

Annual Report

2013-2014



PittPharmacy

Fall 2014

Dear Friends,

Today, I can confidently say that our School of Pharmacy offers one of the best professional pharmacy degree programs in the country. At a time when the value of higher education has been questioned, we have worked to increase the value of a PittPharmacy education by “personalizing education,” guiding students to “get to expert faster,” and facilitating summer course work. Like our PharmD Program, our PhD and MS graduate programs and our residency programs have also grown in excellence and in size. Pitt Pharmacy now has the largest number of enrolled students in our history.



Our foundation is strong in research and discovery. The endeavors of our outstanding faculty members have resulted in the largest dollar amount of grant funding in PittPharmacy history. We enjoy the financial support of federal, foundation, and corporate entities to finance the research that extends from computational and molecular discovery to research that improves the health of people in the community.

As you review this School of Pharmacy Annual Report for FY 14 (July 1, 2013 through June 30, 2014), you will see the progress Pitt Pharmacy has made in increasing the health of communities “where we live and work” and in growing international collaborations and partnerships at a time when the University of Pittsburgh is seeking to extend its global reach.

As we start this new fiscal year, I am excited and proud as I look to our immediate future. After years of planning and watching as the first new construction in our 136 years took shape, many research programs will move into Salk Pavilion. In the wake of the move, we have the amazing opportunity to repurpose vacated space into imaginative spaces for teaching and learning and into research neighborhoods that are inviting environments for computational and office-based research.

We look to you, members of our PittPharmacy family, to help us as we move on to this next phase of program building. It is a wonderful time when approaches to education are rapidly evolving and opportunities for innovative research are abundant.

I invite you to “Honor our Past and Shape our Future” and join me in building our future.

Sincerely,

Patricia D. Kroboth, Dean

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Long-Range Plan 2018	
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Leading Pharmacy Education

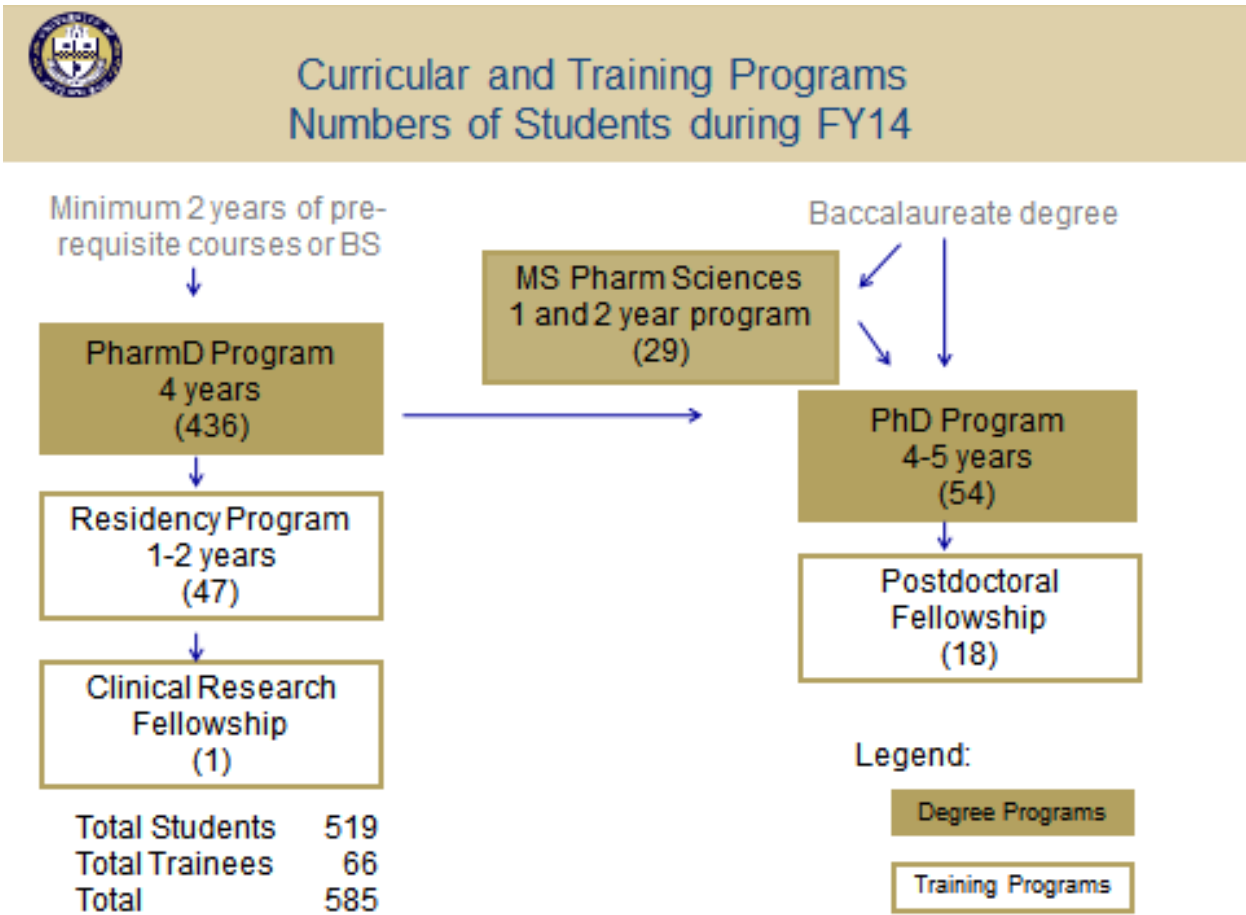




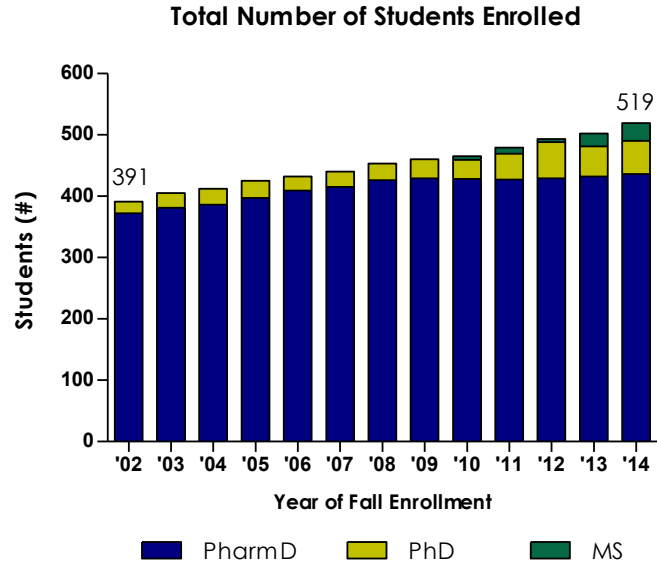
Leading Pharmacy Education

The School builds on its rich tradition of excellence in education, continuing to provide the innovators to solve the complex medication-based problems of today and tomorrow and ultimately enhance the health and well-being of people’s lives. 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 programs: personalizing education and getting to expert faster. These goals serve as the overall objective for the PharmD, residency, and graduate programs for the School of Pharmacy.



EDUCATION BY THE NUMBERS FOR FY14



- Total enrollment has grown by **32.7 %** since FY02 to a total of **519** students enrolled in FY14.
- The number of faculty members has decreased from 79 in to our present number of **72** in FY14.

PharmD Program

In FY14:

- **113** students enrolled in the PharmD class of 2018 with an average SAT score of **1410** and GPA and PCAT scores of 3.58 and 81%, respectively.
- **7.3** –The number of applicants per seat through open admission.
- **203** scholarships totaling **\$506,615** were awarded to **181** PharmD students.
- University of Pittsburgh pharmacy student organizations won **5** national or regional awards.
- PharmD students presented **55** posters at national and regional meetings.
- **335** pharmacists in **21** states and **6** countries provided **738** APPE rotations for **106** fourth professional year students.
- **104** students in the class of 2014 received PharmD degrees and **89** students received the BS in pharmaceutical sciences.

Residency Program

In FY14:

- **47** residents (**31** PGY1 and **16** PGY2) came from **26** schools of pharmacy in **16** states.
- Our **13** programs were in partnership with **11** institutions/entities.
- **35** residents presented their research results at national or regional meetings.
- **29** residents participated in training programs to enhance their teaching and clinical precepting—**15** residents completed the “Mastery of Teaching Program” and **14** completed “Orientation to Learning and Teaching Program.”
- **19** residents were accepted into PGY2 specialty residency programs and **4** were accepted into a fellowship or stewardship programs.
- **5** residents accepted faculty positions at schools of pharmacy.
- **8** residents achieved board certification as pharmacotherapy specialists during their residencies.

- **10** PGY2 residents accepted a clinical position at an academic medical center, 2 of which were at the UPMC Health System.

Graduate Program

In FY14:

- **83** students were enrolled: **54** PhD students; **7** Master of Science students; **22** Non Thesis Master of Science students.
- **34** new students matriculated: **12** PhD students (4 of whom previously completed the Non-Thesis Master of Science); **4** Master of Science students; **18** Non Thesis Master of Science students.
- **17** students received degrees in pharmaceutical sciences; **5** students graduated with PhD degree, **4** students graduated with Master of Science degrees, and **8** students graduated with Non Thesis Master of Science degrees.
- **31%** (**17/53**) of the full-time PhD students are U.S. citizens or permanent residents.
- **50%** (**27/53**) of the full-time PhD students have degrees from schools of pharmacy, of which **5 of 53 (11%)** have PharmD degrees.
- **3** students received regional or national awards for excellence in research and **1** PhD student is in her second year of a competitive national fellowship.
- **54** peer-reviewed manuscripts or book chapters were published by graduate students.
- Graduate students gave **58** presentations at regional and national scientific meetings.
- **18** postdoctoral fellows were engaged in research in School of Pharmacy laboratories.

BS IN PHARMACEUTICAL SCIENCES

In April 2014, 89 students received the BS in pharmaceutical sciences at the end of their second professional year.

In FY11, the Office of the Provost approved the School's proposal to award the Bachelor of Science in Pharmaceutical Sciences (BSPS) degree to students enrolled in the PharmD degree program after the completion of a minimum of 120 credit hours. With the degree, students are eligible to earn credit through selected electives toward University-approved certificates and graduate programs. The BSPS degree also provides eligibility for NIH training programs such as T32 awards for individuals who are training for careers in specified areas of biomedical, behavioral, and clinical research.

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 were permitted to take courses above a standard credit limit and during the summer with no additional tuition for the first time in FY14.
- B. “Personalizing education.” See next major section.
- C. Accelerating learning through active engagement.
 1. Opened the Novo Nordisk Learning Center in Salk Hall in fall of 2013. The state-of-the-art classroom that facilitates active and small-group learning in a large group setting.

Up to 120 students can work in groups of six, each with its own work table and video monitor. The new Learning Center has outstanding acoustics and contemporary technology that 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. Faculty have changed the way they teach to maximize the instructional capabilities in the Learning

- D. Developing, implementing and increasing the number of controlled clinical environments that simulate clinical situations and accelerate the development of clinical decision making skills.
 1. Standardized Patients (Trained Actors)
 2. Standardized Colleagues (Trained Actors)
 3. Computer Cases with Branched Questions that utilize game theory
 4. Human patient simulator

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. Additionally, professionals 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.

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

The experiences with patients depend greatly on preceptors, some of whom are faculty, who share their skill.

- 35 preceptors supervised 113 P1 students.
- 75 preceptors supervised 109 P2 students.
- 107 preceptors supervised 108 P3 students

Students interact with real patients in the 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 city. During the first visit, students talk with patients about their drug therapy. Two weeks later, after doing 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 first meet their patients in the spring of the P1 year, see them again in the fall of their P2 year, then transition the patients to the P1 students in the following spring.

SilverScripts Program Impact during FY14

SilverScripts Fall 2013 P2 Students		
New Patient Total		286
Follow-up Patient Total		43
Total Patients		329
Blood pressure checks	BP only (no med review)	205
	BP w/ med review	174
	Total	375
Total Med Reviews		166
Medication Education w/out med review		56
Drug Therapy Problems Identified	Unnecessary Drug Therapy	21
	Needs Additional Drug Therapy	107
	Needs Different Drug Product	20
	Dosage Too Low	16
	Adverse Drug Reaction	26
	Dosage Too High	15
	Noncompliance	62
Referral to other health care provider		43
Total Number of Drug Therapy Problems		267

SilverScripts Spring 2014 P1 Students		
New Patient Total		357
Follow-up Patient Total		33
Total Patients		390
Blood pressure checks	BP only (no med review)	223
	BP w/ med review	164
	Total	390
Total Med Reviews		166
Medication Education w/out med review		29
Drug Therapy Problems Identified	Unnecessary Drug Therapy	21
	Needs Additional Drug Therapy	107
	Needs Different Drug Product	21
	Dosage Too Low	13
	Adverse Drug Reaction	20
	Dosage Too High	12
	Noncompliance	55
Referral to other health care provider		21
Total # DTPs Identified on Both Visits		249

P2 Community IPPE Patient Interactions and Collective Impact on Patients

Year	# Students	# Patient Encounters	# Drug Therapy Problems Identified	# Interventions
2014	109	3,542	1,400	883

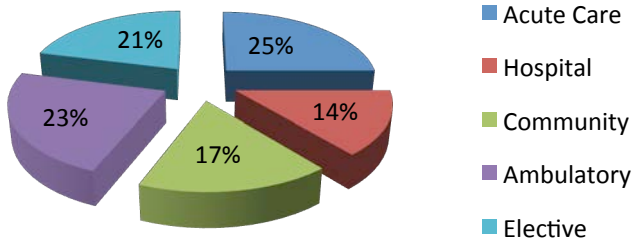
REAL PATIENT CARE EXPERIENCES: ADVANCED PHARMACY PRACTICE EXPERIENCES (APPES)

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 FY14	
Patient Interactions	17,767
Drug Therapy Problems Identified	11,103
Drug Therapy Recommendations	14,218
Adverse drug events identified	641
Adverse drug events averted	702

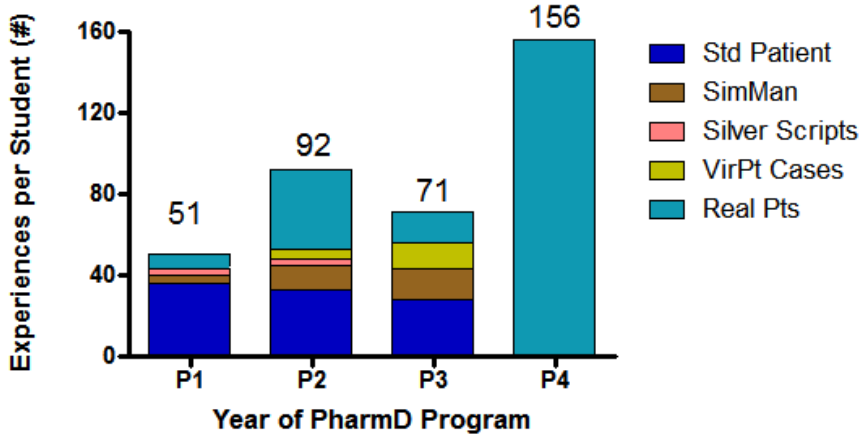
In FY14, 335 preceptors supervised 106 P4 students during 738 five- or six-week rotations. The types of proportions of rotations are shown in the pie chart below.

APPE Distribution by Rotation Type



The figure below shows that in the P1, P2, and P3 years, students are required to have a minimum of 214 real or simulated patient experiences. The number of interactions (156) for P4 students represents an average of the number of patient interactions.

Required Clinical Experiences During PharmD Program = 370



Data were collected using the Pharmacist Interaction Tracking Tool (PITT form) for real-time tracking of patient interactions—both simulated and actual patients.

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.

- A. Areas of Concentration
- B. Special Topics
- C. Presentations of Research at Regional or National Meetings
- D. International Rotations
- E. Professional Development through Advising

A. AREAS OF CONCENTRATION (ARCOs)

During FY14, three additional areas of concentration (ARCOs) were approved, bringing the total number offered to six.

By spring 2014, a total of 77 students were enrolled, including 34 new students. Enrolled are:

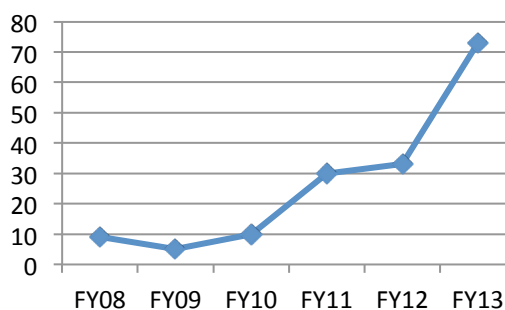
- Sixteen students in the ARCO-Global Health (3 P2, 5 P3, 8 P4).
- Sixteen students in the ARCO-Research (5 P2, 5 P3, 6 P4).
- Twelve students in the ARCO-Pharmacy Business Administration (6 P3, 6 P4).
- Three students in the ARCO-Pediatrics (3 P3).
- Twenty students in the ARCO-Community Leadership, 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 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.

Student engagement in Special Topics courses has grown tremendously and increased almost 700% from FY08 to FY13. Fall 2014 will see the largest number of students to date (n=45) registered to complete such courses in a single term.

Students Enrolled in Special Topics



C. STUDENT PRESENTATIONS AT NATIONAL AND REGIONAL MEETINGS

Student Presentations at National and Regional Meetings

American Society of Health-System Pharmacists Midyear Clinical Meeting	
Primary Author	Poster Title
Anthony Boyd (P3)	Pharmacy distribution model change: improving the medication distribution from a centralized location at a large academic teaching hospital
Frank Cintineo (P4)	Off-label medication use in elderly patients in a medical intensive care unit
Stephanie Cotugno (P3)	Prevalence of hypokalemia in patients taking thiazide diuretics at an urban free clinic
Julia DiNardo (P2)	Redesigning the medication distribution model at a large academic teaching hospital
Allison Doherty (P3)	Development and implementation of contraception education for undergraduate sororities
Matthew Dukewich (P3)	Analysis of antibiotic resistance in a cardiothoracic intensive care unit to determine appropriateness of a restriction program
Cristina Elgin (P4)	Evaluation of a student pharmacist-led smoking cessation program at an inpatient drug and alcohol treatment program
Nicholas Farina (P3)	Implementation and utilization of barcode scanning to prevent medication restocking errors in automated medication stations at a large tertiary academic institution
Maria Felton (P3)	Impact of pharmacy intern involvement on decreasing medication errors during medication reconciliation at an academic teaching facility
Rachel Filiaggi (P3)	Evaluation of the intensive care delirium screening checklist (ICDSC) as a delirium screening protocol in a medical intensive care unit
Emily Graham (P4)	Most common reasons for admission to the intensive care unit
Jocelyn Hatfield (P3)	Development of videos to educate patients on inhalers prior to hospital discharge
Samantha Holliday (P3)	Successful implementation of a sedation algorithm in a medical intensive care unit (MICU)
Lukas Martin (P4)	Bleeding risk assessment among patients receiving antithrombotics for hip and knee replacement surgery
Cara Mazzarisi (P4)	Identification and design of interprofessional advanced pharmacy practice experiences
Cody Moore (P4)	Characteristics of solid organ transplant patients more likely to receive vaccinations after pharmacist recommendation
Jose Nery (P4)	Evaluation of intravenous chlorothiazide use in a large tertiary care academic medical center
Kevin Ordons (P3)	Evaluating the efficiency of a robot rx renovation in a large academic teaching hospital pharmacy
Lindsey Rihtarchik (P3)	Analyzing the efficiency and feasibility of a one technician narcotic delivery model in a large academic teaching facility
Ellen Rubin (P4)	Pharmacokinetic changes in critically ill patients and the potential for adverse drug events

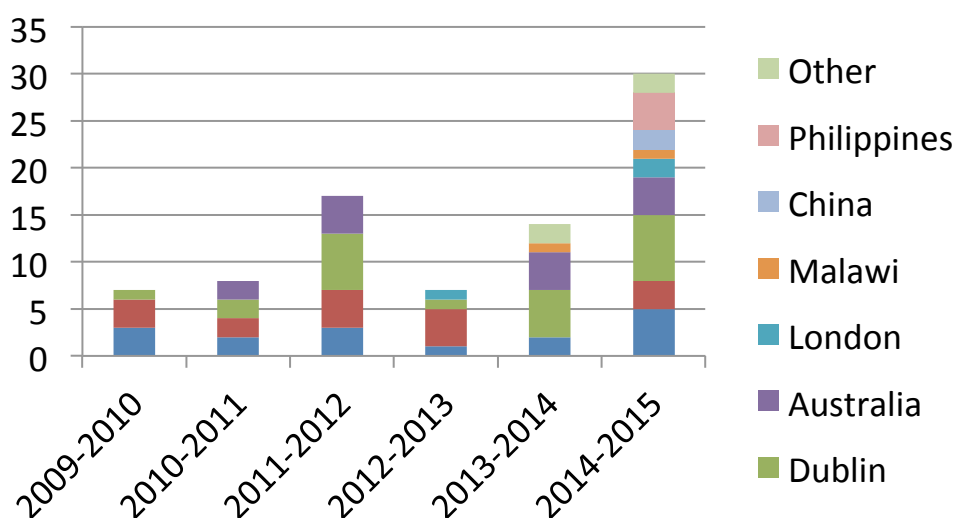
Brahim Shettima (P4)	Long-term stability of dexmedetomidine solutions up to 16 mcg/mL in 0.9% saline at controlled room temperature and under refrigeration
Michael Stanley (P4)	Implementing an automatic medication interchange program across a 13 hospital health system
Shayna Stout (P4)	A retrospective review of vancomycin dosing and monitoring at an academic medical center
Allison Supko (P4)	Risk factors and clinical outcomes associated with resistant alcohol withdrawal (RAW)
Robert Sutton (P4)	Consolidating pharmacy production operations in a large academic teaching hospital
Alexandra Warble (P2)	Reducing unproductive spin time of automated medication carousels within a large academic teaching hospital
Evan Williams (P4)	Oral ribavirin in lung transplant recipients with paramyxoviral infections: a retrospective safety and effectiveness analysis
Jennifer Zhao (P2)	Discharge prescription services: improving patient care by providing smooth transition from inpatient to outpatient
American Pharmacists Association Annual Meeting	
Primary Author	Poster Title
Ukwen Akpoji (P3)	Non-adherence in rheumatoid arthritis patients: Influence of patient-centered factors on disease-modifying antirheumatic drugs and laboratory compliance
Tara Bastawrous (P3)	Impact of first fill interviewing on subsequent refills and patient satisfaction
Stephanie Cotugno (P3)	Optimizing a medication use process to improve safety for a special-needs patient population
Amanda Jaber (P3)	Evaluation of return-to-stock medications in two community pharmacies
Cara Mazzarisi (P3)	Teaching student pharmacists the implications of oral health on chronic disease state management
Matthew Rinkus (P3)	Implementing a telepharmacist service for behavioral health patients within an integrated care system
Courtney Yacko (P3)	Implementation and evaluation of specialized workflow for targeted interventions in a grocery store chain pharmacy
Julia Zecchini (P3)	Increasing over-the-counter analgesic sales by meeting customer needs in an independent pharmacy
Pennsylvania Pharmacists Association Mid-Year Conference	
Primary Author	Poster Title
Ukwen Akpoji (P3)	Non-adherence in RA: Patient-centered factors' influence on DMARD and laboratory monitoring compliance
Amanda Antosz (P2)	Preventing disease state specific vitamin deficiencies through OTC outreach program
Tara Bastawrous (P3)	Impact of first fill interviewing on subsequent refills and patient satisfaction
Joni Carroll (P3)	Participation-base algorithm to systematically allocate funds to professional organization members for a national conference
Stephanie Cotugno (P3)	An overview of the practice of pharmacy at a clinic in Cap Haitien, Haiti
Aaron Devanathan (P2)	An innovative approach: Collecting and tracking patient data to facilitate counseling in patients with hypertension and diabetes
Katelyn Emhoff (P3)	Over-the-counter medication use in college-aged individuals

Jennifer Fever (P1)	Wisconsin Pharmacy Quality Collaborative: Applications to Pennsylvania
Adam Gonyeau (P3)	Implementing a telepharmacist service for behavioral health patients within an integrated care system
Kaleen Hayes (P1)	Osterhaus Pharmacy: The power of provider status
Amanda Jaber (P3)	Evaluation of return-to-stock medications in two community pharmacies
Crystal Jennings (P2)	Compliance improvement within the mental health population
Emily Linville (P2)	Community pharmacy health fairs: Improving patient awareness and building provider relationships
Vivian Nguyen (P2)	Implementation of medication reconciliation discharge in a pediatric outpatient hospital setting
Ravi Patel (P4)	Student-created education artifacts to supplement didactic instruction
Neil Turco (P2)	Scrxiptsync: Improving compliance, improving outcomes
Evan Williams (P4)	The effects of carousel dispensing technology on safety, efficacy, and inventory control in a 300-bed psychiatric hospital
Courtney Yacko (P3)	Implementation and evaluation of specialized workflow for targeted interventions in a grocery store chain pharmacy
Julia Zecchini (P3)	Increasing over-the-counter analgesic sales by meeting customer needs in an independent 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 14 students had 15 international APPE rotation experiences, more than double the number the previous year.

P4 International Rotations FY10 – FY15 (Current Year)



Locations of the P4 rotations and students who participated:

- Addo & Son's Pharmacy in Ghana, Africa (1 student, Sandra Kwarteng).
- Austin Health in Australia (2 students, Felix Fisher and Jessa Koch).
- Kamuzu Central Hospital in Malawi (1 student, Cristina Elgin).
- Beacon Hospital in Dublin, Ireland (2 students, Daniel Greer and Cayla Jones).
- Co-Operative Pharmacy in Dunfermline, Scotland (2 students, Chelsee Claar and Erin Diehl).
- Farmer's Pharmacy in Dublin, Ireland. (3 students, Michelle Bucci, Lindsay Fakete and Nicole Pezzino).
- Hombro a Hombro, Honduras. (2 students, Vantonile Bui and Jessa Koch).
- Sir Charles Hospital in Australia (2 students, Julie Cusatis and Sarah Ward).

Students 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.

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.

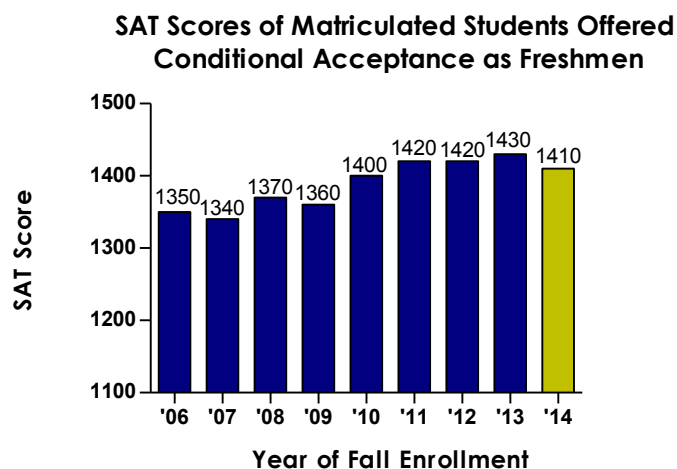
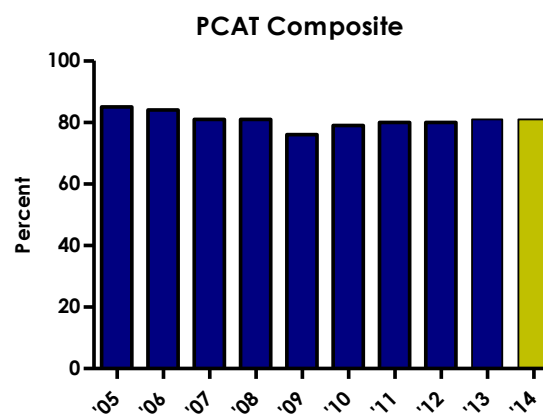
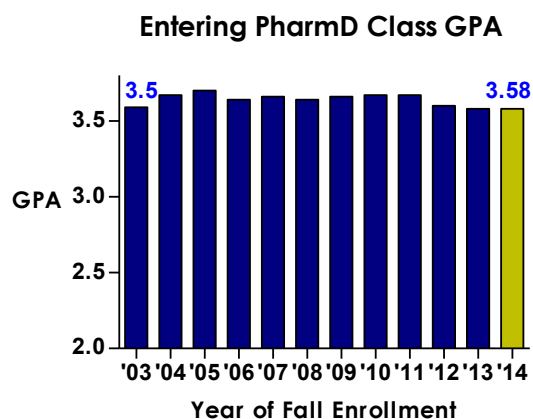
Through the efforts of the Curriculum Committee, the faculty evaluates all courses over a cycle of four years. Thus, each year one fourth of the courses are subjected to an in-depth course evaluation process. We have expanded our use of curricular mapping for curricular design, scheduling of courses, 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 113 students for the class of 2018.



In previous years, the Annual Report captured the average SAT scores for the entering PharmD students who submitted SAT scores. However, the SAT is not required for the School of Pharmacy open admission application. Our conditional acceptance program, which allows students to apply to the pre-Pharmacy program when applying to the University of Pittsburgh as freshman, does require an SAT score from applicants. The SAT requirements for conditional admission include a minimum SAT total score of 1300. For accuracy, we have chosen to report the average scores for the conditional acceptance matriculated students.

During FY14, we recruited the class of 2018 for fall enrollment.

- Conditional admission to the class of 2018
 - 4 students applied for the PharmD program after freshman year.
 - 47 students applied for PharmD program after sophomore year.
 - 51 were interviewed.
 - 44 were qualified and were offered admission.
 - 43 accepted the offers.

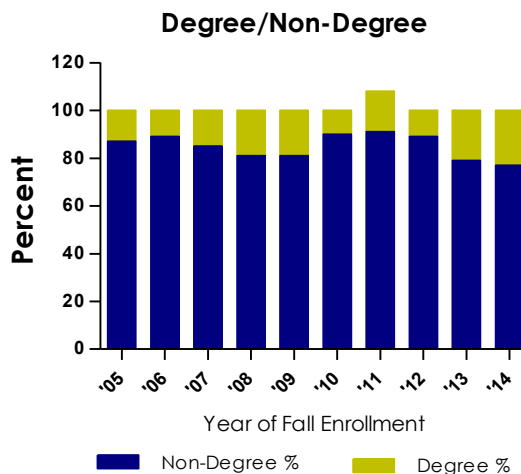
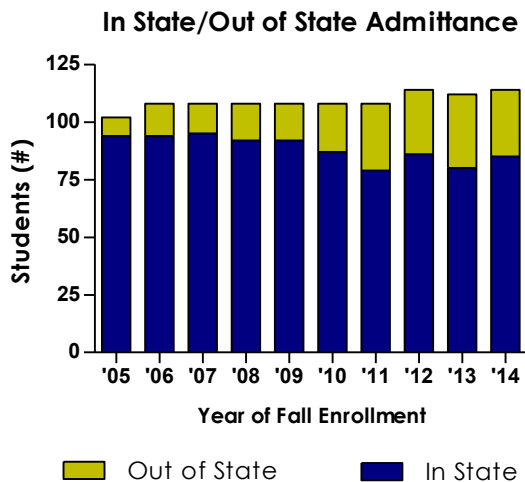
- Open admission to the class of 2018
 - 518 applied to the PharmD program.
 - 157 were interviewed.
 - 103 were offered admission.
 - 71 accepted the offers.

Data for entering classes over time are summarized in the table below. Of the students in the class of 2018, 31% are men and 69% are women (36% and 64%, respectively, in the class of 2017); and 5% are from an underrepresented minority (6% in the class of 2017). The data in the table and figures show a steady increase in the percentage of students with a previous four-year degree.

First-Year (P1) Class Enrollments 2002-2014

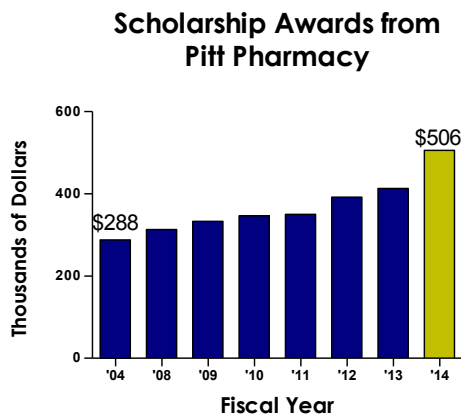
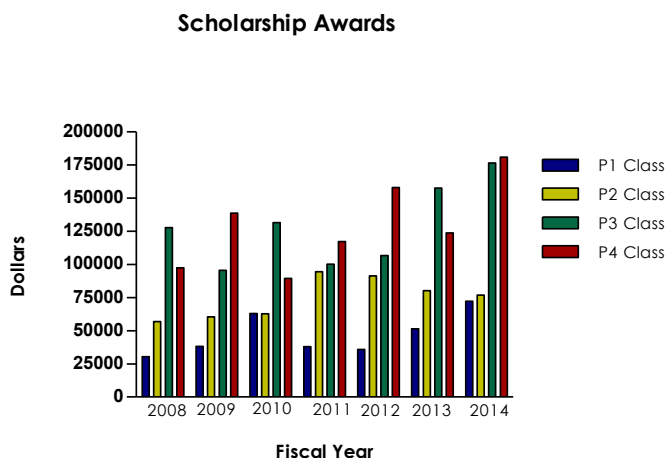
Fall Term	Residency Status		Application Pathway*					Students with 4-Year Degree (% of class)
			Conditional Acceptance	Educational Institution or Type for Students Accepted through Open Admission				
	PA (%)	Non-PA (%)		Pitt	Community College	AAU-member Institution	Other	
2002	92	8	37	37	5	5	12	16
2003	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

*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 FY14 was 176% more than the amount awarded FY04 as shown in the figure below.



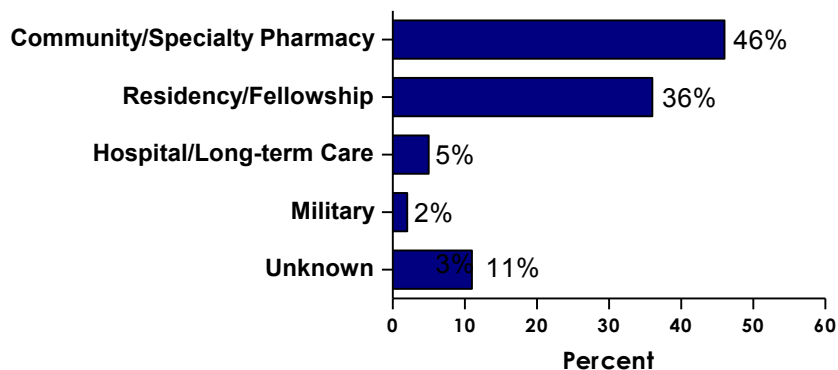
GRADUATING CLASS OF 2014

104 students received their PharmD diplomas at the May 2014 Commencement Ceremony.

In calendar year 2013, 97.2% of students 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.

Thirty-six percent (36%) of the class of 2014 continued training in a post-PharmD residencies or fellowships. Other graduates obtained employment in a variety of pharmacy practice settings.

Class of 2014



Comparison of NAPLEX Pass Rates: First-Time Candidates

Year	Pitt Candidates Pass/Total	Pitt Pass Rate (%)	State Pass Rate (%)	National Pass Rate (%)
2014 ⁺	1/1	100	90.9	83.2
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-April scores

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

Year	Pitt Candidates Pass/Total*	Pitt Pass Rate (%)	State Pass Rate** (%)	National Pass Rate** (%)
2014 ⁺	7/7	100	93.7	90.9
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-April scores

RECOGNITIONS AND AWARDS

Recognition and Awards: Student Organizations

Organization	Award
American Pharmacists Association-Academy of Student Pharmacists (APhA-ASP)	Cardinal Health Foundation Prescription Drug Abuse and Misuse Prevention Grant Region 2 Generation Rx Award
Pennsylvania Pharmacists Association	Membership Award for excellence in membership recruitment, retention, and involvement.
Rho Chi	Chapter Project Award for <i>Posters, Professors, and Progress</i>
Lambda Kappa Sigma	Chrysanthemum Award for member retention Northeast Region Chapter of the Year
Phi Lambda Sigma	Chapter of the Year Runner-Up

Recognition and Awards: Individual Students

Student	Award	Description
Adrienne Jantzi (P3)	Placed in the top 10 in National Patient Counseling Competition	Competition hosted by the American Pharmacists Association-Academy of Student Pharmacists
Pamela Lyons (P4) Evan Williams (P4)	Placed in top 10 in National Clinical Skills Competition	Competition hosted by the American Society of Health-System Pharmacists
Kyle McCormick (P3)	Elected to state-level office (director)	Student member of the Pennsylvania Pharmacists Association Board of Directors
Cara Mazarisi (P3)	Paul Ambrose Scholar	Competitive interprofessional program focused on public and population health issues
Rachel Jansen (P3)	Student Poster Award Winner	Awarded to 3 students internationally for posters presented at All Together Better Health VII
Shea Liput (P2)	Gateway to Research Scholarship	Awarded by the American Foundation for Pharmaceutical Education
Erin Resetar (P3)	Presented research at Immunology 2013	Immunology is the annual conference of the Association for Prevention Teaching and Research
Natalie Valentino (P3)	Ruth Davies Flaherty Award	Lambda Kappa Sigma chapter member selected for exemplary service
Amanda Jaber(P3)	Selected to participate in Government Relations Advocacy for Student Pharmacists (GRASP)	Advocacy training seminar hosted by the Pennsylvania Pharmacists Association
Sophia Yang (P2)	Selected for JRCOSTEP	Junior Commissioned Officer Student Training and Extern Program (JRCOSTEP), Division of the Civilian Volunteer Medical Reserve Corps under Office of the Surgeon General

Student	Award	Description
Brandon Antinopoulos (P4) Kyle McCormick (P4) Kyle McGrath (P3) Andrew Nguyen (P3)	Awarded grant to attend National Community Pharmacists Association convention	Competition sponsored by the Pennsylvania Pharmacists Association Special Interest Group for Independent Pharmacy
Anna Bondar (P3) Austin Van Horn (P2)	Selected as Pittsburgh Schweitzer Fellows	One-year fellowship focusing on reducing disparities in health and health care and on developing leaders in service
Lauren Cirrincione (P3) Rachel Jansen (P3) Ruth Lidoshore (P3) Cara Mazzarisi (P3) Regina Ulis (P3)	Selected for the Jewish Healthcare Foundation Patient Safety Fellowship	Summer fellowship focusing on interprofessional team approaches to improving health care and patient safety

Student Awards at Graduation

Award Title	Student Awardee
APhA Academy of Student Pharmacists Recognition Certificate	Kyle McCormick
Facts and Comparisons Award of Excellence in Clinical Communication	Samantha Holliday
John Herman Wurdack Award	Deanna Rowe
Lilly Achievement Award	Pamela Lyons
Merck Award	Paul Bowers Cristina Elgin Evan Williams
Mylan Pharmaceutical Excellence in Pharmacy Award	Cody Moore
Natural Medicines Comprehensive Database Recognition Award	Emily Graham
Pennsylvania Pharmacists Association Outstanding Student Award	Brandon Antinopoulos
Robert W. Taylor Award for Outstanding Performance in Patient Care Rotation	Nicole Pezzino
TEVA Pharmaceuticals Outstanding Student Award	Ravi Patel
U.S. Public Health Service Award for Excellence in Public Health Pharmacy Practice	Jessa Koch
University of Pittsburgh School of Pharmacy Patient Care Award	Emily Mallit
University of Pittsburgh School of Pharmacy – Pharmacy Communications Award	Eric Emerson
Natural Standard Academic Award	Kinley Sepkovic

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 2013-14 awardees were:

- Dr. Scott Drab, Assistant Professor, Department of Pharmacy and Therapeutics. Dr. Drab provides ambulatory care rotations at the University Diabetes Care Associates (UDCA) located in Greensburg, PA. This was one of the first pharmacist run diabetes care centers located in a community independent pharmacy. The Center is committed to providing patients with diabetes and their families with the highest quality of education, support, and tools necessary to increase quality of life and prevent diabetes related morbidity and mortality. Dr. Drab offers rotations for P3 and P4 students.
- Dr. Heather Sakely offers ambulatory care rotations providing direct patient care to older adults at all levels of care. Two geriatric clinical pharmacists care for patients alongside physicians in the following locations: UPMC St. Margaret Division of Geriatric Medicine (DGM) practice, Geriatric Care Center Oakmont and Presbyterian Senior Care, in Oakmont, PA. Dr. Sakely offers rotations for P1 and P4 students.

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

- Dr. Neal J. Benedict, Associate Professor, Department of Pharmacy and Therapeutics, was the 2013-2014 recipient.

All students vote on a Faculty Member of the Year and present it at the APhA-ASP Student Formal.

- Dr. Lauren J. Jonkman, Assistant Professor, Department of Pharmacy and Therapeutics, was the 2013-2014 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 FY13, revised content was distributed to over 1,500 individuals. Approximately 250 health professionals registered for continuing education credit: 613 pharmacists, 21 nurses, and 19 registered dietitians. Over 1,000 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 FY14:

- Fall Continuing Education Seminar: “Substance Abuse and Addiction” featured presentations by Ralph E. Tarter, PhD, Dennis C. Daley, PhD, and Kathie E. Simpson, RN in the S100A, Biomedical Science Tower with 47 attendees. The intent of this continuing education program was to educate attendees about the origins, development, management, and recovery from addiction to drugs and/or alcohol, as well as the responsibilities and consequences specific to pharmacists in regard to substance abuse and addiction.
- Spring Continuing Education Seminar: “Issues and Opportunities in Current Practice” featured presentations by Sarah Krahe Dombrowski, PharmD, Amanda P. Wojtusik, PharmD, BCPS, Gerard P. Mascara, PharmD, and Jennifer M. Belavic, PharmD, BCPS, FASCP in the S100A, Biomedical Science Tower with 71 attendees. The intent of this continuing education program was to educate attendees about the opportunities for pharmacists in Pennsylvania surrounding collaborative practice agreements. In addition, the program addressed challenges for pharmacists and patients using oral chemotherapy treatments and safety issues involved in sterile compounding. The chemotherapy and compounding sessions count towards the Pennsylvania Patient Safety CE requirement.

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.

Residents 2013-2014

Total Residents: 47

Total Number of Types of Residency Programs: 13

Locations for the 3 PGY1 Programs: 11

Locations for the 10 PGY2 programs: 4

Last Name	First Name	Pitt Residency Program	Year	PharmD School	Plans for FY15
Ballman	Jennifer	Pharmacy	PGY1	Duquesne University	Clinical Pharmacist, Cleveland Clinic, Cleveland, OH
Bremmer	Derek	Pharmacy	PGY1	South Carolina College of Pharmacy	PGY2 Infectious Diseases, The Ohio State University Wexner Medical Center
Breslin	Teresa	Pharmacy	PGY1	Wayne State University	PGY2 Geriatrics, UPMC St. Margaret
Buehrle	Deanna	Pharmacy	PGY1	Duquesne University	PGY2 Infectious Diseases, UPMC Presbyterian
Butala	Jessica	Pharmacy	PGY1	University of Michigan	Clinical Pharmacist West Penn
Cadwalader	John Carroll	Health System Pharmacy Administration	PGY2	Massachusetts College of Pharmacy and Health Sciences-Worcester	PGY2 Medication Safety, UPMC Presbyterian
Castelli	Gregory	Family Medicine	PGY2	Wilkes University Nesbitt School of Pharmacy	Assistant Professor, West Virginia University School of Pharmacy/ Department of Family Medicine
Chitwood*	Sean D.	Managed Care	PGY1	Mercer University College of Pharmacy	Unknown, left the program before completion.
Davies	Marie	Ambulatory Care	PGY2	Campbell University College of Pharmacy	Assistant Professor, Western University of Health Sciences, Pomona, Calif.
Dombrowski	Sarah Krahe	Family Medicine	PGY2	University of Pittsburgh	Assistant Professor, Lake Erie College of Osteopathic Medicine
Doyle,	Meaghan	Pharmacy	PGY1	Creighton University, Omaha, NE	Pharmacist, Bryan Health, Lincoln, NE

Last Name	First Name	Pitt Residency Program	Year	PharmD School	Plans for FY15
Filip	Holly	Pharmacy	PGY1	Duquesne University	Pharmacist, UPMC Shadyside
Gavini	Madhavi	Geriatrics	PGY2	University of Florida	Clinical Pharmacist SUNY Downstate Medical Center Brooklyn, NY
Gregg	Abigail	Pharmacy	PGY1	University at Buffalo	Clinical Pharmacist – West Penn
Hale	Genevieve	Pharmacy	PGY1	Nova Southeastern University	PGY2 Cardiology, Michigan
Harris	Justin	Cardiology	PGY2	University of the Sciences, Philadelphia, PA	Undecided
Harrison	Chelsea	Pharmacy	PGY1	Duquesne University	PGY2 Ambulatory Care, The Cleveland Clinic, Ohio
Haver	Amy	Geriatrics	PGY2	Duquesne University	Undecided
Hebda	Michele	Pharmacy	PGY1	Creighton University, Omaha, NE	Academic and Research Fellowship, Duquesne University
Hedges	Ashley	Pharmacy	PGY1	UNC Eshelman School of Pharmacy	Fellowship, Patient Safety, VAPHS
Higbea	Ashley	Pharmacy	PGY1	Virginia Commonwealth University	PGY2 Family Medicine, UPMC St. Margaret
Hill	Lucas	Pharmacy	PGY1	University of Missouri-Kansas City	PGY2 Ambulatory Care, UPMC St. Margaret
Hogue	Ashleigh	Critical Care	PGY2	University of Pittsburgh	Unit Based Pharmacist, UPMC Presbyterian
Johnson	Amanda	Health System Pharmacy Administration	PGY2	University of Pittsburgh	PGY2 Critical Care , UPMC Presbyterian
Ko	Priscilla	Pharmacy	PGY1	Texas Tech	Fellowship, Global Health/Public Health, Rutgers
Kudla	Nadia	Pharmacy	PGY1	University of Pittsburgh	Clinical Pharmacist, Forbes Regional Hospital
Lichvar	Alicia	Pharmacy	PGY1	University of Pittsburgh	PGY2 Transplant, UPMC Presbyterian
MacLasco	Adam	Pharmacy	PGY1	Northeastern University, Boston, MA	PGY2 Emergency Medicine, University of Illinois-Chicago
Mathis	Erin	Pharmacy	PGY1	University of Pittsburgh	PGY2 Psychiatry, William S. Middleton Memorial Veteran Hospital, Madison, WI
McCartney	Elizabeth	Community Pharmacy	PGY1	University of Pittsburgh	Assistant Professor for Community Pharmacy at Philadelphia College of Pharmacy

Last Name	First Name	Pitt Residency Program	Year	PharmD School	Plans for FY15
Nifes	Emanuel	Pharmacy	PGY1	University of Pittsburgh	PGY2 Critical Care, Greenville Health System, Greenville, SC
Ossman	Kristine	Community Pharmacy	PGY1	St. John Fisher College Wegmans School of Pharmacy	Clinical Pharmacist, RiteAid, Pittsburgh, PA
Pickering	Aaron	Infectious Disease	PGY2	Duquesne University	Infectious Disease/Antimicrobial Stewardship Pharmacist Baltimore-Washington Medical Center
Rashid	Chelsey	Pharmacy	PGY1	LECOM	Clinical Pharmacist, Olean General Hospital, Olean, NY
Riedy	Mary	Pharmacy	PGY1	Duquesne University	PGY2 Pediatrics, Boston Children's Hospital, Boston, MA
Rindfuss	Sarah	Pharmacy	PGY1	University of Pittsburgh	PGY2 Family Medicine, UPMC St. Margaret
Rivosecchi	Ryan	Pharmacy	PGY1	University of Pittsburgh	PGY2 Critical Care, UPMC Presbyterian
Sacha	Lauren	Transplant	PGY2	St. John Fisher College Wegmans School of Pharmacy	Undecided
Schwier	Nicholas	Cardiology	PGY2	St. John Fisher College Wegmans School of Pharmacy	Assistant Professor, University of Oklahoma College of Pharmacy
Shigle	Terri Lynn	Oncology	PGY2	Ohio Northern University	Clinical Specialist MD Anderson Cancer Center, Houston, TX
Shutzberg	Glenna	Managed Care Pharmacy – UPMC Health Plan	PGY1	University of Pittsburgh	Managed Care
Sochacki	Marisa	Underserved and Global Health	PGY2	University of Toledo College of Pharmacy	Doctors Without Borders
Tauber	Meghan	Managed Care Pharmacy – CVS Caremark	PGY1	University of Minnesota	CVS Caremark,
Tunney	Robert	Pharmacy	PGY1	Duquesne University	PGY2 Cardiology, Vanderbilt University Medical Center, Nashville, TN
Whitman	Arin	Pharmacy	PGY1	Duquesne University	PGY2 Oncology, Allegheny General Hospital
Wilkening	Gwendolyn (Lucy)	Pharmacy	PGY1	Southwestern Oklahoma State University	PGY2 Psychiatric Pharmacy, WPIC
Wojtusik	Amanda	Family Medicine	PGY2	University of Rhode Island	Clinical Pharm in Primary Care , Providence Health System, Portland, Oregon

Last Name	First Name	Pitt Residency Program	Year	PharmD School	Plans for FY15
Wong	Adrian	Critical Care	PGY2	Northeastern University, Boston, MA	Clinical Specialist, Mountain View Hospital, Las Vegas

*Left program before completion.

Residents Recruited for 2014-2015

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	Gatti Pharmacy	Kyle McCormick	University of Pittsburgh
		Giant Eagle	Christine Jordan	University of Pittsburgh
		University Pharmacy	Brandon Antinopoulous	University of Pittsburgh
		Rite Aid	Gale Gamong	Lake Erie College of Osteopathic Medicine
PGY1 Managed Care Pharmacy	CVS-Caremark		William Wiberg	University of Minnesota
	UPMC Health Plan		Eric Emerson	University of Pittsburgh
PGY1 Pharmacy Practice	UPMC Presbyterian, WPIC		Ayesha Ather	University of Montana
			Maxwell Brown	Northeastern University
			Emily Graham	University of Pittsburgh
			Cody Moore	University of Pittsburgh
			Anh Vu	University of Colorado
			Cory Weaver	West Virginia University
	UPMC Mercy		Justin John Delic	Duquesne University
			Pamela Lyons	University of Pittsburgh
			Rachel Marini	Duquesne University
			Katherine Roberts	Duquesne University
			Megan Zielke	Duquesne University
	UPMC Hamot		Stephen Henderson	Ohio Northern University
			Hollins Kitts	Wingate University School of Pharmacy
			Angela Shick	Lake Erie College of Osteopathic Medicine
	Children's Hospital of Pittsburgh of UPMC		Anne Countway	Duquesne University
	UPMC St. Margaret		Ashley Campbell	University of North Carolina Eshelman School of Pharmacy
			Raymond Durigan	University of Rhode Island School of Pharmacy
			Matthew Joseph	University of Pittsburgh
			Nicole Payette	Philadelphia College of Pharmacy
			Mira Patel	Albany College of Pharmacy and Health Sciences
			Gregory Trietley	University of Pittsburgh
	UPMC Shadyside		Vivian Tang	Oregon State University
			Dan (Tina) Tran	University of California-San

Program Type	Location	Resident	Education
			Francisco
	UPMC McKeesport	Alice Gahbauer	University of California
PGY2 Ambulatory Care Pharmacy	UPMC Presbyterian-Shadyside	Emily Chan	State University of New York at Buffalo
PGY2 Cardiology Pharmacy	UPMC Presbyterian-Shadyside	Nathan Verlinden	Drake University
PGY2 Critical Care Pharmacy	UPMC Presbyterian-Shadyside	Amanda Johnson	University of Pittsburgh
		Ryan Rivosecchi	University of Pittsburgh
PGY2 Family Medicine	UPMC St. Margaret	Ashley Higbea	Virginia Commonwealth University
		Lucas Hill	University of Missouri- Kansas City
		Sarah Rindfuss	University of Pittsburgh
PGY2 Geriatrics	UPMC St. Margaret	Teresa Breslin	Wayne State University
PGY2 Infectious Disease Pharmacy	UPMC Presbyterian-Shadyside	Deanna Buehrle	Duquesne University
PGY2 Medication Safety	UPMC Presbyterian-Shadyside	John Cadwalader	Massachusetts College of Pharmacy
PGY2 Oncology Pharmacy	UPMC Presbyterian-Shadyside	Anand Shah	State University of New York at Buffalo
PGY2 Psychiatric Pharmacy	Western Psychiatric Institute and Clinic of UPMC	Gwendolyn (Lucy) Wilkening	Southwestern Oklahoma State University
PGY2 Solid Organ Transplant Pharmacy	UPMC Presbyterian-Shadyside	Alicia Lichvar	University of Pittsburgh
PGY2 Specialized Area of Pharmacy: Underserved Care	University of Pittsburgh School of Pharmacy	Rebecca Cope	Albany College of Pharmacy and Health Sciences

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 four tracks: biochemical pharmacology, medicinal chemistry, pharmaceuticals, and clinical pharmaceutical sciences (a specialized program to train students in clinical and translational science).

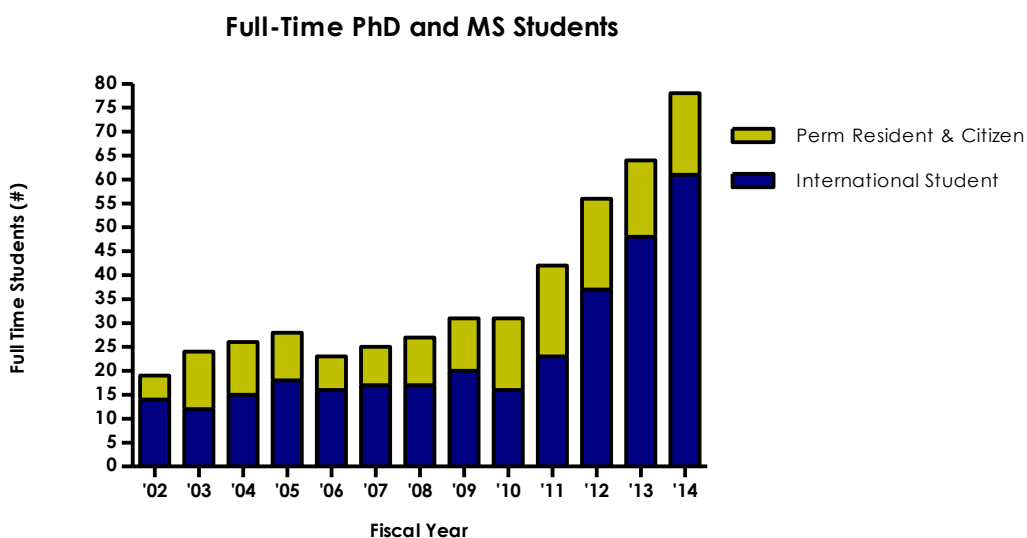
ADMISSION AND ENROLLMENT DEMOGRAPHICS

FY14 was a record for the total number of students enrolled in the graduate program with **79** full-time and **4** part-time students enrolled in the pharmaceutical sciences graduate program. The part-time students included one in the PhD program, one in the MS program, and two in the non-thesis MS program.

Of the 79 full-time students: **53** are PhD students; **6** are Master of Science students; **20** are non-thesis MS students.

- **31% (17/53)** of the PhD students are U.S. citizens or permanent residents.
- **50% (27/53)** of the PhD students have degrees from schools of pharmacy.
- **5** students passed their comprehensive examination and achieved PhD candidate status.

See figure below.



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.

- **27% (14/52)** of the PhD students are U.S. citizens or permanent residents.

2013-2014 (FY14) Admission Demographics

For the class that enrolled in the fall of 2013,

- The school received 145 applications for the PhD program, 55 for the MS program and 12 for the non-thesis MS.
- 12 PhD students received admission offers and enrolled (100% yield).
 - 4 of the 12 are either US citizens or permanent residents.
 - 1 of the 12 has a PharmD degree.
- 7 MS students received admission offers and 4 students enrolled.
- 28 NTMS students received admission offers (through application to the PhD or MS program); 18 enrolled.

2014-2015 (FY15) Admission Demographics

- The school received 92 applications for the PhD program, 46 for the MS program and 6 for the non-thesis MS.
- 6 PhD students were offered and 5 accepted for fall 2014.
 - 1 of the 6 is either a US citizen or permanent resident.
 - 1 holds a PharmD degree.
- 7 MS students were offered admission and 6 accepted for fall 2014.
- 14 NTMS students were offered admission and 7 accepted for fall 2014.

2013–2014 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
Amin, Yashesh	Folan, Maggie	Non-Thesis Master	12-Sep	NTMS
Bi, Yuhan	Xie, Wen	Pharmacology	13-Aug	PhD
Bian, Ke	Undecided	Non-Thesis Master	12-Sep	NTMS
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
Fang, Cheng	Xie, Sean	Medicinal Chemistry	12-Aug	PhD
Feturi, Firuz	Venkataramanan, Raman	Pharmaceutics	11-Aug	PhD
Gao, Xinyi	Gill, Sandy	Pharmaceutics	12-Aug	NTMS
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

Name	Advisor	Track	Enrollment	Degree
Hu, Ziheng	Undecided	Non-Thesis Master	13-Aug	NTMS
Ihunnah, Chibueze	Xie, Wen	Pharmacology	8-Aug	PhD
Jhunjhunwala, Kunal	Rohan, Lisa	Pharmaceutics	13-Aug	NTMS
Jiang, Mengxi	Xie, Wen	Pharmacology	8-Aug	PhD
Joshi, Rujuta	Venkataramanan, Raman	Pharmaceutics	11-Aug	PhD
Kalluri, Hari Varun	Venkataramanan, Raman	CPS*	11-Aug	PhD
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
Kulmanova, Bibissara	Undecided	Non-Thesis Master	13-Aug	NTMS
Li, Hewen	Undecided	Non-Thesis Master	13-Aug	NTMS
Li, Jing	Undecided	Pharmaceutics	13-Aug	PhD
Li, Junyi	Gibbs, Robert	Pharmacology	12-Aug	MS
Li, Lingjue	Poloyac, Samuel	CPS*	13-Aug	PhD
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
Ma , Shifan	Xie, Sean	Medicinal Chemistry	13-Aug	MS
Mason, Daniel	Undecided	Non-Thesis Master	13-Aug	NTMS
Mehrens, Jennifer	Gold, Barry	Medicinal Chemistry	12-Aug	NTMS
Mukundan, Shilpa	Sant, Shilpa	Pharmaceutics	13-Aug	PhD
Odunze, Uchechukwu	Undecided	Non-Thesis Master	13-Aug	NTMS
Parise, Robert	Venkataramanan, Raman	CPS*	5-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
Regev, Galit	Rohan, Lisa	Pharmaceutics	11-Aug	PhD
Sachar, Madhav	Ma, Xiaochao	Pharmacology	13-Aug	PhD
Shawaqfeh, Mohammad	Venkataramanan, Raman	CPS*	7-Aug	PhD
Shehu, Amina	Undecided	Non-Thesis Master	13-Aug	NTMS
Shen, Danfeng	Undecided	Non-Thesis Master	13-Aug	NTMS
Sun, Xiaohuan	Undecided	Non-Thesis Master	13-Aug	NTMS
Thanukrishnan, Harisudhan	Venkataramanan, Raman	CPS*	12-Aug	PhD
Walbi, Ismail	Beumer, Jan	Pharmaceutics	12-Jan	MS

Name	Advisor	Track	Enrollment	Degree
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
Whetstone, Ryan	Gold, Barry	Medicinal Chemistry	7-Aug	PhD
Wu, Yijun	Undecided	Non-Thesis Master	13-Aug	NTMS
Xie, Xinyan	Undecided	Non-Thesis Master	13-Aug	NTMS
Xu, Jieni	Li, Song	Pharmaceutics	13-Aug	MS
Xu, Xiaomeng	Undecided	Non-Thesis Master	13-Aug	NTMS
Xue, Yingfei	Undecided	Medicinal Chemistry	13-Aug	PhD
Yan, Jiong	Xie, Wen	Biochemical Pharmacology	12-Aug	PhD
Yang , Xiaole	Undecided	Non-Thesis Master	13-Aug	NTMS
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, Yifei	Li, Song	Pharmaceutics	9-Aug	PhD
Zhou, Tian	Rohan, Lisa	Pharmaceutics	11-Aug	PhD
Zhou, Xiang	Undecided	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 2014

Name	Advisor	Track	Degree
Li, Junyi	Gibbs, Robert	Pharmacology	PhD
Chen, Yichao	Li, Song	Pharmaceutics	PhD
Prokopenko, Alexander	Poloyac, Samuel	CPS*	PhD
Xie, Yang	Xie, Wen	Pharmacology	PhD
Hu, Ziheng	Xie, Xiang-Qun	Medicinal Chemistry	PhD
Dong, Zhaoqi	Sant, Shilpa		MS
Feng, Shan	Gold, Barry	Medicinal Chemistry	MS
Kiesel, Brian	Beumer, Jan	Pharmaceutics	MS
Venkatakrisnan, Harini	Sant, Shilpa	Pharmaceutics	MS
Xing, Changrui	Xie, Xiang-Qun	Medicinal Chemistry	MS

Name	Advisor	Track	Degree
Zhang, Yan	Xie, Xiang-Qun	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 2014*

Lyu, Yafei	Tang, Chenxiao
Lin, Ying Yu	Wei, Yuan
Liu, Chenchang	Xu, Ruichao
Sun, Tianyu	

*All Non-Researched Based MS are advised by Dr. Vinayak Sant and Dr. M. Maggie Folan

STUDENTS COMPLETING GRADUATE DEGREES IN 2013-2014

Master of Science Graduates

Cheng Fang, MS

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

Graduation: April 2014 (Defense completed March 2014)

Thesis Title: Poloypharmacology Analysis of Anti-osteoporosis Agents and Cannabinoid 2 Receptor Inverse Agonists for Osteoporosis Drug Research

Layal Hammad, MS

Advisor: Peter Wipf, PhD

Graduation: December 2013 (Defense completed December 2013)

Thesis Title: A Small Molecule Scaffold Analysis: Biological Profiles of Novel, Priviledged, and Promiscuous Scaffolds

Ismail Walbi, MS

Advisor: Jan Beumer, PharmD, PhD

Graduation: April 2014 (Defense completed April 2014)

Thesis Title: Pharmacokinetics of the Combination of Veliparib and Temozolomide in Leukemia

Qi Xu, MS

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

Graduation: August 2013 (Defense completed August 2013)

Thesis Title: PKD1 3D Structure Model and Docking Studies for New PKD Inhibitors

PhD Graduates

Ayman Akil, PhD

Advisor: Lisa C. Rohan, PhD

Graduation: December 2013 (Defense completed November 2013)

Thesis Title: Vaginal Polymeric Film Containing Combination of Antiretrovirals for Prevention of HIV Sexual Transmission: Impact of Co-Delivery

Ananda Chowdhury, PhD

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

Graduation: December 2013 (Defense completed November 2013)

Thesis Title: Functional Human Cannabinoid Receptor 2 from Escherichia Coli

Kareem Khoury, PhD

Advisor: Barry Gold, PhD

Graduation: December 2013 (Defense completed December 2013)

Thesis Title: Small Molecule Inhibitors of Protein-Protein Interactions

Robert Parise, PhD

Advisor: Raman Venkataramanan, PhD

Graduation: April 2014 (Defense completed April 2014)

Thesis Title: The Preclinical and Clinical Pharmacology of Benzaldehyde Dimethane Sulfonate (BEN) for the Treatment of Renal Cell Carcinoma

Jafra Sadik Bhasha Shaik, PhD

Advisor: Samuel M. Poloyac, PharmD, PhD

Graduation: December 2013 (Defense completed October 2013)

Thesis Title: Evaluation of Effects of CYP450 Derived Eicosanoids in Cerebral Ischemia

Non-Thesis MS Graduates

Jing Li, MS

Advisor: Lisa C. Rohan, PhD

Graduation: August 2013

Lingjue Li, MS

Advisor: Samuel M. Poloyac, PharmD, PhD

Graduation: August 2013

Hesong Liu, MS

Advisor: Regis Vollmer, PhD

Graduation: August 2013

Chuchu Qin, MS

Advisor: Lee McDermott, PhD

Graduation: August 2013

Daniel Reinfeld, MS

Advisor: Lisa C. Rohan, PhD

Graduation: August 2013

Yingfei Xue, MS

Advisor: Song Li, MD, PhD

Graduation: December 2013

Tianyi Yang, MS

Advisor: Peter Wipf, PhD

Graduation: December 2013

Xiang Zhou, MS

Advisor: Jeffrey K. Yao, PhD, FACB

Graduation: December 2013

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

- Solomon Adams won the First in Category, Critical Care Medicine Best Poster Award at the 12th Annual Safar Symposium Multi-Departmental Trainees' Research Day, University of Pittsburgh, May 22, 2014.
- Kacey Anderson won the 2014 ACCP Student Award (which included a scholarship for travel and meeting registration) for her abstract "The Effects of Therapeutic hypothermia on ABCG2 and ABCB1."

Competitive Fellowships

- 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).
- Kacey Anderson was awarded the Jonas Salk Fellowship from the Jewish HealthCare Foundation for the 2013-14 academic year.

Other Awards

- Sheila Grab won the Leadership and Service award presented by The Graduate and Professional Student Government, University of Pittsburgh, April 18, 2014.
- Zu Wei Zhai won the 2014 Society for Prevention Research Early Career Prevention Network Travel Award.
- Mengxi Jiand and Peng Zhang won the Pharmaceutical Sciences Graduate Student Excellence Award from the University of Pittsburgh, School of Pharmacy.
- Jianqin Liu and Nuo Zhou Wang won the Norman R. and Priscilla A. Farnsworth Student Award from the University of Pittsburgh, School of Pharmacy.
- Lindsay Ferguson Kramzer and Dustin Walsh won the Randy and Renee Juhl Pharmacy Graduate Scholar Award from the University of Pittsburgh, School of Pharmacy.
- Kacey Anderson and Hari Kalluri won the Graduate Student Teaching Assistant Award from the University of Pittsburgh, School of Pharmacy.

Travel Awards

- Mengxi Jiang received a Graduate Program Council travel award to attend the ICE/ENDO Annual Meeting in Chicago, IL.
- Tian Zou received a Graduate Program Council travel award to attend the 27th International Conference and Antiviral Research in Raleigh, NC.

- ZuWei Zhai received a Graduate Program Council travel award to attend the Society for Prevention Research Symposium in Washington, DC.
- Ryan Whetstone received a Graduate Program Council travel award to attend the 16th Annual Midwest DNA Repair Symposium in Detroit, MI.
- Omar Almazroo received a Graduate Program Council travel award to attend the AAPS Annual Meeting in San Antonio, TX.
- Tiantian Gong received a Graduate Program Council travel award to attend the AAPS Annual Meeting in San Antonio, TX.
- Lindsay Kramzer received a Graduate Program Council travel award to attend the AAPS Annual Meeting in San Antonio, TX.
- Xiaolan Zhang Lindsay Kramzer received a Graduate Program Council travel award to attend the Nanomedicine and Drug Delivery Symposium in Los Angeles, CA.

Combined PharmD-PhD Program

Initiated in 2007, this program is designed to give students the opportunity to enter the graduate program during the third professional year. It permits the students to complete some of the course requirements for the PhD with electives in their PharmD program. The goal is to recruit pharmacists to the PhD program and encourage them to become faculty at schools of pharmacy.

- Lindsay Ferguson-Kramzer, (PharmD 2009, University of Pittsburgh) works in L. Rohan's lab and expects to graduate in the spring semester 2014.
- Erin Resetar (anticipated PharmD 2015, University of Pittsburgh) has completed two summers of research in K. Empey's lab and has been admitted as a PhD student for fall 2015.

Graduate Student Publications and Presentations

PUBLICATIONS

- **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*. 2014 Jul 31. [Epub ahead of print]
- **Akil A**, Devlin B, Cost C, Rohan LC. Increased dapivirine tissue accumulation through vaginal film codelivery of dapivirine and tenofovir. *Mol Pharm*. 2014 May 5;11(5):1533-41.
- Lotrich FE, **Albusaysi S**, Ferrell RE. Brain-derived neurotrophic factor serum levels and genotype: association with depression during interferon- α treatment. *Neuropsychopharmacology*. 2013 May;38(6):985-95.
- Yang P1, Wang L, Feng R, **Almehizia AA**, Tong Q, Myint KZ, Ouyang Q, **Alqarni MH**, Wang L, Xie XQ. Novel triaryl sulfonamide derivatives as selective cannabinoid receptor 2 inverse agonists and osteoclast inhibitors: discovery, optimization, and biological evaluation. *J Med Chem*. 2013 Mar 14;56(5):2045-58.
- Yang P1, Myint KZ, Tong Q, Feng R, Cao H, **Almehizia AA**, **Alqarni MH**, Wang L, Bartlow P, Gao Y, Gertsch J, Teramachi J, Kurihara N, Roodman GD, Cheng T, Xie XQ. Lead discovery, chemistry optimization, and biological evaluation studies of novel biamide derivatives as CB2

receptor inverse agonists and osteoclast inhibitors. *J Med Chem.* 2012 Nov 26;55(22):9973-87.

- 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 Mar 26. [Epub ahead of print]
- **Alshogran OY**, Ocque AJ2, Zhao J, Day BW, Leblond FA4 Pichette V, Nolin TD. Determination of warfarin alcohols by ultra-high performance liquid chromatography-tandem mass spectrometry: application to in vitro enzyme kinetic studies. *J Chromatogr B Analyt Technol Biomed Life Sci.* 2014 Jan 1;944:63-8.
- Empey PE, de Mendizabal NV, Bell MJ, Bies RR, **Anderson KB**, Kochanek PM, Adelson PD, Poloyac SM; Pediatric TBI Consortium: Hypothermia Investigators. Therapeutic hypothermia decreases phenytoin elimination in children with traumatic brain injury. *Crit Care Med.* 2013 Oct;41(10):2379-87.
- **Chen Y, Zhang X, Lu J**, Huang Y, **Li J**, Li S. Targeted delivery of curcumin to tumors via PEG-derivatized FTS-based micellar system. *AAPS J.* 2014 May;16(3):600-8.
- Gao Y, Shen H, Yang P, Yu H, Xie Z, Zhang L, Bartlow P, Ji Q, Ding Y, Wang L, Hao S, Ma S, Dong F, Li Y, Zhang P, **Cheng H**, Miao W, Yuan Y, Cheng T, Xie XQ. p18INK4C is an unique target for hematopoietic stem cell expansion with small molecule inhibitors. *Experimental Hematology* August 2013. Volume 41, Issue 8, Supplement, S65.
- **Donnelly MK**, Conley YP, Crago EA, Ren D, Sherwood PR, Balzer JR, Poloyac SM. Genetic markers in EET metabolic pathway are associated with outcomes in patients with aneurysmal subarachnoid hemorrhage. *J Cereb Blood Flow Metab* (Accepted)
- Smith M.A., Hibino M, Falcione B.A., **Eichinger K.M.**, et al., 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. *Annals of Pharmacotherapy*, 2014. 48(1): 77-85.
- Xie XQ, Wang L, Liu H, Ouyang Q, **Fang C**, Su W. Chemogenomics knowledgebased polypharmacology analyses of drug abuse related G-protein coupled receptors and their ligands. *Front Pharmacol.* 2014 Feb 6;5:3.
- LaPorte MG, Tsegay S, Hong KB, Lu C, **Fang C**, Wang L, Xie XQ, Floreancig PE. Construction of a spirooxindole amide library through nitrile hydrozirconation-acylation-cyclization cascade. *ACS Comb Sci.* 2013 Jul 8;15(7):344-9.
- **Ghazwani M, Zhang Y**, Gao X, Fan J, **Li J**, Li S. Anti-fibrotic effect of thymoquinone on hepatic stellate cells. *Phytomedicine.* 2014 Feb 15;21(3):254-60.

- Rinehart M, **Grab S**, Rohan L, Katz D, Wax A. Analysis of vaginal microbicide film hydration kinetics by quantitative imaging refractometry. *PLoS One*. 2014 Apr 15;9(4).
- **Thunnah CA**, Wada T, Philips BJ, Ravuri SK, Gibbs RB, Kirisci L, Rubin JP, Marra KG, Xie W. Estrogen sulfotransferase/SULT1E1 promotes human adipogenesis. *Mol Cell Biol*. 2014 May;34(9):1682-94.
- Ou Z, **Jiang M**, Hu B, Huang Y, Xu M, Ren S, Li S, Liu S, Xie W, Huang M. Transcriptional Regulation of Human Hydroxysteroid Sulfotransferase SULT2A1 by LXR. *Drug Metab Dispos*. 2014 Jul 15. [Epub ahead of print]
- **Jiang M**, He J, Kucera H, Gaikwad NW, Zhang B, Xu M, O'Doherty RM, Selcer KW, Xie W. Hepatic overexpression of steroid sulfatase ameliorates mouse models of obesity and type 2 diabetes through sex-specific mechanisms. *J Biol Chem*. 2014 Mar 21;289(12):8086-97.
- **Lu J**, Huang Y, Zhao W, **Chen Y**, Li J, Gao X, Venkataramanan R, Li S. Design and characterization of PEG-derivatized vitamin E as a nanomicellar formulation for delivery of paclitaxel. *Mol Pharm*. 2013 Aug 5;10(8):2880-90.
- He J, Hu B, Shi X, Weidert ER, **Lu P**, Xu M, Huang M, Kelley EE, Xie W. Activation of the aryl hydrocarbon receptor sensitizes mice to nonalcoholic steatohepatitis by deactivating mitochondrial sirtuin deacetylase Sirt3. *Mol Cell Biol*. 2013 May;33(10):2047-55.
- Fregoso OI, Ahn J, Wang C, **Mehrens J**, Skowronski J, Emerman M. Evolutionary toggling of Vpx/Vpr specificity results in divergent recognition of the restriction factor SAMHD1. *PLoS Pathog*. 2013;9(7).
- Ji X, Wu Y, Yan J, **Mehrens J**, Yang H, DeLucia M, Hao C, Gronenborn AM, Skowronski J, Ahn J, Xiong Y. Mechanism of allosteric activation of SAMHD1 by dGTP. *Nat Struct Mol Biol*. 2013 Nov;20(11):1304-9.
- Vorontsov II, Wu Y, DeLucia M, Minasov G, **Mehrens J**, Shuvalova L, Anderson WF, Ahn J. Mechanisms of allosteric activation and inhibition of the deoxyribonucleoside triphosphate triphosphohydrolase from *Enterococcus faecalis*. *J Biol Chem*. 2014 Jan 31;289(5):2815-24.
- Gaharwar.A.K, **Mukundan S.**, Karaca E.,Dolatshahi-Pirouz.A, Patel A., Rangarajan K., Mihaila S.M, Iviglia G., Zhang H., Khademhosseini A. Nanoclay Enriched Polycaprolactone electrospun scaffolds for osteogenic differentiation of Human Mesenchymal Stem Cells. *Tissue Eng Part A*. 2014 May 19. [Epub ahead of print]
- 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 May 20. [Epub ahead of print]

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- **Parise RA**, Beumer JH, Clausen DM, Rigatti LH, Ziegler JA, Gasparetto M, Smith CA, Eiseman JL. Effects of the aldehyde dehydrogenase inhibitor disulfiram on the plasma pharmacokinetics, metabolism, and toxicity of benzaldehyde dimethane sulfonate (NSC281612, DMS612, BEN) in mice. *Cancer Chemother Pharmacol.* 2013 Dec;72(6):1195-204.
- Pillai VC, Venkataramanan R, **Parise RA**, Christner SM, Gramignoli R, Strom SC, Rudek MA, Beumer JH. Ritonavir and efavirenz significantly alter the metabolism of erlotinib--an observation in primary cultures of human hepatocytes that is relevant to HIV patients with cancer. *Drug Metab Dispos.* 2013 Oct;41(10):1843-51.
- Kiesel BF, **Parise RA**, Tjørnelund J, Christensen MK, Loza E, Tawbi H, Chu E, Kummar S, Beumer JH. LC-MS/MS assay for the quantitation of the HDAC inhibitor belinostat and five major metabolites in human plasma. *J Pharm Biomed Anal.* 2013 Jul-Aug;81-82:89-98.
- **Patel A**, Sant S. Exploiting Hypoxic Tumor Microenvironment for Development of Targeted Therapies. In MM Amiji and A Singh (Eds), *Intelligent drug delivery systems*. London, UK: Future Medicine, Future Science Group. (Accepted)
- Shields RK, Nguyen MH, **Press EG**, Updike CL, Clancy CJ. Caspofungin MICs correlate with treatment outcomes among patients with *Candida glabrata* invasive candidiasis and prior echinocandin exposure. *Antimicrob Agents Chemother.* 2013 Aug;57(8):3528-35. doi: 10.1128/AAC.00136-13
- Shields RK, Nguyen MH, **Press EG**, Updike CL, Clancy CJ. Anidulafungin and micafungin MIC breakpoints are superior to that of caspofungin for identifying FKS mutant *Candida glabrata* strains and Echinocandin resistance. *Antimicrob Agents Chemother.* 2013 Dec;57(12):6361-5.
- Oleksiuk LM, Nguyen MH, **Press EG**, Updike CL, O'Hara JA, Doi Y, Clancy CJ, Shields RK. In vitro responses of *Acinetobacter baumannii* to two- and three-drug combinations following exposure to colistin and doripenem. *Antimicrob Agents Chemother.* 2014;58(2):1195-9.
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- **Press EG**, Shields RK, Clancy C. *Candida* Biofilm: Clinical Implications of Recent Advances in Research. *Curr Fungal Infect Rep* (2014) 8:72-80.

- **Shaik JS**, Ahmad M, Li W, Rose ME, Foley LM, Hitchens TK, Graham SH, Hwang SH, Hammock BD, Poloyac SM. Soluble epoxide hydrolase inhibitor trans-4-[4-(3-adamantan-1-yl-ureido)-cyclohexyloxy]-benzoic acid is neuroprotective in rat model of ischemic stroke. *Am J Physiol Heart Circ Physiol*. 2013 Dec 1;305(11):H1605-13.
- **Shaik JS**, Miller TM, Graham SH, Manole MD, Poloyac SM. Rapid and simultaneous quantitation of prostanoids by UPLC-MS/MS in rat brain. *J Chromatogr B Analyt Technol Biomed Life Sci*. 2014 Jan 15;945-946:207-16.
- Cheng J, Edin ML, Hoopes SL, Li H, Bradbury JA, Graves JP, DeGraff LM, Lih FB, Garcia V, **Shaik JS**, Tomer KB, Flake GP, Falck JR, Lee CR, Poloyac SM, Schwartzman ML, Zeldin DC. Vascular characterization of mice with endothelial expression of cytochrome P450 4F2. *FASEB J*. 2014 Jul;28(7):2915-31.
- **Wang N**, Bartlow P, Ouyang Q, Xie XQ. Recent advances in antimultiple myeloma drug development. *Pharm Pat Anal*. 2014 May;3(3):261-77.
- Shi X, Cheng Q, Xu L, **Yan J**, **Jiang M**, He J, Xu M, Stefanovic-Racic M, Sipula I, O'Doherty RM, Ren S, Xie W. Cholesterol sulfate and cholesterol sulfotransferase inhibit gluconeogenesis by targeting hepatocyte nuclear factor 4 α . *Mol Cell Biol*. 2014 Feb;34(3):485-97.
- **Zhai ZW**, Kirisci L, Tarter RE, Ridenour TA. Psychological dysregulation during adolescence mediates the association of parent-child attachment in childhood and substance use disorder in adulthood. *Am J Drug Alcohol Abuse*. 2014 Jan;40(1):67-74.
- **Zhai, Z.W.**, Pajtek, S., Luna, B., Geier, C.F., Ridenour, T.A., Clark, D.B. Reward modulated response inhibition, cognitive shifting and the orbital frontal cortex in early adolescence. *Journal of Research on Adolescence*. (Accepted)
- Riggs NR, Tate EB, Ridenour TA, Reynolds MD, **Zhai ZW**, Vanyukov MM, Tarter RE. Longitudinal associations from neurobehavioral disinhibition to adolescent risky sexual behavior in boys: direct and mediated effects through moderate alcohol consumption. *J Adolesc Health*. 2013 Oct;53(4):465-70.
- Clark DB1, Chung T, Pajtek S, **Zhai Z**, Long E, Hasler B. Neuroimaging methods for adolescent substance use disorder prevention science. *Prev Sci*. 2013 Jun;14(3):300-9.
- **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.
- **Zhang P**, **Lu J**, Huang Y, Zhao W, **Zhang Y**, **Zhang X**, Li J, Venkataramanan R, Gao X, Li S. Design and evaluation of a PEGylated lipopeptide equipped with drug-interactive motifs as an improved drug carrier. *AAPS J*. 2014 Jan;16(1):114-24.

- **Zhang X**, Huang Y, Li S. Nanomicellar carriers for targeted delivery of anticancer agents. *Ther Deliv*. 2014 Jan;5(1):53-68.
- **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 X**, **Lu J**, Huang Y, Zhao W, **Chen Y**, Li J, Gao X, Venkataramanan R, Sun M, Stolz DD, Zhang L, Li S. PEG-Farnesylthiosalicylate Conjugate as a Nanomicellar Carrier for Delivery of Paclitaxel. *Bioconjug Chem*. Mar 20, 2013; 24(3): 464–472.
- **Zhang Y**, **Ghazwani M**, **Li J**, Sun M, Stolz DB, He F, Fan J, Xie W, Li S. MiR-29b inhibits collagen maturation in hepatic stellate cells through down-regulating the expression of HSP47 and lysyl oxidase. *Biochem Biophys Res Commun*. 2014 Apr 18;446(4):940-4.
- **Zhang YF**, Huang YX, Li S. Polymeric Micelles as Nanocarriers for Cancer Targeted Drug Delivery. *AAPS PharmSciTech*. 2014 Aug;15(4):862-71.
- **Zhang Y**, Huang Y, Zhao W, **Lu J**, **Zhang P**, **Zhang X**, Li J, Venkataramanan, R. Fmoc-Conjugated PEG-Vitamin E2 Micelles for Tumor-targeted Delivery of Paclitaxel: Enhanced Drug-Carrier Interaction and Loading Capacity. *AAPS J*. (Accepted)
- **Zhou T**, **Hu M**, Pearlman A, Patton D, Rohan L. Expression and Localization of P-Glycoprotein, Multidrug Resistance Protein 4, and Breast Cancer. *AIDS Res Hum Retroviruses*. 2014 Jun 12. [Epub ahead of print]

PRESENTATIONS, POSTERS, AND PODIUM PRESENTATIONS

- 12th Annual Safar Symposium Multi-Departmental Trainees' Research Day, University of Pittsburgh, Pittsburgh, PA. ABCG2 rs2231142 is associated with outcomes following severe traumatic brain injury. **Adams S**. May 22, 2014.
- 2013 American Association of Pharmaceutical Scientists Annual Meeting and Exposition. San Antonio, TX. Longitudinal Changes in the Expression of Renal Transporters Following Living and Deceased Donor Renal Transplantation. **Almazroo, O**. November 10, 2013.
- 2013 American College of Clinical Pharmacology Annual Meeting, Bethesda, Maryland. The Effect of Experimental Kidney Failure on Warfarin Reduction in Rats. **Alshogran, O**. September 23, 2013.
- 5th AAPS Regional Meeting and Research Forum, Duquesne University, Pittsburgh, PA, Down-Regulation of Hepatic Reductases in Experimental Kidney Disease. **Alshogran, O**. November 5, 2013.

- 2013 American College of Clinical Pharmacology Annual Meeting, Bethesda, Maryland. Effect of hypothermia on ABCG2- and ABCB1-mediated drug transport. **Anderson, K.** September 22, 2013.
- 5th AAPS Regional Meeting and Research Forum, Duquesne University, Pittsburgh, PA. Effect of hypothermia on ABCG2- and ABCB1-mediated drug transport. **Anderson, K.** November 5, 2013.
- 22nd Annual American Heart Association Fellows Research Day, Pittsburgh, PA. Mild hypothermia decreases ABCG2 and ABCB1 mediated drug transport. **Anderson, K.** February 14, 2014.
- 12th Annual Safar Symposium Multi-Departmental Trainees' Research Day, University of Pittsburgh, Pittsburgh, PA. Mild hypothermia decreases ABCG2 and ABCB1 mediated drug transport. **Anderson, K.** May 23, 2013.
- 13th Annual McGowan Institute for Regenerative Medicine Scientific Retreat, Nemacolin Woodlands, Farmington, PA. Development of Polyssacharide-based Non-viral Vectors for Mesenchymal Stem Cell Gene Delivery. **Chen, Y.** March 10, 2014.
- 42nd Annual Autumn Immunology Conference, Chicago, IL. Inhaled interferon γ (IFN γ) during primary respiratory syncytial virus (RSV) infection induces airway hyperresponsiveness (AHR) after RSV re-challenge. **Eichinger K.** November 22, 2013
- 2013 Pittsburgh International Lung Conference, Pittsburgh, PA. Understanding the role of IFN γ in an infant mouse model of respiratory syncytial virus (RSV). **Eichinger K.** October 18, 2013.
- 2013 American Association of Pharmaceutical Scientists Annual Meeting and Exposition. San Antonio, TX. Preformulation Development of Griffithsin, an Anti-HIV Vaginal PrEP Candidate. **Ferguson LK.** November 13, 2103.
- 2014 West Virginia University School of Pharmacy Regional Research Forum, Morgantown, WV. Correlative Metrics of Adherence to Immunosuppression in Upper Extremity Transplantation – The Pittsburgh Experience. **Feturi, F.** June 12, 2014.
- 2013 American Association of Pharmaceutical Scientists Annual Meeting and Exposition. San Antonio, TX. Sensitive and Specific VF Cocktail Assay for rapidly simultaneous assessment of Rat Cytochrome P450 Activities in Rat Hepatic Microsome using LC-MS/MS for in vitro drug-disease studies. **Feturi, F.** November 15, 2013.
- 2013 American Association of Pharmaceutical Scientists Annual Meeting and Exposition. San Antonio, TX. Pharmacokinetics and local tissue levels of the immunosuppressive medications after topical and systemic administration in rats. **Feturi, F.** November 15, 2013.
- Department of Plastic Surgery Resident Research Day, University of Pittsburgh, Pittsburgh PA. Feasibility of topical administration of mycophenolic acid and tacrolimus for vascularized composite allotransplantation **Feturi, F.** June 27 2014.

- Center for Pharmacogenomics, University of Pittsburgh, Pittsburgh, PA. PEG5k-Fmoc-FTS2 Micelle System as Dual Functional Delivery System for TQ in Treatment of Liver Fibrosis. **Ghazwani, M.** September 26, 2014.
- Center for Pharmacogenomics, University of Pittsburgh, Pittsburgh, PA. Anti-fibrotic effect of Thymoquinone on Hepatic Stellate Cells. **Ghazwani, M.** January 16, 2014
- Center for Pharmacogenomics, University of Pittsburgh, Pittsburgh, PA. Development and characterization of Paclitaxel-loaded solid lipid nanoparticles. **Ghazwani, M.** May 22, 2014.
- 2013 American Association of Pharmaceutical Scientists Annual Meeting and Exposition. San Antonio, TX. Nanocrystal formulation development of CSIC, a highly potent anti-HIV drug candidate. **Gong, T.** November 13, 2013.
- Experimental Biology 2014. San Diego, CA. Estrogen Sulfotransferase Promotes Human Adipogenesis. **Ihunnah, C.** April 30, 2014.
- Joint Meeting of the International Society of Endocrinology and the Endocrine Society: ICE/ENDO 2014, Chicago, IL. Hepatic over-expression of steroid sulfatase ameliorates mouse models of obesity and type 2 diabetes through sex-specific mechanisms. **Jiang, M.** June 21, 2014.
- 2013 American College of Clinical Pharmacology Annual Meeting, Bethesda, MD. Continuous Infusion of Mycophenolate Mofetil for Acute Graft-Versus-Host-Disease Prophylaxis in Pediatric Bone Marrow Transplant Patients. **Joshi, R.** September 22, 2013.
- 5th AAPS Regional Meeting and Research Forum, Duquesne University, Pittsburgh, PA. Continuous Infusion of Mycophenolate Mofetil for Acute Graft-Versus-Host-Disease Prophylaxis in Pediatric Bone Marrow Transplant Patients **Joshi, R.** November 5, 2013.
- International Sephardic Education Foundation (ISEF), New York, NY. Social Involvement during Graduate Studies. **Kirshner, Z.** February 11, 2014.
- Neuroscience 2013, Society For Neuroscience, San Diego, CA. Sustained treatment with estradiol or G-1 alters the levels of orexin and aromatase mRNAs in the brain in a regionally-specific manner **Kirshner, Z.** November 5, 2013
- 8th Annual Rapid Responses to Steroid Hormones Meeting, Erie, PA. Estradiol affects brain aromatase and orexin mRNA levels through G Protein-Coupled Estrogen Receptor in regionally-specific manner **Kirshner, Z.** September 19, 2013.
- Neuroscience 2013, Society For Neuroscience, San Diego, CA. Sustained Treatment with Estradiol and G-1 Alters the Levels of Orexin and Aromatase mRNAs in the Brain in a Regionally-Specific Manner. **Li, J.** November 13, 2013.
- 8th Annual Rapid Responses to Steroid Hormones Meeting, Erie, PA. Estradiol Affects Brain Aromatase and Orexin mRNA Levels Through G Protein-Coupled Estrogen Receptor in Regional- Specific Manner. **Li, J.** September 10, 2013.

- The 15th International Winter Eicosanoid Conference, Baltimore, MD. The effect of intravenous administration of a soluble epoxide hydrolase inhibitor t-tueb on p450 dependent eicosanoid concentrations in pnd 17 rat brain. **Li, L.** March 11, 2014.
- 41st Annual Meeting & Exposition of the Controlled Release Society, Chicago, IL. Folate-conjugated PEG-derivatized Embelin as A Versatile Nanocarrier for the Targeted Delivery of Doxorubicin with Reversal of Multidrug Resistance. **Lu, J.** July 21, 2014.
- 2014 West Virginia University School of Pharmacy Regional Research Forum, Morgantown, WV. Targeted delivery of Doxorubicin by Folic Acid-Decorated Multifunctional Nanocarrier with Reversal of Multidrug Resistance. **Lu, J.** June 13, 2014.
- 5th AAPS Regional Meeting and Research Forum, Duquesne University, Pittsburgh, PA. Targeted Delivery of Doxorubicin by star-shaped Nanomicelles with Suppression of Multidrug Resistance. **Lu, J.** November 5, 2013.
- Pittsburgh Area Nuclear Receptor/Coregulator Club (PANRC) Conference, University of Pittsburgh Cancer Institute, Pittsburgh, PA. AHR Activation Alleviates Diet-induced Obesity and Type 2 Diabetes by Induction of Fibroblast, **Lu, P.** September 17, 2014.
- 13th Annual McGowan Institute for Regenerative Medicine Scientific Retreat, Nemaconlin Woodlands, Farmington, PA. Mechanically strong self-assembled fibers, **Mukundan, S.** March 9, 2014.
- 5th AAPS Regional Meeting and Research Forum, Duquesne University, Pittsburgh, PA. PCL-Graphene nanocomposites for skeletal muscle tissue engineering. **Mukundan, S.** November 5, 2013.
- Science 2013, University of Pittsburgh. Pittsburgh, PA. Electrospun PCL-Graphene Composite Scaffolds for Skeletal Muscle Regeneration. **Mukundan, S.** October 3, 2013.
- Science 2013, University of Pittsburgh. Pittsburgh, PA. Fabrication of collagen mimicking hydrogel fibers. **Mukundan, S.** October 3, 2013.
- Science 2013, University of Pittsburgh. Pittsburgh, PA. Bioengineered Tumor Microenvironments to Study Effect of Size on Tumor Progression. **Mukundan, S.** October 3, 2013.
- The Minerals, Metals and Materials Society (TMS) 2013 Annual Meeting, Montreal, Canada. Fabrication and characterization of electrospun PCL- Graphene nanocomposites. **Mukundan, S.** October 27, 2013.
- 2013 Annual Meeting Biomedical Engineering Society, Seattle, WA. Engineered in vitro Microtumors of Controlled Sizes as Models for Breast Cancer. **Mukundan, S.** September 27, 2013.
- 2013 Annual Meeting Biomedical Engineering Society, Seattle, WA. Graphene Nanocomposites for Tissue Engineering. **Mukundan, S.** September 27, 2013.

- 13th Annual McGowan Institute for Regenerative Medicine Scientific Retreat, Nemaconlin Woodlands, Farmington, PA. In-vitro biomineralization study in self assembled hydrogel fibers. **Patel, A.** March 9, 2014.
- 5th AAPS Regional Meeting and Research Forum, Duquesne University, Pittsburgh, PA. Small Molecule Inhibitors of Cytoplasmic Dynein Heavy Chain. **Pouland, T.** November 5, 2013.
- Drug Discovery Institute, University of Pittsburgh, Pittsburgh, PA. Screening for Small Molecule Perturbagens of Cytoplasmic Dynein Heavy Chain. **Pouland, T.** August 5, 2013.
- 16th Annual Midwest DNA Repair Symposium, Detroit, MI. Stem Cell Mutagenesis and Carcinogenesis in the Colon of Wild Type and Immune Compromised Mice after Treatment with Azoxymethane and/or Dextran Sodium Sulfate. **Whetstone, R.** May 17, 2014.
- The 26th Annual UPCI Scientific Retreat, University of Pittsburgh, Greensburg, PA. Colon Stem Cell Mutagenesis and Carcinogenesis in Wild Type and Immune Compromised Mice after Treatment with Azoxymethane and/or Dextran Sulfate Sodium. **Whetstone, R.** June 19, 2014.
- 13th Annual McGowan Institute for Regenerative Medicine Scientific Retreat, Nemaconlin Woodlands, Farmington, PA. Synthesis and characterization of novel APS-based elastomer for soft tissue engineering. **Xue, Y.** March 9, 2014.
- Pittsburgh Area Nuclear Receptor/Coregulator Club (PANRC) Conference, University of Pittsburgh Cancer Institute. CAR Suppresses Gluconeogenesis through PGC1 α Sequestration and Degradation, **Yan, J.** September 17, 2013.
- 2014 Annual Meeting Society for Prevention Research. Washington DC. Roles of parental attachment in the development of risky sexual behavior. **Zhai, ZW.** May 28, 2014.
- 5th AAPS Regional Meeting and Research Forum, Duquesne University, Pittsburgh, PA. Parental attachment, neurobehavior disinhibition, and substance use in the etiology of substance use disorder. **Zhai, Z.** November 5, 2013.
- 2014 West Virginia University School of Pharmacy Regional Research Forum, Morgantown, WV. A PEG-Fmoc conjugate as a simple and effective nanocarrier for paclitaxel. **Zhang, P.** June 12, 2014.
- 5th AAPS Regional Meeting and Research Forum, Duquesne University, Pittsburgh, PA. PEGylated peptide equipped with drug-interactive units: a simple and effective nano-carrier for anti-cancer agent paclitaxel. **Zhang, P.** November 15, 2013
- The 26th Annual UPCI Scientific Retreat, University of Pittsburgh, Greensburg, PA. Reduction-Sensitive Dual Functional Nanomicelles for Improved Delivery of Paclitaxel. **Zhang, X.** June 19, 2014.
- West Virginia University School of Pharmacy Regional Research Forum, Morgantown, WV. Reduction-Sensitive Dual Functional Nanomicelles for Improved Delivery of Paclitaxel. **Zhang, X.** June 12, 2014.

- West Virginia University School of Pharmacy Regional Research Forum, Morgantown, WV. Fmoc-Conjugated PEG-Vitamin E2 Micelles for Tumor-Targeted Delivery of Paclitaxel: Enhanced Drug-Carrier Interaction and Loading Capacity. **Zhang, Y.** June 12, 2014.
- 5th AAPS Regional Meeting and Research Forum, Duquesne University, Pittsburgh, PA. Fmoc-Conjugated PEG-Vitamin E2 Micelles for Tumor-Targeted Delivery of Paclitaxel: Enhanced Drug-Carrier Interaction and Loading Capacity. **Zhang, Y.** November 15, 2013.
- 27th International Conference on Antiviral Research. Regulation and Function of Efflux Transporters in Mouse Cervicovaginal Tissues. **Zhou, T.** May 2014.

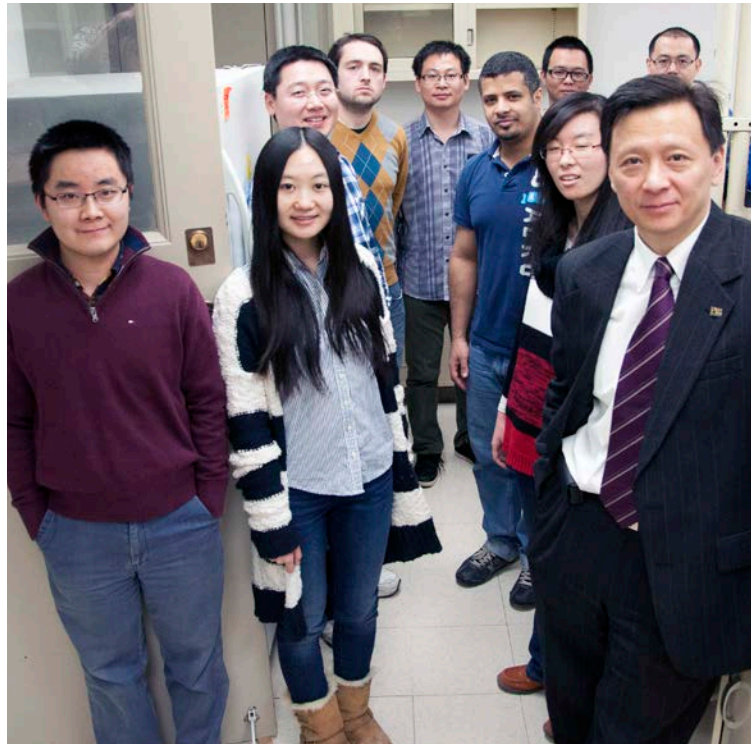
POSTDOCTORAL FELLOWS

School of Pharmacy Postdoctoral Associates FY14

Name	Degree	Degree/University	Field	Country
Bartlow, Patrick	PhD	University of Pittsburgh	Bioengineering	USA
Bastian, Jaime	PharmD	University of Florida	Pharmacy	USA
Chithambarampillai, Venkateswaran	PhD	Texas Tech	Pharmacology and Toxicology	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
Huang, Yixian	PhD	Shanghai Institute of Organic Chemistry	Organic Synthesis	China
Liu, Ke	PhD	Chinese Academy of Sciences	Bioanalysis, Drug Metabolism and Pharmacokinetics	China
Ouyang, Qin	PhD	Nankai University	Organic Chemistry	China
Shaik, Imam	PhD	Texas Tech University	Pharmaceutical Sciences	USA
Shi, Xiongjie	PhD	Chinese Academy of Sciences	Hydrobiology	China
Sinha, Mantosh Kumar	PhD	Scripps Research Institute	Organic Chemistry	USA
Sung, Kisa	PhD	Sungkyunkwan University	Molecular Cell Biology	Korea
Wang, Kan	PhD	University of Pittsburgh	Chemistry	USA
Wang, Peng-Cheng	PhD	Chinese Academy of Sciences	Medicinal Chemistry	China
Zhang, Peng	PhD	Beijing Institute of Transfusion Medicine	Pathology	China
Zhang, Wei	PhD	Fudan University	Pharmaceutics	China
Zhao, Jieliu	PhD	Virginia Polytechnic Institute and State University	Bioorganic and Medicinal Chemistry	USA

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 FY14

- In FY14, funded research projects generated **\$14,709,329** in total support (**\$10.94 million** direct costs and **\$3.77 million** indirect costs).
- FY14 School of Pharmacy PHS research expenses were **\$6,058,477** in direct costs and **\$2,629,542** in indirect costs.
- **114**: the number of active research projects.
- **#12** among schools of pharmacy in NIH support for FY13 with \$7.9 million in funding (**#13** in overall funding and **#7** in non-federal funding).
- **35** faculty members were principal investigators.
- **3** principal investigators or co-investigators on multi-institutional grants.
- **9** international research presentations in **4** countries.
 - 3 at universities or hospitals
 - 6 at conferences or academies

RESEARCH FUNDING

Annual Grant Costs by Source

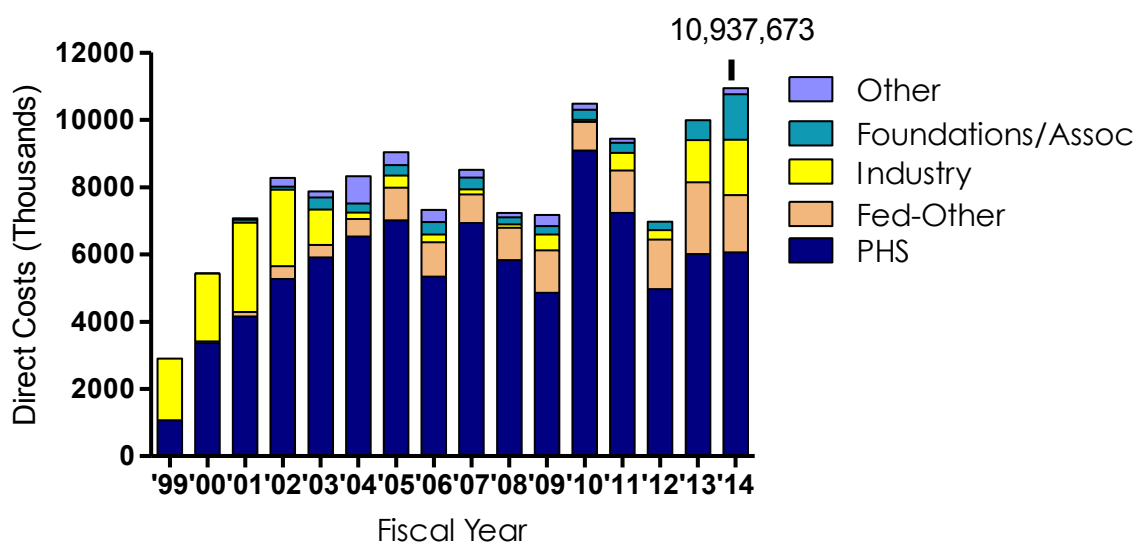
Active project funding for FY14 was **\$14.71 million**, with **\$10.94 million in direct costs** and **\$3.77 million in indirect costs**. The graph and tables below and on the next page provide detail regarding FY14 sources of funding for direct costs.

Direct Costs for Research by Funding Category

Source	FY02	FY07	FY10	FY11	FY12	FY13	FY14
PHS	\$5,269,880	\$6,934,873	\$9,083,208	\$7,229,748	\$4,967,911	\$6,006,199	\$6,058,477
Federal-Oth	257,268	846,586	856,030	1,268,055	1,469,405	2,143,548	\$1,702,706

Source	FY02	FY07	FY10	FY11	FY12	FY13	FY14
Industry	2,277,596	156,419	60,226	518,140	289,323	1,253,199	\$1,649,131
Found/Assoc	86,523	351,468	296,641	305,600	249,664	584,447	\$1,347,135
Other	261,494	222,110	187,737	111,157	0	0	\$180,224
TOTAL	\$8,152,761	\$8,511,456	\$10,483,842	\$9,432,700	\$6,976,303	\$9,987,393	\$10,937,673

Direct Costs: Research Funding



RESEARCH DETAILS

FY14 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	R01 CA140375	Vaccines to Promote Tc-1 Based Targeting of Tumor Stroma	3,278	1,688	4,966

Investigator	Agency	AgencyNum	Title	Direct \$	Indirect \$	Total
J. Beumer	NIH	R21 CA161951	Pilot Clinical-Pathological and Molecular Analysis of Atypical Nevi in Response to BSE-L-Sulforaphane	16,065	8,434	24,499
J. Beumer	NIH	U01 CA099168	Early Clinical Trials of New Anti-Cancer Agents with Phase 1 Emphasis	29,251	15,357	44,608
J. Beumer	NIH	R21 CA173887	Nanomicellar Formulation for Synergistic Targeting Prostate Cancer	9,163	4,810	13,973
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		Gynecologic Oncology Group Pharmacokinetic and Pharmacodynamic Core Laboratory	31,799	16,376	48,175
J. Beumer	NIH	R01 CA13284404	Role of CYP24 in Non-Small Cell Lung Cancer	11,000	5,665	16,665
X. Gao	NIH	R01 EB016516	Ultrasound Activated Microbubbles for Targeted siRNA Delivery to Tumor (Villanueva)	3,149	1,653	4,802
R. Gibbs	NIH	R01 NS060005	Environmental Enrichment and Cholinergic Mechanisms After TBI (Kline)	7,811	4,022	11,833
R. Gibbs	NIH	R21 AG043817	Impact of Estrogens and Menopause on Interacting Monoamine Neurotransmitters in the Brain	150,000	78,938	228,938
B. Gold	NIH	P41 GM094055	Protein Protein Interaction Directed Libraries	5,838	3,007	8,845
C. Ihunnah	NIH	5F31 DK095589	Estrogen Sulfotransferase in Human Adipogenesis	30,312	0	30,312

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	195,050	102,402	297,452
P. Johnston	NIH	U24 AI082673	Novel Modifiers of Toll-like and RIG-like Receptor Signaling	25,981	13,380	39,361
P. Johnston	NIH	R01 DE023685-01A1	P13K Pathway Mutations in Head and Neck Cancer	10,115	5,437	15,552
L. Kirisci	NIH	K02 DA017822	Quantifying and Tracking Risk for Substance Use Disorder	125,450	9,970	135,420
S. Li	NIH	R01 HL083365	Role of Ubiquitin in Cardiovascular System	225,437	109,486	334,923
S. Li	NIH	R01 GM102989	Rational Design of Lipidic Vectors for Mitochondria-Targeted Antioxidants	190,000	94,677	284,677
S. Li	NIH	R01 CA174305	Targeted Combination Therapy for Breast Cancer	207,500	104,628	312,128
S. Li / X. Gao	NIH	R01 HL091828	Non Viral Gene Therapy for Lung Injury	201,598	103,759	305,357
S. Li / X. Gao	NIH	U19 AI068021	Mitochondrial Targeting Against Radiation Damage	86,654	41,689	128,343
S. Li / X. Gao	NIH	R21 CA155983	Polymeric System for Synergistic Targeting of AR Signaling in Prostate Cancer	130,500	67,208	197,708
S. Li	NIH	R21 CA173887	Nanomicellar Formation for Synergistic Targeting of Prostate Cancer	121,338	63,702	185,040
X. Ma	NIH	R01 DK090305	Mechanisms of adverse effects of anti-tuberculosis drugs	217,500	109,686	327,186
X. Ma	NIH	R56 AI095425	Drug-induced liver injury associated with anti-retroviral therapy	120,110	63,208	183,318

Investigator	Agency	AgencyNum	Title	Direct \$	Indirect \$	Total
S. Poloyac	NIH	R01 NR004339	Determining Genetic and Biomarker Predictors of DCI and Long term Outcomes after a SAH	82,324	30,666	112,990
S. Poloyac	NIH	R01 NR014221	Developing Goal-Directed Perfusion Therapy for Neurocardiac Injury in Sub-Arachnoid Hemorrhage (Hravnak- Nursing)	6,794	3,627	10,421
S. Poloyac	NIH	R01 NS069247	Overcoming Membrane Transporters to Improve CNS Drug Therapy	41,928	15,412	57,340
S. Poloyac	NIH	R01 NS037459	Cyclooxygenase 2 and Ischemic Neuronal Injury	6,195	3,190	9,385
S. Poloyac	NIH	R01 HD069620	Understanding the Impact of Antipsychotic Drugs on Recovery after TBI	8,648	4,454	13,102
S. Poloyac	NIH	R01 NR013610	Epigenomics of Patient Outcomes after Aneurysmal SAH	13,752	7,426	21,178
M. Reynolds	NIH	R01 DA033322	Decision Making and Dysregulation Pathways in Adolescents with Parental SUD History	32,790	17,215	50,005
L. Rohan	NIH	R33 A1089801	Microbicide Properties of RT Inhibitor Combinations	123,413	68,467	191,880
L. Rohan	NIH	U19 A1082639	Alternative Formulations of Tenofovir & UC781 Project 1 & Core C	629,736	200,447	830,183
L. Rohan	NIH	U19 A1082637	Combination HIV Antiretroviral Rectal Microbicide Prog (Formulation Development CoreC)	171,529	50,392	221,921
S. Sant	NIH	R03 EB018575	Engineered Microenvironments to Model Effect of Size in Tumor Progression	50,000	26,813	76,813

Investigator	Agency	AgencyNum	Title	Direct \$	Indirect \$	Total
R. Tarter	NIH	P50 DA005605	Drug Abuse Vulnerability: Mechanisms and Manifestations	1,231,269	466,317	1,697,586
R. Tarter	NIH	K05 DA031248	Longitudinal Modeling of SUD Etiology	125,650	10,052	135,702
C. Thorpe	NIH	R21 DK090634	Medication Oversupply and Outcomes in Patients with Diabetes	123,750	63,731	187,481
C. Thorpe	NIH	R01 HS018368	Guideline Adherence and Short/Long-term Health Outcomes in Patients with Diabetes	40,816	21,248	62,064
R. Venkataramanan	NIH	U10 HD047905	Impact of Pregnancy on Drug Absorption, Disposition and End Organ Response (Caritis)	155,591	80,129	235,720
R. Venkataramanan	NIH	UH2 TR000496	All-Human Microphysical Model of Metastasis Therapy	47,813	25,102	72,915
R. Venkataramanan	NIH	T32 HD071859	Training in basic and Clinical Pharmacology in Pregnancy	63,140	4,063	67,203
W. Xie	NIH	R01 DK083952	A Novel Role of the Aryl Hydrocarbon Receptor in Hepatic Steatosis	205,425	105,794	311,219
W. Xie	NIH	R01 HD073070	The Perinatal Pharmacology of the Nuclear Receptor	201,690	105,887	307,577
X. Xie	NIH	P50 GM067082	New Concepts, Methodologies and Scaffolds for Diversity-Oriented Organic Synthesis (Wipf)	55,149	28,402	83,551
X. Xie	NIH	R01 DA025612	Structure and Function of CB2 Ligand and G-protein Recognition Pockets	218,250	112,399	330,649
X. Xie	NIH	R21 HL109654	Screen and Design p18 Chemical Probes for Hematopoietic Stem Cell Self-Renewal	125,000	75,293	200,293
TOTAL				6,058,477	2,629,542	8,688,019

FY14 Federal Other Funding

Investigator	Agency	Title	Direct \$	Indirect \$	Total
C. Culley	AHRQ	Enhancing the Detection and Management of Adverse Drug Events in the Nursing Home	13,217	6,807	20,024
R. Farrah	Univ. of Iowa	A Collaborative Model to Improve BP Control and Minimize Racial Disparities-CCC	6,245	3,478	9,723
R. Gibbs	NSF	Role of GPR30 in Estrogen-Mediated Effects on Cholinergic Function and Cognition	96,548	49,722	146,270
D. Huryn	Leidos Biomed	Discovery and Optimization of Inhibitors of STAT3 Activation for the Treatment of Squamous Cell Carcinoma of the Head and Neck TO6 next phase	301,278	163,122	464,400
D. Huryn	Leidos Biomed	Administrative Support for the UP-CDC	208,784	107,672	316,456
D. Huryn	Leidos Biomed	p97	133,753	70,220	203,973
P. Johnston	Leidos Biomed	Discovery and Optimization of Inhibitor of STAT3 Activatin for the Treatment of Squamous cell Carcinoma of the Head and Neck	159,530	83,754	243,284
P. Johnston	SUNY Stony Brook	Inhibition of STAT3 Mediated Autoimmunity	77,738	39,632	117,370
S. Kane	AHRQ	Enhancing the Detection and Management of Adverse Drug Events in the Nursing Home	37,376	12,055	49,431
S. Poloyac	DOD	Operation Brain Trauma Therapy	25,068	13,473	38,541
J. Pringle	MERCY	New Lease on Life	33,871	8,129	42,000
J. Pringle	VA	Evaluation of a Cloud-Based Application	36,297	19,192	55,489
J. Pringle	SAMSHA	The Pennsylvania Medical Residency Training Program	354,180	20,820	375,000

Investigator	Agency	Title	Direct \$	Indirect \$	Total
J. Pringle	Allegheny Singer Research Institute	Pennsylvania Screening, Brief Intervention, and Referral to Treatment (SBIRT) Interdisciplinary Training Program	131,114	10,489	141,603
L. Rohan	ImQuest	Development of a Novel Nanoparticle Pyrimidinedione Vaginal	25,973	15,194	41,167
L. Rohan	Univ of FL	Aminoglycoside Microbicides to Restore Natural Expression of anit-HIV1 Retrocyclins	9,980	5,888	15,868
L. Rohan	Advance Tech	Release of Assays from EVA Rings	5,836	3,444	9,280
L. Rohan	CDC/SBIR	Tablets for Sublingual Delivery of Measles Vaccine	18,499	10,915	29,414
C. Scelsi	HRSA	Geriatric Education Center	7,379	590	7,969
W. Xie	ST JUDE	Regulation of PXR by Cell Cycle and Phosphorylation	8,358	4,304	12,662
W. Xie	Rutgers	Gut Bile Acids, FXR. & FGF15 In Total Parenteral Nutrition - Associated Cholestasis	11,682	6,134	17,816
Total			1,702,706	655,034	2,357,740

FY 2014 Industry Funding

Investigator	Agency	Title	Direct \$	Indirect \$	Total
N. Benedict/ S. Kane/ J. Thorpe	HOSPIRA	Clinical Quality Improvement of Benzodiazepine - Resistant Alcohol Withdrawal Syndrome	19,169	10,831	30,000
J. Beumer	Spectrum	Belionostat Hepatic Impairment Study - PK + Genotyping	167,000	41,750	208,750

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	30,867	18,211	49,078
J. Beumer	ABBVIE	A Phase I Study of Chronically Dosed, Single ABT-888 in Patients with either BRCA 1/2 Mutated Cancer, Platinum-Refractory Ovarian, Fallopian Tube, or Primary Peritoneal Cancer; or Basal-Like Breast Cancer	127,013	12,987	140,000
J. Beumer	Stanford/Novartis	Phase I Study of Nilotinib in Steroid Dependent/Refractory Chronic Graft Versus Host Disease	13,632	3,408	17,040
J. Beumer	BMS	Central Pharmacokinetic Referenced Laboratory for Ixabepilone Investigator Sponsored Research (ISR) Trials	116,056	29,014	145,070
K. Empey	Vaccine Pty	RSV Vaccine/Advax Pilot Study	13,829	7,813	21,642
D. Hall / J. Pringle	BRAUN	Military Drug Management System	68,289	18,984	87,273
J. Pringle	Takeda	Proposed Evaluation Plan for the Electronic Quality Improvement Platform for Plans & Pharmacies	122,917	24,583	147,500
J. Pringle	Medvantix	Evaluating the Impact of Sample Medication on Subsequent Patient Adherence	35,967	5,020	40,987
J. Pringle	MERCK	Prospective Study to Assess the Effect of Adherence Interventions on Reducing Patients Non-Fulfillment and/or Non-Persistence to Chronic Medications	855,172	47,185	902,357
R. Smith	Novo	DM Educate Comprehensive Diabetes Management Course	45,000	0	45,000

Investigator	Agency	Title	Direct \$	Indirect \$	Total
R. Venkataramanan	ProStrakan Inc.	Pharmacokinetics and Bioavailability of Granisetron Transdermal System (Sancuso) in Pregnancy	34,220	8,555	42,775
Total			1,649,131	228,341	1,877,472

FY14 Foundation/Association Funding

Investigator	Agency	Title	Direct \$	Indirect \$	Total
J. Beumer	Brigham & Women's	Cancer and Leukemia - Group B	33,360	17,180	50,540
J. Beumer	HMJF/USArmy	Gynecologic Cancer translational Research Center of Excellence	13,200	6,930	20,130
J. Beumer	MSKCC	Quantitation of Isofludelone in Human Plasma	15,082	8,522	23,604
J. Beumer	Mayo Clinic	A Phase II Study of Combination Nilotinib and Hyper-CVAD in Patients Newly Diagnosed with Philadelphia-chromosome Positive Acute Lymphoblastic Leukemia or Chronic Myeloid Leukemia Blast-Phase	16,897	4,223	21,120
K. Coley/ C. Thorpe	JEWISH	Pharmacist-led Intervention on Transitions of Seniors (PICOTS: A Community-Academic Partnership)	65,000	0	65,000
K. Coley/ C. Thorpe	UPMC	PIVOTS: Pharmacist-led intervention on Transitions of seniors	10,968	0	10,968
K. Coley		PIVOTS: Improving Care of Older Adults and Staff Perceptions of Pharmacist-led Interventions	700	0	700
K. Coley	ST. Margaret	PIVOTS: Pharmacist-led intervention on Transitions of seniors	5,000	0	5,000
J. Coons/ P.Empey	ASHP	Pharmacist-Delivered Pharmacogenomic Care	23,112	1,849	24,961
A. Donihi/ K. Coley	ASHP	Implementation of an Inpatient Bulk Meds to Home Program	23,148	1,852	25,000

Investigator	Agency	Title	Direct \$	Indirect \$	Total
S. Kane/ P. Smithburger/ J. Thorpe	ASHP	A Multicenter Evaluation of Off-Label Medication use and Adverse Drug Event in Adult Intensive Care Unit Patients.	18,448	1,476	19,924
S. Kim	AACP	Quantitative Mechanistic Modeling of Drug Disposition with Variable Interactions	9,960	0	9,960
S. Krahe-Dombrowski	APhA	Identifying key factors associated with successful integration of patient care services into dispensing workflow: a traditional community chain pharmacy evaluation	1,000	0	1,000
S. Mukundan	SIGMA XI	Fabrication and characterization of PCL-Graphene nanocomposite scaffolds for skeletal muscle tissue engineering	1,000	0	1,000
E. McCartney	PA Pharm. Ed. Fndtn.	Mobile Application Features Sought After By Patients of a Grocery Store Chain	1,000	0	1,000
M. McGivney	NACDS	Community Pharmacy Faculty Scholars Program	32,298	4,845	37,143
McGivney/ Coley/Bacci	PPA	State Public Health Actions to Prevent and Control Diabetes	78,000	8,658	86,658
J. Pringle	JEWISH	Pharmacy Pay for Performance (P4P) Model	20,000	0	20,000
J. Pringle	PQA	Phase II Pennsylvania Demonstration Project	62,046	6,204	68,250
J. Pringle	BHARP	Clearfield-Jefferson Drug and Alcohol Commission SBIRT Project	16,324	0	16,324
J. Pringle	BHARP	Facilitating the implementation, Diffusion and Sustainability of Screening, Brief Intervention and Referral to Treatment (SBIRT)	42,947	0	42,947
L. Rohan	Gates Fndtn	Films as a Vaginal Drug Delivery Platform	659,017	98,852	757,869
C. Thorpe	Vasculitis Fndtn	Impact of Healthcare Utilization and Information	54,161	0	54,161

Investigator	Agency	Title	Direct \$	Indirect \$	Total
C. Thorpe	UPMC	Communication about Type 2 Diabetes Treatment Decisions in Older Patients with Comorbid Dementia	20,000	0	20,000
C. Thorpe	VAMC	Supporting Medication Adherence in Veterans and Their Caregivers	5,288	0	5,288
H. Yang	Magee Fndtn	Building Interdisciplinary Research Careers in Womens Health in Pittsburgh	72,352	5,788	78,140
H. Yang	Magee Fndtn	Improving the Robutness of the Ex Vivo Challenge Assay	46,827	4,683	51,510
Total			1,347,135	171,062	1,518,197

FY 2014 Other Funding

Investigator	Agency	Title	Direct \$	Indirect \$	Total
J. Pringle	PA DOH	Pennsylvania Client Placement Criteria	32,229	8,315	40,544
J. Pringle	Cmwltth of PA	Pennsylvania Overdose Prevention Coalition	84,572	45,352	129,924
J. Pringle	Blair Co./Cmwltth of PA	Implementation of Screening, Vrief Intervention and Referral to Treatment with the Medical Community of Blair County	63,423	34,010	97,433
Total			180,224	87,677	267,901

RESEARCH RECOGNITION OF FACULTY

Faculty members received various forms of recognition for their accomplishments and their expertise during FY14.

- 22 faculty members served on scientific journal editorial boards.
- 11 faculty members served on NIH grant review committees.
- 78 – the number of invited research presentations by faculty.
 - 4 presentations at 4 universities in 3 states
 - 23 presentations at 20 scientific meetings in 12 states
 - 4 presentations at 4 universities in 3 countries
 - 4 presentations at 3 international scientific meetings in 3 countries
- 9 international presentations in 4 countries.
 - 3 at universities or hospitals
 - 6 at conferences or academies

Members of Editorial Boards

Faculty Member	Number	Editorial Board
Sherrie L. Aspinall, PharmD	3	American Journal of Oncology Journal of Thrombosis and Thrombolysis Drug Formulary Review
Jan H. Beumer, PharmD, PhD	2	Journal of Chromatography and Separation Techniques Cancer Chemotherapy and Pharmacology
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 Hurn, PhD	2	Organic Letters ACS Medicinal Chemistry Letters
Paul A. Johnston, PhD	1	Journal of Assays and Drug Development Technologies
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	3	Journal of Gene Medicine Biological Procedure Online American Journal of Cancer Therapy and Pharmacology
Susan M. Meyer, PhD	1	American Journal of Pharmaceutical Education
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

Faculty Member	Number	Editorial Board
Shilpa Sant, PhD	5	Journal of Pharmacovigilance IEEE Transactions on Nanobioscience JSM Regenerative Medicine In Silico Pharmacology Scientific Reports
Amy L. Seybert, PharmD	1	International Simulation Education
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
Regis R. Vollmer, PhD	1	Editor, Clinical and Experimental Hypertension
Wen Xie, MD, PhD	6	Current Drug Metabolism World Journal of Gastroenterology Drug Metabolism Letters Drug Metabolism Reviews Molecular Endocrinology Drug Metabolism and Disposition
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
Jan H. Beumer, PharmD, PhD	Pharmaceutical Sciences	1
Barry Gold, PhD	Pharmaceutical Sciences	1
Donna M. Huryn, PhD	Pharmaceutical Sciences	1
Paul A. Johnston, 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
Carolyn T. Thorpe, PhD, MPH	Pharmacy and Therapeutics	1
Xiang-Qun (Sean) Xie, PhD	Pharmaceutical Sciences	3

School of Pharmacy Publications in Peer-Reviewed Journals

Research

- Akil A, Devlin B, Cost M, **Rohan LC**. Increased Dapivirine tissue accumulation through vaginal film codelivery of dapivirine and Tenofovir. *Mol Pharm*. 2014 May 5;11(5):1533-41. doi: 10.1021/mp4007024. Epub 2014 Apr 14.
- Almehezia A, Yang P, **Wang L, Xie XQ**. Latest Advances in the Multiple Myeloma Drug Research: From Molecular Signaling Pathways to Small Molecules Development. *Curr Trends Med Chem*. 01/2013; 7:105-133.
- Alshogran OY, Ocque AJ, Zhao J, Day BW, Leblond FA, Pichette V, **Nolin TD**. Determination of warfarin alcohols by ultra-high performance liquid chromatography-tandem mass spectrometry: application to in vitro enzyme kinetic studies. *J Chromatogr B Analyt Technol Biomed Life Sci*. 2014 Jan 1;944:63-8. doi: 10.1016/j.jchromb.2013.11.014. Epub 2013 Nov 14.
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- Broyles JM, Alrakan M, **Ensor CR**, Khalifian S, Kotton CN, Avery RK, Brandacher G, Lee WP, Gordon CR. Characterization, prophylaxis, and treatment of infectious complications in craniomaxillofacial and upper extremity allotransplantation: a multicenter perspective. *Plast Reconstr Surg*. 2014 Apr;133(4):543e-51e. doi: 10.1097/PRS.0000000000000015
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- **Coons JC**, Schwier N, Harris J, **Seybert AL**. Pharmacokinetic evaluation of prasugrel for the treatment of myocardial infarction. *Expert Opin Drug Metab Toxicol*. 2014 Apr;10(4):609-20. doi: 10.1517/17425255.2014.890589. Epub 2014 Feb 20.
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- Ging P, **Shullo MA**. Pharmacists take prominent role at the International Society of Heart and Lung Transplant 33rd annual meeting and scientific sessions in Montreal. *Eur J Hosp Pharm*. 2014;21:131-132 doi:10.1136/ejhpharm-2013-000362.
- Glick RM, Desai KM, Lovett E, **Farrah R**, Low Dog T. Integrative medicine. Cardiovascular health. *FP Essent*. 2013 Mar;406:23-8, 34-40; quiz 41-6.
- Glick RM, Desai KM, Lovett E, **Farrah R**, Low Dog T. Integrative medicine. Common chronic pain conditions. *FP Essent*. 2013 Mar;406:18-22, 34-40; quiz 41-6.
- Glick RM, Desai KM, Lovett E, **Farrah R**, Low Dog T. Integrative Medicine. Depression. *FP Essent*. 2013 Mar;406:13-7, 34-40; quiz 41-6.
- Glick RM, Desai KM, Lovett E, **Farrah R**, Low Dog T. Integrative medicine. Oncology: focus on breast cancer. *FP Essent*. 2013 Mar;406:29-40; quiz 41-6.
- Goldstein SL, **Nolin TD**. Lack of Drug Dosing Guidelines for Critically Ill Patients Receiving Continuous Renal Replacement Therapy. *Clin Pharmacol Ther*. 2014 May 8. doi: 10.1038/clpt.2014.102
- Kloet MA, Lohr BR, **Smithburger PL**, **Seybert AL**, **Kane-Gill SL**. Prospective Assessment of Inpatient Boxed Warning Prescriber Adherence. *J Patient Saf*. 2014 Mar 18. [Epub ahead of print].
- 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.
- Rivosecchi RM, Rice MJ, **Smithburger PL**, Buckley MS, **Coons JC**, **Kane-Gill SL**. An evidenced based systematic review of remifentanil-induced hyperalgesia. *Expert Opin Drug Saf*. 2014;13:587-603.
- Rivosecchi RM, Rice MJ, **Smithburger PL**, Buckley MS, **Coons JC**, **Kane-Gill SL**. An evidence based systematic review of remifentanil associated opioid-induced hyperalgesia. *Expert Opin Drug Saf*. 2014 May;13(5):587-603. doi: 10.1517/14740338.2014.902931. Epub 2014 Mar 26.
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- Lavergne V, Ouellet G, Bouchard J, Galvao T, Kielstein JT, Roberts DM, Kanji S, Mowry JB, Calello DP, Hoffman RS, Gosselin S, **Nolin TD**, Goldfarb DS, Burdmann EA, Dargan PI, Decker BS, Hoegberg LC, Maclaren R, Megarbane B, Sowinski KM, Yates C, Mactier R, Wiegand T, Ghannoum M. Guidelines for Reporting Case Studies on Extracorporeal Treatments in Poisonings: Methodology. *Semin Dial*. 2014 May 29. doi: 10.1111/sdi.12251. [Epub ahead of print].
- Tortorici MA, **Nolin TD**. Kidney function assessment and its role in drug development, review and utilization. *Expert Rev Clin Pharmacol*. 2014 Jul;7(4):523-32. doi: 10.1586/17512433.2014.922865. Epub 2014 May 29.
- Yates C, Galvao T, Sowinski KM, Mardini K, Botnaru T, Gosselin S, Hoffman RS, **Nolin TD**, Lavergne V, Ghannoum M; the EXTRIP workgroup. Extracorporeal Treatment for Tricyclic Antidepressant Poisoning: Recommendations from the EXTRIP Workgroup. *Semin Dial*. 2014 Apr 9. doi: 10.1111/sdi.12227

Education

- **Benedict N, Schonder K**, McGee J. Promotion of self-directed learning using virtual patient cases. *Am J Pharm Educ*. 2013 Sep 12;77(7):151. doi: 10.5688/ajpe777151
- Farland MZ, Sicat BL, Franks AS, **Pater KS**, Medina MS, Persky AM. Best Practices for Implementing Team-Based Learning in Pharmacy Education. *Am J Pharm Educ*. 2013 Oct 14;77(8):177. doi: 10.5688/ajpe778177
- **Kane-Gill SL**, Williams EA, **Smithburger PL**, **Seybert AL**. Tips for developing an integrated online and simulation course based on 6-years of experience. *Pharmacy*. 2013;1:34-42. doi:10.3390/pharmacy1010034. <http://www.mdpi.com/2226-4787/1/1/34>
- **Smithburger PL**, **Kane-Gill SL**, Kloet MA, Lohr B, **Seybert AL**. Advancing interprofessional education through the use of high fidelity human patient simulators. *Pharm Pract (Granada)*. 2013 Apr;11(2):61-5. Epub 2013 Jun 30.
- Ibrahim S, **Meyer SM**, **Kane-Gill S**, **Howrie DL**. The Influence of Teaching Programs on Residents' Perceptions of Comfort and Confidence in Teaching. *Currents in Pharmacy Teaching and Learning*. 2014 May-June; 3(6) 455-459. DOI: 10.1016/j.cptl.2014.02.014
- Holliday SF, **Kane-Gill SL**, **Empey PE**, Buckley MS, **Smithburger PL**. Interpatient variability in dexmedetomidine response: a survey of the literature. *ScientificWorldJournal*. 2014 Jan 16;2014:805013. doi: 10.1155/2014/805013. eCollection 2014.
- Buckley MA, MacLaren RM, Frazee EN, **Smithburger PL**, Personett HA, **Kane-Gill SL**. Surveying residents on postgraduate year 2 critical care pharmacy residencies about their level of preparedness to practice. *Currents in Pharmacy Teaching and Learning*. 2013 Nov 27; 6(1): 76 – 84.

RESEARCH OVERVIEW

Center for Pharmacogenetics

Faculty

Song Li, Professor

Xiaochao Ma, Associate Professor

Wen Xie, Professor

Jiang Li, Research Assistant Professor

Graduate Students (PhD students)

Yuhan Bi

Chibueze Ihunnah

Mengxi Jiang

Sung Tae Kim

Peipei Lu

Jianqin Lu

Madhav Sachar

Amina I. Shehu

Jiong Yan

Peng Zhang

Xiaolan Zhang

Yifei Zhang

Postdoctoral Fellows

Wojciech Garbaz

Ke Liu

Pengcheng Wang

Major Accomplishments

- **Xiaochao Ma** was invited to serve as an *ad hoc* reviewer for Medical Research Council, United Kingdom, December 2013.
- **Xiaochao Ma** was invited to serve as a Session co-Chair, Metabolomics in Drug Development and Drug Safety, 19th North American ISSX Meeting / 29th JSSX Meeting 2014.
- **Song Li's** group has developed several novel dual-functional carriers that are highly efficient in delivery of poorly water-soluble drugs and in synergistic action with co-delivered anticancer agents. His group has also developed a new concept that incorporation of a drug-interactive group into lipid surfactants at interfacial region will not only increase drug-loading capacity but also improve the formulation stability. These studies have led to the publication of a series of manuscripts and the filing of three provisional patent applications.
- **Jiang Li** in **Dr. Song Li's** lab has discovered that altered metabolism of amino acids is one of the early events that plays an important role in transactivation of hepatic stellate cells. This study may suggest a new therapy for the treatment of liver fibrosis.
- **Song Li** has served as an ad hoc member in a number of NIH and DOD study sections.
- **Song Li** received a new grant NIH RO1GM102989: *Rationale Design of Lipidic Carriers for Mitochondria-Targeted Antioxidants*, 07/01/13-04/30/17.
- **Song Li** received a new grant R01CA174305: *Targeted Combination Therapy for Breast Cancer*, 12/02/13-11/30/18.

- **Wen Xie** received a new NIH R01 grant titled “A Novel Regulation of the Phase II Enzyme Estrogen Sulfotransferase.” The goal of this project is to determine the inflammatory regulation of the estrogen sulfotransferase (EST) and the implications of this regulation in sepsis response
- **Wen Xie** received a new NIH R01 grant titled “The hepatic function of cholesterol sulfotransferase 2B1b (SULT2B1b) in energy metabolism.” The goal of this project is to study the role of cholesterol sulfotransferase 2B1b (SULT2B1b) and its enzymatic byproduct cholesterol sulfate in glucose metabolism and metabolic disease.
- **Wen Xie** was named Guest Professor, Zhejiang University, Hangzhou, Zhejiang, China
- **Wen Xie** was named Guest Professor, Beijing Hospital 302, Beijing, China
- **Wen Xie** was invited to serve as an *ad hoc* member, NIH special emphasis panel “Systemic Injury by Environmental Exposure (SIEE)”. October, 2013; February and June 2014
- **Wen Xie** was invited to serve as an ad hoc member, Polish National Science Center. September 2013
- **Wen Xie** was invited to serve as an ad hoc member, NIH, Ruth L. Kirschstein Predoctoral and Postdoctoral Fellowship, Endocrinology, Metabolism, Nutrition and Reproductive Sciences (EMNR) Integrated Review Group (IRG). November 20, 2013
- **Wen Xie** was invited to serve as an ad hoc member, “Research projects in the field of the effects of the exposure to environmental risk factors on cancer,” Cancer TMOI of the French National Alliance for Life and Health Sciences (AVIESAN) jointly with the French National Cancer Institute (INCa). October 2013
- **Wen Xie** was invited to serve as an ad hoc member, NIH/NHLBI, RFA Review Panel, RFA on “Basic Research in the Pathogenesis of HIV-Related Heart, Lung, and Blood (HLB) Diseases in Adults and Children”. April 16, 2014
- **Wen Xie** was invited to serve as an ad hoc member, NIH/NIEHS, ZRG1 DKUS-C (50) R Virtual Consortium for Translational/Transdisciplinary Environmental Research (ViCTER) (Jun 26, 2014)
- **Wen Xie** was invited to serve as an ad hoc member, NIH/CSR, ZRG1 GGG-L (40) P (P01) Pre-Clinical Pharmacogenetics: a systems approach (Teleconference) (July 9, 2014)
- **Wen Xie** was invited to serve as an ad hoc member, NIH, ZRG1 CB-L (55) R Adverse Drug Reactions in Children (July 29, 2014)
- **Wen Xie** was named Editorial Board Member, *Molecular Endocrinology* (2014-2016)

Selected Publications

- 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 Aug 14. [Epub ahead of print]

- Liu K, Li F, Lu J, Liu S, Dorko K, Xie W, **Ma X**. Bedaquiline metabolism: enzymes and novel metabolites. *Drug Metab Dispos.* 2014; 42(5):863-6.
- 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; 7(1):48
- Liu K, Li F, Lu J, Gao Z, Klaassen CD, **Ma X**. Role of CYP3A in isoniazid metabolism in vivo. *Drug Metab Pharmacokinet.* 2014; 29(2):219-22.
- McGill MR, Li F, Sharpe MR, Williams CD, Curry SC, **Ma X**, Jaeschke H. Circulating acylcarnitines as biomarkers of mitochondrial dysfunction after acetaminophen overdose in mice and humans. *Arch Toxicol.* 2014; 88(2):391-401.
- Li F, Lu J, **Ma X**. CYP3A4-mediated α -hydroxyaldehyde formation in saquinavir metabolism. *Drug Metab Dispos.* 2014; 42(2):213-20.
- Bhushan B, Borude P, Edwards G, Walesky C, Cleveland J, Li F, **Ma X**, Apte U. Role of bile acids in liver injury and regeneration following acetaminophen overdose. *Am J Pathol.* 2013; 183(5):1518-26.
- Zhang, P., Huang, Y., Liu, H., Marquez, R., 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* (in press).
- 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. *Molecular Pharmaceutics* (in press).
- 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* (in press).
- Zhou, P., Huang, G., Zhao, Y., Zhong, D., Xu, Z., Zeng, Y., Zhang, Y., **Li, S.**, He, F. MicroRNA-363-mediated downregulation of S1PR1 suppresses the proliferation of hepatocellular carcinoma cells. *Cellular Signalling.* 2014 26: 1347-54, 2014. (PMID: 24631531).
- Chen, Y., Zhang, X., Lu, J., Huang, Y., Li, J., and **Li, S**. Targeted delivery of curcumin to tumors via PEG-derivatized FTS-based micellar system. *AAPS Journal* 16: 600-608, 2014. (PMID: 24706375).
- Zhang, Y., Ghazwani, M., Li, J., Sun, M., Stolz, D.B., He, F., Fan, J., Xie, W., and **Li, S**. MiR-29b inhibits collagen maturation in hepatic stellate cells through down-regulating the expression of HSP47 and lysyl oxidase. *Biochemical and Biophysical Research Communications* 446: 940-946, 2014 (PMID: 24650661).
- Zhang, P., Lu, J., Huang, Y., Zhao, W., Zhang, Y., Zhang, X., Li, J., Venkataramanan, R., Gao, X., and **Li, S**. Design and evaluation of a PEGylated lipopeptide equipped with drug-interactive motifs as an improved drug carrier. *AAPS Journal* 16: 114-124, 2014 (PMID: 24281690).

- Lu, J., Huang, Y., Zhao, W., Li, J., Gao, X., Venkataramanan, R., and **Li, S.** Design and characterization of PEG-derivatized vitamin E as a nanomicellar formulation for delivery of paclitaxel. *Molecular Pharmaceutics* 10: 2880-2890, 2013 (PMID: 23768151)
- Ghazwani, M., Zhang, Y., Gao, X., Fan, J., Li, J., and **Li, S.** Anti-fibrotic effect of thymoquinone on hepatic stellate cells. *Phytomedicine* 21: 254-260, 2014 (PMID: 24182989).
- Liu, Z., Jiang, Y., Li, Y., Wang, J., Fan, L., Scott, M.J., Xiao, G., **Li, S.**, Billiar, T.R., Wilson, M.A., Fan, J. TLR4 signaling augments monocyte chemotaxis by regulating G protein-coupled receptor kinase 2 (GRK2) translocation. *Journal of Immunology* 191: 857-864, 2013 (PMID: 23772028)
- Elcombe CR, Peffer RC, Wolf DC, Bailey J, Bars R, Bell D, Cattley RC, Ferguson SS, Geter D, Goetz A, Goodman JI, Hester S, Jacobs A, Omiecinski CJ, Schoeny R, **Xie W**, Lake BG. Mode of action and human relevance analysis for nuclear receptor-mediated liver toxicity: A case study with phenobarbital as a model constitutive androstane receptor (CAR) activator. *Crit Rev Toxicol.* 44: 64-82 (2014) (Peer-reviewed review article) PMID: 24180433
- Shi X, Cheng Q, Xu L, Yan J, Jiang M, He J, Xu M, Stefanovic-Racic M, Sipula I, O'Doherty RM, Ren S, **Xie W**. Cholesterol Sulfate and Cholesterol Sulfotransferase Inhibit Gluconeogenesis by Targeting HNF4 α . *Mol Cell Biol.* 34: 485-497 (2014) PMID: 24277929
- Liu K, Li F, Lu J, Liu S, Dorko K, **Xie W**, Ma X. Bedaquiline metabolism: enzymes and novel metabolites. *Drug Metab Dispos.* 42: 863-866 (2014) PMID: 24513655
- Jiang M, He J, Kucera H, Gaikwad N, Zhang B, Xu M, O'Doherty RM, Selcer KW, **Xie W**. Hepatic over-expression of steroid sulfatase ameliorates mouse models of obesity and type 2 diabetes through sex-specific mechanisms. *J Biol Chem.* 289: 8086-8097 (2014) PMID: 24497646
- Zhang Y, Ghazwani M, Li J, Sun M, Stolz DB, He F, Fan J, **Xie W**, Li S. MiR-29b inhibits collagen maturation in hepatic stellate cells through down-regulating the expression of HSP47 and lysyl oxidase. *Biochem Biophys Res Commun.* 446: 940-944 (2014) PMID: 24650661
- Ihunnah CA, Wada T, Philips BJ, Ravuri SK, Gibbs RB, Kirisci L, Rubin JP, Marra KG, **Xie W**. Estrogen sulfotransferase (EST/SULT1E1) promotes human adipogenesis. *Mol Cell Biol.* 34: 1682-1694 (2014) PMID: 24567372
- Zhong L, Yang Q, **Xie W**, Zhou J. Liver X receptor regulates mouse GM-CSF-derived dendritic cell differentiation in vitro. *Mol Immunol.* 60: 32-43 (2014). PMID: 24747959
- Wang J, Dai S, Guo Y, **Xie W**, Zhai Y. Biology of PXR: role in drug-hormone interactions. *EXCLI Journal* 13: 728-739 (2014) (Peer-reviewed review article)
- Ou Z, Jiang M, Hu B*, Huang Y, Xu M, Ren S, Li S, Liu S, **Xie W**, Huang M. Transcriptional regulation of human hydroxysteroid sulfotransferase SULT2A1 by LXR α . *Drug Metab Dispos.* 2014 Jul 15. [Epub ahead of print] PMID: 25028566

- Yan J, **Xie W**. Decipher the role of constitutive androstane receptor in energy metabolism. *Acta Pharmacologica Sinica* (Accepted) (Peer-reviewed review article)

Selected Invited Research Presentations

- Humanized mouse models and drug toxicity. 10th International Society for the Study of Xenobiotics (ISSX) Meeting. Toronto, Canada, October 2013. **Ma X**.
- Human PXR models provide novel insights into adverse drug reactions associated with anti-TB and anti-HIV drugs. Therapeutics Research Program, Division of AIDS, NIAID, NIH, November 2013. **Ma X**.
- Nuclear Receptors PXR and CAR in the Crossroad of Drug Metabolism and Energy Metabolism. 10th International ISSX Meeting. Toronto, Ontario, Canada. September 29-October 3, 2013. **Xie W**.
- CAR and PXR-Novel Therapeutic Targets in Obesity and Diabetes. 2013 American Association of Pharmaceutical Scientists (AAPS) Annual Meeting. San Antonio, Texas. November 10-14, 2013. **Xie W**.
- Nuclear Receptors, Their Regulation of Drug Metabolism and Beyond. School of Pharmacy, The Chinese University of Hong Kong. Hong Kong, China. December 5, 2013. **Xie W**.
- Nuclear Receptors In Drug Metabolism And Pharmacogenetics. 1st Ling-Nan International DMPK Summit Conference. Guangzhou, China. December 5-8, 2013. **Xie W**.
- Crosstalk between Drug Metabolism and Energy Metabolism. 10th Biennial Meeting of Chinese Biological Investigators Society (CBIS), Cancun, Mexico. December 21-24, 2013. **Xie W**.
- AhR in Fatty Liver Disease, the Expected and Unexpected. 53rd Society of Toxicology Annual Meeting, Phoenix, AZ. March 23-27, 2014. **Xie W**.
- A Decade of Discoveries in Pittsburgh: Unravelling the Function of Orphan Nuclear Receptors in Obesity and Diabetes. Provost's Inaugural Lecture as the Joseph Koslow Endowed Chair, University of Pittsburgh, Pittsburgh, PA. April 15, 2014. **Xie W**.
- Nuclear Receptors and Metabolic Diseases. 20th Microsomes and Drug Oxidations (MDO) Meeting. Stuttgart, Germany. May 18-22, 2014. **Xie W**.
- Intestine-Liver Crosstalk, the Role of PXR in Gallstone Disease. 6th Forum on Intestinal Barriers and Related Diseases. Beijing, China. June 6-8, 2014. **Xie W**.
- Orphan Nuclear Receptors in Hepatobiliary Diseases. Sino-U.S. Forum on Infectious Diseases and Liver Diseases, Beijing 302 Hospital, Beijing, China. June 9, 2014. **Xie W**.
- Nuclear Receptors in Liver Metabolism and Liver Diseases. Xijing Hospital of Digestive Diseases, Fourth Military Medical University, Xi'an, China. June 13, 2014. **Xie W**.

- Cholesterol Sulfate and Cholesterol Sulfotransferase Inhibit Gluconeogenesis by Targeting HNF4□ School of Basic Medical Sciences, Capital Medical University, Beijing, China. June 18, 2014. **Xie W.**
- Cholesterol Sulfate and Cholesterol Sulfotransferase Inhibit Gluconeogenesis by Targeting HNF4□ College of Life Science, Beijing Normal University. Beijing, China. June 18, 2014. **Xie W.**

Center for Clinical Pharmaceutical Sciences

Faculty

Samuel M. Poloyac, PharmD, PhD, FCCM, Associate Professor and Center Director
 Jan H. Beumer, PharmD, PhD, Assistant Professor
 Kim C. Coley, PharmD, FCCP, Professor
 Kerry M. Empey, PharmD, PhD, Assistant Professor
 Philip E. Empey, PharmD, PhD, BCPS, Assistant Professor
 Mary M. Folan, PhD, Assistant Professor
 Sandra L. Kane-Gill, PharmD, MS, FCCM, FCCP, Associate Professor
 Sean H.J. Kim, PhD, Assistant Professor
 Margaret Beth Minnigh, PhD, Assistant Professor
 Thomas D. Nolin, PharmD, PhD, Assistant Professor
 Lisa C. Rohan, PhD, Associate Professor
 Carolyn T. Thorpe, PhD, MPH, Assistant Professor
 Joshua Thorpe, PhD, MPH, Associate Professor
 Raman Venkataramanan, PhD, Professor

Graduate Students

Solomon M. Adams, PharmD	Tiantian Gong, BS, MS
Omar A. Almazroo, BSc, MSc	Fanuel Hagos, BS, MS
Ali Mohamed Alshabi, BS, MS	Hari V Kalluri, PharmD
Osama Y. Alshogran, BS, MS	Lingjue Li, MS
Shoroq Altawalbeh, PharmD	Ellen Press, BS, MS
Kacey Anderson, BS	Mohammad S. Shawaqfeh, PharmD, MS
Katherine Eichinger, PharmD, MS	Harisudhan Thanukrishnan, M Pharm.
Lindsay Ferguson Kramzer, PharmD	Dustin R. Walsh, PharmD
Firuz G Feturi, BS	

Major Accomplishments

- **Kim Coley** was named as a standing scientific grant review panelist for PCORI –“Addressing Disparities” subsection.
- **Kim Coley** served on three grant review panels for the ASHP Foundation and AACP.
- **Kim Coley** received funding for the following research projects:
 - Pennsylvania Pharmacists Association. “Identifying key factors associated with successful integration of patient care services into dispensing workflow: a traditional community chain pharmacy evaluation.” Role Co-I; \$1,000; 2013.
 - ASHP Foundation. PIVOTS: Pharmacist Led Interventions on Transitions of Seniors. Role S-I; \$20,000; 2013-2015.

- The Beckwith Institute. “Transforming the role of the hospital pharmacist to improve patients' access, adherence, and self-management of medication after discharge.” Role Co-PI; \$24,450; 2013-2014.
 - St. Margaret Hospital Foundation. “Pharmacist Led Interventions on Transitions of Seniors.” Role P-I; \$5,000; 2013-2015.
 - Jewish Healthcare Foundation. “Pharmacist Led Interventions on Transitions of Seniors.” Role P-I; \$60,000; 2013-2015.
- **Kerry Empey** received the Brenneman Scholar Award from the University of Pittsburgh, School of Pharmacy. July 29, 2013. In support to advance the science of making medicine work for people.
 - **Kerry Empey** was awarded the following grants:
 - Central Medical Research Fund. University of Pittsburgh, Office of Research. “A novel approach to treating infant respiratory syncytial virus (RSV) disease: therapeutic stimulation of immature alveolar macrophages to enhance anti-viral activity.” Role PI; \$40,000 direct costs; 2013-2015.
 - National Institutes of Health, KL2 RR024154-05 (Competitive Supplement) University of Pittsburgh Multidisciplinary Clinical Research Scholars Program (CTSA KL2). “Intranasal delivery of INF γ in a neonatal mouse model of infant RSV disease.” Role: PI; \$5000; 2013.
 - **Phil Empey** received a secondary appointment, Scientist, Safar Center for Resuscitation Research, University of Pittsburgh. October 2013.
 - **Phil Empey's** three graduate students earned distinction for their research:
 - Kacey Anderson presented at the American College of Clinical Pharmacology's national meeting in Washington DC (won best poster/travel award), American Heart Association Fellows' Research Day (selected for an oral presentation), and the Safar Symposium (poster).
 - Fanuel Hagos presented this same research work as an oral abstract at the Safar Symposium and won best oral presentation for the entire symposium for our research.
 - Solomon Adams won best poster award in Critical Care Medicine at the Safar Symposium.
 - **Phil Empey** was awarded the following 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.
 - University of Pittsburgh, Clinical Translational Science Institute, project funding. “MEDivate: achieving great medication outcomes together.” Center for Assistance in Research using eRecord (CARE) support. Role PI; project funding; 2014.
 - 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; project funding; 2014-2016.

- **Sandra L. Kane-Gill** is the recipient of the 2013 American College of Clinical Pharmacy (ACCP) Critical Care PRN Achievement Award.
- **Sandra L. Kane-Gill** was appointed vice-chair for the Critical Care Practitioners as Educators Task Force for the Society of Critical Care Medicine.
- **Sandra Kane-Gill** is the Chair of the ACCP Program Committee (2012-2014).
- **Sandra Kane-Gill** is an elected At-Large Member of the SCCM Council (2014-2017).
- **Sandra Kane-Gill** received the following grants:
 - Clinical & Translational Science Institute at the University of Pittsburgh. “Improving the identification of actionable adverse drug events associated with acute kidney injury in nursing homes.” Role Co-I; \$100,000; 3/1/14-6/30/14.
 - The Beckwith Institute. “Transforming the role of the hospital pharmacists to improve patients’ access, adherence and self-management of medications after discharge.” Role Co-I; \$25,000; 6/1/13-6/1/14.
- **Sean Kim** was awarded a grant from the American Association of Colleges of Pharmacy for his study “Quantitative Mechanistic Modeling of Drug Disposition with Variable Interactions.” Role PI; \$9,960 direct costs; 2014.
- **Tom Nolin** became a member of the Center for Critical Care Nephrology; Department of Critical Care Medicine, University of Pittsburgh School of Medicine.
- **Tom Nolin** received 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.
- **Sam Poloyac** was named as a standing member to the Neurological Sciences and Disorders K, National Institutes of Health grant reviewer.
- **Sam Poloyac** was the recipient of the University of Pittsburgh Chancellors Distinguished Teaching Award for 2014.
- **Sam Poloyac’s** undergraduate student, Shea Liput is the AFPE Gateway Fellow Awardee for 2014.
- **Sam Poloyac** was appointed as the Associate Director, Safar Center for Resuscitation Research.
- **Carolyn Thorpe** was chosen as Best Reviewer, Pharmacoepidemiology and Drug Safety.
- **Carolyn Thorpe** was invited to serve as a temporary member of the Health Services Organization and Delivery Study Section, at the National Institutes of Health.
- **Carolyn Thorpe** was awarded the following grants:

- Vasculitis Foundation. “Impact of healthcare utilization and informal caregiving for primary systemic vasculitis: A national perspective.” Role PI; \$99,920 (direct total); 12/1/13-11/30/15.
- Department of Veterans Affairs, Health Services Research and Development, CHERP Competitive Pilot Funding Program. “Supporting medication adherence in Veterans with dementia and their caregivers.” Role PI; \$35,000 (direct total); 10/1/13-9/30-14.
- Aging Institute of UPMC Senior Services and the University of Pittsburgh, Seed Grant Pilot Funding Program. “Communication about Type 2 Diabetes Treatment Decisions in Older Patients with Comorbid Dementia.” Role PI; \$19,914 (direct total); 7/1/2013-6/30/2014.
- **Joshua Thorpe** was named associate director of Analytics and Research for VA’s national center for Performance Reporting and Outcomes Measurement to Improve the Standard of Care at End-of-life, PROMISE Center.
- **Joshua Thorpe** is a temporary study section member for VA Health Services Research & Development, Care of Gulf War Veterans section.
- **Joshua Thorpe** was awarded the following grants:
 - Department of Veteran Affairs, Health Services Research & Development. “Dual Use of VA/Medicare Part D and Unsafe Prescribing in Veterans with Dementia Source.” Role PI; \$920,000 total direct costs; 4/1/14 – 9/30/17.
 - VA HSR&D CHERP Competitive Pilot Research Program. “Developing a Typology Veterans’ Healthcare Experiences.” Role PI; \$33,000 total direct costs; 10/1/13 – 9/30/14.

Selected Publications

- Kim JJ, Mohammad RA, **Coley KC**, Donihi AC. Use of an iPad to Provide Warfarin Video Education to Hospitalized Patients. *J Patient Saf.* 2014 Feb 11. [Epub ahead of print] PMID: 24522209 [PubMed - as supplied by publisher].
- Kreys TJ, Fabian TJ, Saul MI, Haskett R, **Coley KC**. An evaluation of inpatient treatment continuation and hospital readmission rates in patients with bipolar disorder treated with aripiprazole or quetiapine. *J Psychiatr Pract.* 2013 Jul;19(4):288-95. PMID: 23852103 [PubMed - indexed for MEDLINE].
- Sakely H, Corbo J, **Coley K**, McGivney M, Thorpe C, Klatt P, Schleiden L, Zaharoff J, Cox-Vance L, Balestrino V. Experience with a pharmacist-led collaborative practice for older adults across the continuum of care. *Am J Health-Syst Pharm* 2014. Accepted.
- 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. Epub 2013 Nov 4. PMID: 24259637 [PubMed - in process].
- Kling HM, Nau GJ, Ross TM, Evans TM, Chakraborty K, **Empey KM**, Flynn JL. Challenges and Future in Vaccines, Drug Development, and Immunomodulatory Therapy: Proceedings from the 2013 Pittsburgh Lung Conference. *Annals of the Am Thoracic Soc.* 2014 [In Press].

- Smith, MA, Hibino, M, Falcione BA, Eichinger KM, Patel R, **Empey KM**. A review of the immunosuppressive aspects of analgesics and sedatives used in patients at risk for ventilator-associated pneumonia. *Annals Pharmacother*. 2014 Jan;48(1):77-85. PMID 24259637.
- **Empey PE**, Velez de Mendeizabal N, Bell MJ, Bies R, Kochanek PM, Adelson PD, Poloyac SM. Therapeutic hypothermia decreases phenytoin elimination in children with traumatic brain injury. *Crit Care Med*. 2013 Oct; 41(10):2379-2387. PMID: 23896831. PMCID: PMC3783553.
- Cousar JL, Conley YP, Willyerd FA, Sarnaik AA, Puccio AM, **Empey PE**, Kochanek PM, Okonkwo DO, Clark RSB. Influence of ATP-Binding Cassette Polymorphisms on Neurological Outcome after Traumatic Brain Injury in Humans. *Neurocrit Care*. 2013 Oct;19(2):192-8. PMID: 23896815.
- Smithburger PL, Smith RB, Kane-Gill SL, **Empey PE**. Patient predictors of dexmedetomidine effectiveness for sedation in intensive care units. *Am J Crit Care*. 2014 Mar;23(2):160-5. PMID: 24585165
- Kloet MA, Lohr BR, Smithburger PL, Seybert AL, **Kane-Gill SL**. Prospective Assessment of Inpatient Boxed Warning Prescriber Adherence. *J Patient Saf*. 2014 Mar 18. [Epub ahead of print] PMID: 24647270 [PubMed - as supplied by publisher].
- **Kane-Gill SL**, Wytiaz NP, Thompson LM, Muzykovsky K, Buckley MS, Cohen H, Seybert AL. A real-world, multicenter assessment of drugs requiring weight-based calculations in overweight, adult critically ill patients. *ScientificWorldJournal*. 2013 Nov 30;2013:909135. PMID: 24363625 [PubMed - indexed for MEDLINE].
- Buckley MS, Harinstein LM, Clark KB, Smithburger PL, Eckhardt DJ, Alexander E, Devabhakthuni S, Westley CA, David B, **Kane-Gill SL**. Impact of a clinical pharmacy admission medication reconciliation program on medication errors in "high-risk" patients. *Ann Pharmacother*. 2013 Dec;47(12):1599-610. Epub 2013 Oct 15. PMID: 24259613 [PubMed - in process].
- Hunt CA, Kennedy RC, **Kim SHJ**, Ropella GEP. Agent-Based Modeling: A Systematic Assessment of Use Cases and Requirements for Enhancing Pharmaceutical Research and Development Productivity. *WIREs Systems Biology and Medicine* 5(4):461-480 (2013).
- Mactier R, Laliberté M, Mardini J, Ghannoum M, Lavergne V, Gosselin S, Hoffman RS, **Nolin TD**; EXTRIP Workgroup. Extracorporeal Treatment for Barbiturate Poisoning: Recommendations From the EXTRIP Workgroup. *Am J Kidney Dis*. 2014 Jul 3. [Epub ahead of print] PMID: 24998037.
- Alshogran OY, Ocque AJ, Zhao J, Day BW, Leblond FA, Pichette V, **Nolin TD**. Determination of warfarin alcohols by ultra-high performance liquid chromatography-tandem mass spectrometry: Application to *in vitro* enzyme kinetic studies. *J Chromatogr B Analyt Technol Biomed Life Sci* 2014;944:63-68. PMID: 24291722.
- Tortorici MA, **Nolin TD**. Kidney function assessment and its role in drug development, review and utilization. *Expert Rev Clin Pharmacol* 2014 May 29 Epub. PMID: 24875237.
- Tyurina YY, **Poloyac SM**, Tyurin VA, Kapralov AA, Jiang J, Anthonymuthu TS, Kapralova VI, Vikulina AS, Jung MY, Epperly MW, Mohammadyani D, Klein-Seetharaman J, Jackson TC,

Kochanek PM, Pitt BR, Greenberger JS, Vladimirov YA, Bayliff H, Kagan VE. A mitochondrial pathway for biosynthesis of lipid mediators. *Nat Chem*. 2014 Jun;6(6):542-52. Epub 2014 Apr 20. PMID: 24848241.

- Shaik JS, Ahmad M, Li W, Rose ME, Foley LM, Hitchens TK, Graham SH, Hwang SH, Hammock BD, **Poloyac SM**. Soluble epoxide hydrolase inhibitor trans-4-[4-(3-adamantan-1-yl-ureido)-cyclohexyloxy]-benzoic acid is neuroprotective in rat model of ischemic stroke. *Am J Physiol Heart Circ Physiol*. 2013; 305(11): H1605-13. PMC3882464.
- Empey PE, Velez de Mendeizabal N, Bell MJ, Bies R, Kochanek PM, Adelson PD, **Poloyac SM**. Therapeutic hypothermia decreases phenytoin elimination in children with traumatic brain injury. *Crit Care Med*. 2013 Oct;41(10):2379-87. PMC3783553.
- Marcum ZA, Driessen J, **Thorpe CT**, Gellad WF, Donohue JM. (2014). Impact of multiple pharmacy use on medication adherence and safety in Medicare. *Journal of the American Geriatrics Society*, 62(2): 244-252. PMID 24521363.
- Johnson HM, **Thorpe CT**, Bartels CM, Schumacher JR, Palta M, Pandhi N, Sheehy AM, Smith MA. (2014). Antihypertensive medication initiation among young adults with regular primary care use. *Journal of General Internal Medicine*, 29:723-731. PMC Journal – In Process.
- Everett CM, **Thorpe CT**, Palta M, Carayon P, Bartels C., Gilchrist VJ, Smith MA (2013). Physician assistants and nurse practitioners perform effective roles on teams caring for Medicare patients with diabetes. *Health Affairs*, 32(11): 1942-8. PMID: 24191084.
- Okunseri C, Okunseri E, Xiang Q, **Thorpe JM**, Szabo A. J. Prescription of opioid and nonopioid analgesics for dental care in emergency departments: Findings from the National Hospital Ambulatory Medical Care Survey. *Public Health Dent*. 2014 May 26. [Epub ahead of print] PMID: 24863407 [PubMed - as supplied by publisher].
- Deshpande M, Chewing B, Mott D, **Thorpe JM**, Young HN. Asthma medication use among U.S. adults 18 and older. *Res Social Adm Pharm*. 2014 Mar 1. [Epub ahead of print] PMID: 24684962 [PubMed - as supplied by publisher].
- Corazzini KN, Anderson RA, Mueller C, **Thorpe JM**, McConnell ES. Licensed practical nurse scope of practice and quality of nursing home care. *Nurs Res*. 2013 Sep-Oct;62(5):315-24. PMID: 23995465 [PubMed - indexed for MEDLINE].
- Young HN, Larson TL, Cox ED, Moreno MA, **Thorpe JM**, MacKinnon NJ. Patient activation, medication adherence, and disease control in underserved rural patients with asthma. *J Rural Health* 2013, June 11.

Selected Invited Presentations

- Animal-based Research: Making a difference for Society. PA Society for Biomedical Research, Invited Speaker, Pittsburgh PA. March 6, 2014. **Empey K**.
- Inhaled interferon γ (IFN γ) during primary respiratory Syncytial Virus (RSV) infection induces airway hyperresponsiveness (AHR) after RSV re-challenge. Autumn Immunology Conference,

Chicago, IL. Eichinger K, Resetar E, Egana L, Alcorn J, **Empey K**. Center for Clinical Pharmaceutical Sciences, University of Pittsburgh School of Pharmacy. November 2013.

- Understanding the role of IFN γ in an infant mouse model of respiratory syncytial virus (RSV). Pittsburgh Lung Conference, Pittsburgh PA. October 18, 2013. **Empey K**.
- Pharmacogenomics in critical care. SCCM Critical Care Congress, San Francisco, CA. January 2014. **Empey P**.
- Lost in translation: The importance of understanding clinical pharmacology in neurotrauma research. National Neurotrauma Symposium, Nashville, TN. August 2013. **Empey P**.
- Development of a graduate level cross-institutional course to foster an understanding of translational sciences. American Association of Colleges of Pharmacy, Chicago, IL. July 2013. **Empey P**.
- Frequently Asked Questions and Tips for Success. Pre-Residency Excellence Program (PREP) – Resident Research: Webinar for Registrants in the PREP Program for Pennsylvania Pharmacists Association. May 2014. **Kane-Gill SL**.
- Strategies to manage alert overload from clinical decision support systems. 43rd Society of Critical Care Medicine (SCCM) Congress San Francisco, CA. January 2014. **Kane-Gill SL**.
- Med Wreck or Med Safety: The impact of medication reconciliation on medication errors and adverse drug events. 46th ASHP Midyear Clinical Meeting, Orlando, FL. December 2013. **Kane-Gill SL**.
- Acute kidney injury in the critically ill, elderly patient. 3rd AKI Symposium, University of Pittsburgh, Pittsburgh, PA. October 2013. **Kane-Gill SL**.
- Pulling the Trigger on ADE Surveillance in the ICU. Greater New York Hospital Association-webinar for 180 acute care hospitals and health systems in New York, New Jersey, Connecticut, MA. October 2013. **Kane-Gill SL**.
- Quantitative Mechanistic Modeling of Drug Disposition – A New Paradigm for Regulatory Consideration. US Food and Drug Administration, Silver Spring, MD. January 15, 2014. **Kim SHJ**.
- Pharmacokinetics in CRRT: Background and Proposed Study Design for KHI Project. Presented at the Kidney Health Initiative PK Workgroup Project Meeting. U.S. Food and Drug Administration, Center for Drug Evaluation Research, Office of Clinical Pharmacology, Silver Spring, MD. December 18, 2013. **Nolin TD**.
- KHI's Pilot Projects-Lessons Learned: Pharmacokinetics in Patients Receiving CRRT. Presented at the Kidney Health Initiative Second Annual Stakeholder's Meeting, Bethesda, MD. June 12, 2014. **Nolin TD**.
- CYP Eicosanoids and Stroke: Results from a large cohort of aneurysmal subarachnoid hemorrhage patients. Winter Eicosanoid Conference, Baltimore, MD. March 2014. **Poloyac SM**.

- Special Session: Development of a Graduate Level Cross-Institutional Course to Foster an Understanding of Translational Sciences. American Association of Colleges of Pharmacy Annual Meeting Teachers Seminar, Chicago, IL. July 2013. **Poloyac SM.**
- Effective Coping – The Educator’s Role. How Can We Help? Strategies for Behavior Change and Effective Coping. American Diabetes Association 74th Scientific Sessions, San Francisco, CA. June 2014. **Thorpe C.**

Computational Chemical Genomics Screening (CCGS) Center

Faculty

Xiang-Qun (Sean) Xie, PhD MBA, Professor and Director of CCGS Center

Lirong Wang, PhD, Assistant Research Professor and CCGS Center Scientific Administrator

Graduate Students

Abdulrahman Almehezia, BS
 Mohammed Hamed Alqarni, BS
 Haizi Cheng, MS
 Cheng Fang, MS
 Shfang Ma, MS
 Nuo Zhou Wang, BS
 Xiaomeng Xu, MS
 XiaoLe Yang, MS

Exchange Students

Haibin Liu, PhD
 Jinxu Wang, PhD

Postdoctoral Fellows

Patrick Bartlow, PhD
 Zhiwei Feng, PhD
 Qin Ouyang, PhD
 Peng Yang, PhD
 Peng Zhang, PhD

The Computational Chemical Genomics Screening (CCGS) Center has completed its second 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.

Major Accomplishments

- In FY14, amassed 21 peer-reviewed research publications and had 2 PCT new discovery patents approved.
- 6 faculty were invited speakers, session chair, and/or organizing committee members for international meetings or organizations.
- Received 2 newly awarded NIH grants, including:
 - *NIDA Center of Excellence for Computational Chemogenomics Drug Abuse Research*, PI/Director: X-Q Xie, Co-PI: L. Wang. \$5.4 million (07/01/2014-06/30/19). The overall goal of the Computational Drug Abuse Research (CDAR) Center is to advance state-of-the-art computational chemogenomics technologies for research toward the prevention and treatment of drug abuse (DA).

- *Structure/Function of the CB2 Receptor Binding and G-protein Recognition Pocket*, PI: X-Q Xie. (04/10/10- 03/31/15). This study involves X-ray crystallographic studies of CB2 protein.
- Continued 3 NIH funded grants, including:
 - *Structure/Function of the GPCR CB2 Receptor Binding and G-protein Recognition Pockets*, PI: X-Q Xie. (4/1/2010-03/31/2015). This project focuses on characterizing the cannabinoid receptor subtype 2 (CB2) binding residues and functional domains and then to elucidate 3D structures of the recognition pockets important to agonist/antagonist binding and G-protein coupling by combined biophysical and biochemical approaches.
 - *New Concepts, Methodologies and Scaffolds for Diversity-Oriented Organic Synthesis*, PI: P. Wipf, Co-PI and Core Co-Director: X-Q Xie, Co-Investigator: L. Wang. (10/1/08-09/31/2014). This project is to build a Pitt Center for Chemical Methodologies and Library Development.
 - *Screen/Design the CK1 p18 Inhibitors for Hematopoietic Stem Cell Self-Renewal*, PI: X-Q Xie. (7/1/2011-6/30/2014). This project is to screen/design small molecules targeting CK1 p18, and use them as chemical probes for characterization of p18 protein binding and p18/CDK6 disruption, and further exploration of the mechanisms of activating HSC self-renewal in increasing the quantity of functional stem cells. Ultimately, our work will lead to developing HSC drugs for therapeutic uses.
- 2 NIH grant submitted as PI and co-PI (Xiang-Qun Xie and Lirong Wang).
- Center faculty supervised and trained 7 undergraduates, 10 graduate students, and 5 post-doctoral fellows.

Selected Publications

- Almezizia A, Yang P, Wang L, **Xie X-Q***. Latest Advances in the Multiple Myeloma Drug Research: From Molecular Signaling Pathways to Small Molecules Development. *Current Trends in Medicinal Chemistry*, (2013) 7:105-133.
- Chen XF, Gao Y, Zhang H, Zhu ZY, Liu M, Liu HB, Hong ZY, Liu WH, Lv DY, Wang LR, Zhuo XY, Zhang JP, **Xie X-Q***, Chai YF*. Comparative Normal/Failing Rat Myocardium Cell Membrane Chromatographic Analysis System for Screening Specific Components That Counteract Doxorubicin-Induced Heart Failure from *Acontium carmichaeli*. *Anal Chem*, 2014 May 20;86(10):4748-57. PMID:24731167; PMCID:PMC4033634. doi: 10.1021/ac500287e. Epub 2014 Apr 30.
- Chen XF, Gao Y, Zhang H, Zhu ZY, Liu M, Liu HB, Hong ZY, Liu WH, Lv DY, Wang LR, Zhuo XY, Zhang JP, **Xie X-Q***, Chai YF*. Comparative Normal/Failing Rat Myocardium Cell Membrane Chromatographic Analysis System for Screening Specific Components That Counteract Doxorubicin-Induced Heart Failure from *Acontium carmichaeli*. *Anal Chem*, 2014 May 20;86(10):4748-57. PMID:24731167
- Feng RT, Milcarek C, **Xie, X-Q***. Antagonism of cannabinoid receptor 2 pathway suppresses IL-6-induced immunoglobulin IgM secretion. *BMC Pharmacol Toxicol.*, 2014, 5:30 PMID:24913620, PMCID: PMC4062519; doi:10.1186/2050-6511-15-30

- Gao X, Huang Y, Makhov AM, Epperly M, Lu J, Grab S, Zhang P, Rohan L, **Xie XQ**, Wipf P, Greenberger J, Li S. Nanoassembly of surfactants with interfacial drug-interactive motifs as tailor-designed drug carriers. *Mol Pharm*, 2013,10(1):187-98. PMID:23244299
- Laporte MG, Tsegay S, Hong KB, Lu C, Fang C, Wang L, **Xie X-Q**, Floreancig PE. Construction of a Spirooxindole Amide Library through Nitrile Hydrozirconation-Acylation-Cyclization Cascade. *ACS Comb Sci*, 2013, 15(7):344-9. PMID: 23731121; PMCID: PMC3800499. (Journal Coverage).
- Liu HB, Liang FY, Su WW, Wang N, Lv ML, Li PB, Pei Z, Zhang Y, **Xie X-Q**, Wang LR, Wang YG. Lifespan extension by n-butanol extract from seed of *Platyclusus orientalis* in *Caenorhabditis elegans*, *J Ethnopharmacol*. 2013 May 20;147(2):366-72. doi: 10.1016/j.jep.2013.03.019. Epub 2013 Mar 21. PMID: 23523941
- Liu HB, Liang FY, Su WW, **Xie X-Q**, et al. Lifespan extension by n-butanol extract from seed of *Platyclusus orientalis* in *Caenorhabditis elegans*. *Journal of Ethnopharmacology*, 2013, 147: 366-372.
- Liu HB, Liang FY, Su WW, **Xie X-Q**, et al. Lifespan extension by n-butanol extract from seed of *Platyclusus orientalis* in *Caenorhabditis elegans*. *Journal of Ethnopharmacology*, 2013, 147: 366-372.
- Liu HB, Liang FY, Su WW, Xie X-Q, et al. Significant attenuation of A myloid- β induced pathological behaviors by n-butanol extract from seed of *Platyclusus orientalis* in *Caenorhabditis elegans*. *Experimental Gerontology*, (In press).
- Liu HB, Liang FY, Su WW, Xie X-Q, et al. Significant attenuation of A myloid- β induced pathological behaviors by n-butanol extract from seed of *Platyclusus orientalis* in *Caenorhabditis elegans*. *Experimental Gerontology*. (In press).
- Liu HB, Wang L, Su WW, **Xie, X-Q***. ALzPlatform: An Alzheimer's Disease Domain-Specific Chemogenomics Knowledgebase for Polypharmacology and Target Identification Research. *J Comput Info Modeling*, 2014, 54(4):1050-60. PMID:24597646; PMCID: PMC4010297; doi: 10.1021/ci500004h. Epub 2014 Mar 20. (Cover page of the issue).
- Liu HB, Wang L, Su WW, **Xie, X-Q***. Advance in Alzheimer disease Drug development. Patents and Clinical trials. *Pharmaceutical Patent Analyst*, (Accepted).
- Liu HB, Wang LR, Su WW, **Xie, X-Q***. Advance in Alzheimer disease Drug development. Patents and Clinical trials. *Pharmaceutical Patent Analyst*. (Accepted).
- Ma C, Wang LR, Yang P, Tong Q, Myint KZ, **Xie X-Q***. LiCABEDS II. Modeling of Ligand Selectivity for G-protein Coupled Cannabinoid Receptors, *J. Chem. Inf. Model.*, 2013, 53(1):11-26. PMID:23278450; NIHMSID: 433009. PMID: 23278450. doi: 10.1021/ci3003914
- Ouyang Q, Tong Q, Peng RT, Myint KZ, Yang P, **Xie* X-Q**. Trisubstituted Sulfonamides: A New Chemotype for Development of Potent and Selective CB2 Receptor Inverse Agonists. *ACS Med Chem Lett*, 2013, 4(4):387-392. doi: 10.1021/ml3004236. NIHMSID: 451185. ml3004236.

- 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
- 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.
- Wang L, Ma C, Wipf P, Liu H, Su W, **Xie X-Q***. TargetHunter: An In Silico Target Identification Tool for Predicting Therapeutic Potential of Small Organic Molecules Based on Chemogenomic Database. *AAPS J*, 2013, 15, 395-406 PMID:23292636; PMCID: PMC3675739 (AAPS Special theme issue).
- Wang L, **Xie, Z-Q***. Computational target fishing: what should chemogenomics researchers expect for the future of in silico drug design and discovery? *Future Medicinal Chemistry*, March 2014, Vol. 6, No. 3, Pages 247-249. PMID:24575960 (invited editorial).
- Wang N, Bartlow P, Ouyang Q, Xie XQ. Recent advance in antimultiple myeloma drug development. *Pharm Pat Anal*, 2014 May; 3(3):261-77. doi: 10.4155/ppa.14.18
- **Xie X-Q***, Chowdhury A. Advances in methods to characterize ligand-induced ionic lock and rotamer toggle molecular switch in G protein-coupled receptors. *Methods Enzymol*, 2013, 520, 153-174. PMID: 23332699; NIHMSID: 562667. doi: 10.1016/B978-0-12-391861-1.00007-1
- **Xie X-Q***, Wang L, Liu H, Ouyang Q, Fang C, Su W. Chemogenomics Knowledgebased Polypharmacology Analyses of Drug Abuse Related G-Protein Coupled Receptors and Their Ligands. *Front. Pharmacol.(Neuropharmacology)*, 2014, 5:3. PMID:24567719; PMCID: PMC3915241 doi: 10.3389/fphar.2014.00003
- Yang P, Wang L, Feng R, Almehizia AA, Tong Q, Myint K-Z, Qin O, Alqarni MH, Wang L, **Xie* X-Q** . Novel Triaryl Sulfonamide Derivatives as Selective Cannabinoid Receptor 2 Inverse Agonists and Osteoclast Inhibitors: Discovery, Optimization, and Biological Evaluation, *J Med Chem.*, 2013, 56(5):2045-2058. PMID:23406429, NIHMSID: 449514. doi: 10.1021/jm3017464
- Zeng D, Ouyang Q, Cai Z, **Xie XQ**, Anderson CJ. New cross-bridged cyclam derivative CB-TE1K1P, an improved bifunctional chelator for copper radionuclides. *Chem Commun (Camb)*, 2014, 4;50(1):43-5. PubMed PMID: 24141371; NIHMSID: 562664. doi: 10.1039/C3CC45928D (Journal coverage).
- Zeng D, Ouyang Q, Cai Z, **Xie XQ**, Anderson CJ. New cross-bridged cyclam derivative CB-TE1K1P, an improved bifunctional chelator for copper radionuclides. *Chem Commun (Camb)*, 2014, 4;50(1):43-5. PubMed PMID.
- Zhang SJ, Jia NY, Shao P, Tong Q, **Xie X-Q**, Bai M. Target-Selective Phototherapy Using a Ligand-Based Photosensitizer for Type 2 Cannabinoid Receptor. *Chemistry & Biology*, 2014 21(3):338-44. PMID: 24583052; PMCID: PMC3989837; doi:10.1016/j.chembiol.2014.01.009

- Zhang, SJ, Jia, NY, Shao, P, Tong, Q, **Xie, X-Q**, Bai M. Target-Selective Phototherapy Using a Ligand-Based Photosensitizer for Type 2 Cannabinoid Receptor. *Chemistry & Biology*, 2014 21(3):338-44. PMID: 24583052: 24141371.

Selected Invited Presentations

- Cloud Computing and Diseases-Specific Chemogenomics Knowledgebase for System Pharmacology Drug Discovery and Personalized Medicine. New Frontiers in Therapeutic Agents – Successes in Drugging the Undruggable Conference, jointly sponsored by the John S. Dunn Gulf Coast Consortium for Chemical Genomics (GCCCG) and the Texas Screening Alliance for Cancer Therapeutics (TxSACT). April 16-17, 2014, University of Texas MD Anderson Cancer Center, Houston, TX. **Xie X-Q**.
- Cloud Computing Target Hunter and Disease-Specific Chemogenomics Knowledgebase for System Pharmacology Drug Discovery and Personalized Medicine. June 23, 2014, University of Florida, Gainesville, FL. **Xie X-Q**.
- Cloud Computing and Diseases Domain-Specific Chemogenomics Knowledgebases for Systems Pharmacotherapy and Personalized Medicine. Workshop on Quantitative Systems Pharmacology in Personalized Medicine. November 2013, Pittsburgh, PA. **Xie X-Q**.
- TargetHunter© and Diseases-Specific Chemogenomics Knowledgebases for Multiple Myeloma Drug Discovery. 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. May 28-31, 2014, Shanghai, China. **Xie X-Q**.
- Cloud Computing TargetHunter© and Diseases-Specific Chemogenomics Knowledgebases for Multiple Myeloma Drug Discovery. Institute of Materia Medica, Chinese Academy of Sciences(CAS), June 9, 2014, Beijing, China. **Xie X-Q**.
- Cloud Computing Chemogenomics Knowledgebase Platform for Drug Discovery. 2nd International Conference on Medicinal Chemistry & Computer Aided Drug Designing, October 15, 2013, Las Vegas, NV. **Xie X-Q**.

Patents Approved

- **Xie X-Q**, Myint K, Roodman D. “P62-ZZ Chemical Inhibitor and Therapeutic Potential for Multiple Myeloma” WO2013/022919 .
- **Xie X-Q**, Feng RT, Yang P. “Novel CB2 Inverse Agonists and Therapeutic Potential for Multiple Myeloma and Osteoporosis Bone Diseases”. US Patent Appl No: 14/305,941.
- **Gold B, Xie X-Q**, Srinivasan, A, Wang LR. “Compounds and Methods for Inhibition of AP endonuclease-1/redox factor-1 (hAPE1) activity.” PCT/US2013/023653.

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. 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.

Faculty

Lisa Rohan, PhD, Associate Professor

Haitao Yang, PhD, Assistant Professor

Research Staff

Marilyn Cost

Phillip Graebing

Lin Wang

Yuan Shi

Graduate Students

Lindsay Ferguson, PharmD

Sheila Grab

TianTian Gong

Minlu Hu

Jing Li

Galit Regev

Tian Zhou

Kunal Jhunhunwala

Postdoctoral Fellows

Wei Zhang, PhD

Major Accomplishments

- Completed a Phase I clinical trial evaluating the antiretroviral dapivirine in a novel vaginal film product. This clinical trial is the first in human study to evaluate the use of thin film drug delivery platforms as an option for HIV prevention. Results from this trial were selected for presentation at the Conference On Retroviruses And Opportunistic Infections (CROI) annual meeting as a late breaker oral presentation. The development work and clinical trial was supported through NIAID at the NIH.
- Also within the context of the Program Cooperative Agreement Grant for which Dr. Rohan is Principal Investigator a second antiretroviral containing vaginal film was developed, the IND successfully submitted and the Phase I clinical trial initiated.
- A rectal specific HIV prevention drug product containing the antiretroviral drug tenofovir was developed in the lab. An Investigational New Drug (IND) Application was successfully filed and the clinical trial completed. This is the first clinical trial to evaluate a rectal specific dosage form for HIV prevention. A second rectal HIV prevention product was developed containing an HIV entry inhibitor. The IND was recently filed for this product and a clinical trial will be conducted at Magee in partnership with International Partnership for Microbicides and ViiV Healthcare. The development work and clinical trial is supported through NIAID at the NIH.
- The group has continued with their innovative work regarding characterization of anatomical and physiological parameters essential for development of safe and effective vaginal products. To this end they have expanded their work on transporters and metabolizing enzymes in reproductive tissues of humans and other animal models and have developed in vitro and animal models for

assessment of vaginal film products. This work has been shared with other groups and has facilitated vaginal product design by a number of organizations.

- The group in collaboration with Universal Stabilization Technologies in California has successfully formulated quick dissolve film and table vaccine formulations which can potentially overcome the current requirements for cold chain storage for worldwide vaccine distribution.
- Funding for the Pharmaceuticals Group over the past year has been provided through 11 separate grants (8-NIH; 2-Bill & Melinda Gates Foundation; 1-CDC). The group was awarded a second round of supplemental funding to their U19 cooperative grant entitled “Alternative Formulations of Tenofovir and UC781”.

Selected Publications

This year the Pharmaceuticals Group has published 11 peer reviewed scientific manuscripts and 1 Review Article and 2 book chapters. Additionally 2 manuscripts have been submitted for review.

- 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. *Pharmaceutical Research*. 2014 Jul 31. PMID:25079391.
- Dezzutti CS, Russo J, Wang L, Abebe KZ, Lic J, Friend DR, McGowan IM, **Rohan LC**. Development of HIV-1 Rectal-Specific Microbicides and Colonic Tissue Evaluation. *PLoS One*. 2014 July 12. PMID:25025306
- Michailidis, E. Ryan EM, Ong YT, Maxwell LD, Matzek KB, Singh K, Marchand B, Huber AD, Hagedorn AN, Kirby KA, **Rohan LC**, Kodama EN, Mitsuya H, Parniak MA, Sarafianos SG. 4'-ethynyl-2-fluoro-2'-deoxyadenosine (EFdA) inhibits HIV-1 reverse transcriptase with multiple mechanisms. *J. Biol Chem*. 2014 June 26. PMID:24970894.
- Zhang W, Parniak MA, Sarafianos SG, Empey PE, **Rohan LC**. In vitro transport characteristics of EFdA, a novel nucleoside reverse transcriptase inhibitor using Caco-2 and MDCKII cell monolayers. *European Journal of Pharmacology*. 2014 Jun 5;732:86-95. PMID 24690257
- Carballo-Diéguez A, Giguere R, Dolezal C, Bauermeister J, Leu CS, Valladares J, **Rohan LC**, Anton PA, Cranston RD, Febo I, Mayer K, McGowan I. Rectal-Specific Microbicide Applicator: Evaluation and Comparison with a Vaginal Applicator Used Rectally. *AIDS Behav*. 2014 May 25. [Epub ahead of print] PubMed PMID: 24858481.
- Zhou T, Hu M, Pearlman AP, Patton D, **Rohan LC**. 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 May 7 [Epub ahead of print] PMID 24803409.
- Akil A, Devlin B, Cost M, **Rohan LC**. Increased dapivirine tissue accumulation through vaginal film codelivery of dapivirine and tenofovir. *Molecular Pharmaceutics*. 2014 May 5; 11(5):1533-1541 [Epub] PMID 24693866.

- Rinehart M, Grab S, **Rohan L**, Datz D, Wax A. Analysis of vaginal microbicide film hydration kinetics by quantitative imaging refractometry. *PLOS ONE*. 2014 April; 9 (4): e95005.doi:10.1371/journal.pone.0095005.
- Chappell CA, **Rohan LC**, Moncla BJ, Wang L, Meyn LA, Bunge K, Hillier SL. The effects of reproductive hormones on the physical properties of cervicovaginal fluid. *American Journal of Obstetrics & Gynecology*. 2014 Mar 21 [Epub ahead of print] PMID: 24662718

Selected Invited Presentations

- Dr. Rohan was invited as a plenary speaker to deliver a talk entitled “The Role of PK/PD tissue models for prevention” at the 15th International Workshop on Clinical Pharmacology of HIV & Hepatitis Therapy held in Washington DC on May 20, 2014
- Of the many grantees for the Bill and Melinda Gates Foundation the group was one of six chosen grantees as a “Grantee Spotlight: Multipurpose Technology for HIV and Family Planning” at the Bill & Melinda Gates Foundation Annual Employee Meeting held in Seattle, WA on May 13, 2014. Their work toward development of a vaginal thin film which provides both protection from unwanted pregnancy and HIV infection.
- Over a dozen published meeting abstracts were generated. From the program grant alone seven presentations (2 oral, 5 posters) were made at 5 different conferences across a range of scientific areas (STDs (ISSTD); Reproductive infectious disease (IDSOG); HIV (CROI, ICAR); & Family planning (Forum for Family Planning Research)
- Dr. Rohan continues to serve as a scientific advisor for the CRIMP program within NIAID at the NIH as well as advisor to several not for profit groups and pharmaceutical companies.

International Impact

The Pharmaceuticals Group continues to have international impact. In addition to their research efforts in the area of improving global health, the group continues to support and train international investigators. The group collaborates with investigators in Africa, Europe, India, and Australia. As part of the Microbicide Trials Network Comparative Assessment Core the group provides scientific support to the MTN community which includes clinical sites in the US as well as in Peru, Malawi, Zambia, Uganda, Zimbabwe, India, South Africa, and Thailand. They recently successfully competed for renewal of the network grant and have been awarded a new grant which extends the MTN for an additional 7 years.

Center for Education and Drug Abuse Research

December 31, 2014 will mark 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. In addition to the center grant funded by the National Institute on Drug Abuse, a grant funded by Staunton Farm Foundation enabled CEDAR to establish a prototype for addiction screening of youths in the primary pediatric setting. The results of this project indicate that a 5-10 minute screening of addiction risk can be conducted unobtrusively in a pediatrician’s office using the Web platform. CEDAR’s cumulative record of publications exceeds 400 peer reviewed papers and book chapters. The following publications are representative of empirical reports published between July 1, 2013 – June, 30, 2014.

Faculty

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

Graduate Student

ZuWei Zhai, BA

Postdoctoral Fellow

Michelle Horner, DO

Major Accomplishments

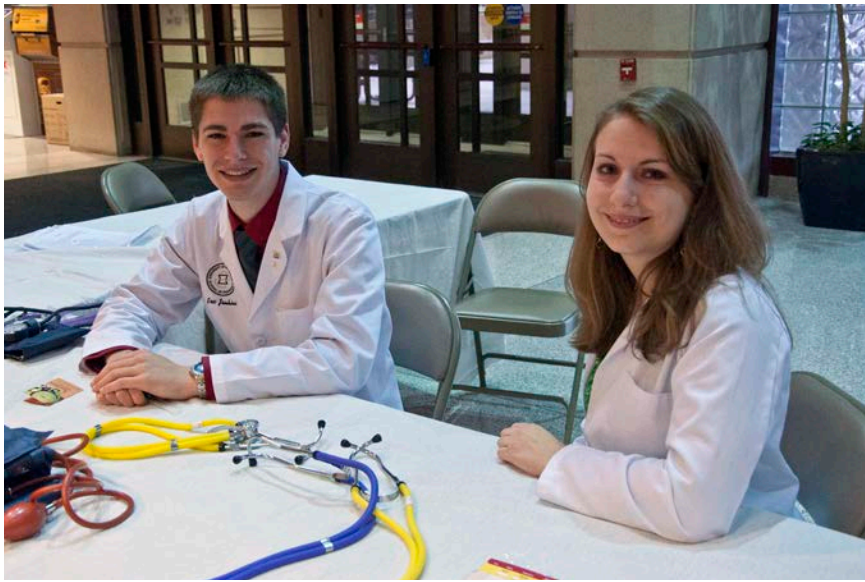
- The Transmissible Liability Index (TLI) derived and validated at CEDAR to quantify the intergenerational component of risk for addiction has been adopted by the National Institute on Drug Abuse for inclusion in the PhenX Toolbox.
- Research with the TLI has revealed that it is informative for elucidating the genetic and neurobiological underpinnings of addiction.
- Research with the TLI has led to a funded R01 grant to demonstrate its utility for routine screening jointed to secondary prevention.

Publications

- Cornelius, J., Kirisci, L. Longer-term effectiveness of CBT in treatment of comorbid AUD/MDD adolescents. *International journal of medical and biological frontiers*. NIHMSID: 513364.
- Cornelius, J., Kirisci, L. Treatment trial and long-term follow-up evaluation among comorbid youth with major depression and a cannabis use disorder. *International journal of medical and biological frontiers*. NIHMSID: 513297.

**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, and 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 medicine, 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 FY14

In FY14, School of Pharmacy faculty members:

- Contributed to care of underserved communities by:
 - Providing oversight of the pharmacy program for Health Care for the Homeless Clinic, dispensing almost **9,000** prescriptions to uninsured patients through the efforts of **12** faculty members, residents, and volunteers.
- Optimized the use of medications and stemmed the misuse, abuse, and diversion of medications by:
 - Providing anticoagulation management for over **1,200** patients with an INR in goal range of **75 %** for **23,738** INR values evaluated.
 - Avoiding **92** potential simeprevir-related drug-drug interactions in **310** patients with hepatitis C infection.
 - Providing medication management and education during **>1,500** heart transplant recipient clinic visits.
 - Providing medication reconciliation and medication management in approximately **2,100** oncology hospitalized patients.
 - Joining the specialty Chronic Heart Failure Clinic and identifying **46** drug-related problems and **4** adverse drug reactions and preventing **9** adverse drug reactions in first **3** months.
 - Collaborating with a multidisciplinary team at the UPMC Advanced Heart Failure Outpatient Clinic to improve transitions of care through over **200** patient interactions.
 - Leading a team of pharmacists and pharmacy residents and students who educated **2,746** hospitalized patients on their medications including **247** patients newly started on insulin.
 - Administering **> 3,500** seasonal influenza vaccines season to **2,083** University employees, **467** University students, and **697** UPMC employees.

- Promoted residency programs and training by:
 - Developing **2** new community pharmacy residency positions for FY15. .
 - Creating **1 of 12** post-graduate residency programs nationally in geriatric pharmacy practice, successfully graduating the second PGY2 geriatric resident this year.
- Pioneered and managed patient care programs, including:
 - Creating a collaborative practice agreement with **8** infectious diseases (ID) physicians for patients discharged on intravenous antimicrobial therapy and impacting **225** patients in the inaugural **6** months.
 - Providing pharmacist-led medication-reconciliation program for over **150** patients through specialty hypertension.
 - Establishing pharmacist-led medication reconciliation program in a specialty hyperlipidemia clinic, providing medication assessments for **108** patients in first **6** months.
- Developed UPMC system-wide policies and protocols, including:
 - Conducting **114** guidelines/reviews and developing **10** electronic health record protocols for medication use across UPMC hospitals.
 - Facilitating development of **9** medication therapeutic class interchanges across UPMC inpatient sites, to optimize medication inventory, while ensuring equal safety and cost-effectiveness for UPMC patients.
- Assumed leadership roles, including:
 - Becoming **1 of 5** critical pharmacists to serve as nationally as faculty for the American Society of Health-System Pharmacists (ASHP) Foundation Critical Care Trainee Program.
- Managed **630** patients referred to University Diabetes Care Associates by **41** primary care physicians; resolved **1,450** drug-related problems.
- The WPIC MEDPACT (Medication and Education at Discharge – Pharmacist Assisted Care Transitions) program has:
 - Facilitated transitions of care for over **8,000** patients since program inception in 2008.
 - Assisted a total of **2,411** patients in FY14 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 **6,042** medication-related interventions including resolving **2,925** prescription insurance issues and providing patient-specific medication education for **1,465** patients.
- Competed successfully in the Pitt Innovation Challenge (PInCh) Awards for patient care innovations so that 3 of 29 pharmacy teams placed among the finalists, **1** of which placed in the top ten.

PATIENT CARE HIGHLIGHTS WITHOUT NUMBERS

During FY14, faculty member(s):

- Supervised the establishment of the Interprofessional Student-Run Free Clinic at the Birmingham Clinic.
- Served in leadership roles in International Society for Heart and Lung Transplantation.
- Achieved ASHP Accreditation for PGY2 Solid Organ Transplantation Pharmacy Residency.
- Was named Associate Director-Cardiac Transplantation for the Advanced Heart Failure division of the UPMC Heart and Vascular Institute.

- Developed a new transitions-of-care program to be piloted at UPMC Shadyside beginning August 2014.
- Designed and implemented a program so that patients can take home their partially used bulk medications (e.g. insulin pens, inhalers) at the time of discharge.
- Developed a Free Medication Program for UPMC Family Health Center patients to improve access to medications.
- Managed carbapenem-resistant Enterobacteriaceae (CRE) in collaboration with the primary medical team. Through the assistance of provider analytics, the antibiotic management program showed that this approach led to a significant decrease in mortality, hospital stay, and costs associated with CRE infections. This is a public-health emergency and one that we are successfully addressing with our multi-disciplinary team.
- Provided medication assessment to all patients undergoing kidney transplant evaluation.
- Created new UPMC system-wide policy to define the clinical scope of practice for the institutional (hospital) pharmacist related to automatic dosing protocols, medication formulary and safety initiatives, and design of inpatient collaborative practice agreements, which are defined by the State Board of Pharmacy as “institutional protocols.”
- Facilitated 120 students attending Pennsylvania Legislative Day for the purpose of policy development.

COMMUNITY-BASED PROGRAMS

Community Chain Partnerships

Faculty

Melissa S. McGivney, PharmD, Associate Professor, Assistant Dean for Community Partnerships
 Stephanie H. McGrath, PharmD, Assistant Professor
 Kim C. Coley, PharmD, Professor

Research Fellow

Jennifer Bacci, PharmD

Resident

Elizabeth McCartney, PharmD-PGY1 Community Pharmacy Resident
 Kristine Ossman, PharmD-PGY1 Community Pharmacy Resident

Major Accomplishments

In FY14, School of Pharmacy faculty members:

- Successfully graduated the 8th class of Community Residents, **Elizabeth McCartney** and **Kristine Ossman**.
- 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.
- Successfully recruited four PGY1 Community Pharmacy Residents for 2014-15.

- Successfully recruited a new community pharmacy faculty member beginning July, 2014: **Lucas Berenbrok, PharmD**
- Invited to partner with the Stearn Colloquium through the University of Pittsburgh Health Policy Institute: **Kim C. Coley** and **Melissa S. McGivney**.
- Engaged students in a series of practice enhancement projects lead by **Melissa S McGivney, Kim C Coley, Jennifer L. Bacci, Stephanie H. McGrath**. Led intern engagement in advancing clinical patient care at Rite Aid, Giant Eagle, CVS, and within independent pharmacies.
- Awarded Fellowship in the American Pharmacists Association: **Melissa S. McGivney**
- Facilitated 120 students attending Pennsylvania Legislative Day: **Jennifer L Bacci** and **Melissa S. McGivney**

Programmatic Accomplishments

- **Pennsylvania Pharmaceutical Care Network Training (2014-present)**
 - 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)**
 - 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).
- **Statewide Community Residency Research Coalition – TOP TIER (Training Outpatient Pharmacists Techniques In Evidence-Based Research) 2009-present**
 - 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)**
 - 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.
- **Student Presentations: PPA and APhA**
 - 16 students presented 13 innovative community practice posters at PPA: January, 2013 – Bedford, PA.
 - Ten students presented 5 community research posters at APhA: March, 2013 – Orlando, FL.

Selected Publications (related to community dwelling patients)

- **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. *Accepted J Am Pharm Assoc*: 2014.
- 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. *Accepted Am J Health-Sys Pharm*: 2014.
- Adams AJ, Clark DR, DeLander GE, Mackinnon GE, Malloy M, **McGivney MS**, Mobley C, Nuffer, W, Parsons P, Smesny AL, Smith M, Ives TJ. Report of the AACP Task Force on Patient-Centered Medical Homes and Accountable Care Organizations. *Am J Pharm Ed*. 2013;77(7) Article 142.
- 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

- 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.**

Selected Invited Presentations (National/International)

- Collaboration between Schools of Pharmacy and State Pharmacy Organizations. AACP Annual Meeting. Grapevine, TX. July, 2014. **McGivney MS.**
- Qualitative Research Methods. Roundtable Speaker APhA Annual Meeting. Orlando, FL. March, 2014. **McGivney MS.**
- Deans Networking Session II: Partnering with ACOs and Medical Homes. Panel Speaker AACP Annual Meeting. Chicago, IL. July, 2013. **McGivney MS.**
- Research in Community Pharmacy: the Need, the Resources, the Opportunity. Panel Speaker AACP Annual Meeting. Chicago, IL. July, 2013. **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 23 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 FY14, School of Pharmacy faculty members:

- Treated 630 patients referred by 41 primary care physicians to resolve 1450 drug related problems.
- Precepted 19 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.

Awards

- University of Pittsburgh School of Pharmacy Preceptor of the Year Award. **Drab SR.**
- University of Pittsburgh School of Pharmacy Rho Chi Society Innovation in Teaching Award. **Drab SR.**

Selected Publications

- **Drab SR**, Philis-Tsimikas A. A New Option for Glycemic Control: Insulin Degludec, a New-Generation Basal Insulin with an Ultralong Duration of Action. *Pharmacotherapy*. 34(3):291-302, March 2014.

Book Chapters Written

- **Drab SR**, Hall DL. Type 2 diabetes mellitus: New onset. In: Schwinghammer TL, ed. *Pharmacotherapy casebook: A patient-focused approach*. 9th ed. New York, NY: McGraw-Hill, 2014. Case answers provided in: *Instructor's Guide to Accompany the Pharmacotherapy Casebook*. 9th ed. New York, NY: McGraw-Hill, 2014.

Selected Invited Presentations (National/International)

- Reducing Chronic Complications of Diabetes. Richmond Pharmacists Association; Richmond, VA, August 22, 2013. **Drab SR.**
- Pharmacological Implications of Co-Morbid Conditions in Cancer Care. Oncology Nursing Society; Dallas, TX, November 7, 2013. **Drab SR.**
- Implementing the Chronic Care Model for Diabetes. Washington County Pharmacists Association; Hagerstown, MD, November 20, 2013. **Drab SR.**

- Managing Diabetes in the Long Term Care Setting. Pennsylvania Health Care Association Center for Assisted Living Management; Harrisburg, PA, February 18, 2014. **Drab SR.**
- Addressing Safety Challenges with U-500 Insulin. Institute for Safe Medication Practices Webinar; Horsham, PA, March 27, 2014. **Drab SR.**
- Diabetes Challenges: Improving Outcomes in the Long Term Care Setting. Pennsylvania Association of Directors of Nursing Administration Annual Meeting; Hershey, PA, April, 2, 2014. **Drab SR.**
- Incretin Impairment: Discovering the Core Defects in Type 2 Diabetes. Pharmacy Society of Wisconsin; Madison, WI, April 10, 2014. **Drab SR.**
- Basal Bolus Insulin Therapy: Implementing Best Practices for Inpatients with Hyperglycemia. Institute for Safe Medication Practices Webinar; Horsham, PA, April, 23, 2014. **Drab SR.**

Grants

- Diabetic Monitoring and Education Grant. \$480.00, LifeScan Inc, a Johnson & Johnson Company, Milpitas, CA, 2013. **Drab SR.**
- Diabetic Monitoring and Education Grant. \$620.00, Roche Diagnostics, Indianapolis, IN, 2013. **Drab SR.**
- Diabetic Monitoring and Education Grant. \$450.00, Abbott Diabetes Care, Alameda, CA, 2013. **Drab SR.**
- Diabetic Monitoring and Education Grant. \$280.00, Novo Nordisk, Pittsburgh, PA, 2013. **Drab SR.**
- Diabetic Monitoring and Education Grant. \$340.00, Bayer Corp, Pittsburgh, PA, 2013. **Drab SR.**
- DM Educate Comprehensive Diabetes Management Course. \$50,000.00, Novo Nordisk Professional Education Services Grant, Princeton, NJ, 2014. **Drab SR, Smith RB, Martin SS.**

Program Evaluation Research Unit (PERU)

Faculty

Janice L. Pringle, PhD, Associate Professor

Selected Publications (related to community dwelling patients)

- **Pringle JL**; Slain T; Rickard-Aasen S; Hegde GG; Shang J; Johnjulio W; Venkat A. Incorporating Screening, Brief Intervention, and Referral to Treatment Into Emergency Nursing Workflow Using An Existing Computerized Physician Order Entry/Clinical Decision Support System. *J Emerg Nurs.* 2013 Dec.

- **Pringle JL**; Aldridge A; Boyer A; Conklin M; McCullough J. The Pennsylvania Project: Pharmacist Intervention Improved Medication Adherence and Reduced Health Care Costs. Accepted for publication, *Health Affairs*. 2014.
- Stewart C; **Pringle JL**. The Relationship Between Religion and Spirituality and Physical and Mental Health in a Sample of African Americans in Substance Abuse Treatment. Submitted for publication, *Journal of Ethnicity in Substance Abuse*. 2014.
- Shank G; Pringle JL; Brown L. *Understanding Education Research: A Guide to Critical Reading*. Paradigm Publishers: 2014.

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**.
- Military Drug Management System for Advanced Pharmaceutical Clinical Decision Support (CDS) for Integration into the Military Health Systems (MHS). (Braun Technologies). \$87,273. 2011-2013. **Pringle JL**.
- Prospective Study on a Pharmacist-led Intervention to Improve Medication Adherence. (Merck). \$902,357. 2011-2014. **Pringle JL**.
- Pennsylvania Client Placement Criteria. (Pennsylvania Department of Health, Department of Drug and Alcohol Programs). \$40,544. 2012-2014. **Pringle JL**.
- Pharmacy Pay for Performance (P4P) Models. (Jewish Healthcare Foundation). \$20,000. 2012-2014. **Pringle JL**.
- Evaluation of the Electronic Quality Improvement Platform for Plans and Pharmacies (EQuIPP) Implementation Phase. (Takeda Pharmaceuticals). \$147,500. 2012-2014. **Pringle JL**.
- Evaluation of the Impact of Sample Medication on Subsequent Medication Adherence. (MedVantx). \$40,987. 2013. **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**.
- Overdose Prevention Coalition. (Pennsylvania Commission on Crime and Delinquency). \$129,924. 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**.

- Circlebacks. (Pitt Innovation Challenge). \$25,000. 2014. **Pringle JL.**
- Screening, Brief Intervention, and Referral to Treatment Implementation Project for Clearfield and Jefferson Counties. (Behavioral Health Alliance of Rural Pennsylvania). \$16,324. 2014-2015. **Pringle JL.**

Selected Invited Presentations (National/International)

- Implementation of Screening, Brief Intervention and Referral to Treatment (SBIRT) in the Emergency Department without Additional Resources. INEBRIA Conference. Rome Italy, September 2013. **Pringle JL.**
- Addiction: Character Defect versus Chronic Disease. PAA 2013 Conference. Gettysburg, PA, September 2013. **Pringle JL.**
- Strategies for Improving Medication Adherence Within Community Pharmacies. Annual Diabetes Conference. Charlotte, NC, September 2013. **Pringle JL.**
- Emerging Regional Issues and Hot Topics: Naloxone. NASCSA 29th Annual Conference. Kansas City, MO, October 2013. **Pringle JL.**
- A New Strategy to Drive Adherence Improvement Using Principles from Industry, Behavioral Health, Public Health and Innovation Modeling. World Congress Summit to Improve Adherence and Enhance Patient Engagement. Philadelphia, PA, March 2014. **Pringle JL.**
- Applying Value Based Incentive Models Within Community Pharmacy Practice. Pharmacy Quality Alliance (PQA). Arlington, VA, May 2014. **Pringle JL.**

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, Instructor
 Karen Pater, PharmD, Assistant Professor

Residents:

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

Major Accomplishments

In FY14, the Grace Lamsam Program:

- Continued in partnership with UPMC Matilda Theiss Health Center as a 340B Leading Practice Site (Peer to Peer Leader) by the Pharmacy Services Support Center in partnership with Health Resources and Service Administration, Health Systems Bureau, Office of Pharmacy Affairs.
- Provided oversight of the pharmacy program for Health Care for the Homeless Clinic, dispensing almost 9000 prescriptions to uninsured patients through the efforts of 12 faculty members, residents, and volunteers.
- Provided experiences for 247 pharmacy students through IPPEs and APPEs.
- Provided care for approximately 200 patient care visits at the North Side Christian Health Center Pharmacy Services Clinic.
- Established longitudinal patient-care experiences for one ambulatory care resident at and two pharmacy practice resident rotation experiences UPMC Matilda Theiss Health Center, and two Pharmacy Practice resident rotations Birmingham Free Clinic.
- Participated in the HRSA Patient Safety and Clinical Pharmacy Services Collaborative through the Matilda Theiss Center and provided care for approximately 300 patient care visits.
- Supervised the establishment of the Interprofessional Student-Run Free Clinic at the Birmingham Clinic (Mazzarisi, PharmD P3 and Yoav Karpenshif [MS3], Lauren Jonkman.
- First Area of Concentration in Global Health students graduated (Tina Elgin and Jessa Koch) and each will participate in Pharmacy Practice residencies in the upcoming year.
- Graduated one Global Health/Care to Underserved Resident who has accepted a position as an Aid Worker with Doctors Without Borders.

Selected Publications

- **Connor SE, Scharf DM, Jonkman, LJ, Herbert MI.** Focusing on the Five A's: A Comparison of Homeless and Housed Patients' Access to and Use of Pharmacist-Provided Smoking Cessation Treatment. *Res Social Adm Pharm.* 2014;10(2):369-77.
- **Lupu AM, Connor SE, Jonkman LJ.** Pharmacy Students' Actual and Perceived Knowledge of Issues Related to Underserved Populations Across the Professional Curriculum. *Currents in Pharmacy Teaching and Learning.* Nov/Dec. 2013 5(6)526-40.
- **Kauffman Y, Jonkman L, Lupu A and Connor S.** Exploring the value of clinical pharmacy services for patients with diabetes in safety net settings. *Res Social Adm Pharm.* 2013 Nov-Dec;9(6):770-6.

Invited Presentations

- Five Principles in Action - Only quality medication regimens for patients: Clinic level strategies. Invited presentation at the Dispensary of Hope National Conference. Nashville, TN, April 1, 2014. **Connor SE.**

- What communities are doing to ensure quality medication regimens for patients. Invited presentation at the Dispensary of Hope National Conference. Nashville, TN, April 1, 2014. **Connor SE.**

Select Presentations

- Prevalence of hypokalemia in patients taking thiazide diuretics at an urban free clinic. American Society of Health Systems Pharmacy Midyear Clinical Meeting. Orlando FL, December 2013. Cotugno S, **Jonkman LJ.**
- Evaluation of a student pharmacist-led smoking cessation program at an inpatient drug and alcohol treatment program. American Society of Health Systems Pharmacy Midyear Clinical Meeting. Orlando FL, December 2013. Elgin C, Koch J, **Jonkman LJ**, Ridenour T, **Connor SE.**
- An overview of the practice of pharmacy at a clinic in Cap Haitien, Haiti. Pennsylvania Pharmacists Association Midyear Conference. Bedford PA, January 2014. Cotugno S, Henderson C, Holliday S, **Jonkman L.**
- Don't reinvent the wheel: Integrating established community resources into a student-run free clinic. Society of Student-Run Free Clinics Annual Conference. Nashville TN, February 2014. Karpenshif Y, Mazzarisi C, Yang S, **Jonkman L.**
- Teaching student pharmacists the implications of oral health on chronic disease state management. American Pharmacists Association Annual Meeting. Orlando FL, March 2014. Mazzarisi, Bastin M, Steel E, Primley C, Gersten J, **Jonkman L.**
- Implementation of an asthma treatment program for children in a remote community of Honduras. Consortium of Universities for Global Health Conference. Washington DC, May 2014. Sochacki M, **Jonkman LJ**, **Connor SE**, Meyer M.
- Self-management support for diabetic patients at the Birmingham Free Clinic. All Together Better Health VII. Pittsburgh PA, June 2014. Mohanty S, **Jonkman L**, Herbert M, Bui T.

UPMC PROGRAMS

UPMC Ambulatory Clinics and Retail Pharmacies

UPMC Presbyterian Ambulatory Clinics and Outpatient Pharmacy

Faculty

Deanne L. Hall, PharmD, Associate Professor
 Heather J. Johnson, PharmD, Assistant Professor
 Karen S. Pater, PharmD, Assistant Professor
 Kristine S. Schonder, PharmD, Assistant Professor
 Michael A. Shullo, PharmD, Associate Professor

Residents

Marie Davies, PharmD, MS-PGY2 Ambulatory Care Pharmacy Resident

Patient Care Activities for FY14

- Led the program that administered > 3,500 seasonal influenza vaccines during influenza season to 2,083 University employees, 467 University students, and 697 UPMC employees.
- Provided anticoagulation management for over 1,200 patients with an INR in goal range of 75% for 23, 738 INR values evaluated.
- Provided transition to home for 98 patients on low molecular weight heparin.
- Newly established pharmacist team member within specialty chronic heart failure clinic identified 46 drug related problems, 4 adverse drug reactions, and preventing 9 adverse drug reactions in first 3 months.
- Provided pharmacist lead medication reconciliation programs for specialty hypertension providing medication reconciliation for over 150 patients in the year.
- Established pharmacist lead medication reconciliation program in a specialty hyperlipidemia clinic, providing medication assessments for 108 patients in first 6 months.
- Provide medication assessment to all patients undergoing kidney transplant evaluation.
- Avoided 92 potential drug-drug interactions in 310 Hepatitis C patients treated with simeprevir.
- Provided medication therapy management and education for patients during >1500 heart transplant recipient clinic visits.
- Oversee all drug therapy for the Advanced Heart Failure program consisting of artificial heart and heart transplant.
- Provided diabetes education on a weekly basis to individuals and group education classes on a monthly basis.
- Established UPMC Health Plan Certified Pharmacist smoking cessation program at Falk Pharmacy.

Major Accomplishments

In FY14, School of Pharmacy faculty members were recognized as follows:

- Invited ASHP Ambulatory Care Conference and Summit Panelist. **Hall DL.**
- Best Poster Finalist, 2013 American College of Clinical Pharmacy Annual Meeting. **Hall DL.**
- Elected President, Allegheny County Pharmacist Association. **Pater KS.**
- 2013 Stan Cohen Teach of the Year Award. **Pater KS.**
- 2013 Pennsylvania Pharmacist Association Preceptor of the Year. **Pater KS.**
- 2014 Advisory Council, Allegheny County Health Department. **Pater KS.**
- Chair Elect of the of the AACP Self-Care Therapeutics/Nonprescription Medicines Special Interest Group (AACP SCT/NM SIG). **Pater KS.**
- Appointed Associate Director of Cardiac Transplantation. **Shullo MA.**

- Provided ambulatory residency rotation training for 7 PGY1 residents and 6 PGY2 Residents. (ALL)

Selected Publications (related to the care of and educating students in the care of ambulatory patients)

- Farland MZ, Sicat BL, Franks AS, **Pater KS**, Medina MS, Persky AM. Best Practices for Implementing Team-Based Learning in Pharmacy Education. *AJPE*. 2013; 77 (8) Article 177.
- Edelstein O, **Pater K**, Sharma R, Albert SM. Influence of urban residence on use of psychotropic medications in Pennsylvania, USA: Cross-sectional comparison of older adults attending senior centers. *Drugs and Aging*. 2013 31(2): 141-148.
- Snyder ME, Frail CK, Jaynes HA, **Pater KS**, Zillich AJ. Predictors of medication-related problems among Medicaid patients receiving a telephonic medication therapy management program. *Pharmacother*. In Press.
- **Pater KS**, Agimi Y, Albert SM. Prescription Medication Review among Older Adults Living in Low-Income Senior Housing Using a Pharmacy Student Model. *Seniors Housing & Care Journal*. 2014. In Press.
- Snyder ME, Frail CK, Hudmon K, **Pater KS**, Doebbeling B, **Smith RB**. Utility of a Screening Tool for Medication-Related Problems. Accepted for publication.
- Fleishman M*, Ridenour T, Yahnkee A, Fischer G, **Hall D**. Impact of a Medicaid prescription limitation policy on health care utilization. *American College of Clinical Pharmacy Best Poster Finalist*. Albuquerque, New Mexico, October 2013.

Selected Invited Presentations (National/International)

- Anticoagulation and Reversal of Anticoagulation. Management of Complex Health Problems Nurse Practitioner Training. University of Pittsburgh School of Nursing. September 2014. **Helms BE**.
- Medication Reconciliation - Not Just Creating a Med List. Pennsylvania Pharmacist Association Webinar. May 15, 2014. ACPE# 0159-0000-14-038-L05-P. **Pater KS**.
- Tracking Curricular Outcomes Through the Implementation of an ePortfolio. Assessment Institute 2013, Indianapolis, IN, Oct 28, 2013. **Pater KS**.
- Medication Reconciliation and Implications for Patient Safety. Pennsylvania Pharmacist Association Annual Meeting, Gettysburg, PA. Sept 28, 2013. 0159-0000-13-042-L05-P. **Pater KS**.
- Technology in Pharmacy Education and Learning SIG: Educational Effects of Active Learning with Turning Point. AACP Annual Meeting, Chicago, IL, July 16, 2013. ACPE#294-999-13-108-L04P. **Pater KS**.

*Past Pharmacy Residents

**PharmD Students

UPMC St. Margaret Family Medicine

Faculty

Roberta Farrah, PharmD, Assistant Professor

Residents

Gregory Castelli, PharmD

Sarah Dombrowski, PharmD

Amanda Wojtusik, PharmD

Patient Care Activities for FY14

- Provide medication therapy management for patients seen at three family health centers. 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.
- The three family health centers are models for interprofessional primary care practice. All three have received Level 3 Patient Centered Medical Home (PCMH) status by the National Committee for Quality Assurance (NCQA). 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.
- Precept UPMC St. Margaret family medicine physician residents, UPMC St. Margaret PGY1 pharmacy practice residents, and medical/pharmacy IPPE and APPE student learners at the family health centers.
- Initiated a private practice initiative (PPI) of incorporating a PGY2 Ambulatory Care pharmacy resident into a non-academic community physician practice.
- Support naloxone prescribing, dispensing and education initiative for at-risk patients and caregivers
- Lead a Free Medication Program for family health center patients to improve access to medications.

Selected Publications

- Desai K, Glick R, **Farrah RM**, Low TL. (2013). *Integrative medicine* (FP Essentials Monograph Series 406). Leawood, KS: American Academy of Family Physicians.

Selected Invited Presentations (National/International)

- Impact of community pharmacy experience in a family medicine residency program. Society of Teacher of Family Medicine (STFM) spring conference, Baltimore, 2013. Dombrowski S, Klatt PM, **Farrah RM**.
- Strategies for Integrating Pharmacy Trainees Into Interdisciplinary Family Medicine Teams. Breakfast presentation at the 47th STFM Annual Conference. San Antonio, TX. May 6, 2014. **Farrah RM**.
- Pharmacist-Initiated Transitions of Care Program: Effect on Hospital Readmission and Adherence to PCP Appointments. Work-in-Progress presentation at the 47th STFM Annual Conference. San Antonio, TX. May 6, 2014. **Farrah RM**.

Transitions of Care

Faculty

Kim Coley, PharmD, Professor
James Coons, PharmD, Assistant Professor
Amy Donihi, PharmD, Associate Professor
Tanya Fabian, PharmD, PhD, Assistant Professor
Deanne Hall, PharmD, Associate Professor
Karen Pater, PharmD, Assistant Professor
Christine Ruby, PharmD, Assistant Professor
Amy Seybert, PharmD, Associate Professor
Michael Shullo, PharmD, Associate Professor

Major Accomplishments

In FY14, School of Pharmacy faculty members:

- Worked with leadership at UPMC to develop and implement a new transitions of care program to be piloted at UPMC Shadyside beginning August 2014. This pilot was modeled after the award-winning transitions of care program developed by pharmacy school faculty (Coley, Donihi, Kroboth). **Coley KC**
- Collaborated with UPMC St. Margaret Hospital to research staff perceptions on a geriatric pharmacist-led transitions of care program in elderly patients. **Coley KC, McGivney M, Thorpe C.**
- Worked with faculty (**Coley KC, Coons J, Kane-Gill S, Seybert A**) to pilot a shared decision-making program to improve medication access and adherence at UPMC Presbyterian that resulted in:
 - 19 pharmacists and pharmacy students trained in the process of shared decision making
 - 173 patients evaluated for medication access and adherence problems and engaged in shared decision-making to improve their medication use.
- The WPIC MEDPACT (Medication and Education at Discharge – Pharmacist Assisted Care Transitions) program, led by Dr. **Tanya Fabian**, 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 2,411 patients in FY14 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 6,042 medication-related interventions including resolving 2,925 prescription insurance issues and providing patient-specific medication education for 1,465 patients. **Fabian T**
- Collaborated with a multidisciplinary team at the UPMC Advanced Heart Failure Outpatient Clinic to improve patients’ transitions of care. This included over 200 patient encounters. **Coons J.**
- Developed a risk stratification model to decrease readmissions in heart failure patients. **Coons J.**
- Led a team of pharmacists, pharmacy residents, and pharmacy students who educated 2,746 hospitalized patients on their medications. This including 247 patients newly started on insulin. **Donihi AC.**

- Designed and implemented a program so that patients can take home their partially used bulk medications (e.g. insulin pens, inhalers) at the time of discharge. **Donihi AC.**
- Mentored pharmacy students who created several medication education videos that will be used to teach patients how to use their inhalers prior to hospital discharge. **Donihi AC.**
- Provided transition to home management for 98 patients on low molecular weight heparin through the UPMC Anticoagulation service. **Hall DL.**
 - Led a pharmacist driven transition of care program focusing on Senior Care patients discharged from UPMC affiliated nursing homes (Heritage, Charles Morris, Canterbury, 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 C.**
 - Added three new sites to the SeniorCare Transitions of Care program to include UPMC Magee Hospital, UPMC St. Margarets Hospital, and UPMC Mercy TCU/Rehab. **Ruby C.**
 - Developed a special topics elective focusing on transitions of care and included new material on transitions of care in Experiential Learning 3 course. **Ruby C.**
 - 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.**

Selected Publications

- Korytkowski MT, Koerbel GL, Fostel L, **Donihi AC.** Pilot trial of diabetes self-management education in the hospital setting, *Prim. Care Diab.* Epub 2013 Dec 30.
- Kim JJ, **Mohammad RA, Coley KC, Donihi AC.** Use of an iPad to Provide Warfarin Video Education to Hospitalized Patients. *J Patient Saf.* Epub 2014 Feb 11.

Selected Invited Presentations

- Medication Reconciliation - Not Just Creating a Med List. Pennsylvania Pharmacist Association Webinar. May 15, 2014. **Pater K**
- Medication Reconciliation and Implications for Patient Safety. Pennsylvania Pharmacist Association Annual Meeting, Gettysburg, PA. Sept 28, 2013. **Pater K**
- Pharmacologic Therapy of Heart Failure – Acute and Chronic. American Heart Association and the Pittsburgh Regional Healthcare Initiative. Pittsburgh, PA, April 24, 2014 and May 1, 2014. **Coons J.**

Grants

- **Coley KC, Thorpe C, and McGivney M** partnered with UPMC St. Margaret Hospital on developing, “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 as well as a \$5,000 award from St. Margaret Hospital 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 \$700.
- **Donihi AC and Coley KC** partnered 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.
- **Donihi AC** partnered with clinicians from UPMC for “Nurse Education and Transition (NEAT).” This program was funded for \$20,000 by the Beckwith Institute and UPMC.

HOSPITAL-BASED PROGRAMS

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 Students

Hongfei Zhang

Postdoctoral Fellows

Jamie Bastian, PharmD
Martha Bustos, PhD
Maisa Feghali, MD
Chithambaram Pillai Venkateswaran, PhD
Vikram Raghu, MD
Imam Shaik, PhD
Yang Zhao, PhD

Residents

Lauren Sacha, PharmD-PGY2 Solid Organ Transplant Pharmacy Resident

Visiting Scholars

Huijun Chen

Mimi Li

Research Associate

Wenchen Zhao

Major Accomplishments

In FY14, School of Pharmacy faculty members:

- Awarded the Leach-Abramson-Imhoff ISHLT Links Writer of the Year for 2013. **Ensor CR.**
- Served as Section Editor, Transplant Pharmacotherapy for Progress in Transplantation. **Ensor CR.**
- Served as Chair, UPMC lung transplantation sensitization and AMR research group. **Ensor CR.**
- Served as Past-chair, Scientific Council on Pharmacy and Pharmacology 2013-14. International Society for Heart and Lung Transplantation. **Ensor CR.**
- Served as Co-Director, University of Pittsburgh Pharmacotherapy Scholars Program. **Ensor CR.**
- Served as Consensus Conference Participant, Antibody Mediated Rejection in Lung Transplantation. International Society for Heart and Lung Transplantation. **Ensor CR.**
- ASHP Accreditation of PGY2 Pharmacy Residency in Solid Organ Transplantation. **All.**
- Served as Chair, Scientific Council on Pharmacy and Pharmacology 2013-14, International Society for Heart and Lung Transplantation. **Shullo MA.**
- Named as Associate Director-Cardiac Transplantation for the Advanced Heart Failure division of the UPMC Heart and Vascular Institute. **Shullo MA.**
- Received Best Educational Presentation award: Antidotes for Alloimmunity - Principles of T cell-Directed Therapies ISHLT Academy: Core Competencies in Basic Science and Translational Research. **Shullo MA.**
- 9th year of NICHD funding (U10) for Pharmacology in Pregnancy. **Venkat R.**
- 2nd year of T-32 for maternal fetal pharmacology. **Venkat R.**
- AAPS Board member. **Venkat R.**
- AAPS Foundation, Chair of Grants Review Committee. **Venkat R.**

Grants/Research

- Evaluation of Treprostinil in prevention of ischemia reperfusion injury of liver after liver transplantation. Co-PI, Active, United Therapeutics. **Venkat R.**

- AIDS malignancy Consortium trials collaboration – HIV and anticancer drug interactions. Co-PI, Active, NCI. **Venkat R.**
- Impact of pregnancy on drug absorption, disposition and end response. Co-PI, Active, NICHD. **Venkat R.**
- Pharmacokinetics of Tamiflu in Pregnancy. Co-PI, Active, Roche. **Venkat R.**
- All Human Microphysiological model of metastasis therapy. Co-investigator, Active, NIH. **Venkat R.**
- Granisetron pharmacokinetics in pregnancy. Co-PI, Active, Prostraken. **Venkat R.**
- T-32. Training in Basic and Clinical Pharmacology in Pregnancy. Co-PI, Active, NICHD. **Venkat R.**

Selected Publications

- Hollis IB, Jennings DL, Oliphant CS, Baker WL, Davis EM, Allender JE, Zemrak WR, **Ensor CR.** Key articles and guidelines in the management of patients undergoing cardiac surgery. *J Pharm Pract.* (accepted).
- 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 (accepted).
- Broyles JM, Alrakan M, **Ensor CR,** Khalifian S, Kotton CN, Avery RK, Brandacher G, Lee WPA, Gordon CR*. Characterization, prophylaxis, and treatment of infectious complications in craniomaxillofacial and upper extremity allotransplantation: A multicenter perspective. *Plast Reconstr Surg.* 2014;133:453-51.
- Lidor AO*, **Ensor CR,** Scheer AJ, Orens JB, Clarke JO, McDyer JF. Domperidone for delayed gastric emptying in lung transplant recipients with and without gastroesophageal reflux. *Prog Transplant.* 2014;24:27-32.
- Bishop MA, Streiff MB, **Ensor CR,** Tedford RA, Russel SA, Ross PA. Pharmacist-managed international normalized ratio patient self-testing is associated with increased time in therapeutic range in patients with left ventricular assist devices at an academic medical center. *ASAIO J.* 2014;60:193-8.
- **Ensor CR,** Walker CL, Rider SK, Clemente EU, Ashby DM, Shermock KM. Streamlining the review process of pharmacy practice residency applications: an analytic approach. *Am J Health Syst Pharm.* 2013;70:1670-5.
- Shermock KM, Ashby DM, Walker CL, Rider SK, Clemente EU, **Ensor CR.** Verifying information in pharmacy residency applications. *Am J Health Syst Pharm.* 2014;71:787. (responses to letters to the editor of publication 21).

- Smith MA, **Johnson HJ**, Chopra KB, Dunn MA, Ulrich AM, Mohammad RA. Incidence and management of rash in telaprevir-treated patients: lessons for simeprevir? *Ann Pharmacother.* (in press).
- Lampert BC, Eckert C, Weaver S, Scanlon A, Lockard K, Allen C, Kunz N, Bermudez C, Bhama JK, **Shullo MA**, Kormos RL, Dew MA, Teuteberg JJ. Blood Pressure Control in Continuous Flow Left Ventricular Assist Devices: Efficacy and Impact on Adverse Events. *Ann Thorac Surg.* 2014;97:139-46
- Ging P, **Shullo MA**. Pharmacists take prominent role at the International Society of Heart and Lung Transplant 33rd annual meeting and scientific sessions in Montreal. *Eur J Hosp Pharm.* 2013;0:1–2
- 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;11:2807-14.
- 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;71:1120-7.
- 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;35:7146-56.
- 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 [Epub ahead of print]
- 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 [Epub ahead of print]
- Mantha VR, Nair HK, **Venkataramanan R**, Gao YY, Matyjaszewski K, Dong H, Li W, Landsittel D, Cohen E, Lariviere WR. Nanoanesthesia: a novel, intravenous approach to ankle block in the rat by magnet-directed concentration of ropivacaine-associated nanoparticles. *Anesth Analg.* 2014;118:1355-62.
- Gramignoli R, Tahan V, Dorko K, **Venkataramanan R**, Fox IJ, Ellis EC, Vosough M, Strom SC. Rapid-and-Sensitive Assessment of Human Hepatocyte Functions. *Cell Transplant.* 2014. [Epub ahead of print]
- 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 [Epub ahead of print]

- Goyal RK, Gehris RP, Howrie D, Cogley KM, Windreich RM, **Venkataramanan R**. Phototoxic dermatoses in pediatric BMT patients receiving voriconazole. *Pediatr Blood Cancer*. 2014;61:1325-8.
- Wheeler SE, Borenstein JT, Clark AM, Ebrahimkhani MR, Fox IJ, Griffith L, Inman W, Lauffenburger D, Nguyen T, Pillai VC, Prantil-Baun R, Stolz DB, Taylor D, Ulrich T, **Venkataramanan R**, Wells A, Young C. All-human microphysical model of metastasis therapy. *Stem Cell Res Ther*. 2013;4 Suppl 1:S11.
- Rytting E, Nanovskaya TN, Wang X, Vernikovskaya DI, Clark SM, Cochran M, Abdel-Rahman SM, **Venkataramanan R**, Caritis SN, Hankins GD, Ahmed MS. Pharmacokinetics of indomethacin in pregnancy. *Clin Pharmacokinet*. 2014;53:545-51.
- Zhang P, Lu J, Huang Y, Zhao W, Zhang Y, Zhang X, Li J, **Venkataramanan R**, Gao X, Li S. Design and evaluation of a PEGylated lipopeptide equipped with drug-interactive motifs as an improved drug carrier. *AAPS J*. 2014;16:114-24.
- Chang J, Zhao Y, Zhao W, **Venkataramanan R**, Caritis SN; Obstetrical-Fetal Pharmacology Research Units Network. Quality assessment of compounded 17-hydroxyprogesterone caproate. *Am J Obstet Gynecol*. 2014;210:47.e1-7.
- Caritis SN, **Venkataramanan R**, Thom E, Harper M, Klebanoff MA, Sorokin Y, Thorp JM Jr, Varner MW, Wapner RJ, Iams JD, Carpenter MW, Grobman WA, Mercer BM, Sciscione A, Rouse DJ, Ramin S; Eunice Kennedy Shriver National Institute of Child Health and Human Development Maternal-Fetal Medicine Units Network and Obstetric-Fetal Pharmacology Research Units Network. Relationship between 17-alpha hydroxyprogesterone caproate concentration and spontaneous preterm birth. *Am J Obstet Gynecol*. 2014;210:128.e1-6.
- Barbarino JM, Staatz CE, **Venkataramanan R**, Klein TE, Altman RB. PharmGKB summary: cyclosporine and tacrolimus pathways. *Pharmacogenet Genomics*. 2013;23:563-85.
- Pillai VC, **Venkataramanan R**, Parise RA, Christner SM, Gramignoli R, Strom SC, Rudek MA, Beumer JH. Ritonavir and efavirenz significantly alter the metabolism of erlotinib--an observation in primary cultures of human hepatocytes that is relevant to HIV patients with cancer. *Drug Metab Dispos*. 2013;41:1843-51.
- Kittayaruksakul S, Zhao W, Xu M, Ren S, Lu J, Wang J, Downes M, Evans RM, **Venkataramanan R**, Chatsudthipong V, Xie W. Identification of three novel natural product compounds that activate PXR and CAR and inhibit inflammation. *Pharm Res*. 2013;30:2199-208.
- Han K, Pillai VC, **Venkataramanan R**. Population pharmacokinetics of cyclosporine in transplant recipients. *AAPS J*. 2013;15:901-12.
- Lu J, Huang Y, Zhao W, Chen Y, Li J, Gao X, **Venkataramanan R**, Li S. Design and characterization of PEG-derivatized vitamin E as a nanomicellar formulation for delivery of paclitaxel. *Mol Pharm*. 2013 5;10:2880-90.

- Gramignoli R, Tahan V, Dorko K, Skvorak KJ, Hansel MC, Zhao W, **Venkataramanan R**, Ellis EC, Jorns C, Ericzon BG, Rosenborg S, Kuiper R, Soltys KA, Mazariegos GV, Fox IJ, Wilson EM, Grompe M, Strom SC. New potential cell source for hepatocyte transplantation: discarded livers from metabolic disease liver transplants. *Stem Cell Res.* 2013;11:563-73.

Book Chapters

- Zeevi A, Marrari M, Lunz J, Lomago J, Johnson K, Jelinek L, Foster D, Bermudez C, McDyer J, Pilewski J, **Ensor CR**. The big picture: a case report of antibody mediated rejection and treatment after lung transplantation illustrating the need to correlate laboratory findings with clinical status. In: Everly M, Terasaki P, eds. *Clinical Transplants*. 2014.
- Jennings DJ, **Ensor CR**. Pharmacotherapy considerations before and after cardiac surgery. In: Johnson SG, ed. Ambulatory Care Self-Assessment Program, 2014 Book X. Lanexa, KS: *American College of Clinical Pharmacy*, 2014.
- Hasley PB, **Schonder K**, Shapiro R. Chapter 34: Role of Primary Care Provider in the Referral and Care of Abdominal Organ Transplant Patients. In: *Textbook of Organ Transplantation*. Kirk AD, Knechtle SJ, Larsen CP, Madsen JC, Pearson TC, Webber SA, editors. West Sussex: John Wiley & Sons, Ltd., in press.

Invited Presentations and Published Abstracts

- Failure of oral ribavirin in the treatment of paramyxovirus after lung transplantation. American College of Clinical Pharmacy Annual Meeting. Austin TX, USA. October 2014 (accepted for poster). **Lichvar A**, McDyer JF, Kwak EJ, **Ensor CR**.
- Carfilzomib-based therapy depletes anti-HLA antibody in lung transplant patients with antibody-mediated rejection. 40th American Society for Histocompatibility and Immunogenetics Annual Meeting. Denver CO, USA. October 2014 (accepted for oral). Zeevi A, McDyer JF, Yousem SA, Morrell MR, D’Cunha J, Pilewski J, Bermudez C, **Ensor CR**.
- Novel use of the proteasome inhibitor carfilzomib for antibody mediated rejection after lung transplantation. Poster, World Transplant Congress. San Francisco CA, USA. July 2014. **Ensor CR**, Zeevi A, Morrell MR, Yousem SA, D’Cunha J, Pilewski J, Bermudez C, **Shullo M**, Teuteberg J, McDyer JF.
- Carfilzomib for refractory antibody mediated rejection and allosensitization in heart transplantation. Oral, ISHLT 34th Annual Meeting and Scientific Sessions. San Diego CA, USA. April 2014. **Sacha L**, Teuteberg JJ, Zeevi A, Bermudez C, Kormos R, **Ensor CR**, McDyer JF, **Shullo MA**.
- First experience with the novel proteasome inhibitor carfilzomib for antibody mediated rejection after lung transplantation. Oral, ISHLT 34th Annual Meeting and Scientific Sessions. San Diego CA, USA. April 2014. **Ensor CR**, Zeevi A, Morrell MR, Yousem SA, D’Cunha J, Pilewski J, Bermudez C, Shullo M, Teuteberg J, McDyer JF.
- A retrospective analysis of safety and efficacy outcomes in lung transplant patients treated with oral ribavirin for paramyxoviral infections. Poster, American Society of Health-System Pharmacists Midyear Meeting, Orlando FL, December 2013. Williams EA, Lyons PJ, McDyer JF, Smith RB, **Ensor CR**.

- Incidence and severity of isometric tubular vacuolization in renal transplant recipients treated with CMVig or IVIg-glycine. *Pharmacotherapy* 2013;33:e238 (Abstract 186). Poster, American College of Clinical Pharmacy, Albuquerque NM. October 2013. Passarelli AJ, Bagnasco S, Lees L, Lewin JJ, Kruer R, Racusen L, Kraus E, Shermock KM, **Ensor CR**.
- Roe's solution for cold preservation of the harvested pediatric donor heart. *Pharmacotherapy* 2013;33:e241-2. Oral, American College of Clinical Pharmacy, Albuquerque NM. October 2013. Sison A, Halushka MK, Beaty C, George TJ, Scheel JN, Vricella LA, Shermock KM, McNamara L, **Ensor CR**.
- The impact of pharmacist-managed point-of-care INR testing on the outcomes of patients with left ventricular assist devices. *J Thromb Thrombolysis* 2013;35:408. Poster, 12th National Conference on Anticoagulant Therapy, Phoenix AZ. May 2013. Bishop MA, Ross PA, Kraus PS, **Ensor CR**, Shermock KM, Streiff MB
- What you always wanted to know about LISH (laboratory tests, infectious agents, special situations, and hidden infections) but were afraid to ask. ISHLT 24th Annual Meeting and Scientific Sessions, San Diego, CA. April 2014. **Ensor CR** (co-chair).
- Pharmacologic considerations in the post-transplant/LVAD patient. American College of Cardiology 63rd Annual Scientific Session & Expo. Washington DC. March 2014. **Ensor CR**, McIlvennan C, Page RL 2nd, Peura J, Alpert JS, Parra D.
- Antithrombotic therapy for advanced heart failure and mechanical circulatory support: Principles and challenges. 28th Pharmacy Invitation Conference on Antithrombotic Therapy (PICAT). Orlando FL. December 2013. **Ensor CR**.
- Novel therapeutic approaches to resistant cytomegalovirus. Immunology and transplantation PRN focus session. ACCP Annual Meeting, Albuquerque NM. October 2013. **Ensor CR**.
- Antibody-mediated rejection after lung transplantation: Prevention and mitigation strategies. International Transplantation Nurses Society, Pittsburgh PA. February 2014. **Ensor CR**.
- Characteristics of solid organ transplant patients more likely to receive vaccinations after pharmacist recommendation. Poster presented at the American Society of Health-Systems Pharmacy Midyear Clinical Meeting, Orlando, LA, December 8–12, 2013. Moore CA, Supko AE, **Schonder KS**, Thorpe CT, Ingemi AI.
- The impact of a pharmacist-directed program to improve vaccination documentation, knowledge, and compliance in renal, liver, and pancreas transplant candidates. Poster presented at the World Transplant Congress, San Francisco, CA, July 26–31, 2014. Ingemi A, **Schonder KS**, Thorpe CT, Tevar A.
- A data-driven assessment matrix to meet accreditation requirements while supporting systematic curriculum evaluation. Presented at the 2013 Assessment Institute, Indianapolis, IN, October 28, 2013. **Schonder KS**.
- Tracking curricular outcomes through the implementation of an ePortfolio. Presented at the 2013 Assessment Institute, Indianapolis, IN, October 28, 2013. **Schonder KS**.

- Carfilzomib for refractory antibody mediated rejection and allosensitization in heart transplantation. [Oral Presentation/Abstract] International Society of Heart and Lung Transplant. April 2014. L Sacha , Teuteberg JJ, Zeevi A, Bermudez C, Kormos R, **Ensor CR**, McDyer J, **Shullo MA**.
- Cost effectiveness of routine surveillance endomyocardial biopsy beyond 12 months post heart transplantation. [Oral Presentation/Abstract] International Society of Heart and Lung Transplant. April 2014. Lampert BC, Teuteberg JJ, **Shullo MA**, Holtz J, K Smith K.
- First experience with the novel proteasome inhibitor carfilzomib for antibody mediated rejection after lung transplantation. [Oral Presentation/Abstract] International Society of Heart and Lung Transplant. April 2014. **Ensor CR**, Zeevi A, Morrell MR, Yousem SA, D’Cunha J, Pilewski JM , Bermudez C, **Shullo MA**, Teuteberg JJ, McDyer JF.
- Transplant pharmacist evaluation prior to heart transplantation uncovers medication noncompliance as a common issue. [Oral Presentation/Abstract] International Society of Heart and Lung Transplant. April 2014. **Shullo MA**, Yost C, Sabatine T, Ramani R, Kormos R, Bhama J, Zomak R, Bermudez C, Mathier M , Teuteberg JJ.
- Relationship between anit-HLA antibodies and coronary allograft vasculopathy after heart transplantation. [Poster/Abstract] International Society of Heart and Lung Transplant. April 2014. Khandhar SJ, **Shullo MA**, Zeevi A, Toma C, Teuteberg JJ.
- Impact of mechanical support on quality of life measures over time – is there a differential response based upon indication? [Poster/Abstract] International Society of Heart and Lung Transplant. April 2014. Teuteberg JJ, McNulty M, Holtz J, Kunz N, Lockard K, Dunn E, Bermudez C, Bhama JK, **Shullo MA**, Kormos R, Dew M.
- A time-dependent model of survival for adverse event in bridge to transplant patients. [Poster/Abstract] International Society of Heart and Lung Transplant. April 2014. Bansal S, Jackson KR, Bhama JK, Teuteberg JJ, Simon M, Bermudez C, **Shullo MA**, Huffman L, Hayanga JW, Lockard KL, Kormos RL.
- Impact of early major adverse events on quality of life after mechanical circulatory support. [Poster/Abstract] International Society of Heart and Lung Transplant. April 2014. Holtz J, Dew MA, McNulty M, Lockard K, Kunz N, Dunn E, Bhama J, Bermudez C, **Shullo MA**, Kormos R, Teuteberg J.
- Antidotes for Alloimmunity - Principles of T cell-Directed Therapies. International Society of Heart and Lung Transplant Academy: Core Competencies in Basic Science and Translational Research. San Diego CA. April 2014. **Shullo MA**.
- Generic Tacrolimus, Buenos Aires, Argentina. Sandoz Argentina, 2013. **Venkat R**.
- Interpretation and Application of Pharmacokinetic Parameters in optimizing Dosing of Immunosuppressive Drugs, Buenos Aires, Argentina. 2013. **Venkat R**.
- Tacrolimus in Transplantation, Childrens Hospital of Buenos Aires, Buenos Aires, Argentina. 2013. **Venkat R**.

- Generic Tacrolimus in Pediatric patients. Urologica Pediatrica, Santiago Chile. 2013. **Venkat R.**
- Beyond Benches. National Biotechnology Conference, San Diego CA. 2013. **Venkat R.**
- Drug Interactions between HAART drugs and anticancer drugs, ICMAOI, NIH, Bethesda MD. 2013. **Venkat R.**
- In vivo pharmacokinetics of 17-hydroxyprogesterone caproate in rats, AAPS, San Antonio TX. 2013. **Venkat R.**
- HAART Drugs Alter the Metabolism of Paclitaxel in Primary Cultures of Human Hepatocytes. ICMAOI, NIH, Bethesda MD. 2013. **Venkat R.**
- Longitudinal Changes in the Expression of Renal Transporters and Drug Metabolizing Enzymes Following Living and Deceased Donor Renal Transplantation, AAPS, San Antonio TX. 2013. **Venkat R.**
- Induced pluripotent stem cell-derived hepatocyte-like cells and renewable endothelial cells provide reasonable alternatives to fresh liver resections, NIH, Bethesda MD. 2013. **Venkat R.**
- All-Human Microphysical Model of Metastasis Therapy Using Liver as both Metastatic Niche and Pharmacologic Metabolizer System Model of Breast Metastasis”. AACR Special Conference on Advances in Breast Cancer Research, NIH, Bethesda MD. 2013. **Venkat R.**
- Optimization of a three-dimensional liver bioreactor for Long Term Assessment, AAPS, San Antonio TX. 2013. **Venkat R.**
- Modeling Breast Cancer Dormancy, San Antonio Breast Cancer Symposium, San Antonio TX. 2013. **Venkat R.**
- Impact of Female Hormones on Regulation of Cytochrome P450 Enzymes Using Human Hepatocytes Culture, ACCP, Bethesda MD. 2013. **Venkat R.**
- Continuous Infusion of Mycophenolate Mofetil for Acute Graft-Versus-Host-Disease Prophylaxis in Pediatric Bone Marrow Transplant Patient, ACCP, Bethesda MD. 2013. **Venkat R.**
- HAART Drugs, Ritonavir and Efavirenz Alter the Metabolism of Anticancer Drug Imatinib in Primary Cultures of Human Hepatocytes, ICMAOI, NIH, Bethesda MD. 2013. **Venkat R.**
- Sensitive and Specific VF Cocktail Assay for rapidly simultaneous assessment of Rat Cytochrome P450 Activities in Rat Hepatic Microsome using LC-MS/MS for in vitro drug-disease studies. AAPS, San Antonio TX. 2013. **Venkat R.**

UPMC Pharmacy Critical Care Group

Faculty

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

Residents

Justin Harris, PharmD, PGY2 Cardiology Pharmacy Resident
Ashleigh Hogue, PharmD, PGY2 Critical Care Pharmacy Resident
Megan Kloet, PharmD, PGY2 Critical Care Resident
Nick Schwier, PharmD, PGY2 Cardiology Pharmacy Resident
Adrian Wong, PharmD, PGY2 Critical Care Pharmacy Resident

Graduate Students

Solomon M. Adams, PharmD
Kacey Anderson, BS
Fanuel Hagos, BS, MS
Lingjue Li, MS

Major Accomplishments

In FY14, School of Pharmacy faculty members were:

- Chosen as one of five critical pharmacists in the nation to serve as Faculty for the American Society of Health-System Pharmacists (ASHP) Foundation Critical Care Trainee Program. **Benedict NJ**
- Granted a secondary appointment, Scientist, Safar Center for Resuscitation Research, University of Pittsburgh. October 2013. **Empey P.**
- Appointed as Co-leader for the Society of Critical Care Medicine/Clinical Pharmacy and Pharmacology Section charge to develop a recertification education proposal for the Board of Pharmacy Specialties for the newly approved Certification in Critical Care. **Falcione B.**
- 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.**

- 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.**
- Appointed as the Associate Director, Safar Center for Resuscitation Research. **Poloyac S.**
- Named as a standing member to the Neurological Sciences and Disorders K, National Institutes of Health grant reviewer. **Poloyac S.**
- Elected as Secretary/Treasurer of the ACCP Critical Care PRN and appointed member of the SCCM Quality and Safety Committee. **Smithburger PL**

Awards

- Cohen Teacher of the Year Award; University of Pittsburgh School of Pharmacy. **Benedict NJ**
- American Association of Colleges of Pharmacy (AACP) Innovations in Teaching Award. **Benedict NJ**
- Kacey Anderson presented at the American College of Clinical Pharmacology’s national meeting in Washington DC (won best poster/travel award), American Heart Association Fellows’ Research Day (selected for an oral presentation), and the Safar Symposium (poster). Fanuel Hagos presented this same research work as an oral abstract at the Safar Symposium and won best oral presentation for the entire symposium for our research. **Empey PE**
- Solomon Adams won best poster award in Critical Care Medicine at the Safar Symposium. **Empey PE**
- 2013 American College of Clinical Pharmacy (ACCP) Critical Care PRN Achievement Award. **Kane-Gill SL**
- ACCP Volunteer Recognition Citation for significant contributions profession of pharmacy through committee work, publications, presentations, or other commendable participation. **Smithburger PL**
- SCCM Presidential Citation for outstanding contributions to the Society of Critical Care Medicine. **Smithburger PL**

Selected Critical Care Publications

- Anthes AM*, Harinstein LM*, **Smithburger PL**, **Seybert AL**, **Kane-Gill SL**. Improving adverse drug event detection in critically ill patients through screening intensive care unit transfer summaries. *Pharmacoepidemiol Drug Saf.* 2013 May;22(5):510-6. PMID:23440931
- Armahizer M*, Seybert AL, **Smithburger PL**, Kane-Gill SL. Drug-drug interactions contributing to QT prolongation in the ICU. *Crit Care.* 2013 Jun;28(3):243-9. PMID:23312127
- Armahizer MJ*, **Kane-Gill SL**, **Smithburger PL**, Anthes AM*, **Seybert AL**. Comparing DDI severity for clinician opinion to proprietary databases. *ISRN Critical Care.* 2013. Article ID 347346. <http://www.hindawi.com/journals/isrn/2013/347346/abs>

- Armahizer MJ*, **Seybert AL**, **Smithburger PL**, **Kane-Gill SL**. Corrected QT interval for possible drug-drug interactions in the intensive care unit. *J Crit Care*. 2013; 28(6):1107
 - **Benedict NJ**, **Schonder KS**, and, McGee JB. Promotion of Self-directed Learning Using Virtual Patient Cases. *AJPE*. 2013; 77 (7) Article 151
 - Buckley MA, MacLaren RM, Frazee EN, **Smithburger PL**, Personett HA, **Kane-Gill SL**. Surveying residents on postgraduate year 2 critical care pharmacy residencies about their level of preparedness to practice. *Currents in Pharmacy Teaching and Learning*. 2013;6(1):76-84.
 - Buckley MS, Dzeirba AL, **Smithburger PL**, McAllen KJ, Jordan CJ, **Kane-Gill SL**. Chlorhexidine for the prevention of ventilator-associated pneumonia. *Journal of Infection Prevention*. 2013;14(5):162-9.
 - Buckley MS, Wesley CA, David B, **Smithburger PL**, Devabhakthuni S, Alexander E, Harinstein LM, **Kane-Gill SL**. Impact of a pharmacist-conducted medication reconciliation program on medication errors. *Ann Pharmacother*. 2013 Oct 15. [Epub ahead of print] PMID:24259613
 - **Coons JC**, Clarke M, Wanek MR, Bauer A, Bream-Rouwenhorst HR. Safe and effective use of prostacyclins to treat pulmonary arterial hypertension. *Am J Health-Syst Pharm*. 2013;70:1716-23.
 - **Coons JC**, Miller T. Strategies to reduce bleeding risk in acute coronary syndromes and percutaneous coronary intervention: new and emerging pharmacotherapeutic considerations. *Pharmacotherapy*. 2014 June 5. doi: 10.1002/phar1447
 - **Coons JC**, Schwier N, Harris J, **Seybert AL**. Pharmacokinetic evaluation of prasugrel for the treatment of myocardial infarction. *Expert Opin Drug Metab Toxicol*. 2014;10(4):609-20.
 - Cousar JL, Conley YP, Willyerd FA, Sarnaik AA, Puccio AM, **Empey PE**, Kochanek PM, Okonkwo DO, Clark RSB. "Influence of ATP-Binding Cassette Polymorphisms on Neurological Outcome after Traumatic Brain Injury in Humans." *Neurocrit Care*. 2013 Oct;19(2):192-8. PMID: 23896815.
- Empey PE**, Velez de Mendeizabal N, Bell MJ, Bies R, Kochanek PM, Adelson PD, **Poloyac SM**. Therapeutic hypothermia decreases phenytoin elimination in children with traumatic brain injury. *Crit Care Med*. 2013 Oct; 41(10):2379-2387. PMID: 23896831. PMCID: PMC3783553.
- Holliday SF*, **Kane-Gill SL**, **Empey PE**, **Smithburger PL**. Dexmedetomidine and interpatient variability. *Scientific World Journal, Critical care*. 2014 Jan 16;2014:805013. eCollection 2014
 - **Kane-Gill SL**, Williams EA*, **Smithburger PL**, **Seybert AL**. Tips for developing an integrated online and simulation course based on 6-years of experience. *Pharmacy* 2013;1:34-42. doi:10.3390/pharmacy1010034. <http://www.mdpi.com/2226-4787/1/1/34>
 - **Kane-Gill SL**, Wytiaz N*, Thompson L, Buckley MS, Muzykovsky K, Cohen H, **Seybert AL**. A real-world, multicenter assessment of drugs requiring weight-based calculations in adult critically ill patients. *ScientificWorldJournal* 2013, article ID 909135.

- Kloet MA*, Lohr B*, **Smithburger PL**, **Seybert AL**, **Kane-Gill SL**. Prospective assessment of inpatient boxed warning prescriber adherence. *J Patient Saf*. 2014 [Epub ahead of print]
- Mactier R, Laliberté M, Mardini J, Ghannoum M, Lavergne V, Gosselin S, Hoffman RS, **Nolin TD**; EXTRIP Workgroup. Extracorporeal Treatment for Barbiturate Poisoning: Recommendations From the EXTRIP Workgroup. *Am J Kidney Dis*. 2014 Jul 3. [Epub ahead of print] PMID: 24998037.
PMID:24647270
- Rivosecchi RM*, Rice MJ, **Smithburger PL**, Buckley MS, **Coons JC**, **Kane-Gill SL**. An evidenced based systematic review of remifentanil-induced hyperalgesia. *Expert Opin Drug Saf* 2014; (accepted)
- Shaik JS, Ahmad M, Li W, Rose ME, Foley LM, Hitchens TK, Graham SH, Hwang SH, Hammock BD, **Poloyac SM**. Soluble epoxide hydrolase inhibitor trans-4-[4-(3-adamantan-1-yl-ureido)-cyclohexyloxy]-benzoic acid is neuroprotective in rat model of ischemic stroke. *Am J Physiol Heart Circ Physiol*. 2013; 305(11): H1605-13. PMC3882464.
- Smith M, **Mohammad R**, and **Benedict NJ**. Use of Virtual Patients in an Advanced Therapeutics Pharmacy Course to Promote Active, Patient-Centered Learning. *American Journal of Pharmaceutical Education*. Volume 78, Issue 6, Article 125.
- 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. doi: 10.1177/1060028013510698. Epub 2013 Nov 4.
- **Smithburger PL**, Campbell SC, **Kane-Gill SL**. Alteplase treatment of acute pulmonary embolism in the intensive care unit. *Crit Care Nurse*. 2013;33:17-27. PMID: 2354712
- **Smithburger PL**, **Kane-Gill SL**, Kloet MA, Lohr B, **Seybert AL**. Advancing interprofessional education through the use of high fidelity human patient simulators. *Pharm Pract* 2013; 11(2):61-5. PMID: 24155851
- **Smithburger PL**, **Smith RB**, **Kane-Gill SL**, **Empey P**. Patient Predictors of Dexmedetomidine Effectiveness for sedation in intensive care units. *Am J Crit Care*. 2014;23(2):160-5. PMID: 24585165
- Tortorici MA, **Nolin TD**. Kidney function assessment and its role in drug development, review and utilization. *Expert Rev Clin Pharmacol*. 2014 May 29 Epub. PMID: 24875237.
- Tyurina YY, **Poloyac SM**, Tyurin VA, Kapralov AA, Jiang J, Anthony-muthu TS, Kapralova VI, Vikulina AS, Jung MY, Epperly MW, Mohammadyani D, Klein-Seetharaman J, Jackson TC, Kochanek PM, Pitt BR, Greenberger JS, Vladimirov YA, Bayr H, Kagan VE. A mitochondrial pathway for biosynthesis of lipid mediators. *Nat Chem*. 2014 Jun;6(6):542-52. Epub 2014 Apr 20. PMID: 24848241.

Grants

- Using Personal Genome Testing To Teach Pharmacogenomics in a Large Lecture Course. Innovation in Education Award. Provost's Advisory Council on Instructional Excellence, May 1,

2014 – April 30, 2015. \$18,708. **Empey PE, Coons JC, Smith R.**

- 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.**
- University of Pittsburgh, Clinical Translational Science Institute, project funding. MEDivate: achieving great medication outcomes together. Center for Assistance in Research using eRecord (CARE) support. Role PI; project funding; 2014. **Empey PE.**
- 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; project funding; 2014-2016. **Empey PE.**
- Clinical & Translational Science Institute at the University of Pittsburgh (3/1/14-6/30/14), Improving the identification of actionable adverse drug events associated with acute kidney injury in nursing homes. **Co-Investigator** (salary support 10%). \$100,000. **Kane-Gill SL.**
- Interactive search and review of clinical records with multilayer semantic annotation. Co-Investigator (salary support 5%), Chapman (PI), Subcontract UCSD RO1 LM010964 National Library of Medicine (09/30/11- 09/29/15). \$591,195. **Kane-Gill SL.**
- Agency for Healthcare Research and Quality (05/01/10-02/28/14) Enhancing the detection and management of adverse drug events in the nursing home. **Co-Investigator** (salary support 16%), Handler (PI) RO1 HS01872. \$1,975,795. **Kane-Gill SL.**
- Evidence based healthcare: Interprofessional, learner-focused small groups in large lecture courses in dentistry and pharmacy. Co-Investigator. University of Pittsburgh Innovations in Teaching Award 2013 (Funded: \$14,450). **Smithburger PL.**
- The Beckwith Institute (6/1/13-6/1/14). Transforming the role of the hospital pharmacists to improve patients' access, adherence and self-management of medications after discharge. \$25,000. **Seybert AL, Kane-Gill SL, Coley KC.**

Selected Invited Presentations

- 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.**
- How To Use Web-Based Simulations to Build Clinical Reasoning Skills Across the Healthcare Education Spectrum - From Novices to Expert Teams. Presented at International Meeting on Simulation in Healthcare; San Francisco, CA. McGee J, **Benedict N**, Tabas G, Doshi A.
- A Lifecycle Journey in Pulmonary Hypertension. International Society of Heart and Lung Transplantation (ISHLT) 34th Annual Meeting and Scientific Sessions, San Diego, CA, April 11, 2014. **Coons JC.**
- IV Prostaglandin Therapy: Indications and Mechanism of Action for PAH. International Society of Heart and Lung Transplantation (ISHLT) 34th Annual Meeting and Scientific Sessions, San Diego, CA, April 11, 2014. **Coons JC.**

- Pulmonary Arterial Hypertension: Today's Treatment Landscape & Breakthroughs on the Horizon. American Society of Health-System Pharmacists (ASHP) 48th Midyear Clinical Meeting and Exhibition, Orlando, FL, December 9, 2013. **Coons JC.**
- Pharmacogenomics in critical care. SCCM Critical Care Congress, San Francisco, CA. January 2014. **Empey P.**
- Lost in translation: The importance of understanding clinical pharmacology in neurotrauma research. National Neurotrauma Symposium, Nashville, TN. August 2013. **Empey P.**
- Development of a graduate level cross-institutional course to foster an understanding of translational sciences. American Association of Colleges of Pharmacy, Chicago, IL. July 2013. **Empey P.**
- In Pursuit of Creative Active Learning Game Strategies: Low-tech Gaming with a Twist. Presented at the Annual American Association of Colleges of Pharmacy Meeting Grapevine, Texas. **Falcione BA**

Update on recent ACIP/CDC immunization recommendations. Presented at the Annual Pennsylvania Pharmacists Association Annual Meeting, Gettysburg, PA. **Falcione BA**

- Analysis of antibiotic resistance in a cardiothoracic intensive care unit to determine appropriateness of a restriction program. Presented at American Society of Health Systems Pharmacists Midyear Clinical Meeting, Orlando, Florida. **Falcione BA.**
- Pre-Residency Excellence Program (PREP) – Resident Research: Frequently Asked Questions and Tips for Success, Webinar for Registrants in the PREP Program for Pennsylvania Pharmacists Association May 2014. **Kane-Gill SL.**
- Managing alert overload: Clinical decision support. 43rd SCCM Critical Care Congress, San Francisco, CA. January 2014. **Kane-Gill SL.**
- Med Wreck or Med Safety: The impact of medication reconciliation on medication errors and adverse drug events. 46th ASHP Midyear Clinical Meeting, Orlando, FL December 2013. **Kane-Gill SL.**
- Acute kidney injury in the critically ill, elderly patient. 3rd AKI Symposium, University of Pittsburgh, Pittsburgh, PA October 2013. **Kane-Gill SL.**
- Pulling the Trigger on ADE Surveillance in the ICU. Greater New York Hospital Association-webinar for 180 acute care hospitals and health systems in New York, New Jersey, Connecticut, Massachusetts. October 2013. **Kane-Gill SL.**
- Pharmacokinetics in CRRT: Background and Proposed Study Design for KHI Project. Presented at the Kidney Health Initiative PK Workgroup Project Meeting. U.S. Food and Drug Administration, Center for Drug Evaluation Research, Office of Clinical Pharmacology, Silver Spring, MD. December 18, 2013. **Nolin TD.**

- KHI's Pilot Projects-Lessons Learned: Pharmacokinetics in Patients Receiving CRRT. Presented at the Kidney Health Initiative Second Annual Stakeholder's Meeting, Bethesda, MD. June 12, 2014. **Nolin TD.**
- CYP Eicosanoids and Stroke: Results from a large cohort of aneurysmal subarachnoid hemorrhage patients. Winter Eicosanoid Conference, Baltimore, MD. March 2014. **Poloyac SM.**
- Special Session: Development of a Graduate Level Cross-Institutional Course to Foster an Understanding of Translational Sciences. American Association of Colleges of Pharmacy Annual Meeting Teachers Seminar, Chicago, IL. July 2013. **Poloyac SM.**

UPMC Pharmacy General Inpatient (Internal Medicine and Medication Education Program) Group

School of Pharmacy faculty members provide care to patients on the general units at UPMC Presbyterian in a variety of ways. They precept students and residents on internal medicine units, where they manage patients' medication therapy as members of the patient care team. They lead the hospital-wide Medication Education Program that involves a team of pharmacists and pharmacy students who provide medication education for hospitalized patient with complex medication regimens and those who are newly started on anticoagulants and insulin. They contribute to system-wide interdisciplinary teams with the goal of optimizing the inpatient management of patients, such as those with diabetes or at risk for hyperglycemia.

Faculty

Amy Calabrese Donihi, PharmD, Associate Professor

Rima A. Mohammad, PharmD, Assistant Professor (at the School until September 1, 2014)

Major Accomplishments

In FY14, School of Pharmacy faculty members:

- Led a team of pharmacists, pharmacy residents, and pharmacy students who educated 2,746 hospitalized patients on their medications. This including 247 patients newly started on insulin. **Donihi AC**
- Designed and implemented a program so that patients can take home their partially used bulk medications (e.g. insulin pens, inhalers) at the time of discharge. **Donihi AC**
- Mentored pharmacy students who created several medication education videos that will be used to teach patients how to use their inhalers prior to hospital discharge. **Mohammad RA, Donihi AC**
- Designed and implemented a multidisciplinary process for ensuring that hospitalized patients receive their mealtime insulin at an appropriate time in relation to their meals. **Donihi AC**

Publications

- Korytkowski MT, Koerbel GL, Fostel L, **Donihi AC**. Pilot trial of diabetes self-management education in the hospital setting, *Prim. Care Diab.* Epub 2013 Dec 30.
- Kim JJ, **Mohammad RA, Coley KC, Donihi AC**. Use of an iPad to Provide Warfarin Video Education to Hospitalized Patients. *J Patient Saf.* Epub 2014 Feb 11.

- Nayak S, Magaji V, **Donihi AC**, Willard L, Jampana S, Parachur N, Eder RA, Johnston J, Korytkowski MT. Efficacy and Safety of Continuous Insulin Infusion Protocols with Glycemic Targets of 110-140 mg/dL in Patients With and Without Diabetes Following Cardiac Surgery. *Journal of Diabetes Science and Technology*. 2014; 8:425-426.
- Hawkins K, **Donihi AC**, Korytkowski MT. Diabetes in intensive care units and non-ICU settings. In: *Therapy for Diabetes Mellitus and Related Disorders. 6th ed.* Umptierrez GE, Ed. Alexandria, VA, American Diabetes Association, 2014, p. 559-581.

Grants

- Grant Total: \$25,000. “Implementation of an Inpatient Bulk Meds to Home Program at a Large Academic Medical Center.” ASHP Foundation, 2012-2015, **Donihi AC** Principal Investigator.
- Grant Total: \$20,000 (\$10,000 from the Beckwith Foundation plus \$10,000 in matching funds). “Nurse Education and Transition (NEAT)” Beckwith Foundation, 2013-2014, **Donihi AC** Co-Investigator

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 and OPAT Pharmacist
 Ryan Shields, PharmD, Adjunct Faculty

Resident

Aaron Pickering, PharmD, PGY2 Infectious Diseases Pharmacy Resident

Major Accomplishments

During FY14, School of Pharmacy faculty members achieved the following:

- Approximately one year ago, the antibiotic management program, with the assistance of TheraDoc to identify positive cultures in real-time, directly contacted and discussed therapy recommendations (in real-time as well) for carbapenem-resistant Enterobacteriaceae (CRE) with the primary medical team whenever that type of organism grew from blood culture. Through the assistance of provider analytics, the antibiotic management program was able to show that this approach led to a significant decrease in mortality, hospital stay, and costs associated with CRE infections. This is a public-health emergency and one that we are successfully addressing with our multi-disciplinary team. This data was accepted for presentation at the Interscience Conference for Antimicrobial Agents and Chemotherapy (ICAAC) to be held in Washington, D.C., in the Fall of 2014.
- **Brian Potoski** was awarded the Society of Infectious Diseases (SIDP) Outstanding Clinical Practice in Infectious Diseases Pharmacy Practice Award 2013.
- In an effort to prevent adverse drug events and hospital readmissions a collaborative practice agreement with 8 Infectious Diseases (ID) physicians was created for a new pharmacist monitoring program of patients discharged from the hospital on intravenous antimicrobial therapy through the UPMC Presbyterian ID Outpatient Parenteral Antibiotic Therapy (OPAT) clinic. In

the first 6 months 225 patients were monitored by an infectious diseases pharmacist and a unique dose assessment nomogram was created for the clinic nursing staff; during this period the ID OPAT clinic reduced hospital readmissions by 44%. **Falcione BA**

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 Apr 18 [Epub ahead of print]
- **Shields RK**, Clancy CJ, Gillis LM, Kwak EJ, Silveira FP, Massih RC, Eschenauer GA, **Potoski BA**, Nguyen MH. Epidemiology, clinical characteristics and outcomes of extensively drug-resistant *Acinetobacter baumannii* infections among solid organ transplant recipients. *PLoS One*. 2012;7:e52349.
- Multicenter study of high-dose daptomycin for treatment of Enterococcal infections. Casapao AM, Kullar R, Davis SL, Levine DP, Zhao JJ, **Potoski BA**, Goff DA, Crank CW, Segreti J, Sakoulas G, Cosgrove SE, Rybak MJ. *Antimicrob Agents Chemother*. 2013;57:4190-6.
- Real world experience with Echinocandin MICs against *Candida* species in a multicenter study of hospitals that routinely perform susceptibility testing of bloodstream isolates. Echenauer GA, Nguyen HM, Shoham S, Vazquez JA, Morris AJ, Pasculle AW, Kubin CJ, Klinker KP, Carver PL, Hanson KE, Chen S, Lam SW, **Potoski BA**, Clarke LG, **Shields RK**, Clancy CJ. *Antimicrob Agents Chemother*. 2014;58:1897-906.
- **Falcione BA** and **Meyer SM**. Development of an antimicrobial stewardship based infectious diseases elective that incorporates human patient simulation technology. *Am J Pharm Educ*. Accepted for publication.
- Devanathan D, Sheridan K, Shields RK, **Falcione BA**. Evaluation of infectious diseases pharmacists' interventions for patients receiving outpatient parenteral antimicrobial therapy after discharge from a large teaching hospital. To be presented at the ACCP Annual Meeting on October 14, 2014 in Austin, Texas.

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 patients at UPMC. Continuing to build on the rigorous foundation of the nationally recognized UPMC formulary management work, 15 hospitals of the UPMC are now integrated as part of the 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 FY14, School of Pharmacy faculty members achieved the following:

- In the past year, **114** guidelines/reviews and **10** electronic health record protocols were developed for use of medications in the hospital setting across UPMC. **Skledar SJ, Culley CM**, other faculty and PGY1/PGY2 residents mentored by the faculty.
- Facilitated development of **9** medication therapeutic class interchanges across UPMC inpatient sites, to optimize medication inventory, while ensuring equal safety and cost-effectiveness for UPMC patients. **Skledar SJ, Culley CM**.
- Led the revision and/or creation of **13** 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 new UPMC system-wide policy to define the clinical scope of practice for the institutional (hospital) pharmacist related to automatic dosing protocols, medication formulary and safety initiatives, and design of inpatient collaborative practice agreements, which are defined by the State Board of Pharmacy as “institutional protocols.” **Skledar SJ**.
- Worked with clinical pharmacists and physicians across the system to create **5** institutional automatic dosing protocols in the areas of warfarin anticoagulation, intravenous-to-oral medication switch, renal dose adjustment, weight-based dose adjustment for pre-surgical antibiotics, and parenteral nutrition management. **Skledar SJ, Culley CM**.
- Mentored **5** 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.” **Skledar SJ**.
- Received the 2013 ASHP Distinguished Service Award from the ASHP Section of Inpatient Care Practitioners for work with service to ASHP, teaching and mentoring, and advancing the practice of pharmacy in the hospital setting. **Skledar SJ**.

Selected Publications

- Henaio JP, Peperzak KA, Lichvar AB, 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.
- Kumar R, Henry BL, Smith RE. A review of and recommendations for the management of patients with dabigatran-associated hemorrhage: a single-center university hospital experience. *J Intensive Care Med* 2014 Mar 25. Published online: <http://jic.sagepub.com/content/early/2014/03/24/0885066614527417>. (**Skledar SJ** acknowledgement)
- **Skledar SJ**. Continuous Quality Improvement Principles. In Larson C and Saine D ed. 1st edition. *The Medication Safety Officer's Handbook*. American Society of Health-System Pharmacists. Bethesda, MD 2013.

Selected Invited Presentations

- Improving smart pump compliance in the outpatient oncology setting. INS Infusion Nurses Society Meeting. Charlotte, NC. May 18, 2013. Urban A, Bayless A, Nicolai C, Gotaskie G, **Skledar SJ**.
- Incidence of extrapyramidal symptoms following administration of oral perphenazine 8 mg: a retrospective analysis. Poster presentation. American Society of Anesthesiologists Annual Meeting. San Francisco, CA. October 15, 2013. Henao JP, Peperzak KA, Lichvar AB, Orebaugh SL, **Skledar SJ**, Williams BA.
- Personalizing drug therapy through pharmacogenomics. University of Pittsburgh Drug Discovery Institute and Institute for Personalized Medicine. Pittsburgh Workshop on Quantitative Systems Pharmacology in Personalized Medicine. Pittsburgh PA. November 19, 2013. **Coons J**, Berg JM, Smith C, Crowley R, Nikiforov N, Boyce R, Hochheiser H, **Skledar SJ**, **Smith RB**, **Kroboth PD**, **Empey PE**.
- Implementing an automatic medication interchange program across a 13-hospital health system. ASHP 48th Midyear Clinical Meeting, Orlando, FLA. December 9, 2013. Stanley M, **Skledar SJ**.
- CQI Analytics for Smart Intravenous Infusion Pumps. Quality and Safety Pearls 2013. ASHP 48th Midyear Clinical Meeting, Orlando FLA. December 9, 2013. **Nicolai C**, **Skledar SJ**.
- Smart Intravenous Infusion Pumps: The Data Make the Difference. Greater New York Hospital Association (GNYHA) Services/Premier Clinical Pharmacy Forum Webinar Series. Northeast US area (New Jersey, New York, Connecticut, Massachusetts). March 26, 2014. **Skledar SJ**, **Nicolai C [adjunct]**
- 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**.

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

Zachary A. Marcum, PharmD, MS, Assistant Professor

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

Pharmacy Residents

Madhavi Gavini, PharmD, PGY2 Geriatric Pharmacy Resident

Major Accomplishments

- Created one of twelve post-graduate residency programs nationally in geriatric pharmacy practice, successfully graduating the second PGY2 geriatric resident this year. **Ruby CM.**
- Created one of two geriatric pharmacy fellowship programs nationally; successfully recruiting the third fellow this year. **Hanlon JT and Ruby CM.**
- Successfully completed the American Society of Health System Pharmacy accreditation process for the post-graduate residency program. (Anticipating full accreditation in August 2014). **Ruby CM.**
- Led a pharmacist driven transition of care program focusing on Senior Care patients discharged from UPMC affiliated nursing homes (such as Heritage, Charles Morris, Canterbury) and 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 three new sites to the Senior Care Transitions of Care program to include UPMC Magee Hospital, UPMC St. Margaret's Hospital, and UPMC Mercy TCU/Rehab and provided at least 100 patient transition of care encounters. **Ruby CM.**
- Developed a special topics elective focusing on transitions of care. **Ruby CM.**
- Trained numerous pharmacy learners (2 PGY2, 3 PGY1, 16 APPE, 8 IPPE and 5 special topic students) and medical residents over the last 2 years about the Senior Care Transitions of Care program. **Ruby CM.**
- Abstract referee, American Association of Colleges of Pharmacy Annual Meeting. July 2014. **Ruby CM.**

Awards

- Faculty elected 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.**
- Recipient of Leadership in Education Award, American Society of Consultant Pharmacists. **Ruby CM.**

Grants

- Systematic Evaluation of the Medication Reconciliation Process; Medical Staff Grant, UPMC Magee-Womens Hospital, 07/01/13-06/30/14. PI- **Marcum ZA**
- Using Shared Decision Making to Reduce Medication Discrepancies; Beckwith Institute Clinical Transformation Program, 7/01/13-06/30/14. PI- **Marcum ZA**

National Presentations- Invited Speaker

- Reducing Harm in the Elderly: A Focus on Delirium, Falls, and Medication Errors. An invited speaker for the American Society of Health-System Pharmacists Midyear Clinical Meeting, Orlando, FL; December 11, 2013. **Ruby CM.**

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.
- **Marcum ZA**, Amuan ME, **Hanlon JT**, **Aspinall SL**, Handler SM, **Ruby CM**, Pugh MJ. Prevalence of unplanned hospitalizations caused by adverse drug reactions among older veterans. *J Am Geriatr Soc*. 2012; 60.
- **Marcum ZA**, Pugh MV, Amuan ME, **Aspinall SL**, Handler SM, **Ruby CM**, **Hanlon JT**. Prevalence of potentially preventable unplanned hospitalizations caused by therapeutic failures and adverse drug withdrawal events among older Veterans. *J Gerontol A Biol Sci Med Sci*. 2012; 67:867-874. PMID: 22389461
- **Marcum ZA**, **Hanlon JT**. Inappropriate Medication Use and Medication Errors in the Elderly. In Wehling M, Burkhardt H. (editors), *Drug Therapy in the Elderly*. 2nd Ed., Berlin Heidelberg New York:Springer-Verlag. 2013. pp 43-50.
- **Marcum ZA**, Peron E, **Hanlon JT**. Medication use in older adults. In: Newman A, Cauley J (editors). *The Epidemiology of Aging*. New York:Springer Publishing Company 2013:317-327.
- **Marcum ZA**, Arbogast KL, Behrens MC, Logsdon MW, Francis SD, Jeffery SM, **Aspinall SL**, **Hanlon JT**, Handler SM. Utility of an adverse drug event trigger tool in Veterans Affairs nursing homes. *Consult Pharm*. 2013;28:99-109. PMID: 23395810
- **Marcum ZA**, Sevick MA, Handler SM. Medication Non-Adherence: A Diagnosable and Treatable Medical Condition. *Journal of the American Medical Association (JAMA)*. 2013;309:2105-6.
- **Marcum ZA**, Zheng Y, Perera S, Strotmeyer E, Newman AB, Simonsick EM, Shorr RI, Bauer DC, Donohue JM, **Hanlon JT**. Prevalence and correlates of self-reported medication non-adherence among older adults with coronary heart disease, diabetes mellitus, and/or hypertension. *Res Soc Admin Pharm*. 2013;9:817-27. PMCID: PMC3620923
- Pugh MV, **Marcum ZA**, Copeland LA, Mortensen EM, Zeber JE, Noel PH, Downs JR, Good CB, Alvarez C, Amuan ME, **Hanlon JT**. The quality of quality measures: HEDIS quality measures for medication management in the elderly and outcomes associated with new exposure. *Drugs & Aging*. 2013;30:645-54. PMCID: PMC3720786
- **Marcum ZA**, Driessen J, **Thorpe CT**, Gellad WF, Donohue JM. Impact of multiple pharmacy use on medication adherence and drug-drug interactions in older adults with Medicare Part D. *J Am Geriatr Soc*. 2014;62:244-52. PMCID: PMC Journal - In Process
- Handler SM, Cheung PW, **Culley CM**, Perera S, **Kane-Gill SL**, Kellum JA, **Marcum ZA**. Determining the incidence of drug-associated acute kidney injury in nursing home residents. *J Am Med Dir Assoc*. 2014 [in press]
- **Marcum ZA**, **Hanlon JT**, Strotmeyer ES, Newman AB, Shorr RI, Simonsick EM, Bauer DC,

Boudreau R, Donohue JM, Perera S, for the Health ABC Study. Gastroprotective agent underuse in high-risk older daily non-steroidal anti-inflammatory drug users over time. *J Am Geriatr Soc*. 2014 [in press]

- **Aspinall SL**, Zhao X, Semla TP, Cunningham FE, Paquin AM, Pugh MJ, Schmader KE, Stone RA, **Hanlon JT**, for the VA CLC Pharmacotherapy Research Group. Epidemiology of drug-disease interactions in older Veteran nursing home residents. *J Am Geriatr Soc*. 2014 [in press]

UPMC Oncology Magee-Womens Hospital of UPMC

School of Pharmacy faculty member provides care to oncology patients at Magee Womens Hospital in a variety of ways. Precept pharmacy students and residents on the oncology inpatient unit, where they manage patients' medication therapy as part of the patient care team. Educate medical residents and fellows on medication management of gynecology oncology patients. Provide care to the inpatient oncology patients by rounding with the multidisciplinary care team. Also, provide education to patients on chemotherapy medications, supportive care medications and discharge medications. Serve as the resource for inpatient chemotherapy in terms of providing recommendations for chemotherapy regimens, meeting with the patient regarding any questions/concerns and following the patient through their regimen as an inpatient. Serve as a consultant to the outpatient oncology clinics and infusion center to provide consults to providers and patients to optimize care to patients receiving chemotherapy.

Faculty

Lindsay Lippman, PharmD, Clinical Instructor

PGY2 Resident

Terri Lynn Shigle, PharmD, PGY2 Oncology Pharmacy Resident

Major Accomplishments

- Guest speaker at UPMC Advanced Practice Practitioner Conference in October 2013 on "Economic Impact of Drug Therapy in Advanced Stage Cancer Patients." **Lippman, L.**
- Obtained recertification as a Board Certified Oncology Pharmacist. **Lippman, L.**
- Provided medication reconciliation and medication management in approximately 2100 oncology hospitalized patients.

UPMC – Western Psychiatric Institute and Clinic

Faculty

Tanya J. Fabian, PharmD, PhD-Assistant Professor
Director of Pharmacy Research and Pharmacy Services, Western Psychiatric Institute and Clinic

Residents

Erin Mathis, PharmD, PGY1 Pharmacy Practice Resident
G. Lucy Wilkening, PharmD, PGY1 Pharmacy Practice Resident

Select Presentations/Posters

- The Effects of Carousel Dispensing Technology on Safety, Efficiency and Inventory Control in a 300 Bed Psychiatric Hospital. Presented at the 2014 Pennsylvania Pharmacist Association Meeting, Bedford Springs, Pennsylvania, January 2014. Williams EA, Sakely K, **Fabian TJ**.
- Successful Clozapine Rechallenge Following Presumed Clozapine-Induced Neuroleptic Malignant Syndrome: A Case Report. Presented at the 2014 College of Psychiatric and Neurologic Pharmacists Annual Meeting, Phoenix, Arizona, April 2014. Ross C, **Fabian TJ**.
- Description of Pharmacist Interventions at a Large Academic Acute Psychiatric Hospital. Presented at the 2014 College of Psychiatric and Neurologic Pharmacists Annual Meeting, Phoenix, Arizona, April 2014. Brennan JL, Wong KR, Carlson K, Crabtree R, **Fabian TJ**.
- Gabapentin Prescribing Patterns: Impact of a Pharmacist-Developed Educational Intervention. Presented at the 2014 College of Psychiatric and Neurologic Pharmacists Annual Meeting, Phoenix, Arizona, April 2014. Wilkening GL, Brennan JL, **Fabian TJ**.
- Developing a Team-Based Integrated Care Model to Improve Physical and Behavioral Health Outcomes of Patients with Serious Mental Illness (SMI). Presented at the 2014 All Together Better Health Conference VII, Pittsburgh, Pennsylvania, June 2014. Jansen R, Montgomery J, Lupu A, Dobblestein C, Chengappa K, Gannon J, **Fabian TJ**.

Publications

- Leung JG, Chengappa R, Kahn C, Ivanov E, Gandotra G, Weber J, **Fabian TJ**. Clozapine Augmentation: Inpatient Antipsychotic Selection and Likelihood of Continuation at Discharge. Submitted.

STUDENTS IMPACTING PATIENT CARE IN COMMUNITIES

Students across all years of the curriculum use the Pharmacist Interaction Tracking Tool (PITT form) for real-time tracking of patient interactions. In aggregate, the School uses PITT form data to document students' impact on patient care. In fall 2013, P2 students, worked with 329 elderly individuals in the community through the SilverScripts curricular activity. Across two visits per student, 267 drug therapy problems were identified by the class. In spring 2014, P1 students, worked with 390 elderly patients across two visits. Collectively, they identified 249 drug therapy problems and were able to resolve 17% of the problems identified on the first visit by the second visit. Additionally, a new partnership with the CDC and the Pennsylvania Department of Health called "Get Smart About Antibiotics" was the first of its kind to engage with pharmacies to engage the public at the patient/customer level. Our students educated 771 patients this year.

In FY14, students in the P4 class documented almost 18,000 patient interactions during which they identified over 11,000 drug-related problems in their patients. The most frequently encountered drug-related problem was "needs drug therapy." The students made over 14,000 drug therapy recommendations, identified over 640 actual adverse drug events, and prevented over 700 potential adverse drug events.

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 FY14

- **\$22.9 million:** The total School of Pharmacy expenditures in FY14 from all sources.
- **\$24.07 million:** The market value of the School's endowment at the end of FY14.
- **\$27,208,332:** The Capital Campaign total at the end of FY14.
- **\$828,353:** Gifts in FY14; **\$236,180** from annual gifts.
- The School of Pharmacy has an allocation of and/or leases **62,896 SF** of space in **seven (7) locations** in Oakland, the South Side, and the East End.
- **\$362 per SF:** Efficiency measured as expenditures divided by total number of square feet occupied.
- In FY14, the School of Pharmacy had **72 full-time faculty members** who received **14** awards for their accomplishments.

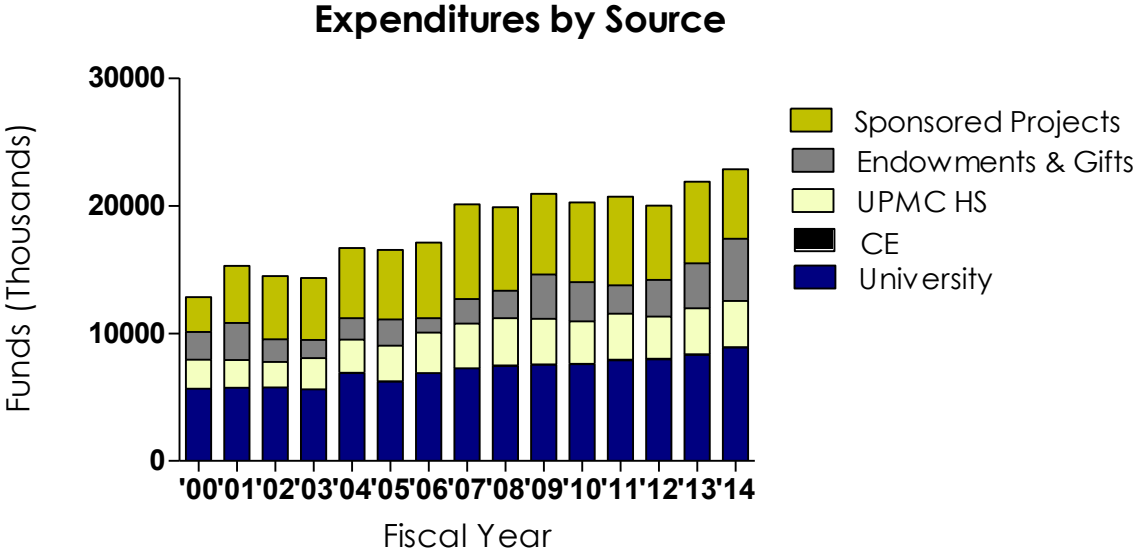
Of our 72 faculty members,

- **18 (25%)** have been elected to fellowship in one or more organizations.
- **24 (33.3%)** are board certified.
- **38 (52.7%)** are board certified, fellows, or both.
- **69:** the number of staff, of whom **31** are administrative and **38** are research.
- Number of living alumni: **5,170**
- 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.
 - **#3** among all University schools and programs in alumni engagement.
- **31.9 percent** of the alumni were engaged with the School of Pharmacy and/or University in some way.
- **10** major print communications were each mailed to **6,100** stakeholders.
- **38,540** 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 '14.



The School of Pharmacy’s total expenditures are 1.59 times higher in FY14 (\$22,857,493 million) than they were in FY03 (\$14, 349,415). Sponsored projects accounted for 24% of the expenses in FY14 and 34% in FY03. Together, the University (38.9%), sponsored project awards (23.8%), and UPMC (15.9%) accounted for over 78% of the School’s funding in FY14.

Institutional Advancement

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

Capital Campaign

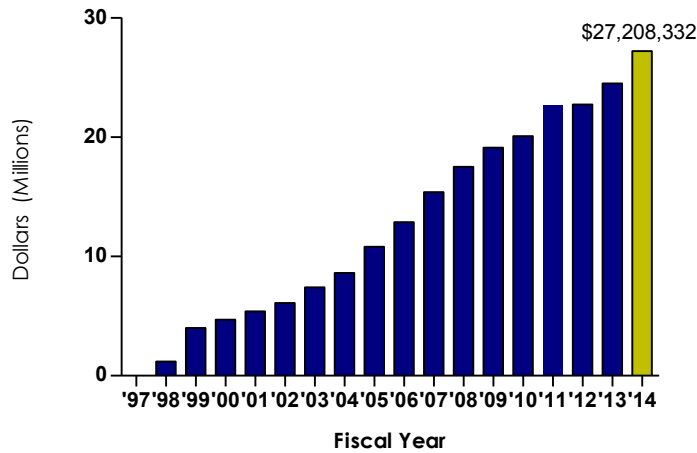
On July 1, 1997, the University launched the Capital Campaign to support students, teaching and learning, and the research of faculty. To date, the School of Pharmacy has raised \$27,208,332 in gifts and pledges for the School’s portion of the Capital Campaign. Of this amount, a total of \$24,487,498 has been received and \$2,720,833 is due in pledges and gifts. At the close of FY14 the University of Pittsburgh achieved and exceeded its Capital Campaign goal of \$2 billion.

**School of Pharmacy Capital Campaign by Gift Designation
Gifts and Pledges*
July 1, 1997 – June 30, 2014**

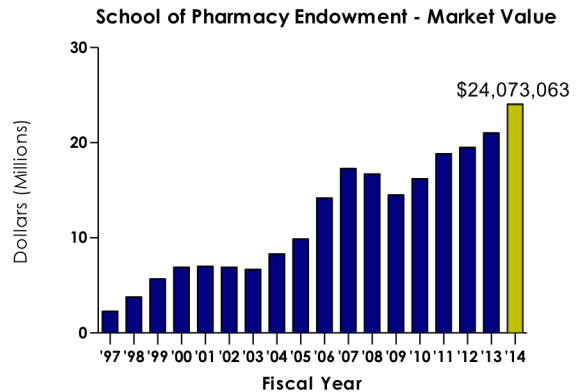
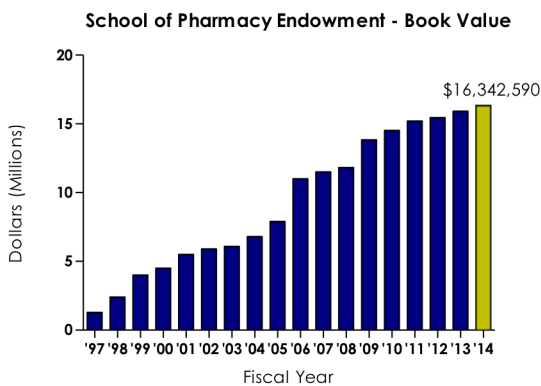
Designation	Amount
Individual Major Gifts	\$6,327,670
Foundations	2,576,032
Corporations	7,009,551
Other Organizations	2,466,903
Planned Giving	6,652,381
Individual Other Gifts	2,175,795
Total	\$27,208,332

*Includes Voluntary Support (gifts) received during FY14

**Capital Campaign
Total Gifts and Pledges**

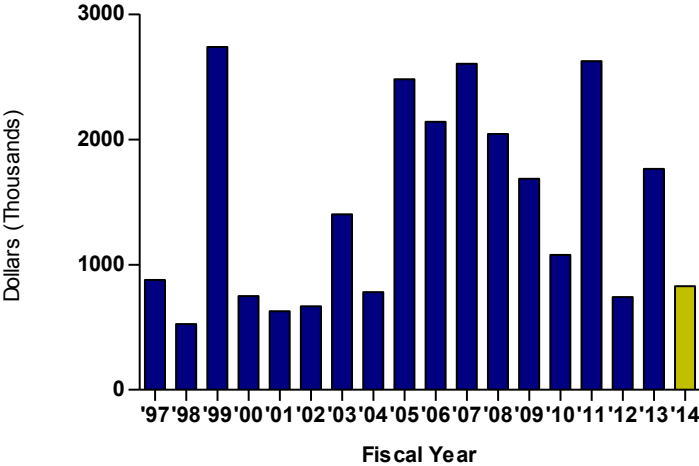


The book value of the School of Pharmacy endowment has continued to grow through gifts as shown in the graph below. The market value of the endowment has fluctuated with the national economy; as the economy has recovered, so has the market value of the endowment.



In FY14, the School of Pharmacy received charitable gifts, pledges, and grants totaling \$828,353 from a total of 709 individuals, foundations, corporations, and other organizations. Of the total, \$402,341 was from corporations and organizations and was primarily designated to benefit technological renovations and research.

Total Gifts & Pledges by Year

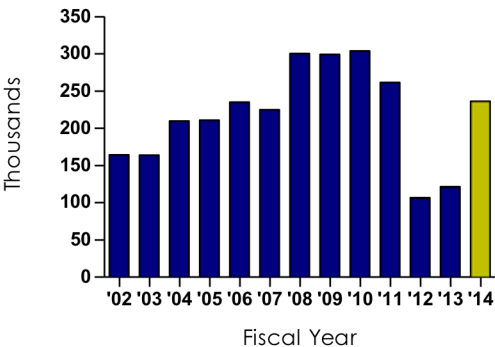


FY14 Giving to the School of Pharmacy by Source

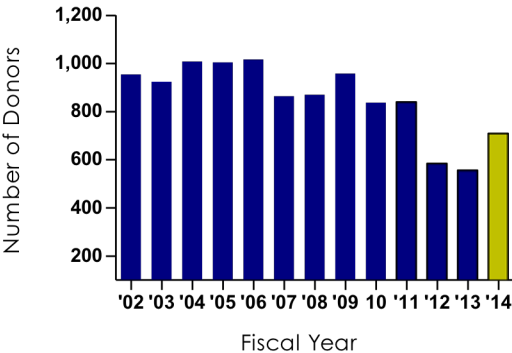
	Alumni	Foundations	Corporations	Organizations	Friends
Amount	\$169,148	\$204,241	\$336,245	\$67,096	\$51,623
Percentage	20.4%	24.6%	40.5%	8%	6.2%

Despite the decrease in total gifts & pledges, the graphs below demonstrate an increase in total annual gifts (1.9 fold increase to \$236,180) and in annual donors (1.3 fold to 709 donors).

Annual Gift Amount



Annual Donors



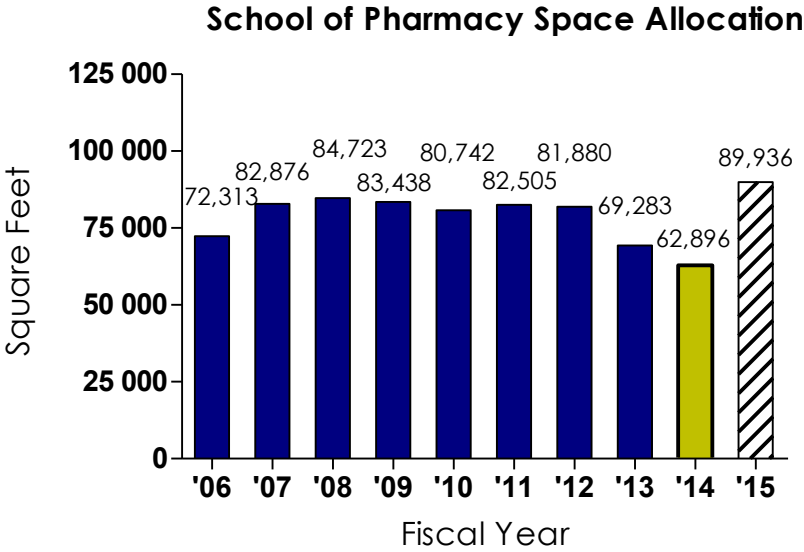
PHYSICAL FACILITIES

At the close of FY14, the School of Pharmacy occupied a total of 62,896 SF, including:

- 50,310 SF in Salk Hall*
- 3,607 SF in BSTIII*
- 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

As shown in the graph below, the space allocation to pharmacy has continued to decrease. Losses of UPMC-provided office space in Montefiore, Presbyterian, and Victoria Hall for faculty who provide service to UPMC totaled 12,775 SF and explain the decrease. The School of Pharmacy is now at its lowest amount of space in the last eight years. The graph also demonstrates that once Salk Pavilion opens in FY15, the School of Pharmacy will have an increase in its available space.

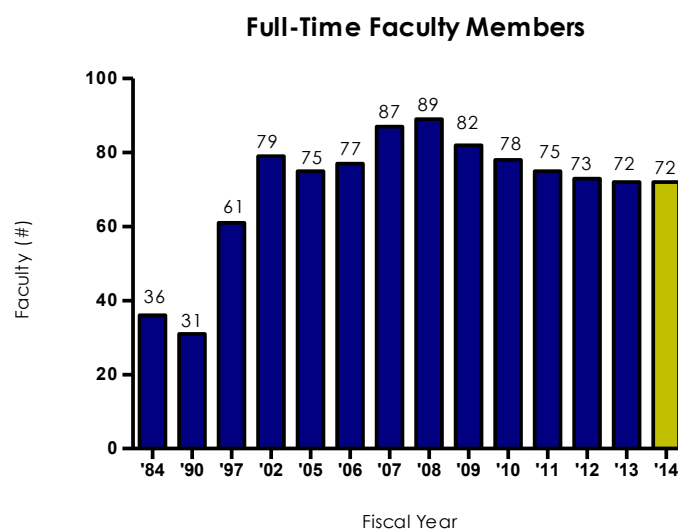


THE RESOURCE OF PEOPLE

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

Faculty

Seventy-two 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:

- Xiaochao Ma, PhD was recruited as an associate professor (with tenure) from the University of Kansas Medical Center in Kansas City, KS; the position of Lee McDermott, PhD was changed from research assistant professor to assistant professor.
- Jan Beumer, PhD, was awarded tenure.
- Regis R. Vollmer, PhD, Professor of Pharmaceutical Sciences, was named emeritus professor and retired in April 2014 after 37 years of service.
- In the past year, Billy W. Day, PhD retired; Debra Artim, PhD took a position in the Department of Neuroscience at Pitt; and Ty Ridenour, PhD relocated to the Research Triangle Institute in NC.

In the Department of Pharmacy and Therapeutics:

- One new faculty member was recruited. Assistant Professor Olufunmilola K. Odukoya, PhD, joined in the area of patient-centered safety outcomes research.
- Associate Professor Janice L. Pringle was awarded tenure; Neal Benedict, PharmD, was promoted to the rank of associate professor.
- Part-time Assistant Professor Stephanie McGrath, PharmD, left to focus on her family and full-time staff position with Rite Aid.

Full-Time Faculty Rank by Department of Primary Appointment*

Faculty Rank	Pharmaceutical Sciences	Pharmacy and Therapeutics	Total for School of Pharmacy
Professor	14	2	16
Associate Professor	4	16	20
Assistant Professor	6	21	27
Instructor	0	3	3
Research Associate Professor	1	0	1
Research Assistant Professor	4	0	4
Visiting Research Assistant Professor	1	0	1
All Faculty	30	42	72

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

- In FY14, School of Pharmacy faculty members earned a total of 14 major awards and 1 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).

FY14: Faculty Awards, Honors, and Recognitions

Faculty Member	Award	Organization
Neal J. Benedict	Innovations in Teaching Award	American Association of Colleges of Pharmacy (AACP)
Christopher Ensor	Leach-Abramson-Imhoff Writer of the Year Links Award	International Society for Heart and Lung Transplantation
Lauren Jonkman	Faculty Member of the Year	American Pharmacists Association –Academy of Student Pharmacists (APhA-ASP)
Sandra Kane-Gill	ACCP Critical Care PRN Achievement Award	American College of Clinical Pharmacy (ACCP)
Sean Kim	New Investigator Award	American Association of Colleges of Pharmacy (AACP)
Patricia Kroboth	Bristol-Meyers Squibb Clinical Pharmacology Mentor Award	American College of Clinical Pharmacology
Stephanie Harriman McGrath	Distinguished Young Pharmacist	Pennsylvania Pharmacist Association
Samuel M. Poloyac	University of Pittsburgh Chancellors Distinguished Teaching Award	University Of Pittsburgh
Brian A. Potoski	Outstanding Clinical Practice in Infectious Diseases Pharmacotherapy	Society of Infectious Diseases Pharmacists (SIDP)
Susan J. Skledar	Distinguished Service Award (December 2013)	American Society of Health-System Pharmacists, Section of Inpatient Care Practitioners
Pamela L. Smithburger	SCCM, Clinical Pharmacy and Pharmacology Section Excellence in Using Technology to Improve ICU Medication Safety Award	SCCM, Clinical Pharmacy and Pharmacology Section Excellence in Using Technology to Improve ICU Medication Safety Award
Melissa Somma McGivney	Fellow of the American Pharmacists Association	American Pharmacists Association
Wen Xie	Provost's Inaugural Lecture, Joseph Koslow Endowed Chair	University of Pittsburgh
Xiang-Qun Xie	XieHe Scholar Honorary Professor	Chinese Academy of Medical Sciences, China
Faculty Member	Recognition	Organization
Amy Calabrese Donihi	Recognized on the ACCP Web site for contributions to the College and the profession of pharmacy (http://www.accp.com/membership/vrp.aspx)	American College of Clinical Pharmacy (ACCP)

Fellowships in Organizations and Board Certification

Election to fellowship and board certification are two characteristics of faculty members who have distinguished themselves. Of the 74 faculty members, 18 (24.3%) have been elected to fellowship in one or more organization, 24 (32.4%) are board certified, and 38 (51.4%) 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.

FY14: 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	
Joanne Kowiatek	FASHP	American Society of Health-Systems Pharmacists	Pharmacy and Therapeutics (Adjunct)
Edward Krenzelo	FAACT	American Association of Clinical Toxicology	Pharmacy and Therapeutics
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
Ralph Tarter	FAPS	American Psychological	Pharmaceutical Sciences

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

FY14: 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	
Philip 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
Edward Krenzlok	DABAT	Toxicology	Pharmacy and Therapeutics
Lindsay Lippman	BCOP	Oncology	Pharmacy and Therapeutics
Rima Mohammad	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
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
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

In the eight years that the University of Pittsburgh has been ranking its 18 schools and programs in alumni engagement, the School of Pharmacy has held the number one spot in FY07 and FY09, ranking second in FY08 and FY10, and third in FY11, FY12, and FY14. “Engagement” is the percentage of

alumni who make gifts to the School/University, participate in events, have Life memberships in the Alumni Association, participate in online forums, and have provided active email addresses.

In FY14:

- 31.90 percent of the 5,170 School of Pharmacy living alumni were engaged with the School of Pharmacy and/or University in some way.
- School of Pharmacy alumni ranked:
 - first (11.10 percent) in life and in regular memberships in the Pitt Alumni Association in schools and programs with more than 100 alumni.
 - third (31.9 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 2013 with a Tailgate Homecoming Party held at the William Pitt Union. Over 150 alumni were in attendance.
 - School of Pharmacy hosted two receptions at national professional and scientific meetings:
 - American College of Clinical Pharmacy Annual Meeting, September 23, 2013, Bethesda, Maryland.
 - American Pharmacists Association Annual Convention, March 29, 2013, Orlando, Florida. The Pennsylvania Pharmacy Association and Pennsylvania Schools of Pharmacy jointly hosted the reception.
- The School of Pharmacy also hosted:
 - The Twenty Second Annual Career Roundtables, October 23, 2013, O'Hara Student Center Ballroom. Twenty-nine alumni participated in this student event. Alumni from nineteen 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 16, 2014, Quicksilver Golf Course. Seventy-one golfers participated, and the event raised \$18,131.71 for the Alumni Scholarship Fund. In the past eleven years, more than \$194,000 has been raised for student scholarships.

The Rxtravaganza Gala for alumni and friends celebrated the 135th Anniversary of the founding of the School of Pharmacy. The event, called *We Have Something in Commons*, was held in the Cathedral of Learning Commons on October 26, 2013. The event raised \$28,275.00 for student scholarships.

- The School's Alumni Society recognized two alumni as Distinguished Alumni:
 - Zane Gates, BS '90, the director of the Altoona Community Health Center, Partnering for Health Services and the founder of the Gloria Gates Foundation.
 - Roger Morris, BS '86, is partner in Quarles & Brady's Health Care Practice Group and a member of the American Society for Pharmacy Law.
- The School's Alumni Society recognized two alumni Rising Stars:
 - Adam Welch, PharmD '03, associate professor of Pharmacy Practice at Wilkes University and the acting chairperson of Pharmacy Practice.

- Michelle Zingone Farland, PharmD '04, assistant professor in the Department of Clinical Pharmacy at the University of Tennessee College of Pharmacy, Knoxville campus; she also serves as an ambulatory care clinical specialist.

Board of Visitors

Dean Patricia Kroboth and select faculty hosted the School of Pharmacy Mini-Board of Visitors on November 13, 2013. The chair of the Board, a board member, and representatives from the Katz Graduate School of Business and the University Center for International Studies had a focused discussion on the proposed MS in Pharmacy Business Administration.

Board of Visitors 2013–14

Herbert S. Shear, Chair
Chief Executive Officer
GENCO ATC

William L. Bailey, PharmD
Head, North American Medical Affairs
Pfizer Consumer Healthcare
Global R&D/Global Medical Affairs

Richard J. Bertz, PhD '95
Executive Director, Virology and Neurosciences
Discovery Medicine and Clinical Pharmacology
Research and Development, Bristol-Myers Squibb

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

Leaf Huang, PhD
Fred N. Eshelman Distinguished Professor and
Chair, Division of Molecular Pharmaceutics
Eshelman School of Pharmacy
University of North Carolina at Chapel Hill

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

Patrick Quinn, '78 CAS
Senior Director of Trade
Novo Nordisk Inc.

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

Albert L. Wright, Jr., FACHE
Vice President of Operations
UPMC Presbyterian Shadyside

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 FY14:

- Sixty-nine staff members served in:
 - administrative roles (31)
 - research roles (38).
- Eleven staff members received service awards from the School of Pharmacy for their tenure and commitment to the School.
- Kellie Mitchell served as Chair-Elect of the Administrative and Finance Officers of the American Association of Colleges of Pharmacy; she will serve as Chair during FY15.
- 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.

Information Technology

FY14, the Information Technology staff:

- Handled 1,110 Technology Help Tickets
 - Web and online: 287
 - Network/Server Administration: 241
 - Desktop and Classroom Support: 582
- Expanded task responsibilities for a team of student workers to include some classroom technology support in addition to expanded video support.
- Implemented battery replacement program to make lecture rooms 402 and 456 “greener.” This cut the number of batteries needed for the year by about 100 AA batteries, lowering cost as well as keeping batteries out of landfills.
- Completed the migration of the School’s database servers and set a September 2014 date for completing the total migration of all servers to the University NOC for increased security and stability. This also leverages University support for backup and maintenance of servers.

Communications

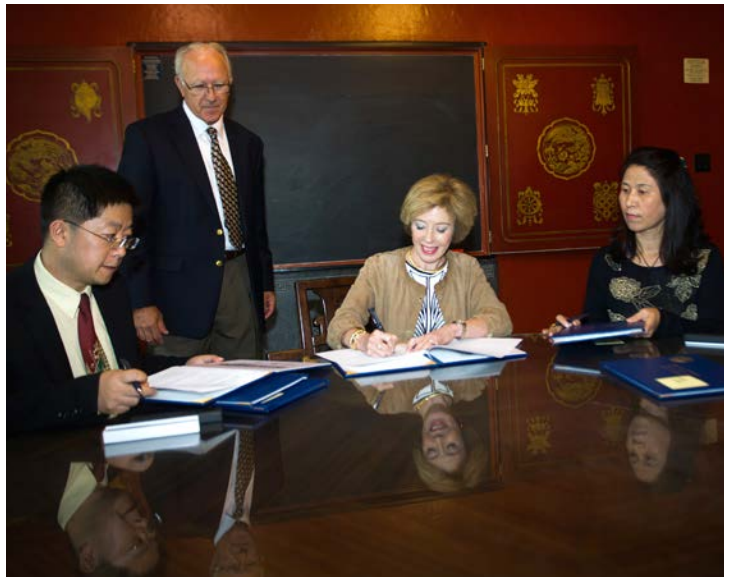
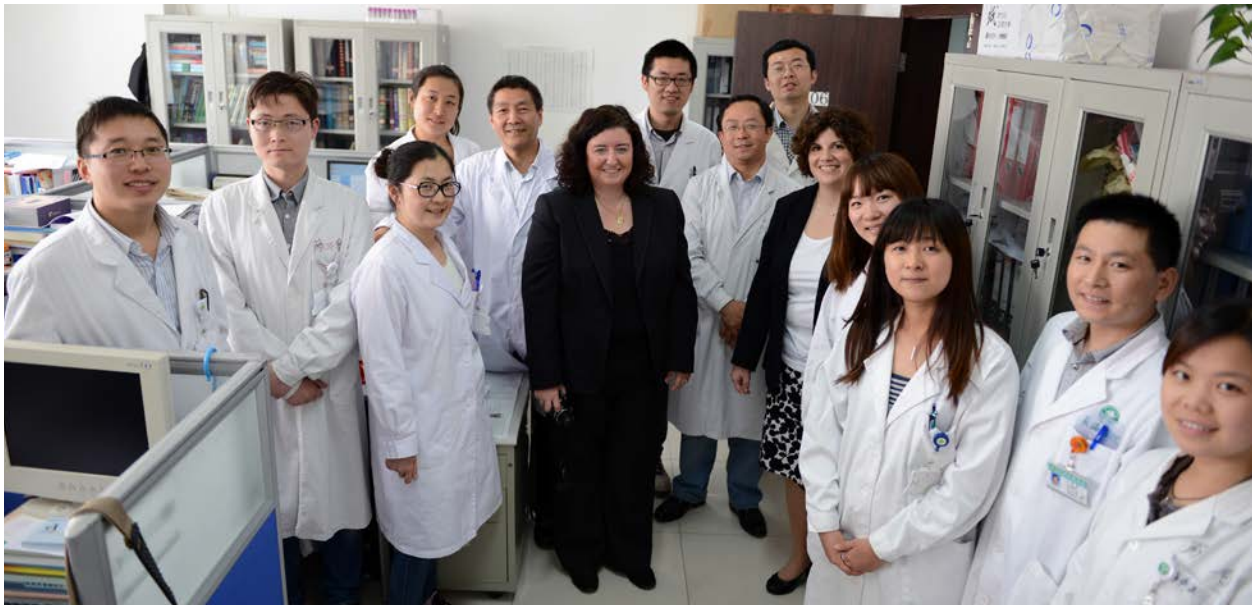
The Web site continues to be a primary tool by which varied constituents learn about the School of Pharmacy, with an average of 38,540 monthly users. PittPharmacy is active in social media and has a presence in Twitter, Facebook, YouTube, and LinkedIn.

The Communications Team achieved the following in FY14:

- Ten major print communications to the School of Pharmacy’s 6,100 stakeholders; a total of 30 print pieces were developed and produced by the Communications Team for more limited distribution. A move to electronic publications is occurring for both efficiency and effectiveness reasons.
- The Communications Group redesigned, re-formatted PittPharmacy, the School’s news magazine. The publication is now printed in color with updated layout intended to give broader appeal to our alumni, faculty, staff, students, donors and friends. Two issues were published during FY14: PittPharmacy Fall 2014 and PittPharmacy Spring 2014.
- The team collaborated to overhaul the School’s Web site with the goal to convey the dynamic range of programs and learning opportunities within the School and provide increased “branding.” The new site was published in sections over the year and will continue to be revised during FY15.
- The event notification process was improved to coordinate with the ePittPharmacy electronic news and information platform. Faculty, staff and students are able to submit and expand on news about the school. This electronic process also streamlines our most current news to outside media and assists in tracking awards, grants and promotions for data use in reports.

Extending Our Global Reach





Extending Our Global Reach

The School of Pharmacy is extending its global reach 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.

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.”

This section expresses the commitment of the School of Pharmacy to endorse the University’s emphasis on extending its global reach. Although this section of the annual report is new for FY14, the faculty and staff of the School of Pharmacy embraced the Global Vision that the University of Pittsburgh articulated in 2012.

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.**

GLOBAL REACH BY THE NUMBERS FOR FY14

During FY14:

- The School of Pharmacy engaged in partnerships with **24** international organizations on **6** continents, including Africa, Asia, Australia, Central America, and Europe. The agreements include:
 - **12** 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.
- **11** international visiting scholars studied at the School of Pharmacy.
- **14** P4 PharmD students participated in **15** rotations in **6** different countries at **8** different sites.
- **5 P1 and P2** students and **5 residents** also completed international rotations.
- **67** international students are enrolled in degree programs and comprise **12.9%** of our students: **5** PharmD students; **36** PhD students; **6** Master of Science students; **20** Non-Thesis Master of Science Students.

DEVELOPING A SUPPORTIVE INFRASTRUCTURE

During 2014, two administrative appointments were made to provide infrastructure for the School's growing international program.

- International Partnerships Coordinator: Shannon L. Young, MA
In this role, Shannon works with international institutions to formalize agreements for collaboration and to coordinate visits to the School of Pharmacy.
- Coordinator for Student International Experiences: Lauren Jonkman, PharmD, MPH
In this new role, Dr. Jonkman works to meet student demand for quality international learning opportunities and matches students with their interests and available sites. She also seeks out and develops new learning experiences for future Pitt Pharmacy students.

Both individuals assumed those responsibilities in addition to their primary roles. The School began a focused effort to increase and support global interactions for faculty and 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.

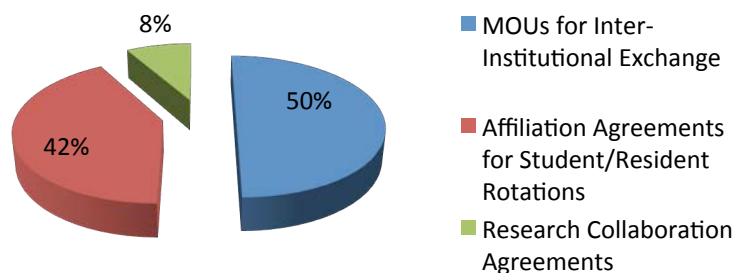
Key advances during the year include:

- Tripling the number of MOUs from 4 in FY13 to 12 in FY14. This growth illustrates our commitment to developing international programs and our efforts to identify partners who have shared goals.
New MOUs were signed with a variety of institutions in China, including Peking University Health Sciences Center in Beijing, Second Military Medical University and Changhai Hospital in Shanghai, and West China Hospital in Chengdu.
- The School hosted a delegation of 14 visitors from Yunnan Province in September 2013 who represented the Kunming Institute of Botany from the Chinese Academic of Sciences' State Key Laboratory of Phytochemistry and Plant Resources and the Botanical Society of Yunnan.
In addition to touring the Drug Discovery Institute, the delegates participated in a Memorandum of Understanding signing ceremony in the stunning China Nationality Room in the Cathedral of Learning.
- 10 international affiliation agreements were signed/maintained for the student and resident rotations.

- 2 research agreements were signed for specific faculty members/ students to engage in collaborative research with an international site.

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 FY14



FY14: Agreements with International Organizations

Institution	Location
Australia	
Austin Health Hospital	Perth, Australia
Sir Charles Hospital (Nedlands)	Nedlands, Australia
Britain	
King's College	London, United Kingdom
China	
Botanical Society of Yunnan	Yunnan Province, China
Changhai Hospital	Shanghai, China
Fudan University	Shanghai, China
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

Institution	Location
Sun Yat-Sen University	Guangzhou, China
West China Hospital	Chengdu, China
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
Scotland	
HCDumfermline – Douglas Street	Dunfermline, Scotland
South Africa	
Kwazulu-Natal Research Institute for TB-HIV	Durban, South Africa

PROGRAMS

Summer Research Program

Initiated 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.

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.

If deemed successful, the program will be extended to domestic and other international institutions.

Clinical Training Program

In collaboration with organizations in Singapore, the School of Pharmacy has developed a 12-month fee-based clinical training program similar to a PGY2 speciality clinical pharmacy residency.

Under the leadership of Professor 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 has received a scholarship from the Singapore Ministry of Health to support her for one year. The goal is to extend this fee-based training program to other organizations in Singapore and to other countries once the School establishes the appropriate infrastructure to support the program.

Planned future clinical scholars. Exchanges have been arranged for FY15 for clinical pharmacists from Fudan University and Peking University.

PharmD Student International Learning and Experiences

Interest in international pharmacy experiences has continued to grow among our PharmD students. Students seek opportunities in global health (underserved patients), international pharmacy practice (developed countries), and research. Their goals are diverse and include passion for serving communities, inquisitiveness to learn about health care in other nations through both research and practice, and an adventurous spirit to become global citizens.

In FY14, a total of **20 PharmD** students were the direct beneficiaries of the growing number of international partnerships.

- 14 PharmD students completed 15 P4 APPE rotations;
- 1 P3 student on a Howard Hughes Fellowship research experience in Durban, South Africa
- 1 P1 student to Cap Haitien, Haiti
- 4 P2 PharmD to Shanghai

Examples of the student work include:

- The student who went to Cap Haitien, Haiti worked at St. Anthony’s Clinic to develop a medication formulary for the clinic that would meet the needs of the population and aid in obtaining donations for needed essential medications.
- Students evaluated differences between clinical pharmacy practice at Second Military Hospital Pharmacy and Pharmacy School in Shanghai and UPMC Presbyterian Hospital.

The number of P2 students (six) is an increase from two P2 students who studied internationally in FY13. In FY13, two students attended a global conference on Drug Development and Traditional Chinese Medicine (TCM) at Shanghai Jiao Tong University School of Pharmacy. Those students also had observerships in two Chinese hospitals—one a westernized hospital and one that uses TCM. Students focused their research on the comparison of outpatient pharmacy practice in a TCM practice to a typical US community pharmacy.

Howard Hughes Medical Institute Program

In FY14, P3 student Lauren Cirrincione received a 10-week summer research fellowship with KwaZulu-Natal Research Institute for Tuberculosis and HIV (K-RITH) in Durban, South Africa. K-RITH is a program offered as a collaboration 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.

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 FY13 (three students); in FY14, five students completed the elective.

Global Health Area of Concentration

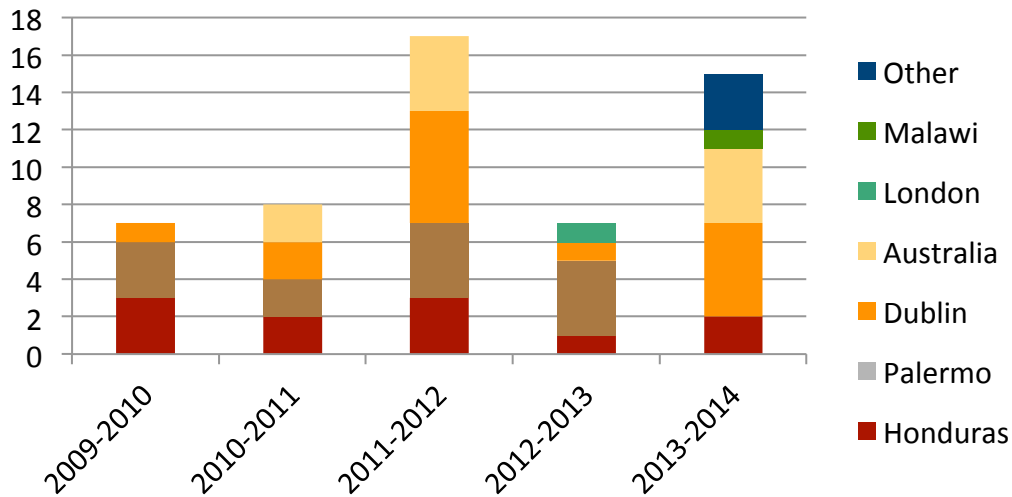
In FY14, a total of 14 students were enrolled in the Global Health Area of Concentration (GH-ARCO). The co-directors of the GH-ARCO are Sharon Connor, PharmD and Lauren Jonkman, PharmD. The first 2 PharmD students in the ARCO graduated in the class of 2014, each having participated in at least one global health APPE rotation and each having completed a mentored independent research project. The next graduating class of ARCO students includes eight students, of which six will complete their ARCO projects in international global health settings in FY15.

International Advanced Pharmacy Practice Experiences (APPEs)

In FY14, 14 P4 students completed 15 separate international advanced pharmacy practice rotations. Three students arranged international rotations using personal contacts (Scotland and Ghana). The remaining rotations are long-lasting School of Pharmacy partnerships.

- Farmer’s Pharmacy in Dublin, Ireland: 3 students
- UPMC Beacon Hospital in Dublin, Ireland: 2 students
- Shoulder to Shoulder Pittsburgh-San José, San José del Negrito, Honduras: 2 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
- Accra, Ghana community pharmacy: 1 student
- Dunfermline, Scotland hospital pharmacy: 2 students

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 FY14, the PGY2 resident implemented a quality improvement program in Honduras to identify and treat all children in the community with moderate to severe asthma. The program relies on a community health nurse to visit families monthly to provide education and medicines with the goal of improving asthma control in a rural community.

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
- 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 PGY1 pharmacy practice resident
- INMED in Wenchi Methodist Hospital, Ghana: 1 UPMC St. Margaret PGY1 pharmacy practice resident

International Visiting Scholars

In total, the School of Pharmacy hosted 11 international visiting scholars at differing levels of training during FY14. In FY14, 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.

FY14 Visiting Scholars

Name	Home Institution	Hosted By
Hua-Lin Cai, PhD	The Second Xiangya Hospital of Central South University	Dr. Jeffrey K. Yao's Lab
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
Sharleen Ibrahim	King's College London	Dr. Janice L. Pringle's Lab
Suhyeon Kim, PhD	World Class Institute of the Korea Research Institute of Bioscience and Biotechnology	Dr. Song Li's Lab
Haibin Liu, MS	Sun Yat-Sen University, China	Dr. Xiang-Qun Xie's Lab
Wan Jin Sia, BS	National University of Singapore	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
ShuHui Yeang, BS	National University of Singapore	Dr. Amy Seybert
Zhihui Zheng, PhD	North China Pharmaceutical Group Corp	Dr. Wen Xie's Lab

International Invited Presentations

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

- **9** international research presentations in **4** countries.
 - 3 at universities or hospitals
 - 6 at conferences or academies
- **3** international education presentations in **1** country.
 - 2 at universities or hospitals
 - 1 at a conference

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, and students 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:

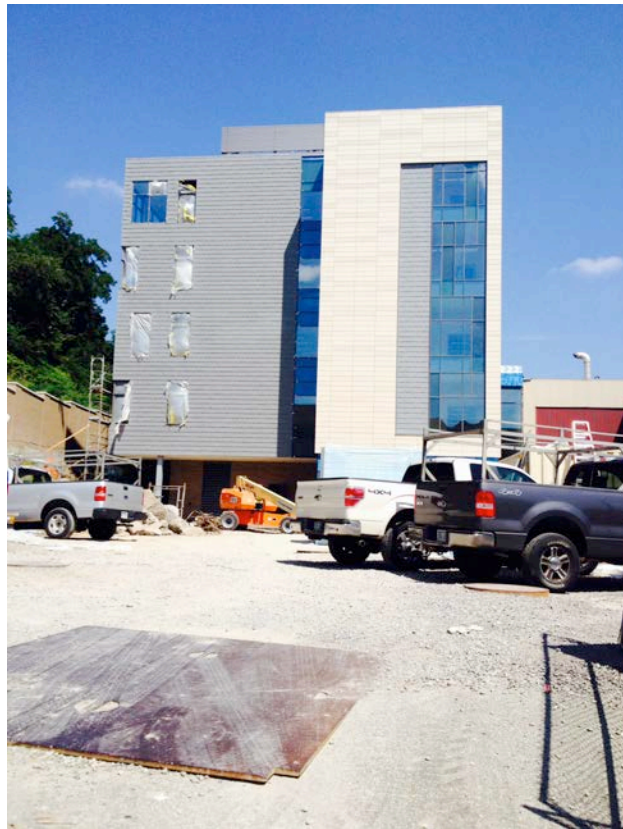
- Consistently Deliver Excellence in Pharmacy and Pharmaceutical Education;
- Make Contributions of Impact to Health through Pioneering Research;
- Build Community Health through Pharmacist-Provided Care of Patients in the Community, in Institutions, and During Transitions of Care;
- Extend Our Global 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. This time, we chose to make a few bold statements that could be easily remembered. The outline of our Long-Range Plan 2018 is attached and includes the major themes within the strategic priority areas.



The images show Salk Hall plus phases of construction on Salk Pavilion, the new research facility.

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.

*Additional details will be defined during FY15.

**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.
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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.
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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.
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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.
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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.
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Long-Range Plan 2006—2012—2018

Educating the Next Generation of Practitioners and Scientists

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

Adopted 2005



PHARM D PROGRAM

The School of Pharmacy will:

Excellence

1. Meet or exceed the standards for accreditation by ACPE, earning accreditation for the maximum interval of six 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

4. Sustain a culture of innovation and scholarship in teaching and assessment.
 5. Develop 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

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.
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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.

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

Adopted 2005



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.

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



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.

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



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

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.