surgery, Pittsburgh, PA. Locally Implantable Tacrolimus loaded Disc for Allograft Targeted Immunosuppression after Vascularized Composite Tissue Allotransplantation. **Feturi, F.** June 20, 2015.
- 2015 Society of Biomaterials Annual Meeting, Charlotte, NC. Biomimetic Fibrous Hydrogels with Aligned Hierarchical Structure Promote Biomineralization in Vitro. **Patel, A.** April 15, 2015.

- 6th Annual Pittsburgh AAPS Student Chapter Research Symposium, Pittsburgh, PA. Novel Biomimetic Fibrous Hydrogel Scaffolds for Hard Tissue Regeneration. **Patel, A.** October 24, 2014.
- 2015 Experimental Biology Annual Meeting, Boston, MA. Activation of Aryl Hydrocarbon Receptor Dissociates Fatty Liver from Insulin Resistance by Inducing FGF21. **Lu, P.** March 28, 2015.
- 2015 McGowan Institute for Regenerative Medicine Annual Retreat, Farmington, PA. Collagen-Mimetic Fibrous Hydrogel Scaffolds Promote In Vitro Biomineralization. **Patel, A.** March 8, 2015.
- AAPS/ISPOR Regional Research Forum, Morgantown, WV. Self-Assembled Polyelectrolyte Hydrogels Mimic in vivo Biomineralization. **Patel, A.** June 19, 2015.
- 2015 School of Pharmacy Annual Retreat, Pittsburgh, PA. Self-Assembled Polyelectrolyte Hydrogels as In Vitro 3D Models to Recapitulate In Vivo Biomineralization. **Patel, A.** June 1, 2015.
- Science 2014, Pittsburgh, PA. Novel Biomimetic Fibrous Hydrogel Scaffolds for Hard Tissue Regeneration. **Patel, A.** October 10, 2014.
- 2015 AAPS Regional Research Forum, Morgantown, WV. Regulation of Drug Metabolism and Disposition by Trauma. **Xie, Y.** June 19, 2015.
- 6th Annual Pittsburgh AAPS Student Chapter Research Symposium, Pittsburgh, PA. Topical Delivery of Immunosuppressive Drugs. **Feturi, F.** July 19, 2014.
- American Heart Association Fellows Research Day, Pittsburgh, PA. Alterations of the Cerebral Microvascular Circulation After Asphyxial Cardiac Arrest in Developing Rats. **Li, L.** January 23, 2015.
- 6th Annual Pittsburgh AAPS Student Chapter Research Symposium, Pittsburgh, PA. CAR Assembles Cullin1 Ubiquitination Complex and Promotes PGC1 α Degradation in PML Nuclear Bodies. **Yan, J.** October 17, 2014.
- Great Lakes Nuclear Receptor Conference, Madison, WI. CAR Assembles Cullin1 Ubiquitination Complex and Promotes PGC1 α Degradation in PML Nuclear Bodies. **Yan, J.** October 18, 2014.
- University of Pittsburgh School of Pharmacy Research Retreat, West Virginia. CAR Assembles Cullin1 Ubiquitination Complex and Promotes PGC1 α Degradation in PML Nuclear Bodies. **Yan, J.** June 1, 2015.
- Protein Discovery Summit 2014. Boston, MA. In Silico Prediction and Site-directed Mutagenesis Study of Binding Pocket Residues of Cannabinoid Subtype 2 (CB2) Receptor. **Alqarni, M.** October 23, 2014.
- Computational Drug Abuse Research (CDAR), Pittsburgh PA. Proposed Structural and Functional Studies of Human Cannabinoid Receptor 2 Expressed and Purified from Insect Cells (poster). **Alqarni, M.** May 14, 2015.

- 6th Annual Pittsburgh AAPS Student Chapter Research Symposium, Pittsburgh, PA. Treatment Patterns in Asthmatic Elderly Patients: Prevalence and Predictors. **Altawalbeh, S.** October 17, 2014.
- University of Pittsburgh School of Pharmacy Research Retreat, West Virginia. Targeted Delivery of Anticancer Agents via a Dual Functional Nanomicellar Carrier. **Zhang, X.** June 1, 2015.
- Brain 2015: The XXVIIth International Symposium on Cerebral Blood Flow, Metabolism and Function, Vancouver, Canada. Alterations of the Cerebral Microvascular Circulation After Asphyxial Cardiac Arrest in Developing Rats. **Li, L.** June 27, 2015.
- University of Pittsburgh Center of Pharmacogenetics, Pittsburgh, PA. Development and Characterization of Paclitaxel-loaded Solid Lipid Nanoparticles. **Ghazwani, M.** December 11, 2014.
- University of Pittsburgh Center of Pharmacogenetics, Pittsburgh, PA. Novel Farnesylthiosalicylate (FTS)-based Solid Lipid Nanoparticles for Improved Targeted Delivery of Paclitaxel. **Ghazwani, M.** May 12, 2015.
- University of Pittsburgh School of Pharmacy Research Retreat, West Virginia. Optimization of an Isolated Perfused Rat Kidney Model to Evaluate Ischemic Reperfusion Injury and Function After Cold Storage. **Thanukrishnan, H.** June 1, 2015.
- Society of Critical Care Medicine's 44th Critical Care Congress, Phoenix, AZ. Probenecid Enhances Brain Availability of N-Acetylcysteine. **Hagos, F.** January 16, 2015.
- 2015 McGowan Institute for Regenerative Medicine Annual Retreat, Farmington, PA. Role of Surface Modification and Microstructure of Scaffolds in Myoblast Differentiation. **Mukudan, FS.** March 8, 2015.
- 2015 McGowan Institute for Regenerative Medicine Annual Retreat, Farmington, PA. Engineered Microenvironment to Mimic Tumor Growth-Induced Events Involved in Breast Tumor Progression. **Mukudan, FS.** March 8, 2015.
- 2015 Regional Pharmacy Research Forum, Morgantown, WV. Pharmacokinetic based MMF dosing in Pediatric Hematopoietic Stem Cell Transplant Recipients. **Joshi, R.** June 19, 2015.
- 2015 American Association of Colleges of Pharmacy Annual Meeting, Baltimore, MD. Use of Clinical Trial Simulations to Teach Pharmacy Students about the Drug Development Process. **Kalluri, H.** July 13, 2015.

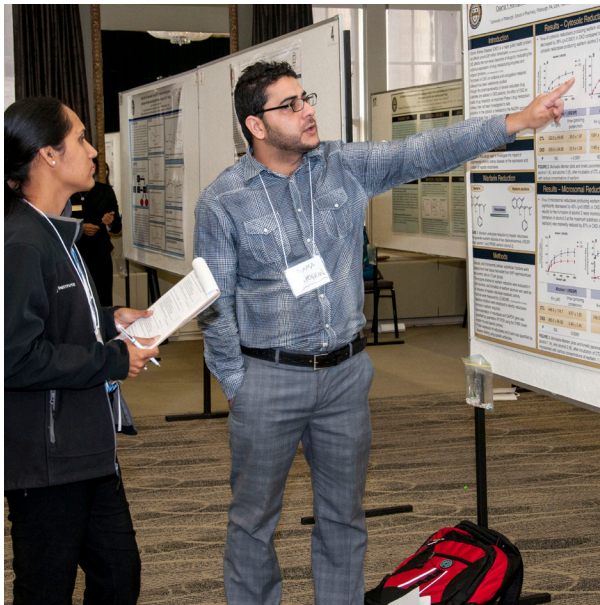
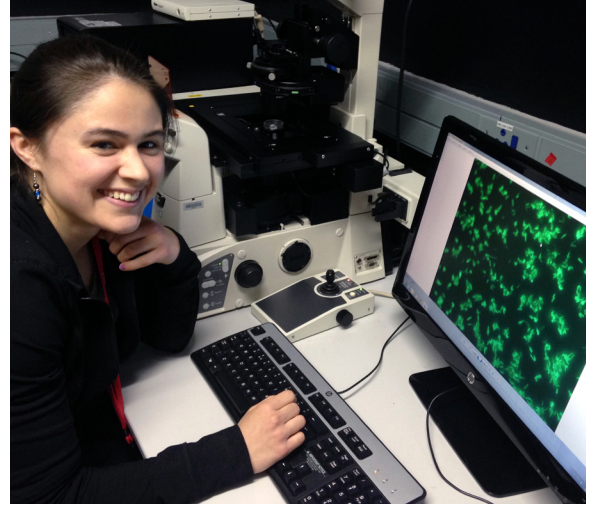
POSTDOCTORAL FELLOWS

School of Pharmacy Postdoctoral Associates FY15

Name	Degree	Degree/University	Field	Country
Bastian, Jaime	PharmD	University of Florida	Pharmacy	USA
Espinoza, Martha Bustos	PhD	Universidad Nacional Autonoma de Mexico	Biomedical Sciences	Mexico
Feng, Zhiwei	PhD	Soochow University	Materials Science	China
Garbacz, Wojciech	PhD	University of Dundee in Dundee	Toxicology	UK
Jiang, Mengxi	PhD	University of Pittsburgh	Pharmaceutical Sciences	USA
Liu, Ke	PhD	Chinese Academy of Sciences	Bioanalysis, Drug Metabolism and Pharmacokinetics	China
Patel, Sravan	PhD	Duquesne University	Pharmaceutics	USA
Shaik, Imam	PhD	Texas Tech University	Pharmaceutical Sciences	USA
Sun, Jingjing	PhD	Chinese Academy of Sciences	Polymer Chemistry and Physics	China
Wang, Peng-Cheng	PhD	Chinese Academy of Sciences	Medicinal Chemistry	China
Wang, Zehua	PhD	Yunnan University	Biochemistry and Molecular Biology	China
Zhang, Wei	PhD	Fudan University	Pharmaceutics	China
Zhao, Yueshui	PhD	The Chinese University of Hong Kong	Biomedical Sciences	China
Zhu, Junjie	PhD	Chinese Academy of Sciences	Medicinal Chemistry	China

**Advancing Human Health
Through Research**





Advancing Human Health through Research

The overall goal of the School of Pharmacy’s research programs is to advance human health through research supported by a diversified funding portfolio that ranges from the molecular to patient outcomes. School of Pharmacy investigators are using state-of-the-art techniques to answer important questions leading to new drug targets and improved drug therapy. Faculty are identifying sources of variability to improve patient outcomes and creating evidence-based guides for therapy. The quality of the science is shown through successful competition for NIH research support. As stated in Long-Range Plan 2012–2018:

By 2018, the School of Pharmacy will:

- **Be recognized as a research school of distinction.**

RESEARCH BY THE NUMBERS FOR FY15

- In FY15, funded research projects generated **\$13,315,498** in total support (**\$9,714,833 million** direct costs and **\$3,600,655 million** indirect costs).
- FY15 School of Pharmacy PHS research funding is **\$6,450,467** in direct costs and **\$2,801,413** in indirect costs.
- **93**: the number of active research projects.
- **#9** among schools of pharmacy in NIH support for FY14 with \$10.62 million in funding (**#10** in overall funding and **#13** in non-federal funding).
- **30** faculty members were principal investigators.
- **4** principal investigators or co-investigators on multi-institutional grants.
- **18** international research presentations in **8** countries.
 - 3 at universities or hospitals
 - 15 at conferences or academies

RESEARCH FUNDING

Annual Grant Costs by Source

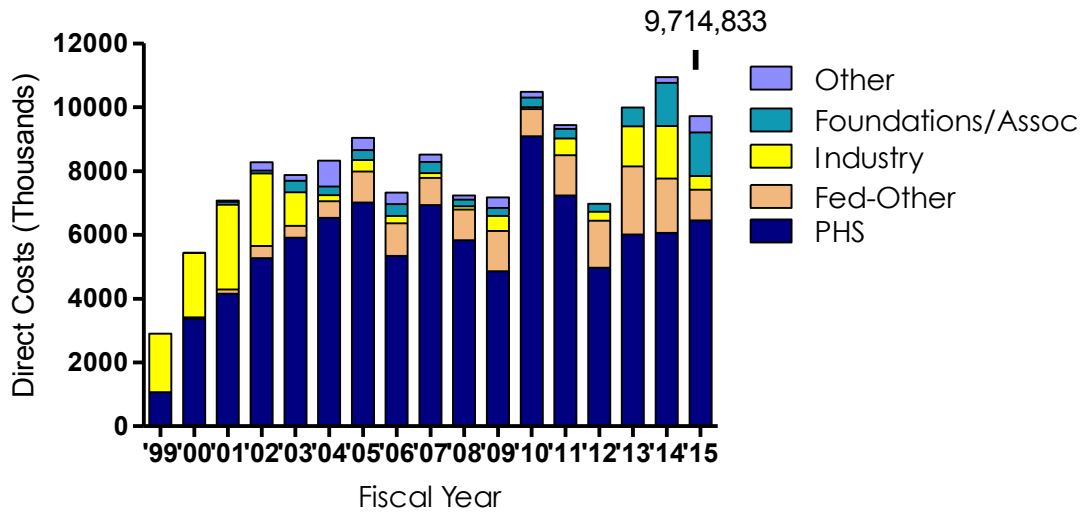
Active project funding for FY15 was **\$13.32 million**, with **\$9.71 million in direct costs** and \$3.6 million in indirect costs. The graph and tables below and on the next page provide detail regarding FY15 sources of funding for direct costs.

Direct Costs for Research by Funding Category

Source	FY7	FY10	FY11	FY12	FY13	FY14	FY15
PHS	\$6,934,873	\$9,083,208	\$7,229,748	\$4,967,911	\$6,006,199	\$6,058,477	\$6,450,467
Federal-Oth	846,586	856,030	1,268,055	1,469,405	2,143,548	\$1,702,706	\$967,894

Source	FY7	FY10	FY11	FY12	FY13	FY14	FY15
Industry	156,419	60,226	518,140	289,323	1,253,199	\$1,649,131	\$425,862
Found/Assoc	351,468	296,641	305,600	249,664	584,447	\$1,347,135	\$1,363,123
Other	222,110	187,737	111,157	0	0	\$180,224	\$507,487
TOTAL	\$8,511,456	\$10,483,842	\$9,432,700	\$6,976,303	\$9,987,393	\$10,937,673	\$9,714,833

Direct Costs: Research Funding



RESEARCH OVERVIEW

Center for Pharmacogenetics

Faculty

Song Li, Professor
Xiaochao Ma, Associate Professor
Wen Xie, Professor
Da Yang, Assistant Professor
Jiang Li, Research Assistant Professor
Yixian Huang, Research Associate

Graduate Students (PhD students)

Yuhan Bi	Yuan Wei
Yichao Chen	Yang Xie
Mohammed Ghazwani	Jieni Xu
Peipei Lu	Jiong Yan
Madhav Sachar	Peng Zhang
Amina Shehu	Xiaolan Zhang

Postdoctoral Fellows

Wojciech Garbaz
Jingjing Sun
Lei Liang
Bo Yang
Pengcheng Wang
Zehua Wang
Junjie Zhu

Visiting Scholars

Yukun Huang
Lei Liang
Qiongfeng Liao
Min Zhao
ZanmeiZhao

Major Accomplishments

- **Song Li** and his associates Yichao Chen, and Yixian Huang filed a patent application titled “Immunostimulatory Nanocarrier” (Provisional application 62/199,455, filed on July 31, 2015).
- **Xiaochao Ma** was invited to serve as an *ad hoc* reviewer for The Wellcome Trust DBT India Alliance Fellowship, July 2015.
- **Wen Xie** is the co-Investigator of a new NIH R01 grant titled “IRE1/XBP1s Signaling: A Novel Essential Regulator For Bone Marrow Microenvironmen.” (Hongjiao Ouyang/School of Dental Medicine, P.I.).
 - Named Guest Professor, Second Military Medical University, Shanghai, China.
 - Invited to serve as an Charter member of the NIH Systemic Injury by Environmental Exposure (SIEE) Study Section (09/01/2014-06/30/3017)
 - Invited to serve as an *Ad hoc* Reviewer, Scientific Assessment and Workforce Development, Oak Ridge Associated Universities (ORAU), on behalf of the

Nazarbayev University Research Council in Astana, Kazakhstan (December 2014).

- Invited to serve as an *Ad hoc* Reviewer (Mail review), National Science Foundation of China (NSFC) (Digestive Diseases) (May 2015).
 - invited to serve as an *Ad hoc* Reviewer, Chang Jiang Scholars Program, Ministry of Education, China (September 2015).
 - Named Guest Editor for *Biochimica et Biophysica Acta -Gene Regulatory Mechanisms (BBA-GRM)*, to organize a Thematic Issue on xenobiotic receptors (2015-2016)
 - Named Member, Scientific Advisory Board, *Microsomes and Drug Oxidations Meeting*, Davis, CA. October 2-6, 2016.
- **Da Yang** was selected to be the recipient of Elsa U. Pardee Foundation grant and Awarded UPCI-RPCI Ovarian Cancer SPORE Early Career Award.

Selected Publications

- Wu Z, Zhang X, Xu X, Chen Y, Hu T, Kang Z, Li S, Wang H, Liu W, **Ma X**, Guan M. The mutation profile of JAK2 and CALR in Chinese Han patients with Philadelphia chromosome-negative myeloproliferative neoplasms. *J Hematol Oncol*. 2014 Jul 15; 7:48. PMID: 25023898.
- Gonzalez FJ, Fang ZZ, **Ma X**. Transgenic mice and metabolomics for study of hepatic xenobiotic metabolism and toxicity. *Expert Opin Drug Metab Toxicol*. 2015; 11(6):869-81. PMID: 25836352.
- Liu K, Yan J, Sachar M, Zhang X, Guan M, Xie W, **Ma X**. A metabolomic perspective of griseofulvin-induced liver injury in mice. *Biochem Pharmacol*. 2015 Sep 5. pii: S0006-2952(15)00575-4. doi: 10.1016/j.bcp.2015.09.002. [Epub ahead of print] PMID: 26343413.
- Sachar M, **Ma X**. Role of ABCG2 in liver injury associated with erythropoietic protoporphyria. *Hepatology*. 2015 Sep 24. doi: 10.1002/hep.28249. [Epub ahead of print] PMID: 26403458.
- Zhang P, Li J, Ghazwani M, Zhao W, Huang Y, Zhang X, Venkataramanan R, **Li S**. Effective co-delivery of doxorubicin and dasatinib using a PEG-Fmoc nanocarrier for combination cancer chemotherapy. *Biomaterials*. 2015 Oct;67:104-14. (PMID:26210177)
- Lu J, Liu C, Wang P, Ghazwani M, Xu J, Huang Y, Ma X, Zhang P, **Li S**. The self-assembling camptothecin-tocopherol prodrug: An effective approach for formulating camptothecin. *Biomaterials*. 2015 Sep;62:176-87. (PMID: 26057133)
- Zhang, X., Liu, K., Huang, Y., Xu, J., Li, J., Ma, X., and **Li, S**. Reduction-sensitive dual functional nanomicelles for improved delivery of paclitaxel. *Bioconjugate Chemistry* 25: 1689-1696, 2014. (PMID: 25121577)
- Lu P, Yan J, Liu K, Garbacz WG, Wang P, Xu M, Ma X, **Xie W**. Activation of Aryl Hydrocarbon Receptor Dissociates Fatty Liver from Insulin Resistance by Inducing FGF21. *Hepatology* **61**: 1908-1919 (2015) PMID: 25614121
- Cheng Q, Inaba Y, Lu P, Xu M, He J, Zhao Y, Guo GL, Kuruba R, De La Vega R, Evans RW, Li S, **Xie W**. Chronic activation of FXR in transgenic mice caused perinatal toxicity and sensitized

mice to cholesterol toxicity. *Mol Endocrinol* **29**: 571-582 (2015) PMID: 25719402 (#, co-first authors)

- Hu B, Guo Y, Garbacz WG, Jiang M, Xu M, Huang H, Tsung A, Billiar TR, Ramakrishnan SK, Shah YM, Lam KSL, Huang M, **Xie W**. Fatty acid binding protein-4 (FABP4) is a hypoxia inducible gene that sensitizes mice to liver ischemia/re-perfusion injury. *J Hepatol* **63**: 855-862 (2015) PMID: 26070408
- Jiang M, Klein M, Zanger UM, Mohammad MK, Cave MC, Gaikwad NW, Selcer KW, Guo Y, He J, Zhang X, Shen Q, Qin W, Li J, Li S, **Xie W**. Inflammatory regulation of steroid sulfatase, a novel mechanism to control estrogen homeostasis and inflammation in chronic liver disease. *J Hepatol*. 2015 Jul 25 [Epub ahead of print] PMID: 26220752
- Liu G, **Yang D**, Pecot C, Sun Y, Li Xia, Ji P, Cogdell D, Hu L, Rodriguez-Aguayo C, Lopez-Berestein G, Shmulevich I, De Cecco L, Mezzanzanica D, Xue F, Sood A. Augmentation of response to chemotherapy by microRNA-506 through synthetic lethality in serous ovarian cancers. *J Natl Cancer Inst*. 2015 107 (7): djv108 doi: 10.1093/jnci/djv108
- **The Cancer Genome Atlas Research Network (include Yang D)**, Comprehensive, Integrative Genomic Analysis of Diffuse Lower Grade Gliomas. *N Engl J Med*. 2015; 372:2481-2498 June 25, 2015 DOI: 10.1056/NEJMoa1402121
- **Cancer Genome Atlas Research Network (include Yang D)**, Genomic Classification of Cutaneous Melanoma. *Cell*. 2015 Volume 161, Issue 7, 18 June 2015, Pages 1681–1696

Selected Invited Research Presentations

- “The opportunities and challenges of metabolomics in drug safety evaluation”. 19th North American ISSX Meeting / 29th JSSX Meeting. San Francisco, California, October 2014. **Ma X**.
- “Genetically Engineered Mouse Models in Preclinical Studies of Drug Metabolism & Toxicity”. The Delaware Valley Drug Metabolism Discussion Group. West Chester, Pennsylvania, March 2015. **Ma X**.
- “Metabolomic Analysis Reveals Novel Mechanisms of Diseases and Drug Toxicity”. Northeast Ohio Medical University. Rootstown, OH, May 2015. **Ma X**.
- “Targeted Delivery of Anticancer Agents via A Dual Function Nanocarrier with An Interfacial Drug-Interactive Motif”. 2014 Chinese Pharmaceutical Conference. Changsha, China, September 19-21, 2015. **Li S**.
- “Improved Delivery of Anticancer Agents via A Dual Function Nanocarrier”. International Conference on Nanomedicine and NanoBiotechnology, ChinaNanomedicine 2015, Hangzhou, China, April 6-9, 2015. **Li S**.
- “*The Hepatic Function of AhR, the Expected and Unexpected.*” NIH/NIEHS Tamburro Liver Symposium (Symposium on Environmental Liver Disease). Louisville, Kentucky. September 11-12, 2014. **Xie W**.

- “Nuclear Receptors in Xeno- and Endobiotic Metabolism”, Departments of Environmental Medicine & Pharmacology, New York University Langone Medical Center. Tuxedo, NY. November 7, 2014. **Xie W.**
- “Nuclear Receptors in Liver Metabolism and Liver Diseases”, Microbiology and Immunology, School of Medicine, Virginia Commonwealth University. Richmond, Virginia. November 11, 2014. **Xie W.**
- “The Hepatic Function of AhR, the Expected and Unexpected”, Northeast Ohio Medical Research Forum 2014 (Joint Retreat of Departments of Pharmaceutical Sciences and Integrative Medical Sciences), Northeast Ohio Medical University (NEOMED), Rootstown, Ohio. December 5, 2014. **Xie W.**
- “The Perinatal Pharmacology of FXR”, Experimental Biology 2015 Meeting/American Association of Pharmacology and Experimental Therapeutics (ASPET), Boston, MA. March 28-April 1, 2015. **Xie W.**
- “Nuclear Receptors in Liver Metabolism and Liver Diseases”, Department of Pharmacology, School of Pharmacy, Second Military Medical University, Shanghai, China. April 10, 2015. **Xie W.**
- “Nuclear Receptors, Drug Metabolism, Energy Metabolism, and Disease Effect on Drug Metabolism”, 1st Sunrise Symposium for Drug Metabolism, Pharmacokinetics and Dynamics, Nanjing, China. April 11-13, 2015. **Xie W.**
- “Nuclear Receptors as Novel Therapeutic Targets in Obesity and Diabetes” Annual Meeting of the Canadian Society of Pharmaceutical Sciences (CSPS), Toronto, Ontario, May 26-29, 2015. **Xie W.**

Center for Clinical Pharmaceutical Sciences

Faculty

Samuel M. Poloyac, PharmD, PhD, FCCM, Associate Professor and Center Director
Kim C. Coley, PharmD, FCCP, Professor
Kerry M. Empey, PharmD, PhD, Assistant Professor
Philip E. Empey, PharmD, PhD, BCPS, Assistant Professor
Margaret Beth Minnigh, PhD, Assistant Professor
Thomas D. Nolin, PharmD, PhD, Assistant Professor
Carolyn T. Thorpe, PhD, MPH, Assistant Professor
Joshua Thorpe, PhD, MPH, Associate Professor
Raman Venkataramanan, PhD, Professor

Graduate Students

Solomon M. Adams, PharmD	Fanuel Hagos, BS, MS
Omar A. Almazroo, BSc, MSc	Rujuta Joshi, BS Pharm
Ali Mohamed Alshabi, BS, MS	Hari V Kalluri, PharmD
Osama Y. Alshogran, BS, MS	Lingjue Li, MS
Shoroq Altawalbeh, PharmD	Alexander J. Prokopienko, PharmD
Kacey Anderson, BS	Mohammad S. Shawaqfeh, PharmD, MS
Katherine Eichinger, PharmD, MS	Harisudhan Thanukrishnan, M Pharm.
	Dustin R. Walsh, PharmD
	Hongfei Zhang, MS

Major Accomplishments

- **Sam Poloyac** received the following funding:
 - National Institutes of Health. “Developing Goal-Oriented Perfusion Therapy for Neurocardiac Injury in Sub-Arachnoid Hemorrhage” Role: Co-PI; 2/5/14 – 1/31/18.
 - Department of Defense “Operation Brain Trauma Therapy” (Extended) Role: Co-I; 5/01/14-4/30/16.
- **Sam Poloyac** served as a reviewer for:
 - The National Institutes of Health NSD-K Regular Study Section Member – Primary Reviewer.
 - The American Heart Association Spring 2015 Region 1 Brain Peer Review Committee.
- **Sam Poloyac** was given the 2015 PLS/Rho Chi Innovations Teaching Award.
- **Kerry Empey** was awarded a R03 grant from the NIH Eunice Kennedy Shriver National Institute of Child Health & Human Development. “Immature infant alveolar macrophage clearance of cell debris during RSV infection.” Role: PI; 4/1/15 – 3/31/17.
- **Philip Empey** was given the following teaching awards:
 - AACP Innovations in Teaching Award from the American Association of Colleges of Pharmacy, April 2015.
 - The Outstanding Scholarly Contribution Award from the Rho Chi Society, 2015.
- **Philip Empey** has received several grants and awards including:

- University of Pittsburgh, Institute of Personalized Medicine/Clinical and Translational Science Institute, demonstration project. “PreCISE-Rx: Pharmacogenomics-guided care to improve the safety and effectiveness of medications”. Role: PI; 2014 – 2016.
 - McCune Foundation – 2013039201 (Berg) “Development of Pharmacogenomics”. Role: Co-I; 20% effort; 2015 – 2017.
 - University of Pittsburgh, Advisory Council on Instructional Excellence (ACIE) Grant Award. “Using personal genome testing to teach pharmacogenomics in a large lecture course”. Role: PI; 2014 – 2015.
 - University of Pittsburgh, Clinical and Translational Science Institute, project funding (Empey) MEDivate: achieving great medication outcomes together”. Role: PI; direct costs and Center for Assistance in Research using eRecord (CARE) support; 2014.
 - University of Pittsburgh, 1st Gear Enterprise Creation Team Grant. “MEDivate: Business development and customer discovery”. Role: PI; 2014.
 - National Institutes of Health – R01 LM011838-01 (Boyce). “Addressing gaps in clinically useful evidence on drug-drug interactions”. Role: Co-I; 2014 – 2018.
 - Mitochondrial Disease Foundation (Bell) “Improving CNS delivery of brain antioxidants after acute metabolic decompensation in mitochondrial disease.” Role: Co-I.
- **Tom Nolin** was awarded a R01 grant from the NIH National Institute of General Medical Science for his research entitled “Drug Metabolizing Enzyme and Transporter Function in Chronic Kidney Disease. Role: PI; 9/15/14 – 8/31/19.
 - **Tom Nolin** was named an associate editor for the tenth edition of “Pharmacotherapy: A Pathophysiologic Approach”. This text is the most frequently utilized textbook within schools of pharmacy nationwide.
 - **Tom Nolin** developed and co-chaired new ACCME/ACPE continuing education program titled “Nephro-Pharmacology across the Spectrum of Kidney Diseases”. Full-day early program at the American Society of Nephrology Annual Meeting, Kidney Week 2014, Philadelphia, PA, November 12, 2014.
 - **Jim Stevenson** was a New Investigator Award Winner based on his research entitled “Genome-wide association study of antipsychotic response in first episode psychosis” Abstracts for the 15th International Congress on Schizophrenia Research (ICOSR). Schizophr Bull (2015) 41 (suppl 1):S1-S341.
 - **Carolyn Thorpe** received the following funding:
 - Veterans Health Administration. “Safety of Opioid Use among Veterans Receiving Care in Multiple Health Systems.” Role Co-I; 2/1/2015 – 1/31/2018.
 - Department of Veterans Affairs, Health Services Research & Development, Department of Veterans Affairs, Quality Enhancement Research Initiative (QUERI). “Differences in Satisfaction with Choice: Laying the Foundation for the Evaluation of the CHOICE Act.” Role: Co-I; 4/1/2015 – 9/30/2015.
 - Department of Veterans Affairs, Pharmacy Benefits Management/Center for Medication Safety PBM/VA Center for Medication Safety Quality Improvement Initiative. Role: Co-I; 11/1/2014 – 9/30/2015.
 - Donoghue Foundation. “Cumulative CNS Medication Dosage and Serious Fall Injuries.” Role: Co-I; 1/1/2015 – 12/31/2016.

- **Joshua Thorpe** received a grant from the Department of Veteran Affairs, Health Services Research & Development. “Dual Use of VA/Medicare Part D and Unsafe Prescribing in Veterans with Dementia.” Role: PI; 6/1/15 – 12/31/17.
- **Raman Venkataramanan’s** funding from NIH National Institute of Child and Human Development was renewed for a third cycle – Obstetric Pharmacology Research Center. Co-PI; Funding renewed for year 11-15, July 2015 – June 2020.
- **Raman Venkataramanan** acquired a NIH National Institute of Child and Human Development - T-32 Fellowship in OB Pharmacology: only one in the country who recruited a PharmD. Student currently on PhD path.
- **Raman Venkataramanan** was honored by:
 - Being awarded the “Graduate Faculty of the Year Award” by the University of Pittsburgh, School of Pharmacy May 2015.
 - Being asked to serve as a speaker in “Agents of Change”. He was one of 7 alumni from 35 years selected to give a talk at the University of British Columbia, Vancouver Canada. Sep 2014.

Selected Publications

- Shaik JS, **Poloyac SM**, Kochanek PM, Alexander H, Tudorascu DL, Clark RS, Manole MD. 20-Hydroxyeicosatetraenoic Acid Inhibition by HET0016 Offers Neuroprotection, Decreases Edema, and Increases Cortical Cerebral Blood Flow in a Pediatric Asphyxial Cardiac Arrest Model in Rats. *J Cereb Blood Flow Metab.* 2015 Jun 10. PMID: 26058691.
- Donnelly MK, Crago EA, Conley YP, Balzer JR, Ren D, Ducruet AF, Kochanek PM, Sherwood PR, **Poloyac SM**. 20-HETE is associated with unfavorable outcomes in subarachnoid hemorrhage patients. *J Cerebral Blood Flow Metab* April 29, 2015. PMID: 25920956.
- Donnelly MK, Conley YP, Crago EA, Ren D, Sherwood PR, Balzer JR, **Poloyac SM**. Genetic markers in the EET metabolic pathway are associated with outcomes in patients with aneurysmal subarachnoid hemorrhage. *J Cereb Blood Flow and Metab.* 2015; 35(2): 267-76. PMID: 25388680.
- Willyerd F, **Empey PE**, Philbrick A, Ikonovic M, Puccio A, Kochanek P, Okonkwo D, Clark RSB. Expression of ATP-Binding Cassette Transporters B1 and C1 after Severe Traumatic Brain Injury in Humans. *J Neurotrauma.* 2015 Apr 19. PMID: 25891836.
- Brochhausen, M., Schneider, J., Malone, D, **Empey PE**, Hogan WR., and Boyce, RD. Towards a foundational representation of potential drug-drug interaction knowledge. The 1st International Drug-Drug Interaction Knowledge Representation Workshop (DIKR 2014). Collocated with the 2014 International Conference on Biomedical Ontology (ICBO 2014). <http://ceur-ws.org/Vol-1309/paper2.pdf>
- **Nolin TD**, Aronoff GR, Fissell WH, Jain L, Madabushi R, Reynolds K, Zhang L, Huang SM, Mehrotra R, Flessner MF, Leyboldt JK, Witcher JW, Breyer MD, Zineh I, Archdeacon P, Roy-Chaudhury P, Goldstein SL. Pharmacokinetic assessment in patients receiving continuous RRT:

Perspectives from the Kidney Health Initiative. *Clin J Am Soc Nephrol* 2015;10(1):159-64. PMID: PMC4284416.

- Alshogran OY, Naud J, Ocque AJ, Leblond F, Pichette V, **Nolin TD**. Effect of experimental kidney disease on the functional expression of hepatic reductases. *Drug Metab Dispos* 2015;43(1):100-6. PMID: 25332430.
- Limdi NA, **Nolin TD**, Booth SL, Centi A, Marques MB, Crowley MR, Allon M, Beasley TM. Influence of kidney function on risk of supratherapeutic international normalized ratio-related hemorrhage in warfarin users: A prospective cohort study. *Am J Kidney Dis* 2014 Nov 25 PMID: 25468385.
- **Nolin TD**. A synopsis of clinical pharmacokinetic alterations in advanced CKD. *Semin Dial* 2015 April 8 PMID: 25855244.
- Bishop JR, **Stevenson JM**, Burghardt KJ. Pharmacogenomics in Mental Health. In: *Pharmacogenomics: Applications to Patient Care*, 3rd Ed. ACCP, Kansas City (2015).
- Lo-Ciganic WH, Donohue JM, **Thorpe JM**, Perera S, **Thorpe CT**, Marcum ZA, Gellad WF. Using Machine Learning to Examine Medication Adherence Thresholds and Risk of Hospitalization. *Med Care*. 2015 Aug;53(8):720-8 PMID:26147866.
- **Thorpe CT**, Gellad WF, Good CB, Zhang S, Zhao X, Mor M, Fine MJ. Tight glycemic control and use of hypoglycemic medications in older veterans with type 2 diabetes and comorbid dementia. *Diabetes Care*. 2015 Apr;38(4):588-95. PMID: 25592195.
- **Thorpe CT**, Johnson H, Dopp AL, **Thorpe JM**, Ronk K, Everett CM, Palta M, Mott DA, Chewing B, Schleiden L, Smith MA. Medication oversupply in patients with diabetes. *Res Social Adm Pharm*. 2015 May-Jun;11 PMID: 25288448.
- **Thorpe JM**, Thorpe CT, Schulz R, Van Houtven CH, Schleiden L. Informal Caregiver Disability and Access to Preventive Care in Care Recipients. *Am J Prev Med*. 2015 Jun 16. PMID: 26091932.
- Chui MA, Stone JA, Martin BA, Croes KD, **Thorpe JM**. Safeguarding older adults from inappropriate over-the-counter medications: the role of community pharmacists. *Gerontologist*. 2014 Dec; 54 PMID: 24197014.
- Zhao Y, Alshabi AM, Caritis S, **Venkataramanan R**. Impact of 17-alpha-hydroxyprogesterone caproate on cytochrome P450s in primary cultures of human hepatocytes. *Am J Obstet Gynecol*. 2014 Oct; 211 (4):412.e1-6. PMID: 24681287.
- Pillai VC, Parise RA, Christner SM, Rudek MA, Beumer JH, **Venkataramanan R**. Potential interactions between HIV drugs, ritonavir and efavirenz and anticancer drug, nilotinib--a study in primary cultures of human hepatocytes that is applicable to HIV patients with cancer. *J Clin Pharmacol*. 2014 Nov; 54 (11):1272-9. PMID: 24846165.
- Pillai VC, Han K, Beigi RH, Hankins GD, Clark S, Hebert MF, Easterling TR, Zajicek A, Ren Z, Caritis SN, **Venkataramanan R**. Population pharmacokinetics of oseltamivir in non-pregnant and pregnant women. *Br J Clin Pharmacol*. 2015 Jun 3. PMID: 26040405.

Selected Invited Presentations

- Society of Critical Care Medicine Annual Meeting, Phoenix, AZ. “Quantitative Lipidomics in Aneurysmal Subarachnoid Hemorrhage.” January 2015. **S Poloyac.**
- University of Pittsburgh Winter Academy in West Palm Beach, FL and Naples, FL. “Pharmacogenomics: Pitt’s Prescription for Personalized Medicine.” March 2015. **P Empey.**
- American Society of Health-system Pharmacists, Anaheim CA. “Testing Considerations for the Application of Pharmacogenomics.” December, 2014. **P Empey.**
- Neurocritical Care Society, Seattle, WA. “Pharmacological implication of targeted temperature management.” September, 2014. **P Empey.**
- 4th Annual AKI symposium, Pittsburgh, PA. “Pharmacokinetics in CRRT: From Research to Regulatory Policy.” October 9, 2014. **T Nolin.**
- American Society of Nephrology and the U.S. FDA, Kidney Week, Philadelphia, PA. “Study Design Considerations: In Vivo Studies in Humans on CRRT.” Kidney Health Initiative Open Workshop to present recommendations from the KHI Project titled “Standardized Pharmacokinetic Assessment in Patients Receiving Continuous Renal Replacement Therapy (CRRT).” November 2014. **T Nolin.**
- American Society of Nephrology Annual Meeting, Philadelphia, PA. “DAM! It’s not all about Excretion (E), Distribution (D), Absorption (A), and Metabolism/Transport (M) Can also change in Kidney Diseases.” November 2014. **T Nolin.**
- Pittsburgh Conference on the Science of Medication Adherence, Pittsburgh, PA. “Profiles of medication non-adherence behaviors in older adults.” Podium presentation June 2-3, 2015. **CT Thorpe**, B. Jordan, JM Thorpe.
- Pittsburgh Conference on the Science of Medication Adherence, Pittsburgh, PA. “Using machine learning to examine medication adherence thresholds and risk of hospitalization.” Podium presentation June 2-3, 2015. W Lo-Ciganic, JM Donohue, JM Thorpe, S Perera, **CT Thorpe**, ZA Marcum, WF Gellad.
- American Heart Association 2014 Scientific Sessions, Chicago, IL. “Achievement of weight loss with hypertension control among adults with incident hypertension.” November 15-19, 2014. HM Johnson, CM Bartels, **CT Thorpe**, N Pandhi, EA Jacobs, MA Smith.
- American Public Health Association’s annual meeting, New Orleans, LA. “Racial and ethnic disparities in analgesic prescribing for migraine in U.S. emergency departments.” October 18, 2014. **J Thorpe.**

Computational Chemical Genomics Screening (CCGS) Center

The Computational Chemical Genomics Screening (CCGS) Center has completed its third successful year since it was launched on September 1, 2012. The Center's mission is to promote interdisciplinary research, education, and training and foster collaborations by providing our developed state-of-the-art computational-chemical-genomics-based *in-silico* drug design approaches. In addition, Sean Xie is directing a NIH Center of Excellence for Computational Drug Abuse Research (CDAR) into its second funding year.

Faculty

Xiang-Qun (Sean) Xie, MD, PhD EMBA, Associate Dean for Research Innovation

- Professor of Pharmaceutical Sciences/Drug Discovery Institute
- Director of Computational Chemical Genomics Screening (CCGS) Center
- NIH Center of Excellence for Computational Drug Abuse Research (CDAR)

Lirong Wang, PhD, Assistant Professor

Terence Francis McGuire, PhD, Research Assistant Professor and Scientific Administrator

Graduate Students

Abdulrahman A. Almehezia
Mohammed H. Alqarni
Ziheng Hu
Xiaole Yang
Xiaomeng Xu
Shifan Ma
Guanxing Hu
Nuo Zhou Wang
Haizi Cheng
Yan Zhang
Changrui Xing
Yu Zhang (visiting scholar)

Postdoctoral Fellows

Peng Yang, PhD
Zhiwei Feng, PhD
Xueying Liu, PhD (visiting scholar)
Xisha Wang, PhD (visiting scholar)
Jianping Hu, PhD (visiting scholar)

Major Accomplishments

- During last fiscal year, Dr. Sean Xie and his team have published 11 peer-reviewed publications and two additional new invention patents. Dr. Sean Xie was an invited speaker by 9 local, national and international conferences or institutes.
- Reported the discovery of the first p18 chemical probes that can be used in stem cell research to lead to development of human stem cell drugs that may broaden use of stem cells in transplantation and regenerative medicine. Published in *Nature Communication* (Impact Factor 11.47).
- Discovered the first potential drugs that target the p62-ZZ domain for Multiple Myeloma pathogenesis. Published in *Leukemia* (Nature) (Impact Factor: 10.43).

- Three invention discovery patents have been successfully licensed to Biotech/pharma. The licensing company is in process of signing a Sponsor Research Agreement with the University and will invest \$4 million to fund anti-multiple myeloma drug development.
- Dr. Sean Xie has successfully led the NIH Center of Excellence into its second year after the first CDAR center annual meeting accomplished on May 14, 2015. The CDAR center focused on advancing quantitative systems pharmacology technologies for translational research in the area of drug abuse addiction and neuro-disorder diseases in collaboration with researchers/colleagues both in the Pittsburgh area and nationwide.
- Continued 2 NIH funded grants:
 - **NIH R01DA025612** P.I.: X.-Q. Xie 4/1/2010-03/31/2016
Structure/Function of the GPCR CB2 Receptor Binding and G-protein Recognition Pockets
 - **NIH NIDA P30 DA035778-01A1** (Xie and PI/Center Director)
7/1/2014 - 6/30/2019 \$5,960,391
NIDA Center of Excellence for Computational Drug Abuse Research (CDAR)
- Center faculty supervised and trained 7 undergraduates, 12 graduate students, and 5 post-doctoral fellows.

Selected Publications

- Yingdai Gao, Peng Yang, Hongmei Shen, Hui Yu, Zhaojun Xie, Liyan Zhang, Patrick Bartlow, Qing Ji, Yahui Ding, **Lirong Wang**, Haibin Liu, Shihui Ma, Sha Hao, Fang Dong, Yanxin Li, Peng Zhang, Haizi Cheng, Paulina H. Liang, Weimin Miao, Youzhong Yuan, Tao Cheng* and **Xiang-Qun Xie,*** “Small-molecule inhibitors targeting INK4 protein p18^{INK4C} enhance *ex vivo* expansion of haematopoietic stem cells”, *Nature Communication*, 2015 DOI: 10.1038/ncomms7328.
- **Feng, ZW.**; Hu, G.; Ma, S.; **Xie*, X.-Q.** Computational Advances for the Development of Allosteric Modulators and Bitopic Ligands in G Protein-Coupled Receptors. *AAPS J.* 2015: 1-16. May 5. PMID: 25940084; doi: 10.1208/s12248-015-9776-y.
- Feng, R, Tong, Q, Xie, ZJ, Cheng, HZ, **Wang, LR**, Lentzsch, S, Roodman, GD, Sfeir, C and **Xie, X-Q** * “Targeting cannabinoid receptor-2 pathway by phenylacetamide suppresses the proliferation of human myeloma cells through mitotic dysregulation and cytoskeleton disruption”, *Molecular Carcinogenesis*, 16 Jan 2015, DOI: 10.1002/mc.22251.
Xie’s lab is the first discovered novel Cannabinoid receptor CB2 ligands with new chemical scaffolds and also first report the new therapeutic application of CB2 ligands to human multiple myeloma intervention (**US patent: Xie, X-Q.**, Myint, K., Kurihara, N., Roodman, D. “P62-ZZ Chemical Inhibitor and Therapeutic Potential for Multiple Myeloma” PCT/US2012/049911; WO2013/022919A1; USSN 61/521,287, Application No. 14/237,494, filed February 6, 2014).
- Myint KZ, **Xie XQ***. “Ligand biological activity predictions using fingerprint-based artificial neural networks (FANN-QSAR)”. *Methods Mol Biol.* 2015;1260:149-64. PMID: 25502380. doi: 10.1007/978-1-4939-2239-0_9.
- Zhiwei Feng, Stanton Kochanek, David Close, **LiRong Wang**, Ajay Srinivasan, Abdulrahma A. Almehezia, Prema Iyer, **Xiang-Qun Xie***, Paul Johnston* and Barry Gold*. "Design and Activity

of AP Endonuclease-1 Inhibitors". *J. Chem Biol.* 2015 1-15. 19 Apr. doi: 10.1007/s12154-015-0131-7.

- **Feng, Zhiwei;** Alqarni, Mohammed; Tong, Qin; Chowdhury, Ananda; **Wang, Lirong; Xie, Xiang-Qun***, "Modeling, Molecular Dynamics Simulation and Mutation Validation for Structure of Cannabinoid Receptor 2 Based on Known Crystal Structures of GPCRs", *J. Chem. Inf. Model.* 2014, 54(9), 2483–2499. PubMed ID: 25141027, DOI: 10.1021/ci5002718.
- Sheng S, Wang J, **Wang L, Xie, X-Q*** et al. Network pharmacology analyses of the antithrombotic pharmacological mechanism of Fufang Xueshuantong Capsule with experimental support using disseminated intravascular coagulation rats[J]. *Journal of ethnopharmacology*, 2014, 154(3): 734-744. PMID: 24832112. doi: 10.1016/j.jep.2014.04.048. Epub 2014 May 14.
- Alqarni, MH, Myint KZ, Tong Q, Yang P, Bartlow P, **Wang L, Feng R, and Xie XQ***. Examining the critical roles of human CB2 receptor residues Valine 3.32 (113) and Leucine 5.41 (192) in ligand recognition and downstream signaling activities. *Biochem. Biophys. Res. Commun.*, 2014; 452(3):334-9. doi: 10.1016/j.bbrc.2014.08.048. PMID: 25148941.

Selected Invited Presentations

- **XQ Xie** as Invited Speaker 2015 April 10, “Diseases-Specific Chemogenomics Knowledgebases and TargetHunter© for System Pharmacology and Alzheimer’s Disease Drug Discovery Research”, FDA - Center for Devices and Radiological Health, Office of Science and Engineering Laboratories , Division of Biology, Chemistry, and Materials Science, Silver Spring, MD.
- **XQ Xie** as Invited Speaker 2015 Feb “Diseases-Specific Chemogenomics Knowledgebases and Drug TargetHunter© Center for Drug Discovery (CDD), School of Pharmacy, Northeastern University, Boston, MA USA.
- **XQ Xie** as Invited Speaker 2014 ”Cloud Computing Target Hunter and Disease-Specific Chemogenomics Knowledgebase for System Pharmacology Drug Discovery and Personalized Medicine”. June 23, 2014 University of Florida, Gainseville, Florida, USA
- **XQ Xie** as Invited speaker and session chair, “TargetHunter© and Diseases-Specific Chemogenomics Knowledgebases for Multiple Myeloma Drug Discovery” in 2014 International Symposium on Clinical and translational Medicine: Sub-session on “The Cancer prevention and control”. Sino-American Symposium in China with co-organizers from the Chinese Academy of Engineering (CAE), Chinese Academy of Sciences(CAS) and the U.S. National Institute of Health Clinical Center. Shanghai, China.

Pharmaceutics Group and Microbicide Clinical Trials Network Central Laboratory Core

The Pharmaceutics Group is involved with formulation development and design of drug delivery systems for pharmaceutical products which include products intended for prevention of the spread of HIV and other sexually transmitted infections, probiotics, practical vaccine products for use in low resource settings globally, and gynecologic oncology application. This group also contributes to the development of in vitro models for formulation assessment to predict clinical outcome and characterization of vaginal and rectal biological barriers to successful drug delivery. They are also studying transporters and metabolizing enzymes within tissues relevant for HIV prevention and are employing pharmacology in human disease relevant tissue to support pharmaceutical discovery in inflammatory bowel disease. The laboratory has experience with the development of pharmaceutical products utilizing many dosage form platforms. Delivery systems are being designed for small molecule, protein and peptide, and bacteria drug candidates.

The Pharmaceutics Group continues to have international impact. Their role within the Microbicide Trials Network provides protocol product support for the multitude of clinical sites within the network throughout the world.

Faculty

Lisa Rohan, PhD, Associate Professor
Vinayak Sant, PhD, Assistant Professor

Research Staff

Lin Wang
Lindsay Ferguson, PharmD, PhD
Phillip Graebing
Michael De Miranda
Andrew Pearlman

Graduate Students (PhD)

TianTian Gong
Minlu Hu
Galit Regev
Sheila Grab
Jing Li
Kunal Jhunjhunwala

Postdoctoral Fellow

Sravan Patel, PhD

Undergraduate Students

Emily Pond (CMU)
Erin Gorse (Duquesne)
Kathryn Ching (Pitt)

Graduate Students (MS)

Yafei Lyu

Major Accomplishments

- Completed a Phase I clinical trial evaluating a novel vaginal film product containing the antiretroviral drug tenofovir that was developed by the Pharmaceutics Group. This clinical trial is one of the first to evaluate the use of the thin film drug delivery platform as an option for HIV prevention in humans. (supported by NIAID.)
- A rectal specific HIV prevention enema product containing the antiretroviral drug tenofovir was developed in the lab. An Investigational New Drug (IND) Application for this product is being compiled to support first in human clinical trials which will be conducted at Magee and Johns Hopkins University.
- The group, in collaboration with Universal Stabilization Technologies in California, has successfully formulated quick dissolve film and tablet vaccine formulations which can potentially overcome the current requirements for cold chain storage for worldwide vaccine distribution.

- Filed for a patent entitled “2nd generation griffithsin mutants for improved stability and solubility”. This patent is a joint filing of the University of Pittsburgh, NCI, and University of Louisville. Filed a second patent entitled “Polymeric films and patches incorporating thermostable biotherapeutic powders for needle-free delivery.”
- Funding for the Pharmaceuticals Group over the past year has been provided through 12 separate grants awarded from NIH; FDA, the Bill & Melinda Gates Foundation; Janssen Pharmaceuticals).
- The pharmaceuticals group initiated a program to develop tissue models to aid in Drug Discovery and Development for Inflammatory bowel disease (IBD). IBD includes patients with ulcerative colitis (UC) and Crohn’s Disease (CD).

Selected Publications

- McGowan I, Cranston RD, Duffill K, Siegel A, Engstrom JC, Nikiforov A, Jacobson C, Rehman KK, Elliott J, Khanukhova E, Abebe K, Mauck C, Spiegel HM, Dezzutti CS, Rohan LC, Marzinke MA, Hiruy H, Hendrix CW, Richardson-Harman N, Anton PA. A Phase 1 Randomized, Open Label, Rectal Safety, Acceptability, Pharmacokinetic, and Pharmacodynamic Study of Three Formulations of Tenofovir 1% Gel (the CHARM-01 Study). *PLoS One*. 2015 May 5;10 (5):e0125363. PMID: 25942472; PMCID: PMC4420274.
- Kramzer LF, Cohen J, Schubert J, Dezzutti CS, Moncla BJ, Friend D, Rohan LC. Assessing the potential of the Woman's Condom for vaginal drug delivery. *Contraception*. 2015 Sep;92 (3):254-60. PMID: 25998936; PMCID: PMC4563346.
- Zhang W*, Hu M*, Shi Y, Gong T*, Dezzutti CS, Moncla B, Sarafianos SG, Parniak MA, **Rohan LC**. Vaginal Microbicide Film Combinations of Two Reverse Transcriptase Inhibitors, EFdA and CSIC, for the Prevention of HIV-1 Sexual Transmission. *Pharm Res*. 2015 Mar 21. PMID: 25794967.
- Hu M, Patel SK, Zhou T, Rohan LC. Drug transporters in tissues and cells relevant to sexual transmission of HIV: Implications for drug delivery. *J Control Release*. 2015 Aug 13. PMID: 26278511.
- Hiruy H, Fuchs EJ, Marzinke MA, Bakshi RP, Breakey JC, Aung WS, Manohar M, Yue C, Caffo BS, Du Y, Abebe KZ, Spiegel HM, Rohan LC, McGowan I, Hendrix CW. A Phase 1 Randomized, Blinded Comparison of the Pharmacokinetics and Colonic Distribution of Three Candidate Rectal Microbicide Formulations of Tenofovir 1% Gel with Simulated Unprotected Sex (CHARM-02). *AIDS Res Hum Retroviruses*. 2015 Aug 24. [Epub ahead of print] PubMed PMID: 26227279.
- Dezzutti CS, Yandura S, Wang L, Moncla B, Teeple EA, Devlin B, Nuttall J, Brown ER, Rohan LC. Pharmacodynamic Activity of Dapivirine and Maraviroc Single Entity and Combination Topical Gels for HIV-1 Prevention. *Pharm Res*. 2015 Jun 16. [Epub ahead of print] PubMed PMID: 26078001.

Selected Invited Presentations

- Lisa Rohan Chaired the session entitled “Novel Formulations & Sustained Delivery of Antiretrovirals” at the “HIV Research for Prevention Meeting held in Capetown, South Africa in Oct 2014.

- Minlu Hu, a PhD graduate student, was selected as one of five New Investigator Award recipients for the HIV Research for Prevention 2014: AIDS Vaccine, Microbicide and ARV-based Prevention Science (HIV R4P), October 28 – 31 in Cape Town, South Africa.
- LisaRohan was invited to present their work on two antiretroviral drugs (EFdA and MK-2048) at Merck & Co. in Philadelphia, PA.
- Lisa Rohan serves as a scientific advisor for the CRIMP program within NIAID at the NIH.

Center for Education and Drug Abuse Research

February 28, 2015 marked the completion of a 25-year longitudinal multidisciplinary investigation of over 700 families having the overarching goal of understanding the origins and developmental pathways to addiction. The past year has focused on deriving and validating predictive models having a research to practice focus. One practical product of this research, the Transmissible Liability Index (TLI) has been shown to be an accurate tool to screen addiction and risk in 5 minutes. This Web-based instrument was standardized this past year.

Faculty

Ralph E. Tarter, PhD, Professor and Center Director
 Levent Kirisci, PhD, Professor
 Maureen D. Reynolds, PhD, Research Assistant Professor
 Michael Vanyukov, PhD, Professor

Graduate Student

ZuWei Zhai received his Ph.D. and is currently a post-doctoral Fellow at Yale University.

Postdoctoral Fellow

Michelle Horner completed her Fellowship and is currently Assistant Professor of Psychiatry at Johns Hopkins University.

Major Accomplishments

- A standardization study of the Transmissible Liability Index (TLI), a brief measure used to quantify risk for addiction, was completed on a nationally representative sample of youths.
- Research with the TLI has shown that the genetic component of its variance largely accounts for the development of addiction by young adulthood.
- Suicide potential is significantly related to the transmissible risk for addiction.

Selected publications

- Kirisci, L., Tarter, R., Ridenour, T., Reynolds, M., Horner, M., & Vanyukov, M. (2015). Externalizing behavior and emotion dysregulation are indicators of transmissible risk for substance use disorder. *Addictive Behaviors*, 42, 57-62.
- Vanyukov, D., Kim, K., Irons, D., Kirisci, L., Neale, M., Ridenour, T., Hicks, B., Tarter, R., Reynolds, M., Kirillova, G., McGue, M., & Iacono, W. (2015). Genetic relationship between the

addiction diagnosis in adults and their childhood measure of addiction liability. Behavior Genetics, 45, 1-11.

- Gathuru, I., Tarter, R., & Klein, M. (2015). Review of hookah tobacco smoking among college students: Policy implications and research recommendations. The American Journal of Drug and Alcohol Abuse, 41, 272-280.

RESEARCH DETAILS

FY15 PHS Funding

Investigator	Agency	AgencyNum	Title	Direct \$	Indirect \$	Total
J. Beumer	NIH	P30 CA047904	CCSG CPAF	64,127	33,025	97,152
J. Beumer	NIH	R21 CA173887	Nanomicellar Formulation for Synergistic Targeting Prostate Cancer	9,713	5,221	14,934
J. Beumer	NIH	R01 GM102989	Rational Design of Lipidic Vectors for Mitochondria-Targeted Antioxidants	16,788	8,814	25,602
J. Beumer	NIH	HHSN2612011 00015	Preclinical Pharmacokinetic and Pharmacological Studies with Anticancer and Other Therapeutic Agents	62,011	31,995	94,006
J. Beumer	NIH	1UM1 CA186690	Sr. Leadership - NCI ET-CTN with Phase I Emphasis at UPCI	17,258	9,319	26,577
J. Beumer	NIH	1UM1 CA186690	PKPD - NCI ET-CTN with Phase I Emphasis at UPCI	156,079	84,283	240,362
K. Empey	NIH	R03 HD080874	Immature Infant Alveolar Macrophage Clearance of Cell D	50,000	23,490	73,490
P. Empey	NIH	R01 LM011838	Addressing gaps in clinically useful evidence on drug-drug interactions	4,207	2,272	6,479
R. Gibbs	NIH	R21 AG043817	Impact of Estrogens and Menopause on Interacting Monoamine Neurotransmitters in the Brain	125,000	67,500	192,500

Investigator	Agency	AgencyNum	Title	Direct \$	Indirect \$	Total
P. Johnston	NIH	R01 CA160423	Development of a Novel HCS Assay to Screen for Disruptors of AR-TIF2 Interactions	196,342	107,458	303,800
P. Johnston	NIH	R01 CA077308	STAT Mediated TGF- α /EGFR Signaling in Squamous Cell Carcinomas of Head & Neck	8,469	4,573	13,042
P. Johnston	NIH	R01 DE023685-01A1	P13K Pathway Mutations in Head and Neck Cancer	3,371	1,820	5,191
P. Johnson	NIH	R01 GM111086	High-Throughput Discovery of Chemical Probes for HIV-1	56,920	30,737	87,657
P. Johnson	NIH	R01 CA183882	HCS to Identify Inhibitors and Disruptors of AR-TIF2	252,880	136,555	389,435
P. Johnson	NIH	P50 CA121973	Identifying Synergy between APE1 DNA Repair Inhibitors and Approved Melanoma Cancer	35,000	18,900	53,900
L. Kirisci	NIH	R01 AA021721	Validating Consumption-Based Brief Screening for Youth	16,357	8,833	25,190
L. Kirisci	NIH	R21 AA022863	Treatment of Young Adults with Comorbid AUD/MDD	4,427	2,391	6,818
L. Kirisci	NIH	R21 AA022123	Double-blind pilot trial of mirtazapine for treatment	4,883	1,231	6,114
L. Kirisci	NIH	HHSN2712012 0030C	Rapid Throughput Standardized Evaluation of Transmissible Risk for SUD in Youth	121,005	65,343	186,348
S. Li	NIH	R01 HL083365	Role of Ubiquitin in Cardiovascular System	246,250	119,907	366,157
S. Li	NIH	R01 GM102989	Rational Design of Lipidic Vectors for Mitochondria-Targeted Antioxidants	190,000	97,064	287,064
S. Li	NIH	R01 CA174305	Targeted Combination Therapy for Breast Cancer	207,500	106,180	313,680

Investigator	Agency	AgencyNum	Title	Direct \$	Indirect \$	Total
S. Li	NIH	U19 AI068021	Mitochondrial Targets for Radiation Mitigation	2,427	1,311	3,738
S. Li	NIH	U19 AI068021	Mitochondrial Targeting Against Radiation Damage	11,942	6,449	18,391
X. Ma	NIH	R01 DK090305	Mechanisms of adverse effects of anti-tuberculosis drugs	217,500	110,970	328,470
L. McDermott	NIH	R01 CA160423	Development of a Novel HCS Assay to Screen for Disruptors of AR-TIF2 Interactions	7,017	3,789	10,806
T. Nolin	NIH	R01 GM107122	Drug Metabolizing Enzyme and Transporter function in Chronic Kidney Disease	134,509	58,811	193,320
S. Poloyac	NIH	R01 NR014221	Developing Goal-Directed Perfusion Therapy for Neurocardiac Injury in Sub-Arachnoid Hemorrhage (Hravnak- Nursing)	7,148	3,860	11,008
S. Poloyac	NIH	R01 HD069620	Understanding the Impact of Antipsychotic Drugs on Recovery after TBI	7,967	4,103	12,070
S. Poloyac	NIH	R01 HD075760	CYP 450-mediated CBF Dysregulation and Neurotoxicity in Pediatric Cardiac Arrest - Manole	33,728	12,620	46,348
S. Poloyac	NIH	R01 NR013610	Epigenomics of Patient Outcomes after Aneurysmal SAH	14,072	7,599	21,671
M. Reynolds	NIH	R01 DA036628	Substance Use Screening and Prevention for Adolescents	3,209	1,733	4,942
L. Rohan	NIH	U19 AI113182	Core B: PREVENT: Product Development Core - MWRIF and Pitt awards	286,834	161,272	448,106
L. Rohan	NIH	RFA-AI-13-023	Delivery of Rectal Enema as Microbicide (DREAM) - Rohan - Roll Up	100,000	58,329	158,329

Investigator	Agency	AgencyNum	Title	Direct \$	Indirect \$	Total
L. Rohan	NIH	U19 AI120249	Film Antiretroviral Microbicide Evaluation (FAME II) - Roll Up	1,200,658	301,178	1,501,836
L. Rohan	NIH	R33 AI094508	Thermostable Vaginal Probiotic Microbicide - MWRIF and Pitt awards	140,309	68,209	208,518
L. Rohan	NIH	UPSOM-14005-002-140	Release Assays from EVA Ring Segments	141,897	83,719	225,616
L. Rohan	NIH	UM1 AI106707	MTN - Laboratory Center (LC): Leadership Group for a Clinical Research Network on Microbicides to Prevent HIV - Year 2	183,539	99,111	282,650
S. Sant	NIH	R03 EB018575	Engineered Microenvironments to Model Effect of Size in Tumor Progression	50,000	27,000	77,000
M. Somma	NIH	U58 DP131305	State Public Health Actions to Prevent and Control Diabetes	40,000	4,400	44,400
R. Tarter	NIH	K05 DA031248	Longitudinal Modeling of SUD Etiology	125,650	10,052	135,702
C. Thorpe	NIH	R01 HS018368	Guideline Adherence and Short/Long-term Health Outcomes in Patients with Diabetes	41,498	22,409	63,907
R. Venkataramanan	NIH	U10 HD047905	Impact of Pregnancy on Drug Absorption, Disposition and End Organ Response (Caritis)	104,777	53,960	158,737
R. Venkataramanan	NIH	UH2 TR000496	All-Human Microphysical Model of Metastasis Therapy	53,165	28,709	81,874
R. Venkataramanan	NIH	UH2 TR000496	All-Human Microphysical Model of Metastasis Therapy	12,987	7,013	20,000

Investigator	Agency	AgencyNum	Title	Direct \$	Indirect \$	Total
R. Venkataramanan	NIH	T32 HD071859	Training in basic and Clinical Pharmacology in Pregnancy	57,406	4,232	61,638
W. Xie	NIH	R01 HD073070	The Perinatal Pharmacology of the Nuclear Receptor	202,312	109,248	311,560
W. Xie	NIH	R01 DK099232	The hepatic function of cholesterol sulfotransferase 2B1b (SULT2B1b) in energy metabolism	217,500	117,450	334,950
W. Xie	NIH	R01 ES023438	A Novel Regulation of the Phase II Enzyme Estrogen Sulfotransferase	225,000	121,500	346,500
W. Xie	NIH	R01 CA182418	RE/XBP1s signaling: an novel essential regulator for bone marrow microenvironment support of multiple myeloma bone disease	6,777	3,660	10,437
X. Xie	NIH	P30 DA035778	NIDA Center of Excellence for Computational Drug Abuse Research (CDAR)	807,070	287,246	1,094,316
X. Xie	NIH	R01 DA025612	Structure/Function of CB2 receptor for Ligand Binding and G-protein Recognition-Administrative Supplement	62,500	33,516	96,016
H. Yang	NIH	K12 HD043441	Building Interdisciplinary Research Careers in Womens Health in Pittsburgh	74,107	5,928	80,035
TOTAL				6,450,467	2,801,413	9,251,880

FY15 Federal Other Funding

Investigator	Agency	Title	Direct \$	Indirect \$	Total
J., Beaumer	Leidos	Phase I Study of the Aurora Kinase A Inhibitor MLN 8237 in Combination with the Histone Deacetylase Inhibitor	10,037	5,418	15,455
D. Huryn	Leidos Biomed	Administrative Support for the UP-CDC	132,347	71,468	203,815

Investigator	Agency	Title	Direct \$	Indirect \$	Total
D. Huryyn	Leidos Biomed	p97	181,585	92,773	274,358
D. Huryyn	Leidos Biomed	Non-Laboratory Project Effort-Artemis Project TO23	3,319	1,793	5,112
D. Huryyn	Leidos Biomed	ATG4b	136,380	73,645	210,025
D. Huryyn	Leidos Biomed	Inhibitors of the Artemis Endonuclease for Cancer Chemotherapy	99,221	53,579	152,800
S. Poloyac	DOD	Operation Brain Trauma Therapy	24,870	13,430	38,300
J. Pringle	SAMHSA	Pennsylvania Screening, Brief Intervention, and Referral to Treatment (SBIRT) Interdisciplinary Training Program	134,933	10,795	145,728
J. Pringle	VA	Pharmacy Readmissions Project Task Order	60,359	32,594	92,953
J. Pringle	VA	Pharmacy Access to Care Project Task Order	145,768	73,791	219,559
C. Scelsi	HRSA	Geriatric Education Centers	7,805	624	8,429
C. Thorpe	VA	IPA Loren Schleiden	31,270	0	31,270
Total			967,894	429,910	1,397,804

FY 2015 Industry Funding

Investigator	Agency	Title	Direct \$	Indirect \$	Total
J. Beumer	Millennium Pharm	A Phase I Pharmacokinetic Study of Intraperitoneal CTEP-Supplies Agent Bortezomib (PS-341, NSC 681239, IND#58443) and Caboplatin (SNC#241240) in Patients with Persistent or Recurrent Ovarian, Fallopian Tube, or Primary Peritoneal Cancer	4,402	2,598	7,000
J. Beumer	Saladax Biomedical	TAS 102-1 08	13,520	3,380	16,900
J. Beumer	Saladax Biomedical	Saladax Quantitation of Gemcitabine in Human Plasma	5,304	1,326	6,630
J. Beumer	BMS	Central Pharmacokinetic Referenced Laboratory for Ixabepilone Investigator Sponsored Research (ISR) Trials	133,672	33,418	167,090
J. Pringle	MERCK	Prospective Study to Assess the Effect of Adherence Interventions on Reducing Patients Non-Fulfillment and/or Non-Persistence to Chronic Medications	57,106	11,776	68,882
J. Pringle	MEDVANTX	Evaluating the Impact of Sample Medication on Subsequent Patient Adherence Phase II	16,449	2,467	18,916
L. Rohan	Janssen Pharmaceuticals	Employing Pharmacology in Human Disease Relevant Tissue to Support Pharmaceutical Discovery in Inflammatory Bowel Disease	142,391	10,075	152,466
V. Sant	North American Hoganas, Inc	Conversion of elemental iron (Reduced Iron Powder) to white iron (Fe-White) using food grade polymers	53,018	31,281	84,299
Total			425,862	96,321	522,183

FY15 Foundation/Association Funding

Investigator	Agency	Title	Direct \$	Indirect \$	Total
L. Berenbrok	Pennsylvania Pharmacists Association	Impact of Pharmacist Coaching on Targeted Medication Review Completion Rates in a Traditional Chain Community	1,000	0	1,000
J. Beumer	City of Hope	City Of Hope Laboratory Services Agreement	14,264	8,416	22,680
J. Beumer	MSKCC	Phase II: Outcomes after Secondary Cytoreductive Surgery With or Without Carboplatin HIPEC Followed By System	21,192	12,504	33,696
L. McDermott	Samuel and Emma Winters Foundation	Identification of serine hydroxymethyltransferase inhibitors	12,000	0	12,000
O. Odukoya	Pennsylvania Pharmacists Association	Pharmacist-led Improvements to Care Coordination for Patients on Long-Acting Injectable Antipsychotics Transitioning from Hospital to Home	1,000	0	1,000
O. Odukoya	Community Pharmacy Foundation	Engaging Pediatric Patients in Counseling and Medication Therapy Management Services in Urban and Rural Community Pharmacies	35,990	0	35,990
O. Odukoya	Academy Health	OTC Sleep Aids: Older Adult Medication - Taking Behavior and Safety Risks	9,091	909	10,000
L. Rohan	Gates Fndtn	Continued Assessment of Films for Multi-purpose Prevention Technology (MPT) Development	904,494	87,353	991,847
R. Smith	Pennsylvania Pharmacists Association	Pharmacists ... Advancing Patient Care 2015 Grant	600	0	600
J. Stevenson	McCune Foundation	Development of Pharmacogenetics (Berg)	183,361	0	183,361

Investigator	Agency	Title	Direct \$	Indirect \$	Total
C. Thorpe	Vasculitis Fndtn	Impact of Healthcare Utilization and Informal Caregiving for Primary Systemic Vasculitis: A National Perspective	45,759	0	45,759
C. Thorpe	Donaghue Foundation	Cumulative CNS Medication Dosage and Serious Fall Injuries	6,740	674	7,414
C. Thorpe	Veterans Research Foundation of Pittsburgh	National Survey of Physician Perceptions of VA Prescribing Policies and Practices	8,832	0	8,832
D. Yang	Elsa U Pardee Foundation	miR-506 is a novel therapy of OvCa targeting metastasis and drug resistance	118,800	17,820	136,620
Total			1,363,123	127,676	1,490,799

FY15 Other Funding

Investigator	Agency	Title	Direct \$	Indirect \$	Total
J., Beumer	Brigham & Women's	CALGB Yr32 REV	36,661	18,879	55,540
J. Beumer	Alliance Clin. Trials	Population Pharmacokinetics of abiraterone and enzalutamide associated with Alliance protocol A031201	31,965	3,197	35,162
J. Beumer	Alliance Clin. Trials	Population Pharmacokinetics of abiraterone and enzalutamide associated with Alliance protocol A031201	235,785	23,578	259,363
P. Johnston	Chinese University of Hong Kong	Selective V4-GEF-H1 MIHA Growth Inhibition Screen	87,208	47,093	134,301

Investigator	Agency	Title	Direct \$	Indirect \$	Total
J. Pringle	Cmwth of PA	Pennsylvania Overdose Prevention Coalition Phase II	97,402	52,598	150,000
J. Pringle	Blair Co./Cmwth of PA	SBIRT Consultation and Data Collection	18,466	0	18,466
Total			507,487	145,345	652,832

RESEARCH RECOGNITION OF FACULTY

Faculty members received various forms of recognition for their accomplishments and their expertise during FY15.

- 25 faculty members served on scientific journal editorial boards.
- 10 faculty members served on NIH grant review committees.
- 74 – the number of invited research presentations by faculty.
 - 4 presentations at 2 universities in 2 states
 - 47 presentations at 33 scientific meetings in 15 states
 - 3 presentations at 3 universities in 2 countries
 - 15 presentations at 9 international scientific meetings in 6 countries
- 18 international presentations in 8 countries.
 - 3 at universities or hospitals
 - 15 at conferences or academies

Members of Editorial Boards

Faculty Member	Number	Editorial Board
Jan H. Beumer, PharmD, PhD	3	Journal of Chromatography and Separation Techniques Cancer Chemotherapy and Pharmacology Oncology Research
Kim C. Coley, PharmD	1	PPA Editorial Board
Colleen M. Culley, PharmD	1	Clin-Alert
Scott R. Drab, PharmD, CDE, BC-ADM	1	Inside Pharmacy
Christopher R. Ensor, PharmD, BCPS-CV	2	Progress in Transplantation Journal of Pharmacy Practice, Key Articles in Pharmacy Practice
Robert B. Gibbs, PhD	1	Hormones and Behavior
Barry Gold, PhD	1	Editorial Advisory Board of Future Medicinal Chemistry
Donna Huryn, PhD	2	Organic Letters ACS Medicinal Chemistry Letters
Paul A. Johnston, PhD	1	Journal of Assays and Drug Development Technologies

Faculty Member	Number	Editorial Board
Sandra L. Kane-Gill, PharmD, MS, FCCM	6	Critical Care Medicine Journal of Hospital Administration Annals of Pharmacotherapy-Adverse Reactions and Medication Safety Panel Advances in Pharmacoepidemiology and Drug Safety International Scholarly Research Network (ISRN) Critical Care Hospital Pharmacy, Critical Care Column Editor
Levent Kirisci, PhD	3	Bipolar Disorder: International Journal of Psychiatry and Neurosciences International Journal of Person-Centered Medicine Journal of Substance Abuse and Rehabilitation
Song Li, MD, PhD	6	Journal of Gene Medicine Biological Procedure Online American Journal of Cancer Therapy and Pharmacology Frontiers in Oncology <i>Biointerface Research in Applied Chemistry</i> <i>Journal of NanoMedicine and Applications</i>
Xiaochao Ma, PhD	2	Nuclear Receptor Research Journal of Drug Metabolism and Toxicology
Lee A. McDermott, PhD	1	Journal of Drug research and Development
Thomas D. Nolin, PharmD, PhD	2	American Journal of Kidney Diseases Seminars in Dialysis
Lisa C. Rohan, PhD	2	AIDS Research and Therapy Journal of Sexually Transmitted Diseases
Shilpa Sant, PhD	5	Journal of Pharmacovigilance IEEE Transactions on Nanobioscience JSM Regenerative Medicine In Silico Pharmacology Scientific Reports
Vinayak Sant, PhD	1	Enliven: Biosimilars and Bioavailability
Amy L. Seybert, PharmD	2	Cardiovascular Pharmacotherapy: A Point of Care Guide Newsletter International Scholarly research Network Critical Care
Ralph E. Tarter, PhD	6	Directions in Substance Abuse Counseling (Advisory Board) Journal of Child and Adolescent Substance Abuse (Book review editor) Drug and Alcohol Dependence Experimental and Clinical Psychopharmacology Clinical Psychology Review Prevention Science American Journal of Drug and Alcohol Abuse
Gordon J. Vanscoy, PharmD, CACP, MBA	3	American Journal of Oncology Review Journal of Thrombosis and Thrombolysis Drug Formulary Review
Raman Venkataramanan, PhD	7	Journal of Clinical Pharmacology Therapeutic Drug Monitoring Clinical Chemistry Journal Open Pharmacology Journal Open Clinical Pharmacology Open Transplantation American Journal of Analytical Chemistry
LiRong Wang, PhD	3	Cancer Translational Medicine Enliven: Biosimilars and Bioavailability Pharmaceutical Science and Drug Designing

Faculty Member	Number	Editorial Board
Wen Xie, MD, PhD	9	Current Drug Metabolism World Journal of Gastroenterology Drug Metabolism Letters Drug Metabolism Reviews Molecular Endocrinology Drug Metabolism and Disposition Frontiers in Molecular and Structural Endocrinology Acta Pharmaceutica Sinica B (APSB) Chinese Medical Journal
Xiang-Qun (Sean) Xie, MBA, PhD	2	American Journal of Molecular Biology Pharmacology and Toxicology

Faculty Participation in NIH Review Committees and Panels

Faculty Member	Department	No. of Panels
Barry Gold, PhD	Pharmaceutical Sciences	1
Donna M. Huryn, PhD	Pharmaceutical Sciences	2
Paul A. Johnston, PhD	Pharmaceutical Sciences	2
Levent Kirisci, PhD	Pharmaceutical Sciences	1
Song Li, MD, PhD	Pharmaceutical Sciences	1
Samuel M. Poloyac, PharmD, PhD	Pharmaceutical Sciences	1
Lisa C. Rohan, PhD	Pharmaceutical Sciences	3
Shilpa Sant, PhD	Pharmaceutical Sciences	1
Randall B. Smith, PhD	Pharmaceutical Sciences	2
Xiang-Qun (Sean) Xie, PhD	Pharmaceutical Sciences	3

School of Pharmacy Publications in Peer-Reviewed Journals

Research

- Akil A, Agashe H, Dezzutti CS, Moncla BJ, Hillier SL, Devlin B, Shi Y, Uranker K, **Rohan LC**. Formulation and characterization of polymeric films containing combinations of antiretrovirals (ARVs) for HIV prevention. *Pharm Res*. 2015 Feb;32(2):458-68. doi: 10.1007/s11095-014-1474-4. Epub 2014 Jul 31.
- Alqarni M, Myint KZ, Tong Q, Yang P, Bartlow P, **Wang L**, Feng R, **Xie XQ**. Examining the critical roles of human CB2 receptor residues Valine 3.32 (113) and Leucine 5.41 (192) in ligand recognition and downstream signaling activities. *Biochem Biophys Res Commun*. 2014 Sep 26;452(3):334-9. doi: 10.1016/j.bbrc.2014.08.048. Epub 2014 Aug 19.
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- Beigi RH, **Venkataramanan R**, Caritis SN. Oseltamivir for influenza in pregnancy. *Semin Perinatol*. 2014 Dec;38(8):503-7. doi: 10.1053/j.semperi.2014.08.015. Epub 2014 Oct 1.
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**Enhancing the Health of the
Communities in Which
We Live and Work**





Enhancing the Health of the Communities in Which We Live and Work

The School of Pharmacy is committed to improving health by developing and standardizing models of patient-focused practice, working in conjunction with our primary partner, UPMC, as well as other partners. This component of the School's mission is primarily driven by members of the Department of Pharmacy and Therapeutics. Our faculty members serve a broad spectrum of patients including ambulatory clinics, physician practices, underserved care settings, pharmacist run diabetes services, inpatient programs, critical care units, transplant services and transitions in care. We are committed to advancing optimal patient care by leading medication therapy.

The School of Pharmacy will be a leader in standardizing the elements of practice so that pharmacists enhance the care of patients in the community, in institutions, and during the transitions of care.

We will impact the lives of the people in the communities in which we live and work through pharmacists who are health care providers promoting health and wellness, optimizing use of medications, and stemming the misuse, abuse, and diversion of medications.

PATIENT CARE BY THE NUMBERS FOR FY15

In FY15, School of Pharmacy faculty members:

- Contributed to care of underserved communities by:
 - Providing oversight of the pharmacy program for the Program for Health Care to Underserved Populations which includes the Birmingham Free Clinic and the Women's Center and Shelter, provided over **200** disease state management encounters providing management of diabetes, hypertension, dyslipidemia, and asthma; dispensing almost **9000** prescriptions to uninsured patients through the efforts of **3** faculty members, **8** residents, and **5** volunteers. Pharmacists provided **1266** hours of direct service.
 - Supervised the establishment of the Interprofessional Student-Run Free Clinic at the Birmingham Clinic.
- Optimized the use of medications and stemmed the misuse, abuse, and diversion of medications by:
 - Continued to lead the pharmacist run diabetes care center (UDCA) staffed by an interdisciplinary team of health care professionals. This year, UDCA treated **710** patients referred by **43** primary care physicians to resolve **1516** drug related problems.
 - Oversaw all transitions of care education, assistance, and discharge planning for the UPMC Adult Heart Transplant Program and provided direct outpatient care during **>1500** patient visits.
 - Facilitated care transitions by performing a total of **5,499** medication-related interventions including resolving **3,655** prescription insurance issues and providing patient-specific medication education for **1,151** patients at WPIC.
 - Facilitated **124** students attending Pennsylvania Legislative Day with **82** legislative visits.

- Continued the Development, Implementation, and Evaluation of an Evidence-Based Screening, Brief Intervention, Referral to Treatment (SBIRT) Curriculum in Medical Residency Training Programs. (SAMHSA).
- Providing medication management and education during **>500** Family Medicine Clinic Visits at UPMC Matilda Theiss Health Center.
- The family medicine residency program consists of three community-based family health centers that are models for academic interprofessional primary care practice. All three have received Level 3 Patient Centered Medical Home (PCMH) status by the National Committee for Quality Assurance (NCQA). The family health centers see a patient volume of up to **2,500** visits per month, as a mix of pediatric and adolescent, adult, and geriatric medicine.
- Educated over **300** hospitalized patients who went home new to insulin
- Collaborated with a multidisciplinary team at the UPMC Advanced Heart Failure/Pulmonary Hypertension Outpatient Clinic to improve patients' transitions of care. This included over **200** patient encounters.
- Provided clinical pharmacy support to: **10** hospital-based palliative care teams, **4** palliative care focused CRNPs within UPMC Senior Communities, and **6** outpatient and home-based palliative care teams.
- Over **1100** Drug-Drug Interactions Screens for HCV therapy candidates, with an average of **8** meds/patient and **1.6** interactions per patient – **interactions identified in about 50%** of patients.
- Organized the University of Pittsburgh and UPMC Pharmacy Based Influenza Vaccination Clinics providing over **4000** influenza vaccines to over **2485** University Employees, **1009** UPMC Employees and **300** university students.
- Promoted residency programs and fellowship training by:
 - Developing **1** new transplant outcomes fellowship and transplant fellow for FY16.
 - Training **44** pharmacy residents for FY15 and accepting **44** pharmacy residents for FY16.
- Pioneered and managed patient care programs, including:
 - Management of Patient Medication Assistance Programs (PMAPs) for over **80** patients at UPMC Matilda Theiss Health Center with significant cost savings to patients and site\
 - Providing pharmacist-led medication-reconciliation program for over **150** patients through specialty hypertension.
 - Provided pharmacist led medication reconciliation programs for specialty hyperlipidemia providing medication reconciliation for over **100** patients in the year.

- Provided pharmacist led medication reconciliation programs for specialty heart failure providing medication reconciliation for over **500** patients in the year.
- Lead a Free Medication Program for family health center patients to improve access to medications.
- Provide leadership and management of naloxone initiative prescribing, dispensing and education initiative for at-risk patients and caregivers.
- Led the daily multidisciplinary process for ensuring that hospitalized patients receive their mealtime insulin at an appropriate time in relation to their meals.
- Assisted a total of **2,736** patients in FY15 and provided nearly a third of eligible WPIC patients with medication education and medications “in hand” prior to discharge.
- Developed UPMC system-wide policies and protocols, including:
 - **155** guidelines/reviews and **6** electronic health record protocols for medication use across UPMC hospitals.
 - **9** medication therapeutic class/ safety interchanges to ensure medication safety and promote cost-effectiveness for UPMC patients.
 - Developed UPMC system-wide policies that allow alert patients to continue wearing their home subcutaneous insulin pump and to continue to self-manage their mealtime insulin via carbohydrate counting while they are hospitalized.
 - Developed a formulary review on oral long-acting opioids for the use of these medications in the hospital settings across UPMC
- Assumed leadership roles, including faculty appointments as/election to:
 - Associate Director of Cardiac Transplantation Program, UPMC
 - Vice-Chair for the Critical Care Practitioners as Educators Task Force for the Society of Critical Care Medicine, Chair of the ACCP Program Committee, and elected At-Large Member of the SCCM Council
 - Associate Editor for the tenth edition of “Pharmacotherapy: A Pathophysiologic Approach
 - Chair-Elect of the ACCP Endocrine and Metabolism PRN
 - Chair-Elect and Programming Chair, AACP Self-Care Therapeutics and Nonprescription Medicines Special Interest Group
 - ASHP Invited Ambulatory Care Webinar Series Program Chair
 - Chair-Elect, American College of Clinical Pharmacy Immunology/Transplantation Practice and Research Network
 - Workforce Co-chair: ISHLT Core Competencies of the Thoracic Pharmacist, International Society of Heart and Lung Transplant

- Workforce Chair: ISHLT Core Competencies of the Thoracic Pharmacist
- International Society of Heart and Lung Transplant
- Chair of AAPS Foundation New Investigator Award Committee
- President of the ACCP Critical Care PRN
- Chair of the American Society of Health-System Pharmacists' (ASHP) Section of Inpatient Care Practitioners
- Cabinet Secretary for the Geriatric Special Interest Group (SIG) of the American Association of Colleges of Pharmacy
- Received an Innovation Award from the University of Pittsburgh's Clinical and Translational Science Institute (CTSI) for MEDivate (Intelligent Medication Management; www.medivate.me). MEDivate is a smartphone application that uses QR-code technology to enable portability of accurate medication lists that can be shared with healthcare providers to improve transitions of care. Also recognized as Top 10 Finalist for proposal at The Pitt Innovation Challenge (PInCh): Sponsored by Pitt CTSI, Office of the Provost, and Innovation Institute.

COMMUNITY-BASED PROGRAMS

Community Partnerships: Chain Community Pharmacy and Community-based Pharmacist Care

Faculty

Lucas Berenbrok, PharmD, Assistant Professor

Kim C. Coley, PharmD, Professor

Melissa S. McGivney, PharmD, Associate Professor, Associate Dean for Community Partnerships

Research Fellow

Jennifer L. Bacci, PharmD, MPH, BCACP

Residents

Brandon Antinopolous, PharmD-PGY1 Community Pharmacy Resident – University Pharmacy/PPA

Gale Garmong, PharmD – PGY1 Community Pharmacy Resident – Rite Aid Pharmacy

Christine Jordan, PharmD-PGY1 Community Pharmacy Resident – Giant Eagle Pharmacy

Kyle McCormick, PharmD – PGY1 Community Pharmacy Resident – Gatti Pharmacy (Indiana, PA)

Major Accomplishments

In FY15, School of Pharmacy faculty members:

- Facilitated 124 students attending Pennsylvania Legislative Day with 82 legislative visits:
Jennifer L Bacci, Melissa S. McGivney, Luke Berenbrok
- Awarded Chancellors Distinguished Teaching Award: **Melissa S. McGivney**

- Awarded American Pharmacists Association – Advanced Pharmacy Practice & Management Presentation Merit Award (APhA Annual Meeting) – team award with co-investigators from UPMC St. Margaret including **Jennifer L. Bacci, Melissa S. McGivney**
- APhA-APPM Presentation Merit Award (Student Category) Cassandra Bloor, Kelsey Moss, **Kim Coley, Brandon Antinopoulos, Melissa S. McGivney**
- AACP/National Consumers League National Award – Script your Future Medication Adherence Team Challenge – 2015 (student award) – Alexander Marshall, Taelr Eason, Ingrid Pan, Dylan Atkinson, **Luke Berenbrok, Melissa S. McGivney.**
- AACP/National Consumers League National Award – Creative Inter-professional Event Award - Script your Future Medication Adherence Team Challenge – 2015 (student award) – Alexander Marshall, Taelr Eason, Ingrid Pan, Dylan Atkinson, **Luke Berenbrok, Melissa S. McGivney.**
- Awarded: AACP Walmart Scholar and PPA Ten Under Ten Award: **Jennifer L. Bacci**
- Leading the development of the Pennsylvania Pharmacist Care Network (PPCN) Research Network: **Kim C. Coley, Melissa S. McGivney**
- Successfully graduated the 9th class of Community Residents, **Brandon Antinopolous, Gale Garmong, Christine Jordan, and Kyle McCormick.** Total residents graduated to date: 20
- Partnered with Gatti Pharmacy, Indiana, PA, University Pharmacy, Pittsburgh, PA, and the Pennsylvania Pharmacists Association to develop two additional community pharmacy residency positions for 2014-15.
- Engaged students in a series of practice enhancement projects led by **Melissa S McGivney, Kim C Coley, Jennifer L. Bacci, Luke Berenbrok, Olufunmilola Odukoya.** Led intern engagement in advancing clinical patient care at Rite Aid, Giant Eagle, CVS, and within independent pharmacies.

Programmatic Accomplishments

- **Pennsylvania Pharmaceutical Care Network Training (2014-present) – Melissa S. McGivney, Jennifer L. Bacci, Brandon Antinopolous**
 - Leading the re-development of on-line and live training content with faculty from all seven Pennsylvania Schools of Pharmacy.
- **NACDS Foundation Faculty Scholars Program (2012-present) – Melissa S. McGivney, Kim C. Coley**
 - Developed training and mentoring program for community-based faculty selected by NACDS Foundation via nomination of their Dean.
 - Coordinate content experts in research and community practice to train faculty.
 - Facilitated learning for 5 Scholars (2012-13); 8 Scholars (2013-14); 8 Scholars (2014-15); 5 Scholars (2015-16).
- **Statewide Community Residency Research Coalition – TOP TIER (Training Outpatient Pharmacists Techniques In Evidence-Based Research) 2009-present – Luke Berenbrok, Jennifer L. Bacci, Kim C. Coley, Melissa S. McGivney**
 - Co-developer and co-coordinator of residency research coalition.

- Progressive on-line education with regular group discussions.
- Includes 3 community residency programs from Wilkes University, Temple University and University of Pittsburgh: 5 residents 2009-10; 6 residents 2010-11, 6 residents 2011-12, 5 residents 2012-13, 7 residents in 2013-14.
- Residents present work at PPA and APhA and are all required write and submit a grant application: 27/27 abstracts accepted to APhA, 11/14 received grants to support research.
- **Community Leadership Innovation and Practice (CLIP) Workshop Series (2013-present) - Luke Berenbrok, Jennifer L. Bacci, Kim C. Coley, Olufunmilola Odukoya, Melissa S. McGivney**
 - Integrated preceptors, alumni, chain pharmacy leadership and students to learn together in a series of 4 CLIP Workshops embedded with Experiential Learning 4.
 - Invited in 4 nationally recognized Keynote Lecturers and provided CE.
 - Organized 3 additional small group interactive sessions for CE.
 - Engaged chain pharmacy leadership (Rite Aid, Walgreens, CVS, Giant Eagle) and independent pharmacy owners who are alumni to meet and talk with students.
- **Poster Presentations: Student and Resident Research in the Community**
 - 22 innovative community practice posters at PPA: February, 2015 – Harrisburg, PA
 - Nine research presentations for community-dwelling geriatric patients: Society of Teachers of Family Medicine, North American Primary Care Research Group, American Geriatric Society – all in partnership with UPMC St. Margaret
 - Nine community research posters at APhA: March, 2015 – San Diego, CA.
 - Two community research poster at Pittsburgh Conference on the Science of Medication Adherence: June, 2015 – Pittsburgh PA

Selected Publications (related to programmatic development and community dwelling patients)

- Snyder ME, Frail CK, Gernant SA, **Bacci JL**, Colip L, Ferreri SP, Hagemeyer NE, **McGivney MS**, Rodis JL, Smith MG, **Smith RB**. Fellowships in Community Pharmacy Research: Experiences of Five Schools and Colleges of Pharmacy. *Submitted JAPhA 2015*.
- **Hall DL, Schonder KS, Pater KS, McGivney MS, Meyer SM**. The PITT Form: Pharmacist Interaction Tracking Tool for capturing student-patient interactions in direct and simulated patient care activities. *Submitted AJPE 2015*.
- **McCartney EM, Bacci JL, Ossman KL**, Richardson RM, DelPizzo DM, DeJames JR, **McGivney MS**. Mobile application features sought after by patients of a grocery store chain pharmacy. *Accepted JAPhA 2015*.
- **Bacci JL**, Akinwale TP, Adams AJ, **McGivney MS**. Exploring community pharmacy shared faculty contributions to practice, teaching and scholarship. *Accepted AJPE 2015*.
- Sakely H, Corbo J, **Coley K, McGivney MS, Thorpe C**, Klatt PM, Schleiden L, Zaharoff J, Cox-Vance L, Balestrino V. Experience with Pharmacist-led Collaborative Practice for Older Adults Across the Continuum of Care. *Am J Health-Sys Pharm 2015;72(8): 606-9*.

- Cochran G, Rubinstein J, **Bacci JL**, Ylioja T, Tarter R. Screening community pharmacy patients for opioid misuse and risk factors of misuse. *J Addict Med*. doi: 10.1097/ADM.000000000000148 (published 2015 August 17).
- Cochran G, Gordon A, Field C, **Bacci J**, Dhital R, Ylioja T, Stitzer M, Kelly Thomas, Tarter R. Developing a framework of care for opioid medication misuse in community pharmacy. *Res Soc Adm Pharm*. doi:10.1016/j.sapharm.2015.05.001 (published 2015 May 8).
- **Bacci JL**, McGrath SH, **Pringle JL**, Maguire MA, **McGivney MS**. Implementation of targeted medication adherence interventions within a community chain pharmacy practice: The Pennsylvania Collaborative. *J Am Pharm Assoc* 2014; 54(6): 584-93.
- Kauffman Y, Barkowitz, E, Cerussi N, **Pringle JL**, **McGivney MS**. Identifying medication-related needs of HIV patients: foundation for community pharmacist-based services. *INNOVATIONS in Pharmacy* 2014; 5(1): Article 139.

Community Practice Grants Awarded

- “The Philly Difference: Connections for better chronic care.” CDC/ Philadelphia Department of Health. Subcontractor of PPA for the development of training resources and outreach materials and program evaluation. Centers for Disease Control and Prevention (CDC). \$48,498. January 2015. Epple P, **McGivney MS**, **Bacci JL**, **Antinopoulos B**, Kauffman Y, Peterson A.
- The impact of a pharmacist coaching program on targeted medication review completion rates in a traditional chain community pharmacy. PPA Educational Foundation. \$1,000. December 2014. **Garmong GE**, **Bacci JL**, **Berenbrok LA**, McGrath SH, Ossman KL, **Odukoya OK**.
- Patient activation as a measure of medication list accuracy. PPA Educational Foundation. \$600. December 2014. **McCormick K**, **Kunkel A**, **Bacci JL**, Cooney SS, **Smith R**.
- PA Collaborative: Million Hearts Campaign. CDC/Pennsylvania Department of Health/Pennsylvania Pharmacists Association. Subcontractor of PPA for the development of additional training resources and statewide research collaborative. \$70,000. January, 2014. **Somma McGivney MA**, **Bacci JL**, **Coley, KC**.
- Mobile application features sought by patients of a community chain pharmacy. PPA Educational Foundation \$1000. January, 2014. **McCartney E**, **Bacci JL**, Richardson R, Ossman K, DelPizzo D, DeJames J, **Somma McGivney MA**.
- Million Hearts Community Initiative. Class of 2014 National Student Award - NACDS Foundation \$5000. January, 2014. Watkins G, Daude T, McGrath K, Carrol J, Akpoji U, **Somma McGivney MA**.
- NACDS Foundation Community Residency PREP Grant with Giant Eagle Pharmacy. NACDS Foundation \$50,000. July 2013-2016. **Somma McGivney MA**, **McGrath SH**, DeJames J, Richardson R.
- NACDS Foundation Faculty Scholars Program. NACDS Foundation \$65,223. March, 2013-2015. **Somma McGivney MA**, Smith RB.

- “Pharmacist Led Interventions on Transitions of Seniors (PIVOTS).” Jewish Healthcare Foundation. 2013-2015. \$60,000. **Coley KC, McGivneyMS.**

Selected Invited Presentations (National/International)

- “Utilizing patient encounters to personalize advanced pharmacy practice experience (APPE) rotation selection. AACP Experiential Education Section Webinar. April, 2015. **Bacci JL, Coley KC, McGivney MS.**
- “Getting your foot in the door as a health care provider: strategies for success” Co-presenter. APhA Annual Meeting. San Diego, CA. March, 2015. **McGivney MS.**
- “Collaboration between Schools of Pharmacy and State Pharmacy Organizations”. AACP Annual Meeting. Grapevine, TX. July, 2014. **McGivney MS.**

University Diabetes Care Associates

UDCA is a pharmacist run diabetes care center staffed by an interdisciplinary team of health care professionals. Over the past 24 years, UDCA has offered a wide range of services to patients and referring physicians including disease state management, patient education and training, medical nutrition counseling, care plan development, and pharmacokinetic consults.

Faculty

Scott R. Drab, PharmD, Associate Professor

Major Accomplishments

In FY15, School of Pharmacy faculty members:

- Treated 710 patients referred by 43 primary care physicians to resolve 1516 drug related problems.
- Precepted 11 Doctor of Pharmacy students in an ambulatory care rotation.
- Precepted 2 residents.
- The curricular objectives permit students and residents to gain a comprehensive knowledge of the practice of pharmaceutical care while allowing flexibility for individualization to specific needs or interests.

Selected Publications

- **Drab SR.** Glucagon-Like Peptide-1 Receptor Agonists for Type 2 Diabetes: A Clinical Update of Safety and Efficacy. **Submitted:** *Journal of Clinical Pharmacy and Therapeutics*, June 2015.

Selected Invited Presentations (National/Local)

- Type 2 Diabetes in the Pediatric Population. Virginia Peninsula Pharmacist Association; Newport News, VA, June 22, 2014. **Drab SR.**
- Addressing Hyperglycemia in the Hospital Setting. Commonwealth of Pennsylvania: Patient Safety Authority Webinar; June 25, 2014. **Drab SR.**

- Reducing Chronic Complications of Diabetes. Washington County Pharmacists Association; Hagerstown, MD, September 24, 2014. **Drab SR.**
- Type 2 Diabetes in the Pediatric Population. Allegheny County Pharmacists Association; Pittsburgh, PA, October 8, 2014. **Drab SR.**
- Diabetes Challenges: Improving Outcomes in Older Adults. Inquisit Continuing Education Program; Pittsburgh, PA, November 5, 2015. **Drab SR.**
- Consultant Pharmacists: Injectable Therapy Recommendations for Long-standing Diabetes. American Society of Consultant Pharmacists Annual Meeting; Orlando, FL, November 7, 2014. **Drab SR.**
- Optimizing Outcomes for Older Adults with Type 2 Diabetes. Program Management Long-term Care Webinar; Pittsburgh, PA, November 12, 2014. **Drab SR.**
- Pattern Management: The Key to Excellent Glycemic Control. Program Management Long-term Care Webinar; Pittsburgh, PA, December 17, 2014. **Drab SR.**
- Foundations to Managing Inpatient Hyperglycemia. Fulton County Medical Center Grand Rounds; McConnellsburg, PA, March 18, 2015. **Drab SR.**
- Management of Special Situations in Inpatient Hyperglycemia: Case Studies in Action. Fulton County Medical Center Grand Rounds; McConnellsburg, PA, April 29, 2015. **Drab SR.**
- Pattern Management: The Key to Excellent Glycemic Control. Allegheny County Pharmacists Association; Pittsburgh, PA, April 29, 2015. **Drab SR.**
- Advances in Outpatient Diabetes Care: Algorithms for Care and the Role of Injectable Therapies. United Samaritans Medical Center Grand Rounds; Danville, IL, May 1, 2015. **Drab SR.**
- Identification and Resolution of Injection Technique Barriers in Patients with Diabetes. American Health Resources Continuing Education Program; Melville, NY, June 10, 2015. **Drab SR.**
- Managing Hyperglycemia in the Transition from Inpatient to Outpatient Care. Fulton County Medical Center Grand Rounds; McConnellsburg, PA, June 17, 2015. **Drab SR.**

Grants

- Diabetic Monitoring and Education Grant. \$520.00, LifeScan Inc, a Johnson & Johnson Company, Milpitas, CA, 2014. **Drab SR.**
- Diabetic Monitoring and Education Grant. \$480.00, Roche Diagnostics, Indianapolis, IN, 2014. **Drab SR.**
- Diabetic Monitoring and Education Grant. \$435.00, Novo Nordisk, Pittsburgh, PA, 2014. **Drab SR.**

Program Evaluation Research Unit (PERU)

Faculty

Janice L. Pringle, PhD, Associate Professor

Selected Publications (related to community dwelling patients)

- **Pringle JL**; Aldridge A; Boyer A; Conklin M; McCullough J. (2014) The Pennsylvania Project: Pharmacist Intervention Improved Medication Adherence and Reduced Health Care Costs. *Health Affairs*, 33(8):1444-1452.
- **Pringle JL**. (November 2015) Perspectives: Applying Value-Based Incentive Models within Community Pharmacy Practice. Pharmacy Quality Alliance and Jewish Healthcare Foundation. *The American Journal of Pharmacy Benefits*..

Community Practice Grants Awarded

- Development, Implementation, and Evaluation of an Evidence-Based Screening, Brief Intervention, Referral to Treatment (SBIRT) Curriculum in Medical Residency Training Programs. (SAMHSA). Annual contract award with the University of Pittsburgh, School of Pharmacy. \$1,875,000. 2008-2014. **Pringle JL**.
- New Lease on Life. SAMHSA (Substance Abuse and Mental Health Services Administration). \$300,000. 2009-2014. **Pringle JL**.
- Prospective Study on a Pharmacist-led Intervention to Improve Medication Adherence. (Merck). \$902,357. 2011-2014. **Pringle JL**.
- Evaluation of the Electronic Quality Improvement Platform for Plans and Pharmacies (EQuIPP) Implementation Phase. (Takeda Pharmaceuticals). \$147,500. 2012-2014. **Pringle JL**.
- Pennsylvania Screening, Brief Intervention, and Referral to Treatment (SBIRT) Interdisciplinary Training Program. (SAMHSA). \$437,000. 2013 – 2016. **Pringle JL**.
- Evaluation of a Cloud-based Application that will facilitate Patient Transition from Inpatient Stay to Primary Care Physician Engagement (PCP). (Department of Veteran Affairs). \$55,489. 2013-2014. **Pringle JL**.
- Pharmacy Readmissions Project Task Order. (Department of Veterans Affairs). \$92,955. 2014 – 2015. **Pringle JL**.
- Circlebacks. (Pitt Innovation Challenge). \$25,000. 2014. **Pringle JL**.
- Overdose Prevention Coalition. (Pennsylvania Commission on Crime and Delinquency). \$129,924. 2014-2015. **Pringle JL**.
- Overdose Prevention Coalition (OPC) Phase II. (Pennsylvania Commission on Crime and Delinquency). \$150,000. 2014-2015. **Pringle JL**.
- Implementation of Screening, Brief Intervention, and Referral to Treatment within the Medical Community of Blair County. (Pennsylvania Commission on Crime and Delinquency). \$97,433.

2014-2015. **Pringle JL.**

- Blair County Drug and Alcohol Partnerships SBIRT Consultation and Data Collection. (Blair County Drug and Alcohol Partnerships). \$18,466. 2015 – 2016. **Pringle JL.**
- Screening, Brief Intervention, and Referral to Treatment Implementation Project for Clearfield and Jefferson Counties. (Behavioral Health Alliance of Rural Pennsylvania). \$28,129. 2014 – 2016. **Pringle JL.**
- Evaluation of the Impact of Sample Medication on Subsequent Medication Adherence Phase II. (MedVantx). \$18,916. 2015. **Pringle JL.**

Selected Invited Presentations (National/International)

- Conference Chair for Medication Adherence and MTM Innovations Summit. Developing Personalized Adherence Programs to Initiate Patient-Specific Interventions that Drive Behavior Change and Optimize Return on Investment. October 2014.
- SBIRT for Medication Adherence in a Pharmacy Setting. Staunton Farm Foundation Grant Meeting. November 2014.
- Implementing and Sustaining SBIRT. National Association of Social Workers SAMHSA Region III. February 2015.
- Providing SBIRT and Substance Use Disorder Education in the Medical School Setting. SAMHSA-COPE III Medical Education Summit. February 2015.
- Overdose Prevention Efforts. University of Pittsburgh, School of Pharmacy Lecture. March 2015.
- SAMHSA Screening, Brief Intervention, Brief Treatment, and Referral to Treatment Expert Panel. Substance Abuse and Mental Health Services Administration. March 2015.
- Developing Personalized Adherence Programs to Initiate Patient-Specific Interventions that Drive Behavior Change and Optimize Return on Investment. 2015 Biannual MTM and Medication Adherence Innovations Summit. April 2015.
- External Landscape for Pharmacy Medication Therapy Management (MTM). Patient Centered Medical Home Advisory Council Meeting. April 2015.
- External Landscape for Pharmacy Medication Therapy Management (MTM). Pennsylvania Medical Director's Meeting. June 2015.
- Virtual SAMHSA Expert Panel. Substance Abuse and Mental Health Services Administration. June 2015.
- 2015 Pittsburgh Conference on the Science of Medication Adherence. June 2015. Abstract and Presentation: Heterogeneous Patient Response to Screening and Brief Intervention. **Pringle JL, Kearney S, Aldridge A, Grasso K.**

- 2015 Academy Health Annual Research Meeting. June 2015.
Abstract and Poster: Effect of Community Pharmacist Intervention on Adherence to Long-Term Medications (ECO-PHIL). **Pringle JL**, McElwee N, Aldridge A, Kearney S, Grasso K.

The Grace Lamsam Pharmacy Program for the Underserved

The Grace Lamsam Program serves primarily homeless and low-income patients, as well as under-insured patients. Pharmacists work in an interdisciplinary model of care with a team of health care providers that includes physicians, nurses, and other allied-health professionals. The Grace Lamsam Pharmacy Program works to enhance access to cost-effective medicines for patients served by our collaborator groups. The program contributes expertise to reduce cost and assure safe and effective drug therapy.

The Grace Lamsam Pharmacy Program partners with Health Care for the Homeless (HCH) and North Side Christian Health Center, UPMC Matilda Theiss and collaborates with the Program for Health Care to Underserved Populations (PHCUP).

Faculty

Sharon Connor, PharmD, Assistant Professor
Lauren Jonkman, PharmD, MPH, Assistant Professor
Karen Pater, PharmD, Assistant Professor

Resident

Rebecca Cope, PharmD-PGY2 Advanced Practice Residency with an Emphasis in Underserved Care & Global Health

Major Accomplishments

In FY15, the Grace Lamsam Program for the Underserved:

- Continued in partnership with UPMC Matilda Theiss Health Center with funding (~\$20,000 in HRSA funding from Matilda Theiss) to support a PGY2 Resident in Global Health.
- Provided oversight of the pharmacy program for the Program for Health Care to Underserved Populations which includes the Birmingham Free Clinic and the Women's Center and Shelter.
- Provided over 200 disease state management encounters providing management of diabetes, hypertension, dyslipidemia, and asthma; dispensing almost 9000 prescriptions to uninsured patients through the efforts of 3 faculty members, 8 residents, and 5 volunteers. Pharmacists provided 1266 hours of direct service.
- Provided experiences for 249 pharmacy students through IPPEs and APPEs.
- Continued partnership with Health Care for the Homeless to provide pharmacy oversight at clinics housed in homeless shelters and drop-in centers.
- Provided care for approximately 200 patient care visits at the North Side Christian Health Center Pharmacy Services Clinic.

- Provided service at the Salvation Army Harbor Light Center to improve health through medication evaluations and consultations with over 50 clients and smoking cessation services to over 30 clients through P3 student pharmacists in an elective course.

Education

- Provided longitudinal clinical training opportunities for 2 PGY1 community residents, 2 PGY1 pharmacy practice residents, and 1 PGY2 ambulatory care resident at the Birmingham Clinic and UPMC Matilda Theiss.
- Supervised the establishment of the Interprofessional Student-Run Free Clinic at the Birmingham Clinic (Coordinated by Cara Mazzarisi [P4] and Yoav Karpenshif [MS4], and faculty preceptor Lauren Jonkman. These students provided care to 34 patients over the course of the year.
- Graduated 9 students with an Area of Concentration in Global Health (Bondar, Draude, Cirrincione, Janse, Jantzi, Mayer, Mazzarisi, Ugwuegbu, Valentino). Those graduates will go on to roles as Fulbright Scholar, Pharmacy Practice Residency, Public Health Service, Community and Health System Pharmacy practice in the upcoming year.
- Graduated one Global Health/Care to Underserved Resident who has accepted a position as an Assistant Professor at the Touro College of Pharmacy in New York City, New York.
- Received funding for:
 - Thomas H Nimick, Jr. Competitive Research Fund: Addressing Deficiencies and solutions in medication forecasting, medication prescribing, and epidemiologic health surveillance in a low-resource setting - \$9,460. Co-investigator (**Jonkman & Connor**)

Selected Publications

- Kauffman YS, **Connor SE**, **Jonkman LJ**, Himisi T, **Kane-Gill SL**, Gilliespie EM, Douglas, GP. Retrospective Evaluation of Adverse Drug Reactions in a Central Hospital in Malawi. *Enliven: Pharmacovigil Drug Saf* 2014;1(1):004.

Invited Presentations

- Accessibility of quality health care in our community and our nation: Possibilities and realities. **Connor SE**, Invited panelist at the APPRISE Symposium, Pittsburgh, PA. September 23, 2014.
- **Jonkman L, Connor S**. A Global Health Area of Concentration: Personalizing Education in the PharmD Program. Mini-session. American Association of Colleges of Pharmacy Annual Meeting. Grapevine TX, July 2014.

UPMC Ambulatory Clinics and Retail Pharmacies

UPMC Presbyterian Ambulatory Clinics and Outpatient Pharmacy

UPMC Ambulatory Care - Matilda Theiss, Heart and Vascular and UPMC Presbyterian Outpatient Pharmacies

Faculty

Deanne L. Hall, PharmD, Associate Professor

Karen S. Pater, PharmD, Assistant Professor

Adjunct Faculty

Bethany Helms, PharmD

Sharon Miller, PharmD

Resident

Emily Chan, PharmD-PGY2 Ambulatory Care Pharmacy Resident

UPMC Presbyterian Ambulatory Clinics and Outpatient Pharmacy

Optimized the use of medications and stemmed the misuse, abuse, and diversion of medications by:

- Providing medication management and education during >500 Family Medicine Clinic Visits at UPMC Matilda Theiss Health Center.
- Provisioning of DM Education and medication management to >200 patients with DM and related cardiovascular disease.
- Managing of Patient Medication Assistance Programs (PMAPs) for over 80 patients at UPMC Matilda Theiss Health Center with significant cost savings to patients and site.
- Organizing the University of Pittsburgh and UPMC Pharmacy Based Influenza Vaccination Clinics providing over 4000 influenza vaccines to over 2485 University Employees, 1009 UPMC Employees and 300 university students.
- Providing pharmacist led medication reconciliation programs for specialty hypertension providing medication reconciliation for over 150 patients in the year.
- Providing pharmacist led medication reconciliation programs for specialty hyperlipidemia providing medication reconciliation for over 100 patients in the year.
- Providing pharmacist lead medication reconciliation programs for specialty heart failure providing medication reconciliation for over 500 patients in the year.
- Establishing partnership with Nurse Practitioner lead heart failure discharge clinic.
- Initiating development of a pharmacist specific documentation tracking tool within EPIC

Assumed leadership roles, including:

- Chair-Elect and Programming Chair, AACP Self-Care Therapeutics and Nonprescription Medicines Special Interest Group. **Pater KS**

- ASHP Invited Ambulatory Care Webinar Series Program Chair. **Hall DL**

Selected Publications

Snyder ME, Frail CK, Jaynes H, **Pater KS**, Zillich AJ. Predictors of medication-related problems among Medicaid patients participating in a pharmacist-provided telephonic medication therapy management program. *Pharmacotherapy*. 2014;34(10):1022-32. Epub 2014 Jul 23.

Pater KS, Agimi Y, Albert SM. Using a pharmacy student model to review prescription medication use among older adults living in low-income seniors housing. *Seniors Hous Care J*. 2014;22(1):4.

Snyder ME, **Pater KS**, Frail CK, Hudmon KS, Doebbeling BN, Smith RB. Utility of a brief screening tool for medication-related problems. *Res Social Adm Pharm*. 2015;11(2):253-64.

Miller L, **Pater KS**, Corman S. The role of clinical decision support in pharmacist response to drug-interaction alerts. *Res Social Adm Pharm*. 2015; 11(3):480-86.

Davies ML, Schonder KS, Meyer SM, **Hall DL**. Changes in Students' Performance and Confidence with a Standardized Patient and Standardized Colleague Interprofessional Activity. *AJPE* 2015; 79 (5) Article 69.

Professional and Community Service

- 2014- present Advisory Council, Allegheny County Health Department
- 2012-2014 Faculty Mentor, University of Pittsburgh School of Pharmacy Achieving Independence Team **State Winners 2012, 2013, 2014, 2015
- 2014 – present Membership Committee, Pennsylvania Pharmacist Association
- 2014 - present Faculty Mentor to newly established Student College of Clinical Pharmacy Chapter
- Member UPMC Health System Flu Group
- Member UPMC EPIC Operations Committee

Other

- Engaged students in practice enhancement projects at UPMC Matilda Theiss Health Center related to Transitions of Care.
- Engaged students in practice enhancement projects at UPMC Matilda Theiss Health Center related to Depression Screenings.

UPMC St. Margaret Family Medicine

Faculty

Roberta Farrah, PharmD, Assistant Professor

Residents

Sarah Rindfuss, PharmD, PGY2 Ambulatory Care Pharmacy Resident

Lucas Hilli, PharmD, PGY2 Ambulatory Care Pharmacy Resident

Ashley Higbea, PharmD, PGY2 Ambulatory Care Pharmacy Resident

Patient Care Activities for FY14

- The family medicine residency program consists of three community-based family health centers that are models for academic interprofessional primary care practice. All three have received Level 3 Patient Centered Medical Home (PCMH) status by the National Committee for Quality Assurance (NCQA). The family health centers see a patient volume of up to 2,500 visits per month, as a mix of pediatric and adolescent, adult, and geriatric medicine.
- Pharmacists practice in face-to-face scheduled office encounters for acute and chronic conditions, telephone recent ER/inpatient transitions-of-care encounters, group visits, home visits, quality measure reports, and drug policy development and review.
- Pharmacists practice alongside family medicine and psychiatry physicians, nurses, social workers, behavioral health specialists, nutritionists, and patient case managers to provide comprehensive patient-centered care.
- Pharmacist-as-educators in precepting UPMC St. Margaret Family Medicine physician residents on required rotations, UPMC St. Margaret PGY1 pharmacy practice residents, and the University's Community Pharmacy Practice residents, and medical/pharmacy IPPE and APPE student learners.
- Initiated a private practice initiative (PPI) of incorporating a PGY2 Ambulatory Care pharmacy resident into a non-academic community physician practices in the Pittsburgh.
- Lead a Free Medication Program for family health center patients to improve access to medications.
- Provide leadership and management of naloxone initiative prescribing, dispensing and education initiative for at-risk patients and caregivers
- Dr. Stephen Wilson MD, MPH, FAACP Director of UPMC St. Margaret Faculty Development Fellowship contribution and participation (along with his physician fellows) in the School's curriculum with regards to physician communication.

Selected Publications

- **Farrar, RM.** Oral Antidiabetic Medication (CME Video Lecture). In Middleton, D. (Course Director), *Comprehensive Review of Family Medicine*. Birmingham, AL: Oakstone Publishing, 2015.
- **Hill LG,** PharmD; Chee JS, MD; Haugh AJ, MLS; Wilson SA, MD. Effect of time of day on lipoprotein measurement. *Evidence-Based Practice*. Accepted for publication. [Review]

- Trietley GS, **Hill LG**. SGLT2 and you: a novel target for diabetes treatment. *Bulletin of the Allegheny County Medical Society* 2015;105(4):169-171.
- **Hill LG**, Castelli GB. Cannabis considered. *Bulletin of the Allegheny County Medical Society* 2014;194(11):452-4.
- **Higbea A**. Sairenji T, Wilson S. How effective is high dose gabapentin in treatment of neuropathic pain in diabetic adults? *Evidence-Based Practice*. (publication pending).
- Wojtusik A, **Higbea A**. A Novel Device for Epinephrine Self-Injection: Auvi-Q[®] Auto-Injector. *Bulletin of the Allegheny County Medical Society*. February 2014;104(2):61-4.
- **Rindfuss S**, Wilson SA. **Are selective serotonin reuptake inhibitors associated with gastrointestinal bleeding in adults**. Accepted for publication. *Evidenced-Based Practice*.

Selected Invited Presentations (National/International)

- Scholarly contributions of pharmacist educators in family medicine in North America: A five-year review. Presentation at the Association for Medical Education in Europe (AMEE) Annual Conference. Glaskow, UK. Sept 5, 2015. Co-presenters: **Rindfuss SR**, Jarret JB.
- Scholarly Contributions by Pharmacist Educators in Family Medicine: A 5-Year Review. Presentation at the 48th STFM Annual Spring Conference. Orlando, FL. April 27, 2015. Co-presenters: **Rindfuss SR**, Broders J, Lounsbury J.
- Implementing Group Visits: Expanding Beyond Diabetes. Presentation at the 48th STFM Annual Spring Conference. Orlando, FL. April 28, 2015. Co-presenters: **Rindfuss SR**, **Farrah RM**, Karsh A, **Higbea A**, Koenig M.
- Demystifying Trial Analysis. Presentation at the 48th STFM Annual Spring Conference. Orlando, FL. April 28, 2015. Co-presenters: **Rindfuss SR**, **Hill L**, Hendry S, Castelli G, Breslin T.
- iPharm: Demolishing Silos in the PCMH. Poster presentation at the 48th STFM Annual Spring Conference. Orlando, FL. April 27, 2015. Co-presenters: **Rindfuss SR**, **Hill L**, Han H, **Higbea A**, Koenig M, Das N.
- The Challenges of Direct-to-Consumer Advertising: A Curriculum on Purple Pills, Butterflies, and Bathtubs.” Poster presentation at the 48th STFM Annual Spring Conference. Orlando, FL. April 27, 2015. Co-presenters: **Rindfuss SR**, Trietley G, **Hill L**, Sairenji S.
- Improving care of older adults within a novel practice: patient perceptions and self-efficacy analysis of Pharmacist-led InterVentions On Transitions of Seniors (PIVOTS) by patient surveys. Presentation at the STFM Practice Improvement Conference. Dallas, TX. December 3-6, 2015. Co-presenters: **Higbea A**, Joseph M, Sakely H, Klatt P, **Thorpe C**, **McGivney MS**, Cox-Vance L, Corbo J, **Coley K**.
- Patient perceptions of Pharmacist-led InterVentions on Transitions of Seniors (PIVOTS): A Patient Survey. Presentation at *American Geriatric Society*. Washington DC. May 2015. Co-presenters: **Higbea A**, **Thorpe C**, **Coley K**, Klatt P, Schleiden L, Zaharoff J, Corbo J, Cox-Vance L, Balestrino V, Sakely H, **McGivney M**.

- The Fitwits BMI Study: Improving Parent and Child Understanding of BMI. Presentation at the 48th STFM Annual Spring Conference. Orlando, FL. April 27, 2015. Co-presenters: Boron E, Edwards B, **Higbea A**, Frazier W, Hogan L, McGaffey A.
- Utilization of a Naloxone Counseling Letter to Encourage Naloxone Use and Improve Opioid Prescribing Practices. Presentation at the 48th STFM Annual Spring Conference. Orlando, FL. April 26, 2015. Co-presenters: **Higbea A**, Han J, Koenig M, **Hill L**, Das N.
- Cannabis as Medicine: Practical Considerations. Presentation at the 48th STFM Annual Spring Conference. Orlando, FL. April 26, 2015. Co-presenters: **Hill L**, Castelli G, Sphar B.

Transitions of Care

Faculty

Kim Coley, PharmD, Professor
 Sharon Connor, PharmD, Assistant Professor
 James Coons, PharmD, Assistant Professor
 Amy Donihi, PharmD, Associate Professor
 Tanya Fabian, PharmD, PhD, Assistant Professor
 Melissa McGivney, PharmD, Associate Professor
 Karen Pater, PharmD, Assistant Professor
 Christine Ruby, PharmD, Assistant Professor
 Michael Shullo, PharmD, Associate Professor

Pharmacy Fellow

Jennifer Greene Naples, PharmD

Major Accomplishments

In FY15, School of Pharmacy faculty members:

- Expanded the BULK Meds to Home program at UPMC to include eye products and topicals (in addition to insulin and inhalers). In addition, the program was expanded to all UPMC hospitals. **Donihi AC.**
- Led the daily multidisciplinary process for ensuring that hospitalized patients receive their mealtime insulin at an appropriate time in relation to their meals. **Donihi AC**
- Educated over 300 hospitalized patients who went home new to insulin. **Donihi AC**
- Developed UPMC system-wide policies that allow alert patients to continue wearing their home subcutaneous insulin pump and to continue to self-manage their mealtime insulin via carbohydrate counting while they are hospitalized. **Donihi AC**
- Elected as Chair-Elect of the ACCP Endocrine and Metabolism PRN. **Donihi AC**
- Oversaw all transitions of care education, assistance, and discharge planning for the UPMC Adult Heart Transplant Program and provided direct outpatient care during >1500 patient visits. **Shullo M**

- The WPIC MEDPACT (Medication and Education at Discharge – Pharmacist Assisted Care Transitions) led by **T. Fabian** program has:
 - Facilitated transitions of care for over 8,000 patients by identifying and resolving barriers to medication access and adherence since program inception in 2008
 - Assisted a total of 2,736 patients in FY15 and provided nearly a third of eligible WPIC patients with medication education and medications “in hand” prior to discharge
 - Facilitated care transitions by performing a total of 5,499 medication-related interventions including resolving 3,655 prescription insurance issues and providing patient-specific medication education for 1,151 patients.
 - Reduced 30-day psychiatric readmission rates for patients with a schizophrenia diagnosis (ICD-9 295.xx) by 52.6% compared to patients who did not participate in MEDPACT (7.4% vs 15.6%).
 - (7.4% vs 15.6%). Patients who left the hospital with “meds in hand” had a 52.6% reduction in psychiatric readmission rate compared to usual care.
- Collaborated with a multidisciplinary team at the UPMC Advanced Heart Failure/Pulmonary Hypertension Outpatient Clinic to improve patients’ transitions of care. This included over 200 patient encounters. **Coons J.**
- Received an Innovation Award from the University of Pittsburgh’s Clinical and Translational Science Institute (CTSI) for MEDivate (Intelligent Medication Management; www.medivate.me). MEDivate is a smartphone application that uses QR-code technology to enable portability of accurate medication lists that can be shared with healthcare providers to improve transitions of care. Also recognized as Top 10 Finalist for proposal at The Pitt Innovation Challenge (PInCh): Sponsored by Pitt CTSI, Office of the Provost, and Innovation Institute. **Empey P, Coons J.**
- The Geriatric clinics are models for interprofessional geriatric pharmacy practice. Both have received Level 3 Patient Centered Medical Home (PCMH) status by the National Committee for Quality Assurance (NCQA). The pharmacists practice in face-to-face scheduled office encounters for acute and chronic conditions and telephonic care for transitions-of-care encounters. **Ruby CM.**
- Led a pharmacist driven transitions- of- care program focusing on Senior Care patients discharged from UPMC affiliated nursing homes (such as Heritage, Charles Morris, Canterbury) and several non-UPMC facilities (such as Asbury Heights and Health South). This program includes medication reconciliation, comprehensive medication review, sharing of discharge information across sites, and confirmation of home care services. **Ruby CM.**
- Added new sites (Arden Court and Harmarville) to the Senior Care Transitions of Care program facilities and provided at least 100 patient transition-of-care encounters. **Ruby CM.**
- Initiated two quality improvement projects relating to the transition-of -care protocols at Senior Care. **Ruby CM.**
- Developed three student specific Special Topics elective courses focusing on transitions-of -care. **Ruby CM.**

Invited Presentations and Published Abstracts

- “Update in Treatment Options for Diabetes” an invited CE presentation for the University of Pittsburgh School of Pharmacy Fall Continuing Education Seminar. Program #0481-0000-14-055-L04-P. October 19, 2014. **Donihi AC**
- “Educating Hospitalized Patients with Diabetes: Perspectives of Staff Nurses on Barriers and Opportunities”. Poster at the American Diabetes Association 75th Scientific Sessions, Boston, Massachusetts; June 8, 2015. **Donihi AC**
- “Transitions of Care: Identifying patients at risk for drug-related problems in an urban health center.” Poster presentation at the University of Pittsburgh Schools of the Health Sciences Health Disparities Poster Competition, Pittsburgh, PA; April 6, 2015. **Connor S; Pater K.**
- “Patient perceptions and self-efficacy analysis within a novel patient care practice: A subset of PIVOTS (Pharmacist-led Interventions On Transitions of Seniors).” Poster presentation at the Society of Teachers of Family Medicine Annual Spring Conference, Orlando, FL. April 25-29, 2015. **Coley KC, Thorpe C, McGivney M.**
- “The impact of pharmacists caring for geriatric patients across the healthcare continuum on the identification, resolution, and prevention of drug therapy problems: A subset of the PIVOTS group.” Presented as a poster at the American Geriatrics Society Annual Scientific Meeting, Washington, DC. May 15-17, 2015. **Coley KC, Thorpe C, McGivney M**
- “Evaluation of a Medication Access and Adherence Tool (MAAT) to identify patients at risk for medication nonadherence after hospital discharge.” A platform presentation at the SMA 2015 Conference, Pittsburgh, PA 2015. **Coley KC**
- “Quality Improvement of Transition of Care Follow-up Process.” Presented at the 9th Annual Aging Institute Research Day, Pittsburgh, PA; March 31, 2015. **Ruby CM.**
- “Development of Medication Tracking Tool for Transitions of Care.” Presented at the 9th Annual Aging Institute Research Day, Pittsburgh, PA; March 31, 2015. **Ruby CM.**
- “Complexities with Transitions of Care in Older Adults. Presented at the Health Disparities.” Poster presented at the Graduate School of Public Health, Pittsburgh, PA April 2015. **Ruby, CM.**

Grants

- **Donihi AC and Coley KC** continued to partner with clinicians from UPMC for “Implementation of an Inpatient Bulk Meds to Home Program at a Large Academic Medical Center.” This program was awarded \$25,000 by the ASHP Foundation.
- **Coley KC, Thorpe C, and McGivney M** continued to work with clinicians from UPMC St. Margaret Hospital on the transitions of care research program, “PIVOTS: Pharmacist led InterVention On Transitions of Seniors.” This program places geriatric clinical pharmacists in a direct patient care role that manages elderly patients as they transition across different levels of geriatric care. This program was awarded a \$60,000 grant from the Jewish Healthcare Foundation.

- **Coley KC** partnered with UPMC St. Margaret Hospital to evaluate provider and staff perceptions of a geriatric pharmacist conducting transitions of care activities. This evaluation was funded by the Pennsylvania Pharmacists Association for \$1000.

HOSPITAL-BASED PROGRAMS

UPMC Palliative and Supportive Institute

Faculty

Jennifer Pruskowski, PharmD, Assistant Professor, Palliative Care Clinical Pharmacy Specialist

Major Accomplishments

During FY15, School of Pharmacy faculty members achieved the following:

- Provided clinical pharmacy support to: 10 hospital-based palliative care teams, 4 palliative care focused CRNPs within UPMC Senior Communities, and 6 outpatient and home-based palliative care teams
- Created and launched Palliative Care Pharmacy Phast Phact weekly electronic newsletter, to be distributed throughout UPMC Palliative and Supportive Institute
- Established a quality improvement project to streamline medications for patients with life-limiting illnesses entitled the DE-PHARM (Discussion to Ensure the Patient-centered, Health-focused, prognosis-Appropriate, and Rational Medication regimen) to be performed in UPMC Senior Communities
- Developed a formulary review on oral long-acting opioids for the use of these medications in the hospital settings across UPMC

Selected Publications

- **Pruskowski J**, Arnold RM. Pregabalin in palliative care #288. J Palliat Med. 2015 Mar;18(3):299-300.
- **Pruskowski J**, Arnold RM. A comparison of pregabalin and gabapentin in palliative care #289. J Palliat Med. 2015 Apr;18(4):386-7.
- **Pruskowski J**, Arnold RM. Tramadol in palliative care #290. J Palliat Med. 2015 May;18(5):461-2.

UPMC Pharmacy Transplant Group

Faculty

Christopher R. Ensor, PharmD, Assistant Professor

Heather J. Johnson, PharmD, Assistant Professor

Kristine S. Schonder, PharmD, Assistant Professor

Michael A. Shullo, PharmD, Associate Professor

Raman Venkataramanan, PhD, Professor

PhD Students

Omar Almazroo, PhD Candidate

Ali Alshabi, PhD Candidate

Fairuz Feturi, PhD Candidate

Rujuta Joshi, PhD Candidate

Hari Kalluri, PhD Candidate

Mohammad Shawafeq, PhD Candidate

Hari Thanukrishnan, PhD Candidate

MS Student

Hongfei Zhang

Postdoctoral Fellows

Cody Moore, PharmD – Transplant Outcomes Research

Martha Bustos, PhD

Maisa Feghali, MD

Chithambaram Pillai Venkateswaran, PhD

Vikram Raghu, MD

Imam Shaik, PhD

Yang Zhao, PhD

Resident

Alicia Lichvar, PharmD-PGY2 Solid Organ Transplant Pharmacy Resident

Visiting Scholars

Huijun Chen

Mimi Li

Research Associate

Wenchen Zhao

Major Accomplishments

In FY15, School of Pharmacy faculty members:

- Preceptor of the Year, 2014-15. School of Pharmacy. **Ensor CR.**
- Chair-Elect, American College of Clinical Pharmacy Immunology/Transplantation Practice and Research Network. **Ensor CR**
2016 ACCP Scientific Program Committee Member. **Ensor CR**
- Workforce Co-chair: ISHLT Core Competencies of the Thoracic Pharmacist
International Society of Heart and Lung Transplant, **Ensor CR**
- Standards and Guidelines Committee Member, ISHLT. **Ensor CR**
- Workforce Chair: ISHLT Core Competencies of the Thoracic Pharmacist
International Society of Heart and Lung Transplant, **Shullo MA**

- Session Chair: Kinetics, coagulation, and cardiology. 35th Annual Meeting and Scientific Sessions. International Society of Heart and Lung Transplant, **Shullo MA**
- Appointed Associate Director of Cardiac Transplantation Program, UPMC. **Shullo MA**
- Over 1100 Drug-Drug Interactions Screens for HCV therapy candidates
Average of 8 meds/patient and 1.6 interactions per patient – interactions identified in about 50% of patients **Johnson HJ**
- NICHD funding renewed for third cycle – Obstetric Pharmacology Research Center – Funding renewed for year 11-15. (July 2015-June 2020). **Venkataramanan R**
- NICHD - T-32 Fellowship in OB Pharmacology: Only one in the country recruited a Pharm.D. student currently on Ph.D. (Lara Siminerio, Pharm.D.) **Venkataramanan R**
- Chair of AAPS Foundation New Investigator Award Committee **Venkataramanan R**
- Graduate Faculty of the Year Award, School of Pharmacy May 2015 - **Venkataramanan R**
- Director of Therapeutic Drug Monitoring, UPMC, **Venkataramanan R**
- Editor, American Journal of Analytical Chemistry, **Venkataramanan R**
- Editorial Board Member – Therapeutic Drug Monitoring and Journal of Clinical Pharmacology, **Venkataramanan R**
- Reviewer: Several journals including J. Clinical Pharmacology, British Journal of Clinical Pharmacology, Therapeutic Drug Monitoring, **Venkataramanan R**
- Graduated one Ph.D. student; one MS student; one PGY-2 resident project, **Venkataramanan R**
- Mentored 9 graduate students; 2 visiting scholars; 6 fellows; one PharmD student, **Venkataramanan R**
- Honored as a speaker in “Agents of Change” – one of 7 alumni from 35 years selected to give a talk at the University of British Columbia, Vancouver Canada. Sep 2014, **Venkataramanan R**

Grants/Research

Onyx Pharmaceuticals, **Ensor CR**, 06/2015-06/2018 (Co-Primary Investigator). Co-PI: John F. McDyer, MD, \$599,994, NCT02474927, IND125138. Carfilzomib for the Antibody-Mediated Rejection Diagnosis in Lung Transplantation Trial (PICARD-Lung).

2U10 HD047905, **Venkataramanan R**, 2/1/10-12/31/15, National Institute of Health, \$104,777.00. Impact of Pregnancy on Drug Absorption, Disposition and End Organ Response, subaward to Magee-Womens Research Institute & Foundation.

5T32 HD071859, **Venkataramanan R**, 5/1/12-4/30/17, National Institute of Health, \$63,140.00. Training in basic and Clinical Pharmacology in Pregnancy, subaward to Magee-Womens Research Institute & Foundation.

UH 2TR000496, **Venkataramanan R**, 7/1/12-6/30/17, National Institute of Health, \$47,813.00. All-Human Microphysical Model of Metastasis Therapy, Optimization of Drug Dosing in Pregnant Women through Research and Education – OPRC Administrative Core.

ProStrakan, Inc, **Venkataramanan R**, 06/20/12 – 06/19/15, Pharmacokinetics and Bioavailability of Granisetron Transdermal System (Sancuso) in Pregnancy.

Selected Publications

- Maldonado AQ, Tichy EM, Rogers CC, Campara M, **Ensor C**, Doligalski CT, Gabardi S, Descourouez JL, Doyle IC, Trofe-Clark J. Assessing pharmacologic and non-pharmacologic risk in renal transplant recipients: A joint opinion of the Immunology/Transplantation practice and research network of the American College of Clinical Pharmacy, the American Society of Transplantation Transplant Pharmacy Community of Practice and the American Society of Health-System Pharmacists Section of Clinical Specialists and Scientists Transplantation/Immunology network. *Am J Health-Syst Pharm* 2015;72:781-93.
- Hollis IB, Jennings DL, Oliphant CS, Baker WL, Davis EM, Allender JE, Zemrak WR, **Ensor C**. Key articles and guidelines in the management of patients undergoing cardiac surgery. *J Pharm Pract* 2015;28:67-85.
- Morrell MR, McDyer JF, Yousem SA, Gries CJ, Crespo MM, Pipeling MR, Pilewski JM, **Ensor CR**, D’Cunha J, Shigemura N, Bermudez CA, Zeevi A. De novo donor-specific HLA antibody is associated with early and high-grade bronchiolitis obliterans syndrome and death after lung transplantation. *J Heart Lung Transplant* 2014;33:1288-94.
- Lampert BC, Teuteberg JJ, **Shullo MA**, Holtz J, Smith K. Cost Effectiveness of Routine Surveillance Endomyocardial Biopsy beyond 12 Months Post Heart Transplantation. *Circ Heart Fail*. 2014 Sep;7(5):807-13.
- Goyal RK, Gehris RP, Howrie D, Cogley KM, Windreich RM, **Venkataramanan R**. Phototoxic dermatoses in pediatric BMT patients receiving voriconazole. *Pediatr Blood Cancer*. 2014 Jul;61(7):1325-8. doi: 10.1002/pbc.24897. Epub 2014 Mar 11. PubMed PMID: 24619922.
- Zhao Y, Alshabi AM, Caritis S, **Venkataramanan R**. Impact of 17-alpha-hydroxyprogesterone caproate on cytochrome P450s in primary cultures of human hepatocytes. *Am J Obstet Gynecol*. 2014 Oct;211(4):412.e1-6. doi: 10.1016/j.ajog.2014.03.048. Epub 2014 Mar 26. PubMed PMID: 24681287.
- Clark AM, Wheeler SE, Taylor DP, Pillai VC, Young CL, Prantil-Baun R, Nguyen T, Stolz DB, Borenstein JT, Lauffenburger DA, **Venkataramanan R**, Griffith LG, Wells A. A microphysiological system model of therapy for liver micrometastases. *Exp Biol Med* (Maywood). 2014 Sep;239(9):1170-9. doi: 10.1177/1535370214532596. Epub 2014 May 12. Review. PubMed PMID: 24821820.
- Pillai VC, Parise RA, Christner SM, Rudek MA, Beumer JH, **Venkataramanan R**. Potential interactions between HIV drugs, ritonavir and efavirenz and anticancer drug, nilotinib--a study in primary cultures of human hepatocytes that is applicable to HIV patients with cancer. *J Clin Pharmacol*. 2014 Nov;54(11):1272-9. doi: 10.1002/jcph.333. Epub 2014 May 27. PubMed PMID: 24846165.

- Zhang P, Huang Y, Liu H, Marquez RT, Lu J, Zhao W, Zhang X, Gao X, Li J, **Venkataramanan R**, Xu L, Li S. A PEG-Fmoc conjugate as a nanocarrier for paclitaxel. *Biomaterials*. 2014 Aug;35(25):7146-56. doi: 10.1016/j.biomaterials.2014.04.108. Epub 2014 May 22. PubMed PMID: 24856103; PubMed Central PMCID: PMC4102141.
- Zhao Y, Bettinger J, Caritis S, **Venkataramanan R**. Stability of hydroxyprogesterone caproate alone and in a compounded pharmaceutical product. *Am J Health Syst Pharm*. 2014 Jul 1;71(13):1120-7. doi: 10.2146/ajhp130466. PubMed PMID: 24939502.
- Zhang X, Huang Y, Zhao W, Chen Y, Zhang P, Li J, **Venkataramanan R**, Li S. PEG-farnesyl thiosalicylic acid telodendrimer micelles as an improved formulation for targeted delivery of paclitaxel. *Mol Pharm*. 2014 Aug 4;11(8):2807-14. doi: 10.1021/mp500181x. Epub 2014 Jul 11. PubMed PMID: 24987803; PubMed Central PMCID: PMC4123940.
- Zhang Y, Huang Y, Zhao W, Lu J, Zhang P, Zhang X, Li J, Gao X, **Venkataramanan R**, Li S. Fmoc-conjugated PEG-vitamin E2 micelles for tumor-targeted delivery of paclitaxel: enhanced drug-carrier interaction and loading capacity. *AAPS J*. 2014 Nov;16(6):1282-91. doi: 10.1208/s12248-014-9651-2. Epub 2014 Sep 6. PubMed PMID: 25193267; PubMed Central PMCID: PMC4389742.
- Feghali M, **Venkataramanan R**, Caritis S. Prevention of preterm delivery with 17-hydroxyprogesterone caproate: pharmacologic considerations. *Semin Perinatol*. 2014 Dec;38(8):516-22. doi: 10.1053/j.semperi.2014.08.013. Epub 2014 Sep 23. PubMed PMID: 25256193; PubMed Central PMCID: PMC4253874.
- Lu J, Zhao W, Huang Y, Liu H, Marquez R, **Gibbs RB**, Li J, **Venkataramanan R**, Xu L, Li S, Li S. Targeted delivery of Doxorubicin by folic acid-decorated dual functional nanocarrier. *Mol Pharm*. 2014 Nov 3;11(11):4164-78. doi: 10.1021/mp500389v. Epub 2014 Sep 29. PubMed PMID: 25265550; PubMed Central PMCID: PMC4224520.
- Zhao Y, Hebert MF, **Venkataramanan R**. Basic obstetric pharmacology. *Semin Perinatol*. 2014 Dec;38(8):475-86. doi: 10.1053/j.semperi.2014.08.011. Epub 2014 Oct 1. PubMed PMID: 25281357.
- Beigi RH, **Venkataramanan R**, Caritis SN. Oseltamivir for influenza in pregnancy. *Semin Perinatol*. 2014 Dec;38(8):503-7. doi: 10.1053/j.semperi.2014.08.015. Epub 2014 Oct 1. PubMed PMID: 25281358.
- Rosborough BR, Raïch-Regué D, Liu Q, **Venkataramanan R**, Turnquist HR, Thomson AW. Adenosine triphosphate-competitive mTOR inhibitors: a new class of immunosuppressive agents that inhibit allograft rejection. *Am J Transplant*. 2014 Sep;14(9):2173-80. doi: 10.1111/ajt.12799. Epub 2014 Aug 4. PubMed PMID: 25307040; PubMed Central PMCID: PMC4196715.
- Wheeler SE, Clark AM, Taylor DP, Young CL, Pillai VC, Stolz DB, **Venkataramanan R**, Lauffenburger D, Griffith L, Wells A. Spontaneous dormancy of metastatic breast cancer cells in an all human liver microphysiologic system. *Br J Cancer*. 2014 Dec 9;111(12):2342-50. doi: 10.1038/bjc.2014.533. Epub 2014 Oct 14. PubMed PMID: 25314052; PubMed Central PMCID: PMC4264444.

- Zhang X, Huang Y, Zhao W, Liu H, Marquez R, Lu J, Zhang P, Zhang Y, Li J, Gao X, **Venkataramanan R**, Xu L, Li S. Targeted delivery of anticancer agents via a dual function nanocarrier with an interfacial drug-interactive motif. *Biomacromolecules*. 2014 Nov 10;15(11):4326-35. doi: 10.1021/bm501339j. Epub 2014 Oct 28. PubMed PMID: 25325795; PubMed Central PMCID: PMC4229023.
- Lu J, Zhao W, Liu H, Marquez R, Huang Y, Zhang Y, Li J, Xie W, **Venkataramanan R**, Xu L, Li S. An improved D- α -tocopherol-based nanocarrier for targeted delivery of doxorubicin with reversal of multidrug resistance. *J Control Release*. 2014 Dec 28;196:272-86. doi: 10.1016/j.jconrel.2014.10.016. Epub 2014 Oct 24. PubMed PMID: 25456831; PubMed Central PMCID: PMC4267990
- Pillai VC, Han K, Beigi RH, Hankins GD, Clark S, Hebert MF, Easterling TR, Zajicek A, Ren Z, Caritis SN, **Venkataramanan R**. Population pharmacokinetics of oseltamivir in non-pregnant and pregnant women. *Br J Clin Pharmacol*. 2015 Jun 3. doi: 10.1111/bcp.12691. [Epub ahead of print] PubMed PMID: 26040405
- Zhao Y, Chen HJ, Caritis S, **Venkataramanan R**. Development and validation of a sensitive liquid chromatographic-tandem mass spectrometric method for the simultaneous analysis of granisetron and 7-hydroxy granisetron in human plasma and urine samples: application in a clinical pharmacokinetic study in pregnant subject. *Biomed Chromatogr*. 2015 Jun 5. doi: 10.1002/bmc.3530. [Epub ahead of print] PubMed PMID: 26053159.
- Entringer S, Epel ES, Lin J, Blackburn EH, Buss C, Shahbaba B, Gillen DL, **Venkataramanan R**, Simhan HN, Wadhwa PD. Maternal Folate Concentration in Early Pregnancy and Newborn Telomere Length. *Ann Nutr Metab*. 2015 Jun 9;66(4):202-208. [Epub ahead of print] PubMed PMID: 26067849.
- Young OM, Shaik IH, Twedt R, Binstock A, Althouse AD, **Venkataramanan R**, Simhan HN, Wiesenfeld HC, Caritis SN. Pharmacokinetics of cefazolin prophylaxis in obese gravidae at time of cesarean delivery. *Am J Obstet Gynecol*. 2015 Jun 20. pii: S0002-9378(15)00634-1. doi: 10.1016/j.ajog.2015.06.034. [Epub ahead of print] PubMed PMID: 26103528.
- Beigi RH, Pillai VC, **Venkataramanan R**, Caritis SN. Oseltamivir for the Treatment of H1N1 Influenza During Pregnancy. *Clin Pharmacol Ther*. 2015 Jun 25. doi: 10.1002/cpt.179. [Epub ahead of print] PubMed PMID: 26108913.
- **Jan H Beumer**, Venkateswaran C Pillai , Robert A Parise , Susan M Christner , Roberto Gramignoli , Stephen C Strom , Michelle A Rudek , **Raman Venkataramanan**. Ritonavir and Efavirenz Interaction with Dasatinib in Primary Cultures of Human Hepatocytes with Clinical Predictions. *BJCP* (Accepted).
- Duong SQ, Lal AK, Joshi R, Feingold B, **Venkataramanan R**. Transition from brand to generic tacrolimus is associated with a decrease in trough blood concentration in pediatric heart transplant recipients. *Pediatric Transplantation*

Invited Presentations and Published Abstracts

- **Ensor CR**. Renal replacement therapy and plasmapheresis: where is the drug going? ISHLT 35th Annual Meeting and Scientific Sessions, Nice, France. April 2015.

- **Ensor CR.** Current and developing approaches for antibody-mediated rejection in thoracic transplantation. American Transplant Congress, American Society of Transplantation, Philadelphia PA. May 2015.
- Respiratory viral infections after lung transplantation: not just the common cold. Lung transplantation grand rounds, University of Pittsburgh School of Medicine. July 2015. **Ensor CR.**
- Donor-specific antibodies and antibody-mediated rejection in thoracic transplantation. Transplant Infectious Diseases grand rounds, Division of Infectious Diseases, University of Pittsburgh School of Medicine. February 2015. **Ensor CR.**
- Cellular rejection after thoracic transplantation: East of the rock and west of the hard place. Transplant Infectious Diseases grand rounds, Division of Infectious Diseases, University of Pittsburgh School of Medicine. December 2014. **Ensor CR.**
- Reinsmoen NL*, Mirocha J, **Ensor CR**, Marrari M, Chaux G, Lai CH, Levine D, Zeevi A. A three center study reveals new insights into the impact of Non-HLA antibodies on the acute rejection process in lung transplantation. ISHLT 35th Annual Meeting and Scientific Sessions. Oral, Nice, France. April 2015.
- Reinsmoen NL*, Mirocha J, **Ensor CR**, Marrari M, Chaux G, Lai CH, Levine D, Zeevi A. New insights into the impact of auto-antibodies on the acute rejection process in lung transplantation. Oral, ISHLT 35th Annual Meeting and Scientific Sessions. Nice, France. April 2015.
- **Ensor CR**, Kwak EJ, Merlo CA, Avery RK, Danziger-Isakov L, Glanville AR, Nguyen MH, Orens JB, Pilewski JM, Potoski BA, Zamora MR, McDyer JF. Worldwide survey of Paramyxoviridae respiratory infection perceptions and practices among adult lung transplant centers. Poster, ISHLT 35th Annual Meeting and Scientific Sessions. Nice, France. April 2015.
- Lendermon EA, Freeman AF, Oliver KN, Pilewski JM, Kwak EJ, DCunha J, **Ensor CR**, Crespo MM, Holland SM, Bermudez CA, McDyer JF. Successful bilateral lung transplantation in HIES. Poster, ISHLT 35th Annual Meeting and Scientific Sessions. Nice, France. April 2015.
- Rihtarchik LR, McDyer JF, Zeevi A, Pilewski JM, Crespo MM, Johnson BA, Lichvar A, Bermudez C, **Smith RB**, **Ensor CR***. Rescue alemtuzumab for refractory acute cellular rejection and bronchiolitis obliterans syndrome after lung transplantation at a single high-volume center. Poster, ISHLT 35th Annual Meeting and Scientific Sessions. Nice, France. April 2015.
- Lichvar A, McDyer JF, Kwak EJ, **Ensor CR**. Failure of oral ribavirin in the treatment of paramyxovirus after lung transplantation. Poster, American College of Clinical Pharmacy Annual Meeting. Austin TX, USA. October 2014.
- Zeevi A, McDyer JF, Yousem SA, Morrell MR, D’Cunha J, Pilewski J, Bermudez C, **Ensor CR**. Carfilzomib-based therapy depletes anti-HLA antibody in lung transplant patients with

antibody-mediated rejection. Oral, 40th American Society for Histocompatibility and Immunogenetics Annual Meeting. Denver CO, USA. October 2014.

- Jennings DL, Horn E, Lyster H, Panos A, Teuteberg J, Lehmkuhl H, Wolowich W, **Shullo M**. Assessing Anticoagulation Practice Patterns in Patients on Durable Mechanical Circulatory Support Devices: An International Survey. [Oral Presentation/Abstract] International Society of Heart and Lung Transplant. April 2015.
- Harris J, J. Teuteberg J, **Coons J**, Winger D, **Shullo M** Optimal Low Density Lipoprotein Levels Prevent Cardiac Allograft Vasculopathy; [Oral Presentation/Abstract] International Society of Heart and Lung Transplant. April 2015.
- What was nice from Nice: an update from the ISHLT 2015 Annual Meeting. ACCP IMTR prn Webinar June 2015, **Shullo M**.
- Updates in Monitoring Organ Graft Rejection and Surveillance. International Transplant Nurses Society, 2015 Summer Symposium. Chicago IL. June 2015, **Shullo M**
- Lichvar AB, **Johnson HJ**, Deen DP, Bonner JJ, Costa G, Abu-Elmagd K, and Venkataramanan R. Tacrolimus trough concentrations increase in intestinal transplant recipients during episodes of acute cellular rejection. Presented at the 2014 ACCP Annual Meeting, Austin, TX, October 2014.
- Lichvar AB, **Johnson HJ**, Deen DP, Bonner JJ, Costa G, Cruz R, Abu-Elmagd K, and Venkataramanan R. Tacrolimus trough concentrations increase in intestinal transplant recipients during episodes of acute cellular rejection. Presented at the American Transplant Congress, Philadelphia, PA, May 2015.
- Graham EP, **Johnson HJ**, Dunn MA, Chopra KB. Pharmacists mitigate effect of simeprevir on blood pressure in patients with hepatitis C infection receiving concurrent calcium channel blocker therapy. Submitted for presentation at the American Association for the Study of Liver Diseases (AASLD) The Liver Meeting 2015, San Francisco, CA, November 2015 – accepted.
- Brown MA, **Johnson HJ**, Lichvar AB, Chopra KB, Dunn MA. Effect of simeprevir administration on dose-normalized concentration of calcineurin inhibitors in solid organ transplant recipients with hepatitis C infection. Submitted for presentation at the American Association for the Study of Liver Diseases (AASLD) The Liver Meeting 2015, San Francisco, CA, November 2015. - accepted
- Lichvar AB, **Johnson HJ**, Rustgi V. The effect of ledipasvir/sofosbuvir on dose-normalized levels of immunosuppression in liver transplant recipients. Submitted for presentation at the American Association for the Study of Liver Diseases (AASLD) The Liver Meeting 2015, San Francisco, CA, November 2015. - accepted
- Feedback: What's All the Noise? Pharmacy Grand Rounds, UPMC Presbyterian, July 16, 2014. **Johnson HJ**
- HCV-New and Emerging Therapies. University of Pittsburgh School of Pharmacy Fall Continuing Education Seminar, Pittsburgh, October 19, 2014. **Johnson HJ**

- Rivosecchi RM, **Kane-Gill SL**, MacLasco A, Garavaglia J, **Johnson HJ**. The effectiveness of intravenous vitamin K in cirrhotic patients with coagulopathy.
- Pillai VC, Parise BA, Kiesel BF, Christen SM, Rudek MA, **Beumer JH**, **Venkataramanan R**. Identification of transporters involved in hepatobiliary disposition of investigational anticancer drug, Alisertib in primary cultures of human hepatocytes. Presented at AAPS Transporter workshop, April 2015 Baltimore, MD.
- Pillai VC, Beig RH, Han K, Hankins GD, Clark S, Hebert MF, Easterling T, Zajichek A, Ren Z, Mattison DR, Caritis SN, **Venkataramanan R**. Pharmacokinetics of Oseltamivir in Non-Pregnant and Pregnant Women. Presented at American Association of Pharmaceutical Scientists (AAPS) meeting, Nov 2014, San Diego, CA.
- Pillai VC, Parise RA, Christner SM, Kiesel BF, Rudek MA, Beumer JH, **Venkataramanan R**. HAART Drugs, Ritonavir and Efavirenz Moderately Alter the Metabolism of Investigational Anticancer Drug, Alisertib(MLN8237) in Primary Cultures of Human Hepatocytes. Presented at American Association of Pharmaceutical Scientists (AAPS) meeting, Nov 2014. San Diego, CA.
- Martha L Bustos, Yang Zhao, Huijun Chen, Steve N Caritis and **Raman Venkataramanan**. Granisetron clearance and antiemetic efficacy are influenced by SNPs in CYP1A1, CYP3A4, CYP3A5 and ABCB1 genes in pregnant women treated for nausea and vomiting. Presented at The Annual Graduate Student Research Retreat, School of Pharmacy. June 1st 2015. Wheeling, WV.
- Chen HJ, Zhao Y, Caritis S, **Venkataramanan R**. Pharmacokinetics of ranitidine in pregnant and non-pregnant women. Present at Fourth Annual University of Pittsburgh-Tsinghua University Joint Symposium, April 2015 Pittsburgh, PA.
- Chen HJ, Zhao Y, Caritis S, **Venkataramanan R**. Pharmacokinetics of Ranitidine and its Metabolite during Pregnancy. Society for Reproductive Investigation 62nd Annual Scientific Meeting, March 2015 San Francisco, CA.
- Zhao Y, Zhang SM, Caritis S, **Venkataramanan R**. Population Pharmacokinetics of Diltiazem in Pregnant and Non-pregnant Subjects. Presented at Society for Reproductive Investigation. 62nd Annual Scientific Meeting. San Francisco, CA.
- Zhao Y, Caritis S., Hankins G., Miodovnik M., Hebert M., **Venkataramanan R**. for the Obstetric-Fetal Pharmacology Research Unit (OPRU) Network. Population Pharmacokinetics of Labetalol in Pregnant and Non-pregnant Subjects. Presented at Society for Reproductive Investigation. 62nd Annual Scientific Meeting. San Francisco, CA.
- Chen HJ, Zhao Y, Caritis S, Hebert M, Hankins G, Miodovnik M, **Venkataramanan R**. Population Pharmacokinetics of Ranitidine and its Metabolite during Pregnancy. Presented at Society for Reproductive Investigation. 62nd Annual Scientific Meeting. San Francisco, CA.
- Zhao Y, Chen HJ, Caritis S, **Venkataramanan R**. Population Pharmacokinetics of Intravenous and Transdermal Granisetron and Its Major Metabolite in Pregnant Patients: Results of Phase 1b/Phase 2 Study. Presented at The 2014 American Association of Pharmaceutical Scientists (AAPS) Annual Meeting and Exposition, San Diego, CA (Abstract AM-14-3178).

- Zhao Y, Alshabi AM, Caritis SN, **Venkataramanan R.** Seventeen Alpha Hydroxyprogesterone Caproate May Cause Drug Interactions in Pregnant Women Based on Data in Primary Cultures of Human Hepatocytes. Presented at The Society for Gynecologic Investigation 61st Annual Scientific Meeting, Florence, Italy (Abstract S-089 in the final program).
- Lauren M Sacha Pharm.D.¹, Hari V Kalluri Pharm.D.², Amanda I Ingemi Pharm.D.³, **Heather J Johnson** Pharm.D.⁴, Douglas Landsittel PhD⁵, Michael A Shullo Pharm.D.⁴, **Raman Venkataramanan** PhD² Vitamin D Deficiency and Incidence of Infection in Adult Renal Transplant Recipients. World Transplant Congress, Philadelphia, May 2015.
- Alicia B. Lichvar PharmD, David P. Deen PharmD, **Heather J. Johnson** PharmD, Jennifer J. Bonner PharmD PhD, Geoffrey Bond MD, Guilherme Costa MD, Ruy Cruz Jr MD PhD, Kareem Abu-Elmagd MD PhD, and **Raman Venkataramanan** PhD Tacrolimus Trough Concentrations Increase in Intestinal Transplant Recipients During Episodes of Acute Cellular Rejection Presented at the ATC meeting in Philadelphia May 2015.
- Alicia B. Lichvar PharmD, David P. Deen PharmD, **Heather J. Johnson** PharmD, Jennifer J. Bonner PharmD PhD, Geoffrey Bond MD, Guilherme Costa MD, Ruy Cruz Jr MD PhD, Kareem Abu-Elmagd MD PhD, and **Raman Venkataramanan** PhD Tacrolimus Trough Concentrations Increase in Intestinal Transplant Recipients During Episodes of Acute Cellular Rejection Presented at the ACCP meeting in Nov 2014
- Omar M Young MD, Imam H Shaik PhD, Roxanna Twedt MD, Anna Binstock MD, Andrew D Althouse PhD, **Raman Venkataramanan PhD**, Hyagriv N Simhan MD MSCR, Harold Wiesenfeld MD, Steve N Caritis MD Pharmacokinetics of cefazolin prophylaxis in obese gravidae at time of cesarean delivery. SMFM meeting March 2015

UPMC Pharmacy Critical Care Group

Faculty

James C. Coons, PharmD, Associate Professor
 Neal J. Benedict, PharmD, Associate Professor
 Philip E. Empey, PharmD, PhD, Assistant Professor
 Bonnie A. Falcione, PharmD, Assistant Professor
 Sandy L. Kane-Gill, MS, PharmD, Associate Professor
 Thomas D. Nolin, PharmD, PhD, Assistant Professor
 Samuel M. Poloyac, PharmD, PhD, Professor
 Amy L. Seybert, PharmD, Associate Professor
 Pamela L. Smithburger, MS, PharmD, Associate Professor

Residents

Amanda Korenoski, PharmD, MHA, PGY2 Critical Care Resident
 Ryan Rivosecchi, PharmD, PGY2 Critical Care Resident
 Nathan Verlinden, PharmD, PGY2 Cardiology Pharmacy Resident

International Trainees-1 Year Program

Chai Ling Ong, MS

Graduate Students

Solomon M. Adams, PharmD

Shoroq Altawalbeh, PharmD

Kacey Anderson, BS

Fanuel Hagos, BS, MS

Lingjue Li, MS

Alexander Prokopienko, PharmD

Dustin Walsh, PharmD

Major Accomplishments

In FY15, School of Pharmacy faculty members were:

- Selected for continued service as Faculty for the American Society of Health-System Pharmacists (ASHP) Foundation Critical Care Trainee Program. **Benedict NJ**
- Appointed vice-chair for the Critical Care Practitioners as Educators Task Force for the Society of Critical Care Medicine, Chair of the ACCP Program Committee (2012-2014), and elected At-Large Member of the SCCM Council (2014-2017). **Kane-Gill S**
- Selected as a member of the Center for Critical Care Nephrology; Department of Critical Care Medicine, University of Pittsburgh School of Medicine. **Nolin T, Kane-Gill S**
- Awarded a National Institutes of Health grant 1 R01 GM107122-01A1 “Drug metabolizing enzyme and transporter function in chronic kidney disease.” Role PI; \$1.9 million direct costs; 2014-2019. **Nolin T.**
- Named an associate editor for the tenth edition of “Pharmacotherapy: A Pathophysiologic Approach.” **Nolin T**
- Promoted to Professor with Tenure, University of Pittsburgh, School of Pharmacy, Department of Pharmaceutical Sciences. **Poloyac S.**
- Named as a standing member to the Neurological Sciences and Disorders K, National Institutes of Health grant reviewer. **Poloyac S.**
- Elected as President of the ACCP Critical Care PRN. **Smithburger PL**
- Implemented the first International Advanced Clinical Training Program with Singapore. **Seybert AL, Smithburger PL, Coons JC, Kane-Gill S**

Awards

- American Association of Colleges of Pharmacy (AACCP) Innovations in Teaching Award. **Empey PE**
- Outstanding Scholarly Contribution Award, Rho Chi Society. **Empey PE**
- Society of Critical Care Medicine (SCCM) Patient and Family Support Specialty Award and invited oral presentation for this research. **Kane-Gill SL, Smithburger PL**

- SCCM, Clinical Pharmacy and Pharmacology Section Medication Safety Award. **Kane-Gill SL, Smithburger PL**
- American Society of Health-System Pharmacists (ASHP) Best Practice Award for the Impact of a Clinical Pharmacist Acid Suppression Therapy Management Program on Inappropriate Use in Intensive Care Unit and General Ward Patients. **Kane-Gill SL**
- American College of Clinical Pharmacy (ACCP) - Mentored the Best Student Poster Award, Characterization of delirium in a medical ICU that emphasizes frequent delirium screening. **Kane-Gill SL, Smithburger PL**
- 2015 Phi Lambda Sigma/Rho Chi Innovations in Teaching Award. **Poloyac S**

Selected Critical Care Publications

- **Adams SM, Anderson K, Coons JC, Smith RB, Meyer SM, Parker LS, Empey PE.** PGx Test2Learn™: Advancing pharmacogenomics education in the core PharmD curriculum through student personal genomic testing. *Am J Pharm Educ* 2015 (Accepted).
- **Benedict N, Felbinger M, Ridenour T, Anthes A, Altawalbeh S, Kane-Gill S.** Correlation of patient reported outcomes of sedation and sedation assessment scores in critically ill patients. *J Crit Care.* 2014;29(6):1132.e5-e9.
- **Buckley MS, Park AS, Anderson CS, Barletta JF, Gerkin R, O'Malley, Wicks LM, Kane-Gill SL.** Impact of a clinical pharmacist stress ulcer prophylaxis management program on inappropriate use in hospitalized patients. *Am J Med* 2015;128:905-913.
- **Callaway CW, Elmer J, Guyette FX, Molyneaux BJ, Anderson K, Empey PE, Gerstel SJ, Holquist K, Repine MJ, Rittenberger JC.** Dexmedetomidine reduces shivering during mild hypothermia in waking subjects. *PLOS One* 2015 (Accepted).
- **Crago EA, Sherwood PR, Bender C, Balzer J, Ren D, Poloyac SM.** Plasma estrogen levels are associated with severity of injury and outcomes after aneurysmal subarachnoid hemorrhage. *Biol Res Nurs* 2014, Dec 29 PMID: 25548393.
- **DiPoto JP, Buckley MS, Kane-Gill SL.** Evaluation of an automated surveillance system using trigger alerts to prevent adverse drug events in the intensive care unit and general ward. *Drug Saf* 2015;83:311-7.
- **Donnelly MK, Crago EA, Conley YP, Balzer JR, Ren D, Ducruet AF, Kochanek PM, Sherwood PR, Poloyac SM.** 20-HETE is associated with unfavorable outcomes in subarachnoid hemorrhage patients. *J Cerebral Blood Flow Metab* April 29, 2015; [Epub ahead of print].
- **Donnelly MK, Conley YP, Crago EA, Ren D, Sherwood PR, Balzer JR, Poloyac SM.** Genetic markers in the EET metabolic pathway are associated with outcomes in patients with aneurysmal subarachnoid hemorrhage. *J Cereb Blood Flow and Metab.* 2015; 35(2): 267-76. PMID: 25388680.
- **Falcione BA, Meyer SM.** Development of an antimicrobial stewardship-based infectious diseases elective that incorporates human patient simulation technology. *Am J Pharm Educ* 2014;78(8):151.

- Goldstein SL, **Nolin TD**. Lack of drug dosing guidelines for critically ill patients receiving continuous renal replacement therapy. *Clin Pharmacol Ther.* 2014;96(2):159-61.
- Hale GM, **Kane-Gill SL**, Groetzinger L, **Smithburger PL**. An evaluation of adverse drug reactions associated with antipsychotic use for the treatment of delirium in a medical intensive care unit. *J Pharm Practice* 2015; epub ahead of print
- Handler SM, **Kane-Gill SL**, Kellum JA. Optimal and early detection of acute kidney injury requires effective clinical decision support. *Nephrol Dial Transplant.* 2014;29:1803-1803
- Harris JR*, **Coons JC**. Ticagrelor use in a patient with a documented clopidogrel hypersensitivity. *Ann Pharmacother* 2014;48(9):1230-33.
- Jackson TC, Lina D, Janesko-Feldman K, Vagni VA, Dezfulian C, **Poloyac SM**, Jackson EK, Clark RSB, Kochanek PM. The nuclear splicing factor RNA binding motif 5 promotes caspase activation in human neuronal cells, and increases after traumatic brain injury in mice. *J Cerebral Blood Flow Metab* 2015, Jan 14 PMID: 25586139
- Jentzer JC, **Coons JC**, Link CB, Schmidhofer M. Pharmacotherapy update on the use of vasopressors and inotropes in the intensive care unit. *J Cardiovasc Pharmacol Ther* 2015;20(3):249-60.
- **Kane-Gill SL**, Sileanu F, Murugan R, Trietley G, Handler SM, Kellum JA. Risk factors for acute kidney injury in older adults with critical illness: A retrospective cohort study. *Am J Kidney Dis* 2015; epub ahead of print.
- **Kane-Gill SL**, Rubin E, **Smithburger PL**, Buckley MS, Dasta JF. The cost of opioid related adverse drug events. *J Pain Palliat Care Pharmacother* 2014; 28:282-93.
- **Kane-Gill SL**, Leblanc JL, Dasta JF, Devabhakthuni S for the Critical Care Pharmacotherapy Trials Network (CCPTN). A multicenter study of the point prevalence of drug-induced hypotension in the ICU. *Crit Care Med* 2014;42:2197-2203.
- Kochanek PM, Jackson TC, Ferguson NM, Carlson SW, Simon DW, Brockman EC, Ji J, Bayliff H, **Poloyac SM**, Wagner AK, Kline AE, **Empey PE**, Clark RS, Jackson EK, Dixon CE. Emerging therapies in traumatic brain injury. *Semin Neurol.* 2015 Feb;35(1):83-100. PMID: 25714870
- Margulies SS, Anderson G, Atif F, Badaut J, Clark RSB, **Empey PE**, Guseva M, Hoane M, Pauly J, Ragupathi R, Scheff S, Stein DG, Tang H, Hicks R. Combination therapies for traumatic brain injury: Retrospective Considerations. *J Neurotrauma.* 2015 May 13. PMID: 25970337
- **Nolin TD**, Aronoff GR, Fissell WH, et al. Pharmacokinetic assessment in patients receiving continuous RRT: perspectives from the kidney health initiative. *Clin J Am Soc Nephrol.* 2015;10(1):159-64.
- **Rivosecchi RM***, **Smithburger PL**, Svec SM, Campbell S, **Kane-Gill SL**. The effect of non-pharmacologic interventions to prevent the development of delirium: An evidence based systematic review. *Crit Care Nurse* 2015;35:39-49.

- Schwier NC*, **Coons JC**, Rao SK. Pharmacotherapy update of acute idiopathic pericarditis. *Pharmacotherapy* 2015;35(1):99-111.
- Sileanu F, Murugan R, Lucko N, Clermont G, **Kane-Gill SL**, Handler SM, Kellum JA. Acute kidney injury in “low-risk” patients in intensive care. *Clin J Am Soc Nephrol* 2015;10:187-196.
- Smith MA, Hibino M, **Falcione BA**, Eichinger KM, Patel R, **Empey KM**. Immunosuppressive aspects of analgesics and sedatives used in mechanically ventilated patients: an underappreciated risk factor for the development of ventilator-associated pneumonia in critically ill patients. *Ann Pharmacother* 2014;48(1):77-85.
- Wang T, **Seybert AL**, Hu C, Wu X, Chen Y, Guan X, Shi L. Development and Evaluation of the Application-based Case Study Program. *J Pharma Care Health Sys* 2015, May 22 (2:3): 138-143.
- **Smithburger PL**, Buckley MS, Lat I, Culver MA, Handler SM, Sokol S, **Kane-Gill SL**. A multicenter evaluation of off-label use and associated adverse drug reactions in adult medical intensive care units. *Crit Care Med* 2015; 43:1612-1621.
- **Verlinden NV***, **Coons JC**. Disopyramide for hypertrophic cardiomyopathy: a pragmatic reappraisal of an old drug. *Pharmacotherapy* 2015 (Accepted).
- Willyerd F, **Empey PE**, Philbrick A, Ikonovic M, Puccio A, Kochanek P, Okonkwo D, Clark RSB. Expression of ATP-binding cassette transporters B1 and C1 after severe traumatic brain injury in humans. *J Neurotrauma*. 2015 Apr 19. [Epub ahead of print]. PMID: 25891836.
- **Wong A***, **Benedict NJ**, Armahizer MJ, **Kane-Gill SL**. Evaluation of adjunctive ketamine to benzodiazepines for management of alcohol withdrawal syndrome. *Ann Pharmacother*. 2015;49:14-9.
- **Wong A***, **Benedict N**, **Kane-Gill S**. Multicenter evaluation of pharmacologic management and outcomes associated with severe resistant alcohol withdrawal. *J Crit Care* 2015;30:405-409.

Grants

- University of Pittsburgh Advisory Council on Instructional Excellence (ACIE) Grant Award. Using personal genome testing to teach pharmacogenomics in a large lecture course. Role: PI; \$18,708 direct costs; 2014-2015. **Empey PE, Coons JC, Smith R**
- University of Pittsburgh, Institute of Personalized Medicine/Clinical and Translational Science Institute demonstration project. PreCISE-Rx: Pharmacogenomics-guided care to improve the safety and effectiveness of medications. Role: PI \$679,500; 2014-2016. **Empey PE**
- McCune Foundation. Development of pharmacogenomics. Role: Co-I; 2015-2017. **Empey PE**
- National Institutes of Health – R01 LM011838-01 (Boyce). Addressing gaps in clinically useful evidence on drug-drug interactions. Role: Co-I; 2014-2018. **Empey PE**
- Mitochondrial Disease Foundation (Bell). Improving CNS delivery of brain antioxidants after acute metabolic decompensation in mitochondrial disease. Role: Co-I. **Empey PE**

- National Institutes of Health. Developing goal-oriented perfusion therapy for neurocardiac injury in sub-arachnoid hemorrhage. Role: Co-PI; 2/5/14 – 1/31/18. **Poloyac S**
- Department of Defense. Operation brain trauma therapy (Extended). Role: Co-I; 5/1/14 - 04/30/16. **Poloyac S**
- National Institutes of Health, KL2 TR000146. University of Pittsburgh Multidisciplinary Clinical Research Scholars Program – competitive extension. “Implications of hypothermia on drug transport.” Role: PI; 7/1/12-6/30/15. **Empey PE**

Selected Invited Presentations

- Integrated progress testing through blended simulation to assess clinical readiness. 13th Annual Safar Symposium, University of Pittsburgh; Pittsburgh, PA. **Benedict N**
- Select topics in prevention and supportive care in critical care patients. ASHP Critical Care Pharmacy Preparatory Review Course: Core Therapeutic Modules Series. **Benedict N**
- Sepsis for the critical care pharmacist. ASHP Critical Care Traineeship Program “Distance Training Webinar”; Pittsburgh, PA. **Benedict N**
- Curricular integration of virtual patients: eight years of simulation. Presented at AACP Annual Conference Innovations in Teaching Special Session; Grapevine, TX: July 29, 2014. **Benedict N**
- Pharmacogenomics applications and opportunities for pharmacists: focus on patients with cardiovascular disease. Presented at Pennsylvania Pharmacists Association (PPA) 2015 Mid-Year Conference; Harrisburg, PA: February 21, 2015. **Coons JC, Empey PE**
- Pharmacogenomics in critical care. SCCM Critical Care Congress; San Francisco, CA. January 2014. **Empey P**
- Pharmacogenomics: Pitt’s prescription for personalized medicine. University of Pittsburgh Winter Academy; West Palm Beach, FL and Naples, FL: March 2015. **Empey PE**
- Testing considerations for the application of pharmacogenomics. ASHP Midyear Meeting; Anaheim, CA. December 2014. **Empey PE**
- Pharmacological implication of targeted temperature management. Neurocritical Care Society; Seattle, WA. September 2014. **Empey PE**
- Improving medication safety strategies in the ICU: Maximizing adverse drug event surveillance with automation. 44th SCCM Critical Care Congress; San Francisco, CA: January 2015. **Kane-Gill SL**
- What do we know about patients at risk for drug associated AKI? 4th AKI Symposium, University of Pittsburgh; Pittsburgh, PA: October 2014. **Kane-Gill SL**
- Quantitative lipidomics in aneurysmal subarachnoid hemorrhage. Presented at SCCM Annual Meeting; Phoenix, AZ: January 2015. **Poloyac S**

- Pharmacokinetics in CRRT: from research to regulatory policy. 4th Annual AKI symposium, University of Pittsburgh; Pittsburgh, PA: October 2014. **Nolin T**
- Study design considerations: in vivo studies in humans on CRRT. Kidney Health Initiative Open Workshop to present recommendations from the KHI Project titled “Standardized pharmacokinetic assessment in patients receiving continuous renal replacement therapy (CRRT).” American Society of Nephrology and the U.S. FDA, Kidney Week. Philadelphia, PA. November 2014. **Nolin T**
- Simulation in Pharmacy Education-European Association of Hospital Pharmacists 20th Annual Congress, Hamburg, Germany, March 2015. **Seybert AL**
- Get Smart: Know When Antibiotics Work” Public Health Outreach Project, Pennsylvania Department of Health, Harrisburg, PA. **Falcione BA**

UPMC Infectious Diseases and Antibiotic Management Program (AMP)

Faculty

Brian A. Potoski, PharmD, Associate Professor and Associate Director AMP

Bonnie A. Falcione, PharmD, Assistant Professor, AMP Pharmacist

Resident

Deanna Buehrle, PharmD, PGY2 Infectious Diseases Pharmacy Resident

Selected Publications

- Pogue JM, **Potoski BA**, Postelnick M, Mynatt RP, Trupaino DP, Eschenauer GA, Kaye KS. Bringing the “Power” to Cerner’s Powerchart for Antimicrobial Stewardship. *Clin Infect Dis*. 2014;59:416-24.
- Eschenauer GA, Kwak EJ, Humar A, **Potoski BA**, Clarke LG, Shields RK, Abdel-massih R, Silveira FP, Vergidis P, Clancy CJ, Nguyen MH. Targeted versus universal prophylaxis among liver transplant recipients. *Am J Transplant*. 2015;15:180-9.
- Shields RK, Nguyen MH, **Potoski BA**, Press EG, Chen L, Kreiswirth BN, Clarke LG, Eschenauer GA, Clancy CJ. Doripenem MICs and ompK36 porin genotypes of sequence type 258, KPC-producing *Klebsiella pneumoniae* may predict responses to carbapenem-colistin combination therapy among patients with bacteremia. *Antimicrob Agents Chemother*. 2015;59:1797-801.
- **Falcione BA**, Meyer SM. Development of an antimicrobial stewardship-based infectious diseases elective that incorporates human patient simulation technology. *Am J Pharm Educ*. 2014;78:151.
- Hatfield J, **Potoski BA**. Facing concerns about the Ebola virus in the community setting. *Inside Patient Care: Pharmacy & Clinics*. 2014;2:10-12.

UPMC Health System Formulary Management and Drug Use Policy

School of Pharmacy faculty members led the development of medication formulary management and drug use policy/protocol work to create evidence-based guidelines that promote safe and cost-effective use of medications for inpatients at UPMC. Continuing to build on the rigorous foundation of the nationally recognized UPMC formulary management work, 15 hospitals of the UPMC are integrated as part of the UPMC System Pharmacy Service Line infrastructure. Faculty and hospital-based clinical pharmacists across UPMC sites are critical in designing and implementing strategies to incorporate guidelines into daily practice. Pharmacists at UPMC, including the clinical faculty, unit-based clinical pharmacists, operations-based pharmacists, and postgraduate year (PGY) 1 and PGY2 hospital-based UPMC residents use these guidelines in the interdisciplinary care of patients throughout the UPMC System.

Faculty

Susan J. Skledar, MPH, Associate Professor

Colleen M. Culley, PharmD, Associate Professor

Major Accomplishments

During FY15, School of Pharmacy faculty members achieved the following:

- In the past year, developed UPMC system-wide medication use guidelines, protocols, and policies, including the following:
 - **155** guidelines/reviews and 6 electronic health record protocols for medication use across UPMC hospitals. **Skledar SJ, Culley CM**, other faculty, clinical pharmacists, and PGY1/PGY2 residents mentored by the faculty.
 - **9** medication therapeutic class/ safety interchanges to ensure medication safety and promote cost-effectiveness for UPMC patients. **Skledar SJ, Culley CM**
- Led the revision and/or creation of 10 UPMC-wide hospital policies, which are guidance documents for pharmacy institutional practice and meet standards of internal and external regulatory and accreditation bodies. **Skledar SJ**
- Created a new UPMC system-wide policy for management of intravenous medication extravasation, which must be managed safely and swiftly to prevent skin and limb damage. **Skledar SJ**
- Collaborated with interdisciplinary clinicians and informatics specialists across the UPMC to create electronic health record rules and alerts based on formulary decisions that resulted in cost-avoidance exceeding \$2.4 million for fiscal year 2015. **Skledar SJ, Culley CM**
- Mentored 11 Carnegie Mellon University Heinz College graduate students in data analytics and health policy on a project entitled, “Comparative effectiveness of prophylactic anticoagulation modalities in orthopedic joint replacement surgery: an observational, retrospective analysis.” Post-surgical thrombotic and bleeding occurrences were quantified and evaluated to recommend the safest preventative anticoagulation regimens at UPMC. **Skledar SJ, Culley CM**
- Served as Chair of the American Society of Health-System Pharmacists’ (ASHP) Section of Inpatient Care Practitioners for 2014-2015. **Skledar SJ**

- Invited member of the Pharmacy Quality Alliance (PQA) National Quality Measures Update Panel to help ensure PQA-endorsed measures align with current evidence and remain viable in the accountable care and health care marketplace. **Skledar SJ**
- Educated pharmacists preparing to obtain their national critical care board certified pharmacotherapy specialist (BCPS) certification in the topic area of Pharmacy Practice Management at a two-day ASHP-sponsored review course. **Skledar SJ**
- Evaluation of adverse event detection system developed as part of an AHRQ-sponsored clinical trial in the UPMC-owned skilled nursing facilities using TheraDoc®, clinical surveillance system. **Culley CM** (UPMC Corporate Pharmacy Supertrainer)

Selected Publications

- **Skledar SJ**, Doedyns A, Yourich BE. Building an outpatient cancer center pharmacy program across a tri-state region. *Am J Health-Syst Pharm* 2015 Jan 15; 72: 127-132.
- **Skledar SJ**, Corman SL, Smitherman TC. Addressing innovative off-label medication use at an academic medical center. *Am J Health-Syst Pharm* 2015 Mar 15; 72:469-77
- Henaio JP, Peperzak KA, **Lichvar AB (PGY1 Resident)**, Orebaugh SL, **Skledar SJ**, Williams BA. The incidence of extrapyramidal symptoms following administration of oral perphenazine 4 or 8 mg: an 11-year retrospective analysis. *Eur J Anaesthesiol* 2014; 31: 1-5.
- Handler SM, Cheung PW, **Culley CM**, et al. Determining the incidence of drug-associated acute kidney injury in nursing home residents. *J Am Med Dir Assoc.* 2014;15(10):719-24. Epub 2014 May 10.
- Boyce RD, Perera S, Nace D, **Culley CM**, Handler SM. Laboratory monitoring adverse drug event alert communication preferences of nursing home physicians. *Appl Clin Inform.* 2014;5(4):895-906.

Selected Invited Presentations

- “Delivery System Integration for Formulary and Decision Support.” World Congress Summit to Improve Patient Access by Leveraging EHRs and Quality Initiatives. Philadelphia, PA. July 15, 2014. **Skledar SJ**
- “Mentoring: What’s It All About?” UPMC St. Margaret’s Preceptor Development Series. Continuing Education Session. ACPE Program #0481-0000-14-038-L04-P. UPMC St. Margaret’s, University of Pittsburgh Medical Center, Pittsburgh PA. October 7, 2014. **Skledar SJ**
- Change across a health system via a progressive pharmacy and therapeutics committee. **ASHP 49th Midyear Clinical Meeting, Anaheim, CA.** December 9, 2014. **Skledar SJ, Culley CM**
- “Pharmacy Practice Administration and Development: Part I.” ASHP 2015 Critical Care Pharmacy Specialty Certification Review Course, Denver, CO. ASHP Summer Meeting 2015. June 7, 2015. **Skledar SJ**

- “Pharmacy Practice Administration and Development: Part II.” ASHP 2015 Critical Care Pharmacy Specialty Certification Review Course, Denver, CO. ASHP Summer Meeting 2015. June 7, 2015. **Skledar SJ**

Selected Poster Presentations

- The utilization of octreotide long-acting release (LAR) at a tertiary care health system. American Society of Health-System Pharmacists (ASHP) 49th Midyear Clinical Meeting. Anaheim, CA; 2014 Dec 7. **Skledar SJ, Culley CM, Hale GH (PGY1 Resident).**
- Development of a system-wide hospital policy for anticoagulation laboratory monitoring. ASHP 49th Midyear Clinical Meeting, Anaheim, CA. December 8, 2014. **Zavilla CM (student pharmacist), Skledar SJ.**
- Algorithm for continuation of specialty medications with extended dosing intervals during inpatient stay. ASHP 49th Midyear Clinical Meeting, Anaheim CA. December 9, 2014. **Williams L (student pharmacist), Skledar SJ.**
- Developing a health system-wide alteplase dosing protocol for catheter clearance. Academy of Managed Care Pharmacists (AMCP) 27th Annual Meeting. San Diego CA. April 9, 2015. **Milovac B (student pharmacist), Skledar SJ, Campbell RC (Preceptor).**
- Detecting drug-associated hypoglycemia using a clinical surveillance system in nursing homes. Poster presented at 2015 Research Day sponsored by the Aging Institute of UPMC Senior Services and the University of Pittsburgh. Pittsburgh, PA; 2015 Mar 31. [Pharmacy-24] **Culley CM, Perera S, Marcum ZA, Kane-Gill SL, Handler SM.**

Geriatrics (Benedum and Shadyside Senior Care Institute) Program

The mission of care is the:

- identification and resolution of drug-related problems in the elderly population which is highly susceptible to adverse drug outcomes;
- enhanced adherence of medication regimens through education of patients and family members; and
- improved drug prescribing by physicians through pharmacy faculty advice and intervention.

Faculty

Christine M. Ruby-Scelsi, PharmD, Assistant Professor

Joseph T. Hanlon, PharmD, MS, Professor (secondary pharmacy appointment)

Pharmacy Fellow

Jennifer Greene Naples, PharmD

Major Accomplishments

During FY15, School of Pharmacy faculty members achieved the following:

- Received full American Society of Health System Pharmacy (ASHP) Accreditation for one of twelve post-graduate residency programs nationally in geriatric pharmacy practice, successfully graduating the second PGY2 geriatric resident in 2014. **Ruby CM.**

- Created one of two geriatric pharmacy fellowship programs nationally; successfully recruiting the third fellow for this T-32 funded program. **Hanlon JT and Ruby CM.**
- The Geriatric clinics are models for interprofessional geriatric pharmacy practice. Both have received Level 3 Patient Centered Medical Home (PCMH) status by the National Committee for Quality Assurance (NCQA). The pharmacists practice in face-to-face scheduled office encounters for acute and chronic conditions and telephonic care for transitions-of-care encounters. **Ruby CM.**
- Led a pharmacist driven transitions- of- care program focusing on Senior Care patients discharged from UPMC affiliated nursing homes (such as Heritage, Charles Morris, Canterbury) and several non-UPMC facilities (such as Asbury Heights and Health South). This program includes medication reconciliation, comprehensive medication review, sharing of discharge information across sites, and confirmation of home care services. **Ruby CM.**
- Added new sites to the Senior Care Transitions of Care program (Arden Court and Harmarville) facilities and provided at least 100 patient transition-of-care encounters. **Ruby CM.**
- Participated as a pharmacy faculty member for the HRSA-funded Geriatric Education Center at the University of Pittsburgh. **Ruby CM.**
- Initiated two quality improvement projects relating to the transition-of -care protocols at Senior Care. **Ruby CM.**
- Organized and led three pharmacist provided immunization clinics at Senior Care. **Ruby CM.**
- Mentored the geriatric pharmacy resident's quality improvement project which was subsequently utilized for our Level 3 PCMH reaccreditation. **Ruby CM.**
- Developed three student specific Special Topics elective courses focusing on transitions-of -care. **Ruby CM.**
- Trained numerous pharmacy learners (3 PGY2, 2 PGY1, 16 APPE, 8 IPPE and 6 Special Topic students) and medical residents over the last 2 years. **Ruby CM.**
- Mentored pharmacy students who created several medication education materials for geriatric patients and in services for house staff and nurses. **Ruby CM.**
- Abstract referee, American Association of Colleges of Pharmacy Annual Meeting. July 2015. **Ruby CM.**

Awards

- Elected and served as cabinet Secretary for the Geriatric Special Interest Group (SIG) of the American Association of Colleges of Pharmacy for a 2-year term. **Ruby CM.**
- Elected and served as the faculty delegate for the American Association of Colleges of Pharmacy Annual Meeting, July 2015. **Ruby CM.**
- Inducted as a life-time fellow of the American Society of Consultant Pharmacists. **Ruby CM.**

Selected Presentations- Invited Speaker

- Interprofessional Case Discussion. An invited speaker for the Interprofessional Forum, University of Pittsburgh Schools of the Health Sciences, Pittsburgh, PA; October 24, 2014. **Ruby CM.**
- Inappropriate Medications in the Older Adult. An invited speaker for the Advances in Geriatric Health Symposium sponsored by the Aging Institute; Robert Morris University; Corapolis, PA; May 20, 2015. **Ruby CM.**
- Concordance Among Anticholinergic Burden Scales. Won best Epidemiology paper at the American Geriatrics Society Annual Meeting, May 2015. **Naples JG and Hanlon JT.**

Selected Presentations

- Conn KM, Kaashyap H, **Ruby CM.** Quality Improvement of Transition of Care Follow-up Process. Presented at the 9th Annual Aging Institute Research Day, Pittsburgh, PA; March 31, 2015.
- Kaashyap, H, Conn KM, **Ruby CM.** Development of Medication Tracking Tool for Transitions of Care. Presented at the 9th Annual Aging Institute Research Day, Pittsburgh, PA; March 31, 2015.
- Kaashyap H, Connor SE, **Ruby, CM.** Complexities with Transitions of Care in Older Adults. Presented at the Health Disparities Poster Session at the Graduate School of Public Health, Pittsburgh, PA April 2015.

Selected Publications

- **Ruby CM** and **Nolin T.** Geriatric Pharmacotherapy. In: Robnett and Chop ed. *Gerontology for the Health Care Professional.* 2nd Ed. Burlington: Jones and Bartlett, 2014;3:171-189.
- Patel RS, **Marcum ZA**, Peron EP, **Ruby CM.** Prevalence of and Factors Associated with Therapeutic Failure-Related Hospitalizations in the Elderly. *Consult Pharm* 2014;29:376-386.
- Gavini M*, Gennari AS, **Ruby CM.** Perceptions of care among high-risk geriatric patients, families or caregivers in a patient-centered medical home. *Consult Pharm* 2015;29:153-62.
- **Naples, JG, Marcum ZA**, Perera S, Gray SL, Newman AB, Simonsick EM, Yaffe K, Shorr RI, and **Hanlon JT.** Concordance of anticholinergic burden scales. *J Amer Geriatr Soc* (accepted).

Pharmacy Innovation Program

We have spent the past three years creating the foundation for a Pharmacy Innovation Lab that we described in Long Range Plan 2018, which stated that:

We will create a Pharmacy Innovations Lab that will be the incubator and concept-testing environment where multidisciplinary teams come together to address complex problems of medication use.

We believe that bringing together expertise and perspectives from the many disciplines, including those external to health, sparks innovation and leads to novel solutions to complex problems.

We have developed a curriculum that works and engage students in developing innovations through an innovation cycle. We know our innovation cycle works based on the successes of the initial cohort of ten students. Individually, our students/graduates are starting a company, developing serious games for delivering educational content, have developed an “app,” creating a network of pharmacy providers throughout the Commonwealth, and created a training program for health care professionals to learn to apply pharmacogenetics to personalize medication therapy. Our focus, whether in education or health care delivery, is to enhance the patient experience and empower patients to participate in their care and make healthy choices

In FY15, the innovation laboratory expanded during the year to become an official program within the School of Pharmacy. The curriculum for all students will begin in the P1 year with an introduction to creativity and design thinking. Students will also be invited to join the innovation laboratory to develop ideas and products outside of formal classes. During the P2 year, all students will propose new patient services or ways to improve patient services in community pharmacy as part of their experiential learning curriculum. At the end of the P2 year, students will have the opportunity make a pitch for funding for their project. Successful projects will receive funding to create a prototype of their idea during their P-3 year. The program will be fully implemented in the Spring Semester 2016.

Faculty

Ameer Ali, PharmD

Philip Empey, PharmD, PhD

Melissa McGivney, PharmD

Randall Smith, PhD

Post-Doctoral Fellow

Ravi Patel, PharmD

Major Accomplishments

During FY15, the Pharmacy Innovation Program:

- Formed new partnerships for working on innovations with:
 - School of Business,
 - School of Engineering
 - Computer Science Program
 - School of Public Health
 - School of Information Sciences.

- Initiated a collaborative project with the School of Information Sciences to redesign the Drug Development 1 course into a semester-long drug development game with a target of January 2016 for implementation.
- Created and implemented the Innovation Fellowship, with Ravi Patel, PharmD, as the first Innovation fellow.
- Created a development plan with PittPharmacy alumnus, Jim Mastrian and advisory board. Developed philanthropy and corporate partnerships strategy to fund the program.
- Garnered support from Skipta, the first corporate sponsor, which has alumnus Ted Search, PharmD as its CEO, CEO of Skipta.
- Engaged 13 P3 students in a two semesters of innovation in a curriculum dedicated to teaching creativity, design thinking, and new technologies.
- Engaged one second-year student pharmacist to take a 3-credit special topics course on Innovation in healthcare.
- Created a concept video demonstrating the potential role of GoogleGlass in a community pharmacy setting. The team met with Google engineers to demonstrate the power of technique.
- Presented a fall workshop for students to learn more about Innovation was provided to all students through a workshop in the fall, attended by thirty students across all years.
- Partnered with UPMC Enterprises and Center for Connected Medicine; five P4 students completed elective rotations under the supervision of Program faculty.
- Arranged for one P4 student to participate in a blended rotation between Presbyterian Pharmacy and UPMC's Technology Development Center to manage the development of an education tool for new Hospital Pharmacy employees.
- Arranged for site visits that included all innovation laboratory students to:
 - Carnegie Mellon University Entertainment Technology Center to learn about new engaging technology presented through games.
 - UPMC Technology Development Center to understand how software is developed.
 - TechShop (Bakery Square), where students had access for a year to test the tools for prototyping in the maker space.

Securing an Adequate Resource Base





Securing an Adequate Resource Base

Achieving the vision of the School of Pharmacy requires a financial and space resource base that supports faculty, staff, and students in their endeavors. Because the people of the School of Pharmacy are one of its greatest resources, information about faculty, staff, and alumni appears in this section.

We will partner with our stakeholders and communities to develop the resources to advance our mission.

RESOURCES BY THE NUMBERS FOR FY15

- **\$22.8 million:** The total School of Pharmacy expenditures in FY15 from all sources.
- **\$24.07 million:** The market value of the School's endowment at the end of FY15.
- **\$1,168,319:** Gifts in FY15; **\$186,519** from annual gifts.
- The School of Pharmacy has an allocation of and/or leases **93,624 SF** of space in **nine (9) locations** in Oakland, the South Side, and the East End.
- **\$244 per SF:** Efficiency measured as expenditures divided by total number of square feet occupied.
- In FY15, the School of Pharmacy had **77 full-time faculty members** who received **14** awards for their accomplishments, 9 of which are national or regional awards.

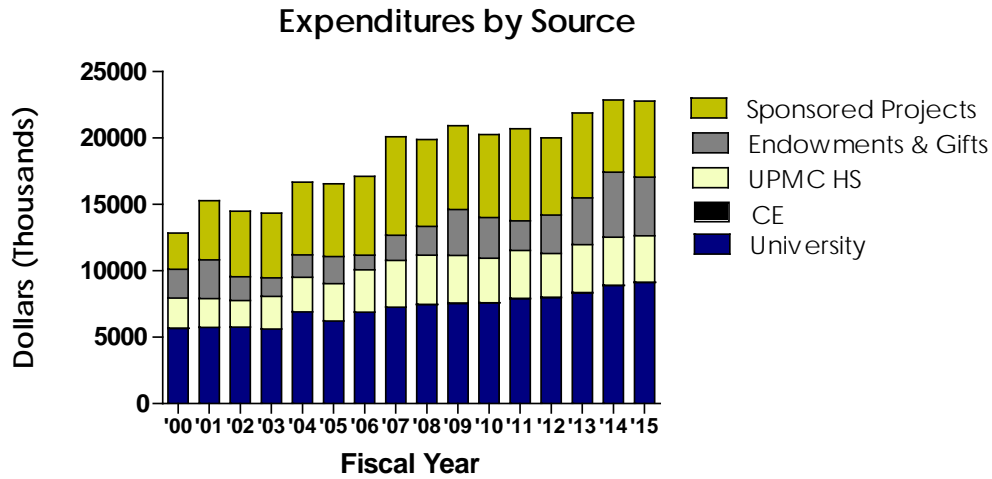
Of our 77 faculty members,

- **16 (20%)** have been elected to fellowship in one or more organizations.
- **23 (28.8%)** are board certified.
- **36 (45.0%)** are board certified, fellows, or both.
- **69:** The number of staff, of whom 31 are administrative and 38 are research
- Number of living alumni: **5,147**
- The School of Pharmacy's alumni ranked:
 - **#1** in life memberships in the Pitt Alumni Association in schools and programs with more than 100 alumni.
 - **#2** among all University schools and programs in alumni engagement.
- **33.61 percent** of the alumni were engaged with the School of Pharmacy and/or University in some way.
- **8** major print communications were each mailed to **6,100** stakeholders and 8 others to a more limited distribution list.
- **5,760** users visited the School's Web site monthly (average of 12 months).

FINANCIAL RESOURCES

Budget

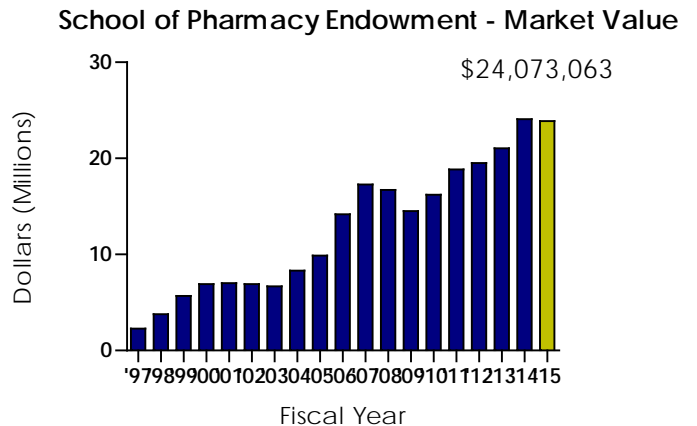
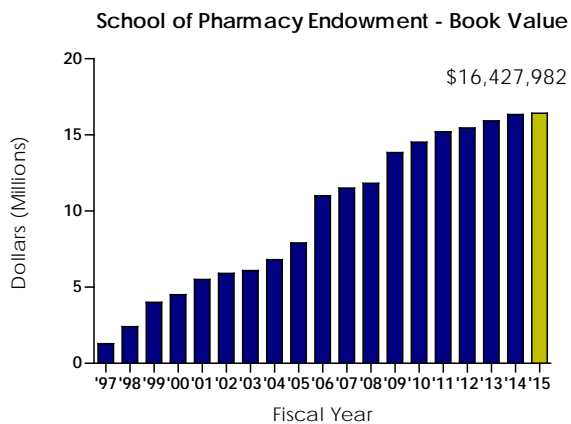
Sources of funding for the School of Pharmacy include allocation from the University of Pittsburgh, UPMC, continuing education and auxiliary accounts, gifts and endowments, and sponsored project awards. The graph below represents financial expenditures for fiscal years '00 through '15



The School of Pharmacy’s total expenditures are 1.4 times higher in FY15 (\$22,785,329 million) than they were in FY05 (\$16,547,383). Sponsored projects accounted for 25% of the expenses in FY15 and 33% in FY05. Together, the University (40%), sponsored project awards (25%), and UPMC (15%) accounted for over 80% of the School’s funding in FY15.

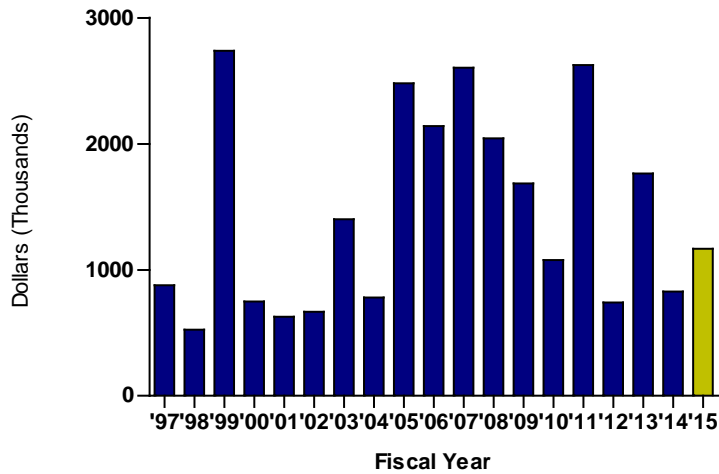
Institutional Advancement

The value of the School of Pharmacy is recognized in many ways, including philanthropic support.



In FY15, the School of Pharmacy received charitable gifts, pledges, and grants totaling \$1,168,319 from a total of 640 individuals, foundations, corporations, and other organizations. Of the total, \$43,322 was from corporations and organizations and was primarily designated to benefit technological renovations and research.

Total Gifts & Pledges by Year

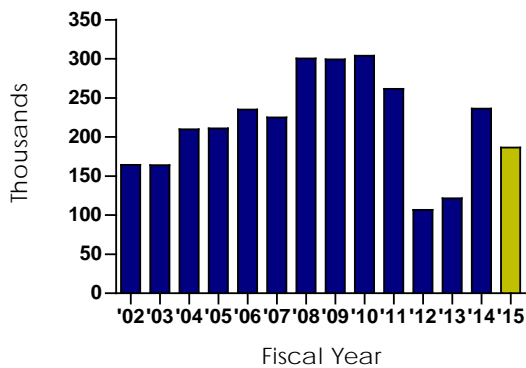


FY15 Giving to the School of Pharmacy by Source

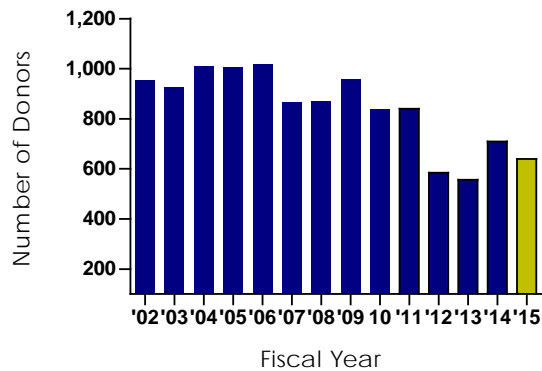
	Alumni	Foundations	Corporations	Organizations	Friends
Amount	\$859,488	\$232,969	\$40,827	\$2,495	\$32,540
Percentage	73.5%	19.94%	3.49%	.21%	2.7%

In spite of an increase in total gifts & pledges from the previous year, the graphs below demonstrate a decrease in total annual gifts (\$186,519) and in annual donors (640 donors).

Annual Gift Amount



Annual Donors



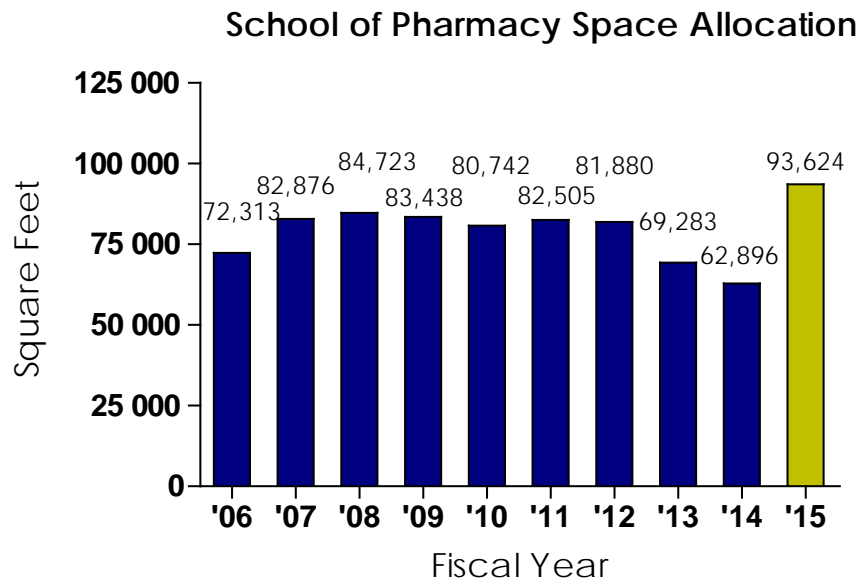
PHYSICAL FACILITIES

At the close of FY15, the School of Pharmacy occupied a total of 93,624 SF, including:

- 56,625 SF in Salk Hall*
- 22,852 SF in Salk Pavilion* (May occupancy)
- 1,561 SF Commons in Salk Pavilion
- 3,607 SF in BST III**
- 1,366 SF (leased) The Offices at Baum
- 3,691 SF (leased) in Birmingham Towers
- 2,074 SF (leased) in Parkvale Building
- 1,091 SF in Falk Clinic
- 757 SF in South Presby Tower

*University space
** Leased University space

Space allocation to pharmacy increased significantly in FY15. The increase in space largely reflects the impact of the opening of Salk Pavilion, which we began occupying in May, 2015.

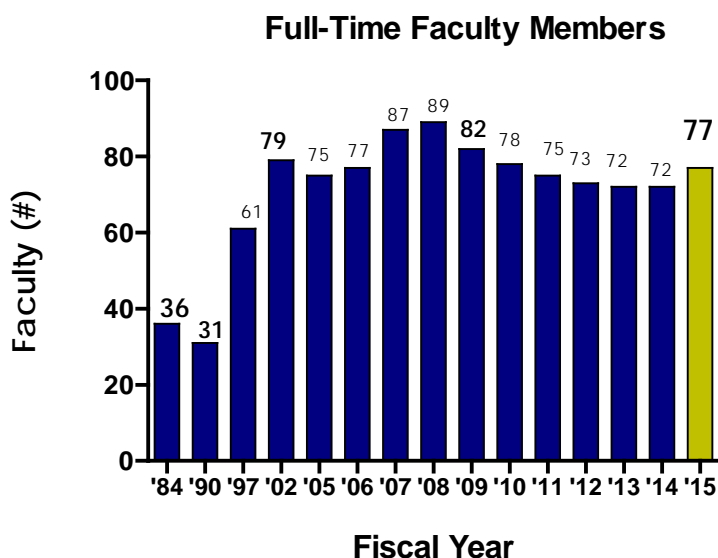


THE RESOURCE OF PEOPLE

We formally recognize that the people of the School are its most valuable resource, and therefore include people in the Resource Section.

Faculty

Seventy-seven full-time and six part-time faculty members comprise the School of Pharmacy, all of whom hold faculty appointments in either the Department of Pharmaceutical Sciences or the Department of Pharmacy and Therapeutics. The changes in number of faculty since 1984 are shown in the graph.



In the Department of Pharmaceutical Sciences:

- Da Yang, PhD was recruited as an assistant professor (tenure stream) from the UT M.D. Anderson Cancer Center, TX; Terrence McGuire, PhD was recruited as a Research Assistant Professor to fill the role of Scientific Administrator for Dr. Xiang-Qun (Sean) Xie's NIH P30 Center grant.
- Samuel M. Poloyac, PharmD, PhD, was promoted to professor.
- Haitao Yang, PhD took a position at the University of Florida.
- Randy Juhl, PhD retired from the faculty and his position as vice chancellor.

In the Department of Pharmacy and Therapeutics:

- Irene Gathuru, PhD, Sean Kim, PhD and Lindsay Lippman, PharmD left the University.
- James Stevenson, PharmD and Bridget Walker, MBA joined the faculty
- Thao Hyunh, PharmD and Amanda Korenoski, PharmD were recruited to join the faculty.
- Lauren Jonkman, PharmD was promoted to assistant professor.
- Tanya Fabian and Pamela Smithburger, PharmD were promoted to associate professor.
- Joshua Thorpe, PhD, associate professor, was awarded tenure.

Full-Time Faculty Rank by Department of Primary Appointment*

Faculty Rank	Pharmaceutical Sciences	Pharmacy and Therapeutics	Total for School of Pharmacy
Professor	15	3	18
Associate Professor	3	17	20
Assistant Professor	7	23	30
Instructor	0	2	2
Research Professor	1	0	1
Research Associate Professor	1	0	1
Research Assistant Professor	5	0	5
Visiting Research Assistant Professor	1	0	1
All Faculty	32	45	77

*Part-time Faculty (numbers not in table) include:
 Department of Pharmaceutical Sciences: 3
 Department of Pharmacy and Therapeutics: 3

In FY15, School of Pharmacy faculty members earned a total of 14 major awards and one recognition for their work. Details of the awards are in the table. The categories of awards/honors are research (5), education (3), practice (4), and service (3).

FY15: Faculty Awards, Honors, and Recognitions

Faculty Member	Award	Organization
Neal J. Benedict	Innovations in Teaching Award	American Association of Colleges of Pharmacy (AACP)
Lucas A. Berenbrok	2015 Faculty of the Year	University of Pittsburgh School of Pharmacy APhA-ASP Chapter
Phillip E. Empey	Innovations in Teaching Award	American Association of Colleges of Pharmacy (AACP)
Christopher Ensor	2015 Preceptor of the Year	University of Pittsburgh School of Pharmacy
Tanya J. Fabian	Rising Star Award	University of Pittsburgh School of Pharmacy Alumni Board
Sandra Kane-Gill	Clinical Pharmacy and Pharmacology Section Medication Safety Award	Society of Critical Care Medicine (SCCM)
	Clinical Pharmacy and Pharmacology Section Patient Safety Technology Award	Society of Critical Care Medicine (SCCM)
Olufunmilola K. Odukoya	Inaugural New Investigator Small Grant Award	Academy Health
Samuel M. Poloyac	PLS/Rho Chi Innovations in Teaching Award	University of Pittsburgh, PLS/Rho Chi
James J. Pschirer	Stanford Cohen Teacher of the Year Award	University of Pittsburgh School of Pharmacy
Lisa C. Rohan	Grantee Spotlight	Bill and Melinda Gates Foundation
Pamela L. Smithburger	Critical Care Practice and Research Network Leadership Award	American Association of Colleges of Pharmacy (AACP)
	Patient and Family Support Specialty Award	Society of Critical Care Medicine (SCCM)
	Clinical Pharmacy and Pharmacology Section Medication Safety Award	Society of Critical Care Medicine (SCCM)
Melissa Somma McGivney	APhA-APPM Presentation Merit Award	American Pharmacists Association (APhA)
	Chancellor's Distinguished Teaching Award	University of Pittsburgh
Raman Venkataramanan	Graduate Faculty of the Year	University of Pittsburgh School of Pharmacy
Xiang-Qun Xie	Outstanding Research Achievement Award in Drug Discovery and Development interface (Allergan)	American Association of Pharmaceutical Sciences (AAPS)

Fellowships in Organizations and Board Certification

Election to fellowship and board certification are two characteristics of faculty members who have distinguished themselves. Of the 80 faculty members, 16 (20.0%) have been elected to fellowship in one or more organization, 23 (28.8%) are board certified, and 36 (45.0%) are elected fellows, board certified, or both. The names, letters indicating the fellowship, and department of affiliation are shown in the table. The organization of the fellowship is indicated at the first use of the initials in the table.

FY15: Faculty Elected to Fellowship in Professional or Scientific Organizations

Name	Fellowship		Department
Kim Coley	FCCP	American College of Clinical Pharmacy	Pharmacy and Therapeutics
Barry Gold	AAAS	American Association for the Advancement of Science	Pharmaceutical Sciences
Donna Huryn	FACS	American Chemical Society	Pharmaceutical Sciences
Randy Juhl	FAPhA	American Pharmacists Association	Pharmaceutical Sciences
Sandra Kane-Gill	FCCM	American College of Critical Care Medicine	Pharmacy and Therapeutics
	FCCP	American College of Clinical Pharmacy	
Patricia Kroboth	FCCP	American College of Clinical Pharmacy	Pharmaceutical Sciences
	FAAPS	American Association of Pharmaceutical Scientists	
Melissa Somma McGivney	FCCP	American College of Clinical Pharmacy	Pharmacy and Therapeutics
	FAPhA	American Pharmacists Association	
Thomas Nolin	FCCP	American College of Clinical Pharmacy	Pharmacy and Therapeutics
	FCP	American College of Clinical Pharmacology	Pharmacy and Therapeutics
	FASN	American Society of Nephrology	Pharmacy and Therapeutics
Samuel M. Poloyac	FCCM	American College of Critical Care Medicine	Pharmaceutical Sciences
Christine Ruby-Scelsi	FASCP	American Society of Consultant Pharmacists	Pharmacy and Therapeutics
Paul Schiff	FAPhA	American Pharmacists Association	Pharmaceutical Sciences
	FAAPS	American Association of Pharmaceutical Scientists	
Amy Seybert	FASHP	American Society of Health-System Pharmacists	Pharmacy and Therapeutics
	FCCP	American College of Clinical Pharmacy	
Susan Skledar	FASHP	American Society of Health-System Pharmacists	Pharmacy and Therapeutics
Randall Smith	FAAPS	American Association of Pharmaceutical Scientists	Pharmaceutical Sciences

Name	Fellowship		Department
Ralph Tarter	FAPS	American Psychological Society	Pharmaceutical Sciences
	FAPA	American Psychopathological Association	
Raman Venkataramanan	FACCP	American College of Clinical Pharmacology	Pharmaceutical Sciences
	FAAPS	American Association of Pharmaceutical Scientists	

FY15: Faculty Board Certifications

Name	Certification		Department
Sherrie Aspinall	BCPS	Pharmacotherapy	Pharmacy and Therapeutics
James Coons	BCPS (AQ-CV)	Pharmacotherapy (Added Qualification in Cardiology)	Pharmacy and Therapeutics
Colleen Culley	BCPS	Pharmacotherapy	Pharmacy and Therapeutics
Amy Calabrese Donihi	BCPS	Pharmacotherapy	Pharmacy and Therapeutics
Scott Drab	CDE	Diabetes Educator	Pharmacy and Therapeutics
	BC-ADM	Advanced Diabetes Management	
Phillip Empey	BCPS	Pharmacotherapy	Pharmacy and Therapeutics
Christopher R. Ensor	BCPS (AQ-CV)	Pharmacotherapy (Added Qualification in Cardiology)	Pharmacy and Therapeutics
Tanya Fabian	BCPP	Psychiatric Pharmacy	Pharmacy and Therapeutics
Bonnie Falcione	BCPS (AQ-ID)	Pharmacotherapy (Added Qualification in Infectious Disease)	Pharmacy and Therapeutics
Roberta Farrah	BCPS	Pharmacotherapy	Pharmacy and Therapeutics
Deanne Hall	CDE	Diabetes Educator	Pharmacy and Therapeutics
	BCACP	Ambulatory Care Pharmacy	
Heather Johnson	BCPS	Pharmacotherapy	Pharmacy and Therapeutics
Lauren Jonkman	BCPS	Pharmacotherapy	Pharmacy and Therapeutics
Karen Pater	BCPS	Pharmacotherapy	Pharmacy and Therapeutics
	CDE	Diabetes Educator	
Brian Potoski	BCPS (AQ-ID)	Pharmacotherapy/Added Qualification in Infectious Diseases	Pharmacy and Therapeutics
Jennifer A. Pruskowski	BCPS	Pharmacotherapy	Pharmacy and Therapeutics
	CGP	Geriatric Pharmacist	
Christine Ruby-Scelsi	BCPS	Pharmacotherapy	Pharmacy and Therapeutics
Amy L. Seybert	CHSE	Certified Healthcare Simulation Educator	Pharmacy and Therapeutics
Pamela Smithburger	BCPS	Pharmacotherapy	Pharmacy and Therapeutics
Dennis Swanson	BCNP	Nuclear Pharmacy	Pharmacy and Therapeutics
Ralph Tarter	ABPP	Clinical Psychology	Pharmaceutical Sciences
Lauren Trilli Carradine	BCPS	Pharmacotherapy	Pharmacy and Therapeutics
Gordon J. Vanscoy	CACP	Certified Anticoagulation Care Provider	Pharmacy and Therapeutics

Alumni and Alumni Engagement

The School of Pharmacy ranks second in the University in overall alumni engagement for FY15. PittPharmacy ranks #1 in Life Members in the Alumni Association. In the nine years that the University of Pittsburgh has been ranking its schools and programs in alumni engagement, the School of Pharmacy has held the number one spot in FY07 and FY09, ranking second in FY08, FY10, FY15, and third in FY11, FY12, and FY14. “Engagement” is the percentage of alumni who make gifts to the School/University, participate in events, are Life Members in the Alumni Association, participate in online forums, and have provided active email addresses.

In FY15:

- 33.61 percent of the 5,147 School of Pharmacy living alumni were engaged with the School of Pharmacy and/or University in some way.
- School of Pharmacy alumni ranked:
 - First (10.86 percent) in life and in regular memberships in the Pitt Alumni Association in schools and programs with more than 100 alumni.
 - Second (33.61 percent) in participation in School and University programs in schools and programs with more than 100 alumni.
- Alumni demonstrated their commitment to the University and the School in many ways, including participation in events sponsored by the School and/or the Alumni Society:
 - Pharmacy alumni celebrated Homecoming 2014 with a Tailgate Homecoming Party held at the O’Hara Student Center. Over 120 alumni were in attendance.
 - School of Pharmacy hosted two receptions at national professional and scientific meetings:
 - American Society of Health-System Pharmacists Midyear Clinical Meeting and Exposition on December 8, 2014 in Anaheim, California.
 - American Pharmacists Association Annual Convention, March 28, 2015, San Diego, California. The Pennsylvania Pharmacy Association and Pennsylvania Schools of Pharmacy jointly hosted the reception.
 -
- The School of Pharmacy also hosted:
 - The Twenty Third Annual Career Roundtables, October 25, 2014, O’Hara Student Center Ballroom. Thirty-five alumni participated in this student event. Alumni from twenty-one practice areas met with the P1 students and answered questions about their individual practice area giving the students a better perspective of the many opportunities a degree in pharmacy can offer.
 - The Joseph A. Gatto Scholarship Golf Invitational, May 15, 2015, Quicksilver Golf Course. Seventy-six golfers participated, and the event raised \$28,330 for the Alumni Scholarship Fund. In the past twelve years, more than \$222,330 has been raised for student scholarships.

Board of Visitors

Dean Patricia Kroboth and select faculty hosted the School of Pharmacy Board of Visitors on October 9 and 10, 2014. Discussion focused on new strategies for PittPharmacy education and the implementation of the MS Pharmacy Business Administration program, the Center for Pharmacogenetics, productivity and support, and emerging opportunities. The Board toured the newly under-construction Salk Pavilion and future space renovations for Salk Hall were identified.

**Board of Visitors
2014–15**

Herbert S. Shear, Chair
Chief Executive Officer
GENCO ATC

Richard J. Bertz, PhD '95
Vice President and Head
Clinical Pharmacology & Pharmacometrics
Exploratory Clinical and Translational Research, Bristol-Myers Squibb

Daniel J. Cobaugh, BS '87, PharmD, FAACT, DABAT
Vice President, ASHP Research & Education Fdn.

Timothy A. Kagle, MBA
Vice President of Operations
UPMC Presbyterian Shadyside

Krista M. Pedley, PharmD '00, MS, CDR, USPHS
Director, Office of Pharmacy Affairs
Health Resources and Services Administration

John T. Tighe III, BS '78
Founder, President and CEO,
TMG Health, Inc.

ENHANCING OUR RESOURCE BASE THROUGH EFFICIENCY AND EFFECTIVENESS

Fostering philanthropic support, assuring the efficient utilization of space, acquiring space for new and/or growing programs, managing fiscal resources, and providing the faculty and students with the best teaching technologies are critical to our future success. All are core elements that drive our efficiency and effectiveness goals.

Staff

In FY15:

- Kellie Mitchell served as Chair, Administrative and Financial Officers Special Interest Group of the American Association of Colleges of Pharmacy.
- Sixty-nine staff members served in:
 - administrative roles (31)
 - research roles (38)
- Administrative staff member Larry Kobulinsky co-authored an abstract that was accepted for presentation at the 2015 ACCP Global Conference; he is currently co-authoring a manuscript on an ongoing Cross-Training study.

- Administrative staff presented at national meetings including presentations at the AACP Annual Meeting and the Society of Research Administrators (SRA).
- Several administrative staff members serve as leaders on committees and councils external to the School of Pharmacy. Service in leadership roles and participation on national committees provides opportunity to enhance the reputation of the school and allows for professional development.
- Seven staff members received service awards from the School of Pharmacy for their tenure and commitment to the School.

Information Technology

FY15, the Information Technology staff:

- Handled 1,345 Technology Help Tickets
 - Web and online: 438
 - Network/Server Administration: 301
 - Desktop and Classroom Support: 606
- Implemented a database to track documentation of students' Special Topics electives.

Communications

The Web site continues to be a primary tool by which varied constituents learn about the School of Pharmacy, with an average 5,760 monthly users. PittPharmacy is active in social media and has a presence in Twitter, Facebook, YouTube, and LinkedIn.

In FY15, the Communications Team:

- Produced and mailed eight major print communications to the School of Pharmacy's 6,100 stakeholders. Another 16 print pieces were produced and mailed in a more limited distribution. Limited distribution pieces include materials the new Master of Science in Pharmacy Business Administration (MSPBA) program brochure and the Making Medicines Work booklet, a report and thank you to our donors.
- Developed electronic publications to enhance both efficiency and effectiveness. ePittPharmacy is the current news medium on the PittPharmacy Web Site for the School. Faculty, student, and school awards, accomplishments, grants and events are publicized weekly on the Web site.
- ePittPharmacy email blasts are sent quarterly and more often for special events. Blasts to stakeholders include current news, CE programs, and special events, e.g. Homecoming, RxGala. Our email list has 3,891 active recipients.

Extending Our Global Reach





Extending Our Global Reach

The University of Pittsburgh Board of Trustees formally adopted the “Statement of Aspiration and Strategic Priorities” on February 28, 2014. Abstracted from the document is the statement that “Our overarching goal to be among the best in all that we do. . . . In the pursuit of that perpetual goal, the University’s work in the years ahead will be centered on efforts to: . . . Extend Our Global Reach.”

In 2012, however, the University of Pittsburgh articulated its vision for “Living Globally.”

By 2020, the University of Pittsburgh will be a community of faculty, students, and staff “Living Globally.” The Living Globally commitment will influence all aspects of our research, teaching, and service missions and will serve to enhance the University’s reputation as a leader in global education. We will:

- Pursue research and scholarship that increase global understanding.
- Develop our students into global citizens and leaders.
- Improve people’s lives by studying and solving the world’s most critical problems.

The faculty and staff of the School of Pharmacy embraced the University’s goals and vision in order to provide diverse learning opportunities for our students and to advance research and patient care through meaningful collaborations with international partners whose strengths and interests complement our own.

GLOBAL REACH BY THE NUMBERS FOR FY15

During FY15:

- The School of Pharmacy engaged in partnerships with **25** international organizations on **6** continents, including Africa, Asia, Australia, North America/Central America, and Europe. The agreements include:
 - **13** Memoranda of Understanding for inter-institutional exchange of faculty and students
 - **10** Affiliation Agreements for the purposes of student and resident rotations
 - **2** Research Collaboration Agreements between faculty or students and a host site.
- **28** international visiting scholars studied at the School of Pharmacy.
- **29** P4 PharmD students participated in **30** rotations in **10** different countries at **11** different sites.
- **5 P2 and P3** students and **5 residents** also completed international rotations.
- **65** international students are enrolled in degree programs and comprise **12.9%** of our students: **4** PharmD students; **37** PhD students; **13** Master of Science students; **11** Non-Thesis Master of Science Students.

GLOBAL AND INTERNATIONAL PARTNERSHIPS

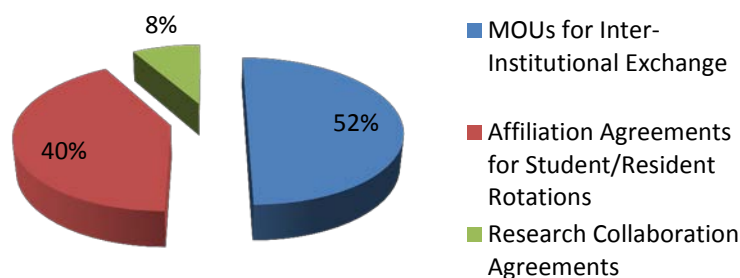
Partnerships

As part of the relationship-building process, the School of Pharmacy signs agreements with institutions to declare our intentions to explore possibilities for collaboration and to formalize our partnership. These agreements include:

- Memoranda of Understanding (MOU), which are broad-based expressions of interest in exploring opportunities for student and faculty exchange, research collaboration, and program development.
- Affiliation Agreements that provide structured expectations of both entities for international rotations for PharmD students and residents.
- Research Agreements between specific faculty or students and international organizations for the purposes of research collaboration.

The graph below illustrates the proportion of each agreement type. The table provides a comprehensive list of organizations with which we have active signed agreements.

Proportion of International Agreements FY15



FY15: Agreements with International Organizations

Institution	Location
Australia	
Austin Health Hospital	Perth, Australia
Sir Charles Hospital (Nedlands)	Nedlands, Australia
China	
Botanical Society of Yunnan	Yunnan Province, China
Changhai Hospital	Shanghai, China
Fudan University	Shanghai, China

Institution	Location
Kunming Institute of Botany, Chinese Academic of Sciences, State Key Laboratory of Phytochemistry and Plant Resources	Yunnan Province, China
Peking University, Health Science Center	Beijing, China
Second Military Medical University	Shanghai, China
Shanghai Jiao Tong University	Shanghai, China
Sun Yat-Sen University	Guangzhou, China
West China Hospital	Chengdu, China
England	
King's College	London, England
Honduras	
Hombro a Hombro Pittsburgh-San Jose	San Jose de Negrito, Yoro District, Honduras
Hong Kong	
The Chinese University of Hong Kong	Shatin, Hong Kong
Ireland	
Farmer's Pharmacy	Dublin, Ireland
Beacon Hospital	Dublin, Ireland
Italy	
Universita degli Studi di Palermo/ UPMC ISMETT, (translated as Mediterranean Institute for Transplantation and High Specialization Therapies)	Palermo, Italy
Malawi	
Baobab Health Trust	Lilongwe, Malawi
Singapore	
National University of Singapore	Singapore
Palestine	
Ashraf Pharmacy	West Bank, Palestine
Philippines	
Philippine General Hospital	Manila, Philippines
University of Philippines	Manila, Philippines

Institution	Location
Portugal	
University of Lisboa- Faculty of Pharmacy	Lisbon, Portugal
Scotland	
HCDumfermline – Douglas Street	Dunfermline, Scotland
South Africa	
Kwazulu-Natal Research Institute for TB-HIV	Durban, South Africa

PROGRAMS

Summer Visiting Research Program

Initiated in summer 2014 and led by Professor Wen Xie, the School of Pharmacy designed a summer research program in partnership with the Sun Yat-Sen University School of Pharmaceutical Science in Guangzhou, China. The admissions committee composed of faculty from both universities selected six competitive third year bachelor’s students from Sun Yat-Sen University to participate as summer research interns at the University of Pittsburgh during July 2014, who were chaperoned by faculty advisors from Sun Yat-Sen University. In FY15, the program continued and five competitive bachelor’s students were chosen to participate in July 2015.

The goal of the program is to attract academically qualified and scientifically prepared MS and PhD students from top tier schools of pharmacy. The summer internship offers potential students an opportunity to learn more about our graduate program, our faculty, the University of Pittsburgh, and living in Pittsburgh. The internship also provides an opportunity for our faculty to evaluate participants and the match of their research interests to individual laboratories.

Students must apply to our graduate program using the regular application process and must meet all requirements for graduate study at the University of Pittsburgh. Students have the option of choosing the two-year thesis-based master’s program, the one-year non-thesis master’s program, or the PhD program. Students admitted to the MS programs must be self-supported.

One of the six students from the FY14 group enrolled in the one-year non-thesis master’s program for Fall 2015 and works under the supervision of Dr. Wen Xie.

Clinical Training Program

In FY15, in collaboration with organizations in Singapore, the School of Pharmacy developed a 12-month fee-based clinical training program similar to a PGY2 speciality clinical pharmacy residency. Under the leadership of Department Chair Amy Seybert, the program accepted its first paying trainee in July 2014, clinical pharmacist Ong Chai Ling from the National Heart Centre in Singapore. Ms. Ling received a scholarship from the Singapore Ministry of Health to support her for one year and completed her training in June 2014.

With the goal to extend this fee-based training program to other organizations in Singapore, three new trainees were accepted for FY15. Clinical pharmacists Janice Li from National University Hospital System and Michelle See from Changi General Hospital will focus on critical care while pharmacist

Yashi Saw from National University Hospital System will specialize in clinical cardiology. All three pharmacists will begin their training in summer 2015, under the direction of Dr. Amy Seybert.

PharmD Student International Learning and Experiences

Interest in international pharmacy experiences remains strong among our PharmD students. Students seek a wide range of opportunities and their goals are diverse, including passion for serving communities, inquisitiveness to learn about health care in other nations through both research and practice, and an adventurous spirit to become well rounded and engaged global citizens.

In FY15, a total of **37 PharmD** students were the direct beneficiaries of the growing number of international partnerships.

- 29 PharmD students completed 30 P4 APPE rotations abroad including ;
 - 1 P4 student who was selected for a Howard Hughes Fellowship research experience in Durban, South Africa
 - 4 students with international experiences through IPSF exchange
 - 4 P2 students to Shanghai
 - 5 P4 students were selected for Students Global Travel Scholarships to support research in the Philippines and Honduras. Two additional P4 students received a mini-award from the Center for Global Health to conduct research on interprofessionalism from international work

Examples of the student work include:

- Investigation of adverse drug reactions occurring among individuals living with HIV at the Philippine General Hospital.
- Evaluation of the differences between clinical pharmacy practice at Second Military Hospital Pharmacy and Pharmacy School in Shanghai and UPMC Presbyterian Hospital.
- Investigation of antibiotic medication taking behaviors among patients at a rural community health center in Honduras.

Howard Hughes Medical Institute Program

In FY15, P4 student Lauren Cirrincione spent 10-weeks participating in a summer research fellowship with KwaZulu-Natal Research Institute for Tuberculosis and HIV (K-RITH) in Durban, South Africa. K-RITH is a collaborative program offered between the Howard Hughes Medical Institute and the University of KwaZulu-Natal. Cirrincione received support in the form of a Nationality Room Scholarship and from the Office of the Dean to support this research experience. The research focus of her the laboratory of her mentor (Dr. Alex Pym) is to understand how the tuberculosis bacterium tolerates certain antibiotics – the ultimate goal is to develop novel therapies for tuberculosis that can reduce the length of treatment.

Fulbright Fellow

Based on her Howard Hughes Medical Institute experience and others, Lauren Cirrincione was selected as a 2015-2016 Fulbright Fellow to continue work in Durban South Africa with Dr. Pym.

International Pharmacy Scholarly Experiences Course

A course entitled International Pharmacy Scholarly Experiences was developed to provide academic support for P2 and P3 students who elect to complete international research experiences during the summer. It was offered for the first time in FY1; in FY15, five students completed the elective.

Global Health Area of Concentration

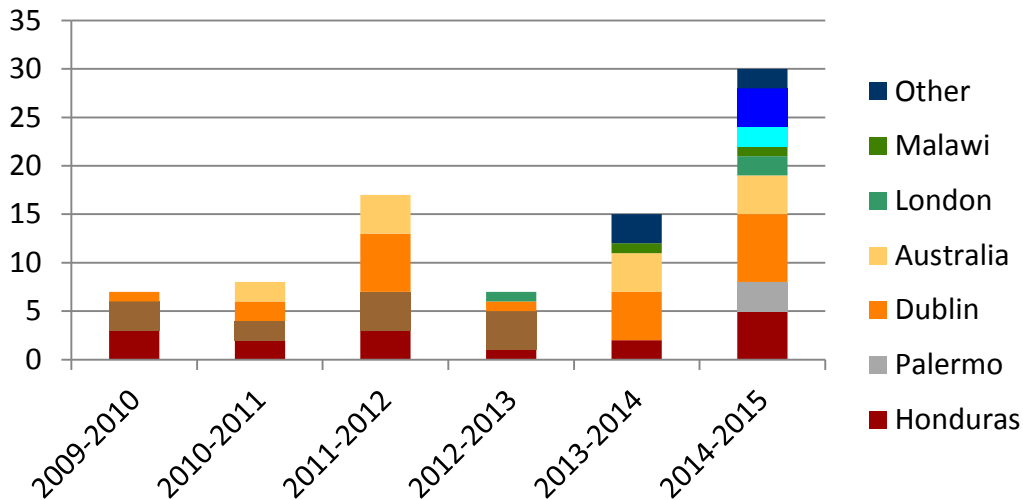
In FY15, a total of 22 students were enrolled in the Global Health Area of Concentration (GH-ARCO). The co-directors of the GH-ARCO are Sharon Connor, PharmD and Lauren Jonkman, PharmD. Nine students in the class of 2015 graduated, each having participated in at least one global health APPE rotation and each having completed a mentored independent research project.

International Advanced Pharmacy Practice Experiences (APPEs)

In FY15, 29 P4 students completed 30 separate international advanced pharmacy practice rotations. Two students arranged international rotations using personal relationships (Palestine and South Africa). The remaining rotations are long-lasting School of Pharmacy partnerships.

- Farmer’s Pharmacy in Dublin, Ireland: 7 students
- Shoulder to Shoulder Pittsburgh-San José, San José del Negrito, Honduras: 5 students
- Kamuzu Central Hospital in Lilongwe, Malawi: 1 student
- Sir Charles Gairdner Hospital in Nedlands, Australia: 2 students
- Austin Health in Heidelberg, Australia: 2 students
- Philippine General Hospital, Philippines: 4 students
- ISMETT, Palermo, Italy: 3 students
- Kings College Hospital, London, United Kingdom: 2 students
- Changhai Hospital, Shanghai, China: 2 students
- Community rotation in Palestine: 1 student
- KwaZulu-Natal Research Institute for Tuberculosis and HIV, South Africa: 1 student

Number of Students Completing P4 International APPEs



Global Health Residency and Rotations

The University of Pittsburgh School of Pharmacy is one of only two PGY2 residency programs in the country to offer pharmacist training to practice in global health. The directors of the PGY2 global health residency are Sharon Connor, PharmD and Lauren Jonkman, PharmD, MPH.

As part of the global health residency experience, the resident practices in limited-resource settings in Pittsburgh; in addition, he or she completes a minimum of two international global health experiences. In FY15, the PGY2 resident conducted a home assessment of families involved in an asthma treatment program to evaluate asthma knowledge. In Pittsburgh, the resident conducted a qualitative evaluation of the needs of underserved patients in transitions of care.

Five pharmacy residents, including the global health resident, completed global health rotations:

- Kamuzu Central Hospital in Lilongwe, Malawi: 1 PGY2 global health resident at the University of Pittsburgh School of Pharmacy and 1 PGY1 Pharmacy Practice resident at UPMC Shadyside
- Shoulder to Shoulder Pittsburgh-San José, San José del Negrito, Honduras: 2 residents: 1 PGY2 global health resident and 1 PGY1 UPMC St. Margaret pharmacy practice resident
- Friends of Ocote Paulino, Ocote Paulino, Honduras: 1 UPMC Presbyterian PGY2 transplant resident

International Visiting Scholars

In total, the School of Pharmacy hosted 28 international visiting scholars at differing levels of training during FY15. In FY15, the array of international visitors to the School of Pharmacy began to diversify. We hosted larger numbers of trainees interested in clinical pharmacy and continued to welcome scholars to conduct pharmaceutical sciences research.

The visiting scholars are listed in the table below.

FY15 Visiting Scholars

Name	Home Institution	Hosted By
Vibishan Balasubramanian	SASTRA University, India	Dr. Shilpa Sant's Lab
Hua-Lin Cai, PhD	The Second Xiangya Hospital of Central South University	Dr. Jeffrey K. Yao's Lab
Xinran Cai	Sun Yat-Sen University	Dr. Wen Xie's Lab
Sicong Chen	Sun Yat-Sen University	Dr. Xiang-Qun Xie's Lab
Nuo Cheng	Second Military Medical University, China	Dr. Amy Seybert
Nan Ding	Changhai Hospital, China	Dr. Amy Seybert
Prithvirajan Durairajan	SASTRA University, India	Dr. Shilpa Sant's Lab
Yue Gao, MS	Second Military Medical University, China	Dr. Amy Seybert
Yan Guo, MS	Shanghai Jiao-Tong University School of Medicine	Dr. Wen Xie's Lab
Bingfang Hu, BS	Sun Yat-Sen University, China	Dr. Wen Xie's Lab
Jianping Hu, PhD	Leshan Normal University, China	Dr. Xiang-Qun Xie's Lab

Yu-Kun Huang, MD, PhD	Xiangya Hospital, China	Dr. Song Li's Lab
Tianqun Lang	Sun Yat-Sen University	Dr. Song Li's Lab
Janice Xuanhui Li, BS, MS	National University Hospital, Singapore	Dr. Amy Seybert
Panlin Li	Sun Yat-sen University, China	Dr. Xiang-Qun Xie's Lab
Ong Chai Ling, BS	National Heart Centre, Singapore	Dr. Amy Seybert
Xueying Liu, PhD	Fourth Military Medical University, China	Dr. Xiang-Qun Xie's Lab
Meihua Luo	Sun Yat-Sen University	Dr. Lisa Rohan's Lab
Lohit Pandoria	King's College, London	Dr. Jan Pringle's Lab
Weilin Qian	Fudan University, China	Dr. Amy Seybert
Danying Qin	Sun Yat-Sen University	Dr. Paul Johnston's Lab
Abdul Sami, BS, MS	University of Arid Agriculture Rawalpindi, Pakistan	Dr. Shilpa Sant's Lab
Kishor Sarkar, PhD	Indian Institute of Science, India	Dr. Shilpa Sant's Lab
Yashi Saw	National University Hospital, Singapore	Dr. Amy Seybert
Michelle See	Changhi Hospital, Singapore	Dr. Amy Seybert
Manjulata Singh, PhD	Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), India	Dr. Shilpa Sant's Lab
Miao Sun	Second Military Medical University, China	Dr. Amy Seybert
Ki Sa Sung, PhD	SungKyunKwan University	Dr. Song Li's Lab
Xisha Wang, PhD	Guangdong Pharmaceutical University.	Dr. Xiang-Qun Xie's Lab
Pingping Yan	Changhai Hospital, China	Dr. Amy Seybert
Bo Yang, PhD	Wuhan University, College of Life Sciences, China	Dr. Da Yang's Lab
Libo Zhao, PhD	Peking University People's Hospital, China	Dr. Amy Seybert
Zheng Zhou	Second Military Medical University, China	Dr. Amy Seybert

International Invited Presentations

Faculty and students are invited to speak at international meetings and sites each year. Examples of recent international invited presentations include:

- **18** international research presentations in **8** countries.
 - 3 at universities or hospitals
 - 15 at conferences or academies

Additional Accomplishments during FY15

- The School extended our 12-month fee-based clinical training program similar to a PGY2 specialty clinical pharmacy residency to three new clinical pharmacists from Singapore in FY15. The pharmacists' specializations range from critical care to clinical cardiology.

- The School hosted a delegation of 5 visitors from Peking University Health Sciences Center in September 2014 who represented key leadership, including Luwen Shi, the Chair of the Department of Pharmacy Administration and Clinical Pharmacy at Peking University Health Science Center and several professors of Pharmacy from Peking University First Hospital. In addition to touring the Center for Pharmacogenetics and meeting our faculty, the group discussed opportunities for training and collaboration with the School and hosted a PharmD student in May 2015 rotation.
- Several groups of PharmD students traveled to partner sites in China for rotations in FY15, primarily in Shanghai. In return, the School welcomed two groups of visitors from our hosts in Shanghai in April 2015.
- Professor Yue Gao from Second Military Medical University School of Pharmacy led a group of three undergraduate students for a one month observation of clinical pharmacy education and practice in the United States.
- Two clinical pharmacists from Changhai Hospital observed clinical pharmacy practice sites for one month. Drs. Amy Seybert and Deanne Hall served as preceptors for both groups of visitors.
- Chuanbin Wu, PhD, Vice-Dean and Professor of Pharmaceutics, School of Pharmaceutical Sciences at Sun Yet-Sen University visited for the purpose of expanding our relationship with that University. He also presented a special seminar for the Department of Pharmaceutical Sciences entitled, "Novel Pharmaceutical Technologies for Macromolecule Drugs" in May 2015.

School of Pharmacy Long Range Plan 2018



School of Pharmacy

Our Excellence, Innovation and Leadership Journey

Building our Long-Range Plan is a journey that began in 2001 and continues to this day in the form of Long-Range Plan 2018. To date, we have forged three long-range plans that have unified the faculty, staff, students, and alumni around goals and their achievement.

From the beginning our plans have been:

- Mission and vision driven;
- Aligned with the strategic direction of the University;
- Highly participative;
- Outcome driven.

One of the first orders of business in 2001 was to align our plan with the University of Pittsburgh goals, we used the five statements articulated in “Pitt in the Year 2000: Pursuing Our Full Potential” to structure our plan. In 2014, the University modified its “Statement of Aspiration and Strategic Priorities.” The School of Pharmacy embraced those priorities. In parallel with the University and its stated priorities, the School of Pharmacy’s work in the years ahead will be centered on efforts to:

- Consistently Deliver Excellence in Pharmacy and Pharmaceutical Education;
- Make Contributions of Impact to Health through Pioneering Research;
- Build Community Health through Pharmacist-Provided Care of Patients in the Community, in Institutions, and During Transitions of Care;
- Extend Our Global Reach
- Secure an Adequate Resource Base.

The School has folded the University’s statement to “Provide Top Value” into “Securing an Adequate Resource Base,” so only five appear above. Within the first year, we developed measurable outcomes within each of the above broad categories. By 2008, we had developed and continue to use “Progress At a GlancE” (PAGE) as the dashboard to standardize the presentation of our accomplishments.

The characteristics of excellence, innovation, and leadership have become a hallmark of the School of Pharmacy and are articulated in our mission statement that was adopted in 2006. Simultaneously, we took a fresh look at our values and developed a more succinct statement. The year of intermittent and thoughtful discussions forged cohesiveness among the faculty and staff. See Mission and Values statements attached.

From the very first planning session at a retreat in 2001, both administrative and office staff and faculty members have engaged in goal setting and planning. Our Board of Visitors, students and alumni also had opportunities for input. Our process is sustainably “highly participative.”

In 2012, we began developing the third iteration of our plan. We chose to make a few bold statements that could be easily remembered and have integrated into the overall framework with measurable outcomes started in 2001 as shown on pages 13 through 20.



The images show the Research Pavilion, the Brick Walkway, the Commons, and a research laboratory in the Pavilion.

Long-Range Plan 2018

School of Pharmacy

“Providing the Innovators and the Discoveries to Solve the Complex Medication-Based Problems of Today and Tomorrow”

The School of Pharmacy will be a leader in pharmacy and pharmaceutical science education.

We will provide students with a personalized education that will efficiently prepare them to innovate, lead, and identify opportunities to improve health using the clinical and research principles of the pharmaceutical sciences.

We will build educational opportunities for non-pharmacy students and health care providers to learn about drugs, drug mechanisms, the use and abuse of medications, therapeutic applications, and the pharmaceutical sciences.

The School of Pharmacy will be a research school of distinction.

We will bridge the drug development gap for new therapies by integrating and expanding our strengths in drug development, drug delivery and biomarker research.

We will develop a translational pharmacogenomics research program to utilize patient-specific information as a component of personalized patient care.

The School of Pharmacy will build healthy communities through pharmacist-provided care of patients in the community, in institutions, and during transitions of care

We will impact the lives of the people in the communities in which we live and work through pharmacists who are health care providers promoting health and wellness, optimizing use of medications, and stemming the misuse, abuse, and diversion of medications.

We will create a Pharmacy Innovations Lab that will be the incubator and concept testing environment where multidisciplinary teams come together to address complex problems of medication use.

We will extend our global reach

Create global partnerships that advance research, develop our students as global citizens, and enhance pharmacy care to promote health, wellness, and the appropriate use of medications.

We will increase the resource base of the School of Pharmacy.

We will leverage existing and evolving technologies to enhance learning, to improve patient care, to enhance research, to engage stakeholders, and to become more efficient.

We will partner with our stakeholders and communities to develop the resources to advance our mission.

**UNIVERSITY OF PITTSBURGH
SCHOOL OF PHARMACY**

Mission

The School of Pharmacy is committed to
improving health through
excellence, innovation, and leadership
in education of pharmacists and pharmaceutical scientists,
in research and scholarship,
in care of patients, and
in service to our communities.

*Adopted July 2006
Revised July 2009*

Vision

To be an outstanding school of pharmacy
renowned for excellence in discovery and
advancement of science-based use of
medicines and other interventions
to enhance the vitality and quality of life.

Adopted July 2006

Values

Integrity guides our daily work.
We foster:
Passion, commitment, and diligence;
Creativity and personal growth;
Collaboration and teamwork;
A culture of respect for the individual.

Adopted July 2006

We will **provide students with a personalized education** that will efficiently prepare them to innovate, lead, and identify opportunities to improve health using the clinical and research principles of the pharmaceutical sciences.

We believe that personalized education will enrich individual student experiences and will better prepare them for success as they navigate the rapidly changing health care landscape and post-graduate environment.

By 2018, we will have:

- Evolved the curriculum of each degree program so that students achieve the “generalist” mastery and have had the opportunity to personalize their learning.
Actions:
 - Review and revise the curricular **outcomes** for the PharmD program to reflect contemporary and evolving practice and research.
 - Personalize and contextualize learning by revising PharmD curriculum to create efficiency and flexibility for vertical integration of in-depth experiences, exposures, and knowledge in practice, in cultures, and in communities.
 - Develop teaching and advising strategies that allow students to build progressively on their strengths and interests and identify career aspirations.
- Embedded learning strategies to enhance educational effectiveness and efficiency and rapidly propel students to defined levels of mastery.
Actions:
 - Inventory current teaching strategies, approaches and resources (e.g., peer-learning, high-fidelity simulations, portfolios, educational support, and technology tools). (FY12)
 - Conduct educational programs, including online programs, for faculty and staff to prepare us to deploy educationally sound teaching, learning, and assessment strategies that are based on learning science. (FY13 and beyond)
 - Define a cross-school or cross-university multidisciplinary education support team to develop, deploy, and study strategies to rapidly propel students to defined levels of mastery. (FY13)
 - Build educational processes by which all students develop and demonstrate expertise in problem identification and problem solving.
 - Address the affordability of education through efficiencies in learning.
- Built learning experiences for students to become engaged in medication discovery, development, manufacture, distribution-including procurement and supply chain management, dispensing, clinical application, and clinical outcomes. (FY14)
Actions:
 - Develop partnerships that will facilitate opportunities for a student to pursue experiences in the areas that impact drug development, distribution, and use.

Develop an outcomes research track to the PhD program that will be available by fall

We will **build educational opportunities for non-pharmacy students and health care providers** to learn about drugs, drug mechanisms, the use and abuse of medications, therapeutic applications, and the pharmaceutical sciences.

We believe that greater depth of knowledge and understanding positively affects non-pharmacist attitudes about pharmacies, pharmacy-centered care, and the use and abuse of medications.

By 2018, we will have:

- Evaluated and potentially developed at least two interdisciplinary certificate programs and short courses.
 - Actions:
 - Charge a taskforce to develop guidelines that will facilitate and guide options for new program (certificate, degree, short course) development. (FY13)
 - Draft and submit proposals for review:
 - a. At least one short course, including use of simulation in education or medication management in transplant patients (FY13)
 - b. At least one undergraduate and/or graduate certificate program (FY14) including pharmaceutical sciences (undergraduate) and research (graduate).
 - Evaluated and potentially developed dual-degree, joint degree, or combined degree programs.
 - Actions:
 - Obtain approval for a PharmD/MBA program as a model for the development of other two degree programs. (FY13)
 - Draft guidelines for the process for partnering with other schools to create two-degree programs and other cross-disciplinary programs (FY13).
 - Developed new or opened existing courses to non-pharmacists/non-pharmaceutical scientists who are engaged in discovery, development, manufacture, distribution — including procurement and supply chain management, — dispensing, and clinical application.
 - Draft and submit proposals for review:
 - a. At least one course in an area of opportunity and need. Areas to consider include graduate and undergraduate courses in: medications of abuse, physiology, and drug discovery/development, pharmacogenomics.
 - b. Offer one or more courses during the summer, fall, or spring terms on an ongoing basis.
-

We will **bridge the drug development gap for new therapies** by integrating and expanding our strengths in drug development, drug delivery and biomarker research.

We believe that the faculty of the School of Pharmacy has expertise to bridge the drug discovery, development, and delivery gap, sometimes known as the “Valley of Death” for the chemical to drug transition.

By 2018, we will have:

- Become the “knowledge experts” for campus researchers and external entities to pursue the development of chemicals into drugs or to repurpose currently approved drugs.
Actions:
 - Develop a Center for Drug Development and Delivery that integrates the continuum of research spanning from delivery to the clinic.
 - Charge a task force to develop a proposal for the center, including identification of specific goals, administrative structure, and performance metrics.
 - Establish an outside advisory group that provides direction and guidance regarding development plans and selection of projects to be undertaken within the center.
 - Achieve focused growth particularly in pharmacogenomics, metabolomics, and PK/PD modeling.
 - Moved one or more compounds across the “Valley of Death” to the point of licensing the formulation or drug.
Actions:
 - Develop a new or apply an existing algorithm for moving potential candidate molecules through the development and/or delivery process.
 - Expand the biomarker core to include biomarker discovery (metabolomics) and validation (modeling) as it relates to drug effect and disease progression.
 - Developed partnerships with external sources including industry partners.
Actions:
 - Develop a mechanism to engage expertise outside the School of Pharmacy.
 - Work with the Office of Technology Management to identify and engage with industry partners.
-

We will **develop a translational pharmacogenomics research program** to utilize patient-specific information as a component of personalized patient care.

We believe that pharmacogenomics is central to the role of pharmacists in the healthcare team to make personalized medicine a reality for each individual patient.

We believe that pharmacy is uniquely positioned to determine drug response and genetic profile systematically in individual patients and to assess variability in drug response among patients.

We believe pharmacy should be the primary driver of research aimed at understanding drug response/ pharmacogenetic relationships and diffusing this knowledge into clinical practice.

By 2018, we will have:

- Established a translational pharmacogenomics research program.
Actions:
 - Recruit at least one faculty member who has translational pharmacogenomics/ epigenetics expertise and at least one faculty member who has a pharmacogenomics clinical research focus.
 - Define resources needed to collect outcomes and to design/test interventions.
 - Integrate School of Pharmacy researchers into genetics-focused initiatives such as the Personalized Medicine Institute and the NIH-funded Pharmacogenomics Research Network.
 - Generate and access genetic information for the purpose of personalizing drug therapy.
- Established processes for incorporating pharmacogenomics into new and existing drug use protocols and measuring the clinical outcomes from these implementations.
Actions:
 - Charge a task force with external expert representatives to recommend mechanisms for establishing pharmacogenomic testing services at UPMC.
 - Build pharmacist-based systems to define and measure drug and patient outcomes.
- Become the identifiable source for information about the application of pharmacogenomics to patient care.
Actions:
 - Build a web-based pharmacogenomics information resource housed in the School of Pharmacy.
 - Lead the diffusion of understanding regarding the drivers of drug response, including the application of pharmacogenetics, throughout inpatient and community patient-care sites; this includes pharmacists and other health care providers.

We will **impact the lives of the people in the communities in which we live and work** through pharmacists who are health care providers promoting health and wellness, optimizing use of medications, and stemming the misuse, abuse, and diversion of medications.

We believe that pharmacies can become the home of health and wellness within communities through interprofessional models of care.

We believe that pharmacists, who are among the most trusted professionals, can play an essential role in the prevention and treatment of illness and in the promotion of health and wellness.

By 2018, we will have:

- Partnered with UPMC and UPMC Health Plan and other entities to continually pilot, implement, evaluate, and disseminate pharmacist-based patient care programs.
Action:
 - Design, implement, and evaluate a telepharmacy or remote pharmacy program.

- Created pharmacy-centric community health zones that are scalable.
Actions:
 - Evaluate the Pharmacy Practice Act for legality of pharmacists providing pharmacy care when not associated with a dispensing pharmacy; pursue a pharmacy license if needed.
 - Establish a partnership with the Oak Hill Neighborhood Association in Pittsburgh with the goal of improving overall health and wellness.

- Addressed America’s prescription drug abuse crisis and improve the safety of the public through policy, research, and patient care demonstration programs.
Actions:
 - Develop scalable prescription drug programs that partner physicians, dentists, pharmacists, and patients to address the use, misuse, abuse, and diversion of medications.
 - Engage in collaborative practices in chronic pain and palliative care.

- Created global partnerships that will advance pharmacy care to promote health, wellness, and the appropriate use of medications.
Actions:
 - Create Memoranda of Understanding with international partners—including schools of pharmacy and non-governmental organizations.

- Gained recognition from the public for pharmacists as health care providers who promote health, wellness, and the appropriate use of medications.
Actions:
 - Maximize collaborative practice opportunities ambulatory care and community settings, including dental practices.
 - Create programs and tools that can promote health and wellness.
 - Engage student pharmacists in an organized approach to address medication-based needs of patients.
 - Host an Invitational Conference on implementation of effective pharmacy care models.

We will **create a Pharmacy Innovations Lab** that will be the incubator and concept-testing environment where multidisciplinary teams come together to address complex problems of medication use.

We believe that bringing together expertise and perspectives from many disciplines, including those external to health, sparks innovation and leads to novel solutions to complex problems.

By 2018, we will have:

- Created innovative patient care models that have become clinical “game changers” and the foundation for policy.
Actions:
 - Systematically incorporate pharmacy and non-pharmacy stakeholders into planning, conducting, and communicating our work.
 - Take on the risk to design, implement, and evaluate system interventions with partners, including self-insured companies, to improve health outcomes.
 - Define effective mechanism for diffusion of innovative findings into inpatient, outpatient and community-based settings.
 - Establish and host recurring partner colloquia where research questions and research in-progress are shared to identify and extend opportunities to improve health outcomes.
 - Use technologies to improve pharmacy-based care of patients.
 - Become the “knowledge experts” for creative solutions to systems-related medication problems.
Actions:
 - Create a white paper for the Pharmacy Innovations Lab that includes recent accomplishments and the case for development of the Lab. (FY13)
 - Create a portfolio of projects and programs that demonstrate improved care and make it available on-line in print. (FY13)
 - Organize symposia at Pitt and at national health care meetings.
 - Create a Web-site that showcases the available expertise.
-

We will **leverage existing and evolving technologies** to enhance learning, to improve patient care, to enhance research, to engage stakeholders, and to become more efficient.

We believe that technology can magnify the impact of a single person.

We believe that pharmacists must successfully utilize vast and growing amounts of health information to inform prescribing decisions regarding individual patients and populations of patients.

By 2018, we will have:

- Enriched the student experience by applying technology and web-based content that augments innovative teaching and assessment strategies and supports our goals.
Actions:
 - Establish “Educational Technology Committee” to guide and recommend the efficient application of technology, web-based content, and assessment strategies. (FY13) For example:
 - a. Implementation of systematic capture of course content, i.e., lecture.
 - b. Develop additional VPSim cases with variable difficulty and development of new simulations and applications for the hi-fidelity human simulator.
 - c. Develop additional multi-university courses so that students can interact through media with students and faculty at other universities.
 - Created a technology “help team” that supports education and the other elements of our mission.
Actions:
 - Charge a faculty-staff-student technology advisory committee with external participants to continually evaluate technologies that will support and advance our mission and goals.
 - Created systems for capturing and readily retrieving patient-specific information about medication outcomes to support practice-based research.
Action:
 - Use national claims data and link to health outcomes.
 - Develop systems or work with partners to develop “add-ons” to existing systems, e.g. EpiCare, EMR, Cerner.
 - Obtain a data-capture system to support School of Pharmacy patient-care programs.
 - Become the “knowledge experts” or referral group for technology implementation.
Action:
 - Evaluate and publish results of technology implementation, offer short courses, and license or share technology developed internally.
 - Efficiently applied technology to optimize utilization of staff and faculty time and financial resources.
Actions:
 - Implement a mechanism for making internal and external video calls and conferences.
-

We will **partner with our stakeholders and communities to develop the resources to advance our mission.**

We believe that the members of the extended School of Pharmacy family are united in our pride in our past and in our ability to shape our future.

By 2018, we will have:

- Partnered with individuals, companies, and organizations who will open their network of colleagues to provide opportunities for students to personalize their education.
 - Recruited and retained faculty and staff who are critical to achieving the goals stated in Long-Range Plan 2018.
 - Designed and built new effective “neighborhoods” within Salk Hall and Salk Pavilion for:
 - teaching and learning, including simulation, practice laboratories, and large and small classrooms.
 - laboratory research.
 - practice- and computer-based research in Salk Hall.
 - Met our internal Capital Campaign goal so that the funds raised support this Long-Range Plan.
 - Create a Technology Development Fund.
-

Long-Range Plan 2018-- with Established Measurables

Educating the Next Generation of Practitioners and Scientists

The School of Pharmacy will be a leader in pharmacy education.

Adopted 2005

We will provide students with a personalized education that will efficiently prepare them to innovate, lead, and identify opportunities to improve health using the clinical and research principles of the pharmaceutical sciences.

We will build educational opportunities for non-pharmacy students and health care providers to learn about drugs, drug mechanisms, the use and abuse of medications, therapeutic applications, and the pharmaceutical sciences.

Adopted 2012



PHARMD PROGRAM

The School of Pharmacy will:

Excellence

1. Meet or exceed the standards for accreditation by ACPE, earning accreditation for the maximum interval of eight years.
2. Consistently demonstrate the excellence of our students and their organizations by the awards and national recognitions they receive.
3. Recruit and retain a diverse community of students.

Innovation and Leadership

We will provide students with a personalized education that will efficiently prepare them to innovate, lead, and identify opportunities to improve health using the clinical and research principles of the pharmaceutical sciences.

4. Sustain a culture of innovation and scholarship in teaching and assessment.
5. Develop and expand credit-based opportunities for students to obtain international study experiences
6. Create curricular tracks/areas of concentration for specialization within the PharmD program.

7. Develop elective and required interprofessional education opportunities and courses within our curriculum.
 8. Be a leader in defining and providing innovative curricula that enhances pharmacy-provided patient care.
 9. Explore and potentially develop an “out-of-Pittsburgh” curricular program
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GRADUATE PROGRAM

The School of Pharmacy will:

Excellence

10. Achieve and sustain recognition for the quality of the graduate students and graduate program.
11. Recruit and retain highly academically qualified graduate students.
12. Educate graduate students who are highly sought after.
13. Maintain the excellence of the Clinical Pharmaceutical Scientist Program as a national model for clinical and translational research in the pharmaceutical sciences.

Innovation and Leadership

We will build educational opportunities for non-pharmacy students and health care providers to learn about drugs, drug mechanisms, the use and abuse of medications, therapeutic applications, and the pharmaceutical sciences.

14. Partner with the Clinical and Translational Science Institute to develop learning opportunities for our students.
 15. Develop MS program in pharmacy administrative sciences, including institutional and community practice administration.
 16. Advance the graduate program in order to successfully compete for a PHS training grant.
-

RESIDENCY PROGRAM

The School of Pharmacy will:

Excellence

17. Participate in the creation of accredited residency program and training of residents.
18. Achieve national recognition for the excellence of our residency programs.
19. Train residents who compete successfully for national grants and awards.

Innovation and Leadership

20. Define criteria for and establish “Residencies of Excellence” in targeted areas of focus.
21. Partner in the development and implementation of a residency program model that emphasizes the commonality of community and ambulatory programs.

Advancing Human Health through Research

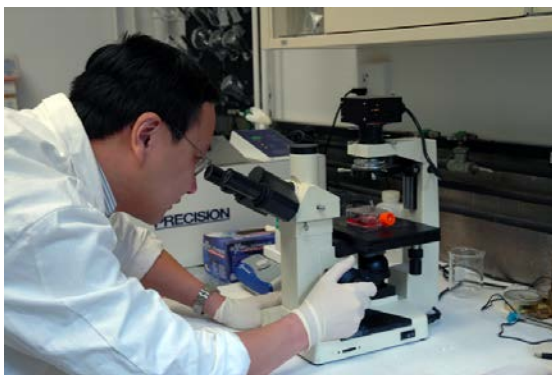
The School of Pharmacy will be a research school of distinction.

Adopted 2005

We will bridge the drug development gap for new therapies by integrating and expanding our strengths in drug development, drug delivery and biomarker research.

We will develop a translational pharmacogenomics research program to utilize patient-specific information as a component of personalized patient care.

Adopted 2012



The School of Pharmacy will:

Excellence

22. Enhance our reputation of research excellence.
23. Diversify our portfolio of research funding.
24. Train a cadre of PhD and postdoctoral PhD fellows who are highly sought after for careers in academia, industry, and the government.

Innovation and Leadership

25. Compete successfully for a PHS training grant.
26. Compete successfully for a program project grant and center grants.
27. Establish a program for research that focuses on pharmacy service models and health care outcomes to favorably improve patient care.
28. Develop research collaborations through the Clinical and Translational Science Institute at the University of Pittsburgh.

Enhancing the Health of the Community through Partnerships

The School of Pharmacy will be a leader in standardizing the elements of practice so that pharmacists enhance the care of patients in the community, in institutions, and during transitions of care.

Adopted 2007

We will impact the lives of the people in the communities in which we live and work through pharmacists who are health care providers promoting health and wellness, optimizing use of medications, and stemming the misuse, abuse, and diversion of medications.

We will create a Pharmacy Innovations Lab that will be the incubator and concept testing environment where multidisciplinary teams come together to address complex problems of medication use.

Adopted 2012

We will extend our global reach.

Create global partnerships that advance research, develop our students as global citizens, and enhance pharmacy care to promote health, wellness, and the appropriate use of medications.

Adopted 2014



The School of Pharmacy will:

Excellence

29. Engage in significant corporate partnerships for the purpose of providing patient care.
30. Maintain and enhance our reputation of practice excellence through honors and recognitions of our programs and our faculty.
31. Develop evidence-based medication protocols and collaborative practice agreements that improve clinical outcomes, enhance patient safety, and reduce costs.

Innovation and Leadership

33. Provide leadership in the safe and effective use of medications for the care of all UPMC patients through development and implementation of a comprehensive system for hospital care and transition to the community.
34. Create and implement a pharmacy service model that integrates faculty and staff pharmacists in provision of care for UPMC patients.
35. Participate in the care of underserved patients in local and global communities through the Grace Lamsam Pharmacy Program for Underserved Patients.
37. Partner to provide remote care for patients through technology.

We Will Extend our Global Reach

The School of Pharmacy will create global partnerships that advance research, develop our students as global citizens, and enhance pharmacy care to promote health, wellness, and the appropriate use of medications.

Adopted 2014



The School of Pharmacy will:

Innovation and Leadership

- 37a. Engage in significant international partnerships:
 - o So that PittPharmacy students can enhance their abilities to become global citizens.
 - o So that international students can learn and do research at PittPharmacy.
 - o That will impact the lives of people through pharmacists who are health care providers promoting health and wellness, optimizing use of medications, and stemming the misuse, abuse, and diversion of medications.

Enhancing Our Capabilities through Increased Efficiency and Effectiveness

The School of Pharmacy will increase effectiveness and efficiency and will enhance the professional growth of faculty and staff.

Renewed 2005

We will leverage existing and evolving technologies to enhance learning, to improve patient care, to enhance research, to engage stakeholders, and to become more efficient.

Adopted 2012



The School of Pharmacy will:

Excellence

38. Efficiently apply technology to optimize utilization of staff and faculty time and financial resources.
39. Apply technology to deliver quality education to facilitate effective and efficient student learning.
40. Improve efficiency and cost savings through initiatives identified and led by the staff.
41. Create effective means of communication for internal stakeholders
42. Adopt a proven and effective technology platform that serves faculty, staff, students and others

Innovation and Leadership

43. Enhance faculty and staff knowledge of new technologies for teaching
44. Application of Lean System principles and practices, and value stream mapping for staff and some faculty processes.
45. Consistently partnered with CSSD in testing the application of technology.

Securing an Adequate Resource Base

We will increase the resource base of the School of Pharmacy.

Renewed 2005

We will partner with our stakeholders and communities to develop the resources to advance our mission.

Adopted 2012

HUMAN RESOURCES

The School of Pharmacy will:

Excellence

Faculty

46. Recruit and retain faculty who are recognized for scholarly, educational, service and practice distinctions.
47. Enhance faculty participation in programs that support achievement of professional and academic potential.
48. Recruit and retain faculty members who engage as citizens in serving the academic community and the profession of pharmacy.

Staff

49. Recruit and retain staff members who contribute to the strategic goals of the School and to the culture of teamwork and collaboration.
50. Create and implement individualized development plans for all staff members.

Alumni, Friends, and Other Stakeholders



51. Deliver high-quality and timely print and digital publications to internal and external stakeholders
52. Create and sustain a Web site that is easily navigated, features high-quality imaging and that provides up-to-date information.

53. Retain our place among the top schools on campus for alumni engagement.
 54. Engage and support non-faculty preceptors who provide educational experiences for our students.
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FINANCIAL RESOURCES

We will:

55. Meet the goals for the Capital Campaign.
56. Increase the book value of the School of Pharmacy endowment.
57. Increase total dollars and number of contributors through all sources of gifts.

PHYSICAL RESOURCES



We will:

58. Renovate and refurbish existing space to meet programmatic needs.
59. Secure our place in the Master Plan for Oakland, assuring adequate space for the School's programs.

