

ANNUAL REPORT 2015–2016



PittPharmacy

Fall 2016

Dear Friends,

As I look at Thomas Friedman's latest book, "Thank You for Being Late: An Optimist's Guide to Thriving in the Age of Accelerations," I focus on the word, "accelerations." Acceleration (singular) seems a fitting word to describe the world I find myself in daily; in particular, it describes what is happening at our Pitt School of Pharmacy. And I could not be happier about it!



As we put the finishing touches on this annual report, I am flooded with the sense of pleasure and pride. A combination of vision, hard work and perseverance has put PittPharmacy in a significant and important place in the world of pharmacy, health care, and education.

Take a minute to name the top six nationally important areas that are relevant to pharmacy. I am wondering if we identified the same six: the opiate crisis, "big data"/analytics, pharmacogenetics, pharmacy care for people in communities particularly those with chronic diseases, innovations in educational approaches, and team-based patient care/interprofessional education. A seventh is the cancer "moon shot."

PittPharmacy has a significant story to tell in each of these areas. The numbers and graphs in this report show great data and demonstrate excellence. What they don't tell is the incredible impact we are having on each of the above areas and the stories of innovation and discovery. I refer you to issues of PittPharmacy, the School of Pharmacy magazine, for some of those stories. We have described some of the efforts we have taken to address the opiate crisis in Pennsylvania. In "big data/analytics," we have described "Target Hunter" and our incredible computational drug discovery program, though we have not shared work on big data for patient outcomes. The story of RxPedition, our award-winning and innovative semester-long educational game that immerses students in the process of drug development appeared recently. An upcoming issue will focus on a 3D-screening model for cancer therapeutics as well as the work in pharmacogenetics and an educational innovation for making genetics personal. Each story is only a glimpse of the outstanding work and many stories that have yet to be told.

Our progress is being achieved by a diverse group of people who are inclusive and open to new ideas. The coming year is the University's year of Diversity and Inclusion, when we will be strategically developing programs in order to become more diverse and inclusive and we will have a story about that.

Now as I see the title of Thomas Friedman's recent book title, I think if I were writing a book, I might title it, "Thank You: Together, We Have Accelerated our Innovations for Pharmacy."

Hail to Pitt!

Patricia D. Kroboth, Dean

Table of Contents

	Page
Leading Pharmacy Education	
<hr/>	
Education by the Numbers for FY16	2
PharmD Program	2
Residency Program	3
Graduate Program	3
The PharmD Program	4
Increasing the Value of a PharmD Education: Getting to Expert Faster	4
Increasing the Value of a PharmD Education: Personalizing Education Students	7
Graduating Class of 2016	13
Graduating Class of 2016	16
Professional Development: Educating the Next Generation of Practitioners	20
Residency Program: Educating the Next Generation of Practitioners	21
Graduate Program: Educating the Next Generation of Scientists	25
Graduate Program in Pharmaceutical Sciences Details	25
Postdoctoral Fellows	45
Advancing Human Health Through Research	
<hr/>	
Research by the Numbers for FY16	1
Research Funding	1
Research Overview	3
Center for Pharmacogenetics	3
Center for Clinical Pharmaceutical Sciences	10
Computational Chemical Genomics Screening (CCGS) Center	18
Pharmaceuticals Group and Microbicide Clinical Trials Network	21
Central Laboratory Core	
Center for Education and Drug Abuse Research (CEDAR)	24
Research Details	26
Research Recognition of Faculty	35
Enhancing the Health of the Communities in Which We Live and Work	
<hr/>	
Patient Care by the Numbers for FY16	1
Community Leadership and Innovation in Pharmacy Center	3
University Diabetes Care Associates	3
Program Evaluation Research Unit (PERU)	6
The Grace Lamsam Pharmacy Program for the Underserved	8
UPMC Ambulatory Care	12
UPMC St. Margaret Family Medicine	14
Transitions of Care	18
Pharmacy Innovation Program	20
Community Pharmacy Partnerships	22
Hospital-Based Programs	25
UPMC Palliative and Supportive Institute	25
UPMC Pharmacy Transplant Group	26
UPMC Pharmacy Critical Care Group	36
UPMC Infectious Diseases and Antibiotic Management Program (AMP)	42
Health System Formulary Management and Drug Use Policy	44
Geriatrics (Benedum and Shadyside Senior Care Institute) Program	47
UPMC Oncology (Magee)	49
Pittsburgh Poison Center	50
Pharmacogenomics	50

Securing an Adequate Resource Base

Resources by the Numbers for FY16	1
Financial Resources	2
Budget	2
Institutional Advancement	2
Physical Facilities	4
The Resource of People	4
Faculty	4
Alumni and Alumni Engagement	8
Board of Visitors	10
Enhancing Our Resource Base Through Efficiency and Effectiveness	11
Staff	11
Information Technology	11
Communications	11

Extending Our Global Reach

Global Reach by the Numbers for FY16	1
Global and International Partnerships	2
Partnerships	2
Programs	4
PharmD Student International Learning and Experiences	5
Global Health Residency and Rotations	7
International Visiting Scholars	7

Long-Range Plan 2020

Long-Range Plan 2020	
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Leading Pharmacy Education





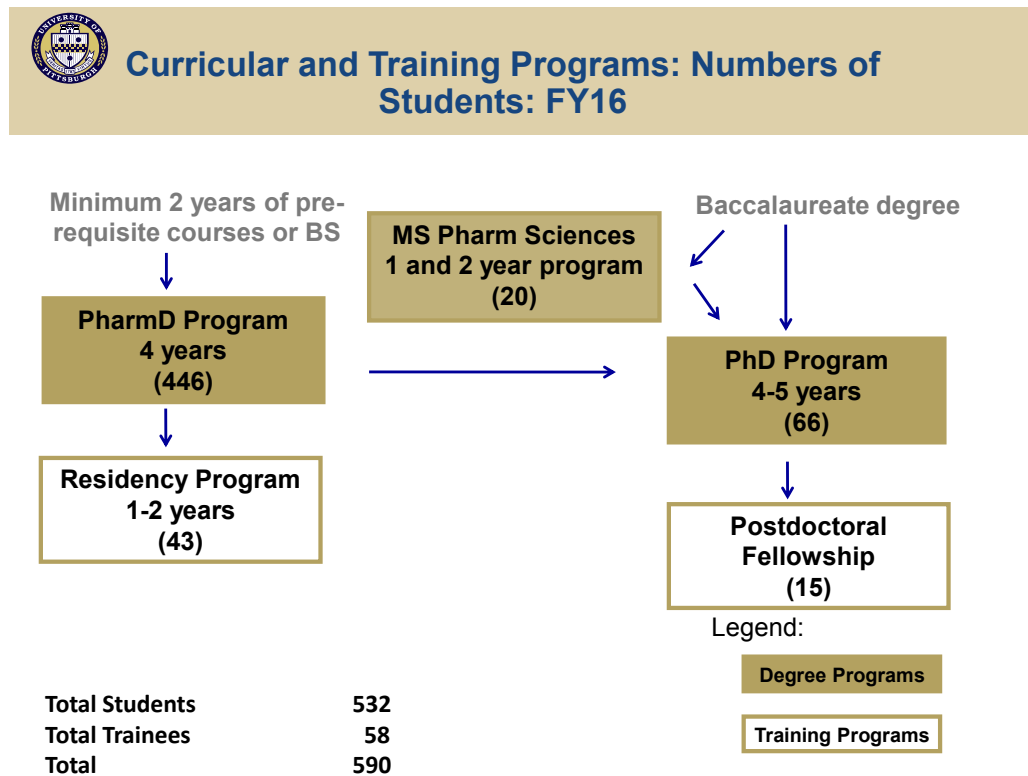
Leading Pharmacy Education

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

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

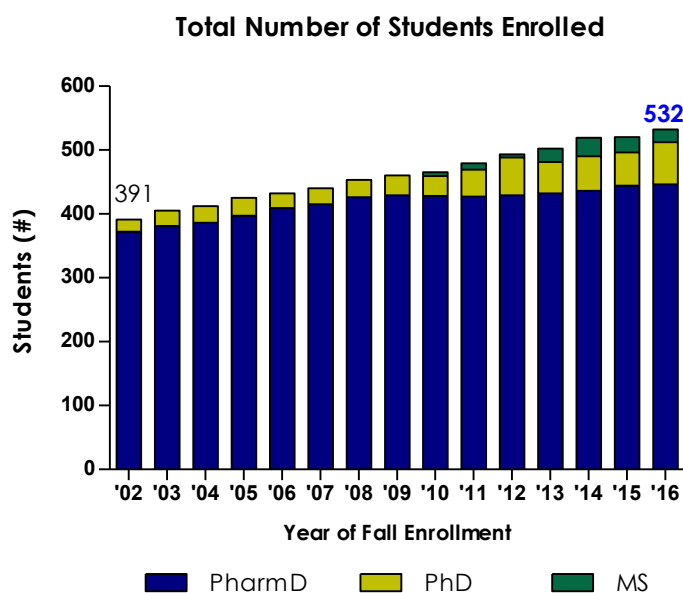
- Personalizing Education and
- Getting to Expert Faster.

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



EDUCATION BY THE NUMBERS FOR FY16

- Our total number of students in degree granting programs has reached the all-time high of **532**. The student body is 23% higher than a decade ago and 36 % higher than FY02.
- **80** full-time faculty members educate students in the PharmD program and graduate programs.



PharmD Program

In FY16:

- **115** students matriculated for the PharmD class of 2020; average SAT score of **1430** and GPA and PCAT scores of 3.60 and 85%, respectively.
- **3.1** –The number of applicants per seat through open admission.
- **221** scholarships totaling **\$511,354** were awarded to **186** PharmD students.
- University of Pittsburgh pharmacy student organizations won **9** national or regional awards.
- **84** PharmD students presented **52** posters at **3** national and regional meetings.
- **314** pharmacists in **23** states and **9** countries provided **756** APPE rotations for **108** fourth professional year students.
- **28** students in the class of 2016 completed APPE rotations in the Indian Health Service and **18** completed international rotations.
- **108** students in the class of 2016 received PharmD degrees.
- **83** students elected to receive the Bachelor of Science in Pharmaceutical Sciences after their second professional year.
- **82 (25%)** of 332 students in the P2, P3, and P4 years were enrolled in Areas of Concentration.

- **20** P4 students had international APPE rotation experiences and **16** P1, P2, and P3 students had international experiences.
- **32** students completed APPE rotations at the Indian Health Services.

Residency Program

In FY16:

- **43** residents (**28** PGY1 and **15** PGY2) came from **21** schools of pharmacy in **14** states.
- Our **13** programs were in partnership with **15** institutions/entities.
- **27** residents presented their research results at national or regional meetings.
- **21** residents participated in training programs to enhance their teaching and clinical precepting—**13** residents completed the “Mastery of Teaching Program” and **8** completed “Orientation to Learning and Teaching Program.”
- **14** residents were accepted into PGY2 specialty residency programs and **2** were accepted into a fellowship programs.
- **2** residents accepted faculty positions at schools of pharmacy.
- **6** residents achieved board certification as pharmacotherapy specialists during their residencies.
- **15** PGY2 residents accepted a clinical position at an academic medical center, 4 of which were at the UPMC Health System.

Graduate Program

In FY16:

- **66** full-time students were enrolled: **48** PhD students; **14** Master of Science students; **4** Non Thesis Master of Science students.
- **25** received degrees in pharmaceutical sciences; **8** PhD students; **12** Master of Science students; **5** Non Thesis Master of Science students.
- **27% (13/48)** of the full-time PhD students are U.S. citizens or permanent residents.
- **47% (27/48)** of the full-time PhD students have degrees from schools of pharmacy; **7 of 58 (12%)** have PharmD degrees.
- **11** students received regional or national awards for excellence in research.
- **54** peer-reviewed manuscripts or book chapters were published by graduate students.
- Graduate students gave **44** presentations at regional and national scientific meetings.
- **15** postdoctoral fellows were engaged in research in School of Pharmacy laboratories.

BS IN PHARMACEUTICAL SCIENCES

In April 2016, 83 students elected to receive the Bachelor of Science in Pharmaceutical Sciences at the end of their second professional year.

THE PHARM D PROGRAM

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

FY 16 REAL PATIENT CARE EXPERIENCES: INTRODUCTORY PHARMACY PRACTICE EXPERIENCES (IPPEs)

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

- 33 preceptors supervised 114 P1 students (Class of 2019).
- 79 preceptors supervised 113 P2 students (Class of 2018).
- 105 preceptors supervised 114 P3 students (Class of 2017).

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

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

SilverScripts Program Impact during FY16

**P2
IPPE Patient
and
Impact on**

SilverScripts Spring 2016 P1 Students		
Comprehensive Medication Review		151
Targeted Medication Review		13
Referrals for Vaccination		63
Blood Pressure Assessment		252
Total Encounters		479
Drug Therapy		
Drug Therapy Problems (DTPs) Identified	Unnecessary Drug Therapy	23
	Needs Additional Drug Therapy	58
	Needs Different Drug Product	11
	Dosage Too Low	14
	Adverse Drug Reaction	26
	Dosage Too High	4
	Noncompliance	53
Referral to other health care provider		39
Total # Drug Therapy Problems Identified		189

**Community
Interactions
Collective
Patients**

Year	# Students	# Patient Encounters	# Drug Therapy Problems Identified	# Interventions
2016	114	6,762	3720	4,006

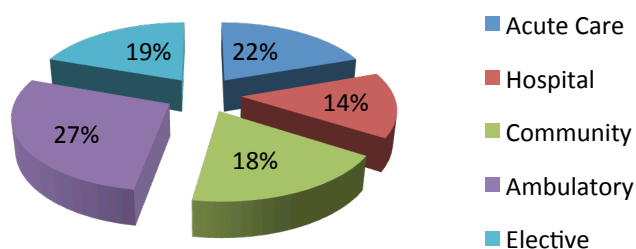
REAL PATIENT CARE EXPERIENCES: ADVANCED PHARMACY PRACTICE EXPERIENCES (APPEs)

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

P4 Class Patient Impact FY16	
Patient Interactions	18,346
Drug Therapy Problems Identified	11,886
Drug Therapy Recommendations	13,090
Adverse drug events identified	1,485
Adverse drug events averted	665

In FY16, 353 preceptors supervised 109 P4 students during 763 five or six-week rotations. The types of proportions of rotations are shown in the pie chart below.

APPE Distribution by Rotation Type



Increasing the Value of a PharmD Education: Personalizing Education

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

Long Range Plan 2018

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

- 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)

In academic year 2015-2016, six Areas of Concentration were offered. Eighty-two (82) or 25% of 332 students in the P2, P3 and P4 years were enrolled in Areas of Concentrations.

- Eleven students in the ARCO-Global Health (2 P2, 4 P3, 5 P4)
- Eleven students in the ARCO-Research (1 P2, 7 P3, 3 P4)
- Twelve students in the ARCO-Pharmacy Business Administration (6 P3, 6 P4)
- Eight students in the ARCO-Pediatrics (2 P3, 6 P4)
- Twenty students in the ARCO-Community Leadership, Innovation, and Practice (10 P3, 10 P4)
- Twenty students in the ARCO-Pharmacotherapy Scholars (10 P3, 10 P4)

B. SPECIAL TOPICS

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

During FY16, 94 students were enrolled in Special Topics courses.

C. STUDENT PRESENTATIONS AT NATIONAL AND REGIONAL MEETINGS

84 PharmD students presented 52 posters at 3 national and regional meetings in FY 16.

Student Presentations at National and Regional Meetings

American Society of Health-System Pharmacists Midyear Clinical Meeting	
Primary Author	Poster Title
Anthony Albert (P4) Aaron Devanathan (P4) Christina Xia (P4)	Comparative effectiveness analysis of single and combination therapies for pulmonary arterial hypertension in a tertiary healthcare system
Elizabeth Crish (P4)	Evaluation of the implementation of delirium screening and a non-pharmacologic delirium prevention protocol in intensive care units
Kimberly Frantz (P4)	A unique institutional program for evaluation of innovative medication use in a pediatric tertiary care center
Hannah Greivenkamp (P4)	Health education and recovery together (HEART): implementation of health education classes in substance abuse rehabilitation
Karen Hoang (P4)	Development of an inhaler technique assessment tool for pharmacist incorporation into primary care
Brittany Jordan (P3)	Predictors on medication non-adherence behaviors in older adults

Cameron Ninos (P4)	A description of the etiologies of liver cirrhosis and the use of Vitamin K in a hospitalized cohort at an academic medical center
Briana Thompson (P4)	Results of drug-drug interaction evaluations for patients starting direct acting antiviral therapy for Hepatitis C: implications for treatment
Meera Vachhani (P4)	1. Comparison of normal saline and plasmalyte for fluid resuscitation in septic shock 2. Comparative safety analysis of single and combination therapies for pulmonary arterial hypertension in the tertiary healthcare system
Ryan Winstead (P4) Neil Turco (P4) Cassandra Bloor (P4) Meera Vachhani (P4)	The comparative safety of PAH therapy analysis
Sophia Yang (P4)	Assessing impact of admission medication discrepancy data on the predictive validity of the LACE Index to identify pharmacist intervention opportunities of care
Alexander Yohe (P4)	Health Education and Recovery Together (HEART): implementation of health education classes in substance abuse rehabilitation
Kyle Zacholski (P3)	Raising awareness about contraceptive use in all female student organizations
Daisy Zhu (P3)	Optimization of the advanced clinical evaluation program for ambulatory oncology infusion
American Pharmacists Association Annual Meeting	
Primary Author	Poster Title
Brandon Barry (P2)	An evaluation of successful point-of-care testing implementation by community pharmacists in Pennsylvania
Emily Bobrsynski (P3) Taylor Buck (P3) Jennifer Fever (P3)	The Medication Access and Adherence Tool (MAAT): an opportunity to improve medication adherence through targeted interventions by community pharmacists
Maeghan Moss (P3) Kaitlyn Zeis (P3)	Impact of the Appointment-Based Model (ABM) on influenza vaccination rates in a community pharmacy
Daniela Policicchio (P3)	Uncovering asthma management needs in college-age students
Christine Ross (P3)	The Medication Access and Adherence Tool (MAAT): an opportunity to improve medication adherence through targeted interventions by community pharmacists
Emily Steltenpohl (P3)	An evaluation on point-of-care testing implementation by community pharmacists in Pennsylvania
Brittany Stocks (P3)	Exploring community pharmacists' preparedness in dispensing medications for pets
Taylor Watterson (P3)	Implementing medication synchronization in a chain pharmacy: the role of pharmacy interns
Pennsylvania Pharmacists Association Mid-Year Conference	
Primary Author	Poster Title
Allyson Seitz (P2) Kelsey Collett (P2) Lauren Shirley (P2) Carly Parris (P2)	Patient care impact of SilverScripts program in elderly population

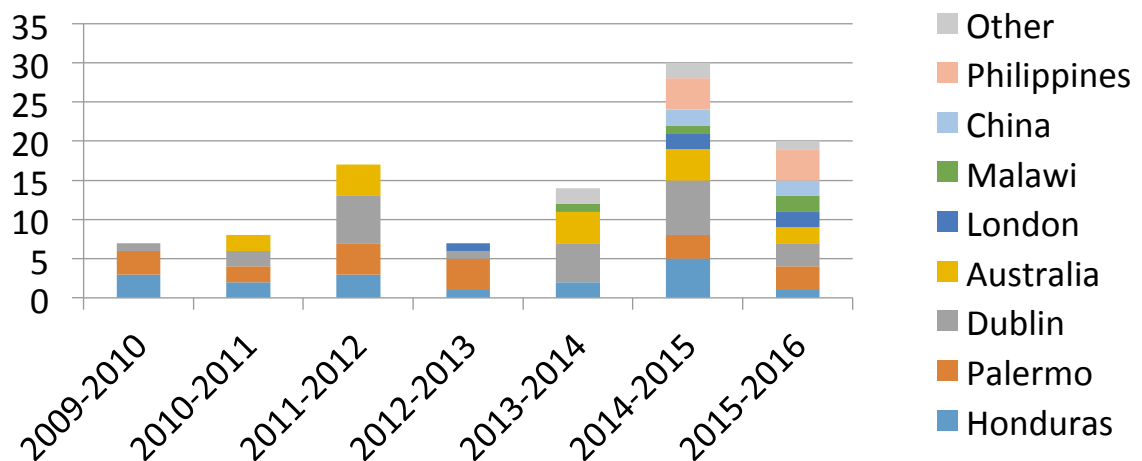
Alexa Hospodar (P2) Kelsey Haller (P2) Abby Meyer (P2)	Determining anticoagulant and antiplatelet therapy in atrial fibrillation patients undergoing PCI: weighing stroke and bleeding risk
Carly Beck (P2) Kasey Martik (P3)	UPMC St. Margaret Free Medication Program
Rebecca Wytiaz (P2)	The need for adolescent-geared medication adherence apps
Kayla McFeely (P3) April Wolski (P3)	Expanding patient access to hormonal contraceptives through pharmacist-led initiatives
Serena Lamping (P3) Rachel Gribbin (P3)	Community pharmacist's role in supporting persons with Alzheimer's disease
Alexandria Lavella (P3)	Expanding care to the underserved while maximizing a limited budget
Scott Bechtel (P3) Kimberly Lor (P3) Alyson Sapirstein (P3)	A retrospective analysis of statin use based on ASCVD risk in adults
Karen Quach (P2)	Medication-related barriers identified by patients in an urban community health center after hospital discharge
Kaitlyn Burkett (P1) Wenqi Chen (P1) Rami El Chammas (P1) Ann McAndrew (P1) Huilin Zhang (P1) Shannon Ye (P1)	The need for clinical pharmacists in pediatric oncology clinics
Jenn Fever (P3) Emily Bobrzynski (P3) Christine Ross (P3)	The Medication Access and Adherence (MAAT): an opportunity to improve adherence through targeted interventions by community pharmacists
Maeghan Moss (P3) Kaitlin Zeis (P3)	Impact of the Appointment-Based Model (ABM) on influenza vaccination rates in a community pharmacy
Daniela Policicchio (P3) Taylor Buck (P3)	Uncovering asthma management needs in college-aged students
Taylor Watterson (P3)	Implementing medication synchronization in a chain pharmacy: the role of pharmacy interns
Emily Steltenpohl (P3) Brandon Barry (P2)	An evaluation of point-of-care testing implementation by community pharmacists in Pennsylvania
Brittany Stocks (P3)	Exploring community pharmacists' preparedness in dispensing medications for pets
Doreen Foy (P2) Stephanie Tchen (P3) Carolyn Ubinger (P3) Brenda Fuh (P3)	Integrating interprofessional electives into the PharmD curriculum
Heather Johnson (P2) Julie Mandel (P2) Elyse Tomaszewski (P2)	Evolving roles for student leadership in the SilverScripts program
Aleta Figurelli (P3)	Pharmacist-prescribed hormonal contraceptives: current practice and opportunities
Olivia Marchionda (P2) Nicolette Diehl (P2)	Pharmacy and nursing students collaboration at SilverScripts
Brittany Lewis (P2)	Patient medication assistance programs at the Birmingham Free Clinic

Kathryn Ching (P2) Mary Grace Fitzmaurice (P2)	Using STOPP/START criteria when prescribing for the elderly: the relevance of mandatory counseling
Abigail Kraus (P2) Alyssa Faipler (P2) Allyson Kraft (P2)	Get Smart: student pharmacists' implementation in Allegheny County
Olivia Goss (P2) Kathleen Dillon (P2)	Implementing medication synchronization programs into pharmacy practice to increase medication adherence, health outcomes, and pharmacy star ratings
Hilare Kimmel (P2)	E-Cigarettes as smoking cessation aids in patients with schizophrenia
Marissa Badzik (P2)	Engaging community pharmacists to improve breastfeeding rates
Alexis Giles (P1) Esther Tse (P1) Richard Jones (P1) Collin Wolf (P1) Katherine Halza (P1) Philipp Kappes (P1)	CareVan as a model for pharmacists providing care to PA underserved populations
Hayley Fedorek (P3)	Addition of group smoking cessation therapy to individual counseling in a substance abuse treatment facility
Justin Saver (P2)	Rx-to OTC switch of an antimigraine drug: A label comprehension pilot study
Harvey He (P3)	Measuring the impact of computerized provider order entry rules on formulary compliance, prescriber action, and economics

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 20 students had international APPE rotation experiences, more than double the number the previous year. A total of 32 students performed rotations at the Indian Health Services.

P4 International Rotations FY10 – FY16



Locations of the P4 rotations and students who participated during FY 2016

- Sir Charles Hospital in Australia (2 students, Kelsey Moss and Kelly Yelenic).
- Malawi Children's Village in Malawi (2 students, Elena Schaller and Ryan Winstead).
- Shanghai Hospital in Shanghai, China (2 students, Meichang Wang and Fengyee Zhou).
- ISMETT in Palermo, Italy (3 students, Emily Smith, Briana Thompson and Jennifer Zhao).
- Farmer's Pharmacy in Dublin, Ireland (3 students, Lucetta Pontiff, Carrie Recker and Gina Stefan).
- Hombro a Hombro, Honduras (1 student, Emily Linville).
- Philippine general Hospital in Manila, Philippines (4 students, Tyler Halfhill, Alyssa Kunkel, Katlyn Grossman and Sophia Yang).
- King's College in London, England (2 students, Leah Miller and Georgina Waldman).
- Faculdade de Farmacia, Universidade de Lisboa in Portugal (1 student, Valerie Nolt).

For the first time this past year, 9 students (4 P1s and 5 P2s) travelled to Namibia for a spring break experience to build relationships with the University of Namibia. Before leaving, students participated in a rigorous preparatory course designed to ensure that students were well aware of the key principles in global health, determinants of health, historical context for care in Namibia, and tuberculosis. During the course of their 1 week experience, students worked with P4 Namibian pharmacy students in their tuberculosis clinical rotation, sat in on classes throughout the professional program, and shadowed interviewed recent graduate pharmacist interns at Windhoek Central Hospital. The experience culminated in a joint presentation for faculty and students at the University of Namibia and a celebration of the relationship between the 2 schools. This experience will continue to be offered twice annually for PharmD students at Pitt.

Sixteen P1, P2, and P3 students had international experiences, 123 of which were for credit; 4 were through IPSF.

E. STUDENT PROFESSIONAL DEVELOPMENT

The Career Learning and Mentoring groups, established in FY14, were extended in FY16 to now include all P1, P2 and P3 students, thus reaching the goal for advising all pre-APPE students. Each year groups of six P1 students are added to the advising groups of P2 and P3 students assigned to faculty advisors, who work with the same students throughout the years of the curriculum. The process creates a community of learners and near-peer mentors within each Career Learning and Mentoring group.

Advising and career development are key to the School's goal of personalizing education. The tradition of using portfolios to demonstrate achievement was established in the 1990s. Each student builds an assessment portfolio using the customized e-portfolio platform to show integration of learning across courses and progressive development across the curriculum. 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.

Students also create a professional presentation portfolio as they approach graduation and prepare for interviews; students use the same platform. 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.

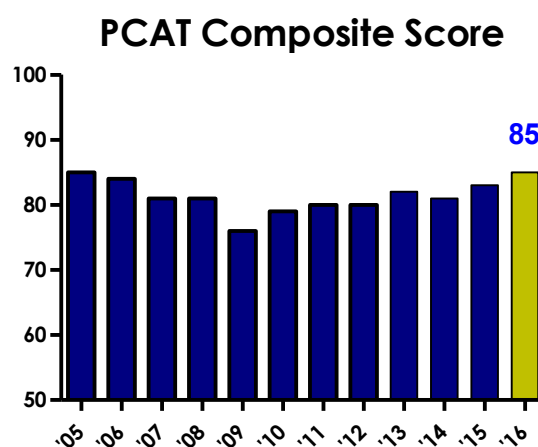
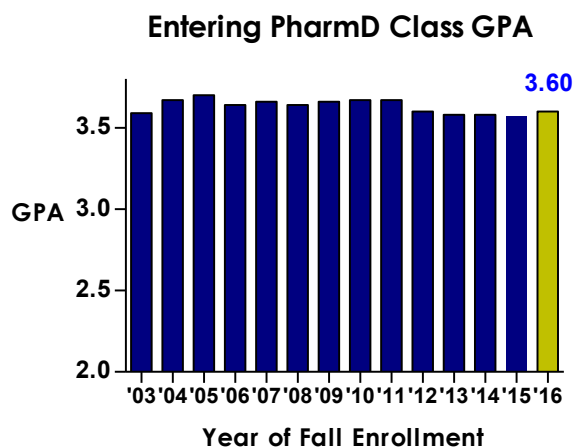
Through the efforts of the Curriculum Committee, the faculty evaluates all courses over a cycle of four years. Thus, each year one fourth of the courses are subjected to an in-depth course evaluation process. We have expanded our use of curricular mapping for curricular design, scheduling of courses,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

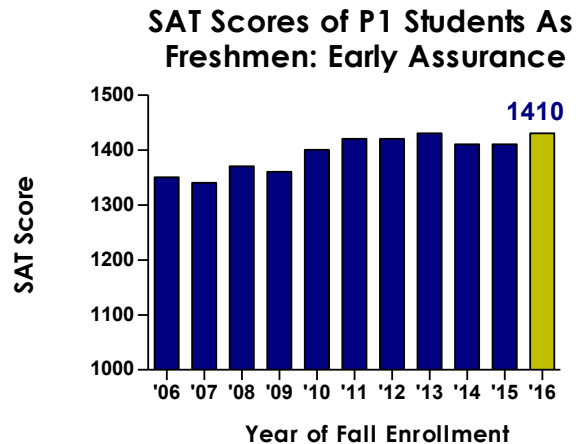
Students

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.

90% of our full-time faculty participated in interviewing applicants. Their work resulted in the selection of an excellent group of 115 students for the class of 2020.





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

During FY16, we recruited the class of 2020 for fall enrollment.

- Early assurance admission to the class of 2020
 - 53 students applied for PharmD program after sophomore year.
 - 55 were interviewed (2 withdrew).
 - 39 were qualified and were offered admission.
 - 39 accepted the offers.

- Open admission to the class of 2020
 - 338 applied to the PharmD program.
 - 142 were interviewed.
 - 101 were offered admission.
 - 76 accepted the offers.

Data for entering classes over time are summarized in the table below. Of the students in the class of 2020, 31% are men and 69% are women (37% and 63%, respectively, in the class of 2019); and 5% are from an underrepresented minority (6% in the class of 2019).

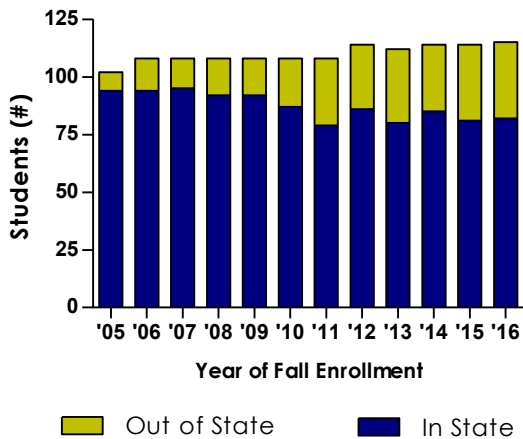
First-Year (P1) Class Enrollments 2002-2016

Fall Term	Residency Status		Application Pathway*					Students with 4-Year Degree (% of class)
			Early Assurance	Educational Institution or Type for Students Accepted through Open Admission				
	PA (%)	Non-PA (%)		Pitt	Community College	AAU-member Institution	Other	
2002	92	8	37	37	5	5	12	16
2003	86	14	36	38	3	7	18	13
2004	85	15	52	28	0	4	13	15
2005	92	8	60	28	0	8	6	13
2006	87	13	50	44	1	3	10	11
2007	88	12	42	53	0	4	9	15
2008	86	14	47	42	0	2	17	19
2009	85	15	51	39	0	4	11	19

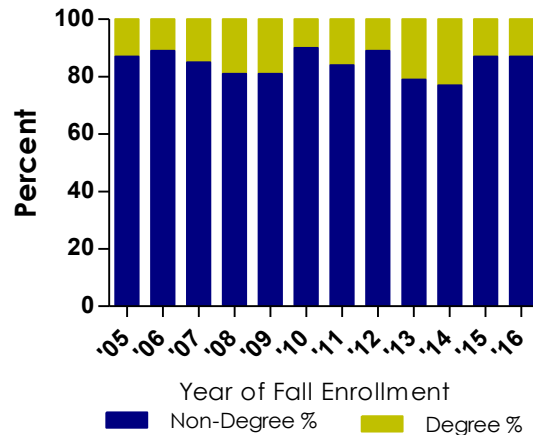
2010	81	19	47	51	0	2	9	11
2011	73	27	49	44	0	5	9	16
2012	77	23	54	46	0	1	11	8
2013	71	29	45	50	1	7	9	21
2014	75	25	43	46	0	10	14	23
2015	71	29	46	56	1	5	6	*15
2016	69	31	39	61	0	4	11	13

*Total across Applications Pathway sums to the total students enrolled

P1 Students: In State/Out of State



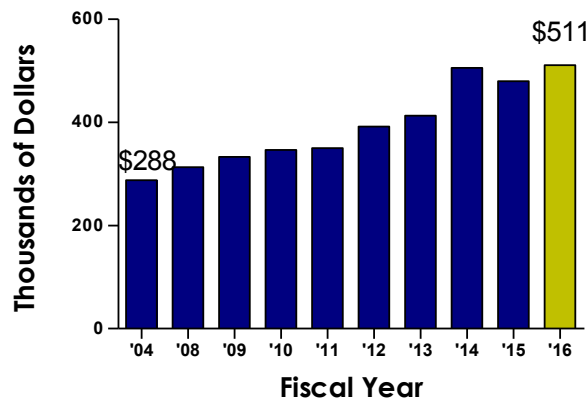
P1 Students: Previous Degree



SCHOLARSHIP SUPPORT FOR STUDENTS

The School of Pharmacy awarded scholarships in the fall of 2015 (FY16) that were 178% more than the amount awarded FY04 as shown in the figure below. The distribution to P2 through P4 students is shown in the next figure. More funding was awarded to P1, P2, and P3 students than in previous years.

Scholarship Awards from Pitt Pharmacy

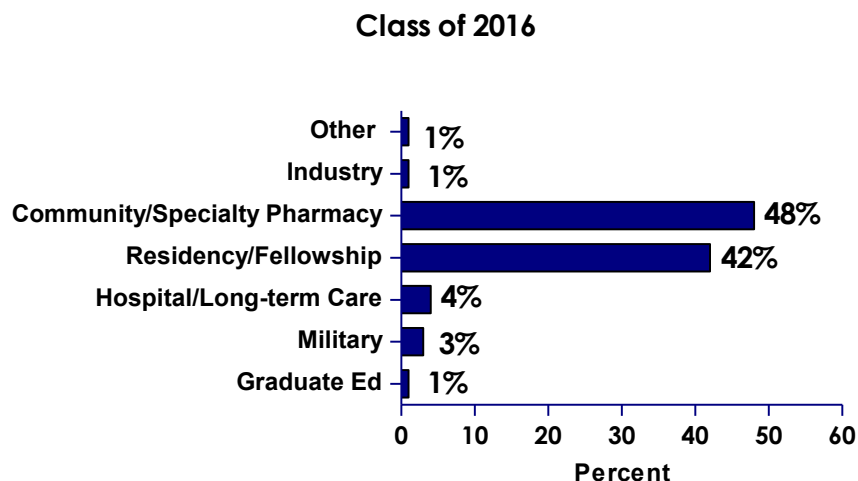


GRADUATING CLASS OF 2016

108 students received their PharmD diplomas at the April 2016 Commencement Ceremony.

91.7% of students in the Graduating Class of 2016 passed the North American Pharmacist Licensure Exam on their first attempt and 96.7% passed the Multistate Pharmacy Jurisprudence Examination on their first attempt. School graduates have consistently exceeded state and national averages for scores and pass rates on these two examinations.

Forty-two percent (42%) of the class of 2016 continued training in a post-PharmD residencies or fellowships. Other graduates obtained employment in a variety of pharmacy practice settings.



Comparison of NAPLEX Pass Rates: First-Time Candidates

Year	Pitt Candidates Pass/Total	Pitt Pass Rate (%)	State Pass Rate (%)	National Pass Rate (%)
2016+	99/108	91.7	91.3	87.3
2015	107/108	99.0	95.8	92.6
2014	102/102	100	95.9	94.4
2013	104/107	97.2	96.9	95.4
2012	106/106	100	98.0	96.4
2011	103/105	98.0	97.8	96.6
2010	104/107	97.2	87.6	91.5
2009	102/102	100	98.0	97.5

+Jan–Aug scores

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

Year	Pitt Candidates Pass/Total*	Pitt Pass Rate (%)	State Pass Rate** (%)	National Pass Rate** (%)
2016+	87/90	96.7	87.4	85.5
2015	82/83	98.8	95.2	93.5
2014	95/96	99.0	95.0	93.15
2013	83/84	98.8	95.0	92.8
2012	91/91	100	95.1	92.5
2011	89/89	100	96.6	95.6
2010	70/73	95.9		93.9
2009	77/77	100		92.1

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

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

+ Jan-Aug scores

RECOGNITIONS AND AWARDS

Recognition and Awards: Student Organizations

Organization	Award
Rho Chi Society	Outstanding Chapter in Region II Award
Rho Chi Society	Awarded \$500 to support Alpha Omicron Chapter's project proposal, "Students, Special Topics and Scholarly Work"
SNPhA – APhA-ASP	Pitt Division of Student Affairs - Blue Stars Red Carpet Award for Outstanding Program of the Year
PittPharmacy Students	Achieving Independence Competition for the THIRD YEAR In a ROW by the Pennsylvania Pharmacists Association (PPA)
PittPharmacy Students	Won the National Challenge Award Medication Adherence Team Challenge. Part of the National Script Your Future public awareness campaign coordinated by the National Consumers League (NCL)
PittPharmacy Students	ACCP Clinical Challenge "Elite Eight" from a field of 108 Teams
PittPharmacy Students	OTC Winners by the Pennsylvania Pharmacists Association (PPA)
PittPharmacy Students	SNPhA Service Grant Competition Winners
LKS	Raised over \$2000 to benefit the National Ovarian Cancer Coalition
Kappa Psi	Awarded Outstanding Chapter of the Year
ASHP	Outstanding Student Organization of the Year 2015-2016

Recognition and Awards: Individual Students

Student	Award	Description
Daisy Zhu (P3)	APhA – ASP Member of the National Communications Standing Committee	APhA National Executive Board awards four members to serve on the National Communications Standing Committee and are required to attend the APhA Leadership Conference in Washington DC
Karen Quach (P3)	Bridging the Gaps Summer	Working with the underserved populations in interprofessional

Nicolette Diehl (P3)	Internship Program	teams to provide service while gaining a better understanding of the social determinants
Dylan Atkinson (P3)	Paul G. Canono Legislative Intern - Selected through the American Society of Consultant Pharmacists	Experience and training in legislative and regulatory advocacy on a federal level and a chance to see how politics shape pharmacists practice across the nation
Dylan Atkinson (P3)	National Association of Chain Drug Stores (NACDS)	Represent PittPharmacy by meeting with legislators on Capitol Hill to discuss pharmacy issues
Student	Award	Description
Michelle Myers (P3)	Paul G. Canono Legislative Intern - Selected through the American Society of Consultant Pharmacists	The internship is designed to offer student pharmacists experience and training in legislative and regulatory advocacy on a federal level, and a chance to see first-hand how politics shape pharmacists practice across the nation
Neil Turco (P4) Cameron Ninos (P4) Aaron Devanathan (P4)	ACCP – American College of Clinical Pharmacy Association	PittPharmacy's ACCP Clinical Pharmacy Challenge Team competition winners. Competed in the annual meeting and were a part of the "Elite Eight" from a field of 108 teams of pharmacy students
Lauren Wooley (P3)	Pittsburgh Schweitzer Fellows Program	Will work with FOCUS Pittsburgh to implement medication management and education services
Michelle Myers (P3)	Awarded a Nationality Rooms Scholarship	Selected by the Polish Room Committee
Lauren Wooley (P3)	Pittsburgh Schweitzer Fellows Program	Will work with FOCUS Pittsburgh to implement medication management and education services
Michelle Myers (P3)	Awarded a Nationality Rooms Scholarship	Selected by the Polish Room Committee
Sophia Yang (P4)	George F. Archambault Scholarship	Selected by APhA
Sophia Yang (P4)	Pediatric Oncology Education (POE) summer internship	St. Jude Children's Research Hospital in Memphis, Tennessee
Sophia Yang (P4)	US Public Health Junior Commissioned Officer Student Training Program	US Public Health Service with the Indian Health Service

Jennifer Baird (P4)	Awarded the AMCP Gold Medal Winner	Abstract submitted - Palbociclib Utilization and Costs among 18 million Insured Americans: Managed Care Pharmacy Opportunities
Linda Huang (P2)	Hesselbein Global Academy	Accepted as a member to the Hesselbein Global Academy for Student Leadership and Civic Engagement
Alex Marshall (P3) Dylan Atkinson (P3) John Chang (P3) Kerry Moore (P3)	PPA Achieving Independence Award	Achieving Independence Competition for the THIRD YEAR In a ROW by the Pennsylvania Pharmacists Association (PPA)

Student Awards at Graduation

Award Title	Student Awardee
Lilly Achievement Award	Neil Turco
John Herman Wurdack Award	Chelsea Zavilla
TEVA Pharmaceuticals Outstanding Student Award	Vince Netto
APhA Academy of Students of Pharmacy Senior Recognition Certificate	Ranran Xia
Pennsylvania Pharmacists Association Outstanding Pharmacy Student Award	Kelsey Moss
Mylan Pharmaceutical Excellence in Pharmacy Award	Shea Liput
University of Pittsburgh, School of Pharmacy, Advancement of Patient Care Services Award	Valerie Nolt
Robert W. Taylor Award for Outstanding Performance in Patient Care Rotation	Jessica Lewis
University of Pittsburgh, School of Pharmacy, Innovations in Community Practice Award	Alyssa Kunkle
University of Pittsburgh, School of Pharmacy, Excellence in Clinical Communication Award	Meera Vachhani
Merck Award	Svetlana Avshalumov, Chelsea Henderson, Georgina Waldman
US Public Health Service–Excellence in Public Health Pharmacy Practice Award	Sophia Yang
Natural Medicines Comprehensive Database Recognition Award	Michelle Myers

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 2015-16 awardees were:

- Susan J. Skledar, Professor, Department of Pharmacy & Therapeutics University of Pittsburgh School of Pharmacy. Professor Skledar offered an elective rotation at the UPMC Health System Formulary Management/Drug Use Policy. She offered rotations for P3 and P4 students. She has recently been appointed Associate Director of the Experiential Learning Program for the University of Pittsburgh School of Pharmacy.
- Gerard P. Mascara, PharmD, offers an acute care rotation in Hematology/Oncology/Stem Cell Transplant at UPMC Shadyside which is part of the UPMC Cancer Center. Dr. Mascara is a graduate of the University of Pittsburgh, Class of 2011. He offers rotations for P3 and P4 students.

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

- Dr. Scott R. Drab, Associate Professor, Department of Pharmacy and Therapeutics and Director of University Diabetes Care Associates, was the 2015-2016 recipient.

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

- Dr. Susan M. Meyer, Associate Dean for Education and Professor, Co-director, Pitt Center for Interprofessional Practice and Education, was the 2015-2016 recipient.

PROFESSIONAL DEVELOPMENT: EDUCATING THE NEXT GENERATION OF PRACTITIONERS DM Educate® - 4th Edition: Comprehensive Diabetes Management

After significantly updating DM Educate® to the 4th edition in FY15, revised content was distributed to over 1,000 individuals in FY16. Approximately 144 health professionals registered for continuing education credit: 102 pharmacists, 5 nurses, 8 registered dietitians, and 29 other. Over 941 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 FY16:

Fall Continuing Education Seminar

“Opioid Abuse: The Role of the Pharmacist in Management” featured presentations by Jennifer A. Pruskowski, PharmD, BCPS, CGP and Michael A. Zemaitis, PhD. The program was attended by 59 pharmacists. The intent of this continuing education program was to educate attendees about the scope of the current epidemic of opioid drug abuse and strategies to manage or mitigate it.

Spring Continuing Education Seminar

“Topics in Pharmacy Practice and Education” featured presentations by Brenda L. Cassidy, DNP, RN, CPNP-PC, Susan M. Meyer, PhD, and Lucas A. Berenbrok, PharmD. The program was attended by 35 pharmacists. The intent of this continuing education program was to educate attendees about the pharmacist’s role in decreasing vaccine-preventable illness, the importance of experiential education at

the University of Pittsburgh School of Pharmacy, and the role of quality measures in community pharmacy practice.

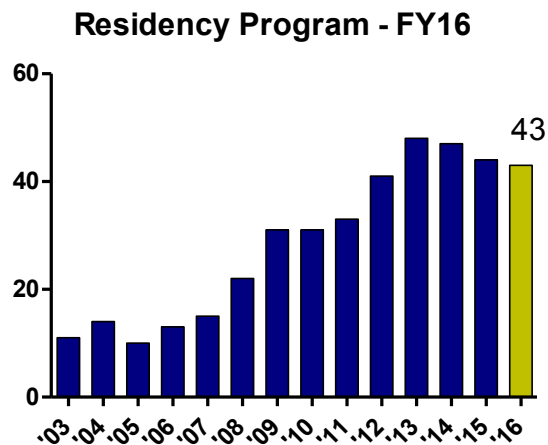
CLIP Workshop Series

- January 8, 2016: “Advocacy and the Future of Community Pharmacy Practice” featured presentation by Alex Adams, PharmD, MPH, Executive Director, Idaho State Board of Pharmacy. 144 pharmacists and student pharmacists attended.
- February 5, 2016: “Public Health: How pharmacists can contribute” featured presentation by Karen Hacker, MD, MPH, Director, Allegheny County Health Department. 142 pharmacists and student pharmacists attended.
- February 26, 2016: “Successful Implementation of Patient Care Services into the Community Pharmacy” featured presentation by Brian Bobby, PharmD, Vice President, Clinical Services, Rite Aid. 136 pharmacists and student pharmacists attended.
- April 8, 2016: “Future of Pharmacy Practice: Predicting Patient Needs” featured presentation by Joshua Benner, PharmD, ScD, Executive Vice President of Strategy & Corporate Development, Millennium Health. 146 pharmacists and student pharmacists attended.

RESIDENCY PROGRAM: EDUCATING THE NEXT GENERATION OF PRACTITIONERS

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

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



Residents 2015-2016

Total Residents: 43

Locations for the 3 PGY1 programs: 12

Total Number of Types of Residency Programs: 13

Locations for the 10 PGY2 programs: 4

Last Name	First Name	Pitt Residency Program	Year	PharmD School	Plans for FY17
Assefa	Ferealem	Underserved Care	PGY2	Wingate University	Clinical pharmacist, Carilion Roanoke Memorial Hospital, Roanoke, VA
Bondar	Anna	Pharmacy	PGY1	University of Pittsburgh	PGY2-Ambulatory Care, UPMC St. Margaret
Brown	Emily	Pharmacy	PGY1	Ohio Northern University	PGY2-Critical Care, Akron General Medical Center
Brown	Maxwell	Oncology	PGY2	Northeastern University	Clinical Pharmacy Manager, New York Presbyterian/Weill Cornell Medical Center
Campbell	Ashley	Geriatrics	PGY2	University of North Carolina Eshelman School of Pharmacy	Assistant Professor, University of Arizona College of Pharmacy
Chen	Nancy	Pharmacy	PGY1	University of Michigan	Pharmacist, Mayo Clinic, Rochester, MN
Chen	Sherry (Hua)	Pharmacy	PGY1	University of Maryland	PGY2-Cardiology, UPMC Presbyterian
Durie	Nicole	Pharmacy	PGY1	Northeastern University	PGY2-Cardiology, UPMC Presbyterian
Durigan	Raymond	Ambulatory Care	PGY2	University of Rhode Island	Clinical Pharmacist, Ambulatory Care, Thundermist Medical, RI
Farabaugh	Nicole	Pharmacy	PGY1	West Virginia University	Patient Care Surgery Pharmacist, Nationwide Children's Hospital, Columbus OH
Felton	Maria	Pharmacy	PGY1	University of Pittsburgh	PGY2-Geriatrics, UPMC St. Margaret
Gao	Arlene	Pharmacy	PGY1	University of Maryland	PGY2-Oncology, UPMC Shadyside
Giddens	Shannon	Pharmacy	PGY1	Mercer University College of Pharmacy	PGY2 Pediatrics, Yale-New Have Children's Hospital
Giruzzi	Nicholas	Pharmacy	PGY1	Albany College of Pharmacy and Health Sciences	PGY2-Ambulatory Care, UPMC St. Margaret
Hart	Kristin	Community	PGY1	State University of New York at Buffalo	PGY2-Geriatrics, UPMC Shadyside
Heisel	Ronald	Pharmacy	PGY1	University of Pittsburgh	Pharmacist, UPMC Shadyside, Pittsburgh, PA

Last Name	First Name	Pitt Residency Program	Year	PharmD School	Plans for FY17
Iasella	Carlo	Pharmacy	PGY1	University of Pittsburgh	Fellow - Clinical Outcomes Research, University of Pittsburgh School of Pharmacy
Jakubek	Joy	Pharmacy	PGY1	Duquesne University	Clinical Pharmacist, Allegheny Health Network
Joseph	Matthew	Pharmacy	PGY2	University of Pittsburgh	Geriatric Pharmacy Specialist, Western Psychiatric Institute and Clinic of UPMC, Pittsburgh, PA
Knoph	Kristen	Pharmacy	PGY1	University of Rhode Island	PGY2-Pharmacotherapy, Mayo Clinic, Rochester, MN
Kohley	Lauren	Psychiatry	PGY2	Lake Erie College of Osteopathic Medicine	
Lamberton	Nathan	Pharmacy	PGY1	Albany College of Pharmacy and Health Sciences	PGY2-Ambulatory Care, UPMC St. Margaret
Mainthia	Namita	Managed Care	PGY1	Northeastern University	
Marini	Rachel	Infectious Diseases	PGY2	Duquesne University	Infectious Disease Pharmacist, UPMC Presbyterian
Mayr	Katrina	Pharmacy	PGY1	University of California – San Francisco	Pharmacist, Billings Clinic, Billings, MT
McCleary	Seth	Pharmacy	PGY1	Lake Erie College of Osteopathic Medicine	Clinical Pharmacist – Geisinger Medical Center, Danville, PA
Miller	Susan	Pharmacy	PGY1	Duquesne University	Clinical Pharmacist, Mt. Nittany Medical Center, State College, PA
Modany	Ashley	Cardiology	PGY2	Duquesne University	Fellowship – Advanced Practice Simulation, VA Medical Center, Pittsburgh, PA
Montgomery	James	Ambulatory Care	PGY2	University of Pittsburgh	Primary Care Pharmacist, Cleveland Clinic Family Health Center, Cleveland, OH
Ni	Danfeng	Managed Care	PGY1	Wayne State	Clinical Advisor, CVS Health
Nierste	Nicole	Ambulatory Care	PGY1	University of Pittsburgh	PGY2-Ambulatory Care, St. Vincent, Indianapolis, IN
Payette	Nicole	Ambulatory Care	PGY2	Philadelphia College of Pharmacy	Clinical Pharmacist, Christiana Health System
Shoulders	Bethany	Critical Care	PGY2	University of Tennessee Health Science Center College of Pharmacy	Assistant Professor, University of Florida College of Pharmacy
Skezas	Nicholas	Pharmacy	PGY1	Duquesne University	Pharmacist, UPMC Presbyterian
Springer	Sydney	Pharmacy	PGY1	University of Rhode Island	PGY2-Geriatrics, UPMC St. Margaret

Last Name	First Name	Pitt Residency Program	Year	PharmD School	Plans for FY17
Strnad	Kyle	Pharmacy	PGY1	Thomas Jefferson University	PGY2-Critical Care, UPMC Presbyterian
Szelc	Alexa	Pharmacy	PGY1	Duquesne University	Clinical Pharmacist, Monongahela Valley Hospital, Monongahela, PA
Tang	Vivian	Ambulatory Care	PGY2	Oregon State University	Clinical Pharmacist, Providence Medical Group, Portland, OR
Tokarski	Rebecca	Pharmacy	PGY1	University of Pittsburgh	Pharmacist, Chartwell, Pittsburgh, PA
Trietley	Greg	Ambulatory Care	PGY2	University of Pittsburgh	Clinical Pharmacist, Endocrinology and Primary Care, Allegheny Health Network, Pittsburgh, PA
Venturella	Evan	Pharmacy	PGY1	Thomas Jefferson University	Clinical Pharmacist, Accredo Specialty Pharmacy, Pittsburgh, PA
Vu	Anh	Solid Organ Transplant	PGY2	University of Colorado	Clinical Pharmacist, University of Kansas Medical Center, Kansas City, MO
Weaver	Cory	Critical Care	PGY2	West Virginia University	Clinical Pharmacist, UPMC Presbyterian

Residents Recruited for 2016-2017

Total Residents: 44

Total Number of Types or Residency Programs: 13

Locations for the 3 PGY1 programs: 13

Locations for the 10 PGY2 programs: 5

Program Type	Location		Resident	Education
PGY1 Community Pharmacy	University of Pittsburgh School of Pharmacy	Rite Aid	Karen Hoang	University of Pittsburgh
		Giant Eagle	Jonathan Kovac	University of Pittsburgh
PGY1 Managed Care Pharmacy	CVS-Caremark		Gregory Bresin	University of Pittsburgh
	UPMC Health Plan		Jeffrey Kinney	Wilkes University
PGY1 Pharmacy Practice	UPMC Presbyterian		Moses Demehin	University of Maryland
			Natalie Giron	Mercer University
			Cassius Hudson	University of Toledo
			Adrienne Szymkowiak	Duquesne University
			Hanna Welch	University of Michigan
			Tin Ting Wu	University of Minnesota
	UPMC Mercy		Seohyun Choi	Ohio State University
			Jaclyn Nlggemyer	Notre Dame of Maryland University
			Muhammad Sheheryar	University of Maryland
			Ryan Steiner	Temple University
			William Wilson	University of Pittsburgh
	UPMC Hamot		April Elling	Lake Erie College of Osteopathic Medicine
			Sadaf Mahmood	University of Saskatchewan

Program Type	Location	Resident	Education
		Tanya Mumau	Duquesne University
	Children's Hospital of Pittsburgh of UPMC	Julia Dawson	Duquesne University
	Magee Women's Hospital of UPMC	Megan Bookser	Ohio Northern University
	UPMC St. Margaret	Gina Ayers	Shenandoah University
		Megan Carr	University of Kansas
		Ardis Copenhaver	Medical University of South Carolina
		Emily Linville	University of Pittsburgh
	UPMC Shadyside	Neil Turco	University of Pittsburgh
		Sheava Blackman	Nova Southeastern University in South Florida
	UPMC McKeesport	Alana Grabigel	Duquesne University
Mahalia Harrell		University of Missouri, Kansas City	
PGY2 Ambulatory Care Pharmacy	UPMC Presbyterian-Shadyside	Jessica Anderson	Presbyterian College of Pharmacy in South Carolina
		Khushbu Thaker	Massachusetts College of Pharmacy
PGY2 Cardiology Pharmacy	UPMC Presbyterian-Shadyside	Hua (Sherry) Chen	University of Maryland
		Nicole Durie	Northeastern University
PGY2 Critical Care Pharmacy	UPMC Presbyterian-Shadyside	Kyle Strnad	Thomas Jefferson University
PGY2 Ambulatory Care	UPMC St. Margaret	Anna Bondar	University of Pittsburgh
		Nicholas Giruzzi	Albany College of Pharmacy and Health Sciences
		Nathan John Lambertson	Albany College of Pharmacy and Health Sciences
PGY2 Geriatrics	UPMC St. Margaret	Maria Felton	University of Pittsburgh
		Sydney Springer	University of Rhode Island
PGY2 Geriatrics	UPMC Presbyterian-Shadyside	Kristen Hart	State University of New York at Buffalo
PGY2 Oncology Pharmacy	UPMC Presbyterian-Shadyside	Arlene Gao	University of Maryland
PGY2 Psychiatric Pharmacy	Western Psychiatric Institute and Clinic of UPMC	Kristy Walker	Irma Lerma Rangel College of Pharmacy
PGY2 Solid Organ Transplant Pharmacy	UPMC Presbyterian-Shadyside	Olya Witkowsky	University of Wisconsin
PGY2 Specialized Area of Pharmacy: Underserved Care	University of Pittsburgh School of Pharmacy	Amna Jamil	Ernest Mario School of Pharmacy at Rutgers University

GRADUATE PROGRAM: EDUCATING THE NEXT GENERATION OF SCIENTISTS

Graduate Program in Pharmaceutical Sciences

This program prepares students for positions in academia, government, and industry. The School of Pharmacy offers three degrees: the PhD, the thesis-based Master of Science (MS), and the 12-month, non-thesis-based MS (NTMS). The PhD program provides students with the foundation to become independent researchers as either basic scientists or clinical pharmaceutical scientists. The MS provides

students the opportunity to develop basic and/or clinical research skills preparing them for entry into a PhD program or employment. The NTMS degree is a one-year program designed to prepare students for employment in the pharmaceutical and biotechnology fields. Each degree program offers five tracks: biochemical pharmacology, medicinal chemistry, pharmaceuticals, clinical pharmaceutical sciences (a specialized program to train students in clinical and translational science), and pharmaceutical outcomes and policy research.

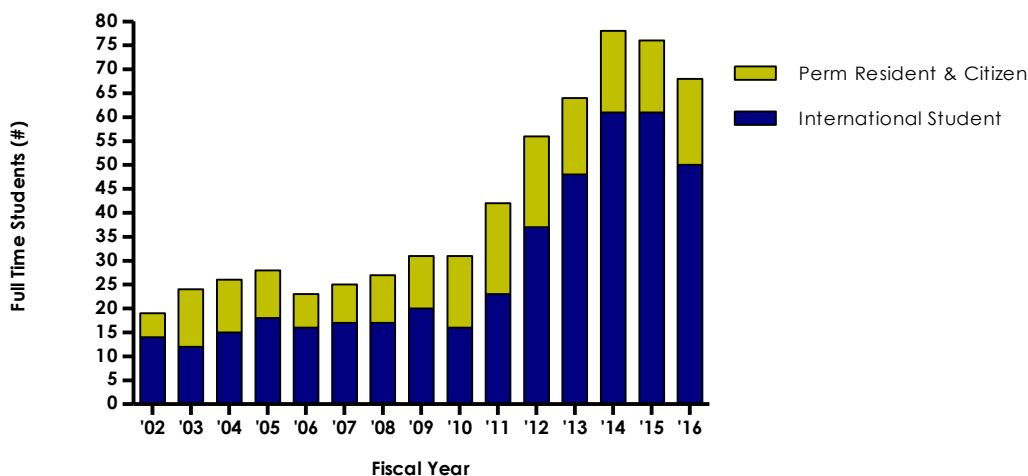
ADMISSION AND ENROLLMENT DEMOGRAPHICS

The total number of students enrolled in the graduate program for FY16 included **66** full-time and **2** part-time students enrolled in the pharmaceutical sciences graduate program. The part-time students were enrolled in the MS program.

Of the 66 full-time students: **48** are PhD students; **16** are Master of Science students; **4** are non-thesis MS students.

- **27% (13/48)** of the PhD students are U.S. citizens or permanent residents.
- **47% (27/48)** of the PhD students have degrees from schools of pharmacy.
- **9** students passed the comprehensive examination and **11** achieved PhD candidate status.

Full-Time PhD and MS Students



At the beginning of the FY16, **68** students were enrolled in the graduate program: **66** full-time and **2** part-time students. Part-time students include 2 in the MS program.

Of the **66** full-time students: **48** are PhD students; **14** are Master of Science students; **4** are non-thesis MS students.

27% (13/48) of the PhD students are U.S. citizens or permanent residents.

FY16 Admission Demographics

- The school received 60 applications for the PhD program, 43 for the MS program and 3 for the non-thesis MS.
- 11 PhD students were offered admission and 10 accepted for fall 2015 (90% yield).
 - 2 of the 10 are either a US citizen or permanent resident.
 - 1 holds a PharmD degree.
 - 1 holds a PhD degree

- 10 MS students were offered admission and 7 accepted for fall 2015 (70% yield).
- 17 NTMS students were offered admission (6 applied through the PhD application, 9 through the MS application, 2 through the NTMS); 4 accepted for fall 2015.

FY17 Admission Demographics

For the class that will enroll in the fall of 2016:

- The school received 64 applications for the PhD program, 63 for the MS program and 3 for the non-thesis MS.
- 10 PhD students received admission offers and 9 enrolled (90% yield).
 - 2 of the 9 are US citizens.
 - 1 of the 9 has a PharmD degree.
- 16 MS students received admission offers and 9 students enrolled.
- 4 NTMS students received admission offers (1 had applied through the PhD application and 3 through the MS); 1 enrolled.

2015-2016 Pharmaceutical Sciences Graduate Students

Name	Advisor	Track	Enrollment	Degree
Adams, Solomon	Empey, Phil	CPS*	13-Aug	PhD
Al Busaysi, Salwa	Fabian, Tanya	Pharmaceutics	11-Jan	PhD
Almazroo, Omar	Venkataramanan, Raman	Pharmaceutics	11-Aug	PhD
Alqarni, Mohammed	Xie, Xiang-Qun	Pharmaceutics	11-Jan	PhD
Altawalbeh, Shoroq	Thorpe, Joshua	CPS*	12-May	PhD
Alvarez, Celeste	Wipf, Peter	Medicinal Chemistry	11-Aug	PhD
Anderson, Kacey	Poloyac, Sam	CPS*	10-Aug	PhD
Bi, Yuhan	Xie, Wen	Pharmacology	13-Aug	PhD
Bian, Yuemin	Xie, Xiang-Qun	Medicinal Chemistry	15-Aug	MS
Cai, Xinran	Folan, Maggie	Non-Thesis Master	15-Aug	NTMS
Chen, Janice	Folan, Maggie	Non-Thesis Master	15-Aug	NTMS
Chen, Yichao	Li, Song	Pharmaceutics	12-Aug	MS
Cheng, Haizi	Xie, Xiang-Qun	Medicinal Chemistry	13-Jan	PhD
Eichinger, Katherine	Empey, Kerry	CPS*	11-Aug	PhD
Fancher, Ashley	Xie, Xiang-Qun	Medicinal Chemistry	13-Aug	PhD
Feturi, Firuz	Venkataramanan, Raman	Pharmaceutics	11-Aug	PhD
Franchetti, Yoko	Nolin, Tom	CPS*	15-Aug	PhD
Ghazwani, Mohammed	Li, Song	Pharmaceutics	10-Jan	PhD

Name	Advisor	Track	Enrollment	Degree
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, Minlu	Rohan, Lisa	Pharmaceutics	11-Aug	PhD
Hu, Ziheng	Undecided	Non-Thesis Master	13-Aug	NTMS
Jhunjhunwala, Kunal	Rohan, Lisa	Pharmaceutics	13-Aug	PhD
Joshi, Rujuta	Venkataramanan, Raman	Pharmaceutics	11-Aug	PhD
Kalluri, Hari Varun	Venkataramanan, Raman	CPS*	11-Aug	PhD
Kiesel, Brian	Beumer, Jan	Pharmaceutics	14-Aug	MS
Kim, Sung Tae	Kwon, Yong Tae	Pharmacology	8-Aug	PhD
Kirshner, Ziv	Gibbs, Bob	Pharmacology	11-Aug	PhD
Kochanek, Stanton	Johnston, Paul	Pharmacology	13-Aug	PhD
Kondiparthi, Lavanya	Sant, Shilpa	Pharmaceutics	15-Aug	MS
Li, Jing	Undecided	Pharmaceutics	13-Aug	PhD
Li, Junyi	Gibbs, Robert	Pharmacology	12-Aug	MS
Li, Lingjue	Poloyac, Samuel	CPS*	13-Aug	PhD
Lu , Peipei	Xie, Wen	Pharmacology	11-Aug	PhD
Lyu, Yafei	Sant, Vinayak	Non-thesis Master	14-Aug	NTMS
Ma , Shifan	Xie, Xiang-Qun	Medicinal Chemistry	13-Aug	MS
Niznik, Joshua	Thorpe, Carolyn	CPS*	15-Aug	PhD
Patel, Akhil	Sant, Shilpa	Pharmaceutics	13-Aug	NTMS
Pitale, Yohann	Sant, Shilpa	Pharmaceutics	15-Aug	MS
Pouland, Timothy	Johnston, Paul	Medicinal Chemistry	8-Aug	PhD
Pradhan, Komal	Folan, Maggie	Non-Thesis Master	15-Aug	NTMS
Prokopienko, Alexander	Nolin, Thomas	CPS*	14-Aug	PhD
Regev, Galit	Rohan, Lisa	Pharmaceutics	11-Aug	PhD
Rothenberger, Natalie	Folan, Maggie	Non-Thesis Master	15-Aug	NTMS
Sachar, Madhav	Ma, Xiaochao	Pharmacology	13-Aug	PhD
Shan, Feng	Gold, Barry	Medicinal Chemistry	14-Aug	MS
Shehu, Amina	Ma, Xiaochao	Pharmacology	13-Aug	PhD

Name	Advisor	Track	Enrollment	Degree
Silva Barbosa, Anne	Wen, Xie	Pharmacology	15-Aug	PhD
Tang, Chenxiao	Poloyac, Sam	CPS*	14-Aug	MS
Thanukrishnan, Harisudhan	Venkataramanan, Raman	CPS*	12-Aug	PhD
Vasudevan, Vignesh	Venkataramanan, Raman	Pharmaceutics	15-Aug	MS
Venkatakrisnan, Harini	Sant, Shilpa	Pharmaceutics	14-Aug	MS
Walsh, Dustin	Nolin, Thomas	CPS*	11-Aug	PhD
Wang , Nanyi	Xie, Xiang-Qun	Medicinal Chemistry	15-Aug	MS
Wei, Yuan	Sant, Vinayak	Non-thesis Master	14-Aug	NTMS
Xie, Yang	Xie, Wen	Pharmacology	14-Aug	PhD
Xing, Changrui	Xie, Xiang-Qun	Medicinal Chemistry	14-Aug	MS
Xu, Jieni	Li, Song	Pharmaceutics	13-Aug	MS
Xu, Ruichao	Venkataramanan, Raman	Pharmaceutics	14-Aug	MS
Xue, Yingfei	Sant, Shilpa	Medicinal Chemistry	13-Aug	PhD
Yan, Jiong	Xie, Wen	Biochemical Pharmacology	12-Aug	PhD
Zhang, Hongfei	Undecided	Non-Thesis Master	13-Aug	NTMS
Zhang, Xiaolan	Li, Song	Pharmaceutics	11-Aug	PhD
Zhang, Yan	Xie, Xiang-Qun	Medicinal Chemistry	14-Aug	MS
Zhang, Zhaojia	Xie, Xiang-Qun	Medicinal Chemistry	15-Aug	MS
Zhou, Xiang	Yao, Jeffrey	Biomedical Pharmacology	13-Aug	PhD

*CPS – Clinical Pharmaceutical Scientist Program

Students Selected for the Pharmaceutical Sciences PhD and Research-based MS Graduate Program, Beginning in Fall 2016

Name	Advisor	Track	Degree
An, Yunqi	Xie, Wen	Pharmacology	MS
Cai, Xinran	Xie, Wen	Pharmacology	PhD
Deshpande, Ameya	McDermott, Lee	Medicinal Chemistry	MS
Durairajan, Prithvirajan	Rohan, Lisa	Pharmaceutics	PhD

Name	Advisor	Track	Degree
Ho, Meng-Ni	Sant, Shilpa	Pharmaceutics	MS
Hogle, Brett	Folan, Maggie	Non-Thesis Masters	NTMS
Jing, Yankang	Xie, Xiang-Qun	Medicinal Chemistry	PhD
Kiesel, Brian	Beumer, Jan	Pharmaceutics	PhD
Netto, Vince	Thorpe, Joshua	POPR*	PhD
Rakshe, Vishal	Sant, Shilpa	Pharmaceutics	MS
Tang, Chenxiao	Poloyac, Samuel	CPS [†]	PhD
Tang, Weimin	Xie, Xiang-Qun	Medicinal Chemistry	MS
Tong, Xing	Rohan, Lisa	Pharmaceutics	MS
Tung, Hung-Chun	Xie, Wen	Pharmacology	PhD
Wan, Zhuoya	Li, Song	Pharmaceutics	MS
Wang, Sidney	Johnston, Paul	Medicinal Chemistry	MS
Wang, Yue	Yang, Da	Pharmacology	MS
Xing, Changrui	Xie, Xiang-Qun	Medicinal Chemistry	PhD
Xu, Ruichao	Venkataramanan, Raman	Pharmaceutics	PhD

[†]Pharmaceutical Outcomes and Policy Research Track

*Clinical Pharmaceutical Scientist Program and Pharmaceutics Track

STUDENTS COMPLETING GRADUATE DEGREES IN 2015-2016

Master of Science Graduates

Yuzhe Chen, MS

Advisor: Shilpa Sant, PhD

Graduation: August 2015 (Defense completed July 2015)

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

Kunal Jhunjunwala, MS

Advisor: Lisa Rohan, PhD

Graduation: August 2015 (Defense completed May 2015)

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

Shilpaa Mukundan, MS

Advisor: Shilpa Sant, PhD

Graduation: August 2015 (Defense completed May 2015)

Thesis Title: Nanofibrous Composite Scaffolds of Poly (Ester Amides) with Tunable Physicochemical and Degradation Properties

Akhil Patel, MS

Advisor: Shilpa Sant, PhD

Graduation: August 2015 (Defense completed July 2015)

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

Timothy Pouland, MS

Advisor: Paul Johnston, PhD

Graduation: December 2015 (Defense completed October 2015)

Thesis Title: Characterization of Hit Compounds that Inhibit Glucocorticoid Receptor Translocation in a Cell-Based High Content Screen

Chenxiao Tang, MS

Advisor: Sam Poloyac, PhD

Graduation: August 2016 (Defense completed May 2016)

Thesis Title: Screening 20-HETE Inhibitors in Microsomal Incubates Using UPLC-MS/MS

Amina Shehu, MS

Advisor: Xiaochao Ma, PhD

Graduation: August 2015 (Defense completed July 2015)

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

Dustin Walsh, PharmD, MS

Advisor: Tom Nolin, PhD

Graduation: December 2015 (Defense completed October 2015)

Thesis Title: Drug Transporters And Nherf PdZ Proteins

Changrui Xing, MS

Advisor: Xiang-Qun Xie, PhD

Graduation: April 2016 (Defense completed March 2016)

Thesis Title: Discovery of (E)-3-(4-(Diethylamino) phenyl)-1-phenyl-2-phenylsulfonylprop-2-en-1-one as Novel Cannabinoid Receptor 2 Ligands

Jieni Xu, MS

Advisor: Song Li, PhD

Graduation: August 2015 (Defense completed May 2015)

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

Hongfei Zhang, MS

Advisor: Raman Venkataramanan, PhD

Graduation: August 2015 (Defense completed July 2015)

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

Yan Zhang, MS

Advisor: Xiang-Qun Xie, PhD

Graduation: April 2016 (Defense completed March 2016)

Thesis Title: Mathematical Modeling of Cannabinoid Receptor Type 2 Endocytosis and Trafficking

PhD Graduates

Mohammed Alqarni, PhD

Advisor: Xiang-Qun Xie, PhD

Graduation: April 2016 (Defense completed February 2016)

Thesis Title: Design, Expression and Purification of Functional Human Cannabinoid Receptor 2

Shoroq Altawalbeh, PharmD, PhD

Advisor: Joshua Thorpe, PhD, MPH

Graduation: December 2015 (Defense completed September 2015)

Thesis Title: Addition of Leukotriene Receptor Antagonists versus Long Acting Beta Agonists to Inhaled Corticosteroid Therapy for Asthma Treatment in Older Adults: A Retrospective Data Analysis of Effectiveness, Safety and Cost

Mohammed Ghazwani, PhD

Advisor: Song Li, PhD

Graduation: April 2016 (Defense completed December 2015)

Thesis Title: Targeted Dual Functional Nanoparticles for the Treatment of Cancer and Liver Fibrosis

Tiantian Gong, PhD

Advisor: Lisa Rohan, PhD

Graduation: April 2016 (Defense completed December 2015)

Thesis Title: Vaginal Delivery of a Hydrophobic Antiretroviral Drug Csic for Hiv Prevention: Novel Formulation Strategies for Improved Drug Solubilization and Lymphatic Targeting

Minlu Hu, PhD

Advisor: Lisa Rohan, PhD

Graduation: August 2016 (Defense completed May 2016)

Thesis Title: The Role of Epithelial Integrity and Metabolizing Enzymes in Topical Microbicide Efficacy for the Prevention of HIV Sexual Transmission

Peipei Lu, PhD

Advisor: Wen Xie, PhD

Graduation: August 2016 (Defense completed July 2016)

Thesis Title: The Role of Hepatic Aryl Hydrocarbon Receptor in Metabolic Homeostasis And Hepatic Carcinogenesis.

Peng Zhang, PhD

Advisor: Song Li, PhD

Graduation: December 2015 (Defense completed July 2015)

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

Xiaolan Zhang, PhD

Advisor: Song Li, PhD

Graduation: August 2016 (Defense completed March 2016)

Thesis Title: Peg-Derivatized Fts-Based Micelles for Combination Cancer Therapy

Non-Thesis MS Graduates

Graduation: August 2015

Ying-Yu Lin, MS
Tianyu, Sun, MS

Graduation: August 2016

Xinran Cai, MS
Janice Chen, MS

AWARDS TO GRADUATE STUDENTS

Research or Presentation Awards

- **Ashley Fancher** won a Best Poster Award at the 2015 Regional Pharmacy Research Forum sponsored by the AAPS Student Chapter West Virginia University for her poster entitled "Development and optimization of an Androgen Receptor radioligand binding assay to characterize hits from a high throughput screen for novel Prostate Cancer drugs".
- **Alexander Prokopienko** won a Best Poster Award at the 2016 School of Pharmacy Research Retreat for his poster entitled "Effect of experimental kidney disease on FMO formation of TMAO."
- **Sheila Grab** won a Best Poster Award at the 2016 School of Pharmacy Research Retreat for her poster entitled "Imaging and visual evaluation for the confirmation of vaginal film spreading and retention".
- **Yang Xie** won a Best Poster Award at the 2015 International Symposium for Graduate Students on Pharmaceutical Sciences 2015 and the 1st Annual AAPS-SYSU Student Chapter Research Symposium for her poster entitled "Regulation of drug metabolism and disposition by traumatic injury".
- **Yang Xie** won the Podium Award at the 2015 International Symposium for Graduate Students on Pharmaceutical Sciences and the 1st Annual AAPS-SYSU Student Chapter Research Symposium in for her oral presentation entitled "Regulation of drug metabolism and disposition by traumatic injury".
- **Yang Xie** won a Best Poster Award at the 2016 School of Pharmacy Research Retreat for her poster entitled "Estrogen sulfotransferase sensitizes liver injury to hemorrhagic shock".
- **Hongfei Zhang** was awarded a Podium Presentation at the 2016 School of Pharmacy Research Retreat for her abstract entitled "Gestation induced decrease in buprenorphine exposure: a clinical pharmacokinetic study".
- **Firuz Feturi** was selected to give a Podium Presentation at the 33rd Annual Meeting of the Northeastern Society of Plastic Surgeons in Baltimore, MD for her abstract entitled "Locally

implantable biodegradable polymeric tacrolimus disc prolongs survival of vascularized composite allografts without morbid adverse effects".

- **Firuz Feturi** was selected to give a Podium Presentation at the 5th Biennial Meeting of the American Society for Reconstructive Transplantation in Chicago, IL for abstract entitled "Locally implantable biodegradable polymeric tacrolimus disc prolongs survival of vascularized composite allografts without morbid adverse effects".
- **Firuz Feturi** won a Best Poster Award at the 2015 Regional Pharmacy Research Forum sponsored by the AAPS Student Chapter West Virginia University for her poster entitled "locally implantable biodegradable polymeric tacrolimus disc prolongs survival of vascularized composite allografts without morbid adverse effects".
- **Jing Li** won a Best Poster Award at the 2015 Regional Pharmacy Research Forum sponsored by the AAPS Student Chapter West Virginia University for her poster entitled "Co-delivery of curcumin using PLGA nanoparticles enhances the anti-tumor effect of paclitaxel in vitro".
- **Lingjue Li** won the Top Overall Poster Award at the 14th Annual Safar Symposium, Safar Center for Resuscitation Research and the Peter M. Winter Institute for Simulation Education and for her poster entitled "No-reflow phenomenon: alteration of cerebral microcirculation after cardiac arrest in developing rats".
- **Solomon Adams** was selected to give a Podium Presentation at the 14th Annual Safar Symposium, Safar Center for Resuscitation Research and the Peter M. Winter Institute for Simulation Education and for his abstract entitled "Xenobiotic transporter expression in the hippocampus following experimental pediatric brain injury".
- **Sheila Grab** and **Galit Regev** were awarded the 3rd Place Prize in the 2016 Randall Family Big Idea Competition at the University of Pittsburgh Innovation Institute for their entry "MOrPH Solutions".
- **Galit Regev** was awarded a Podium Presentation at the 2016 School of Pharmacy Research Retreat for her abstract entitled "Novel application of hot melt extrusion for manufacture of vaginal microbicide films".

Competitive Fellowships

- **Joshua Niznik** was the recipient of a T-32 NIH Training Grant from the University of Pittsburgh Department of Medicine - Division of Geriatrics & Pittsburgh; Claude D. Pepper Older Americans Independence Center (P30 AG 024827).
- **Alexander Prokopienko** won a grant from the American College of Clinical Pharmacy Research Institute for his research entitled "Targeted Inhibition of FMO Mediated Formation of TMAO in Kidney Disease: A Pilot Study".
- **Omar Almazroo** received a grant from the United Therapeutics Corporation for his proposal "Remodulin in ischemia and reperfusion injury of liver".

Other Awards

- **Alexander Prokopienko** won a Teaching Assistant of the Year Award for the 2015-2016 academic year.
- **Tao Long** won the University of Pittsburgh Graduate and Profession Student Government Leadership and Service Award for the 2015-2016 academic year.
- **Yingfei Xue** won the Pharmaceutical Sciences Graduate Student Excellent Award for the 2015-2016 academic year.

Travel Awards

- **Celeste Alvarez** received a Graduate Program Council travel award to attend the 252 American Chemical Society National Meeting and Exposition in Philadelphia, PA to present "Side chain optimization of 2-phenyl indole inhibitors of the AAA ATPase p97."
- **Ashley Fancher** received a Graduate Program Council travel award to attend the 2016 Society for Laboratory Automation and Screening 2016 Conference in San Diego, CA to present "Development of radioligand binding and PSA reporter assays to characterize and triage hits from an AR-TIF2 Protein-Protein interaction HCS assay".
- **Ziv Kirshner** received a Graduate Program Council travel award to attend the 2016 Society for Behavioral Neuroendocrinology Annual Meeting in Montreal, Quebec, Canada to present "Effects of menopausal model on enzymes involved in glucose utilization and choline acetyltransferase activity in specific regions of the rat brain".
- **Junyi Li** received a Graduate Program Council travel award to attend the 2016 Society for Behavioral Neuroendocrinology Annual Meeting in Montreal, Quebec, Canada to present "Detection of estradiol in rat brain tissues: contribution of local production versus circulating levels".
- **Shifan Ma** received a Graduate Program Council travel award to attend the, 2015 AAPS Annual Meeting in Orlando, FL to present "Molecular compatibility mechanism of traditional chinese medicinal formula, Sini Decoction, by system pharmacology and chemoinformatics".

Graduate Student Publications and Presentations

PUBLICATIONS

- **Adams SM, Anderson KB, Coons JC, Smith RB, Meyer SM, Parker LS, Empey PE.** Advancing pharmacogenomics education in the core PharmD curriculum through student personal genomic testing. *Am J Pharm Educ.* 2/25/2016 February 25;80(1):3.
- **Patel, A, Sant S.** Hypoxic tumor microenvironment: Opportunities to develop targeted therapies. *Biotechnol Adv.* 2016 Sep-Oct;34(5):803-12.
- **Patel A, Xue Y, Mukundan S, Rohan LC, Sant V, Stolz DB, Sant S.** Cell-instructive graphene-containing nanocomposites induce multinucleated myotube formation. *Ann Biomed Eng.* 2016 Jun;44(6):2036-48.
- **Prokopienko, A.** Contrast-Induced Nephropathy: Effects of Media Type and Comparison of Prevention Strategies. *Pharmacotherapy.* 5/16/2016.;8 (online update).

- **Alvarez C**, Arkin MR, Bulfer SL, Colombo R, Kovaliov M, LaPorte MG, Lim C, Liang M, Moore WJ, Neitz RJ, Yan Y, Yue Z, Huryn DM, Wipf P. Structure-activity study of bioisosteric trifluoromethyl and pentafluorosulfanyl indole inhibitors of the AAA ATPase p97. *ACS Med Chem Lett.* 2015 Dec 10.;6(12):1225-30.
- **Alvarez C**, Bulfer SL, Chakrasali R, Chimenti MS, Deshaies RJ, Green N, Kelly M, LaPorte MG, Lewis TS, Liang M, Moore WJ, Neitz RJ, Peshkov VA, Walters MA, Zhang F, Arkin MR, Wipf P, Huryn DM. Allosteric indole amide inhibitors of p97: identification of a novel probe of the ubiquitin pathway. *ACS Med Chem Lett.* 2016 Feb 11.;7(2):182-7.
- **Shehu A**, Li G, Xie W, Ma X. The pregnane X receptor in tuberculosis therapeutics. *Expert Opin Drug Metab Toxicol.* 2016;12(1):21-30.
- **Anderson KB**, Poloyac SM. Drug Metabolism and Therapeutic Hypothermia. *Critical Connections.* 6/30/2015.
- Callaway CW, Elmer J, Guyette FX, Molyneaux BJ, **Anderson KB**, Empey PE, Gerstel SJ, Holquist K, Repine MJ, Rittenberger JC. Dexmedetomidine reduces shivering during mild hypothermia in waking subjects *PLoS One.* 2015 Aug 3;10(8)
- Cha-Molstad H, Sung KS, Hwang J, Kim KA, Yu JE, Yoo YD, Jan JM, Han DH, Molstad M, Kim JG, Yoon JL, Zakrzewska A, Kim SH, **Kim ST**, Kim SY, Lee HG, Soung NK, Ahn JS, Ciechanover A, Kim BY, and Kwon YT. Amino-terminal arginylation targets endoplasmic reticulum chaperone BiP for autophagy through p62 binding. *Nat Cell Biol.* 2015 Jul;17(7):917-29. Epub 2015 Jun 15.
- **Chen Y**, Xia R, Huang Y, Zhao W, Li J, **Zhang X**, Wang P, Venkataramanan R, Fan J, Xie W, Ma X, Lu B, Li S. An immunostimulatory dual-functional nanocarrier that improves cancer immunochemotherapy. *Nature Communications.* (In revision)
- Cornett KM, Menezes MP, Bray P, Halaki M, Shy RR, Yum SW, Estilow T, Moroni I, Foscan M, Pagliano E, Pareyson D, Laurá M, Bhandari T, Muntoni F, Reilly MM, Finkel RS, Sowden J, **Eichinger KJ**, Herrmann DN, Shy ME, Burns J. Phenotypic variability of childhood Charcot-Marie-tooth disease. *JAMA Neurol.* 2016 Jun 1;73(6):645-51.
- Duong SQ, Lal AK, **Joshi R**, Feingold B, Venkataramanan R. Transition from brand to generic tacrolimus is associated with a decrease in trough blood concentration in pediatric heart transplant recipients. *Pediatr Transplant.* 2015 Dec;19(8):911-7.
- **Eichinger KM**, Egana L, Orend JG, Resetar JG, **Anderson KB**, Patel R, Empey KM. Alveolar macrophages support interferon gamma-mediated viral clearance in RSV-infected neonatal mice. *Respir Res.* 2015 Oct 5;16:122.
- Feng Z, Hu G, **Ma S**, Xie X-Q. Computational Advances for the Development of Allosteric Modulators and Bitopic Ligands in G Protein-Coupled Receptors. *AAPS J.* 2015 Sep;17(5):1080-95.

- Feng Z, **Kochanek S**, Close D, Wang L, Srinivasan A, Almehizia AA, Iyer P, Xie XQ, Johnston PA, Gold B. Design and activity of AP endonuclease-1 inhibitors. *J Chem Biol.* 2015 Jul;8(3):79-93.
- Feng Z, **Ma S**, Hu G, Xie XQ. Allosteric binding site and activation mechanism of class c-g-protein coupled receptors: metabotropic glutamate receptor family. *AAPS J.* 2015 May;17(3):737-53.
- Feng Z, Pearce LV, Zhang Y, **Xing C**, Herold BK, **Ma S**, **Hu Z**, Turcios NA, Yang P, Tong Q, McCall AK, Blumberg PM, Xie XQ. Multi-functional diarylurea small molecule inhibitors of TRPV1 with therapeutic potential for neuroinflammation. *AAPS J.* 2016 Jul;18(4):898-913.
- 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.
- Guo Y, Hu B, **Xie Y**, Billiar TR, Sperry JL, Huang M, Xie W. Regulation of drug-metabolizing enzymes by local and systemic liver injuries. *Expert Opin Drug Metab Toxicol.* 2016;12(3):245-51.
- Shen H, Yu H, Liang PH, **Cheng H**, XuFeng R, Yuan Y, Zhang P, Smith CA, Cheng T. An acute negative bystander effect of α -irradiated recipients on transplanted hematopoietic stem cells. *Blood.* 2012 Apr 12;119(15):3629-37.
- Hu J, **Hu Z**, Zhang Y, Gou X, Mu Y, Wang L, Xie XQ. Metal binding mediated conformational change of XPA protein:a potential cytotoxic mechanism of nickel in the nucleotide excision repair.. *J Mol Model.* 2016 Jul;22(7):156.
- **Hu M**, Patel SK, Zhou T, Rohan LC. Drug transporters in tissues and cells relevant to sexual transmission of HIV: implications for drug delivery. *J Control Release.* 2015 Dec 10;219:681-96.
- Hu, J, Feng Z, **Ma S**, Zhang Y, Tong Q, Alqarni MH, Gou XJ, and Xie XQ. difference and influence of inactive and active states of cannabinoid receptor subtype CB2: From Conformation to Drug Discovery. *J Chem Inf Model.* 2016 Jun 27;56(6):1152-63.
- Cha-Molstad H, Yu JE, Lee SH, Kim JG, Sung KS, Hwang J, Yoo YD, Lee YJ, **Kim ST**, Lee DH, Ciechanover A, Kim BY, Kwon YT. Modulation of SQSTM1/p62 activity by N-terminal arginylation of the endoplasmic reticulum chaperone HSPA5/GRP78/BiP. *Autophagy.* 2016;12(2):426-8.
- Cha-Molstad H, Sung KS, Hwang J, Kim KA, Yu JE, Yoo YD, Jang JM, Han DH, Molstad M, Kim JG, Lee YJ, Zakrzewska A, Kim SH, **Kim ST**, Kim SY, Lee HG, Soung NK, Ahn JS, Ciechanover A, Kim BY, Kwon YT. Amino-terminal arginylation targets endoplasmic reticulum chaperone BiP for autophagy through p62 binding. *Nat Cell Biol.* 2015 Jul;17(7):917-29.
- Gao J, **Yan J**, Xu M, Ren S, Xie W. CAR suppresses hepatic gluconeogenesis by facilitating the ubiquitination and degradation of PGC1 α . *Mol Endocrinol.* 2015 Nov;29(11):1558-70.
- **Yan J**, Chen B, Lu J, Xie W. Deciphering the roles of the constitutive androstane receptor in energy metabolism. *Acta Pharmacol Sin.* 2015 Jan;36(1):62-70.

- Lu J, Liu C, Wang P, **Ghazwani M**, **Xu J**, Huang Y, Ma X, Zhang P, Li S. The self-assembling camptothecin-tocopherol prodrug: An effective approach for formulating camptothecin. *Biomaterials*. 2015 Sep;62:176-87.
- Sun J, **Chen Y**, Li K, Huang Y, Fu X, Zhang X, Zhao W, Wei Y, Xu L, Zhang P, Venkataramanan R, Li S. A prodrug micellar carrier assembled from polymers with pendant farnesyl thiosalicylic acid moieties for improved delivery of paclitaxel. *Acta Biomater*. 2016 Jul 12. [Epub ahead of print]
- 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 non-alcoholic steatohepatitis by deactivating the mitochondrial sirtuin deacetylase Sirt3. *Mol Cell Biol*. 2013 May;33(10):2047-55.
- **Li J**, Oberly PJ, Poloyac SM, Gibbs RB. A microsomal based method to detect aromatase activity in different brain regions of the rat using ultra performance liquid chromatography–mass spectrometry. *J Steroid Biochem Mol Biol*. 2016 Apr 22. [Epub ahead of print]
- Liu K, **Yan J**, **Sachar M**, Zhang X, Guan M, Xie W, Ma X. A metabolomic perspective of griseofulvin-induced liver injury in mice. *Biochem Pharmacol*. 2015 Dec 1;98(3):493-501.
- **Anderson KB**, Poloyac SM, Kochanek PM, Empey PE. Effect of hypothermia and targeted temperature management on drug disposition and response following cardiac arrest: A comprehensive review of pre-clinical and clinical investigations. *Ther Hypothermia Temp Manag*. 2016 Accepted
- **Kalluri, HV**, Hardinger KL. Current state of renal transplant immunosuppression: Present and future. *World J Transplant*. 2012 Aug 24;2(4):51-68.
- Lemon LS, **Zhang H**, Hebert MF, Hankins GD, Haas DM, Caritis SN, Venkataramanan R. Patient exposure to ondansetron changes during pregnancy. *Pharmacotherapy*. 2016 Jul 4.
- Luketich JD, Pennathur A, **Franchetti Y**, Catalano P, Swanson S, Sugarbaker D, De Hoyos A, Maddaus MA, Nguyen NT, Benson AB, Fernando HC. Minimally invasive esophagectomy: results of a prospective Phase II multicenter trial - The Eastern Cooperative Oncology Group (E2202) Study. *Ann Surg*. 2015 Apr;261(4):702-7.
- **Lu P**, **Yan J**, Liu K, Garbacz WG, Wang P, Xu M, Ma X, Xie W. Activation of aryl hydrocarbon receptor dissociates fatty liver from insulin resistance by inducing fibroblast growth factor 21. *J Hepatol*. 2015.;61(6):1908-1919.
- Patel A, Mukundan S, Wang W, Karumuri A, Sant V, Mukhopadhyay SM, Sant S. Carbon-based hierarchical scaffolds for myoblast differentiation: Synergy between nano-functionalization and alignment. *Acta Biomater*. 2016 Mar 1;32:77-88.
- **Peng Zhang**, **Jieni Xu**, Sharon E. Gao, and Song Li. Dual-function nanocarriers with interfacial drug-interactive motifs for improved delivery of chemotherapeutic agents. *Cancer Therapy: Applications of Nanobiomaterials*. April 2016.;7

- Cheng Q, Inaba Y, **Lu P**, Xu M, He J, Zhao Y, Guo GL, Kuruba R, de la Vega R, Evans RW, Li S, Xie W. Chronic activation of FXR in transgenic mice caused perinatal toxicity and cholesterol toxicity. *Mol Endocrinol*. 2015 Apr;29(4):571-82.
- Feng R, Tong Q, Xie Z, **Cheng H**, Wang L, Lentzsch S, Roodman GD, Xie XQ. Targeting cannabinoid receptor-2 pathway by phenylacetamide suppresses the proliferation of human myeloma cells through mitotic dysregulation and cytoskeleton disruption. *Mol Carcinog*. 2015 Dec;54(12):1796-806.
- Romagnoli K, Boyce R, Empey P, **Adams S**, Hochheiser H. Bringing clinical pharmacogenomics information to pharmacists: A qualitative study of information needs and resource requirements. *Int J Med Inform*. 2016 Feb;86:54-61.
- **Sachar M, Anderson KE**, Ma X. Protoporphyrin IX: the Good, the Bad, and the Ugly. *J Pharmacol Exp Ther*. 2016 Feb ;356(2):267-75.
- Sarkar K, **Xue Y**, Sant S, "Host response to synthetic versus natural biomaterials Immune Response to Implanted Materials and Devices." *Immune Response to Implanted Materials and Devices*. Ed. Bruna Corradetti. Springer 2017. In press.
- Shinde A, Berhane H, Rhieu B, Kalash R, Xu K, Goff J, Epperly M, Franicola D, **Zhang X**, Dixon T, Shields D, Wang H, Wipf P, Parmar K, Guinan E, Kagan V, Tyurin V, Ferris R, Zhang X, Li S, Greenberger J. Intraoral mitochondrial-targeted GS-nitroxide, JP4-039, radioprotect normal tissue in tumor-bearing radiosensitive Fancd2^{-/-} (C57BL/6) mice. *Radiat Res*. 2016 Feb;185(2):134-50.
- Statland JM, Heatwole C, **Eichinger K**, Dilek N, Martens WB, Tawil R. Electrical impedance myography in facioscapulohumeral muscular dystrophy. *Muscle Nerve*. 2016 Feb 3 [Epub ahead of print]
- Sun J, Chen Y, Li K, Huang Y, **Zhang X**, Zhao W, Wei Y, Xu L, Venkataramanan R, Li S. A prodrug micellar carrier assembled from polymers with pendant farnesyl thiosalicylic acid moieties for improved delivery of paclitaxel. *Acta Biomater*. 2016 Jul 12. [Epub ahead of print].
- Wang H, Yan T, **Xie Y**, Zhao M, Che Y, Zhang J, Liu H, Cao L, Cheng X, Xie Y, Li F, Qi Q, Wang G, Hao H. Mechanism-based inhibitory and peroxisome proliferator-activated receptor α -dependent modulating effects of silybin on principal hepatic drug-metabolizing enzymes. *Drug Metab Dispos*. 2015 Apr;43(4):444-54.
- Wang P, **Shehu AI**, Liu , Lu J, Ma X. Biotransformation of cobicistat: metabolic pathways and enzymes. *Drug Metab Lett*. 2016;10(2):111-23.
- Windreich RM, Goyal RK, **Joshi R**, Kenkre TS, Howrie D, Venkataramanan R. A Pilot Study of Continuous Infusion of Mycophenolate Mofetil for Prophylaxis of Graft-versus-Host-Disease in Pediatric Patients. *Biol Blood Marrow Transplant*. 2016 Apr;22(4):682-9.
- Chai X, Guo Y, Jiang M, Hu B, Li Z, Fan J, Deng M, Billiar TR, Kucera HR, Gaikwad NW, Xu M, **Lu P, Yan J**, Fu H, Liu Y, Yu L, Huang M, Zeng S, Xie W. Oestrogen sulfotransferase ablation sensitizes mice to sepsis. *Nat Commun*. 2015 Aug 10;6:7979.

- Xie XQ, Yang P, Zhang Y, Zhang P, Wang L, Ding Y, Yang M, Tong Q, **Cheng H**, Ji Q, McGuire T, Yuan W, Cheng T, Gao Y. Discovery of novel INK4C small-molecule inhibitors to promote human and murine hematopoietic stem cell ex vivo expansion. *Sci Rep*. 2015 Dec 18;5:18115
- **Xie Y**, Wang H, Cheng X, Wu Y, Cao L, Wu M, Xie W, Wang G, Hao H. Farnesoid X receptor activation promotes cell proliferation via PDK4-controlled metabolic reprogramming. *Sci Rep*. 2016 Jan 5;6:18751.
- **Xie Y**, Zhou XY, Hao HP, Wang GJ. Progress in the role of farnesoid X receptor in metabolic regulation and tumor cell proliferation. *Sheng Li Xue Bao*. 2014 Apr 25;66(2):252-8.
- **Xue Y**, **Patel A**, Sant V, Sant S PEGylated poly(ester amide) elastomers with tunable physico-chemical, mechanical and degradation properties. *Eur. Polym. J*. 2015 Nov; 72, 163-179
- **Xue Y**, **Patel A**, Sant V, Sant S Semi-quantitative FTIR analysis of the crosslinking density of poly (ester amide) based thermoset elastomers. *Macromol. Mater. Eng*. 2016 ; 301 (3)296–305.
- Li Y, Feng H, Gu H, Lewis DW, Yuan Y, Zhang L, Yu H, Zhang P, **Cheng H**, Miao W, Yuan W, Cheng SY, Gollin SM, Cheng T. The p53–PUMA axis suppresses iPSC generation. *Nat Commun*. 2013;4:2174.
- Gao Y, Yang P, Shen H, Yu H, Song X, Zhang L, Zhang P, **Cheng H**, Xie Z, Hao S, Dong F, Ma S, Ji Q, Bartlow P, Ding Y, Wang L, Liu H, Li Y, Cheng H, Miao W, Yuan W, Yuan Y, Cheng T, Xie XQ. Small-molecule inhibitors targeting INK4 protein p18INK4C enhance ex vivo expansion of haematopoietic stem cells. *Nat Commun*. 2015 Feb 18;6:6328.
- **Wei Y**, **Tang C**, Sant V, Li S, Poloyac SM, Xie W. A Molecular Aspect in the Regulation of Drug Metabolism: Does PXR-Induced Enzyme Expression Always Lead to Functional Changes in Drug Metabolism? *Curr Pharm Reports* 2016 August; 2 (4) 187–192.
- **Zhang H**, Nguyen MH, Clancy CJ, **Joshi R**, Zhao W, Ensor C, Venkataramanan R, Shields RK. Pharmacokinetics of Posaconazole Suspension in Lung Transplant Patients with and without Cystic Fibrosis. *Antimicrob Agents Chemother*. 2016 May 23;60(6):3558-62.
- Zhang J, Cao L, Wang H, Cheng X, Wang L, Zhu L, Yan T, **Xie Y**, Wu Y, Zhao M, Ma S, Wu M, Wang G, Hao H. Ginsenosides Regulate PXR/NF- κ B Signaling and Attenuate Dextran Sulfate Sodium-Induced Colitis. *Drug Metab Dispos*.. 2015 Aug;43(8):1181-9 5/18/2015.;43(8):
- Zhou X, Cao L, Jiang C, **Xie Y**, Cheng X, Krausz KW, Qi Y, Sun L, Shah YM, Gonzalez FJ, Wang G, Hao H. PPAR α -UGT axis activation represses intestinal FXR-FGF15 feedback signalling and exacerbates experimental colitis. *Nat Commun*. 2014 Sep 3;5:4573
- Zhou X, **Xie Y**, Qi Q, Cheng X, Liu F, Liao K, Wang G, Hao H. Disturbance of hepatic and intestinal UDP-glucuronosyltransferase in rats with trinitrobenzene sulfonic acid-induced colitis. *Drug Metab Pharmacokinet*. 2013;28(4):305-13..

PRESENTATIONS, POSTERS, AND PODIUM PRESENTATIONS

- Biomedical Engineering Society Annual Meeting, Tampa, FL. Polyethylene glycol (peg) affects mechanical and biological properties of poly (ester amide) based fibrous scaffolds. **Patel A, Xue Y.** October 9, 2015.
- Biomedical Engineering Society Annual Meeting, Tampa, FL. Carbon nanotube functionalization and scaffold geometry promote differentiation of myoblasts. **Patel A, Mukundan S.** October 9, 2015.
- Materials Research Society Fall Meeting and Exhibit, Boston, MA. Self-assembled hierarchical polyelectrolyte hydrogels mimic biomineralization in vitro. **Patel, A.** November 1, 2015.
- Materials Research Society Fall Meeting and Exhibit, Boston, MA. Carbon-based hierarchical scaffolds for myoblast differentiation: dilemma between scaffold geometry and nano/microstructure? **Patel A, Mukundan S.** November 1, 2015.
- World Biomaterials Congress, Montreal, Canada. Biomimetic self-assembled nano-composite hydrogel promotes myoblast differentiation. **Patel A, Xue Y.** May 16, 2016.
- World Biomaterials Congress, Montreal, Canada. Biocompatible graphene/nanofiber composite promotes myoblast differentiation. **Patel A, Xue Y, Mukundan S.** May 16, 2016.
- Biomedical Engineering Society Annual Meeting, Tampa, FL. Biodegradable and biocompatible pegylated poly (ester amide) elastomers with increased processability. **Xue Y, Patel A,** October 9, 2015.
- McGowan Institute for Regenerative Medicine Annual Retreat, Pittsburgh, PA. Cell-instructive graphene-containing nanocomposites induce multinucleated myotube formation. **Patel A, Xue Y, Mukundan S.** March 4, 2016.
- McGowan Institute for Regenerative Medicine Annual Retreat, Pittsburgh, PA. Self-assembled graphene nanocomposite hydrogels improve multinucleated myotube formation. **Patel A, Xue Y.** March 4, 2016.
- Injury, Repair, and Regenerative Medicine Seminar. McGowan Institute of Regenerative Medicine, Pittsburgh, PA. Harnessing Native Microenvironmental Cues Endows Bioactivity to Biomaterials, **Patel, A.** September 8, 2015.
- Society for Laboratory Automation and Screening (SLAS). Development of radio-ligand binding and PSA reporter assays to characterize and triage hits from an AR-TIF2 protein-protein interaction HCS assay. **Fancher, A.** January 25, 2016.
- AACR Annual Meeting, New Orleans, LA. Toxicity, bioavailability, pharmacokinetics, tissue distribution and metabolism of a novel small molecule inhibitor of IL-6-induced STAT3 activation. **Kiesel, B.** April 18, 2016.

- 28th Annual UPCI Scientific Retreat, Pittsburgh, PA. Synthesis and optimization of novel inhibitors of the AAA ATPase p97. **Alvarez, C.** June 17, 2016.
- Winter Eicosanoid Conference, Baltimore, MD. Screening 20-HETE Inhibitors in Microsomal Incubates Using UPLC-MS/MS. **Tang, C.** March 16, 2016.
- AAPS/FDA/ITC, Baltimore, MD. Interaction of N-acetylcysteine with OAT1 and OAT3 transporters. **Hagos, F.** April 19, 2016.
- Safar Center Symposium, Pittsburgh, PA. A combination of N-acetylceysteine and Probenecid for treatment of TBI. **Hagos, F.** May 17, 2016.
- McGowan Research Retreat 2016, Pittsburgh, PA. Locally implantable biodegradable polymeric Tacrolimus disc prolongs survival of vascularized composite allografts without morbid adverse effects. **Feturi, F.** March 6, 2016.
- 62nd Annual Scientific Meeting of the Robert H. Ivy Pennsylvania Plastic Surgery Society, Pittsburgh, PA. Locally implantable biodegradable polymeric Tacrolimus disc prolongs survival of vascularized composite allografts without morbid adverse effects. **Feturi, F.** April 16, 2016.
- Dr. Charles I. Jarowski Industrial Pharmacy Symposium, St. John's University, Queens, NY. Utilization of hot melt extrusion for the manufacture of a vaginal film containing a microbicide candidate, Dapivirine. **Regev, G.** June 16, 2015.
- 7th Annual AAPS Student Chapters Research Symposium, Morgantown, WV. Utilization of hot melt extrusion for the manufacture of a vaginal film containing a microbicide candidate, Dapivirine. **Regev, G.** June 19, 2015.
- School of Pharmacy Research Retreat, Pittsburgh, PA. Utilization of hot melt extrusion for the manufacture of a vaginal film containing a microbicide candidate, Dapivirine. **Regev, G.** June 19, 2015.
- The University of Texas Health Science Center Retreat, Vail, CO. Novel strategies of manipulating muscle stem cell aging by knocking down NF-kB. **Cheng, H.** December 4, 2015.
- AACP, National Harbor, MD. Use of clinical trial simulations to teach pharmacy students about the drug development process. **Kalluri, H.** July 13, 2015.
- ACCP Global Conference, San Francisco, CA. Physiologically based pharmacokinetic modeling approach to estimate changes in renal organic anion transporters based secretion in transplanted kidneys. **Kalluri, H.** October 17, 2016.
- AAPS Annual Meeting and Exposition, Orlando, FL. Pharmacokinetics of posaconazole suspension in lung transplant patients with and without cystic fibrosis. **Zhang, H.** October 22, 2015.

- 7th Annual AAPS Student Chapters Research Symposium, Morgantown, WV. Co-delivery of curcumin using PLGA nanoparticles enhances the anti-tumor effect of paclitaxel in vitro. **Li, J.** June 19, 2015.
- The International Symposium for Graduate Students on Pharmaceutical Sciences, Sun Yat-Sen University, Guangzhou, China. Drug disposition in critical illness: Effect of targeted temperature. management and ischemic injury on the pharmacokinetics of anti-epileptic drugs. **Anderson, K.** August 22, 2015.
- Autumn Immunology Conference, Chicago, IL. Macrophages are critical coordinators of the infant immune response to respiratory syncytial virus (RSV) disease. **Eichinger, K.** November 22, 2015.
- 14th Annual Safar Symposium, Pittsburgh, PA. No-reflow phenomenon: alteration of cerebral microcirculation after cardiac arrest in developing rats. **Li, L.** May 17, 2016.
- AAPS Annual Meeting and Exposition, Orlando, FL. Hepatic ischemia reperfusion injury is attenuated with treprostinil supplementation in the University of Wisconsin organ preservation solution. **Almazroo, O.** October 25, 2015.
- AAPS Annual Meeting and Exposition, Orlando, FL. Pharmacokinetics of mycophenolic acid (mpa) and mycophenolic acid glucuronide (MPAG) in hematopoietic stem cell transplant recipients receiving MMF for GVHD prophylaxis. **Joshi, R.** October 25, 2015.
- McGowan Research Retreat 2016, Pittsburgh, PA. The association between BDNF and the development of depression in HCV patients taking INF-alpha therapy. **Salwa, A.** March 6, 2016.
- AAPS Annual Meeting and Exposition, Orlando, FL. Clarification of molecular compatibility mechanism of traditional Chinese medicinal formula, Sini Decoction, by network pharmacology and chemoinformatic tools. **Ma, S.** October 26, 2015.
- Society of Critical Care Medicine, 45th Critical Care Conference. Orlando, FL. Next generation gene expression analysis shows decreased expression of transporters following TBI. **Adams, S.** February 20, 2016.
- Fifth Annual SLAS Conference and Exhibition. San Diego, CA. Confirmation of synergistic cancer drug combinations identified by high throughput screening **Kochanek, S.** January 25, 2016.
- Korean Society for Molecular and Cellular Biology 13th Protein Metabolism and Diseases Conference. Sokcho, South Korea. Role of UBR4, a substrate recognition component of the N-end rule pathway, in the endo-lysosomal system. **Kim, ST.** July 8, 2015.
- Korean Society for Molecular and Cellular Biology 13th Protein Metabolism and Diseases Conference. Sokcho, South Korea. N-terminal arginylation of endoplasmic reticulum chaperone BiP generates an autophagy degron that binds to the autophagic adaptor p62/SQSTM1. **Kim, ST.** July 8, 2015.

- Korean Society for Molecular and Cellular Biology 13th Protein Metabolism and Diseases Conference. Sokcho, South Korea. The function of UBR4, one of N-recogins in the N-end rule pathway, in endosomal-lysosomal system. **Kim, ST.** July 8, 2015.
- International Symposium for Graduate students on Pharmaceutical Sciences 2015 and the 1st Annual AAPS-SYSU Student Chapter Research Symposium. Guangzhou, China. Regulation of drug metabolism and disposition by traumatic injury. **Xie, Y.** August 23, 2015.
- 7th Annual AAPS Student Chapters Research Symposium, Morgantown, WV. Regulation of drug metabolism and disposition by traumatic injury. **Xie, Y.** June 5, 2015.
- 10th World Biomaterial Congress. Montreal, Canada. Biocompatible graphene/nanofiber composite promotes myoblast differentiation. **Xue, Y.** May 19, 2016.
- 10th World Biomaterial Congress. Montreal, Canada. Biomimetic self-assembled nano-composite hydrogel promotes myoblast differentiation. **Xue, Y.** May 19, 2016.
- 2015 Biomedical Engineering Society Annual Meeting. Tampa, FL. PEGylated poly(ester amide) elastomers with tunable physico-chemical mechanical and degradation properties. **Xue, Y.** October 7, 2015.
- 2015 Biomedical Engineering Society Annual Meeting. Tampa, FL. Elastomeric APS-PEG/PCL electrospun scaffolds for tissue engineering. **Xue, Y.** October 7, 2015.
- The Center of Excellence for Computational Drug Abuse Research Annual Meeting. Pittsburgh, PA. Effect of anti-hypertensive and anti-diabetic medications on the cognitive decline in alzheimer's disease patients. **Hu, Z.** March 21, 2016.

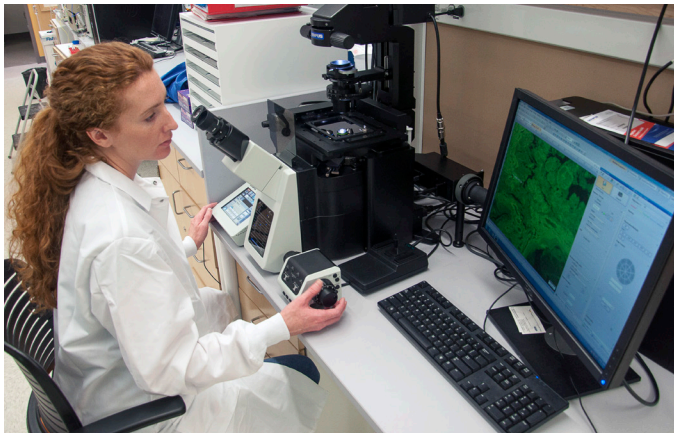
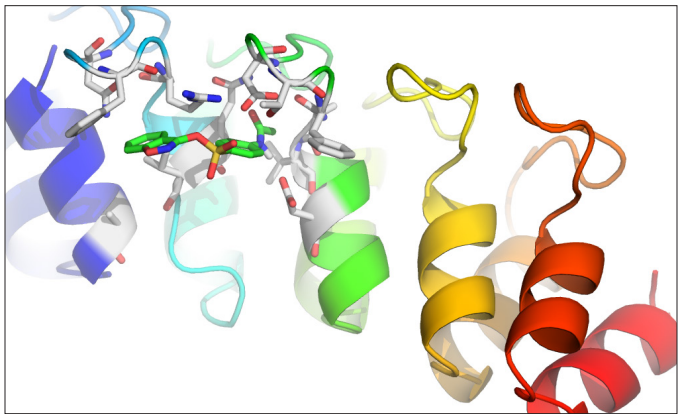
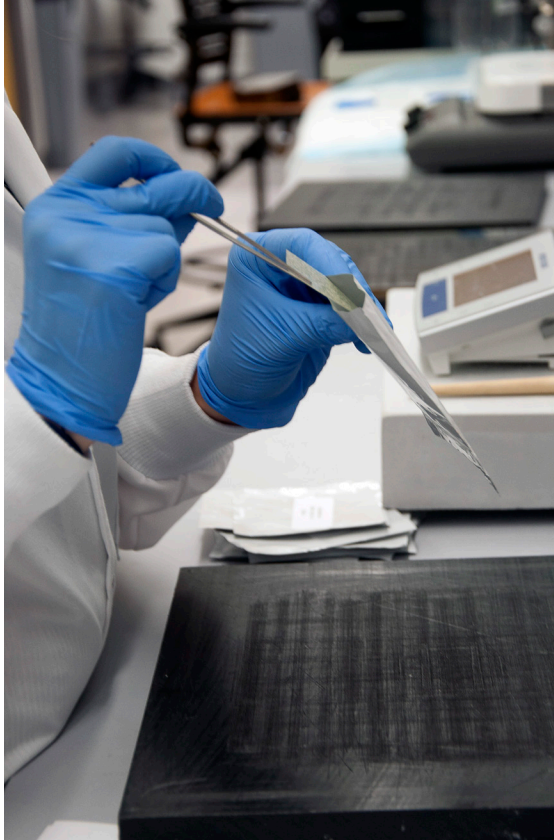
POSTDOCTORAL FELLOWS

School of Pharmacy Postdoctoral Associates FY16

Name	Degree	Degree/University	Field	Country
Choi, You-Jin	PhD	Seoul National University	Pharmaceutical Health Sciences	South Korea
Espinoza, Martha Bustos	PhD	Universidad Nacional Autonoma de Mexico	Biomedical Sciences	Mexico
Garbacz, Wojciech	PhD	University of Dundee in Dundee	Toxicology	Poland
Guo, Weiwei	PhD	Fudan University	Genetics	China
Joshi, Anand Anant	PhD	University of Kansas	Medicinal Chemistry	India
Miah, MD Kowser	PhD	Texas Tech Health Sciences Center	Pharmacokinetics	India
Patel, Sravan	PhD	Duquesne University	Pharmaceutics	India
Shaik, Imam	PhD	Texas Tech University	Pharmaceutical Sciences	India
Siminerio, Lara	PharmD	University of Pittsburgh	Pharmacy	USA
Singh, Manjulata	PhD	Defence Institute of Physiology and Allied Sciences	Life Sciences	India
Sun, Jingjing	PhD	Chinese Academy of Sciences	Polymer Chemistry and Physics	China
Wang, Peng-Cheng	PhD	Chinese Academy of Sciences	Medicinal Chemistry	China
Wang, Zehua	PhD	Yunnan University	Biochemistry and Molecular Biology	China
Zhao, Yueshui	PhD	The Chinese University of Hong Kong	Biomedical Sciences	China
Zhu, Junjie	PhD	Chinese Academy of Sciences	Medicinal Chemistry	China

**Advancing Human Health
Through Research**





Advancing Human Health through Research

The overall goal of the School of Pharmacy’s research programs is to advance human health through a portfolio of research that ranges from computational drug discovery to preclinical development to patient outcomes. Supported by diversified funding sources, 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 FY16

- Funded research projects generated **\$12,808,309** in total support (**\$9,551,076 million** direct costs and **\$3,257,233 million** indirect costs).
- PHS research funding was **\$5,793,220** in direct costs and **\$2,293,256** in indirect costs.
- **83**: the number of active research projects.
- **#18** among schools of pharmacy in NIH support for FY15 with **\$8,086,476** in funding (**#18** in overall funding and **#17** in non-federal funding).
- **27** faculty members were principal investigators.
- **6** principal investigators or co-investigators on multi-institutional grants.
- Faculty made **10** international research presentations in **4** countries.
 - 6 at universities or hospitals
 - 4 at conferences or academies

RESEARCH FUNDING

Annual Grant Costs by Source

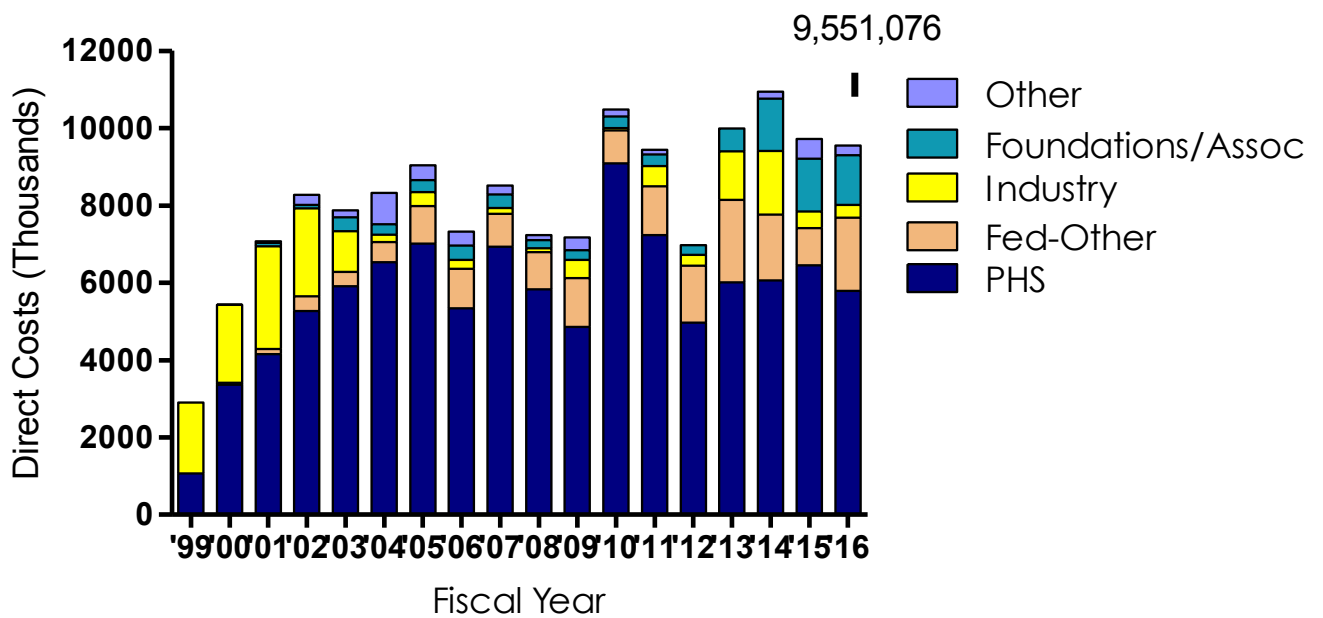
Active project funding for FY16 was **\$12.31 million**, with **\$9.55 million in direct costs** and \$3.1 million in indirect costs. The graph and tables below and on the next page provide detail regarding FY16 sources of funding for direct costs.

Direct Costs for Research by Funding Category

Source	FY10	FY11	FY12	FY13	FY14	FY15	FY16
PHS	\$9,083,208	\$7,229,748	\$4,967,911	\$6,006,199	\$6,058,477	\$6,450,467	\$5,793,220

Source	FY10	FY11	FY12	FY13	FY14	FY15	FY16
Federal-Oth	\$856,030	\$1,268,055	\$1,469,405	\$2,143,548	\$1,702,706	\$967,894	\$1,889,666
Industry	\$60,226	\$518,140	\$289,323	1,253,199	\$1,649,131	\$425,862	\$330,043
Found/Assoc	\$296,641	\$305,600	\$249,664	\$584,447	\$1,347,135	\$1,363,123	\$1,286,688
Other	\$187,737	\$111,157	0	0	\$180,224	\$507,487	\$251,459
TOTAL	\$10,483,842	\$9,432,700	\$6,976,303	\$9,987,393	\$10,937,673	\$9,714,833	\$9,551,076

Direct Costs: Research Funding



RESEARCH OVERVIEW

Center for Pharmacogenetics

Faculty

Christian Fernandez, Assistant Professor
Song Li, Professor
Xiao-chao Ma, Associate Professor
Wen Xie, Professor
Da Yang, Assistant Professor

Research Assistant Professor

Jiang Li

Research Associate

Yixian Huang

Graduate Students (PhD students)

Yunqi An	Amina Shehu
Anne Barbosa	Jingjing Sun
Yuhan Bi	Hung-Chun Tung
Xinran Cai	Yue Wang
Yichao Chen	Yuan Wei
Mohammed Ghazwani	Yang Xie
Komal Pradhan	Jieni Xu
Madhav Sachar	Jiong Yan
Xiaolan Zhang	

Postdoctoral Fellows

You-Jin Choi, PhD
Wojciech Garbacz, PhD
Weiwei Guo
Pengcheng Wang, PhD
Zehua Wang
Bo Yang
Junjie Zhu, PhD

Visiting Scholars

Qianfeng Chen
Na Gao
Li Gao
Lei Liang
Qiongfeng Liao
Yongdong Niu
Dandan Tian

Zhiyuan Wu
Dan Xu
Qianyu Zhai
Min Zhao

Major Accomplishments

- **Song Li** was an ad hoc Reviewer, Lung Cancer Research Program - Therapeutics, Treatment and Resistance (November 2015)
- **Song Li** was an ad hoc Reviewer, NIH Enabling and Bioanalytical and Imaging Technologies (EBIT) Study Section (June 2016)
- **Song Li** was an ad hoc Reviewer, 2016 DOD/BCRP Nanotechnology (July 2016)
- **Xiaochao Ma** is the co-Investigator of a new NIH R01 grant titled “Short- or long-term impacts of drug exposure at early life on drug metabolism, therapeutic efficacy, and drug-induced toxicity.” (Xiaobo Zhong/University of Connecticut, P.I.)
- **Wen Xie** was awarded the competitive renewal of his NIH R01 grant titled “The AHR-FGF21 Axis in Hepatic Steatosis and Metabolic Syndrome”, 1R01 DK083952-06, (Xie, P.I.), Funding period: 04/01/16 – 03/31/20
- **Wen Xie** was the co-Investigator of a new NIH R01 grant titled “Role and Regulation of beta-Catenin in Cholestatic Liver Disease.” R01DK103775, (Kari Nejak-Bowen, P.I.; Xie, Co-Investigator), Funding period: 07/01/15 - 04/30/20
- **Wen Xie** was a Member, Scientific Advisory Board, 2nd Ling-Nan International Forum on DMPK. Guangzhou, China. December 4-6, 2015.
- **Wen Xie** was an ad hoc Reviewer, Scientific Assessment and Workforce Development, Oak Ridge Associated Universities (ORAU), on behalf of the Nazarbayev University Research Council in Astana, Kazakhstan (June-July 2015)
- **Wen Xie** was an ad hoc Reviewer, Chang Jiang Scholars Program, Ministry of Education, China (September 2015)
- **Wen Xie** was an ad hoc Reviewer, Biological and Medical Sciences, Austrian Science Fund (FWF) (January 2016)
- **Wen Xie** was an ad hoc Reviewer, Czech Science Foundation (June 2016)

- **Wen Xie** was Guest Editor for *Biochimica et Biophysica Acta -Gene Regulatory Mechanisms (BBA-GRM)*, to organize a Thematic Issue on xenobiotic receptors, which was published in September 2016.
- **Wen Xie** was the Editor for the book “Drug Metabolism in Diseases”, which was published in September 2016 by Elsevier (Waltham, Massachusetts)
- **Wen Xie** was appointed as an Editorial Board Member, *Molecular Pharmacology*
- **Da Yang** was selected to be the nominee of the V Foundation Scholar for Cancer Research by UPCI
- **Da Yang’s** UPCI-RPCI Ovarian Cancer SPORE Early Career Award has been renewed for another year
- **Da Yang** was invited to serve as an Ad hoc Reviewer for the Cancer Research UK, London, UK
- **Da Yang** was invited to serve as an Ad hoc Reviewer for the Wellbeing of Women, London, UK
- **Da Yang** was invited to serve as Ad hoc Reviewer for the CEP and DEP programs of UPCI-RPCI Ovarian Cancer SPORE

Publications

- Karol SE, Mattano LA Jr, Yang W, Maloney KW, Smith C, Liu C, Ramsey LB, Fernandez CA, Chang TY, Neale G, Cheng C, Mardis E, Fulton R, Scheet P, San Lucas FA, Larsen EC, Loh ML, Raetz EA, Hunger SP, Devidas M, Relling MV. Genetic risk factors for the development of osteonecrosis in children under age 10 treated for acute lymphoblastic leukemia. *Blood*. 2016 Feb 4;127(5):558-64.
- Karol SE, Yang W, Van Driest SL, Chang TY, Kaste S, Bowton E, Basford M, Bastarache L, Roden DM, Denny JC, Larsen E, Winick N, Carroll WL, Cheng C, Pei D, **Fernandez CA**, Liu C, Smith C, Loh ML, Raetz EA, Hunger SP, Scheet P, Jeha S, Pui CH, Evans WE, Devidas M, Mattano LA Jr, Relling MV. Genetics of glucocorticoid-associated osteonecrosis in children with acute lymphoblastic leukemia. *Blood*. 2015;126(15):1770-6.
- **Fernandez CA**, Smith C, Yang W, Mullighan CG, Qu C, Larsen E, Bowman WP, Liu C, Ramsey LB, Chang T, Karol SE, Loh ML, Raetz EA, Winick NJ, Hunger SP, Carroll WL, Jeha S, Pui CH, Evans WE, Devidas M, Relling MV. Genome-wide analysis links NFATC2 with asparaginase hypersensitivity. *Blood*. 2015;126(1):69-75.

- Paugh SW, Bonten EJ, Savic D, Ramsey LB, Thierfelder WE, Gurung P, Malireddi RK, Actis M, Mayasundari A, Min J, Coss DR, Laudermilk LT, Panetta JC, McCorkle JR, Fan Y, Crews KR, Stocco G, Wilkinson MR, Ferreira AM, Cheng C, Yang W, Karol SE, **Fernandez CA**, Diouf B, Smith C, Hicks JK, Zanut A, Giordanengo A, Crona D, Bianchi JJ, Holmfeldt L, Mullighan CG, den Boer ML, Pieters R, Jeha S, Dunwell TL, Latif F, Bhojwani D, Carroll WL, Pui CH, Myers RM, Guy RK, Kanneganti TD, Relling MV, Evans WE. NALP3 inflammasome upregulation and CASP1 cleavage of the glucocorticoid receptor cause glucocorticoid resistance in leukemia cells. *Nat Genet.* 2015;47(6):607-14.
- **Fernandez CA**, Smith C, Karol SE, Ramsey LB, Liu C, Pui CH, Jeha S, Evans WE, Finkelman FD, Relling MV. Effect of premedications in a murine model of asparaginase hypersensitivity. *J Pharmacol Exp Ther.* 2015;352(3):541-51.
- Li, Z., Scott, M.J., Fan, E.K., Li, Y., Liu, J., Xiao, G., **Li, S.**, Billiar, T.R., Wilson, M.A., Jiang, Y., and Fan, J. Tissue damage negatively regulates LPS-induced macrophage necroptosis. *Cell Death and Differentiation* 23: 1428-1447, 2016 (PMID: 26943325)
- Shinde, A., Berhane, H., Rhieu, B., Kalash, R., Xu, K., Goff, J., Epperly, M., Franicola, D., Zhang, X., Dixon, T., Shields, D., Wang, H., Wipf, P., Parmar, K., Guinan, E., Kagan, V., Tyurin, V., Ferris, R., Zhang, X., **Li, S.**, and Greenberger, J. Intraoral mitochondrial-targeted GS-nitroxide, JP4-039, radioprotects normal tissue in tumor-bearing radiosensitive *Fancd2*^{-/-} (C57BL/6) mice. *Radiation Research* 185: 134-150, 2016 (PMID: 26789701)
- Sun, J., Chen, Y., Li, K., Huang, Y., Zhang, X., Fu, X., Zhao, W., Wei, Y., Xu, L., Zhang, P., Venkataramanan, R., and **Li, S.** A prodrug micellar carrier assembled from polymers with pendant farnesyl thiosalicylic acid moieties for improved delivery of paclitaxel. *Acta Biomaterialia* 43: 282-291, 2016 (PMID: 27422196)
- Zhao, M., Huang, Y., Chen, Y., Xu, J., ***Li, S.**, and ***Guo, X.** PEG-Fmoc-ibuprofen conjugate as a dual functional nanomicellar carrier for paclitaxel. *Bioconjugate Chemistry* (in press).
- Chen, Y., Xia, R., Huang, Y., Zhao, W., Li, J., Zhang, X., Wang, P., Venkataramanan, R., Fan, J., Xie, W., Ma, X., Lu, B., and **Li, S.** An immunostimulatory nanocarrier that improves cancer immunochemotherapy. *Nature Communications* (in press).
- Wang P, Pradhan K, Zhong XB, **Ma X.** Isoniazid metabolism and hepatotoxicity. *Acta Pharm Sin B.* 2016 Sep;6(5):384-392. PMID: 27709007.
- Li F, Wang P, Liu K, Tarrago MG, Lu J, Chini EN, **Ma X.** A High Dose of Isoniazid Disturbs Endobiotic Homeostasis in Mouse Liver. *Drug Metab Dispos.* 2016 Nov;44(11):1742-1751. PMID: 27531952.

- Sachar M, Li F, Liu K, Wang P, Lu J, **Ma X**. Chronic Treatment with Isoniazid Causes Protoporphyrin IX Accumulation in Mouse Liver. *Chem Res Toxicol*. 2016 Aug 15;29(8):1293-7. PMID: 27438535.
- Wang P, Shehu AI, Liu K, Lu J, **Ma X**. Biotransformation of Cobicicistat: Metabolic Pathways and Enzymes. *Drug Metab Lett*. 2016;10(2):111-23. PMID: 26935921.
- Shehu AI, Li G, Xie W, **Ma X**. The pregnane X receptor in tuberculosis therapeutics. *Expert Opin Drug Metab Toxicol*. 2016;12(1):21-30. PMID: 26592418.
- Sachar M, Anderson KE, **Ma X**. Protoporphyrin IX: the Good, the Bad, and the Ugly. *J Pharmacol Exp Ther*. 2016 Feb;356(2):267-75. PMID: 26588930.
- Sachar M, **Ma X**. Role of ABCG2 in liver injury associated with erythropoietic protoporphyria. *Hepatology*. 2016 Jul;64(1):305. PMID: 26403458.
- Tien YC, Liu K, Pope C, Wang P, **Ma X**, Zhong XB. Dose of Phenobarbital and Age of Treatment at Early Life are Two Key Factors for the Persistent Induction of Cytochrome P450 Enzymes in Adult Mouse Liver. *Drug Metab Dispos*. 2015 Dec;43(12):1938-45. PMID: 26400395.
- Liu K, Yan J, Sachar M, Zhang X, Guan M, Xie W, **Ma X**. A metabolomic perspective of griseofulvin-induced liver injury in mice. *Biochem Pharmacol*. 2015 Dec 1;98(3):493-501. PMID: 26343413.
- Jiang M, Klein M, Zanger UM, Mohammad MK, Cave MC, Gaikwad NW, Dias NJ, Selcer KW, Guo Y, He J, Zhang X, Shen Q, Qin W, Li J, **Li S**, Xie W. Inflammatory regulation of steroid sulfatase, a novel mechanism to control estrogen homeostasis and inflammation in chronic liver disease. *J Hepatol*. 64: 44-52 (2016) PMID: 26220752
- Yu L, Wang Z, Huang M, Li Y, Zeng K, Lei J, Hu H, Chen B, Lu J, **Xie W**, Zeng S. Evodia alkaloids suppress gluconeogenesis and lipogenesis by activating the constitutive androstane receptor. *Biochim Biophys Acta - Gene Regulatory Mechanisms* 1859: 1100-1111 (2016) PMID: 26455953
- Shehu AI, Li G, **Xie W**, Ma X. The pregnane X receptor in tuberculosis therapeutics. *Expert Opin Drug Metab Toxicol*. 12: 21-30 (2016) PMID: 26592418 (Peer-reviewed review article).

- Xie Y, Wang H, Cheng X, Wu Y, Cao L, Wu M, **Xie W**, Wang G, Hao H. Farnesoid X receptor activation promotes cell proliferation via PDK4-controlled metabolic reprogramming. *Sci Rep.* 6: 18751 (2016) PMID: 26728993
- Guo Y, Hu B, Xie Y, Billiar TR, Sperry JL, Huang M, **Xie W**. Regulation of drug-metabolizing enzymes by local and systemic liver injuries. *Expert Opin Drug Metab Toxicol.* 12: 245-51 (2016) PMID: 26751558
- Wei Y, Tang C, Sant V, Li S, Poloyac SM, **Xie W**. A molecular aspect in the regulation of drug metabolism: does PXR-induced enzyme expression always lead to functional changes in drug metabolism? *Curr Pharmacol Rep* (Accepted)
- Yan J, **Xie W**. A brief history of the discovery of PXR and CAR as xenobiotic receptors. *Acta Pharm Sin B* 6: 450-452 (2016). PMID: 27709013
- Zhao Z, Xu D, Li S, He B, Huang Y, Xu M, Ren S, Li S, Wang H, **Xie W**. Activation of liver X receptor attenuates oleic acid-induced acute respiratory distress syndrome. *Am J Pathol.* 186: 2614-2622 (2016) PMID: 27520356
- Garbacz WG, Lu P, Miller TM, Poloyac SM, Eyre NS, Mayrhofer G, Xu M, Ren S, **Xie W**. Hepatic overexpression of CD36 improves glycogen homeostasis and attenuates high-fat diet induced hepatic steatosis and insulin resistance. *Mol Cell Biol.* 2016 Aug 15 [Epub ahead of print] PMID: 27528620
- Wu SY, Rupaimoole R, Shen F, Pradeep S, Pecot CV, Ivan C, Nagaraja AS, Gharpure KM, Pham E, Hatakeyama H, McGuire MH, Haemmerle M, Vidal-Anaya V, Olsen C, Rodriguez-Aguayo C, Filant J, Ehsanipour EA, Herbrich SM, Maiti SN, Huang L, Kim JH, Zhang X, Han HD, Armaiz-Pena GN, Seviour EG, Tucker S, Zhang M, Yang D, Cooper LJ, Ali-Fehmi R, Bar-Eli M, Lee JS, Ram PT, Baggerly KA, Lopez-Berestein G, Hung MC, Sood AK. A miR-192-EGR1-HOXB9 regulatory network controls the angiogenic switch in cancer. *Nat Commun.* 2016 Apr 4;7:11169.
- Zhang M, Liu G, Xue F, Edwards R, Sood A, Zhang, W, **Yang D#**, Copy number deletion of RAD50 as a predictive marker of BRCAness and PARP inhibitor response in BRCA wild-type ovarian cancer, *Gynecol Oncol.* 2016 Apr;141(1):57-64.
- Zhao W, Chen B, Guo X, Wang R, Chang Z, Dong Y, Song K, Wang W, Qi L, Gu Y, Wang C, **Yang D#**, Guo Z#, A rank-based transcriptional signature for predicting relapse risk of stage II colorectal cancer identified with proper data sources. *Oncotarget.* 2016 Mar 7. doi: 10.18632/oncotarget.7956 (#: corresponding author)
- Li X, Cai H, Zheng W, Tong M, Li H, Ao L, Li J, Hong G, Li M, Guan Q, Yang S, **Yang D#**, Lin X#, Guo Z#. An individualized prognostic signature for gastric cancer patients treated with 5-

Fluorouracil-based chemotherapy and distinct multi-omics characteristics of prognostic groups. *Oncotarget*. 2016 Jan 30. doi: 10.18632/oncotarget.7087 (#: corresponding author)

- Rupaimoole R, Ivan C, **Yang D**, Gharpure KM, Wu SY, Pecot CV, Previs RA, Nagaraja AS, Armaiz-Pena GN, McGuire M, Pradeep S, Mangala LS, Rodriguez-Aguayo C, Huang L, Bar-Eli M, Zhang W, Lopez-Berestein G, Calin GA, Sood AK. Hypoxia-upregulated microRNA-630 targets Dicer, leading to increased tumor progression. *Oncogene*. 2016 Jan 4. doi: 10.1038/onc.2015.492.
- Banerjee Mustafi S, Chakraborty PK, Naz S, Dwivedi SK, Street M, Basak R, **Yang D**, Ding K, Mukherjee P, Bhattacharya R. MDR1 mediated chemoresistance: BMI1 and TIP60 in action. *Biochim Biophys Acta*. 2016 Aug;1859(8):983-93. doi: 10.1016/j.bbagr.2016.06.002. Epub 2016 Jun 22. PubMed PMID: 27295567; PubMed Central PMCID: PMC4958591.

Invited Presentations

- “Improving drug therapy for childhood leukemia”. NIGMS Research Initiative for Scientific Enhancement (RISE) Program, University of Puerto Rico, Cayey, Puerto Rico. February 16th, 2016. (**Fernandez CA**)
- “Multifunctional Nanocarriers for Improved Cancer Therapy”. 4th Asian Symposium on Pharmaceutical Science and Technology (ASPST 2016) & The 4th Enlarged Editorial Board Conference of Asian Journal of Pharmaceutical Sciences (AJPS), Shenyang, China, April 28-29, 2016 (**Li S**)
- “PXR-humanized Mouse Models for Drug Testing”. The Liver Meeting, Special Interest Group (SIG) on Hepatotoxicity. San Francisco, CA, November 2015 (**Ma X**)
- “Nuclear Receptors in Liver Metabolism and Liver Diseases”, School of Pharmaceutical Sciences, Anhui Medical University. Hefei, China. August 19, 2015 (**Xie W**)
- “The Steroid Sulfatase in Energy Metabolism and Inflammatory Liver Disease” School of Basic Medical Sciences, Capital Medical University, Beijing, China. August 28, 2015 (**Xie W**)
- “Xenobiotic Receptors as Therapeutic Targets for Metabolic Disease” Department of Pharmacology and Toxicology, Michigan State University, East Lansing, Michigan. October 28, 2015 (**Xie W**)
- “Nuclear Receptor-Controlled Hormonal Homeostasis in Cancer and Beyond” Cancer Center Liver Symposium, UC Davis Cancer Center, Sacramento, CA. November 12, 2015 (**Xie W**)
- “Transcriptional Regulation of Hormonal Homeostasis in Cancer and Beyond”, Department of Cancer Biology, the Lerner Research Institute of the Cleveland Clinic. Cleveland, Ohio. November 24, 2015 (**Xie W**)

- “Disease-Drug Interactions” 2nd Ling-Nan International DMPK Summit Conference. Guangzhou, China. December 4-6, 2015 **(Xie W)**
- “The Steroid Sulfatase in Energy Metabolism and Inflammatory Liver Disease” Department of Pharmacology, College of Pharmacy and Pharmaceutical Sciences, University of Toledo. Toledo, Ohio. March 23, 2016 **(Xie W)**
- “Transcriptional Regulation of Drug-Drug Interaction and Disease-Drug Interaction” School of Pharmaceutical Sciences, Peking University Health Science Center. Beijing, China. June 3, 2016 **(Xie W)**
- “Nuclear Receptors in Liver Metabolism and Liver Diseases”, Department of Biology, South University of Science and Technology of China. Shenzhen, China. June 6, 2016 **(Xie W)**
- “Integrative Genomics and Prediction of BRCAness and Drug Response in Ovarian Cancer”, 5th Annual Womens Cancer Research Center Retreat, 11/13-14, 2015, Nemaquin Woodlands Resort, PA, Farmington, PA 15437 **(Yang D)**
- “MiR-506 is a master regulator of EMT and HR pathways in ovarian cancer” RPCI-UPCI SPORE IAB Meeting, 4/13-4/15, 2016, Roswell Park Cancer Institute, Buffalo, NY, **(Yang D)**

Center for Clinical Pharmaceutical Sciences

Faculty

Samuel M. Poloyac, PharmD, PhD, Professor and Center Director
 Kerry M. Empey, PharmD, PhD, Assistant Professor
 Philip E. Empey, PharmD, PhD, BCPS, Assistant Professor
 Thomas D. Nolin, PharmD, PhD, Associate Professor
 Lisa C. Rohan, PhD, Professor
 James M. Stevenson, PharmD, MS, Assistant Professor
 Carolyn T. Thorpe, PhD, MPH, Assistant Professor
 Joshua Thorpe, PhD, MPH, Associate Professor
 Raman Venkataramanan, PhD, Professor

Graduate Students

Soloman M. Adams, PharmD
 Omar A. Almazroo, BSc, MSc
 Kacey Anderson, BS
 Katherine Eichinger, PharmD, MS
 Yoko Franchetti, BS, PhD
 Tiantian Gong, BS, MS
 Fanuel Hagos, BS, MS

Rujuta Joshi, BS Pharm
 Hari V. Kalluri, PharmD
 Lingjue Li, MS
 Joshua Niznik, PharmD
 Alexander J. Prokopenko, PharmD
 Mohammad S. Shawaqfeh, PharmD, MS
 Chenxiao Tang, BS
 Harisudhan Thanukrishnan, M Pharm
 Hongfei Zhang, MS

Major Accomplishments

- **Kerry Empey**'s abstract was selected for an International Gordon Conference (GRC).
- **Kerry Empey** has been a member of the General Council for the Autumn Immunology Conference.
- **Philip Empey** was presented with the AACP Innovations in Teaching Award for 2015. The award was given by the American Association of Colleges of Pharmacy (AACP).
- **Philip Empey** was named the Associate Director of the Institute of Personalized Medicine by the University of Pittsburgh.
- **Philip Empey** launched the PreCISE-Rx clinical pharmacogenomics implementation and research initiative at Pitt/UPMC.
- **Philip Empey** received 2 grants:
 - Pittsburgh Health Care Data Alliance: Center for Commercial Applications of Healthcare Data at Pitt, Early Stage Research Award. "MEDivate"; 2015-2016. **Empey PE (PI)**, Coons JC (Co-I).
 - National Association of Chain Drug Stores. "Test2Learn™: Community Pharmacists Pharmacogenomics Education Certificate Program" 2016-2021. **Empey PE (PI)**. Coons JC, Adams S.
- **Tom Nolin** was promoted to Associate Professor with Tenure, University of Pittsburgh, School of Pharmacy, Department of Pharmacy and Therapeutics.
- **Tom Nolin** presented Keynote Lecture titled "Drug Dose Adjustment of Non-Renally Eliminated Drugs in CKD Patients – What is the Evidence?" at the 14th NephroPharmacology Meeting in Heidelberg, Germany, October 2015.
- **Tom Nolin** was an invited symposium chair at the NKF 2016 Spring Clinical Meeting, Boston, MA.
- **Tom Nolin** was invited to be a Visiting Professor at the University of Kansas Medical Center, School of Medicine, Division of Nephrology and Hypertension, Kansas City, KS, March 4, 2016. Presented "Nonrenal Drug Clearance in CKD: Searching for the Path Less Traveled" in the Kidney Institute Sullivan Conference.
- **Sam Poloyac** was named the Associate Dean for Graduate and Post-doctoral programs.
- **Sam Poloyac** was awarded and completed the Academic Leadership Fellow by the American Associate of Colleges of Pharmacy.
- **Sam Poloyac** serves as Co-director to the Clinical and Translational Science Institute TL1 Program, Pre-doctoral training.

- Within their NIAID funded Integrated Preclinical/Clinical Program (IPCP) grant, the team led by Drs. **Lisa Rohan** and Sharon Hillier successfully completed the first human clinical trials for antiretroviral containing vaginal film products intended to prevent HIV infection.
- **Lisa Rohan** was invited to assist with the development of the Fiscal Year (FY) 2017 Trans-NIH Plan for HIV-Related Research for the NIH Office of AIDS Research (OAR).
- **Lisa Rohan** was invited to present at the Office of AIDS Research Advisory Council Meeting.
- **Lisa Rohan** was awarded 2 NIH funded grants during the fiscal year:
 - “Film Antiretroviral Microbicide Evaluation (FAME).” July 2015. Role co-PI.
 - “A Bio-relevant Dissolution Method for Particulate Dosage Forms in the Periodontal Pocket.” August 2015. Role: PI.
- **Jim Stevenson** was a part of the School of Pharmacy team that launched “PreCISE-Rx”, a clinical pharmacogenomics service. The Pittsburgh Post-Gazette and The Pittsburgh Tribune Review published articles about this new service.
- **Carolyn Thorpe** was named “Top Reviewer” by the Research in Social and Administrative Pharmacy.
- **Carolyn Thorpe** was faculty advisor to the regional winners of the Student National Pharmacy Associate and Wal-Mart’s Prescription for Service Competition, for “The HPV Vaccination: The Red Light to Cancer” educational program.
- **Carolyn Thorpe** as awarded 2 government grants during the fiscal year:
 - “De-intensifying unnecessary medications in VA CLC residents nearing end of life.” Department of Veterans Affairs. Role: PI.
 - “Effects of a mindfulness intervention delivered within diabetes education on diabetes-related outcomes in military Veterans.” Department of Veterans Affairs. Role: Co-I.
- **Carolyn Thorpe** serves on the Health Services Research and Development Scientific Merit Review Board 2, Behavioral, Social, and Cultural Determinants of Health and Health Care review committee for the Department of Veterans Affairs.
- **Joshua Thorpe**’s research presentation, “Using Machine-Learning Methods to Identify Key Drivers of Family Dissatisfaction with VA End-of-Life Care” was selected for inclusion in the press program for Academy Health Research Meeting.
- One of **Joshua Thorpe**’s research posters was selected to be featured in the Medicare theme poster walk.
- **Joshua Thorpe** received government funding for his grant titled, “De-intensifying Unnecessary Medications in VA Nursing Home Residents Nearing End of Life.” Department of Veterans Affairs, Health Services Research and Development. Role: Co-I.

- **Joshua Thorpe** is a manuscript reviewer for 3 journals and also serves on an editorial board and 2 advisory boards.
- **Raman Venkataramanan** was nominated for the AAPS Educator award, the AAIPS Distinguished Scientists Award and for the AST Mentor award
- As Director of the TDM program, **Raman Venkataramanan** oversees 20 staff members that analyze an average of over 200 patient samples a day.
- As the Director of the Toxicology program, **Raman Venkataramanan** reviews and signs off toxicology drug screens in patients.
- **Raman Venkataramanan** serves on 8 editorial boards and 4 review committees. Editor for 1 journal.

Selected Publications

- Polin RA (Ed.) Good M, Kolls JK, **Empey KM**. Neonatal Pulmonary Host Defense in Developmental Immunobiology. *Fetal and Neonatal Physiology*, Chapter 130, pg 1262-1293. 2016 Philadelphia, PA: Elsevier.
- Hendricks MR, Lashua LP, Fischer DK, Flitter BA, Eichinger KM, Durbin JE, Sarkar SN, Coyne CB, **Empey KM**, Bomberger JM. Respiratory syncytial virus infection enhances *Pseudomonas aeruginosa* biofilm growth through dysregulation of nutritional immunity. *Proc Natl Acad Sci U S A*. 2016 Feb. PMID: 26729873.
- Eichinger KM, Egaña L, Orend JG, Resetar E, Anderson KB, Patel R, **Empey KM**. Alveolar macrophages support interferon gamma-mediated viral clearance in RSV-infected neonatal mice. *Respir Res*. 2015 Oct. PMID: 26438053.
- Hagos FT, Daood MJ, Ocque JA, Nolin TD, Bayir H, Poloyac SM, Kochanek PM, Clark RS, **Empey PE**. Probenecid, an organic anion transporter 1 and 3 inhibitor, increases plasma and brain exposure of N-acetylcysteine. *Xenobiotica*. 2016 Jun. PMID: 27278858.
- Adams SM, Anderson KB, Coons JC, Smith RB, Meyer SM, Parker LS, **Empey PE**. Advancing Pharmacogenomics Education in the Core PharmD Curriculum through Student Personal Genomic Testing. *Am J Pharm Educ*. 2016 Feb. PMID: 26941429.
- Kochanek PM, Bramlett HM, Shear DA, Dixon CE, Mondello S, Dietrich WD, Hayes RL, Wang KK, Poloyac SM, **Empey PE**, Povlishock JT, Mountney A, Browning M, Deng-Bryant Y, Yan HQ, Jackson TC, Catania M, Glushakova O, Richieri SP, Tortella FC. Synthesis of Findings, Current Investigations, and Future Directions: Operation Brain Trauma Therapy. *J Neurotrauma*. 2016 Mar. PMID: 26671284.
- Willyerd FA, **Empey PE**, Philbrick A, Ikonovic MD, Puccio AM, Kochanek PM, Okonkwo DO, Clark RS. Expression of ATP-Binding Cassette Transporters B1 and C1 after Severe Traumatic Brain Injury in Humans. *J Neurotrauma*. 2016 Jan 15. PMID: 25891836.

- Alshogran OY, Urquhart BL, **Nolin TD**. Downregulation of hepatic carbonyl reductase type 1 in end-stage renal disease. *Drug Metab Lett* 2015;9(2):111-118. PMID: 26282591.
- Walsh DW, **Nolin TD**, Friedman PA. Drug transporters and Na⁺/H⁺ exchange regulatory factor PSD-95/drosophila discs large/ZO-1 proteins. *Pharmacol Rev* 2015. PMID: 26092975.
- Anseeuw K, Mowry JB, Burdman EA, Ghannoum M, Hoffman RS, Gosselin S, Lavergne V, **Nolin TD**. Extracorporeal treatment in phenytoin poisoning: Systematic review and recommendations from the EXTRIP (Extracorporeal Treatment in Poisoning) Workgroup. *Am J Kidney Dis* 2016. PMID: 26578149.
- Stubbs JR, House JA, Ocque AJ, Zhang S, Johnson C, Kimber C, Schmidt K, Gupta A, Wetmore JB, **Nolin TD**, Spertus JA, Yu AS. Serum trimethylamine-N-oxide is elevated in CKD and correlates with coronary atherosclerosis burden. *J Am Soc Nephrol* 2016. PMID: 26229137.
- Alshogran OY, **Nolin TD**. Implications of kidney disease on metabolic reduction. *Curr Drug Metab* 2016. PMID: 27262337.
- Kochanek PM, Bramlett HM, Shear DA, Dixon CE, Mondello S, Dietrich WD, Hayes RL, Wang KK, **Poloyac SM**, Empey PE, Povlishock JT, Mountney A, Browning M, Deng-Bryant Y, Yan HQ, Jackson TC, Catania M, Glushakova O, Richieri SP, Tortella FC. Synthesis of Findings, Current Investigations, and Future Directions: Operation Brain Trauma Therapy. *J Neurotrauma*. 2016 Mar 15. PMID: 26671284.
- Shaik JS, **Poloyac SM**, Kochanek PM, Alexander H, Tudorascu DL, Clark RS, Manole MD. 20-Hydroxyeicosatetraenoic Acid Inhibition by HET0016 Offers Neuroprotection, Decreases Edema, and Increases Cortical Cerebral Blood Flow in a Pediatric Asphyxial Cardiac Arrest Model in Rats. *J Cereb Blood Flow Metab*. 2015 Nov. PMID: 26058691.
- Donnelly MK, Crago EA, Conley YP, Balzer JR, Ren D, Ducruet AF, Kochanek PM, Sherwood PR, **Poloyac SM**. 20-HETE is associated with unfavorable outcomes in subarachnoid hemorrhage patients. *J Cereb Blood Flow Metab*. 2015 Sep. PMID: 25920956.
- Patel A, Xue Y, Mukundan S, **Rohan LC**, Sant V, Stolz DB, Sant S. Cell-Instructive Graphene-Containing Nanocomposites Induce Multinucleated Myotube Formation. *Ann Biomed Eng*. 2016 Jun.
- Bunge KE, Dezzutti CS, **Rohan LC**, Hendrix CW, Marzinke MA, Richardson-Harman N, Moncla BJ, Devlin B, Meyn LA, Spiegel HM, Hillier SL. A Phase 1 Trial to Assess the Safety, Acceptability, Pharmacokinetics, and Pharmacodynamics of a Novel Dapivirine Vaginal Film. *J Acquir Immune Defic Syndr*. 2016 Apr.
- Hu M, Patel SK, Zhou T, **Rohan LC**. Drug transporters in tissues and cells relevant to sexual transmission of HIV: Implications for drug delivery. *J Control Release*. 2015 Dec.
- Hiruy H, Fuchs EJ, Marzinke MA, Bakshi RP, Breakey JC, Aung WS, Manohar M, Yue C, Caffo BS, Du Y, Abebe KZ, Spiegel HM, **Rohan LC**, McGowan I, Hendrix CW. A Phase 1 Randomized,

Blinded Comparison of the Pharmacokinetics and Colonic Distribution of Three Candidate Rectal Microbicide Formulations of Tenofovir 1% Gel with Simulated Unprotected Sex (CHARM-02). *AIDS Res Hum Retroviruses*. 2015 Nov.

- Dezzutti CS, Yandura S, Wang L, Moncla B, Teeple EA, Devlin B, Nuttall J, Brown ER, **Rohan LC**. Pharmacodynamic Activity of Dapivirine and Maraviroc Single Entity and Combination Topical Gels for HIV-1 Prevention. *Pharm Res*. 2015 Nov.
- Kramzer LF, Cohen J, Schubert J, Dezzutti CS, Moncla BJ, Friend D, **Rohan LC**. Assessing the potential of the Woman's Condom for vaginal drug delivery. *Contraception*. 2015 Sep.
- Zhang W, Hu M, Shi Y, Gong T, Dezzutti CS, Moncla B, Sarafianos SG, Parniak MA, **Rohan LC**. Vaginal Microbicide Film Combinations of Two Reverse Transcriptase Inhibitors, EFdA and CSIC, for the Prevention of HIV-1 Sexual Transmission. *Pharm Res*. 2015 Sep.
- **Stevenson JM**, Reilly JL, Harris MS, Patel SR, Weiden PJ, Prasad KM, Badner JA, Nimgaonkar VL, Keshavan MS, Sweeney JA, Bishop JR. Antipsychotic pharmacogenomics in first episode psychosis: a role for glutamate genes *Transl Psychiatry*. 2016 Feb. PMID: 26905411.
- **Thorpe CT**, Fowler NR, Harrigan K, Zhao X, Kang Y, Hanlon JT, Gellad WF, Schleiden LJ, Thorpe JM. Racial and ethnic differences in initiation and discontinuation of antimentia drugs by Medicare beneficiaries. *Journal of the American Geriatrics Society* (in press). PMID: 27549029.
- Altawalbeh SM, **Thorpe CT**, Zgibor JC, Kane-Gill S, Kang Y, Thorpe JM. Antileukotriene Agents Versus Long-Acting Beta-Agonists in Older Adults with Persistent Asthma: A Comparison of Add-On Therapies. *J Am Geriatr Soc*. 2016 Jun. PMID: 27351988.
- Lo-Ciganic WH, Donohue JM, Jones BL, Perera S, Thorpe JM, **Thorpe CT**, Marcum ZA, Gellad WF. Trajectories of diabetes medication adherence and hospitalization risk. *Journal of General Internal Medicine* (in press). PMID: 27229000.
- Radomski TR, Zhao X, **Thorpe CT**, Thorpe JM, Good CB, Mor MK, Fine MJ, Gellad WF. VA and Medicare Utilization Among Dually Enrolled Veterans with Type 2 Diabetes: A Latent Class Analysis. *J Gen Intern Med*. 2016 May. PMID: 26902242.
- Lo-Ciganic WH, Donohue JM, **Thorpe JM**, Perera S, Thorpe CT, Marcum ZA, Gellad WF. Using machine learning to examine medication adherence thresholds and risk of hospitalization. *Med Care*. 2015 Aug. PMID: 26147866.
- **Thorpe JM**, Thorpe CT, Schulz R, Van Houtven CH, Schleiden L. Informal Caregiver Disability and Access to Preventive Care in Care Recipients. *Am J Prev Med*. 2015 Sep. PMID: 26091932.
- **Thorpe JM**, Smith D, Kuzla N, Scott L, Ersek M. Does Mode of Survey Administration Matter? Using Measurement Invariance to Validate the Mail and Telephone Versions of the Bereaved Family Survey. *J Pain Symptom Manage*. 2016 Mar. PMID: 26620233.

- Marcum ZA, Perera S, **Thorpe JM**, Switzer GE, Gray SL, Castle NG, Strotmeyer ES, Simonsick EM, Bauer DC, Shorr RI, Studenski SA, Hanlon JT. Anticholinergic Use and Recurrent Falls in Community-Dwelling Older Adults: Findings From the Health ABC Study. Health ABC Study, USA. *Ann Pharmacother*. 2015 Nov. PMID: 26228936.
- Sharma S, Caritis S, Hankins G, Miodovnik M, Hebert MF, Mattison D, **Venkataramanan R**. Population pharmacokinetics of 17 β -hydroxyprogesterone caproate in singleton gestation. *Br J Clin Pharmacol*. 2016 May 2. PMID: 27133963.
- Caritis S, Zhao Y, Chen HJ, **Venkataramanan R**. Pharmacodynamics of transdermal granisetron in women with nausea and vomiting of pregnancy. *Am J Obstet Gynecol*. 2016 Jul. Epub 2016 Jan. PMID: 26812081.
- Li M, Zhao Y, Humar A, Tevar AD, Hughes C, **Venkataramanan R**. Pharmacokinetics of drugs in adult living donor liver transplant patients: regulatory factors and observations based on studies in animals and humans. *Expert Opin Drug Metab Toxicol*. 2016. Epub 2016 Feb. PMID: 26809188.
- Windreich RM, Goyal RK, Joshi R, Kenkre TS, Howrie D, **Venkataramanan R**. A Pilot Study of Continuous Infusion of Mycophenolate Mofetil for Prophylaxis of Graft-versus-Host-Disease in Pediatric Patients. *Biol Blood Marrow Transplant*. 2016 Apr. PMID: 26740371.
- Shaik IH, Bastian JR, Zhao Y, Caritis SN, **Venkataramanan R**. Route of administration and formulation dependent pharmacokinetics of 17-hydroxyprogesterone caproate in rats. *Xenobiotica*. 2016. PMID: 26153441.
- Pillai VC, Han K, Beigi RH, Hankins GD, Clark S, Hebert MF, Easterling TR, Zajicek A, Ren Z, Caritis SN, **Venkataramanan R**. Population pharmacokinetics of oseltamivir in non-pregnant and pregnant women. *Br J Clin Pharmacol*. 2015 Nov. PMID: 26040405.

Selected Invited Presentations

Kerry Empey

- “Interferon gamma: Friend or Foe in RSV Infected Infant Lungs”. Presented at the University of Kentucky, August 2015. Lexington, KY.
- “Interferon gamma: Friend or Foe in RSV Infected Infant Lungs”. Presented as a part of the University of Pittsburgh, Department of Immunology Seminar Series. June 2016, Pittsburgh PA.

Phil Empey

- “Creating data-driven systems to personalize care through pharmacogenomics”. Presented at the Fondazione Ri.MED Personalized Medicine, October 2015. Rome, Italy.
- “A Cross-Institutional Approach to Multi-Disciplinary Graduate Education and Personal Strengths Development for Team Science and Business Meeting”. Presented at the AACP meeting July 2015. National Harbor, MD.
- “PGx Test2Learn: Advancing pharmacogenomics education in the core PharmD curriculum through student personal genomic testing”. Presented at the AACP meeting July 2015. National Harbor, MD
- “Implementing pharmacogenomics to realize personalized medicine.” Presented at Wilkes University, April 2016. Wilkes-Barre, PA.

Tom Nolin

- “Opportunities for Improved Medication Safety in Patients with Decreased Kidney Function.” Presented at the Maine Medical Center, Department of Medicine, Medical Grand Rounds, September 2015. Portland, ME.
- “Non-renal Drug Clearance in CKD: Searching for the Path Less Traveled.” Presented at the Maine Medical Center, Department of Medicine, Medical Grand Rounds, September 2015. Portland, ME.
- “Drug Does Adjustment of Non-Renally Eliminated Drugs in CKD Patients - What is the Evidence?” Keynote lecture at 14th NephroPharmacology Meeting, October 2015. Heidelberg, Germany.
- “CRRT Pharmacokinetics: A New Chapter.” Presented at the American Society of Nephrology Annual Meeting, Kidney Week 2015, November 2015. San Diego, CA.

Sam Poloyac

- “Leading a Research Center in Academic Pharmacy”. Presentation was given at the AACP Academic Research Fellow Program Presentation in November 2015 at Bethesda, MD.
- “Change Management is a Reactive Process of Managing Resistance During Change”. Presentation was given at the AACP Academic Leadership Fellows Program Presentation in February 2016 at Tampa, FL.
- “Aneurysmal Subarachnoid Hemorrhage Patients with Elevated 20-HETE have higher Lindegaard”. Presentation was given at the 45th Critical Care Congress 2016 in March 2016 at Orlando, FL.

Jim Stevenson

- “Test2LearnTM: Learning to apply pharmacogenomics in pharmacy practice.” Presented at the Pitt Pharmacy Gala, October 2015. Pittsburgh, PA.
- “Implementing Pharmacogenomics to Achieve Precision Medicine.” Presentation given as part of the UPMC Shadyside Internal Medicine Grand Rounds, January 2016. Pittsburgh, PA.
- “Test2LearnTM – application of concepts from weeks 1-6.” PGx Test2LearnPGx Test2Learn using participant (or provided) genetic data.” Presented as a part of the Jewish Health Foundation Big Data Short Course, May 2016. Pittsburgh, PA.

Carolyn Thorpe

- “Healthcare Utilization and Informal Caregiver for Systemic Vasculitis: A National Perspective.” Presented online for the Vasculitis Foundation, The Road Map to Wellness Webinar Series, April 2016.

Joshua Thorpe

- “Prescribing Safety Risks Associated with Dual System Use Among Older Adults with Dementia.” Presented at the Health Services Research Seminar Series, RAND-University of Pittsburgh Health Institute Health Services. University of Pittsburgh – Center for Research on Health Care, January 2016. Pittsburgh, PA.

Raman Venkataramanan

- “Basic Science update – OPRC.” Presented at NICHD, October 2015 and March 2016. Bethesda, MD.
- “Optimizing Medication Use in First Chance in Life (Pregnancy) and Second Chance in Life (Organ Transplantation).” McGowen Injury Repair and Regenerative Medicine at UPMC, March 2016. Pittsburgh, PA.

- “Drug, Herb and Food Interactions”. Presented to the University of Pittsburgh, School of Dental Medicine, March 2016. Pittsburgh, PA.

Lisa Rohan

- “Topical Formulations: Options & Challenges” Presented at the Office of AIDS Research Advisory Council, April 2016, Rockville, Maryland.
- “Rectal Suppositories”, Presented at the Center for Disease Control, March 2016 Atlanta, Georgia.
- “Development of an Ex Vivo Tissue Model for Evaluation of Drug Transport in Irritable Bowel Disease” Presented at Janssen Pharmaceuticals, November 2015, Philadelphia, PA.

Computational Chemical Genomics Screening (CCGS) Center

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

Faculty

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

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

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

Lirong Wang, PhD, Assistant Professor

Peng Yang, PhD, Assistant Professor

Graduate Students

Mohammed H. Alqarni (PhD student, passed PhD defense and graduated 2016)

Yuemin Bian (MS student)

Ziheng Hu (PhD student)

Shifan Ma (PhD student)

Nanyi Wang (MS student)

Changrui Xing (MS student, now in the PhD program in School of Pharmacy, University of Pittsburgh)

Yan Zhang (MS student, graduated in 2016 with MS degree, University of Pittsburgh)

Zhaojia Zhang (MS student)

Visiting Students

Si Chen (visiting student)

Yu Zhang (Visiting student)

Graduate Students from Other Schools

Carly J Deter (Biology)

Adrienne Berue (Molecular Biology; Genetics)

Siani Bolton (Biological Sciences, Computer Science/Pre-Med)

Danielle Devenish (Neurobiology/Pre-Med)

Jeanine Flanigan (Chemistry/Pre-Pharm)

Major Accomplishments

- During the last fiscal year, Sean Xie and his team published 5 peer-reviewed publications and one book chapter. Sean was an invited speaker by 5 local, national, and international conferences or institutes.
- Center faculty supervised and trained 6 undergraduates, 12 graduate students, and 3 post-doctoral fellows.
- Sean Xie and Lirong Wang served as the Chair and Co-Chair of the Organizing Committee for the symposium “Pharmaceutical Sciences in the Era of Big Data” at the 2015 AAPS Annual Meeting in Orlando, Florida.
- The Drug Abuse-Knowledgebase (DA-KB) has been updated with:
 - A new chemogenomics database based on technologies deployed on our CDAR platform for hallucinogen research <http://www.cbligand.org/hallucinogen/>. The database now archived 46 hallucinogenic compounds together with 144 protein targets and 161 related pathways collected from literature and databases. The database also archived chemical compounds associated with these hallucinogens targets reported in 6,721 assays and 23,598 references.
 - A new version of ChEMBL data (V21.0) for the ligand-based target identification tool, TargetHunter program.
 - HTDocking was updated with visualization tool to plot the interaction network. These databases and tools will provide state-of-the-art cloud computation techniques and resources for DA research.

Selected Publications

- Hu J, Feng Z, Ma S, Zhang Y, Tong Q, Alqarni MH, Gou X, **Xie* X-Q**. Difference and Influence of Inactive and Active States of Cannabinoid Receptor Subtype CB2: From Conformation to Drug Discovery. *Journal of Chemical Information and Modeling*. 2016;56(6):1152-63. doi: 10.1021/acs.jcim.5b00739.
- **Xiang-Qun Xie, Lirong Wang**, Junmei Wang, Zhaojun Xie, **Peng Yang**, Qin Ouyang “, In Silico Chemogenomics Knowledgebase and Computational System Neuropharmacology Approach for Cannabinoid Drug Research” DOI: 10.1016/B978-0-12-800634-4.00019-6 Chapter in book: *Neuropathology of Drug Addictions and Substance Misuse*, pp.183-195.
- Teramachi J, Silbermann R, **Yang P**, Zhao W, Mohammad KS, Guo J, Anderson JL, Zhou D, Feng R, Myint KZ, Maertz N, Beumer JH, Eiseman JL, Windle JJ, **Xie* XQ**, Roodman* GD, Kurihara* N. Blocking the ZZ domain of sequestosome1/p62 suppresses myeloma growth and osteoclast formation in vitro and induces dramatic bone formation in myeloma-bearing bones in vivo. *Leukemia*. 2016;30(2):390-8. doi: 10.1038/leu.2015.229.

* Xie's lab was the first to discover and develop p62ZZ chemical inhibitors with promising anti- multiple myeloma (MM) therapeutic index (Patent: Xie et al USSN 61/521,287, PCT/US2012/049911) in collaboration with Dr. David Roodman. Our innovation is based on the therapeutic knowledge and our data that the Sequestosome-1 (or p62) plays critical roles in the survival, growth and metastasis of MM cells. P62 is a key domain activating NF-kB, and p38 MAPK, both of which are aberrantly activated in MM, thus it is a promising drug target for MM treatment. We have proved that the ZZ domain of p62 is responsible for increased MM cell growth and osteoclast (OCL) formation mediated by NF-kB and p38 MAPK signaling. Our discovered lead compound XIE3P62ZZ (#3 or XRK3, 4.31 mM) exhibited notable p62 antagonistic effects and significantly reduced survival of human MM cells and also inhibited osteoclastogenesis. The specificity was further confirmed by p62^{-/-} experiments, in which effects of the inhibitor XRK3 on MM cells and tumor necrosis factor (TNF)- α -induced osteoclast (OCL) formation were lost upon p62^{-/-} gene deficiency.

- Zhiwei Feng, Larry V. Pearce, Yu Zhang, Changrui Xing, Brienna K.A. Herold, Shifan Ma, Ziheng Hu, Noe A. Turcios, Peng Yang, Qin Tong, Anna K. McCall, Peter M. Blumberg*, and **Xiang-Qun Xie***. "Multi-Functional diarylurea small molecule inhibitors of TRPV1 with therapeutics potential for neuroinflammation". 2016, AAPS J., online. PMID:27000851. Doi:10.1208/s12248-016-9888-z.

* TRPV1 occupies a central position in pathways of neuronal inflammatory signaling. Thus, it represents a highly attractive potential therapeutic target for neuroinflammation. Here, *in silico*-identified diarylurea analogues were shown to bind hTRPV1 with high affinity. Subtle alterations in their structure could convert the biological activity of these molecules from antagonism into partial agonism, also predicted by molecular dynamics (MD) simulation. Some TRPV1 inhibitors also showed potential binding affinity toward the cannabinoid receptor 2 (CB2) and the C-X-C chemokine receptor 2 (CXCR2), which are attractive targets for chronic inflammatory/immuno-inflammatory diseases. These findings provide novel strategies to develop small molecule inhibitors that simultaneously target two or more inflammation-related proteins for the treatment of a wide range of inflammatory disorders including neuroinflammation and neurodegenerative diseases with potential synergistic effects.

- **Xie XQ, Yang P, Zhang Y, Zhang P, Wang L, Ding Y, Yang M, Tong Q, Cheng H, Ji Q, McGuire T, Yuan W, Cheng T, Gao Y.** "Discovery of novel INK4C small molecule inhibitors to promote human and murine hematopoietic stem cell ex vivo expansion". Sci Rep. (Nature) 2015 Dec 18;5:18115. doi: 10.1038/srep18115.

* This is a key publication highlighting the utility of *in silico* approaches to design and develop small molecules that target a protein-protein interface. Herein, compounds were developed that disrupt the interaction between p18Ink4C and CDK6, which regulate the entrance of hematopoietic stem cells (HSC) into the cell cycle. Thus, treatment with these small molecule inhibitors selectively promoted the expansion of murine and human HSC *ex vivo* and *in vivo*. These agents can be used as probes to further explore regulation of HSC biology (i.e., cell fate decision-making) and as candidate molecules that may be used clinically for ex vivo expansion of human HSC to treat hematologic diseases.

- **Lirong Wang, Xiang-Qun Xie**, “Cancer genomics: opportunities for medicinal chemistry?” *Future Med Chem.* 2016 Mar;8(4):357-9. doi: 10.4155/fmc.16.1. Epub 2016 Mar 15.
- Feng Z, Kochanek S, Close D, Wang L, Srinivasan A, Almehizia AA, Iyer P, **Xie XQ**, Johnston PA, Gold B. Design and activity of AP endonuclease-1 inhibitors. *J Chem Biol.* 2015 Apr 19;8(3):79-93. doi: 10.1007/s12154-015-0131-7. eCollection 2015 Jul. PubMed PMID: 26101550; PubMed Central PMCID: PMC4470991.
- Zhang H, Sun S, Zhang W, **Xie X**, Zhu Z, Chai Y, Zhang G. Biological activities and pharmacokinetics of aconitine, benzoyleaconine, and aconine after oral administration in rats. *Drug Testing and Analysis.* 2016;8(8):839-46. doi: 10.1002/dta.1858.
- Ji K-L, Zhang P, Li X-N, Guo J, Hu H-B, Xiao C-F, **Xie X-Q**, Xu Y-K. Cytotoxic limonoids from *Trichilia americana* leaves. *Phytochemistry (Elsevier).* 2015;118:61-7. doi: 10.1016/j.phytochem.2015.08.014.

Selected Invited Presentations

- **Xie, XQ**, 2015, Oct 27, “Diseases-Specific Chemogenomics Knowledgebase and TargetHunter© for Drug Discovery”, AAPS Annual Meeting and Exposition Oct 25-29, 2015, Orlando.
- **Xie, XQ**, 2016, January 27, “Precision System Pharmacology for Multiple Myeloma and Osteoporosis: Thinking Inside Precision Medicine via Diseases-Specific Chemogenomics Knowledgebases and TargetHunter©”, Pittsburgh Center for Bone & Mineral Research Seminar Series, University of Pittsburgh.
- **Xie, XQ**, 2016 May 27, “Clinical System Pharmacology by Chemogenomics Knowledgebase”, 2016 Sino-America Forum of Clinical Pharmacy at Fudan University, China

Pharmaceutics Group and Microbicide Clinical Trials Network Central Laboratory Core

The Pharmaceutics Group, a formulation development group, designs drug delivery systems for pharmaceutical products, including products intended for prevention of the spread of HIV and other sexually transmitted infections, women’s health issues, contraception, probiotics, practical vaccine products for use in low resource settings globally, and gynecologic oncology application.

The laboratory has experience with and utilizes many dosage form platforms in the the development of pharmaceutical products. Delivery systems are being designed for small molecule, protein and peptide, and bacteria drug candidates. The scope of the work within the Pharmaceutics Group also includes exploration of new pharmaceutical manufacturing processes. Examples include the novel application of hot melt extrusion for the manufacture of thin polymeric film vaginal dosage forms. The group was also the first to apply 3D printing in this area.

This group 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. Through collaboration with Janssen Pharmaceuticals, they developed a novel system to screen new chemical entities being evaluated for the treatment of Inflammatory Bowel Disease including Crohn's Disease and Ulcerative Colitis. The group was the first to provide information regarding transporters and metabolizing enzymes within tissues relevant for HIV prevention.

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

Faculty

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

Research Staff

Lin Wang
Lindsay Ferguson Kramer
Phillip Graebing
Michael De Miranda
Andrew Pearlman
Christina Bagia

Graduate Students (PhD)

Minlu Hu
Galit Regev
Sheila Grab
Jing Li
Kunal Jhunjhunwala

Postdoctoral Fellow

Robyn Konicki

Undergraduate Students

Emily Pond (CMU)
Nadeem Demian (Princeton)
Aditya Thakur (Georgia Institute of Technology)
Lucia Cencia (Gannon)
Alyssa Betsko (Pitt)
Leah Dickey (Pitt)
Bridget Trimble (Pitt)

Postdoctoral Fellow

Sravan Patel, PhD

Graduate Student (MS)

Yafei Lyu

Major Accomplishments

- The Pharmaceutics Group was the first to demonstrate feasibility of vaginal delivery of antiretroviral drugs for prevention of HIV through completion of two Phase I clinical trials in which the products developed by the laboratory were shown to be safe and tissue biopsies collected from women following product use were shown to successfully inhibit viral challenge in the laboratory. The clinical trial reports are being completed for submission to the FDA. This work was funded through an IPCP grant awarded by NIAID at the NIH.
- A rectal specific HIV prevention enema product containing the antiretroviral drug tenofovir was developed in the lab. An Investigational New Drug (IND) Application for this product was submitted to support first in human clinical trials set to be initiated by the end of 2016. This work was funded by NIAID.
- Awarded a grant from the FDA entitled "A Bio-relevant Dissolution Method for Particulate Dosage Forms in the Periodontal Pocket." This grant will develop novel methods to evaluate dissolution from nanoparticulate drug delivery systems administered orally to the gingival pocket. If successful it would provide a mechanism to evaluate bioequivalence of such products. This is important since Arestin will be coming off patent and currently there are no dissolution methods

available to evaluate bioequivalence of any newly developed generic products for this application.

- The Pharmaceuticals Group was part of the team awarded a \$17 million Integrated Preclinical/Clinical Program for HIV Topical Microbicides (IPCP) (U19) grant from NIAID at the NIH entitled “Film Antiretroviral Microbicide Evaluation”. This multiproject program will develop a new formulation of the antiretroviral drug MK-2048 that women will use just once weekly to prevent HIV infection transmitted through unprotected vaginal intercourse. The program includes laboratory, animal model and clinical trials to achieve these goals over 5 years. MK-2048 is a potent integrase inhibitor being evaluated for HIV prevention. It was developed by Merck & Co. who will participate as a member of the research team. Dr. Lisa Rohan serves a co-Principal investigator with Dr. Sharon Hillier for this multi-institutional grant. Other members of the research team include Drs. Charlene Dezzutti and Bernard Moncla from the University of Pittsburgh, Dr. Lara Mahal from NYU, Dr. Julie Downs from CMU, Dr. Dorothy Patton from the University of Washington, Dr. Peter Anderson from the University of Colorado, Dr. Robert Bies from the University of Buffalo and Dr. Jay Grobler from Merck & Co.
- A clinical study (FLAG) was initiated to better understand product attributes for pharmaceutical vaginal thin film design which are critical for ease of administration and user acceptability. Data generated from this study will be used in the design of acceptable, effective, and easy to use vaginal film products. This work was funded by the Bill & Melinda Gates foundation
- A vaginal film containing an anti-HIV drug combined with a contraceptive agent was designed to explore the applicability of the film platform as a multipurpose technology platform within a project funded by the Bill & Melinda Gates Foundation.
- Lisa Rohan was invited to assist with the development of the Fiscal Year (FY) 2017 Trans-NIH Plan for HIV-Related Research for the NIH Office of AIDS Research (OAR)
- Funding for the Pharmaceuticals Group over the past year has been provided through 12 separate grants awarded from NIH; FDA, the Bill & Melinda Gates Foundation; Janssen Pharmaceuticals).

Selected Publications

- Patel A, Xue Y, Mukundan S, **Rohan LC**, **Sant V**, Stolz DB, Sant S. Cell-Instructive Graphene-Containing Nanocomposites Induce Multinucleated Myotube Formation. *Ann Biomed Eng.* 2016 Jun.
- Bunge KE, Dezzutti CS, **Rohan LC**, Hendrix CW, Marzinke MA, Richardson-Harman N, Moncla BJ, Devlin B, Meyn LA, Spiegel HM, Hillier SL. A Phase 1 Trial to Assess the Safety, Acceptability, Pharmacokinetics, and Pharmacodynamics of a Novel Dapivirine Vaginal Film. *J Acquir Immune Defic Syndr.* 2016 Apr.
- Hu M, Patel SK, Zhou T, **Rohan LC**. Drug transporters in tissues and cells relevant to sexual transmission of HIV: Implications for drug delivery. *J Control Release.* 2015 Dec.

- Hiruy H, Fuchs EJ, Marzinke MA, Bakshi RP, Breakey JC, Aung WS, Manohar M, Yue C, Caffo BS, Du Y, Abebe KZ, Spiegel HM, **Rohan LC**, McGowan I, Hendrix CW. A Phase 1 Randomized, Blinded Comparison of the Pharmacokinetics and Colonic Distribution of Three Candidate Rectal Microbicide Formulations of Tenofovir 1% Gel with Simulated Unprotected Sex (CHARM-02). *AIDS Res Hum Retroviruses*. 2015 Nov.
- Dezzutti CS, Yandura S, Wang L, Moncla B, Teeple EA, Devlin B, Nuttall J, Brown ER, **Rohan LC**. Pharmacodynamic Activity of Dapivirine and Maraviroc Single Entity and Combination Topical Gels for HIV-1 Prevention. *Pharm Res*. 2015 Nov.
- Kramzer LF, Cohen J, Schubert J, Dezzutti CS, Moncla BJ, Friend D, **Rohan LC**. Assessing the potential of the Woman's Condom for vaginal drug delivery. *Contraception*. 2015 Sep.
- Zhang W, Hu M, Shi Y, Gong T, Dezzutti CS, Moncla B, Sarafianos SG, Parniak MA, **Rohan LC**. Vaginal Microbicide Film Combinations of Two Reverse Transcriptase Inhibitors, EFdA and CSIC, for the Prevention of HIV-1 Sexual Transmission. *Pharm Res*. 2015 Sep.

Selected Invited Presentations

- “Topical Formulations: Options & Challenges” Presented by Lisa Rohan at the Office of AIDS Research Advisory Council, April 2016, Rockville, Maryland.
- “Rectal Suppositories”, Presented by Lisa Rohan at the Center for Disease Control, March 2016 Atlanta, Georgia.
- “Development of an Ex Vivo Tissue Model for Evaluation of Drug Transport in Irritable Bowel Disease” Presented by Lisa Rohan at Janssen Pharmaceuticals, November 2015, Philadelphia, PA.
- Lisa Rohan was invited to present at the Office of AIDS Research Advisory Council Meeting.
- Lisa Rohan serves as a scientific advisor for the CRIMP program within NIAID at the NIH.

Center for Education and Drug Abuse Research

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

Faculty

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

Graduate Students and Post Doctoral Fellows

CEDAR's data are actively used by the following individuals at Temple University by Deborah Drabick, Ph.D. in collaborative research with Maureen Reynolds.

Jill Rabinowitz, Ph.D. (Post-doc)
Darcy Burgers (doctoral student)
Ijeoma Osigwe, BA (doctoral student)
Lindsay Myerberg (doctoral student)

Kristine Marceau, PhD., currently Assistant Professor at Purdue, has a NIDA-funded research scientist award using CEDAR's data.

Major Accomplishments

- Physical exercise and recreation participation during adolescence is predicted by number of parents having addiction and forecasts cannabis dependence in adulthood.
- Pediatric visit to the pediatrician for routine health check-up provides the opportunity to objectively assess and intervene for youths who are at high risk for addiction.
- Human herpes virus (HHV) infections NSV-1, EBV, and CMV, as well as non-viral *T.gondii*, are related to IQ decrease in males; the same associations except for *T.gondii* are observed in females. EBV is associated with elevated risk for SUD in males; in females, all HHV infections but not *T.gondii* are associated with elevated SUD risk. IQ does not mediate the infection-SUD risk association.

Manuscripts Published in 2016 Using CEDAR Data

- Cochran G., Bacci J.L., Ylioja T, Hruschak V, Miller S, Seybert, AL, & **Tarter R.** (2016). Prescription opioid use: Patient characteristics and misuse in community pharmacy. Journal of the American Pharmacists Association, 56(3), 248-256.
- Cochran G, Rubenstein J, Bucci J, Ylioja T, & **Tarter R.** (2015). Screening community pharmacy patients for opioid misuse. Journal of Addiction Medicine, 9, 411-416.
- **Kirisci L, Tarter R, Reynolds M, Vanyukov M.** (in press). Item response theory analysis to assess dimensionality of substance use disorder abuse and dependence symptoms. International Journal of Person-centered Medicine.
- **Kirisci L, Hayes JM, Mezzich JE** (in press). Evaluation of person-centered health care. In J. Mezzich et al (eds.), Person-centered Psychiatry. Springer-Verlag; Heidelberg.
- Rabinowitz JA, Drabick DA, **Reynolds MD**, Clark DB, Olinio TM. (2016). Child temperamental flexibility moderates the relation between positive parenting and adolescent adjustment. Journal of Applied Developmental Psychology, 43:43-53. PMID: 26834305.

- Rabinowitz JA, Drabick DA, **Reynolds MD**. (2016). Youth withdrawal moderates the relationships between neighborhood factors and internalizing symptoms in adolescence. Journal of Youth and Adolescence, 45(3): 427-39. PMID: 26149949.
- Rabinowitz J, Osigwe I, Drabick DA, **Reynolds MD**. (2016) Negative emotional reactivity moderates the relations between family cohesion and internalizing and externalizing symptoms in adolescence. Journal of Adolescence, 53, 116-126.
- Rabinowitz JA, Drabick DA, **Reynolds MD**. (in press) Family conflict moderates the relation between negative mood and youth internalizing and externalizing symptoms. Journal of Child and Family Studies.
- Schwantes-An TH, Zhang J, Chen LS, Hartz SM, Culverhouse, RC, Chen X, et al., (110 co-authors) (2016). Association of the OPRM1 variant rs1799971 (A118G) with non-specific liability to substance dependence in a collaborative de novo meta-analysis of European ancestry cohorts. Behavior Genetics, 46(2):151-69. PMID: 26392368.
- **Vanyukov M, Tarter R**, Conway K, Kirillova G, Chandler R, & Daley D. (2016). Risk and resistance perspectives in translation-oriented etiology research. Translational Behavioral Medicine, 6(1), 44-54.

Presentations

- Zhai Z, Ridenour T, Tarter RE, Child-parent attachment mediates but not moderates parent and child substance involvement. College on Problems of Drug Dependence 78th Annual Meeting, Palm Springs, CA, 2016.

RESEARCH DETAILS

FY16 PHS Funding

Investigator	Agency	AgencyNum	Title	Direct \$	Indirect \$	Total
Beumer, J.	NIH	P30 CA047904	CCSG CPAF	56,590	30,559	87,149
Beumer, J.	NIH	R01 GM102989	Rational Design of Lipidic Vectors for Mitochondria-Targeted Antioxidants	11,900	6,426	18,326
Beumer, J.	NIH	HHSN2612011 00015	Preclinical Pharmacokinetic and Pharmacological Studies with Anticancer and Other Therapeutic Agents	92,044	47,401	139,445

Investigator	Agency	AgencyNum	Title	Direct \$	Indirect \$	Total
Beumer, J.	NIH	1UM1 CA186690	Sr. Leadership - NCI ET-CTN with Phase I Emphasis at UPCI	17,366	9,378	26,744
Beumer, J.	NIH	1UM1 CA186690	PKPD - NCI ET-CTN with Phase I Emphasis at UPCI	158,258	85,459	243,717
Beumer, J.	NIH	UM1 CA186690	ETCTN Phase II UM1	11,495	6,207	17,702
Beumer, J.	NIH	U19 AI068021	CMCR CORE C: Signature-Directed, Sequential Delivery of Radiation Mitigators	42,500	22,950	65,450
Empey, K.	NIH	R03 HD080874	Immature Infant Alveolar Macrophage Clearance of Cell D	49,500	23,362	72,862
Empey, P.	NIH	R01 LM011838	Addressing gaps in clinically useful evidence on drug-drug interactions	7,339	3,963	11,302
Johnston, P.	NIH	R01 GM111086	High-Throughput Discovery of Chemical Probes for HIV-1	56,920	30,737	87,657
Johnston, P.	NIH	R01 CA183882	HCS to Identify Inhibitors and Disruptors of AR-TIF2	227,809	123,017	350,826
Johnston, P.	NIH	R01 DE023685	PI3K pathway mutations in head and neck cancer PI3K Pathway Mutations in the Head and Neck Cancer	3,371	1,820	5,191
Johnston, P.	NIH	P50 CA09719012	Develop and implement 3D head & neck cancer (HNC) spheroid cell culture models to screen for effective HNC drugs and drug combinations - Greenberger	32,000	0	32,000
Kirisci, L.	NIH	R01 AA021721	Validating Consumption-Based Brief Screening for Youth	19,703	10,640	30,343
Li, S.	NIH	R01 GM102989	Rational Design of Lipidic Vectors for Mitochondria-Targeted Antioxidants	190,000	96,898	286,898

Investigator	Agency	AgencyNum	Title	Direct \$	Indirect \$	Total
Li, S.	NIH	R01 CA174305	Targeted Combination Therapy for Breast Cancer	207,500	106,180	313,680
Li, S.	NIH	U19 AI068021	Mitochondrial Targets for Radiation Mitigation	11,942	6,449	18,391
Ma, X.	NIH	R01 DK090305	Mechanisms of adverse effects of anti-tuberculosis drugs	213,292	115,178	328,470
Ma, X.	NIH	R01 GM118367	Short and long-term impacts on drug metabolism, therapeutic efficacy, and drug-induced toxicity due to drug exposure	15,835	7,265	23,100
Nolin, T.	NIH	R01 GM107122	Drug Metabolizing Enzyme and Transporter function in Chronic Kidney Disease	133,862	56,302	190,164
Nolin, T.	NIH	R01 DK105811	Hormonal Regulation of NHERF1 in Bone	10,592	5,720	16,312
Poloyac, S.	NIH	R01 NR014221	Developing Goal-Directed Perfusion Therapy for Neurocardiac Injury in Sub- Arachnoid Hemorrhage	8,452	4,564	13,016
Poloyac, S.	NIH	R01 HD069620	Understanding the Impact of Antipsychotic Drugs on Recovery after TBI	7,914	4,076	11,990
Poloyac, S.	NIH	R01 NR013610	Epigenomics of Patient Outcomes after Aneurysmal SAH	14,072	7,599	21,671
Poloyac, S.	NIH	R01 HD075760	CYP 450-mediated CBF Dysregulation and Neurotoxicity in Pediatric Cardiac Arrest	9,795	5,289	15,084
Poloyac, S.	NIH	U19 AI068021	CORE F: Signature-Directed, Sequential Delivery of Radiation Mitigators	55,800	12,368	68,168

Investigator	Agency	AgencyNum	Title	Direct \$	Indirect \$	Total
Pruskowski, J.	NIH	HHSN2712015 00082C	University of Pittsburgh, Center of Excellence in Pain Education: Pain Challenges in Primary Care	1,993	1,076	3,069
Reynolds, M.	NIH	R01 DA036628	Substance Use Screening and Prevention for Adolescents in Pediatric Primary Care	10,378	5,604	15,983
Rohan, L.	NIH	U19 AI113182	Core B: PREVENT: Product Development Core - MWRIF and Pitt awards	452,699	71,750	524,449
Rohan, L.	NIH	U19 AI113127	Delivery of Rectal Enema as Microbicide (DREAM)	20,776	11,219	31,995
Rohan, L.	NIH	U19 AI120249	Film Antiretroviral Microbicide Evaluation (FAME II)	1,171,712	386,184	1,557,896
Rohan, L.	NIH	UM1 AI106707	MTN - Laboratory Center (LC): Leadership Group for a Clinical Research Network on Microbicides to Prevent HIV	41,985	23,755	65,740
Rohan, L.	NIH	R33 AI094508	Thermostable Vaginal Probiotic Microbicide	17,847	9,085	26,932
Rohan, L.	NIH	HHSN2722010 00001C	Preparation of Gels with Increased MK-2048 Concentrations	98,669	58,214	156,883
Tarter, R.	NIH	K05 DA031248	Longitudinal Modeling of SUD Etiology	149,048	11,924	160,972
Venkataramanan, R.	NIH	T32 HD071859	Training in Basic and Clinical Pharmacology in Pregnancy	232,488	17,159	249,647
Venkataramanan, R.	NIH	U54 HD047905	Optimization of Drug Dosing in Pregnant Women through Research and Education - OPRC Administrative Core - Caritis	222,886	118,901	341,787

Investigator	Agency	AgencyNum	Title	Direct \$	Indirect \$	Total
Xie, W.	NIH	R01 HD073070	The Perinatal Pharmacology of the Nuclear Receptor	205,425	110,929	316,354
Xie, W.	NIH	R01 DK099232	The hepatic function of cholesterol sulfotransferase 2B1b (SULT2B1b) in energy metabolism	217,500	117,450	334,950
Xie, W.	NIH	R01 ES023438	A Novel Regulation of the Phase II Enzyme Estrogen Sulfotransferase	225,000	121,500	346,500
Xie, W.	NIH	R01 CA182418	RE/XBP1s signaling: an novel essential regulator for bone marrow microenvironment support of multiple myeloma bone disease	6,777	3,660	10,437
Xie, W.	NIH	R01 DK083952	AHR-FGF21 Axis in Hepatic Steatosis and Metabolic Syndrome	225,000	121,500	346,500
Xie, W.	NIH	R01 DK103775	Role and regulation of Beta-catenin in Cholestatic Liver Disease	7,222	3,900	11,122
Xie, X.	NIH	P30 DA035778	NIDA Center of Excellence for Computational Drug Abuse Research (CDAR)	794,964	269,639	1,064,603
Yang, Da	NIH	P50 CA159981	Ovarian Cancer SPORE	25,000	0	25,000
TOTAL				5,793,220	2,293,256	8,086,476

FY16 Federal Other Funding

Investigator	Agency	Title	Direct \$	Indirect \$	Total
Beumer, J.	Leidos Biomed	Phase I Study of the Aurora Kinase A Inhibitor MLN 8237 in Combination with the Histone Deacetylase Inhibitor	10,037	5,418	15,455

Investigator	Agency	Title	Direct \$	Indirect \$	Total
Coley, K.	CDC	Improving Vaccination Rates through Community Partnerships and Technology	300,000	0	300,000
Gill, S.	AHRQ	Transforming the Medication Regimen Review Process of High-Risk Drugs Using a Patient-Centered Telemedicine-Based Approach to Prevent Adverse Drug Events	304,823	164,604	469,427
Huryn, D.	Leidos Biomed	Administrative Support for the UP-CDC	58,442	31,558	90,000
Huryn, D.	Leidos Biomed	p97	100,658	53,153	153,811
Huryn, D.	Leidos Biomed	ATG4b	14,088	7,608	21,696
Huryn, D.	Leidos Biomed	Inhibitors of the Artemis Endonuclease for Cancer Chemotherapy	129,069	68,494	197,563
Huryn, D.	Leidos Biomed	University of Pittsburgh Chemical Diversity Center	194,805	105,195	300,000
Pringle, J.	SAMHSA	Pennsylvania Screening, Brief Intervention, and Referral to Treatment (SBIRT) Health Professions Student Training	411,206	32,899	444,105
Pringle, J.	SAMHSA	Pennsylvania Screening, Brief Intervention, and Referral to Treatment (SBIRT)	138,870	11,110	149,980
Pringle, J.	VA	Pharmacy Readmissions Project Task Order	92,362	49,875	142,237
Rohan, L.	FDA	A Biorelevant Dissolution Methods for Particulate Dosage Forms in the Periodontal Pocket	92,961	32,039	125,000
Somma, M.	CDC	State Public Health Actions to Prevent and Control Diabetes	40,000	4,400	44,400

Investigator	Agency	Title	Direct \$	Indirect \$	Total
Venkataraman, R.	DOD	A Graft Embedded Loco-regional Immunosuppressive therapy (GEL-IT) Platform for vascularized Composite Allograft transplantation	2,345	1,266	3,611
Total			1,889,666	567,619	2,457,285

FY16 Industry Funding

Investigator	Agency	Title	Direct \$	Indirect \$	Total
Empey, P.	UPMC	MEDIvate	300,400	184,746	485,146
Ensor, C.	Onyx	Combined Therapy	16,427	1,157	17,584
Pringle, J.	MERCK	Additional Analysis of the Pennsylvania Project Data	13,216	2,645	15,861
Total			330,043	188,548	518,591

FY16 Foundation/Association Funding

Investigator	Agency	Title	Direct \$	Indirect \$	Total
Beumer, J.	Alliance Clin. Trials	Population Pharmacokinetics of abiraterone and enzalutamide associated with Alliance protocol A031201	8,106	811	8,917
Beumer, J.	Alliance Clin. Trials	Population Pharmacokinetics of abiraterone and enzalutamide associated with Alliance protocol A031201	47,053	4,705	51,758

Investigator	Agency	Title	Direct \$	Indirect \$	Total
Beumer, J.	NSABP Foundation	FB-10 A Phase Ib/II Dose-Escalated Study Evaluating the Combination of Trastuzumab Emtansine (T-DMI)	39,730	10,270	50,000
Beumer, J.	NSABP Foundation	ARGO - A Phase III Randomized Placebo-Controlled Study, Evaluating Regorafenib Following Completion of Stand	122,415	75,285	197,700
Beumer, J.	NSABP Foundation	NSABP Study FC-7 - A Phase I/II Dose3-Escalation Study Evaluating the Combination of Neratinib and Cetuxumab	19,543	12,017	31,560
Empey, P.	NACDS	Test2Learn: Community Pharmacists Pharmacogenomics Education Certificate Program	304,865	0	304,865
Empey, P.	Jewish Healthcare	The JHF Data Science Fellowship: An Inter-Professional Training Program in Big Data, Healthcare Analytics and Personalized Medicine	7,266	0	7,266
Empey, P.	McCune Foundation	Development of Pharmacogenetics	61,253	0	61,253
Johnston, P.	Doris Duke	Targeting the TWIST1-E2A pathway in oncogene driven lung cancer	27,033	2,163	29,196
Nolin, T.	AHA	Intestinal Microbiota and Atherosclerosis Risk in Chronic Kidney Disease	30,000	3,000	33,000
Odukoya, O.	PPA	Children's Perceptions of Self-Care and Medication Adherence Mobile Applications: Implications for Pharmacist-Provided Counseling	1,000	0	1,000
Pringle, J.	Pittsburgh Foundation	Circlebacks Project	25,000	0	25,000
Rohan, L.	Gates Fndtn	Continued Assessment of Films for Multi-purpose Prevention Technology (MPT) Development	307,970	30,797	338,767

Investigator	Agency	Title	Direct \$	Indirect \$	Total
Somma, M.	NACDS	Community Pharmacy Residency Expansion Project	10,000	0	10,000
Somma, M.	NACDS	NACDS Foundation Community Pharmacy Faculty Advanced Scholars Program	79,993	11,999	91,992
Stevenson, J.	McCune Foundation	Development of Pharmacogenetics (Berg)	188,747	0	188,747
Thorpe, C.	Donaghue Foundation	Cumulative CNS Medication Dosage and Serious Fall Injuries	6,714	671	7,385
Total			1,286,688	151,718	1,438,406

FY16 Other Funding

Investigator	Agency	Title	Direct \$	Indirect \$	Total
Pringle, J.	Cmwlth of PA	Pennsylvania Overdose Prevention Coalition Phase II PCCD Overdose Prevention Technical Assistance Center	206,637	41,327	247,964
Pringle, J.	Blair Co./Cmwlth of PA	Vivitrol Consultation	4,612	0	4,612
Pringle, J.	UPMC	Implementing Screenings, Brief Interventions within Community Pharmacies	35,235	14,765	50,000
Pringle, J.	Morehouse	Organizational Health Assessment	4,975	0	4,975
Total			251,459	56,092	307,551

RESEARCH RECOGNITION OF FACULTY

Faculty members received various forms of recognition for their accomplishments and their expertise during FY16.

- 27 faculty members served on scientific journal editorial boards.
- 13 faculty members served on NIH grant review committees.
- 10 international presentations in 4 countries.
 - 6 at universities or hospitals
 - 4 at conferences or academies

Members of Editorial Boards

Faculty Member	Number	Editorial Board
Olufunmilola Abraham, PhD, MS, BPharm	1	Pennsylvania Pharmacists Association
Jan H. Beumer, PharmD, PhD	3	Journal of Chromatography and Separation Techniques Cancer Chemotherapy and Pharmacology Oncology Research
Kim C. Coley, PharmD	1	PPA Editorial Board
Colleen M. Culley, PharmD	1	Clin-Alert
Scott R. Drab, PharmD, CDE, BC-ADM	1	Inside Pharmacy
Christopher R. Ensor, PharmD, BCPS-CV	2	Progress in Transplantation Journal of Pharmacy Practice, Key Articles in Pharmacy Practice
Barry Gold, PhD	2	Future Medicinal Chemistry Medicinal Chemistry Communications
Donna Huryn, PhD	3	Organic Letters ACS Medicinal Chemistry Letters Organic Reactions
Paul A. Johnston, PhD	1	Journal of Assays and Drug Development Technologies
Sandra L. Kane-Gill, PharmD, MS, FCCM	7	Critical Care Medicine Journal of Hospital Administration Annals of Pharmacotherapy-Adverse Reactions and Medication Safety Panel Advances in Pharmacoepidemiology and Drug Safety Critical Connections Hospital Pharmacy, Critical Care Column Editor Pennsylvania Patient Safety Advisory
Levent Kirisci, PhD	2	Bipolar Disorder: International Journal of Psychiatry and Neurosciences International Journal of Person-Centered Medicine
Song Li, MD, PhD	5	Journal of Gene Medicine Biological Procedure Online American Journal of Cancer Therapy and Pharmacology Asian Journal of Pharmaceutical Sciences Journal of NanoMedicine and Applications
Xiaochao Ma, PhD	3	Nuclear Receptor Research Journal of Drug Metabolism and Toxicology Advances In Pharmacoepidemiology and Drug Safety

Faculty Member	Number	Editorial Board
Lee A. McDermott, PhD	2	Journal of Drug research and Development Chronicles of Pharmaceutical Science
Thomas D. Nolin, PharmD, PhD	2	American Journal of Kidney Diseases Pharmacotherapy: A Pathophysiologic Approach
Janice L. Pringle, PhD	1	SciRes Literature
Lisa C. Rohan, PhD	2	AIDS Research and Therapy Journal of Sexually Transmitted Diseases
Shilpa Sant, PhD	5	Journal of Pharmacovigilance IEEE Transactions on Nanobioscience JSM Regenerative Medicine In Silico Pharmacology Scientific Reports Biomaterials, Frontiers in Molecular Biosciences, Bioengineering and Biotechnology and Materials
Vinayak Sant, PhD	1	Enliven: Biosimilars and Bioavailability
Amy L. Seybert, PharmD	2	International Scholarly research Network Critical Care
Ralph E. Tarter, PhD	5	Drug and Alcohol Dependence Experimental and Clinical Psychopharmacology Clinical Psychology Review Prevention Science International Journal of Person Centered Medicine
Joshua M. Thorpe, PhD, MPH	1	Research in Social and Administrative Pharmacy
Gordon J. Vanscoy, PharmD, CACP, MBA	3	American Journal of Oncology Review Journal of Thrombosis and Thrombolysis Drug Formulary Review
Raman Venkataramanan, PhD	11	Therapeutic Drug Monitoring Open Pharmacology Journal Open Clinical Pharmacology Open Transplantation American Journal of Analytical Chemistry Open-International Journal of Pharmacokinetics BAOJ Pharmaceutical Sciences Open SM Bioequivalence and Bioavailability Transplant Surgery: Clinics in Surgery Austin Pharmacology and Pharmaceutics Open Clinical and Experimental Pharmacology
LiRong Wang, PhD	2	Journal of Pharmacy and Pharmaceutics Biosimilars and Bioavailability
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	1	AAPS Journal

Faculty Participation in NIH Review Committees and Panels

Faculty Member	Department	No. of Panels
Robert B. Gibbs, PhD	Pharmaceutical Sciences	1
Donna M. Hury, PhD	Pharmaceutical Sciences	1
Paul A. Johnston, PhD	Pharmaceutical Sciences	1
Levent Kirisci, PhD	Pharmaceutical Sciences	1
Song Li, MD, PhD	Pharmaceutical Sciences	2
Thomas D. Nolin, PharmD, PhD	Pharmacy and Therapeutics	1
Samuel M. Poloyac, PharmD, PhD	Pharmaceutical Sciences	1
Lisa C. Rohan, PhD	Pharmaceutical Sciences	3
Shilpa Sant, PhD	Pharmaceutical Sciences	2
Carolyn Thorpe, PhD, MPH	Pharmacy and Therapeutics	1
Raman Venkataramanan, PhD	Pharmaceutical Sciences	1
Wen Xie, MD, PhD	Pharmaceutical Sciences	1
Xiang-Qun (Sean) Xie, PhD	Pharmaceutical Sciences	2

School of Pharmacy Publications in Peer-Reviewed Journals

Research

- Alshogran OY, **Nolin TD**. Implications of Kidney Disease on Metabolic Reduction. *Curr Drug Metab*. 2016 Jun 3. [Epub ahead of print].
- Alshogran OY, Ocque AJ, Leblond FA, Pichette V, **Nolin TD**. Validation and Application of a Simple UHPLC-MS-MS Method for the Enantiospecific Determination of Warfarin in Human Urine. *J Chromatogr Sci*. 2016 Apr;54(4):554-60. doi: 10.1093/chromsci/bmv186. Epub 2015 Dec 11.
- Alshogran OY, Urquhart BL, **Nolin TD**. Downregulation of Hepatic Carbonyl Reductase Type 1 in End-Stage Renal Disease. *Drug Metab Lett*. 2015;9(2):111-8.
- Altawalbeh SM, **Thorpe CT**, Zgibor JC, **Kane-Gill S**, Kang Y, **Thorpe JM**. Antileukotriene Agents Versus Long-Acting Beta-Agonists in Older Adults with Persistent Asthma: A Comparison of Add-On Therapies. *J Am Geriatr Soc*. 2016 Jun 28. doi: 10.1111/jgs.14235. Epub 2016 Jun 28.
- Alvarez C, Arkin MR, Bulfer SL, Colombo R, Kovaliov M, LaPorte MG, Lim C, Liang M, Moore WJ, Neitz RJ, Yan Y, Yue Z, **Hury DM**, **Wipf P**. Structure-Activity Study of Bioisosteric Trifluoromethyl and Pentafluorosulfanyl Indole Inhibitors of the AAA ATPase p97. *ACS Med Chem Lett*. 2015 Oct 23;6(12):1225-30. doi: 10.1021/acsmchemlett.5b00364. eCollection 2015.
- Alvarez C, Bulfer SL, Chakrasali R, Chimenti MS, Deshaies RJ, Green N, Kelly M, LaPorte MG, Lewis TS, Liang M, Moore WJ, Neitz RJ, Peshkov VA, Walters MA, Zhang F, Arkin MR, **Wipf P**, **Hury DM**. Allosteric Indole Amide Inhibitors of p97: Identification of a Novel Probe of the

Ubiquitin Pathway. *ACS Med Chem Lett*. 2015 Dec 22;7(2):182-7. doi: 10.1021/acsmchemlett.5b00396. eCollection 2016.

- Bacci JL, **Coley KC**, McGrath K, **Abraham O**, Adams AJ, **McGivney MS**. Strategies to facilitate the implementation of collaborative practice agreements in chain community pharmacies. *J Am Pharm Assoc (2003)*. 2016 May-Jun;56(3):257-265.e2. doi: 10.1016/j.japh.2016.02.014. Epub 2016 Mar 24.
- Bakkenist CJ, **Beumer JH**, Schmitz JC. ATM serine-1981 phosphorylation is a plausible biomarker. *Cell Cycle*. 2015;14(20):3207-8. doi: 10.1080/15384101.2015.1084205.
- Balmert LC, Buchanich JM, **Pringle JL**, Williams KE, Burke DS, Marsh GM. Patterns and Trends in Accidental Poisoning Deaths: Pennsylvania's Experience 1979-2014. *PLoS One*. 2016;11(3):e0151655. doi: 10.1371/journal.pone.0151655. Epub 2016 Mar 10.
- Beigi RH, Pillai VC, **Venkataramanan R**, Caritis SN. Oseltamivir for the treatment of H1N1 influenza during pregnancy. *Clin Pharmacol Ther*. 2015 Oct;98(4):403-5. doi: 10.1002/cpt.179. Epub 2015 Jul 22.
- **Beumer JH**, Fu KY, Anyang BN, Siegfried JM, Bakkenist CJ. Functional analyses of ATM, ATR and Fanconi anemia proteins in lung carcinoma. *BMC Cancer*. 2015 Oct 5;15:649. doi: 10.1186/s12885-015-1649-3.
- **Beumer JH**, Kozo D, Harney RL, Baldasano CN, Jarrah J, Christner SM, Parise R, Baburina I, Courtney JB, Salamone SJ. An Automated Homogeneous Immunoassay for Quantitating Imatinib Concentrations in Plasma. *Ther Drug Monit*. 2015 Aug;37(4):486-92. doi: 10.1097/FTD.0000000000000178.
- **Beumer JH**, Pillai VC, Parise RA, Christner SM, Kiesel BF, Rudek MA, **Venkataramanan R**. Human Hepatocyte Assessment of Imatinib Drug-Drug Interactions – Complexities in Clinical Translation. *Br J Clin Pharmacol*. 2015 Nov;80(5):1097-108. doi: 10.1111/bcp.12723. Epub 2015 Sep 19.
- **Beumer JH**, Tawbi H, Ivy SP. Reply to V. Launay-Vacher, T. Shimokata et al, and C. Porta et al. *J Clin Oncol*. 2016 May 16. doi: 10.1200/JCO.2016.67.2790. Epub 2016 May 16.
- Browning M, Shear DA, Bramlett HM, Dixon CE, Mondello S, Schmid KE, **Poloyac SM**, Dietrich WD, Hayes RL, Wang KK, Povlishock JT, Tortella FC, Kochanek PM. Levetiracetam Treatment in Traumatic Brain Injury: Operation Brain Trauma Therapy. *J Neurotrauma*. 2016 Mar 15;33(6):581-94. doi: 10.1089/neu.2015.4131.
- Buehrle DJ, Shields RK, Chen L, Hao B, Press EG, Alkrouk A, **Potoski BA**, Kreiswirth BN, Clancy CJ, Nguyen MH. Evaluation of the In Vitro Activity of Ceftazidime-Avibactam and Ceftolozane-Tazobactam against Meropenem-Resistant *Pseudomonas aeruginosa* Isolates. *Antimicrob Agents Chemother*. 2016 May;60(5):3227-31. doi: 10.1128/AAC.02969-15. Epub 2016 Apr 22.

- Callaway CW, Elmer J, Guyette FX, Molyneaux BJ, Anderson KB, **Empey PE**, Gerstel SJ, Holquist K, Repine MJ, Rittenberger JC. Dexmedetomidine Reduces Shivering during Mild Hypothermia in Waking Subjects. *PLoS One*. 2015 Aug 3;10(8):e0129709. doi: 10.1371/journal.pone.0129709. eCollection 2015.
- Caritis S, Zhao Y, Chen HJ, **Venkataramanan R**. Pharmacodynamics of transdermal granisetron in women with nausea and vomiting of pregnancy. *Am. J Obstet Gynecol*. 2016 Jul;215(1):93.e1-4. doi: 10.1016/j.ajog.2016.01.163. Epub 2016 Jan 23.
- Carpenter DM, **Abraham O**, Alexander DS, Horowitz K. Counseling of children and adolescents in community pharmacies: Results from a 14-day observational study. *J Am Pharm Assoc (2003)*. 2016 May-Jun;56(3):266-269.e1. doi: 10.1016/j.japh.2016.03.001.
- Carry-Littles K, Nguyen K, Rowe T, **Johnston PA**, Brassil K. Symptom word documentation: A novel approach to identifying and managing hospital-acquired infections. *Am J Infect Control*. 2016 Apr 21. doi: 10.1016/j.ajic.2016.03.004. Epub 2016 Apr 21.
- Chai X, Guo Y, Jiang M, Hu B, Li Z, Fan J, Deng M, Billiar TR, Kucera H, Gaikwad NW, Xu M, Lu P, Yan J, Fu H, Liu Y, Yu L, Huang M, Zeng S, **Xie W**. Estrogen sulfotransferase ablation sensitizes mice to sepsis. *Nat Commun*. 2015 Aug 10;6:7979. doi: 10.1038/ncomms8979.
- Chen, J, Bacanu, S-A, Yu, H, Zhao, Z, Jia, P, Kendler, KS, Kranzler, HR, Gelernter, J, Farrer, L, Minica, C, Pool, R, Milanechi, Y, Boomsma, DI, Penninx, BWJH, Tyndale, RF, Ware, JJ, Cotinine meta-analysis group, FTND meta-analysis group, Vink, J, Kaprio, J, Munafò, M, Chen, X. Genetic relationship between schizophrenia and nicotine dependence. *Scientific Reports*. 2016 May 10;6:25671. doi: 10.1038/srep25671.
- Christner SM, Clausen DM, **Beumer JH**, Parise RA, Guo J, Huang Y, Doemling AS, Eiseman JL. In vitro cytotoxicity and in vivo efficacy, pharmacokinetics and metabolism of pyrazole-based small-molecule inhibitors of Mdm2/4-p53 interaction. *Cancer Chemother Pharmacol*. 2015 Aug;76(2):287-99. doi: 10.1007/s00280-015-2791-y. Epub 2015 Jun 7.
- Cochran G, Bacci JL, Ylioja T, Hruschak V, Miller S, **Seybert AL**, **Tarter R**. Prescription opioid use: Patient characteristics and misuse in community pharmacy. *J Am Pharm Assoc (2003)*. 2016 May-Jun;56(3):248-256.e6. doi: 10.1016/j.japh.2016.02.012. Epub 2016 Mar 24.
- Cochran G, Gordon A, Field C, Bacci J, Dhitel R, Ylioja T, Stitzer, M, Kelly, T, **Tarter R**. Developing a framework of care for opioid medication misuse in community pharmacy. *Res Social Adm Pharm*. 2016 Mar-Apr;12(2):293-301. doi: 10.1016/j.sapharm.2015.05.001. Epub 2015 May 8.
- Cochran G, Rubenstein J, Bucci J, Ylioja T, **Tarter R**. Screening community pharmacy patients for opioid misuse. *Journal of Addiction Medicine*. 2015 Sep-Oct;9(5):411-6. doi: 10.1097/ADM.0000000000000148.

- Cornelius J, **Kirisci L**, **Reynolds M**, **Vanyukov M**, **Tarter R**. Does the transmissible liability index (TLI) assessed in late childhood predict suicidal symptoms at young adulthood. *American Journal of Drug and Alcohol Abuse*. 2015 May;41(3):264-8. doi: 10.3109/00952990.2015.1011744. Epub 2015 Feb 20.
- Costantine MM, Cleary K, Hebert MF, Ahmed MS, Brown LM, Ren Z, Easterling TR, Haas DM, Haneline LS, Caritis SN, **Venkataramanan R**, West H, D'Alton M, Hankins G, Eunice Kennedy Shriver National Institute of Child Health and Human Development Obstetric-Fetal Pharmacology Research Units Network. Safety and pharmacokinetics of pravastatin used for the prevention of preeclampsia in high-risk pregnant women: a pilot randomized controlled trial. *Am J Obstet Gynecol*. 2016 Jun;214(6):720.e1-720.e17. doi: 10.1016/j.ajog.2015.12.038. Epub 2015 Dec 23.
- Crago EA, Sherwood PR, Bender C, Balzer J, Ren D, **Poloyac SM**. Plasma Estrogen Levels Are Associated With Severity of Injury and Outcomes After Aneurysmal Subarachnoid Hemorrhage. *Biol Res Nurs*. 2015 Oct;17(5):558-66. doi: 10.1177/1099800414561632. Epub 2014 Dec 29.
- **Culley CM**, Perera S, Marcum ZA, **Kane-Gill SL**, Handler SM. Using a Clinical Surveillance System to Detect Drug-Associated Hypoglycemia in Nursing Home Residents. *J Am Geriatr Soc*. 2015 Oct;63(10):2125-9. doi: 10.1111/jgs.13648. Epub 2015 Oct 12.
- Cunningham FE, Hur K, Dong D, Miller DR, Zhang R, Wei X, McCarren M, Mosholder AD, Graham DJ, **Aspinall SL**, Good CB. A Comparison of Neuropsychiatric Adverse Events During Early Treatment with Varenicline or a Nicotine Patch. *Addiction*. 2016 Jul;111(7):1283-92. doi: 10.1111/add.13329. Epub 2016 Apr 15.
- de Caestecker M, Humphreys BD, Liu KD, Fissell WH, Cerda J, **Nolin TD**, Askenazi D, Mour G, Harrell FE Jr, Pullen N, Okusa MD, Faubel S; ASN AKI Advisory Group. Bridging Translation by Improving Preclinical Study Design in AKI. *J Am Soc Nephrol*. 2015 Dec;26(12):2905-16. doi: 10.1681/ASN.2015070832. Epub 2015 Nov 4.
- Deeken JF, **Beumer JH**, Anders NM, Wanjiku T, Rusnak M, Rudek MA. Preclinical assessment of the interactions between the antiretroviral drugs, ritonavir and efavirenz, and the tyrosine kinase inhibitor erlotinib. *Cancer Chemother Pharmacol*. 2015 Oct;76(4):813-9. doi: 10.1007/s00280-015-2856-y. Epub 2015 Sep 2.
- Deshpande M, Chewning B, Mott D, **Thorpe JM**, Young HN. Asthma medication use among late midlife US Adults. *J Asthma*. 2016;53(3):261-8. doi: 10.3109/02770903.2015.1072720. Epub 2015 Sep 12.
- Dixon CE, Bramlett HM, Dietrich WD, Shear DA, Yan HQ, Deng-Bryant Y, Mondello S, Wang KK, Hayes RL, **Empsey PE**, Povlishock JT, Tortella FC, Kochanek PM. Cyclosporine Treatment in Traumatic Brain Injury: Operation Brain Trauma Therapy. *J Neurotrauma*. 2016 Mar 15;33(6):553-66. doi: 10.1089/neu.2015.4122.
- Donnelly MK, Crago EA, Conley YP, Balzer JR, Ren D, Ducruet AF, Kochanek PM, Sherwood PR, **Poloyac SM**. 20-HETE is associated with unfavorable outcomes in subarachnoid hemorrhage

patients. *J Cereb Blood Flow Metab.* 2015 Sep;35(9):1515-22. doi: 10.1038/jcbfm.2015.75. Epub 2015 Apr 29.

- Du L, **Empey PE**, Ji J, Chao H, Kochanek PM, Bayliff H, Clark RS. Probenecid and N-Acetylcysteine Prevent Loss of Intracellular Glutathione and Inhibit Neuronal Death after Mechanical Stretch Injury In Vitro. *J Neurotrauma.* 2016 Mar 22. doi: 10.1089/neu.2015.4342. Epub 2016 Mar 22.
- Duong SQ, Lal AK, Joshi R, Feingold B, **Venkataramanan R**. Transition from brand to generic tacrolimus is associated with a decrease in trough blood concentration in pediatric heart transplant recipients. *Pediatr Transplantation.* 2015 Dec;19(8):911-7. doi: 10.1111/ptr.12608. Epub 2015 Oct 25.
- Eads JR, **Beumer JH**, Negrea L, Holleran JL, Strychor S, Meropol NJ. A pharmacokinetic analysis of cisplatin and 5-fluorouracil in a patient with esophageal cancer on peritoneal dialysis. *Cancer Chemother Pharmacol.* 2016 Feb;77(2):333-8. doi: 10.1007/s00280-015-2939-9. Epub 2015 Dec 21.
- Eichinger KM, Egaña L, Orend JG, Resetar E, Anderson KB, Patel R, **Empey KM**. Alveolar macrophages support interferon gamma-mediated viral clearance in RSV-infected neonatal mice. *Respir Res.* 2015 Oct 5;16:122. doi: 10.1186/s12931-015-0282-7. Epub 2015 Oct 5.
- Entringer S, Epel ES, Lin J, Blackburn EH, Buss C, Shahbaba B, Gillen DL, **Venkataramanan R**, Simhan HN, Wadhwa PD. Maternal Folate Concentration in Early Pregnancy and Newborn Telomere Length. *Ann Nut Metab.* 2015;66(4):202-8. doi: 10.1159/000381925. Epub 2015 Jun 9.
- Ersek M, **Thorpe JM**, Kim H, Thomasson A, Smith D. Exploring Nonresponse Bias in the Department of Veterans Affairs' Bereaved Family Survey. *J Palliat Med.* 2015 Oct;18(10):858-64. doi: 10.1089/jpm.2015.0050. Epub 2015 Jul 14.
- Farina N, **Smithburger P**, **Kane-Gill S**. Screening and Management of Delirium in Critically Ill Patients. *Hosp Pharm.* 2015 Sep;50(8):667-71. doi: 10.1310/hpj5008-667. Epub 2015 Sep 16.
- Feghali M, **Venkataramanan R**, Caritis S. Pharmacokinetics of drugs in pregnancy. *Seminars in Perinatology.* Nov 2015;39(7):512-9. doi: 10.1053/j.semperi.2015.08.003.
- Feng Z, Kochanek S, Close D, **Wang L**, Srinivasan A, Almehizia AA, **Iyer P**, **Xie XQ**, **Johnston PA**, **Gold B**. Design and activity of AP endonuclease-1 inhibitors. *J Chem Biol.* 2015 Apr 19;8(3):79-93. doi: 10.1007/s12154-015-0131-7. eCollection 2015.
- Feng Z, Pearce LV, Zhang Y, Xing C, Herold BK, Ma S, Hu Z, Turcios NA, **Yang P**, Tong Q, McCall AK, Blumberg PM, **Xie XQ**. Multi-Functional Diarylurea Small Molecule Inhibitors of TRPV1 with Therapeutic Potential for Neuroinflammation. *AAPS J.* 2016 Jul;18(4):898-913. doi: 10.1208/s12248-016-9888-z. Epub 2016 Mar 21.

- **Fernandez CA**, Smith C, Yang W, Mullighan CG, Qu C, Larsen E, Bowman WP, Liu C, Ramsey LB, Chang T, Karol SE, Loh ML, Raetz EA, Winick NJ, Hunger SP, Carroll WL, Jeha S, Pui CH, Evans WE, Devidas M, Relling MV. Genome-wide analysis links NFATC2 with asparaginase hypersensitivity. *Blood*. 2015 Jul 2;126(1):69-75. doi: 10.1182/blood-2015-02-628800. Epub 2015 May 18.
- Gao J, Yan J, Xu M, Ren S, **Xie W**. CAR suppresses hepatic gluconeogenesis by facilitating the ubiquitination and degradation of PGC1 α . *Mol Endocrinol*. 2015 Nov;29(11):1558-70. doi: 10.1210/me.2015-1145. Epub 2015 Sep 25.
- Gathuru I, **Tarter R**, Klein M. Review of hookah tobacco smoking among college students: Policy implications and research recommendations. *Am J Drug Alcohol Abuse*. 2015;41(4):272-80. doi: 10.3109/00952990.2015.1043738. Epub 2015 Jun 9.
- Guo Y, Hu B, Xie Y, Billiar TR, Sperry JL, Huang M, **Xie W**. Regulation of drug-metabolizing enzymes by local and systemic liver injuries. *Expert Opin Drug Metab Toxicol*. 2016;12(3):245-51. doi: 10.1517/17425255.2016.1139574. Epub 2016 Jan 28.
- Hendricks MR, Lashua LP, Fischer DK, Flitter BA, Eichinger KM, Durbin JE, Sarkar SN, Coyne CB, **Empey KM**, Bomberger JM. Respiratory syncytial virus infection enhances *Pseudomonas aeruginosa* biofilm growth through dysregulation of nutritional immunity. *Proc Natl Acad Sci U S A*. 2016 Feb 9.;113(6):1642-7. doi: 10.1073/pnas.1516979113. Epub 2016 Jan 04.
- Heung M, Faubel S, Watnick S, Cruz DN, Koyner JL, Mour G, Liu KD, Cerda J, Okusa MD, Lukaszewski M, Vijayan A. Outpatient Dialysis for Patients with AKI: A Policy Approach to Improving Care. *Clin J Am Soc Nephrol*. 2015 Oct 7;10(10):1868-74. doi: 10.2215/CJN.02290215. Epub 2015 Jul 28.
- Holleran JL, **Beumer JH**, McCormick DL, Johnson WD, Newman EM, Doroshow JH, Kumar S, Covey JM, Davis M, Eiseman JL. Oral and intravenous pharmacokinetics of 5-fluoro-2'-deoxycytidine and THU in cynomolgus monkeys and humans. *Cancer Chemother Pharmacol*. 2015 Oct;76(4):803-11. doi: 10.1007/s00280-015-2857-x. Epub 2015 Sep 1.
- Horner MS, **Reynolds M**, Braxter B, **Kirisci L**, **Tarter RE**. Temperament disturbances measured in infancy progress to substance use disorder 20 years later. *Pers Individ Dif*. 2015 Aug;8296-101. doi: 10.1016/j.paid.2015.03.001.
- Hu B, Guo Y, Garbacz WG, Jiang M, Xu M, Huang H, Tsung A, Billiar TR, Ramakrishnan SK, Shah YM, Lam KSL, Huang M, **Xie W**. Fatty acid binding protein-4 (FABP4) is a hypoxia inducible gene that sensitizes mice to liver ischemia/re-perfusion injury. *J Hepatol*. 2015 Oct;63(4):855-62. doi: 10.1016/j.jhep.2015.05.030. Epub 2015 Jun 10.
- Huo ZY, **Xie X**, Yu T, Lu Y, Feng C, Hu HY. Nanowire-Modified 3D Electrode Enabling Low-Voltage Electroporation for Water Disinfection. *Environ Sci Technol*. 2016 Jun 24. doi: 10.1021/acs.est.6b01050. Epub 2016 Jun 24.
- Huss J, Garbacz W, **Xie W**. Constitutive Activities of Estrogen-related Receptors: Transcriptional

regulation of metabolism by the ERR pathways in health and disease. *Biochim Biophys Acta*. 2015 Sep;1852(9):1912-27. doi: 10.1016/j.bbadis.2015.06.016. Epub 2015 Jun 24.

- Jennings DL, Horn ET, Lyster H, Panos AL, Teuteberg JJ, Lehmkuhl HB, Perez A, **Shullo MA**. Assessing Anticoagulation Practice Patterns in Patients on Durable Mechanical Circulatory Support Devices: An International Survey. *ASAIO J*. 2016 Jan-Feb;62(1):28-32. doi: 10.1097/MAT.0000000000000274.
- Jiang M, Klein M, Zanger UM, Mohammad MK, Cave MC, Gaikwad NW, Dias NJ, Selcer KW, Guo Y, He J, Zhang X, Shen Q, Qin W, **Li J, Li S, Xie W**. Inflammatory regulation of steroid sulfatase, a novel mechanism to control estrogen homeostasis and inflammation in chronic liver disease. *J Hepatol*. 2016 Jan;64(1):44-52. doi: 10.1016/j.jhep.2015.07.022. Epub 2015 Jul 26.
- Johnson JK, Skoda EM, Zhou J, Parrinello E, Wang D, O'Malley K, Eyer BR, Kazancioglu M, Eisermann K, **Johnston PA**, Nelson JB, Wang Z, **Wipf P**. Small Molecule Antagonists of the Nuclear Androgen Receptor for the Treatment of Castration-Resistant Prostate Cancer. *ACS Med Chem Lett*. 2016 May 27;7(8):785-90. doi: 10.1021/acsmedchemlett.6b00186.
- Johnson SL, Bartels CM, Palta M, **Thorpe CT**, Weiss JM, Smith MA. Biological and steroid use in relationship to quality measures in older patients with inflammatory bowel disease: A U.S. Medicare cohort study. *BMJ Open*. 2015 Sep 7;5(9):e008597. doi: 10.1136/bmjopen-2015-008597.
- **Johnston PA**, Nguyen MM, Dar JA, Ai J, Wang Y, Masoodi KZ, Shun T, Shinde S, Camarco DP, Hua Y, **Huryn DM**, Wilson GM, Lazo JS, Nelson JB, **Wipf P**, Wang Z. Development and Implementation of a High-Throughput High-Content Screening Assay to Identify Inhibitors of Androgen Receptor Nuclear Localization in Castration-Resistant Prostate Cancer Cells. *Assay Drug Dev Technol*. 2016 May;14(4):226-39. doi: 10.1089/adt.2016.716.
- **Johnston PA**, Sen M, Hua Y, Camarco DP, Shun TY, Lazo JS, Wilson GM, Resnick LO, LaPorte MG, **Wipf P, Huryn DM**, Grandis JR. HCS campaign to identify selective inhibitors of IL-6-induced STAT3 pathway activation in head and neck cancer cell lines. *Assay Drug Dev Technol*. 2015 Sep;13(7):356-76. doi: 10.1089/adt.2015.663.
- **Kane-Gill SL**, Kellum JA. Advancing the use of clinical decision support to prevent drug-associated AKI. *Nephron*. 2015;131(4):259-61. doi: 10.1159/000437313. Epub 2015 Oct 21.
- Karol SE, Yang W, Van Driest SL, Chang TY, Kaste S, Bowton E, Basford M, Bastarache L, Roden DM, Denny JC, Larsen E, Winick N, Carroll WL, Cheng C, Pei D, **Fernandez CA**, Liu C, Smith C, Loh ML, Raetz EA, Hunger SP, Scheet P, Jeha S, Pui CH, Evans WE, Devidas M, Mattano LA Jr, Relling MV. Genetics of glucocorticoid-associated osteonecrosis in children with acute lymphoblastic leukemia. *Blood*. 2015 Oct 8;126(15):1770-6. doi: 10.1182/blood-2015-05-643601. Epub 2015 Aug 11.
- Kauffman Y, Capozzolo N, **Drab S**, Deloge A, Brandão C, **Smith RB**. Brazilian Pharmacists'

Perspectives on Continuing Education for Diabetes Management. *Curr Pharm Teach Learn*. doi:10.1016/j.cptl.2015.04.017.

- Kearney SM, Aldridge AP, Castle NG, Peterson J, **Pringle JL**. The Association of Job Strain With Medication Adherence: Is Your Job Affecting Your Compliance With a Prescribed Medication Regimen? *J Occup Environ Med*. 2016 July;58(7):707-11.. doi: 10.1097/JOM.0000000000000733. Epub 2016 May 18.
- Kim JJ, Mohammad RA, **Coley KC**, **Donihi AC**. Use of an iPad to Provide Warfarin Video Education to Hospitalized Patients. *J Patient Saf*. 2015 Sep;11(3):160-5. doi: 10.1097/PTS.0000000000000062.
- Kochanek PM, Bramlett HM, Shear DA, Dixon CE, Mondello S, Dietrich WD, Hayes RL, Wang KK, **Poloyac SM**, **Empey PE**, Povlishock JT, Mountney A, Browning M, Deng-Bryant Y, Yan HQ, Jackson TC, Catania M, Glushakova O, Richieri SP, Tortella FC. Synthesis of Findings, Current Investigations, and Future Directions: Operation Brain Trauma Therapy. *J Neurotrauma*. 2016 Mar 15;33(6):606-14. doi: 10.1089/neu.2015.4133.
- Krall KS, **Donihi AC**, Hatam M, Koshinsky, J, Siminerio L. The Nurse Education and Transition (NEAT) model: educating the hospitalized patient with diabetes. *Clinical Diabetes and Endocrinology*. 2/1/2016;2(2):DOI: 10.1186/s40842-016-0020-1.
- Kummar S, Chen A, Gutierrez M, Pfister TD, Wang L, Redon C, Bonner WM, Yutzy W, Zhang Y, Kinders RJ, Ji J, Allen D, Covey JM, Eiseman JL, Holleran JL, **Beumer JH**, Rubinstein L, Collins J, Tomaszewski J, Parchment R, Pommier Y, Doroshow JH. Clinical and pharmacologic evaluation of two dosing schedules of indotecan (LMP400), a novel indenoisoquinoline, in patients with advanced solid tumors. *Cancer Chemother Pharmacol*. 2016 Jul;78(1):73-81. doi: 10.1007/s00280-016-2998-6. Epub 2016 May 11.
- Kurz JE, **Poloyac SM**, Abend NS, Fabio A, Bell MJ, Wainwright MS. Variation in Anticonvulsant Selection and Electroencephalographic Monitoring Following Severe Traumatic Brain Injury in Children-Understanding Resource Availability in Sites Participating in a Comparative Effectiveness Study. *Pediatr Crit Care Med*. 2016 July;17(7):649-57. doi: 10.1097/PCC.0000000000000765. Epub 2016 May 27.
- LaPorte MG, Wang Z, Colombo R, Garzan A, Peshkov VA, Liang M, **Johnston PA**, Schurdak ME, Sen M, Camarco DP, Hua Y, Pollock NI, Lazo JS, Grandis JR, **Wipf P**, **Huryn DM**. Optimization of pyrazole-containing 1,2,4-triazolo-[3,4-b]thiadiazines, a new class of STAT3 pathway inhibitors. *Bioorg Med Chem Lett*. 2016 Aug 1;26(15):3581-5. doi: 10.1016/j.bmcl.2016.06.017. Epub 2016 Jun 09.
- Lassalas P, Gay B, Lasfargeas C, James MJ, Tran V, Vijayendran KG, Brunden KR, Kozlowski MC, Thomas CJ, Smith AB 3rd, **Huryn DM**, Ballatore C. Structure Property Relationships of Carboxylic Acid Isosteres. *J Med Chem*. 2016 Apr 14;59(7):3183-203. doi: 10.1021/acs.jmedchem.5b01963. Epub 2016 Mar 30.
- Lassman AB, Pugh SL, Gilbert MR, Aldape KD, Geinoz S, **Beumer JH**, Christner SM, Komaki

R, DeAngelis LM, Gaur R, Youssef E, Wagner H, Won M, Mehta MP. Phase 2 trial of dasatinib in target-selected patients with recurrent glioblastoma (RTOG 0627). *Neuro-Oncology*. 2015 Jul;17(7):992-8. doi: 10.1093/neuonc/nov011. Epub 2015 Mar 10.

- Lee DH, Zhang Y, Kassam AB, Park MJ, Gardner P, Prevedello DM, Henry S, Horbinski C, **Beumer JH**, Tawbi H, Williams BJ, Shaffrey ME, Egorin MJ, Abounader R, Park DM. Combined PDGFR and HDAC Inhibition Overcomes PTEN Disruption in Chordoma. *PLoS ONE*. Aug 6;10(8):e0134426. doi: 10.1371/journal.pone.0134426. eCollection 2015.
- Lee JJ, **Beumer JH**, Chu E. Therapeutic drug monitoring of 5-fluorouracil. *Cancer Chemother Pharmacol*. 2016 May 23. doi: 10.1007/s00280-016-3054-2. Epub 2016 May 23.
- Lee JJ, Seraj J, Yoshida K, Mizuguchi H, Strychor S, Fiejdasz J, Faulkner T, Parise RA, Fawcett P, Pollice L, Mason S, Hague J, Croft M, Nugteren J, Tedder C, Sun W, Chu E, **Beumer JH**. Human Mass Balance Study of TAS-102 Using ¹⁴C Analyzed by Accelerator Mass Spectrometry. *Cancer Chemother Pharmacol*. 2016 Mar;77(3):515-26. doi: 10.1007/s00280-016-2965-2. Epub 2016 Jan 19.
- **Li J**, Oberly PJ, **Poloyac SM**, **Gibbs RB**. A microsomal based method to detect aromatase activity in different brain regions of the rat using ultra performance liquid chromatography-mass spectrometry. *J Steroid Biochem Mol Biol*. 2016 Apr 22. doi: 10.1016/j.jsbmb.2016.04.013. Epub 2016 Apr 22.
- Li M, Zhao Y, Humar A, Tevar AD, Hughes C, **Venkataramanan R**. Pharmacokinetics of drugs in adult living donor liver transplant patients: regulatory factors and observations based on studies in animals and humans. *Expt Opin Drug Metab and Toxicol*. 2016;12(3):231-43. doi: 10.1517/17425255.2016.1139575. Epub 2016 Feb 6.
- Li X, Cai H, Zheng W, Tong M, Li H, Ao L, **Li J**, Hong G, Li M, Guan Q, Yang S, **Yang D**, Lin X, Guo Z. An individualized prognostic signature for gastric cancer patients treated with 5-Fluorouracil-based chemotherapy and distinct multi-omics characteristics of prognostic groups. *Oncotarget*. 2016 Feb 23;7(8):8743-55. doi: 10.18632/oncotarget.7087.
- Ling X, Zhang S, Shao P, Wang P, **Ma X**, Bai M. Synthesis of a reactive oxygen species responsive heterobifunctional thioketal linker. *Tetrahedron Lett*. 2015 Sep 9;56(37):5242-5244.
- Liu G, **Yang D**, Rupaimoole R, Pecot CV, Sun Y, Mangala LS, Li X, Ji P, Cogdell D, Hu L, Wang Y, Rodriguez-Aguayo C, Lopez-Berestein G, Shmulevich I, De Cecco L, Chen K, Mezzanzanica D, Xue F, Sood AK, Zhang W. Augmentation of response to chemotherapy by microRNA-506 through synthetic lethality in serous ovarian cancers. *J Natl Cancer Inst*. 2015 May 20;107(7). pii: djv108. doi: 10.1093/jnci/djv108. Print 2015 Jul.
- Liu K, Yan J, Sachar M, Zhang X, Guan M, **Xie W**, **Ma X**. A metabolomic perspective of griseofulvin-induced liver injury in mice. *Biochem Pharmacol*. 2015 Dec 1;98(3):493-501. doi: 10.1016/j.bcp.2015.09.002. Epub 2015 Sep 5.

- Lo-Ciganic W, Donohue JM, Jones B, **Thorpe JM**, Perera S, **Thorpe CT**, Marcum ZA, Gellad WF. Using machine learning to examine medication adherence thresholds and risk of hospitalization. *Med Care*. 2015 Aug;53(8):720-8. doi: 10.1097/MLR.0000000000000394.
- Lo-Ciganic WH, Donohue JM, Jones BL, Perera S, **Thorpe JM**, **Thorpe CT**, Marcum ZA, Gellad WF. Trajectories of Diabetes Medication Adherence and Hospitalization Risk: A Retrospective Cohort Study in a Large State Medicaid Program. *J Gen Intern Med*. 2016 Sep;31(9):1052-60. doi: 10.1007/s11606-016-3747-6. Epub 2016 May 26.
- Lu P, **Xie W**. Reply to Correspondence HEP-15-1008 “AHR-FGF21 dissociation of fatty liver from insulin resistance: a timely matter?” *Hepatology*. 2016 Apr;63(4):1396-7. doi: 10.1002/hep.27958. Epub 2015 Aug 21.
- Lu, J, Liu, C, Wang, P, Ghazwani, M, Xu, J, Huang, Y, **Ma, X**, Zhang, P, **Li, S**. The self-assembling camptothecin-tocopherol prodrug: an effective approach for formulating camptothecin. *Biomaterials*. 2015 Sep;62:176-87. doi: 10.1016/j.biomaterials.2015.05.046. Epub 2015 May 31.
- Marani M, Paone A, Fiascarelli A, Macone A, Gargano M, Rinaldo S, Giardina G, Pontecorvi V, Koes D, **McDermott L**, Yang T, Paiardini A, Contestabile R, Cutruzzolà F. A pyrazolopyran derivative preferentially inhibits the activity of human cytosolic serine hydroxymethyltransferase and induces cell death in lung cancer cells. *Oncotarget*. 2016 Jan 26;7(4):4570-83. doi: 10.18632/oncotarget.6726.
- Marcum ZA, Perera S, Newman AB, **Thorpe JM**, Switzer GE, Gray SL, Simonsick EM, Shorr RI, Bauer DC, Castle NG, Studenski SA, Hanlon JT. Antihypertensive use and recurrent falls in community-dwelling older adults: findings from the Health ABC study. *J Gerontol A Biol Sci*. 2015 Dec;70(12):1562-8. doi: 10.1093/gerona/glv095. Epub 2015 Aug 11.
- Marcum ZA, Perera S, **Thorpe JM**, Switzer GE, Gray SL, Castle NG, Strotmeyer ES, Simonsick EM, Bauer DC, Shorr RI, Studenski SA, Hanlon JT. Anticholinergic Use and Recurrent Falls in Community-Dwelling Older Adults: Findings From the Health ABC Study. *Ann Pharmacother*. 2015 Nov;49(11):1214-21. doi: 10.1177/1060028015596998. Epub 2015 Jul 30.
- Margulies SS, Anderson G, Atif F, Badaut J, Clark RSB, **Empey P**, Guseva M, Hoane M, Pauly J, Ragupathi R, Scheff S, Stein DG, Tang H, Hicks R. Combination Therapies for Traumatic Brain Injury: Retrospective Considerations. *J Neurotrauma*. 2016 Jan 1;33(1):101-12. doi: 10.1089/neu.2014.3855. Epub 2015 Aug 6.
- Marles RJ, Dentali SJ, Brinckmann JA, Ko R, Joseph JA, Gorecki DKJ, **Schiff, PL**, Pennyroyal GA, Thakker K, Mille Y, Oketch-Rabah H, Sarma N, Giancaspro GI. Guidelines for Assigning Titles to USP Dietary Supplement Monographs. *Pharmacoepial Forum*. 2015;41(6).
- Mason D, Chen Y, Krishnan HV, **Sant S**. Cardiac gene therapy: Recent advances and future directions. *Journal of Controlled Release*. 2015 Oct 10;215:101-11. doi: 10.1016/j.jconrel.2015.08.001. Epub 2015 Aug 5.

- **McDermott LA, Iyer P**, Verneti L, Rimer S, Sun J, Boby M, Yang T, Fioravanti M, O'Neill J, **Wang L**, Drakes D, Katt W, Huang Q, Cerione R. Design and evaluation of novel glutaminase inhibitors. *Bioorganic Medicinal Chemistry*. 2016 Apr 15;24(8):1819-39. doi: 10.1016/j.bmc.2016.03.009. Epub 2016 Mar 7.
- Mitchell MA, Broyles LM, **Pringle JL**, Kraemer KL, Childers JW, Buranosky RA, Gordon AJ. Education for the Mind and the Heart? Changing Residents' Attitudes about Addressing Unhealthy Alcohol Use. *Subst Abus*. 2016 May 10.0. doi: 10.1080/08897077.2016.1185076. Epub 2016 5 10.
- Mountney A, Bramlett HM, Dixon CE, Mondello S, Dietrich WD, Wang KK, Caudle K, **Empey PE, Poloyac SM**, Hayes RL, Povlishock JT, Tortella FC, Kochanek PM, Shear DA. Simvastatin Treatment in Traumatic Brain Injury: Operation Brain Trauma Therapy. *J Neurotrauma*. 2016 Mar 15;33(6):567-80. doi: 10.1089/neu.2015.4130. Epub 2016 01 20.
- Nguyen-Ha P, **Howrie Schiff D**, Crowley K, Vetterly C, McGhee W, Berry D, Ferguson E, Polishuk E, Goff J, Stilwell T, Brooks MM, Darville T, Thompson AE, Levin JE, Michaels MG, Green M. A Quality Assessment of a Collaborative Model of a Pediatric ASP Program. *Pediatrics*. 2016 May;137(5). pii: e20150316. doi: 10.1542/peds.2015-0316. Epub 2016 Apr 6.
- **Odukoya OK**, Schleiden LJ, Chui MA. The hidden role of community pharmacy technicians in ensuring patient safety with the use of e-prescribing. *Pharmacy*. 2015 Dec;3(4):330-343. Epub 2015 Nov 25.
- Pai AB, Grabe DW, Eisele G, Haqqie S, Patel H, Prokopenko AJ, **Nolin TD**, Kubotera N. Changes in plasma levels of asymmetric dimethylarginine in chronic kidney disease patients treated for 8 weeks with the vitamin D receptor agonist paricalcitol. *J Res Development*. 7/6/2015.
- Pandhi N, Schumacher JR, **Thorpe CT**, Smith MA. Cross-sectional study examining whether the extent of first-contact access to primary care differentially benefits those with certain personalities to receive preventive services. *BMJ Open*. 2016 Mar 7;6(3):e009738. doi: 10.1136/bmjopen-2015-009738.
- Parise RA, Eiseman JL, Clausen DM, Kicielinski KP, Hershberger PA, Egorin MJ, **Beumer JH**. Characterization of the metabolism of benzaldehyde dimethane sulfonate (NSC 281612, DMS612). *Cancer Chemother Pharmacol*. 2015 Sep;76(3):537-46. doi: 10.1007/s00280-015-2828-2. Epub 2015 Jul 21.
- Patel A, Mukundan S, Wang W, Karumuri A, **Sant V**, Mukhopadhyay SM, **Sant S**. Carbon-based hierarchical scaffolds for myoblast differentiation: Synergy between nano-functionalization and alignment. *Acta Biomater*. 2016 Mar 1;3277-88. doi: 10.1016/j.actbio.2016.01.004. Epub 2016 Jan 05.

- Patel A, **Sant S**. Hypoxic tumor microenvironment: Opportunities to develop targeted therapies. *Biotechnol Adv*. 2016 Apr 30. doi: 10.1016/j.biotechadv.2016.04.005. Epub 2016 Apr 30.
- Patel A, Xue Y, Mukundan S, **Rohan LC**, **Sant V**, Stolz DB, **Sant S**. Cell-Instructive Graphene-Containing Nanocomposites Induce Multinucleated Myotube Formation. *Ann Biomed Eng*. 2016 Jun;44(6):2036-48. doi: 10.1007/s10439-016-1586-6. Epub 2016 Mar 16.
- Paugh SW, Bonten EJ, Savic D, Ramsey LB, Thierfelder WE, Gurung P, Malireddi RK, Actis M, Mayasundari A, Min J, Coss DR, Lauder milk LT, Panetta JC, McCorkle JR, Fan Y, Crews KR, Stocco G, Wilkinson MR, Ferreira AM, Cheng C, Yang W, Karol SE, **Fernandez CA**, Diouf B, Smith C, Hicks JK, Zanut A, Giordanengo A, Crona D, Bianchi JJ, Holmfeldt L, Mullighan CG, den Boer ML, Pieters R, Jeha S, Dunwell TL, Latif F, Bhojwani D, Carroll WL, Pui CH, Myers RM, Guy RK, Kanneganti TD, Relling MV, Evans WE. NALP3 inflammasome upregulation and CASP1 cleavage of the glucocorticoid receptor cause glucocorticoid resistance in leukemia cells. *Nat Genet*. 2015 Jun;47(6):607-14. doi: 10.1038/ng.3283. Epub 2015 May 4.
- Pillai VC, Han K, Beigi RH, Hankins GD, Clark S, Hebert MF, Easterling TR, Zajicek A, Ren Z, Caritis SN, **Venkataramanan R**. Population pharmacokinetics of oseltamivir in non-pregnant and pregnant women. *Br J Clin Pharmacol*. 2015 Nov;80(5):1042-50. doi: 10.1111/bcp.12691. Epub 2015 Aug 18.
- **Pringle JL**, Chan C, Rucker L, Burns A, Domann D, Tice B. Perspectives: Applying Value-Based Incentive Models Within Community Pharmacy Practice. *Am J Pharm Benefits*. 2/16/2016;2016;8(1).
- **Pringle JL**, **Coley K**. Improving Medication Adherence: A Framework for Community Pharmacy-Based Interventions. *Integr Pharm Res Pract*. 11/1/2015;Volume 2015:4:175-183. DOI <https://dx.doi.org/10.2147/IPRP.S93036>.
- **Pringle JL**, Kearney SM, Grasso K, Boyer AD, Conklin MH, Szymanski KA. User testing and performance evaluation of the Electronic Quality Improvement Platform for Plans and Pharmacies. *J Am Pharm Assoc (2003)*. 2015 Nov-Dec;55(6):634-41. doi: 10.1331/JAPhA.2015.15074.
- **Pringle JL**, Seale JP, Shellenberger S, Grasso KM, Kowalchuk A, Laufman L, Bray JH. Development and Evaluation of Two Instruments for Assessing SBIRT Competency. *Subst Abus*. 2016 Mar 23.0. doi: 10.1080/08897077.2016.1152343. Epub 2016 Mar 23.
- Rabinowitz JA, Drabick DA, **Reynolds MD**, Clark DB, Olinio TM. Child Temperamental Flexibility Moderates the Relation between Positive Parenting and Adolescent Adjustment. *J Appl Dev Psychol*. 2016 Mar-Apr;43:43-53. doi: 10.1016/j.appdev.2015.12.006.
- Rabinowitz JA, Drabick DA, **Reynolds MD**. Youth Withdrawal Moderates the Relationships Between Neighborhood Factors and Internalizing Symptoms in Adolescence. *J Youth Adolesc*. 2016 Mar;45(3):427-39. doi: 10.1007/s10964-015-0324-y. Epub 2015 Jul 07.
- Radomski TR, Zhao X, **Thorpe CT**, **Thorpe JM**, Good CB, Mor MK, Fine MJ, Gellad WF. VA

and Medicare Utilization Among Dually Enrolled Veterans with Type 2 Diabetes: A Latent Class Analysis. *J Gen Intern Med.* 2016 May;31(5):524-31. doi: 10.1007/s11606-016-3631-4. Epub 2016 Feb 22.

- Ridenour T, Willis D, Bogen D, Novak S, Scherer J, **Reynolds M**, Zhai Z, **Tarter R**. Detecting initiation or risk for initiating substance use before high school during pediatric well-child check-up. *Drug and Alcohol Dependence.* 2015 May 1;150:54-62. doi: 10.1016/j.drugalcdep.2015.02.013. Epub 2015 Mar 2.
- Ridenour TA, Wittenborn AK, Raiff BR, **Benedict N**, **Kane-Gill S**. Illustrating idiographic methods for translation research: moderation effects, natural clinical experiments, and complex treatment-by-subgroup interactions. *Transl Behav Med.* 2016 Mar;6(1):125-34. doi: 10.1007/s13142-015-0357-5.
- Riley CL, Sarani B, Sullivan JA, Upperman JS, **Kane-Gill SL**, Bailey H. Critical violent injury in the United States: A review and call to action. *Crit Care Med.* 2015 Nov;43(11):2460-7. doi: 10.1097/CCM.0000000000001255.
- Rivosecchi RM, **Kane-Gill SL**, Svec S, Campbell S, **Smithburger PL**. The implementation of a nonpharmacologic protocol to prevent intensive care delirium. *J Crit Care.* 2016 Feb;31(1):206-11. doi: 10.1016/j.jcrc.2015.09.031. Epub 2015 Oct 17.
- Rodler ET, Kurl, BF, Griffin M, Gralow JR, Porter P, Yeh RF, Gadi VK, Guenthoer J, **Beumer JH**, Korde L, Strychor S, Kiesel B, Linden HM, Thompson JA, Swisher EM, Chai X, Shepherd S, Giranda VL, Specht JM. Phase I Study of Veliparib (ABT-888) in Combination with Cisplatin and Vinorelbine for Patients with Advanced Triple-Negative Breast Cancer (TNBC) and/or BRCA Mutation-Associated Breast Cancer. *Clin Cancer Res.* 2016 Jun 15;22(12):2855-64. doi: 10.1158/1078-0432.CCR-15-2137. Epub 2016 Jan 22.
- Romagnoli KM, Boyce RD, **Empey PE**, Adams S, Hochheiser H. Bringing clinical pharmacogenomics information to pharmacists: A qualitative study of information needs and resource requirements. *Int J Med Inform.* 2016 Feb;86:54-61. doi: 10.1016/j.ijmedinf.2015.11.015. Epub 2015 Nov 30.
- Roumelioti ME, **Nolin T**, Unruh ML, Argyropoulos C. Revisiting the Middle Molecule Hypothesis of Uremic Toxicity: A Systematic Review of Beta 2 Microglobulin Population Kinetics and Large Scale Modeling of Hemodialysis Trials In Silico. *PLoS One.* Apr 7;11(4):e0153157. doi: 10.1371/journal.pone.0153157. eCollection 2016.
- Rupaimoole R, Ivan C, **Yang D**, Gharpure KM, Wu SY, Pecot CV, Previs RA, Nagaraja AS, Armaiz-Pena GN, McGuire M, Pradeep S, Mangala LS, Rodriguez-Aguayo C, Huang L, Bar-Eli M, Zhang W, Lopez-Berestein G, Calin GA, Sood AK. Hypoxia-upregulated microRNA-630 targets Dicer, leading to increased tumor progression. *Oncogene.* 2016 Jan 4. doi: 10.1038/onc.2015.492. [Epub ahead of print].

- Sachar M, Anderson KE, **Ma X**. Protoporphyrin IX: the Good, the Bad, and the Ugly. *J Pharmacol Exp Ther*. 2016 Feb;356(2):267-75. doi: 10.1124/jpet.115.228130. Epub 2015 Nov 20.
- Sachar M, **Ma X**. Role of ABCG2 in liver injury associated with erythropoietic protoporphyria. *Hepatology*. 2016 Jul;64(1):305. doi: 10.1002/hep.28249. Epub 2015 Oct 30.
- Schwantes-An TH, Zhang J, Chen LS, Hartz SM, Culverhouse RC, Chen X, Coon H, Frank J, Kamens HM, Konte B, Kovanen L, Latvala A, Legr, LN, Maher BS, Melroy WE, Nelson EC, Reid MW, Robinson JD, Shen PH, Yang BZ, Andrews JA, Aveyard P, Beltcheva O, Brown SA, Cannon DS, Cichon S, Corley RP, Dahmen N, Degenhardt L, Foroud T, Gaebel W, Giegling I, Glatt SJ, Gruzca RA, Hardin J, Hartmann AM, Heath AC, Herms S, Hodgkinson CA, Hoffmann P, Hops H, Huizinga D, Ising M, Johnson EO, Johnstone E, Kaneva RP, Kendler KS, Kiefer F, Kranzler HR, Krauter KS, Levrano O, Lucae S, Lynskey MT, Maier W, Mann K, Martin NG, Mattheisen M, Montgomery GW, Müller-Myhsok B, Murphy MF, Neale MC, Nikolov MA, Nishita D, Nöthen MM, Nurnberger J, Partonen T, Pergadia ML, **Reynolds M**, Ridinger M, Rose RJ, Rouvinen-Lagerström N, Scherbaum N, Schmal C, Soyka M, Stallings MC, Steffens M, Treutlein J, Tsuang M, Wall TL, Wodarz N, Yuferov V, Zill P, Bergen AW, Chen J, Cinciripini PM, Edenberg HJ, Ehringer MA, Ferrell RE, Gelernter J, Goldman D, Hewitt JK, Hopfer CJ, Iacono WG, Kaprio J, Kreek MJ, Kremensky IM, Madden PA, McGue M, Munafò MR, Philibert RA, Rietschel M, Roy A, Rujescu D, Saarikoski ST, Swan GE, Todorov AA, **Vanyukov MM**, Weiss RB, Bierut LJ, Saccone NL. Association of the OPRM1 Variant rs1799971 (A118G) with Non-Specific Liability to Substance Dependence in a Collaborative de novo Meta-Analysis of European-Ancestry Cohorts. *Behav Genet*. 2016 Mar;46(2):151-69. doi: 10.1007/s10519-015-9737-3. Epub 2015 Sep 21.
- Shaik IH, Bastian JR, Zhao Y, Caritis SN, **Venkataramanan R**. Route of administration and formulation dependent pharmacokinetics of 17-hydroxyprogesterone caproate in rats. *Xenobiotica*. 2016;46(2):169-74. doi: 10.3109/00498254.2015.1057547. Epub 2015 Jul 7.
- Shaik JS, **Poloyac SM**, Kochanek PM, Alexander H, Tudorascu DL, Clark RS, Manole MD. 20-Hydroxyeicosatetraenoic Acid Inhibition by HET0016 Offers Neuroprotection, Decreases Edema, and Increases Cortical Cerebral Blood Flow in a Pediatric Asphyxial Cardiac Arrest Model in Rats. *J Cereb Blood Flow Metab*. 2015 Nov;35(11):1757-63. doi: 10.1038/jcbfm.2015.117. Epub 2015 Jun 10.
- Shehu AI, Li G, **Xie W**, **Ma X**. The pregnane X receptor in tuberculosis therapeutics. *Expert Opin Drug Metab Toxicol*. 2016;12(1):21-30. doi: 10.1517/17425255.2016.1121381. Epub 2015 Dec 5.
- Shinde A, Berhane H, Rhieu BH, Kalash R, Xu K, Goff J, Epperly MW, Franicola D, Zhang X, Dixon T, Shields D, Wang H, Wipf P, Parmar K, Guinan E, Kagan V, Tyurin V, Ferris RL, Zhang X, **Li S**, Greenberger JS. Intraoral Mitochondrial-Targeted GS-Nitroxide, JP4-039, Radioprotects Normal Tissue in Tumor-Bearing Radiosensitive *Fancd2*(-/-) (C57BL/6) Mice. *Radiat Res*. 2016 Feb;185(2):134-50. doi: 10.1667/RR14035.1. Epub 2016 Jan 20.

- Siminerio L, **Venkataramanan R**, Caritis S. Selective serotonin reuptake inhibitors and childhood motor skill impairment-what can be concluded? *BJOG*. 2015 Sep 15. doi: 10.1111/1471-0528.13581. [Epub ahead of print].
- Siminerio LL, Bodnar LM, **Venkataramanan R**, Caritis SN. Ondansetron Use in Pregnancy. *Obstet Gynecol*. 2016 May;127(5):873-7. doi: 10.1097/AOG.0000000000001375.
- Singh M, Close DA, Mukundan S, **Johnston PA**, **Sant S**. Production of Uniform 3D Microtumors in Hydrogel Microwell Arrays for Measurement of Viability, Morphology, and Signaling Pathway Activation. *Assay Drug Dev Technol*. 2015 Nov;13(9):570-83. doi: 10.1089/adt.2015.662. Epub 2015 Aug 14.
- Singh M, Mukundan S, Jaramillo M, Oesterreich S, **Sant S**. Three-Dimensional Breast Cancer Models Mimic Hallmarks of Size-Induced Tumor Progression. *Cancer Res*. 2016 May 23. doi: 10.1158/0008-5472.CAN-15-2304. Epub 2016 May 23.
- Skrypnik NI, Sanker S, Brilli-Skvarca L, Novitskaya T, Woods C, Chiba T, Patel K, Goldberg ND, **McDermott L**, Vinson PN, Calcutt MW, **Huryn DM**, Verneti LA, Vogt A, Hukriede N, de Caestecker MP. Delayed treatment with PTBA analogs reduces post injury renal fibrosis after kidney injury. *Am J Physiol Renal Physiol*. 2015 Dec 9;ajprenal.00503.2015. doi: 10.1152/ajprenal.00503.2015.
- **Smithburger PL**, Buckley MS, Culver MA, Sokol S, Lat I, Handler SM, **Kirisci L**, **Kane-Gill SL**. A Multicenter Evaluation of Off-Label Medication Use and Associated Adverse Drug Reactions in Adult Medical ICUs. *Crit Care Med*. 2015 Aug;43(8):1612-21. doi: 10.1097/CCM.0000000000001022.
- Sobel SI, Augustine M, **Donihi AC**, Reider J, Forte P, Korytkowski M. Safety and Efficacy of a Peri-operative Protocol for Patients with Diabetes Treated with Continuous Subcutaneous Insulin Infusion Who are Admitted for Same-Day Surgery. *Endocr Pract*. 2015 Nov;21(11):1269-76. doi: 10.4158/EP15727.OR. Epub 2015 Aug 17.
- **Stevenson JM**, Reilly JL, Harris MS, Patel SR, Weiden PJ, Prasad KM, Badner JA, Nimgaonkar VL, Keshavan MS, Sweeney JA, Bishop JR. Antipsychotic pharmacogenomics in first episode psychosis: a role for glutamate genes. *Transl Psychiatry*. 2016 Feb 23;6:e739. doi: 10.1038/tp.2016.10. Epub 2016 Feb 23.
- Stewart C, **Kirisci L**, Long AL, Giancola PR. Development and Psychometric Evaluation of the Child Neglect Questionnaire. *J Interpers Violence*. 2015 Nov;30(19):3343-66. doi: 10.1177/0886260514563836. Epub 2014 Dec 21.
- Stubbs JR, House JA, Ocque AJ, Zhang S, Johnson C, Kimber C, Schmidt K, Gupta A, Wetmore JB, **Nolin TD**, Spertus JA, Yu AS. Serum Trimethylamine-N-Oxide is Elevated in CKD and Correlates with Coronary Atherosclerosis Burden. *J Am Soc Nephrol*. 2016 Jan;27(1):305-13. doi: 10.1681/ASN.2014111063. Epub 2015 Jul 30.

- **Tarter RE, Kirisci L, Reynolds M**, Horner M, Zhai Z, Gathuru I, **Vanyukov M**. Longitudinal Modeling of the Association Between Transmissible Risk, Affect During Drug Use and Development of Substance Use Disorder. *J Addict Med*. 2015 Nov-Dec;9(6):464-9. doi: 10.1097/ADM.0000000000000163.
- Taylor M, Jakacki R, May C, **Howrie Schiff D**, Maurer S. Ketamine PCA for Treatment of End-of-life Neuropathic Pain in Pediatrics. *Am J Hosp Palliat Care*. 2015 Dec;32(8):841-8. doi: 10.1177/1049909114543640. Epub 2014 Jul 15.
- Teramachi J, Silbermann R, **Yang P**, Zhao W, Mohammad K, Guo J, Anderson J, Zhou D, Feng R, Myint K, Maertz N, **Beumer JH**, Eiseman J, Windle J, **Xie XQ**, Roodman G, Kurihara N. Blocking the ZZ Domain of Sequestosome1/p62 Suppresses Myeloma Growth and Osteoclast Formation In Vitro and Induces Dramatic Bone Formation in Myeloma-Bearing Bones In Vivo. *Leukemia*. 2016 Feb;30(2):390-8. doi: 10.1038/leu.2015.229. Epub 2015 Aug 19.
- **Thorpe JM**, Smith D, Kuzla N, Ersek M. Does mode of survey administration matter? Using measurement invariance to validate the mail and phone versions of the Bereaved Family Survey. *J Pain Symptom Manage*. 2016 Mar;51(3):546-56. doi: 10.1016/j.jpainsymman.2015.11.006. Epub 2015 Nov 24.
- **Thorpe JM, Thorpe CT**, Schulz R, Van Houtven CH, Schleiden L. Informal caregiver disability and access to preventive care in care recipients. *Am J Prev Med*. 2015 Sep;49(3):370-9. doi: 10.1016/j.amepre.2015.02.003. Epub 2015 Jun 16.
- Tien YC, Liu K, Pope C, Wang P, **Ma X**, Zhong XB. Dose of Phenobarbital and Age of Treatment at Early Life are Two Key Factors for the Persistent Induction of Cytochrome P450 Enzymes in Adult Mouse Liver. *Drug Metab Dispos*. 2015 Dec;43(12):1938-45. doi: 10.1124/dmd.115.066316. Epub 2015 Sep 23.
- Trask OJ, **Johnston PA**. Standardization of high content imaging and informatics. *Assay Drug Dev Technol*. 2015 Sep;13(7):341-6. doi: 10.1089/adt.2015.29022.ojt.
- **Vanyukov MM, Tarter RE**, Conway KP, **Kirillova GP**, Chandler RK, Daley DC. Risk and resistance perspectives in translation-oriented etiology research. *Transl Behav Med*. 2016 Mar;6(1):44-54. doi: 10.1007/s13142-015-0355-7.
- Walsh DR, **Nolin TD**, Friedman PA. Drug Transporters and Na⁺/H⁺ Exchange Regulatory Factor PSD-95/Drosophila Discs Large/ZO-1 Proteins. *Pharmacol Rev*. 2015 Jul;67(3):656-80. doi: 10.1124/pr.115.010728.
- **Wang L, Xie X-Q**. Cancer genomics: opportunities for medicinal chemistry? *Future Med Chem*. 2016;8(4):357-9. doi: 10.4155/fmc.16.1. Epub 2016 Mar 15.
- Wang T, **Benedict N**, Olsen KM, Luan R, Zhu X, Zhou N, Tang H, Yan Y, Peng Y, Shi L. Effect of critical care pharmacist's intervention on medication errors: A systematic review and meta-analysis of observational studies. *J Crit Care*. 2015 Oct;30(5):1101-6. doi: 10.1016/j.jcrc.2015.06.018. Epub 2015 Jun 24.

- Wang YM, Chai SC, Lin W, Chai X, Elias A, Wu J, Ong SS, Pondugula SR, Beard JA, Schuetz EG, Zeng S, **Xie W**, Chen T. Serine 350 of human pregnane X receptor is crucial for its heterodimerization with retinoid X receptor alpha and transactivation of target genes in vitro and in vivo. *Biochem Pharmacol.* 2015 Aug 15;96(4):357-68. doi: 10.1016/j.bcp.2015.06.018. Epub 2015 Jun 25.
- Whetstone R, **Gold B**. Quantification of glucose-6-phosphate dehydrogenase mutations in colonic stem cells. *J Vis Exp.* 2015 Sep 25;(103). doi: 10.3791/53240.
- Whetstone W, Wittel U, Michels N, Gulizia JA, **Gold B**. Colon carcinogenesis in wild type and immune compromised mice after treatment with azoxymethane, and azoxymethane with dextran sodium sulfate. *Mol Carcinog.* 2016 Jul;55(7):1187-95. doi: 10.1002/mc.22361. Epub 2015 Jul 8.
- Willyerd FA, **Empey PE**, Philbrick A, Ikonovic MD, Puccio AM, Kochanek PM, Okonkwo DO, Clark RS. Expression of ATP-Binding Cassette Transporters B1 and C1 after Severe Traumatic Brain Injury in Humans. *J Neurotrauma.* 2016 Jan 15;33(2):226-31. doi: 10.1089/neu.2015.3879. Epub 2015 Jun 17.
- Windreich RM, Goyal RK, Joshi R, Kenkre TS, **Howrie Schiff D**, **Venkataramanan R**. A Pilot Study of Continuous Infusion of Mycophenolate Mofetil for Prophylaxis of Graft-versus-Host-Disease in Pediatric Patients. *Biol Blood Marrow Transplant.* 2016 Apr;22(4):682-9. doi: 10.1016/j.bbmt.2015.12.013. Epub 2015 Dec 29.
- Wong A, **Benedict NJ**, Lohr BR, Pizon AF, **Kane-Gill SL**. Management of benzodiazepine-resistant alcohol withdrawal across a healthcare system: Benzodiazepine dose-escalation with or without propofol. *Drug Alcohol Depend.* 2015 Sep 1;154:296-9. doi: 10.1016/j.drugalcdep.2015.07.005. Epub 2015 Jul 16.
- Wong A, Pickering AJ, **Potoski BA**. Dosing Practices of Intravenous Acyclovir for Herpes Encephalitis in Obesity: Results of a Pharmacist Survey. *J Pharm Pract.* 2016 Apr 10. doi: 10.1177/0897190016642689. Epub 2016 Apr 10.
- Wong A, **Smithburger PL**, **Kane-Gill SL**. Review of adjunctive dexmedetomidine in the management of severe acute alcohol withdrawal syndrome. *Am J Drug Alcohol Abuse.* 2015 Jul 30:1-10. Epub 2015 Jul 30.
- Wytiaz RM, Lee HM, **Odukoya OK**. Smart phone apps: An innovative approach to improving pediatric medication adherence. *Innovations in Pharmacy.* 2015;6(4): Article 222. <http://pubs.lib.umn.edu/innovations/vol6/iss4/4>.
- **Xie W**. Xenobiotic nuclear receptors, new tricks for an old dog. *Biochim Biophys Acta - Gene Regulatory Mechanisms.* 2016 Apr 27. pii: S1874-9399(16)30079-7. doi: 10.1016/j.bbgrm.2016.04.011. [Epub ahead of print].

- **Xie XQ, Yang P,** Zhang Y, Zhang P, **Wang L,** Ding Y, Yang M, Tong Q, Cheng H, Ji Q, **McGuire T,** Yuan W, Cheng T, Gao Y. Discovery of novel INK4C small-molecule inhibitors to promote human and murine hematopoietic stem cell ex vivo expansion. *Sci Rep.* 2015 Dec 18;5:18115. doi: 10.1038/srep18115.
- Xie Y, Wang H, Cheng X, Wu Y, Cao L, Wu M, **Xie W,** Wang G, Hao H. Farnesoid X receptor activation promotes cell proliferation via PDK4-controlled metabolic reprogramming. *Sci Rep.* 2016 Jan 5;6:18751. doi: 10.1038/srep18751.
- Xue Y, Patel A, Mukundan S, **Sant V, Sant S.** Biocompatible graphene/nanofiber composite promotes myoblast differentiation. *Front Bioen Biotechnol.* Conference Abstract: 10th World Biomaterials Congress. doi: 10.3389/conf.FBIOE.2016.01.02664.
- Xue Y, Patel A, **Sant V, Sant S.** PEGylated poly(ester amide) elastomers with tunable physico-chemical, mechanical and degradation properties. *European Polymer Journal.* 11/2015;72;163-179.
- Xue Y, Patel A, **Sant V, Sant S.** Semi-quantitative FTIR analysis of the crosslinking density of poly (ester amide) based thermoset elastomers. *Macromolecular Materials and Engineering.* 12/31/2015;301(3):296-305;Mar 2016.
- Yoshida K, Sun B, Zhang L, Zhao P, Abernethy DR, **Nolin TD,** Rostami-Hodjegan A, Zineh I, Huang SM. Systematic and quantitative assessment of the effect of chronic kidney disease on CYP2D6 and CYP3A4/5. *Clin Pharmacol Ther.* 2016 Jul;100(1):75-87. doi: 10.1002/cpt.337. Epub 2016 Mar 7.
- Young OM, Shaik IH, Twedt R, Binstock A, Althouse AD, **Venkataramanan R,** Simhan HN, Wiesenfeld HC, Caritis SN. Pharmacokinetics of cefazolin prophylaxis in obese gravidae at time of cesarean delivery. *Amer J Obstet Gynecol.* 2015 Oct;213(4):541.e1-7. doi: 10.1016/j.ajog.2015.06.034. Epub 2015 Jun 20.
- Yousef KM, Balzer JR, Bender CM, Hoffman LA, **Poloyac SM,** Ye F, Sherwood PR. Cerebral Perfusion Pressure and Delayed Cerebral Ischemia After Aneurysmal Subarachnoid Hemorrhage. *Am J Crit Care.* 2015 Jul;24(4):e65-71. doi: 10.4037/ajcc2015913.
- Yousef KM, Balzer JR, Bender CM, Hoffman LA, **Poloyac SM,** Ye F, Sherwood PR. Temporal Profiles of Cerebral Perfusion Pressure After Subarachnoid Hemorrhage. *J Neurosci Nurs.* 2015 Aug;47(4):E2-9. doi: 10.1097/JNN.000000000000145.
- Yu L, Wang Z, Huang M, Li Y, Zeng K, Lei J, Hu H, Chen B, Lu J, **Xie W,** Zeng S. Evodia alkaloids suppress gluconeogenesis and lipogenesis by activating the constitutive androstane receptor. *Biochim Biophys Acta.* 2015 Oct 8. pii: S1874-9399(15)00207-2. doi: 10.1016/j.bbagr.2015.10.001. [Epub ahead of print].
- Zhang H, Nguyen MH, Clancy CJ, Joshi R, Zhao W, **Ensor C, Venkataramanan R,** Shields RK. Pharmacokinetics of posaconazole suspension in lung transplant patients with and without cystic

fibrosis. *Antimicrobial Agents and Chemotherapy*. 2016 May 23;60(6):3558-62. doi: 10.1128/AAC.00424-16. Print 2016 Jun.

- Zhang M, Liu G, Xue F, Edwards R, Sood A, Zhang, W, **Yang D**. Copy number deletion of RAD50 as a predictive marker of BRCAness and PARP inhibitor response in BRCA wild-type ovarian cancer. *Gynecol Oncol*. 2016 Apr;141(1):57-64. doi: 10.1016/j.ygyno.2016.01.004.
- Zhang P, **Li J**, Ghazwani M, Zhao W, Huang Y, Zhang X, **Venkataramanan R**, **Li S**. Effective co-delivery of doxorubicin and dasatinib using a PEG-Fmoc nanocarrier for combination cancer chemotherapy. *Biomaterials*. 2015 Oct;67:104-14. doi: 10.1016/j.biomaterials.2015.07.027. Epub 2015 Jul 15.
- Zhao W, Chen B, Guo X, Wang R, Chang Z, Dong Y, Song K, Wang W, Qi L, Gu Y, Wang C, **Yang D**, Guo Z. A rank-based transcriptional signature for predicting relapse risk of stage II colorectal cancer identified with proper data sources. *Oncotarget*. 2016 Apr 5;7(14):19060-71. doi: 10.18632/oncotarget.7956.
- Zhao Y, Chen HJ, Caritis S, **Venkataramanan R**. Development and validation of a sensitive liquid chromatographic-tandem mass spectrometric method for the simultaneous analysis of granisetron and 7-hydroxy granisetron in human plasma and urine samples: application in a clinical pharmacokinetic study in pregnant subject. *Biomed Chromotogr*. 2016 Feb;30(2):149-54. doi: 10.1002/bmc.3530. Epub 2015 Jul 21.
- Zhou Y, Wang X, Li H, Zhang J, Chen Z, **Xie W**, Zhang J, **Li J**, Zhou L, Huang M. Polymorphisms of ABCG2, ABCB1 and HNF4 α are associated with Lamotrigine trough concentrations in epilepsy patients. *Drug Metab Pharmacokinet*. 2015 Aug;30(4):282-7. doi: 10.1016/j.dmpk.2015.05.002. Epub 2015 May 16.

Patient Care

- Anseeuw K, Mowry JB, Burdmann EA, Ghannoum M, Hoffman RS, Gosselin S, Lavergne V, **Nolin TD**. Extracorporeal Treatment in Phenytoin Poisoning: Systematic Review and Recommendations from the EXTRIP (Extracorporeal Treatments in Poisoning) Workgroup. *Am J Kidney Dis*. 2016 Feb;67(2):187-97. doi: 10.1053/j.ajkd.2015.08.031. Epub 2015 Nov 11.
- **Benedict N**, Hess MM. History and future of critical care pharmacy practice. *Am J Health Syst Pharm*. 2015 Dec 1;72(23):2101-5. doi: 10.2146/ajhp150638.
- Buckley MS, Park AS, Anderson CS, Barletta JF, Gerkin R, O'Malley, Wicks LM, **Kane-Gill SL**. Impact of a clinical pharmacist stress ulcer prophylaxis management program on inappropriate use in hospitalized patients. *Am J Med*. 2015 Aug;128(8):905-13. doi: 10.1016/j.amjmed.2015.02.014. Epub 2015 Mar 27.
- Carmichael JM, **Hall DL**. Evolution of ambulatory care pharmacy practice in the past 50 years. *Am J Health Syst Pharm*. 2015 Dec 1;72(23):2087-91. doi: 10.2146/ajhp150627.

- Cerdá J, Liu KD, Cruz DN, Jaber BL, Koyner JL, Heung M, Okusa MD, Faubel S; AKI Advisory Group of the American Society of Nephrology. Promoting Kidney Function Recovery in Patients with AKI Requiring RRT. *Clin J Am Soc Nephrol*. 2015 Oct 7;10(10):1859-67. doi: 10.2215/CJN.01170215. Epub 2015 Jul 2.
- **Coons JC**, Miller T, Simon MA, Ishizawar DC, Mathier MA. Oral treprostinil for the treatment of pulmonary arterial hypertension in patients transitioned from parenteral or inhaled prostacyclins: case series and treatment protocol. *Pulm Circ*. 2016 Mar;6(1):132-5. doi: 10.1086/685111.
- **Culley CM**, DiBridge JN, Wilson GL. Off-Label Use of Agents for Management of Serious or Life-threatening Angiotensin Converting Enzyme Inhibitor-Induced Angioedema. *Ann Pharmacother*. 2016 Jan;50(1):47-59. doi: 10.1177/1060028015607037. Epub 2015 09 28.
- **Drab SR**. Glucagon-Like Peptide-1 Receptor Agonists for Type 2 Diabetes: A Clinical Update of Safety and Efficacy. *Curr Diabetes Rev*. 2015 Dec 22. Epub 2015 12 22.
- Felton M, Weinberg R, **Pruskowski J**. Olanzapine for Nausea, Delirium, Anxiety, Insomnia, and Cachexia #315. *J Palliat Med*. 2016 Jun 6. [Epub ahead of print].
- Hedges A, **Coons JC**, Saul M, Smith RE. Clinical effectiveness and safety outcomes associated with prothrombin complex concentrates. *J Thromb Thrombolysis*. 2016 Jul;42(1):6-10. doi: 10.1007/s11239-015-1321-4.
- Jin H, Wang T, **Falcione BA**, Olsen KM, Chen K, Tang H, Hui J, Zhai S. Trough concentration of voriconazole and its relationship with efficacy and safety: a systematic review and meta-analysis. *J Antimicrob Chemother*. 2016 Jul;71(7):1772-85. doi: 10.1093/jac/dkw045. Epub 2016 03 10.
- **Kane-Gill SL**, Goldstein SL. Drug-induced AKI: A focus on risk assessment for prevention. *Crit Care Clinics*. 2015 Oct;31(4):675-84. doi: 10.1016/j.ccc.2015.06.005.
- Kobashigawa J, Teuteberg J, Colvin M, Edwards L, Daun T, Luu M, Patel J, Vega J, DMeyer, Ardehali A, Bhat G, Baran D, Couper G, Czer L, Esmailian F, Fischer W, Gollnick M, Halnon N, Johnson M, Kao T, Kearney-Hoffman P, Kessler L, Khush K, Mone T, Peltz M, Pinney S, Pisani B, Pyke J, Rajapreyar I, Robbins-Callahan L, Schladt D, **Shullo M**, Schulte K, Skeans M, Sieg A, Simones B, Sorensen A, Stehlik J, Taylor D, Toyoda Y, Velleca A, Wong J, Zeglin J. Proceedings of the AST heart allocation meeting at the American Transplant Congress. *Clin Transplant*. 2016 May;30(5):641-8. doi: 10.1111/ctr.12717. Epub 2016 Mar 22.
- Liput SA, **Kane-Gill SL**, **Seybert AL**, **Smithburger PL**. A Review of the Perceptions of Healthcare Providers and Family Members Toward Family Involvement in Active Adult Patient Care in the ICU. *Crit Care Med*. 2016 Jun;44(6):1191-7. doi: 10.1097/CCM.0000000000001641.
- Lyons P, Nery J, Rivosecchi R, **Smithburger PL**, **Kane-Gill SL**. Fentanyl induced hyperalgesia in acute pain management. *J Pain Palliat Care Pharmacother*. 2015 Jun;29(2):153-60. doi: 10.3109/15360288.2015.1035835.

- Mowry JB, Burdmann EA, Anseeuw K, Ayoub P, Ghannoum M, Hoffman RS, Lavergne V, **Nolin TD**, Gosselin S. Extracorporeal treatment for digoxin poisoning: systematic review and recommendations from the EXTRIP Workgroup. *Clin Toxicol (Phila)*. 2016;54(2):103-14. doi: 10.3109/15563650.2015.1118488.
- **Pater KS, Culley CM**. Carded for Cold Medicine. *AAPS Blog*. 2/9/16.
- Rivosecchi RM, **Kane-Gill SL**, Svec S, Campbell S, **Smithburger PL**. The implementation of a non-pharmacologic protocol to prevent intensive care delirium. *J Crit Care*. 2016 Feb;31(1):206-11. doi: 10.1016/j.jcrc.2015.09.031. Epub 2015 Oct 17.
- **Shullo MA**, Page RL, MSPH, **Ensor C**, Gellatly R, Cochrane A, Horn E, Ging P, Ford K, Uber WE. International Society for Heart and Lung Transplantation, Thoracic Transplant Pharmacy Professional Core Curriculum. http://www.ishlt.org/ContentDocuments/ISHLT_Pharm_Competencies_final1.pdf. 9/25/2015;web(web).
- **Skledar SJ**, Lachell CM, Chelly JE. Pharmacodynamics and clinical efficacy of fentanyl iontophoretic transdermal system for post-operative pain in hospitalized patients. *Expert Opin Drug Metab Toxicol*. 2015;11(12):1925-35. doi: 10.1517/17425255.2015.1112788. Epub 2015 11 13.
- Sutherl, SM, Chawla LS, **Kane-Gill SL**, Hsu RK, Kramer AA, Goldstein SL, Kellum JA, Ronco C, Bagshaw SM for the 15th ADQI Consensus Group. Utilizing the electronic health record to predict acute kidney injury risk and outcomes: Workgroup statements from the 15th ADQI consensus conference. *Can J Kidney Health Dis*. 2016 Feb 26;3:11. doi: 10.1186/s40697-016-0099-4. eCollection 2016.
- Verlinden NV, **Coons JC**. Disopyramide for hypertrophic cardiomyopathy: a pragmatic reappraisal of an old drug. *Pharmacotherapy*. 2015 Dec;35(12):1164-72. doi: 10.1002/phar.1664.
- Viehman JA, Oleksiuk LM, Sheridan KR, Byers KE, He P, **Falcione BA**, Shields RK. Adverse Events Lead to Drug Discontinuation More Commonly among Patients Who Receive Nafcillin than among Those Who Receive Oxacillin. *Antimicrob Agents Chemother*. 2016 May;60(5):3090-5. doi: 10.1128/AAC.03122-15. Epub 2016 04 22.
- Vijayan A, Faubel S, Askenazi DJ, Cerda J, Fissell WH, Heung M, Humphreys BD, Koyner JL, Liu KD, Mour G, **Nolin TD**, Bihorac A; American Society of Nephrology Acute Kidney Injury Advisory Group. Clinical Use of the Urine Biomarker [TIMP-2] × [IGFBP7] for Acute Kidney Injury Risk Assessment. *Am J Kidney Dis*. 2016 Jul;68(1):19-28. doi: 10.1053/j.ajkd.2015.12.033. Epub 2016 Mar 4.
- Waldman G, **Pruskowski J**, Arnold R. The Role of Melatonin in Palliative Care #306. *J Palliat Med*. 2016 May;19(5):568-9. doi: 10.1089/jpm.2016.0023. Epub 2016 Apr 20.

- Zavilla CM, **Skledar SJ**. Spring isn't the only time of year for allergies. *Safemedication.com (ASHP consumer blog)*. 10/1/2015;N/A(O).

Education

- Adams SM, Anderson KB, **Coons JC**, **Smith RB**, **Meyer SM**, Parker LS, **Empey PE**. Advancing Pharmacogenomics Education in the Core PharmD Curriculum through Student Personal Genomic Testing. *Am J Pharm Educ*. 2016 Feb 25;80(1):3. doi: 10.5688/ajpe8013.
- Bustos M, **Venkataramanan R**, Caritis S. Nausea and vomiting of pregnancy - What's new? *Auton Neurosci*. 2016 May 13. doi: 10.1016/j.autneu.2016.05.002. Epub 2016 5 13.
- Davies ML, **Schonder KS**, **Meyer SM**, **Hall DL**. Changes in student performance and confidence in a standardized colleague interprofessional activity. *Am J Pharm Educ*. 2015 Jun 25;79(5):69. doi: 10.5688/ajpe79569.
- Dornblaser EK, Ratka A, Gleason SE, Ombengi DN, Tofade T, Wigle PR, Zapantis A, Ryan M, **Connor S**, **Jonkman LJ**, Ochs L, Jungnickel PW, Abrons JP, Alsharif NZ. Current Practices in Global/International Advanced Pharmacy Practice Experiences: Preceptor and Student Considerations. *Am J Pharm Educ*. 2016 Apr 25;80(3):39. doi: 10.5688/ajpe80339.
- Kauffman YS, **Jonkman LJ**, **Connor SE**. Navigating across international borders: a guide to research in low and middle-income countries. *Pharmacy Education*. 2016;16(1):48-52.
- **Pruskowski J**, Arnold RM. Opioid Pharmacokinetics #307. *J Palliat Med*. 2016 Jun;19(6):668-70. doi: 10.1089/jpm.2016.0024. Epub 2016 May 25.
- Snyder ME, Frail CK, Gernant SA, Bacci JL, **Coley KC**, Colip LM, Ferreri SP, Hagemeyer NE, **McGivney MS**, Rodis JL, Smith MG, **Smith RB**. Fellowships in community pharmacy research: Experiences of five schools and colleges of pharmacy. *J Am Pharm Assoc (2003)*. 2016 May-Jun;56(3):316-22. doi: 10.1016/j.japh.2015.11.015. Epub 2016 04 12.
- Sorensen TD, Shapiro NL, **Benedict N**, Edwards KL, Chan A, Covey D, Daniels C, Hagemann T, Hemstreet B, Miller W, Musselman ME. Recommendations for Aligning PGY2 Pharmacy Residency Training and Pharmacy Specialist Board Certification. *Pharmacotherapy*. 2016 May;36(5):e34-9. doi: 10.1002/phar.1741. Epub 2016 Apr 6.
- Wilkening GL, Gannon JM, Ross C, Brennan JL, **Fabian TJ**, Marcsisin MJ, **Benedict NJ**. Evaluation of Branched-Narrative Virtual Patients for Interprofessional Education of Psychiatry Residents. *Acad Psychiatry*. 2016 Mar 14. doi: 10.1007/s40596-016-0531-1. Epub 2016 Mar 14.

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





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

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

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

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

PATIENT CARE BY THE NUMBERS FOR FY16

In FY16, School of Pharmacy faculty members:

- Contributed to care of underserved communities by:
 - Provided oversight of the pharmacy program for the Program for Health Care to Underserved Populations which includes the Birmingham Free Clinic and the Women's Center and Shelter, provided over **200** disease state management encounters providing management of diabetes, hypertension, dyslipidemia, and asthma; dispensing almost **9000** prescriptions to uninsured patients. Pharmacists provided **2327** hours of direct service with the support of faculty, resident and community volunteers.
- Optimized the use of medications and stemmed the misuse, abuse, and diversion of medications by:
 - Developed **158** formulary guidelines/reviews for medication use across UPMC hospitals.
 - Led the maintenance of the **14** System Pharmacy policies and created **4** new UPMC-wide hospital policies, which are guidance documents for pharmacy institutional practice and meet standards of internal and external regulatory and accreditation bodies. New policies included Continued Use of Intrathecal Pain Management Pumps upon Admission, Automated Medication Dispensing Systems, Pharmacist Review and Remote Verification of Physician Orders, Pharmaceutical Product Specifications and Purchasing.
 - Continued to lead the pharmacist run diabetes care center (UDCA) staffed by an interdisciplinary team of health care professionals. This year, UDCA treated **860** patients referred by **44** primary care physicians to resolve **1832** drug related problems.

- Continued the Development, Implementation, and Evaluation of an Evidence-Based Screening, Brief Intervention, Referral to Treatment (SBIRT) Curriculum in Medical Residency Training Programs. (SAMHSA).
- Providing medication management and education during **>500** Family Medicine Clinic Visits at UPMC Matilda Theiss Health Center.
- Evaluated **834** Hepatitis C patients with **696** interactions, **387 (46%)** patients with interactions and **8** absolute contraindications identified within UPMC patients.
- The family medicine residency program consists of three community-based family health centers that are models for academic interprofessional primary care practice. All three have received Level 3 Patient Centered Medical Home (PCMH) status by the National Committee for Quality Assurance (NCQA). The family health centers see a patient volume of up to **2,500** visits per month, as a mix of pediatric and adolescent, adult, and geriatric medicine.
- Facilitated transitions of care and for over 9,000 patients at Western Psychiatric Institute and Clinics (WPIC) through the MEDPACT (Medication and Education at Discharge – Pharmacist Assisted Care Transitions) Program. Additionally, WPIC MEDPACT has provided patient-specific medication counseling by pharmacists and filled **3,673** discharge prescriptions resulting in **1,096** patients having “meds in hand” prior to discharge from WPIC.
- Improved communication of patients’ discharge medication lists by having insulins listed separately in the Patient Discharge Summary across UPMC Health System.
- Integrated pharmacists into a heart failure clinic where they focused on post-discharge assessments including medication reconciliation and assessing for medication effectiveness and side effects. Pharmacists evaluated **149** patients and identified **210** drug therapy problems and made **202** medication-related interventions.
- Provisioning of DM Education and medication management to **>200** patients with DM and related cardiovascular disease.
- Organizing the University of Pittsburgh and UPMC Pharmacy Based Influenza Vaccination Clinics providing **over 4000** influenza vaccines to over **2350** University Employees, **650** UPMC Employees, **240** university students and **213** non-employees.
- Providing pharmacist led medication reconciliation programs for specialty hypertension providing medication reconciliation for **over 150** patients in the year.
- Led a **pharmacist driven transitions- of- care program focusing on Senior Care patients discharged from UPMC affiliated nursing homes** (such as Heritage, Charles Morris, Canterbury) and several non-UPMC facilities (such as Asbury Heights and Health South). This program includes medication reconciliation, comprehensive medication review, sharing of discharge information across sites, and confirmation of home care services.

- Added new sites to the Senior Care Transitions of Care program facilities and provided at least **150** patient transition-of-care encounters.
- Provided clinical pharmacy support to: **10** hospital-based clinical palliative-care teams, **4** palliative care CRNPs within UPMC Senior Communities, and **6** outpatient clinic and home-based palliative care teams.
- Collaborated with the gynecology oncology team to provide comprehensive patient care services for > **1,000** patients
- Responded to nearly **90,000** poison exposure and poison information calls, **47.8%** of which were for children under the age of 6.
- Launch of clinical pharmacogenomics service in Dec 2015 which have provided CYP2C19 standard-of-care genotyping services to more than **500** patients presenting to UPMC Presbyterian Hospital through August 2016.

COMMUNITY LEADERSHIP AND INNOVATION IN PHARMACY CENTER

In 2016, a number of existing programs coalesced to create synergy among faculty whose work is focused on the community. These programs include:

- University Diabetes Care Associates
- Program Evaluation Research Unit (PERU)
- The Grace Lamsam Pharmacy Program for the Underserves
- UPMC Ambulatory Care
- UPMC St. Margaret Family Medicine
- Transitions of Care
- Pharmacy Innovation Program
- Community Pharmacy Partnerships

Vision:

To be a dynamic center known for leading and creating community-based pharmacist innovations, pioneering novel approaches to education, developing collaborative research, and implementing sustainable pharmacist-provided care.

Mission:

Advancing pharmacy practice and the health of people in our communities through discovery, innovation, training, implementation, and collaboration with our partners and patients.

University Diabetes Care Associates

UDCA is a pharmacist run diabetes care center staffed by an interdisciplinary team of health care professionals. Over the past 25 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 FY16, School of Pharmacy faculty members:

- Treated 860 patients referred by 44 primary care physicians to resolve 1832 drug related problems.
- Precepted 13 Doctor of Pharmacy students in an ambulatory care rotation.
- Precepted one resident.
- The curricular objectives permit students and residents to gain a comprehensive knowledge of the practice of pharmaceutical care while allowing flexibility for individualization to specific needs or interests.

Selected Publications

- Pezzino NC, **Drab SR**, Hall DL. Type 2 diabetes mellitus: New onset. In: Schwinghammer TL, ed. *Pharmacotherapy casebook: A patient-focused approach*. 10th ed. New York, NY: McGraw-Hill, 2016. Case answers provided in: *Instructor's Guide to Accompany the Pharmacotherapy Casebook*. 10th ed. New York, NY: McGraw-Hill, 2016.
- Kauffman Y, Capozzolo N, **Drab SR**, Deloge A, Brandão C, Smith RB. Brazilian Pharmacists' Perspectives on Continuing Education for Diabetes Management. *Curr Pharm Teach Learn*, 2015;7(4):536-540.
- **Drab SR**. Glucagon-Like Peptide-1 Receptor Agonists for Type 2 Diabetes: A Clinical Update of Safety and Efficacy. *Curr Diabetes Rev*, 2015 Dec 22, [Epub ahead of print].
- Davies ML, Pham DQ, **Drab SR**. Glucagon-Like Peptide-1 Receptor Agonist Add-on Therapy in Patients with Type 2 Diabetes Currently on a Bolus Containing Insulin Regimen. **Submitted & Accepted: *Pharmacotherapy*, May 2016.**
- Benedict N, **Drab SR** et al. Blended Simulation Progress Testing for Assessment of Practice Readiness. **Submitted & Accepted: *Am J Pharm Educ*, May 2016.**

Selected Invited Presentations (National/Local)

- Advances in Outpatient Diabetes Care: Algorithms for Care and the Role of Injectable Therapies. Fulton County Medical Center Grand Rounds; McConnellsburg, PA, July 22, 2015.
- Optimizing Outcomes for Older Adults with Type 2 Diabetes. Washington County Pharmacists Association; Hagerstown, MD, September 16, 2015.
- Current Approaches to Preventing Chronic Diabetes Complications. Virginia Peninsula Pharmacist Association; Yorktown, VA, October 4, 2015.
- Basal Insulin Therapy in the Treatment of Insulin Resistant Type 2 Diabetes: The Role of the Pharmacist in Ensuring Their Safe and effective Use in Patients. Ohio Pharmacists Association Columbus Chapter; Columbus, OH, October 13, 2015.

- Basal Insulin Therapy in the Treatment of Insulin Resistant Type 2 Diabetes: The Role of the Pharmacist in Ensuring Their Safe and effective Use in Patients. Ohio Pharmacists Association Cleveland Chapter; Cleveland, OH, October 21, 2015.
- Pattern Management: The Key to Excellent Glycemic Control. Kentucky Statewide Diabetes Symposium 2015; Louisville, KY, November 6, 2015.
- Optimizing Outcomes for Older Adults with Type 2 Diabetes. Kentucky Statewide Diabetes Symposium 2015; Louisville, KY, November 6, 2015.
- Addressing Hypoglycemia in Type 2 Diabetes Mellitus: The Pharmacists Role in Optimizing Patient Outcomes. Webinar for Postgraduate Healthcare Education; Pittsburgh, PA, November 17, 2015.
- Pregnancy for Women with Diabetes. Chesapeake Bay Pharmacists Association; Williamsburg, VA, November 22, 2015.
- Fundamental Principles of Insulin Therapy. Ohio Society of Health System Pharmacists; Cincinnati, OH, January 21, 2016.
- Patient-Centered Management of Diabetes from Hospital Admission to Discharge. Pennsylvania Society of Health System Pharmacists South Eastern Chapter; Mt. Joy, PA, February 9, 2016.
- Clinical Updates Type 2 Diabetes: New Strategies for Insulin Replacement Therapy. American Pharmacists Association 2016 Annual Meeting and Exposition; Baltimore, MD, March 6, 2016.
- Optimizing Outcomes for Older Adults with Type 2 Diabetes. Maryland Pharmacists Association Primary Care Coalition of Montgomery; Silver Spring, MD, March 10, 2016.
- Addressing Hyperglycemia in the Hospital Setting. Commonwealth of Pennsylvania: Patient Safety Authority Webinar; March 29, 2016.
- Current Approaches to Preventing Chronic Diabetes Complications. Allegheny County Pharmacists Association; Pittsburgh, PA, April 13, 2016.
- Type 2 Diabetes in Children & Adolescents. Cincinnati Pharmacists Association; Cincinnati, OH, May 22, 2016.

Grants

- Drab SR. Diabetic Monitoring and Education Grant. **\$300.00**, LifeScan Inc, a Johnson & Johnson Company, Milpitas, CA, 2015.
- Drab SR. Diabetic Monitoring and Education Grant. **\$450.00**, Roche Diagnostics, Indianapolis, IN, 2015.
- Drab SR. Diabetic Monitoring and Education Grant. **\$480.00**, Novo Nordisk, Pittsburgh, PA, 2015.
- Drab SR, Smith RB, Freidhoff MJ. DM Educate Comprehensive Diabetes Management Course. **\$70,000.00**, Novo Nordisk Princeton, NJ, 2016.

Program Evaluation Research Unit (PERU)

Faculty

Janice L. Pringle, PhD, Professor

Selected Publications (related to community dwelling patients)

- **Pringle JL**; Kearney S; Grasso K; Boyer A; Conklin M; Szymanski. User Testing and Performance Evaluation for the Electronic Quality Improvement Platform for Plans and Pharmacies (EQUIPP). *Journal of the American Pharmacists Association (JAPHA)*. 2015;55(6).
- **Pringle JL**; Coley K. Improving Medication Adherence: A Framework for Community Pharmacy-Based Interventions. *Integrated Pharmacy Research and Practice*. Dove Medical Press. November 2015 Volume 2015:4, Pages 175-183.
- **Pringle JL**; Fawcett JA. (2015) Facilitating Therapeutic Alliance between Pharmacists and Patients to Improve Medication Adherence.
- Balmert LC; Buchanich JM; **Pringle JL**; Williams KE; Burke DS; & Marsh GM. (2016). Patterns and Trends in Accidental Poisoning Deaths: Pennsylvania's Experience 1979-2014. *PLoS one*, 11(3), e0151655.
- Buchanich JM; Balmert LC; **Pringle JL**; Williams KE; Burke DS & Marsh GM. (2016). Patterns and trends in accidental poisoning death rates in the US, 1979–2014. *Preventive medicine*.
- **Pringle JL**; Chan C; Rucker L; Burns A; Domann D; Tice B. Perspectives: Applying Value-Based Incentive Models Within Community Pharmacy Practice. *Pharmacy Quality Alliance and Jewish Healthcare Foundation. The American Journal of Pharmacy Benefits*. 2016;8(1):22-29.
- **Pringle JL**, Seale JP, Shellenberger S, Grasso KM, Kowalchuk A, Laufman L, Bray JH. Development and Evaluation of Two Instruments for Assessing SBIRT Competency. *Substance abuse*. 2016 Mar 1.
- Kearney SM; Aldridge AP; Castle NG; Peterson J; **Pringle JL**. The Association of Job Strain with Medication Adherence: Is your job affecting your compliance with a prescribed medication regimen? *Journal of Occupational and Environmental Medicine*. 2016 Jul;58(7):707-11.
- Mitchell MA; Broyles LM; **Pringle JL**; Kraemer KL; Childers JW; Buranosky RA & Gordon AJ. (2016). Education for the Mind and the Heart? Changing Residents' Attitudes about Addressing Unhealthy Alcohol Use. *Substance abuse*, (just-accepted), 00-00.

Accepted and Pending Publication

- **Pringle JL**; Aldridge AP; Kearney SM; Grasso K; Radack J; Hogue S; Manolis C. Evaluating the Impact of Sample Medication on Subsequent Patient Adherence. *Journal of Managed Care & Specialty Pharmacy*. *Pending Publication*.

Community Practice Grants Awarded

- Implementing Screening, Brief Intervention with Community Pharmacies. (UPMC). \$50,000. 2015-2016. Pringle JL.
- Pharmacy Readmissions Project Task Order (Circlebacks). (Veterans Healthcare System). \$142,237. 2015-2016. Pringle JL.
- Screening, Brief Intervention and Referral to Treatment (SBIRT) Health Professions Student Training. (SAMHSA (subcontract to Chatham University)). \$457,167. 2015-2018. Pringle JL.

- Screening, Brief Intervention and Referral to Treatment (SBIRT) Health Professions Student Training. (SAMHSA (subcontract to Morehouse University)). \$457,167. 2015-2018. Pringle JL.
- Screening, Brief Intervention and Referral to Treatment (SBIRT) Health Professions Student Training. (SAMHSA (subcontract to University of the Sciences)). \$457,167. 2015-2018. Pringle JL.
- Organizational Health Assessment: Morehouse School of Medicine National Center for Primary Care. (Morehouse School of Medicine). \$4,975. 2015-2016. Pringle JL.
- Pennsylvania Heroin Overdose Prevention Technical Assistance Center (TAC). (Pennsylvania Commission on Crime and Delinquency (PCCD)). 2016. \$247,964. Pringle JL.
- Additional Analysis of the Pennsylvania Project Data. (Merck & Co., Inc.). 2016. \$15,861. Pringle JL.
- Circlebacks Project. (The Pittsburgh Foundation). 2016. \$25,000. Pringle JL.
- Circlebacks Project. (Jewish Healthcare Foundation). 2016. \$15,000. Pringle JL.
- Vivitrol Consultation. (Blair Drug and Alcohol Program, Inc. (BDAP)). 2016. \$4,612. Pringle JL.

Selected Invited Presentations (National/International)

- “Medication Adherence: Pharmacists Improving Outcomes and Decreasing Health Care Costs.” National Association of Chain Drugstores (NACDS) Total Store Expo. Denver, CO. August 24, 2015.
- “Evaluation and SBIRT Competency Assessment: Proficiency Checklist.” SBIRT Training Summit. Atlanta, GA. September 22, 2015.
- “Lesson’s Learned from SAMHSA SBIRT Training Program.” INEBRIA Conference: Interprofessional Involvement in Screening and Brief Intervention. Atlanta, GA. September 24-25, 2015.
- INEBRIA Conference: Interprofessional Involvement in Screening and Brief Intervention. Atlanta, GA. September 24-25, 2015.
Abstract: Collaborative Implementation of Screening, Brief Intervention, and Referral to Treatment within the Medical Community of Blair County, PA. Pringle, JL, Rickard-Aasen S.
- INEBRIA Conference: Interprofessional Involvement in Screening and Brief Intervention. Atlanta, GA. September 24-25, 2015.
Poster: Implementing Screening and Brief Intervention in Community Pharmacies to Improve Medication Adherence. **Pringle JL**, Boyer A, Conklin M, McCullough J, Aldridge A.
- INEBRIA Conference: Interprofessional Involvement in Screening and Brief Intervention. Atlanta, GA. September 24-25, 2015.
Abstract: Training Staff to Assess SBIRT Fidelity in the Field with Constructive Trainee Feedback.
Pringle JL, Bray J, Seale JP, Grasso K, Rickard-Aasen S.
- INEBRIA Conference: Interprofessional Involvement in Screening and Brief Intervention. Atlanta, GA. September 24-25, 2015.

Abstract: A New Methodology for Examining the Efficacy of SBIRT Protocols on Reducing Healthcare Utilization and Costs. **Pringle JL**, Aldridge A, Kearney S.

- Creating Personalized Adherence Programs to Initiate Patient-Specific Interventions that Drive Behavior Change and Optimize Return on Investment. MTM and Medication Adherence Innovations Summit. Nashville, TN. October 16, 2015.
- AMCP Nexus 2015. Orlando, FL. October 27, 2015.
Poster: Effect of Community Pharmacist Intervention on Adherence to Long-Term Medications (ECO-PHIL). **Pringle JL**, McElwee N, Aldridge A, Kearney S, Grasso K, Clark A.
- “A Patient Centered Approach to Improving Medication Adherence and Decreasing Healthcare Costs.” A Collaborative Approach to Diabetes Care Summit. San Antonio, TX. November 2, 2015.
- European Society for Patient Adherence, COMpliance, and Persistence (ESPACOMP). Prague, Czech Republic. November 12-14, 2015. ESPACOMP Workshop 1
Abstract: Developing a Framework for Implementation of an Adherence Intervention. **Pringle JL**, McElwee N, Aldridge A, Kearney S, Grasso K, Clark A.
- European Society for Patient Adherence, COMpliance, and Persistence (ESPACOMP). Prague, Czech Republic. November 12-14, 2015.
Abstract: Effect of Community Pharmacist Intervention on Adherence to Long-Term Medications (ECO-PHIL). **Pringle JL**, McElwee N, Aldridge A, Kearney S, Grasso K, Clark A.
- “Developing Your Community Coalition.” The Pennsylvania Commission on Crime and Delinquency 2016 Opioid Symposium. Harrisburg, PA. January 27, 2016.
- “Evaluation of SBIRT Training: Assessing SBIRT Skills Using a Proficiency Checklist.” SAMHSA SBIRT Grantee Meeting. Washington, DC. March 22, 2016.
- College on Problems of Drug Dependence (CPDD). Palm Springs, CA. June 11-16, 2016.
Poster: OverdoseFreePA.org: A Resource for Overdose Prevention in Pennsylvania. **Pringle JL**, Rickard-Aasen S, Kearney S, Oblak CJ, Reynolds, M.
- “Addressing the Opioid Epidemic: Progress at the State Level.” Addiction Professional Summit: The Opioid Crisis, Strategies for Treatment and Recovery. June 24, 2016.

The Grace Lamsam Pharmacy Program for the Underserved

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

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

Faculty

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

Residents:

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

Major Accomplishments

In FY16, the Grace Lamsam Program:

- Continued in partnership with UPMC Matilda Theiss Health Center with funding (~\$20,000 in HRSA funding from Matilda Theiss) to support a PGY2 Resident in Global Health.
- Provided oversight of the pharmacy program for the Program for Health Care to Underserved Populations which includes the Birmingham Free Clinic and the Women's Center and Shelter, provided over 200 disease state management encounters providing management of diabetes, hypertension, dyslipidemia, and asthma; dispensing almost 9000 prescriptions to uninsured patients. Pharmacists provided 2327 hours of direct service with the support of faculty, resident and community volunteers.
- Provided experiences for 256 pharmacy students through IPPEs and APPEs.
- Provided service at the Salvation Army Harbor Light Center to improve health through medication evaluations and consultations with over 50 clients and smoking cessation services to over 30 clients through P3 student pharmacists in an elective course.
- Provided longitudinal clinical training opportunities for PGY1 community residents, PGY1 pharmacy practice residents, and PGY2 ambulatory care residents at the Birmingham Clinic and UMPC Matilda Theiss.
- Graduated 5 students with an Area of Concentration in Global Health (Grossman, Kaashyap, Schaller, Van Horn, Yang).
- Faculty served as mentors to Anna Bondar (2015 Graduate) who won the best student poster at the American Association of Colleges of Pharmacy Annual Meeting. Bondar A, Jonkman L, Connor S. Antibiotic use in San Jose del Negrito, Honduras. American College of Clinical Pharmacy Annual Meeting. San Francisco CA, October 2015.

Selected Publications

- **Kauffman YS, Jonkman LJ, Connor SE.** Navigating across international borders: a guide to research in low and middle-income countries. *Pharmacy Education* 2016; 16: 28-32.
- Dornblaser EK, Ratka A, Gleason SE, Ombengi DN, Tofade T, Wigle PR, Zapantis A, Ryan M, **Connor S, Jonkman LJ**, Ochs L, Jungnickel PW, Abrons JP, Alsharif NZ. AACP White Paper: Current Practices in Global/International Advanced Pharmacy Practice Experiences: Preceptor and Student Considerations. *American Journal of Pharmaceutical Education* 2016; 80: 39.
- Rennie T, Hunter C, Kibuule D, Mubita M, **Jonkman L.** Namibia. In: *Interprofessional education in a pharmacy context: Global report.* FIP, 2015.

Invited Presentations

- Forrister D, Miller M, **Jonkman LJ**, Dang Y, Schellhase E. Public Health SIG: Expanding Global Pharmacy Practice Part 1: Getting Started. American Association of Colleges of Pharmacy Annual Meeting. Washington DC. July 2015.
- Bohan K, Gleason SE, **Jonkman LJ**, **Connor SE**. Global Pharmacy Education SIG: Expanding Global Pharmacy Practice Part 2: Advanced Experiences. American Association of Colleges of Pharmacy Annual Meeting. Washington DC. July 2015.
- Boone J, Brock T, Effendie B, Adome R, Salenga R, Kibuule D, **Jonkman L**. Interprofessional and Transformative Pharmacy Education: A New Beginning. International Pharmaceutical Federation Annual Meeting. Dusseldorf, Germany, September 2015.

Select Presentations

Special Session

- **Jonkman L**, Karwa R, Hermes-Desantis E, Miller M, **Connor S**, Schellhase E. Developing leaders in global health: Three models of post-graduate training. Special Session. American Association of Colleges of Pharmacy Annual Meeting. Washington DC, July 2015

Posters

- **Connor SE**, **Jonkman LJ**. An area of concentration in global health: Program development and outcomes. American Association of Colleges of Pharmacy Annual Meeting. Washington, DC, July 2015.
- **Jonkman LJ**, **Connor SE**. Development of a mentoring program in global health research. International Pharmaceutical Federation Annual Meeting. Dusseldorf, Germany, September 2015.
- **Connor SE**, **Jonkman LJ**. An advanced practice residency in global health. American College of Clinical Pharmacy Annual Meeting. San Francisco CA, October 2015.
- **Jonkman LJ**, **Connor SE**. Development of Advanced Pharmacy Practice Experiences in global health. American College of Clinical Pharmacy Annual Meeting. San Francisco CA, October 2015.
- **Connor SE**, **Jonkman LJ**. Medication taking behavior and adherence during a short term medical mission. American College of Clinical Pharmacy Annual Meeting. San Francisco CA, October 2015.
- **Bondar A**, **Jonkman L**, **Connor S**. Antibiotic use in San Jose del Negrito, Honduras. American College of Clinical Pharmacy Annual Meeting. San Francisco CA, October 2015. (Won Best Student Poster)
- Cirrcincione L, Draude T, Mazzarisi C, Valentino N, **Jonkman L**, **Connor S**, **Kane-Gill S**, Salvana E. Evaluation of adverse drug reactions in an outpatient HIV clinic in Manila, Philippines. American College of Clinical Pharmacy Annual Meeting. San Francisco CA, October 2015.
- Cope R, **Connor S**, **Jonkman L**, Meyer M. Evaluation of asthma knowledge in a remote community of Honduras. American College of Clinical Pharmacy Annual Meeting. San Francisco CA, October 2015.

- Ugwuegbu J, **Jonkman LJ, Connor SE**, Meyer M, Douglas G. Patient perspectives on the introduction of an electronic identification system in a rural Primary Care Health Center in Honduras. American College of Clinical Pharmacy Annual Meeting. San Francisco CA, October 2015.
- Yang S, Van Horn A, Ahlborg J, **Connor SE**. Assessing impact of admission medication discrepancy data on the predictive validity of the LACE Index to identify pharmacist intervention opportunities during transitions of care. Poster presentation at the ASHP Midyear Meeting, New Orleans, LA, December 2015.
- Bechtel S, Lor K, Sapirstein A, **Connor S, Pater K**. A retrospective analysis of statin use based on ASCVD risk in an underserved adult population. Poster presentation at the Pennsylvania Pharmacists Association Midyear Conference, Harrisburg, PA, January 2016.
- Halza K, Jones R, Wolf C, Tse E, Kappes P, Giles A, **Jonkman L**. CareVan as a model for pharmacists providing care to Pennsylvania's underserved populations. Pennsylvania Pharmacists Association Midyear Meeting. Harrisburg PA, February 2016.
- Lewis B, **Jonkman L**. Patient Medication Assistance Programs at the Birmingham Free Clinic. Pennsylvania Pharmacists Association Midyear Meeting. Harrisburg PA, February 2016.
- Lavella A, **Jonkman L**. Expanding care to the underserved while maximizing a limited budget. Pennsylvania Pharmacists Association Midyear Meeting. Harrisburg PA, February 2016.
- Wolski A, McFeely K, **Jonkman L**. Expanding patient access to hormonal birth control through pharmacist-led initiatives. Pennsylvania Pharmacists Association Midyear Meeting. Harrisburg PA, February 2016.
- Fedorek H, **Jonkman L**. Addition of group smoking cessation therapy to individual counseling in a substance abuse treatment facility. Pennsylvania Pharmacists Association Midyear Meeting. Harrisburg PA, February 2016.
- Quach K, Ahlborg J, Cope R, **Connor S, Jonkman L**. Medication-related barriers identified by patients in an urban community health center after hospital discharge. Pennsylvania Pharmacists Association Midyear Meeting. Harrisburg PA, February 2016.
- Kwiatkowski M, Wilson E, Halfhill T, Kunkel A, Manini R, Penalosa C, Salvana E, **Jonkman L**. Analyzing antibiotic use on an infectious disease service in the Philippines. University of Pittsburgh Health Disparities Poster Competition. Pittsburgh PA, March 2016.
- Yang S, Grossman K, **Jonkman L**, Salvana E. Assessment of patient perspectives to HIV medication regimens and associated adverse events at an HIV clinic in Manila, Philippines. University of Pittsburgh Health Disparities Poster Competition. Pittsburgh PA, March 2016

Grants

- Addressing Deficiencies and solutions in medication forecasting, medication prescribing, and epidemiologic health surveillance in a low-resource setting. Thomas H Nimick, Jr. Competitive Research Fund \$9,460 Co-investigators 2015-2016. (**Jonkman and Connor**)

- Expansion of Clinical Pharmacy Services at UPMC Matilda Theiss Health Center: Transitions of Care, HRSA, Health Center, \$89,891 Co-Investigators 2015-2016 (**Connor** and **Pater**)
- Enhancing transitions of care for uninsured patients within the UPMC System Community Challenge Grants 2016 Pennsylvania Department of Health \$100,000. Co-Investigators 2016 – 2018. (**Connor** and **Jonkman**)

UPMC Ambulatory Clinics and Retail Pharmacies

UPMC Presbyterian Ambulatory Clinics and Outpatient Pharmacy

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

Faculty

Deanne L. Hall, PharmD, Associate Professor

Karen S. Pater, PharmD, Assistant Professor

Residents

James Montgomery, PharmD-PGY2 Ambulatory Care Pharmacy Resident UPMC Presbyterian Shadyside

Vivan Tang, PharmD-PGY2 Ambulatory Care Pharmacy Resident UPMC Presbyterian Shadyside

UPMC Presbyterian Ambulatory Clinics and Outpatient Pharmacy

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

- Providing medication management and education during >500 Family Medicine Clinic Visits at UPMC Matilda Theiss Health Center.
- Provisioning of DM Education and medication management to >200 patients with DM and related cardiovascular disease.
- Managing of Patient Medication Assistance Programs (PMAPs) for over 80 patients at UPMC Matilda Theiss Health Center with significant cost savings to patients and site.
- Organizing the University of Pittsburgh and UPMC Pharmacy Based Influenza Vaccination Clinics providing over 4000 influenza vaccines to over 2350 University Employees, 650 UPMC Employees, 240 university students and 213 non-employees.
- Providing pharmacist led medication reconciliation programs for specialty hypertension providing medication reconciliation for over 150 patients in the year.
- Leading implementation of new specialty medications and providing pharmacist led medication reconciliation programs for specialty hyperlipidemia providing medication reconciliation for over 100 patients in the year.

- Integration of pharmacy residents in nurse practitioner lead Heart Failure Discharge clinic providing transition of care and medication reconciliation for 200 patients this year.
- Initiating development of a pharmacist specific documentation tracking tool within EPIC
- Initiation of PUH/SHY Ambulatory Care Pharmacist Group and strategic plan development of standardizing care across practice sites with a focus on integration of PittPharmacy Faculty and UPMC Clinical Specialist.

Assumed leadership roles, including:

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

Selected Publications

- **Hall DL**, Schonder KS, **Pater KS**, McGivney MS, Meyer S. Using the pharmacist interaction tracking tool for capturing student-patient interactions in direct and simulated patient care activities. *Am J Pharm Ed.* 2016;80(6) Article 105.
- Carmichael JM, **Hall DL**. Evolution of ambulatory care pharmacy practice in the last 50 years. *Am J Health-Sys Pharm.* 2015;72:2087-91. (Invited publication)
- Kernodle AR, Frail CK, Gernant SA, **Pater KS**, Doebbeling BN, Snyder ME. Patients' experiences using a brief screening tool for medication-related problems in a community pharmacy setting: A Qualitative Study. *Jour Pharm Practice.* doi:10.1177/0897190015605015 (published Sept 2015).

Invited Presentations

- Putting the Fire Out: Intranasal Naloxone and the Emerging Role of the Pharmacist. Pennsylvania Pharmacist Association Webinar. July 6, 2016. ACPE# 0159-0000-16-016-L01-P and ACPE# 0159-0000-16-016-H01-P (**Pater KS**)

Awards

- 2016 APhA Immunization Champion Individual Honorable Mention (**Hall DL**)

Professional and Community Service

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

UPMC St. Margaret Family Medicine

Faculty

Roberta Farrah, PharmD, Assistant Professor

Residents

R. Christopher Durigan, PharmD, PGY2 Ambulatory Care Pharmacy Resident

Gregory Trietly, PharmD, PGY2 Ambulatory Care Pharmacy Resident

Nicole Payette, PharmD, PGY2 Ambulatory Care Pharmacy Resident

Patient Care Activities for FY16

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

Selected Publications

- **Farrah, RM.** Oral Antidiabetic Medication (CME Video Lecture). In Middleton, D. (Course Director), Comprehensive Review of Family Medicine. Birmingham, AL: Oakstone Publishing, 2015.

- Joseph MP, Higbea A, **Thorpe C, Coley K, McGivney MS, Klatt PM**, Schleiden L, Zaharoff J, Cox-Vance L, Corbo J, Balestrino V, Sakely H. Surveys of Older Adult's Medication-related Self-Efficacy and Adherence: Pharmacist-led Interventions on Transitions of Seniors (PIVOTS). *J Am Geriatr Soc* 64(suppl 1):S257, 2016.
- Campbell A, **Coley K**, Corbo J, DeLellis T, **Thorpe C, McGivney M, Klatt P**, Cox-Vance L, Zaharoff J, Sakely H. Outcomes of coordinated, pharmacist-led, anticoagulation management of older adults across the levels of care: A mixed methods analysis of the PIVOTS model. *J Am Geriatr Soc.* 64(suppl 1):S257, 2016.
- Payette N, Breslin TM, D'Amico F, Durigan RC, **Klatt PM, Coley K, McGivney MS**, Corbo J, Cox-Vance L, Driessen J, **Thorpe C, Bacci J**, Zaharoff J, Balestrino V, Sakely H. Time and Motion Analysis of the Geriatric Clinical Pharmacist in Three Geriatric Care Settings: Pharmacists-led Interventions On Transitions of Seniors (PIVOTS). *J Am Geriatr Soc.* 64(suppl 1):S256, 2016.
- **Klatt PM**. Anticoagulation (CME Video Lecture). In Middleton, D. (Course Director), *Comprehensive Review of Family Medicine*. Birmingham, AL: Oakstone Publishing, 2015.
- Sakely H, Corbo J, **Coley K, McGivney MS, Thorpe C, Klatt PM**, Schleiden L, Zaharoff J, Cox-Vance L, Balestrino V. Pharmacist-led Collaborative Practice for Older Adults across the Continuum of Care. *Am J Health-Sys Pharm* 2015;72(8):606-9. PMID: 25825181
- Felton MF, **Durigan RC**. Nuedexta® (dextromethorphan-quinidine) for patients with pseudobulbar affect (PBA). *Allegheny County Medical Society Bulletin [Materia Medica]*.
- Bondar A, **Durigan RC**, Haugh A, Wilson SA. Is Suboxone or methadone more effective for treatment of opioid addiction? *HDA Evidenced-Based Practice*.
- **Durigan RC**, Breslin TM. Complementary and Alternative Medicine Treatments for Migraine Headaches. *Allegheny County Medical Society Bulletin [Materia Medica]*.
- **Durigan RC**, Wilson SA. Is there a place for antiarrhythmic agent in heart failure therapy? *Allegheny County Medical Society Bulletin [Materia Medica]*.
- **Durigan C**. "Lomitapide: A novel agent for the treatment of homozygous familial hypercholesterolemia." *Davis and Miyares*, 71:1001-1008doi:10.2146/ajhp130592. Sept 9, 2015. <http://www.ajhp.org/letters/#28283>
- **Durigan RC**, Campbell R. IV acetaminophen: The reason behind its formulary restriction at UPMC St. Margaret. *UPMC St. Margaret Pharmacy Flash newsletter publication*. UPMC St. Margaret Pharmacy Residency Program, Pittsburgh, PA. November 2015.
- **Durigan RC**. Alternate Statin Regimen for Patients with Previous Statin Intolerance. *UPMC St. Margaret Pharmacy Flash newsletter publication*. UPMC St. Margaret Pharmacy Residency Program, Pittsburgh, PA. April 2015
- **Payette N**. Are we ready yet? (Letter to the Editor RE: "The future of specialized pharmacy residencies: Time for postgraduate year 3 subspecialty training." *Helling and Johnson*, 71:1199-1203doi:10.2146/ajhp140115. Sept 9, 2015. <http://www.ajhp.org/letters/#28283>

- Higbea A, **Payette NJ**. Role of combination oxycodone and naloxone in abuse and opioid-induced constipation. Bulletin of the Allegheny County Medical Society [Materia Medica]. July 2015;105(7):298-301.
- **Kane-Gill SL**, Sileanu FE, Murugan R, **Trietley GS**, Handler SM, Kellum JA. Risk factors for acute kidney injury in older adults with critical illness: a retrospective cohort study. Am J Kidney Dis 2015;65(6):860-9.
- **Trietley GS**, Hill LG. SGLT2 and you: a novel target for diabetes treatment. Bulletin of the Allegheny County Medical Society [Materia Medica]. 2015;105(4):169-171.

Refereed Presentations

- “Rounding together: collaborative learning between medical and pharmacy residents.” Workshop at the 49th STFM Annual Conference, Minneapolis, MN. May 2, 2016. Co-presenters: Trietley G, Jarrett J, Corbo J, Wilson SA, **Farrah RM**, Macken M.
- “Evaluating the Impact of a Free Medication Program on Continuity of Care at Three Patient-Centered Medical Homes in Pittsburgh, PA.” Poster presentation at the 49th STFM Annual Conference. Minneapolis, MN. May 2, 2016. Co-presenters: Bondar A, Koenig ME, **Farrah RM**, Han JK.
- “Assessing Development of Professional Competence Across the Curriculum through Capstone Cases.” School Poster presentation at the AACP Annual Meeting Innovative Approaches to Standards 2016. National Harbor, MD. July 11-15, 2015. Co-presenters: **Schonder, KS, Hall, DL, Ruby-Scelsi, CM, Benedict, NJ, Thorpe, CT, Kane-Gill, SL, Coley, KC, Meyer, SM, Farrah RM**
- “Pharmacist Faculty Contribution to Evidence-Based Practice: Milestone Implications, Tracking Tool Development, and Next Steps to Advance Evidence-Based Practice Training.” Presentation at the 48th STFM Annual Spring Conference. Orlando, FL. April 28, 2015. Co-presenters: Moon J, Lounsbury J, Smith A, Broders J, **Farrah RM**, Koenig K, **Klatt P**, Koenig M, Slattengren A.
- “Connect 4: A Millennial Perspective on Teaching and Learning with 4 Generations.” Seminar at the 49th STFM Annual Conference, Minneapolis, MN. May 3, 2016. Co-presenters: **Durigan RC**, Bondar A, Castelli G, Chaudhri P, Springer S.
- “There's an App for That: A Beginner's guide to 5 point-of-care device applications health care professionals should know about.” Seminar at the 49th STFM Annual Conference, Minneapolis, MN. May 3, 2016. Co-presenters: **Durigan, RC**, Breslin T, Chaudhri P, Frazier W, **Payette N, Trietley G**.
- “There's an App for That: Comparing notes with veterans and incorporating apps into teaching.” Roundtable discussion at the 49th STFM Annual Conference, Minneapolis, MN. May 3, 2016. Co-presenters: **Durigan RC, Trietley G, Payette N**, Chaudhri P, Frazier WT, Breslin T.
- “Prescription Opioid Abuse: What is the Health Policy Response?” Roundtable presentation at the 49th STFM Annual Conference, Minneapolis, MN. May 1, 2016. Co-presenters: **Durigan RC**, Frazier WT, Bondar A, Springer S.

- “Time and Motion Analysis of the Geriatric Clinical Pharmacist in Three Geriatric Care Settings: Pharmacists-led Interventions On Transitions of Seniors (PIVOTS). Abstract presentation. American Geriatric Society Annual Scientific Meeting. Long Beach, CA. May 2016. Co-presenters: **Payette N**, Breslin TM, D’Amico F, **Klatt PM**, **Coley K**, **McGivney MS**, Corbo J, Cox-Vance L, Driessen J, **Thorpe C**, Bacci J, Zaharoff J, Balestrino V, Sakely H.
- “Naloxone Counseling for Harm Reduction and Patient Engagement within a Family Medicine Residency.” Poster presentation at the 2016 PAFP Research Day. Pittsburgh, PA. March 12, 2016. **Durigan RC**.
- “10 Essential Point-of-Care Applications for Health Providers.” Presentation at the HIMSS Annual Conference & Exhibition. Las Vegas, NV. March 2016. Co-presenters: **Durigan RC**, Hogan L, **Payette N**, **Trietley G**.
- “Harm Reduction in a Family Medicine Residency through Direct Naloxone Dispensation and Patient Engagement Letters.” Workshop at the 34th Annual FMEC Annual Meeting. Danvers, MA. October 31, 2015. Co-presenters: **Durigan RC**, Das N, Hill L, Sphar B, Koenig M, Han J.
- “HOVEC: An Enhanced Home Visit Program Utilizing Wearable Glass Technology.” Seminar at the Family Medicine Education Consortium (FMEC) Annual Meeting. Danvers, MA. October 31, 2015. Co-presenters: **Durigan RC**, Mercuri J, Das N, Han J, Koenig M, Hill L.
- “Did You Hear About Our Sensational HPV Vaccination Trial? A family medicine team effort to improve vaccination rates.” Presentation at the 2016 PAFP Research Day. Pittsburgh, PA March 12, 2016. **Payette N**.
- “CPR: Resuscitate your presentation.” Seminar at the 49th STFM Annual Conference, Minneapolis, MN. May 3, 2016. Co-presenters: **Trietley G**, Chaudhri P, Frazier WT, Giruzzi N, Campbell A.

Invited Presentations

- “Acne.” General session at the 2016 Combined PAFP CME Conference and UPMC 43rd Refresher Course in Family Medicine. Pittsburgh, PA Mar 10, 2016. Co-presenter: **Farrah RM**, Sauereisen S.
- “Diabetes Update”. ” UPMC St. Margaret Family Medicine Residency Clinical Content Series, Family Medicine Faculty, Residents, Fellows and Students, December 2015. Co-presenter: **Farrah RM**, Koenig M.
- “Living with a Terminal Disease (ALS).” Grand Rounds. UPMC St. Margaret Family Medicine Residency Program. Pittsburgh, PA. April 9, 2015; **Klatt PM**
- “Perioperative Anticoagulation: To Hold or Not to Hold.” Session at the 42nd Annual Refresher Course in Family Medicine. Pittsburgh, PA. March 5, 2015. Co-presenter: **Klatt PM**, Higbea A.
- “Pharmacology Board Review 1 & 2” Session at the 41st Annual Refresher Course in Family Medicine. Pittsburgh, PA. February 28, 2014. Co-presenter: **Klatt PM**, Koenig M.

- There’s an App for That: Choose Your Own App-Venture. Presentation at the Pennsylvania Academy of Family Physicians (PAFP) CME Conference. Pittsburgh, PA. March 2016. Co-presenter: **Durigan RC**, Owen N.
- “Competence in Improving Systems of Care Through Practice-Based Learning and Improvement.” Improving Evaluation and Feedback Skills to Become Better Clinician Educator series. Presented at Directors Meeting, UPMC St. Margaret Family Medicine Residency Program. Pittsburgh, PA. April 8, 2016. Co-presenter: **Payette N**, Hirokawa R.
- “Practice Audit, Medical Record Review, and Chart-Stimulated Recall.” Improving Evaluation and Feedback Skills to Become Better Clinician Educator series. Presented at Directors Meeting, UPMC St. Margaret Family Medicine Residency Program. Pittsburgh, PA. May 20, 2016. Co-presenter: **Trietley G**, Felton M.
- “Working with Problem Residents: A Systematic Approach.” Improving Evaluation and Feedback Skills to Become Better Clinician Educator series. Presented at Directors Meeting, UPMC St. Margaret Family Medicine Residency Program. Pittsburgh, PA. February 12, 2016. Co-presenter: **Trietley G**, Ie, K.

Transitions of Care

Faculty

Kim Coley, PharmD, Professor
 Sharon Connor, PharmD, Assistant Professor
 James Coons, PharmD, Assistant Professor
 Amy Donihi, PharmD, Associate Professor
 Tanya Fabian, PharmD, PhD, Assistant Professor
 Deanne Hall, PharmD, Associate Professor
 Melissa McGivney, PharmD, Associate Professor

Major Accomplishments

In FY16, School of Pharmacy faculty members:

- Facilitated transitions of care and for over 9,000 patients at Western Psychiatric Institute and Clinics (WPIC) through the MEDPACT (Medication and Education at Discharge – Pharmacist Assisted Care Transitions) Program. Additionally, WPIC MEDPACT has provided patient-specific medication counseling by pharmacists and filled 3,673 discharge prescriptions resulting in 1,096 patients having “meds in hand” prior to discharge from WPIC. **Fabian T.**
- Improved communication of patients’ discharge medication lists by having insulins listed separately in the Patient Discharge Summary across UPMC Health System. **Donihi A.**
- Integrated pharmacists into a heart failure clinic where they focused on post-discharge assessments including medication reconciliation and assessing for medication effectiveness and side effects. Pharmacists evaluated 149 patients and identified 210 drug therapy problems and made 202 medication-related interventions. **Hall D.**

Selected Publications

- Krall KS, **Donihi AC**, Hatam M, Koshinsky, J, Siminerio L. The Nurse Education and Transition (NEAT) model: educating the hospitalized patient with diabetes. *Clinical Diabetes and Endocrinology*. 2016, 2:1

Invited Presentations and Published Abstracts

- “Assessing impact of admission medication discrepancy data on the predictive validity of the LACE Index to identify pharmacist intervention opportunities during transitions of care.” Poster presentation at the ASHP Midyear Meeting, New Orleans, LA, December 2015. **Connor SE**.
- “Medication-related barriers identified by patients in an urban community health center after hospital discharge.” Poster presentation at the Pennsylvania Pharmacists Association Midyear Conference, Harrisburg, PA, January 2016. **Connor SE**.
- “Implementation of an inpatient bulk medications to home program at a large academic medical center.” Poster presentation at the ASHP Midyear Clinical Meeting. Anaheim, CA 2015. **Donihi A, Coley KC**.
- “Long-term outcomes associated with initiating a long-acting injectable antipsychotic in patients with a psychosis-spectrum disorder during an acute inpatient hospitalization.” Poster presentation at the 2016 College of Psychiatric and Neurologic Pharmacists Annual Meeting in Colorado Springs, Colorado, April 2016. **Fabian TJ**.
- “Overcoming the Barriers and Challenges of Educating Hospitalized Patients with Diabetes”, an invited presentation within the Symposium titled “Designing Transitional-Care Programs and Communication Strategies to Improve Quality and Reduce Admissions.” Invited presentation at the American Diabetes Association 76th Scientific Sessions, New Orleans, LA. June 2016. **Donihi A**.
- “Time-and-motion analysis of the geriatric clinical pharmacist in three care settings: Pharmacist-led Interventions on Transitions of Seniors (PIVOTS).” Poster presentation at the NAPCRG 2015 Annual Meeting, Cancun, Mexico. Oct 24-28, 2015. **Coley KC, McGivney M, Thorpe C**.
- “Improving care of older adults within a novel practice: patient perceptions and self-efficacy analysis of Pharmacist-led Interventions on Transitions of Seniors (PIVOTS) by patient surveys.” Poster presentation at the STFM Annual Spring Conference. Minneapolis, MN. Apr 30-May 4, 2016. **Coley KC, McGivney M, Thorpe C**.
- “Improving care of older adults within a novel practice: patient perceptions and self-efficacy analysis of Pharmacist-led Interventions on Transitions of Seniors (PIVOTS) by patient surveys.” Poster presentation at the STFM Conference on Practice Improvement. Dallas, TX. Dec 3-6, 2015. **Coley KC, McGivney M, Thorpe C**.
- “Time and motion analysis of the geriatric clinical pharmacist in three geriatric care settings: Pharmacist-Led Interventions on Transitions of Care (PIVOTS).” Poster presentation at the American Geriatrics Society Annual Scientific Meeting, Long Beach, CA. May 19-21, 2016. **Coley KC, McGivney M, Thorpe C**

Grants

- **Coley KC, Thorpe C, and McGivney M** completed their work with clinicians from UPMC St. Margaret Hospital on the transitions of care research program, “PIVOTS: Pharmacist led Intervention on Transitions of Seniors.” This program places geriatric clinical pharmacists in a direct patient care role that manages elderly patients as they transition across different levels of geriatric care. This program was awarded a \$60,000 grant from the Jewish Healthcare Foundation.
- **Empey P and Coons J** received an Early Stage Research Award from the Pittsburgh Health Care Data Alliance Project: Center for Commercial Applications of Healthcare Data at Pitt for the development of the MEDivate app. The MEDivate app will be piloted in the advanced heart failure population at UPMC Presbyterian Hospital, by integrating into the medication discharge process and transitions of care clinic. A medication list will be populated that is portable and transferrable using QR-code technology.

Pharmacy Innovation Program

The Pharmacy Innovation Lab is the incubator and concept-testing environment where multidisciplinary teams come together to address complex problems. It endeavors to prepare pharmacy students to be innovative problem solvers with the tools to create and manage development of new ideas. The innovation laboratory expanded during the year to become an official program within the School. The program will begin in the P-1 year with an introduction to creativity and design thinking. They will also be invited to join the innovation laboratory to develop ideas and products outside of formal classes. During the P-2 year students will propose new patient services or ways to improve patient services in community pharmacy as part of their experiential learning curriculum. At the end of the P-2 year, they will have the opportunity make a pitch for funding for their project. Successful projects will receive funding to create a prototype of their idea during their P-3 year. Students in their P-4 year may elect for rotations with faculty to participate in project in mobile health technology, practice innovation, and/or a project of their own.

Faculty

Ameer Ali, PharmD, Instructor
Philip Empey, PharmD, PhD, Assistant Professor
Melissa McGivney, PharmD, Associate Professor
Randall Smith, PhD, Professor

Staff

Ravi Patel, PharmD

Major Accomplishments

- The first Staff member for the Program was hired. Ravi Patel, PharmD, serves as the Lead Innovation Advisor.
- MEDivate grant listed the Pharmacy Innovation Lab as a partner to help design their app for deployment in retail pharmacy and hospital clinic locations.
- Twenty one P-3 students completed the pharmacy innovation elective in the Fall semester. Twelve students continued onto the Spring semester, taking on projects that addressed real world problems in academic, clinical, and corporate settings.

- Hosted Innovation Workshops/Sessions with: Giant Eagle, Novo Nordisk, and Pittsburgh Business Group on Health.
- Formed a partnership with “higi.” Installed a “higi” wellness station in Salk Hall to test patient engagement methods.
- All Innovation Laboratory Students had the opportunity to attend site visits to:
 - InventionLand, which is the world's largest invention factory, where retailers, corporations and inventors come to innovative their products
 - Google’s Bakery Square office in Pittsburgh to learn about workplace environments
 - Maya Design, a technology design firm and innovation group founded in Pittsburgh, which partners, projects, and clients across healthcare, technology, and various other industries.
- Deployed “RxPedition” the serious game for drug discovery in the P-1 curriculum
- Completed four capstone projects with the Computer Science program at the University of Pittsburgh
 - Pharmacy Dashboard – using patient wait times in community pharmacies to educate patients about the value of pharmacists
 - Check-in Kiosk – engaging patients in retail settings to improve pharmacy operation efficiency
 - Pharmacy Quiz Game – creating an educational platform to allow student users to test their own knowledge and compare to class mates
 - Website Development – Creating the website for the Program
- Provided stakeholder expertise for the projects of the Innovation Studio course offered by Carnegie Mellon University
- Mentored three pharmacy student team submissions to Randall Big Idea Competition
 - TrackRx – Improving patient experience and workflow in community pharmacy settings
 - Stella – Mental health app leveraging Artificial Intelligence to engage patients out of care settings
 - LocalScene – Travel app used to connect local experts to visitors
 - Formed a partnership with the Learning Technology Laboratory at the University of Pittsburgh School of Information Science.
- Presented at the following Conferences:
 - Pennsylvania Pharmacists Association (Mid-Year and Annual Meeting)
 - Stanford MedicineX (Oral Presentation)
 - European Conference for Game Based Learning (Competition Finalists)

Community Pharmacy Partnerships

Faculty

Lucas Berenbrok, PharmD, Assistant Professor

Kim C. Coley, PharmD, Professor

Philip Empey, PharmD, PhD, BCPS, Assistant Professor

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

Staff

Mindy Kozminski, PharmD, BCPS, Senior Program Manager

Residents

Kristen Hart, PharmD – PGY1 Community Pharmacy Resident – Rite Aid Pharmacy

Nicole Nierste, PharmD – PGY1 Community Pharmacy Resident – Gatti Pharmacy (Indiana, PA)

Major Accomplishments

In FY16, School of Pharmacy faculty members:

- Facilitated 126 students attending Pennsylvania Legislative Day with 84 legislative visits: **Melissa S. McGivney, Luke Berenbrok, Kristen Hart, Nicole Nierste.**
- AACP/National Consumers League National Award – Script your Future Medication Adherence Team Challenge – 2015 (student award) – Heather Johnson, Julie Mandel, Rebecca Wytiaz, **Luke Berenbrok, Melissa S. McGivney.**
- Partnered with the Pennsylvania Pharmacists Association to create a new PittPharmacy staff position: Executive Manager, Pennsylvania Pharmacists Care Network (PPCN): **Melissa S McGivney**
- Successfully recruited over 120 community pharmacies to be involved with PPCN: **Mindy Kozminski**
- Leading the development of the Pennsylvania Pharmacist Care Network (PPCN) Research Network: **Kim C. Coley, Melissa S. McGivney**
- Partnered with the University of Pittsburgh CTSI as a part of the Precision Medicine Initiative Grant and engaged Giant Eagle Pharmacy as a partner: **Melissa S McGivney, Philip Empey**
- Successfully graduated the 10th class of Community Residents: **Kristen Hart, Nicole Nierste.** Total residents graduated to date: 22

- Partnered with Gatti Pharmacy, Indiana, PA to develop a new one-year Pharmacist Practice Development Fellowship for 2016-17.
- Engaged students in a series of practice enhancement projects lead by **Melissa S McGivney, Kim C Coley, Luke Berenbrok, Olufunmilola Odukoya**. Led intern engagement in advancing clinical patient care at Rite Aid, Giant Eagle, CVS, and within independent pharmacies.

Programmatic Accomplishments

- **Pennsylvania Pharmaceutical Care Network Training (2014-present) – Melissa S. McGivney, Mindy Kozminski**
 - Lead the re-development of on-line and live training content with faculty from all seven Pennsylvania Schools of Pharmacy.
- **NACDS Foundation Faculty Scholars Program (2012-present) – Melissa S. McGivney, Kim C. Coley**
 - Developed training and mentoring program for community-based faculty selected by NACDS Foundation via nomination of their Dean.
 - Coordinate content experts in research and community practice to train faculty.
 - Facilitated learning for 5 Scholars (2012-13); 8 Scholars (2013-14); 8 Scholars (2014-15); 5 Scholars (2015-16).
 - Initiated the Advanced Scholars Program (2016-18) – 2 Scholars engaged.
- **Statewide Community Residency Research Coalition – TOP TIER (Training Outpatient Pharmacists Techniques In Evidence-Based Research) 2009-present – Luke Berenbrok, Kim C. Coley**
 - 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, 7 residents in 2014-15, 5 residents in 2015-16.
 - Residents present work at PPA and APhA and are all required write and submit a grant application: 33/33 abstracts accepted to APhA, 13/16 received grants to support research.
- **Community Leadership Innovation and Practice (CLIP) Workshop Series (2013-present) - Luke Berenbrok, Kim C. Coley, Olufunmilola Odukoya, Melissa S. McGivney**
 - Integrated preceptors, alumni, chain pharmacy leadership and students to learn together in a series of 4 CLIP Workshops embedded with Community Pharmacist Practice 2.
 - Invited in 4 nationally recognized Keynote Lecturers and provided CE.
 - Organized 3 additional small group interactive sessions for CE.

- Engaged chain pharmacy leadership (Rite Aid, Walgreens, CVS, Giant Eagle) and independent pharmacy owners who are alumni to meet and talk with students.
- **Poster Presentations: Student and Resident Research in the Community**
 - 28 innovative community practice posters at PPA: February, 2016 – Harrisburg, PA
 - Six community research posters at APhA: March, 2016 – Baltimore, MD

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

- **Hall DL, Schonder KS, Pater KS, McGivney MS, Meyer SM.** The PITT Form: Pharmacist Interaction Tracking Tool for capturing student-patient interactions in direct and simulated patient care activities. *Am J Pharm Ed* 2016; 80(6), Article 105.
- Bacci JL, Akinwale TP, Adams AJ, **McGivney MS.** Exploring community pharmacy shared faculty contributions to practice, teaching and scholarship. *Am J Pharm Ed* 2016; 80(7) Article 115.
- Snyder ME, Frail CK, Gernant SA, Bacci JL, Colip L, Ferreri SP, Hagemeyer NE, **McGivney MS**, Rodis JL, Smith MG, **Smith RB.** Fellowships in Community Pharmacy Research: Experiences of Five Schools and Colleges of Pharmacy. *J Am Pharm Assoc* 2016; 56: 316-322.
- Bacci JL, **Coley KC**, McGrath K, Abraham O, Adams AJ, **McGivney MS.** Strategies to facilitate the implementation of collaborative practice agreements in chain community pharmacies. *J Am Pharm Assoc* 2016: 257-265.
- McCartney EM, Bacci JL, Ossman KL, Richardson RM, DelPizzo DM, DeJames JR, **McGivney MS.** Mobile application features sought after by patients of a grocery store chain pharmacy. *J Am Pharm Assoc* 2016;56:62-66.

Community Practice Grants Awarded

- “The Philly Difference: Connections for better chronic care.” CDC/ Philadelphia Department of Health. Subcontractor of PPA for the development of training resources and outreach materials and program evaluation. Centers for Disease Control and Prevention (CDC). \$48,498. January 2015. Epple P, **McGivney MS**, Bacci JL, Antinopoulos B, Kauffman Y, Peterson A.
- 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, Coley, KC.**
- 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 \$91,992. 2015-2018. **Somma McGivney MA, Coley K.**
- Partnered with CTSI on PA Cares Initiative, NIH Precision Medicine Initiative “All of Us.” \$46 million. 2016-2021. **Somma McGivney MA, Empey P.**

Selected Invited Presentations (National/International)

- **McGivney MS.** “Creating an action plan to integrate the patient care process into the classroom and experiential learning.” AACP Annual Meeting Teacher’s Seminar. Anaheim, CA. July, 2016.
- **McGivney MS.** “Leading the charge for patient care services.” Co-presenter. APhA Annual Meeting. Baltimore, MD. March, 2016.

HOSPITAL-BASED PROGRAMS

UPMC Palliative and Supportive Institute

Faculty

Jennifer Pruskowski, PharmD, Assistant Professor

Major Accomplishments

During FY16, the School of Pharmacy faculty member achieved the following:

- Provided clinical pharmacy support to: 10 hospital-based clinical palliative-care teams, 4 palliative care CRNPs within UPMC Senior Communities, and 6 outpatient clinic and home-based palliative care teams
- Produced the UPMC Palliative and Supportive Institute Palliative Care Symptom Guide, a pocket-guide dispersed across the UPMC continuum to improve the management of pain and other symptoms
- Counseled approximately 50 patients on intranasal naloxone upon discharge from UPMC Shadyside
- Expanded the DE-PHARM (Discussion to Ensure the Patient-centered, Health-focused, prognosis-Appropriate, and Rational Medication regimen) quality improvement project to deprescribe patients with life-limiting illnesses, to UPMC Seneca Place Senior Community
- Created a palliative sedation policy for actively dying patients with intractable, refractory symptoms for patients with UPMC Presbyterian and Shadyside
- Developed therapeutic guidelines for opioid-induced constipation, and a formulary review for oral ketamine, to be used in the hospital settings across UPMC
- Designed the UPMC Palliative and Supportive Institute (PSI) SharePoint, an internal educational source for all UPMC PSI providers

- Co-completed a quality improvement project to improve the screening and management of respiratory distress in patients unable to communicate via the Respiratory Distress Observation Scale (RDOS)
- Examined the pharmacological outcomes for delirium in PSI's geriatric palliative care population

Selected Publications

- **Pruskowski J**, Arnold RM. Tramadol in palliative care #290. J Palliat Med. 2015 May;18(5):461-2.
- Waldman G, **Pruskowski J**, Arnold R. The Role of Melatonin in Palliative Care #306. J Palliat Med. 2016 May;19(5):568-9.
- **Pruskowski J**, Arnold RM. Opioid Pharmacokinetics #307. J Palliat Med. 2016 Jun;19(6):668-70.
- Felton M, Weinberg R, **Pruskowski J**. Olanzapine for Nausea, Delirium, Anxiety, Insomnia, and Cachexia #315. J Palliat Med. 2016 Jun 6.

Grants

- Passavant Hospital Foundation: CADD® Solis ambulatory subcutaneous infusion pumps to UPMC Passavant for patients at the end of life (amount: \$6,100)

UPMC Pharmacy Solid Organ Transplantation 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, Tenured Professor

PhD Students

Ali Alshabi, PhD Candidate
 Fairuz Feturi, PhD Candidate
 Rujuta Joshi, PhD Candidate
 Hari Kalluri, PhD Candidate
 Mohammad Shawafeq, PhD Candidate
 Hari Thanukrishnan, PhD Candidate
 Hongfei Zhang, PhD Candidate

Postdoctoral Fellows

Cody A. Moore, PharmD – Solid Organ Transplant Research
 Martha Bustos, PhD
 Maisa Feghali, MD
 Chithambaram Pillai Venkateswaran, PhD
 Vikram Raghu, MD
 Yang Zhao, PhD

Resident

Ahn Vu, PharmD-PGY2 Solid Organ Transplant Pharmacy Resident

Visiting Scholars

Huijun Chen

Mimi Li

Research Associate

Wenchen Zhao

Major Accomplishments

In FY16, School of Pharmacy faculty members:

- Chair, American College of Clinical Pharmacy Immunology/Transplantation Practice and Research Network. **Ensor CR**
- 2016 ACCP Scientific Program Committee Member. **Ensor CR**
- University of Pittsburgh School of Pharmacy, Innovations in Teaching Award, Rho Chi Society. **Ensor CR**
- University of Pittsburgh School of Pharmacy, Preceptor of the Year, 2015. **Ensor CR**
- Chair, Immunomodulation in thoracic transplant consensus conference, ISHLT. **Ensor CR**
- ISHLT Meeting Abstract Selection committee. **Ensor CR**
- ISHLT Standards and Guidelines Committee member. **Ensor CR**
- Editor, American Journal of Analytical Chemistry, **Venkataramanan R**
- Editorial Board Member – Therapeutic Drug Monitoring and Journal of Clinical Pharmacology, **Venkataramanan R**
- Reviewer: Several journals including J. Clinical Pharmacology, British Journal of Clinical Pharmacology, Therapeutic Drug Monitoring, **Venkataramanan R**
- AST Fellows Symposium Travel Grant Award. **Moore CA**
- Selected to give 2 oral presentations at major transplant meetings (AST, ISHLT). **Moore CA**
- Provided 6 months of clinical service to lung, liver, and kidney transplant recipients at UPMC Presbyterian. **Moore CA**
- Re-structured Anatomy and Physiology II into a flipped classroom design focusing on acting learning and drug mechanism. **Moore CA, Ensor CR, Johnson HJ, Shullo MA**
- Mentored four new special topic students on transplant clinical outcomes projects. **Moore CA, Ensor CR.**

- Program Committee: ISHLT 37th Annual Meeting and Scientific Sessions. **Shullo MA**
- Session Chair: Anticoagulation and MCS: Can We Do Better. 36th Annual Meeting and Scientific Sessions. International Society for Heart and Lung Transplant. **Shullo MA**
- 834 HCV consults; 696 interactions, 387 (46%) patients with interactions and 8 absolute contraindications identified. **Johnson HJ**
- **Raman Venkataramanan** serves on 8 editorial boards and 4 review committees. Editor for one journal
- As Director of the TDM program, **Raman Venkataramanan** oversees 20 staff members that analyze an average of over 200 patient samples a day.
- As the Director of the Toxicology program, **Raman Venkataramanan** reviews and signs off toxicology drug screens in patients
- PI on the only T-32 award in OBGYN pharmacology year 4. **Venkataramanan R**

Grants/Research

- Amgen Inc, **Ensor CR**, 06/2015-06/2018 (Co-Primary Investigator). Co-PI: John F. McDyer, MD, \$599,994. Carfilzomib for the Antibody-Mediated Rejection Diagnosis in Lung Transplantation Trial (PICARD-Lung).
- Institute for Personalized Medicine; **Cody Moore**, PharmD (Co-investigator), **Rujuta Joshi**, BS (Co-Investigator) **Raman Venkataramanan**, PhD (Co-Investigator), PI: **Christopher Ensor**, PharmD. University of Pittsburgh 9/01/2016 – 8/31/2018 \$100,000
- 1U01AI25050-01 (**Ensor CR**, Co-I), Co-PI: John F. McDyer, MD, and Paul Szabolcz, MD NIH/NIAID 06/01/2016 - 06/01/2021 \$5,100,000
Combined lung and bone marrow transplantation for end-stage lung disease in Immunodeficiency.
- 5T32HD071859 (**Venkataramanan R**, PI-Caritis) 5/1/12-4/30/17
National Institutes of Health \$63,140
Training in basic and Clinical Pharmacology in Pregnancy
- UH 2TR000496 (**Venkataramanan R**, PI-Wells) 7/1/12-6/30/17
National Institutes of Health \$53,165
All-Human Microphysical Model of Metastasis Therapy
- 2U54 HD047905 (**Venkataramanan R**, PI-Caritis) 8/1/15-6/30/20
National Institutes of Health \$10,474
Optimization of Drug Dosing in Pregnant Women through Research and Education – OPRC Administrative Core
- 2U54 HD047905 (**Venkataramanan R**, PI-Caritis) 8/1/15-6/30/20
National Institutes of Health \$5,237
Optimization of Drug Dosing in Pregnant Women through research and Education - Impact of Pregnancy on Buprenorphine Pharmacokinetics and Pharmacodynamics – Clinical

- 2U54 HD047905 (**Venkataramanan R**, PI-Caritis) 8/1/15 -6/30/20
National Institutes of Health \$77,658
Optimization of Drug Dosing in Pregnant Women through research and Education -
Basic/Translational Investigations on Buprenorphine – Basic Science
- 2U54 HD047905 (**Venkataramanan R**, PI-Caritis) 8/1/15-6/30/17
National Institutes of Health \$27,179
Optimization of Drug Dosing in Pregnant Women through research and Education -Feasibility
and Safety of Vaginal Administration of 17-hydroxyprogesterone Caproate - Pilot
- 2U54 HD047905 (**Venkataramanan R**, PI-Caritis) 8/1/15- 6/30/16
National Institutes of Health \$48,204
Optimization of Drug Dosing in Pregnant Women through research and Education -Feasibility
and Safety of Vaginal Administration of 17-hydroxyprogesterone Caproate – Carryover
- S-1414-02 (**Venkataramanan R**, PI-Gorantla) 9/15/16-9/14/17
Geneva Foundation (DOD Prime W81XWH-15-2-0047) \$2,345
A Graft Embedded Loco-regional Immunosuppressive Therapy (GEL-IT®) Platform for
Vascularized Composite Allotransplantation
- United Therapeutics (**Venkataramanan R**) 06/01/2013-05/31/2017
Remodulin in I/R in liver transplantation \$ 128,000
To evaluate the impact of treatment with Remodulin on I/R injury of liver grafts.
- United Therapeutics (**Venkataramanan R**) 06/01/2016-05/31/2017
Remodulin in I/R injury \$ 203,312
To evaluate various parameters in the study of Remodulin in I/R injury of the liver
- United Therapeutics (**Venkataramanan R**) 06/01/2016-05/31/2017
Remodulin in I/R injury \$ 198,900
To evaluate addition of Remodulin to cold preservation solution – Proof of concept in animals.
- American Society of Hand Surgery 09/2014-08/2016
(**Venkataramanan R**, PI-Spiess) \$20,000
Topical application of immunosuppressed drugs for local effect.

Selected Publications

- Lichvar AB, **Moore CA**, **Ensor CR**, McDyer JF, Teuteberg JJ, **Shullo MA**. Evaluation of oral anticoagulation therapy in heart and lung transplant recipients. *Prog Transpl.* (Accepted).
- Reinsmoen N, Mirocha J, Marrari M, **Ensor CR**, Chaux G, Levine D, Zhang X, Zeevi A. A Three Center Study Reveals New Insights into the Impact of Non-HLA Antibodies On Lung Transplantation Outcome. *Transplantation* (accepted).
- **Shullo MA**, Workforce Chair. International Society for Heart and Lung Transplantation, Thoracic Transplant Pharmacy Professional Core Curriculum.
http://www.ishlt.org/ContentDocuments/ISHLT_Pharm_Competencies_final1.pdf

- Jennings DL, Horn ET, Lyster H, Panos AL, Teuteberg JJ, Lehmkuhl HB, Perez A, **Shullo MA**. Assessing anticoagulation practice patterns in patients on durable mechanical circulatory support devices: An International Survey. *ASAIO J*. 2015 Aug 17. [Epub ahead of print]
- Kobashigawa J, Teuteberg J, Colvin M, Edwards L, Daun T, Luu M, Patel J, Vega JD, Meyer D, Ardehali A, Bhat G, Baran D, Couper G, Czer L, Esmailian F, Fischer W, Gollnick M, Halnon N, Johnson M, Kao T, Kearney-Hoffman P, Kessler L, Khush K, Mone T, Peltz M, Pinney S, Pisani B, Pyke J, Rajapreyar I, Robbins-Callahan L, Schladt D, **Shullo M**, Schulte K, Skeans M, Sieg A, Simones B, Sorensen A, Stehlik J, Taylor D, Toyoda Y, Velleca A, Wong J, Zeglin J. Proceedings of the AST heart allocation meeting at the American Transplant Congress, Philadelphia, Pennsylvania, May 4, 2015. *Clin Transplant*. 2016 May;30(5):641-8.
- **Johnson HJ**. Neurologic and psychiatric adverse effect of immunosuppressant medications In *Synopsis of Neurological and Psychiatric Complications of Systemic Disease*, Weisbrot DM, Ettinger AG, Gallimore CE (eds); (submitted)
- **Johnson HJ, Schonder KS**. Solid Organ Transplantation – In *Pharmacotherapy - A Pathophysiologic Approach*, 10th edition. DiPiro JT et al (eds); (submitted)
- Reed MJ, Dhanyamraju S, Schultz MF, Sanchez-Cueva PA, **Johnson HJ**, Miao CL. Solid Organ Transplantation in the ICU - In *Comprehensive Critical Care: Adult*. Roberts PA and Todd SR (eds); (submitted).
- Rivosecchi RM, Kellum JA, Dasta JF, Armachizer, MJ, Bolesta S, Buckley MS, Dzierba AL, Frazee E, **Johnson HJ**, Kim C, Murugan R, Smithburger PL, Wong A, Kane-Gill SL. Drug class combination associated acute kidney injury: A review of the literature. *Annals of Pharmacotherapy* 2016
- Rivosecchi RM, **Kane-Gill, SL**, Garavaglia J, MacLasco A, **Johnson HJ**. The effectiveness of intravenous vitamin K in correcting cirrhosis-associated coagulopathy. *International Journal of Pharmacy Practice*. 2016
- Sharma S, Caritis S, Hankins G, Miodovnik M, Hebert MF, Mattison D, **Venkataramanan R**. Population pharmacokinetics of 17 β -hydroxyprogesterone caproate in singleton gestation. *Br J Clin Pharmacol*. 2016 May 2.
- Caritis S, Zhao Y, Chen HJ, **Venkataramanan R**. Pharmacodynamics of transdermal granisetron in women with nausea and vomiting of pregnancy. *Am J Obstet Gynecol*. 2016 Jul. Epub 2016 Jan.
- Li M, Zhao Y, Humar A, Tevar AD, Hughes C, **Venkataramanan R**. Pharmacokinetics of drugs in adult living donor liver transplant patients: regulatory factors and observations based on studies in animals and humans *Expert Opin Drug Metab Toxicol*. 2016. Epub 2016 Feb.
- Windreich RM, Goyal RK, Joshi R, Kenkre TS, Howrie D, **Venkataramanan R**. A Pilot Study of Continuous Infusion of Mycophenolate Mofetil for Prophylaxis of Graft-versus-Host-Disease in Pediatric Patients. *Biol Blood Marrow Transplant*. 2016 Apr.

- Shaik IH, Bastian JR, Zhao Y, Caritis SN, **Venkataramanan R**. Route of administration and formulation dependent pharmacokinetics of 17-hydroxyprogesterone caproate in rats. *Xenobiotica*. 2016.
- Beigi RH, Pillai VC, **Venkataramanan R**, Caritis SN. Oseltamivir for the treatment of H1N1 influenza during pregnancy. *Clin Pharmacol Ther*. 2015 Oct.
- Young OM, Shaik IH, Twedt R, Binstock A, Althouse AD, **Venkataramanan R**, Simhan HN, Wiesenfeld HC, Caritis SN. Pharmacokinetics of cefazolin prophylaxis in obese gravidae at time of cesarean delivery. *Am J Obstet Gynecol*. 2015 Oct.
- Pillai VC, Han K, Beigi RH, Hankins GD, Clark S, Hebert MF, Easterling TR, Zajicek A, Ren Z, Caritis SN, **Venkataramanan R**. Population pharmacokinetics of oseltamivir in non-pregnant and pregnant women.” *Br J Clin Pharmacol*. 2015 Nov

Invited Presentations and Published Abstracts

- **Ensor CR**, Winstead R, **Moore CA**, Iasella CJ, Morrell MR, Hayanga J, DCunha J, Pilewski J, McDyer JF. Increasing Tacrolimus Time-in-Therapeutic Range Is Associated with Less Cellular Rejection in Lung Transplant Recipients. 2016 American Transplant Congress. Oral, Boston MA. June 2016.
- **Ensor CR**, Harrigan KM, **Moore CA**, Iasella CJ, Morrell MR, Hayanga J, DCunha J, Johnson BJ, McDyer JF. Successful Maintenance Belatacept-Based Immunosuppression in Lung Transplantation Recipients Who Failed Calcineurin Inhibitors. 2016 American Transplant Congress. Oral, Boston MA. June 2016.
- **Ensor CR**, Winstead R, Moore CA, Iasella CJ, Morrell MR, Hayanga J, DCunha J, Pilewski J, McDyer JF. Increasing Tacrolimus Time-in-Therapeutic Range Is Associated with Less Cellular Rejection in Lung Transplant Recipients. 2016 American Transplant Congress. Oral, Boston MA. June 2016.
- Mannem H, Popescu I, Hanumanthu, Gulati S, Kilaru S, Crespo M, Pilewski J, Morrell MR, **Ensor CR**, Armanios M, McDyer JF. Severely shortened telomeres in lung transplant recipients with idiopathic pulmonary fibrosis is associated with impaired cytomegalovirus immunity and viral control. American Thoracic Society 2016 Meeting. Oral, San Francisco CA. May 2016.
- **Ensor CR***, Zeevi A, Marrari M, Morrell MR, Yousem SA, Pilewski JM, DCunha J, McDyer JF. Carfilzomib-based therapy produces favorable outcomes for antibody mediated rejection of the lung allograft. ISHLT 36th Annual Meeting and Scientific Sessions. Oral, Washington DC. April 2016.
- Moore CA, Pilewski JM, Robinson Km, Morrell MR, Gries CJ, Zeevi A, McDyer JF, **Ensor CR***. Effect of aerosolized antipseudomonas on pseudomonas recurrence and bronchiolitis obliterans syndrome after lung transplantation. ISHLT 36th Annual Meeting and Scientific Sessions. Oral, Washington DC. April 2016.
- Lendermon EA*, Dodd-o JM, Guo L, Coon TA, **Ensor CR**, O'Donnell CP, McDyer JF. CD8+ IL-17 responses and obliterative airway disease persist in TBET-/- mouse recipients of

lung transplant treated with low dose azithromycin therapy. ISHLT 36th Annual Meeting and Scientific Sessions. Poster, Washington DC. April 2016.

- Lichvar AB, Morrell MR, Hayanga J, Pilewski JM, Crespo MM, DCunha J, Zeevi A, McDyer JF, **Ensor CR***. Tacrolimus immunosuppressive regimens are associated with a mortality benefit in lung transplantation recipients at a high-volume single center. ISHLT 36th Annual Meeting and Scientific Sessions. Poster, Washington DC. April 2016.
- Lichvar AB, Morrell MR, Hayanga J, Pilewski JM, Crespo MM, DCunha J, Zeevi A, McDyer JF, **Ensor CR***. Mycophenolate-based immunosuppressive regimens are associated with a mortality benefit in lung transplantation recipients at a high-volume single center. ISHLT 36th Annual Meeting and Scientific Sessions. Poster, Washington DC. April 2016.
- Zeevi A*, Marrari M, Morrell MR, Yousem SA, Pilewski JM, DCunha J, McDyer JF, **Ensor CR**. Pre-treatment high titer DSA is associated with non-responsiveness to carfilzomib-based AMR therapy in lung transplant recipients. ISHLT 36th Annual Meeting and Scientific Sessions. Poster, Washington DC. April 2016.
- Lichvar AB, **Ensor CR (co-lead)***, Morrell MR, Pilewski JM, Hayanga J, DCunha J, Zeevi A, McDyer JF, Petrov AA. On-demand immunoglobulin-g replacement is not associated with benefits in lung transplant recipients with hypogammaglobulinemia. ISHLT 36th Annual Meeting and Scientific Sessions. Oral, Washington DC. April 2016.
- Lichvar A, Moore C, **Ensor CR**, Teuteberg J, McDyer J, Shullo M. Safety and efficacy of direct oral anticoagulation agents in heart and lung transplant recipients. ACCP Global Conference on Clinical Pharmacy Meeting. Poster, San Francisco, CA. October 2016.
- **Moore CA**, Pilewski JM, Robinson Km, Morrell MR, Gries CJ, Zeevi A, McDyer JF, **Ensor CR**. Effect of aerosolized antipseudomonas on pseudomonas recurrence and bronchiolitis obliterans syndrome after lung transplantation. ISHLT 36th Annual Meeting and Scientific Sessions. Oral, Washington DC. April 2016.
- Lichvar A, **Moore CA**, **Ensor CR**, Teuteberg J, McDyer J, **Shullo MA**. Safety and efficacy of direct oral anticoagulation agents in heart and lung transplant recipients. ACCP Global Conference on Clinical Pharmacy Meeting. Poster, San Francisco, CA. October 2015.
- Lander M, Kunz N, Dunn E, Lockard K, O'Shea G, Weaver S, Schweke T, **Shullo MA**, Lagazzi L, Kormos RL, Teuteberg JJ. Substantial Reduction in Driveline Infection Rates with the Modification of Driveline Dressing Protocols. [Oral Presentation/Abstract] International Society for Heart and Lung Transplant. April 2016
- Lander M, Lagazzi L, Kormos RL, O'Shea G, Weaver S, Schweke T, **Shullo MA**, Teuteberg JJ. When Antibiotics Are Not Enough: Frequency, Etiology and Durability of the Surgical Management of Driveline Infections. [Oral Presentation/Abstract] International Society for Heart and Lung Transplant. April 2016
- **Vu A**, Teuteberg JJ, Zeevi A, **Shullo MA**. The Timeline of DSA after Cardiac Transplantation. [Oral Presentation/Abstract] International Society for Heart and Lung Transplant. April 2016

- Osnard M, Althouse AD, Krall L, Newman C, Grabowski C, Speicher F, Zomak , Lagazz L, Kormos RL, **Shullo M**, Teuteberg JJ. Poor Blood Pressure Control Is Independently Associated with Renal Dysfunction After Heart Transplant. [Poster/Abstract] International Society for Heart and Lung Transplant. April 2016
- Teuteberg, JJ, Budge D, **Shullo MA**, Hall S, Kobashigawa J. Gene Expression Profiling Score and the Risk of Infection in Heart Transplant Recipients. [Poster/Abstract] American Transplant Congress, 2016
- **Vu A**, Althouse A, Zeevi A, Teuteberg JJ, **Shullo MA**. Impact of Donor Specific Antibodies on Cardiac Allograft Vasculopathy. [Poster/Abstract] American Transplant Congress, 2016
- Graham EP, **Johnson HJ**, Dunn MA, Chopra KB. Pharmacists mitigate effect of simeprevir on blood pressure in patients with hepatitis C infection receiving concurrent calcium channel blocker therapy. Presented at the American Association for the Study of Liver Diseases (AASLD) The Liver Meeting 2015, San Francisco, CA, November 2015.
- Brown MA, **Johnson HJ**, Lichvar AB, Chopra KB, Dunn MA. Effect of simeprevir administration on dose-normalized concentration of calcineurin inhibitors in solid organ transplant recipients with hepatitis C infection. Presented at the American Association for the Study of Liver Diseases (AASLD) The Liver Meeting 2015, San Francisco, CA, November 2015.
- Lichvar AB, **Johnson HJ**, Rustgi V. The effect of ledipasvir/sofosbuvir on dose-normalized levels of immunosuppression in liver transplant recipients. Presented at the American Association for the Study of Liver Diseases (AASLD) The Liver Meeting 2015, San Francisco, CA, November 2015.
- Firuz Feturi, Jignesh Unadkat, Vasil Erbas, Liwei Dong, Lin He, Wensheng Zhang, Kia Washington, Vijay Gorantla, Mario Solari, **Raman Venkataramanan**, Alexander Spiess. Locally Implantable Tacrolimus Disc provides Loco-regional Immunosuppression for Long Term Allograft Survival. AAPS annual meeting in Orlando, FL 28 October 2015.
- Firuz Feturi, Jignesh Unadkat, Vasil Erbas, Liwei Dong, Lin He, Wensheng Zhang, Kia Washington, Vijay Gorantla, Mario Solari, **Raman Venkataramanan**, Alexander Spiess. Locally Implantable Tacrolimus Disc provides Loco-regional Immunosuppression for Long Term Allograft Survival. McGowan Research Retreat, March, 6-8th, 2016.
- Firuz Feturi, Vasil Erbas, Liwei Dong, Huseyin Sahin, Matthias Waldner, Lin Hu, Wensheng Zhang, Alexander Spiess, Mario Solari, **Raman Venkataramanan**, Vijay Gorantla. Topical Immunotherapy Synergizes with Systemic Immunotherapy to Prolong Survival of Vascularized Composite Allografts without Morbid Adverse Effects. 59th Ohio Valley Plastic Surgery annual meeting June 3-5, 2016 Marriott Dayton, OH.
- Firuz Feturi, Jignesh Unadkat, Vasil Erbas, Liwei Dong, Lin He, Wensheng Zhang, Kia Washington, Vijay Gorantla, Mario Solari, **Raman Venkataramanan**, Alexander Spiess. Locally Implantable Tacrolimus Disc provides Loco-regional Immunosuppression for Long Term Allograft Survival. Plastic Surgery Department, Resident Research Day June 24, 2016.
- Firuz Feturi, Jignesh Unadkat, Vasil Erbas, Liwei Dong, Lin He, Wensheng Zhang, Kia Washington, Vijay Gorantla, Mario Solari, **Raman Venkataramanan**, Alexander Spiess.

Locally Implantable Tacrolimus Disc provides Loco-regional Immunosuppression for Long Term Allograft Survival. 62nd Annual Scientific Meeting of the Robert H. Ivy Pennsylvania Plastic Surgery Society, April 16th, 2016.

- Firuz Feturi, Vasil Erbas, Liwei Dong, Huseyin Sahin, Matthias Waldner, Lin Hu, Wensheng Zhang, Alexander Spiess, Mario Solar2, **Raman Venkatramanan**, Vijay Gorantla. Topical Immunotherapy Synergizes with Systemic Immunotherapy to Prolong Survival of Vascularized Composite Allografts without Morbid Adverse Effects. NESPS 33rd Annual Meeting. October 14 – 16, 2016. Four Seasons Hotel. Baltimore, MD.
- Firuz Feturi, Jignesh Unadkat, Vasil Erbas, Liwei Dong, Lin Hu, Wensheng Zhang, Mario Solari, Vijay Gorantla, **Raman Venkatramanan**, Alexander Spiess. Locally implantable biodegradable polymeric Tacrolimus disc prolongs survival of vascularized composite allografts without morbid adverse effects. NESPS 33rd Annual Meeting. October 14 – 16, 2016. Four Seasons Hotel Baltimore, MD.
- M. Bustos, Y. Zhao, H. Chen, S. Caritis, **R. Venkataramanan**. Granisetron Exposure and Antiemetic Efficacy in Pregnant Women Treated for Nausea and Vomiting Are Influenced by SNPs in CYP1A1, CYP3A4, CYP3A5 and ABCB1 Genes. Presented at AAPS annual meeting in Orlando, FL October 2015.
- O. A. Almazroo, I. H. Shaik, V. Chithambarampillai, **R. Venkataramanan**. Hepatic Ischemia Reperfusion Injury Is Attenuated With Treprostinil Supplementation In the University of Wisconsin Organ Preservation Solution. Presented at 2015 AAPS annual meeting in Orlando, FL October 2015.
- Rivosecchi RM, Clancy CJ, Shields RK, L Clarke, Humar A, **Ensor CR, Falcione BF, Venkataramanan R**, Nguyen MH Isavuconazole prophylaxis (ISA px) among solid organ transplant (SOT) patients (pts): Preliminary impressions on interactions with tacrolimus (FK).ASM June 2016
- **Christopher R. Ensor**, PharmD; Katherine M. Harrigan, BS; **Raman Venkataramanan**, PhD; Matthew R. Morrell, MD; Cody A. Moore, PharmD, J. Awori Hayanga, MD; Maria M. Crespo, MD; Jonathan D’Cunha MD, PhD; Adriana Zeevi, PhD; John F. McDyer, MD Increasing tacrolimus time-in-therapeutic range is associated with less cellular rejection in lung transplant recipients – ISHLT May 2016
- V. C. Pillai, R. A. Parise, B.F. Kiesel, S. M. Christner, M.A. Rudek, J.H.Beumer, **R.Venkataramanan** Identification of Transporters Involved in Hepatobiliary Disposition of an Investigational Anticancer Drug, Alisertib (MLN8237) in Primary Cultures of Human Hepatocytes – AAPS Oct 2015
- Pillai VC, Rytting E, Hankins G, Ahmed M, Caritis S, **Venkataramanan R**. A PBPK based approach to evaluate the pharmacokinetics of indomethacin during pregnancy. AAPS Oct 2016
- Zhao Y, Caritis S, Hankins G, Midovnik M, Hebert M, **Venkataramanan R**. Pharmacokinetics of labetalol in pregnant subjects. AAPS Oct 2015.
- Zhao Y, Zhang S, Caritis S, Hankins G, Midovnik M, Hebert M, **Venkataramanan R**. Pharmacokinetics of diltiazema nd its metabolites in pregnant subjects. AAPS Oct 2015.

- Joshi R, Windreich R, Howrie D, Goyal R, **Venkataramanan R**. Pharmacokinetics of Mycophenolic acid in hematopoietic stem cell transplant recipients. AAPS Oct 2015.
- Pillai VC, Clark A, Wheeler S, Stolz, Griffith L, Wells A, **Venkataramanan R**. All Human ex vivo hepatic microphysiologic system functional assessment of drug metabolizing enzymes. UPDDI-conference Nov 2015.
- Clark A, Wheeler S, Neiman JA, Young C, Pillai VC, Taylor D, Yie K, Cirit M, Stoltz D, Prantil-Baun R, Kim E, Nguyen T, Bornstein J, **Venkataramanan R**, Lauffenberger D, Griffith L, Wells A. Modeling breast cancer dormancy and reemergence. NIH/DARPA meeting March 2016
- Bastian J, Chen H, Zhang H, Yang M, Tarter R, English D, **Venkataramanan R**, Caritis S. Pregnancy decreases exposure to sublingual buprenorphine. SMFM March 2016.
- Bastian J, Chen H, Zhang H, Yang M, Tarter R, English D, **Venkataramanan R**, Caritis S. Pregnancy increases metabolism of sublingual buprenorphine. SMFM March 2016.
- Hoshitsuki K, **Venkataramanan R**, Howrie D. Voriconazole TDM in pediatric hematopoietic stem cell transplant patients at CHP of Pittsburgh. PA Pharmacy meeting April 2016.
- Miah MK, Bastian J, Shaik I, Caritis S, **Venkataramanan R**. Effect of cobicistat on exposure of 17-OHPC in rats. Submitted for AAPS 2016.
- Miah MK, Bastian J, Shaik I, Caritis S, **Venkataramanan R**. Route of administration and tissue distribution of 17-OHPC after di. Submitted for AAPS 2016.
- Miah MK, Bastian J, Shaik I, Caritis S, **Venkataramanan R**. Intravaginal administration of 17-OHPC is safe in rats. Submitted for AAPS 2016.
- Kalluri H, Dharyani N, Caritis S, **Venkataramanan R**. PBPK modeling of sertraline exposure in pregnancy. Submitted for AAPS 2016.
- Kalluri H, Zhang H, Caritis S, **Venkataramanan R**. PBPK of buprenorphine in pregnancy. Submitted for AAPS 2016.
- Joshi R, Kalluri H, Netto V, **Venkataramanan R**. PBPK modeling of cefrofloxacin. Submitted for AAPS 2016.
- Wenchen Z, Zu X, Zhang H, **Venkataramanan R**. A sensitive and specific assay for isavuconazole. Submitted for AAPS 2016.
- Firuz Feturi, Jignesh Unadkat, Vasil Erbas² Liwei Dong, Lin Hu, Wensheng Zhang, Mario Solari, Vijay Gorantla, **Raman Venkataramanan**, Alexander Spiess. Locally implantable biodegradable polymeric Tacrolimus disc prolongs survival of vascularized composite allografts without morbid adverse effects Submitted to AAPS 2016.
- **Ensor CR**. Mechanisms of chronic allograft dysfunction: Humoral mechanisms. Cystic Fibrosis Lung Transplant Summit, CF Foundation, Bethesda MD. February 2016.

- Pancytopenia in a Lung Transplant Recipient. Invited Case Presentation. AST Fellows Symposium. Grapevine, TX. October 2015. **Moore CA.**
- The ISHLT 2016 Annual Meeting Recap. American College of Clinical Pharmacy CE Webinar. May 2016. **Moore CA**
- A Novel Approach to Immunosuppression in Solid Organ Transplantation: Getting to Know JAK. Pharmacy Grand Rounds and ACCP webinar CE. UPMC Presbyterian. September 2015. **Moore CA.**
- Combination Therapy with Proliferation Signal Inhibitors and Calcineurin Inhibitor Minimization After Thoracic Transplantation. ABTC-accredited CE. UPMC Presbyterian. **Moore CA**
- Malignancy in the Cardiac Transplant Patient: Preoperative Selection Criteria and Postoperative Management. OPTUM Spotlight Conference. Pittsburgh PA May2016. **Shullo MA**
- Lifecycle Journey of Hepatitis C Heart Failure Patient in 2016: Immunosuppression - A Tricky Balance? International Society for Heart and Lung Transplantation. 36th Annual Meeting. Washington DC. April 2016. **Shullo MA**
- Basic Science update – OPRC. Presented at NICHD, October 2015 and March 2016. Bethesda, MD. **Venkataramanan R**
- Optimizing medication use in first chance in life (Pregnancy) and second chance in life (Organ Transplantation).” McGowen Injury Repair and Regenerative Medicine at UPMC, March 2016. Pittsburgh, PA. **Venkataramanan R**

UPMC Pharmacy Critical Care Group

Faculty

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

Residents

Bethany Shoulders, PharmD, PGY2 Critical Care Resident
 Cory Weaver, PharmD, PGY2 Critical Care Resident
 Ashley Modany, PharmD, PGY2 Cardiology Pharmacy Resident

International Trainees-1 Year Program

Li Xuanhui (Janice), MS-National University Hospital, Singapore
 Yashi Saw, MS-National University Hospital, Singapore
 See Woon Wei (Michelle), PharmD-Changhai General Hospital, Singapore

Graduate Students

Solomon M. Adams, PharmD

Kacey Anderson, BS

Yoko Franchetti, PhD

Fanuel Hagos, BS, MS

Lingjue Li, MS

Alexander Prokopienko, PharmD

Chenxiao Tang, MS

Major Accomplishments

In FY16, School of Pharmacy faculty members were:

- Faculty for the American Society of Health-System Pharmacists (ASHP) Foundation Critical Care Traineeship (2012-2017) **Benedict NJ**
- Named the Associate Director of the Institute of Personalized Medicine by the University of Pittsburgh. **Empey PE**
- Promoted to Associate Professor, University of Pittsburgh, School of Pharmacy, Department of Pharmacy and Therapeutics. **Falcione BA**
- Re-elected as co-chair for the University of Pittsburgh Senate Educational Policies Committee. **Falcione BA**
- Re-elected as a Member of Council, the governing body of the Society of Critical Care Medicine (2016-2018). **Kane-Gill SL**
- Only pharmacist invited as an international expert in medication safety to participate in the 15th and 16th Acute Dialysis in Quality Initiative (ADQI) Conferences resulting in the publication of consensus papers from this conference. **Kane-Gill SL**
- Promoted to Associate Professor with Tenure, University of Pittsburgh, School of Pharmacy, Department of Pharmacy and Therapeutics. **Nolin TD**
- Presented Keynote Lecture titled “Drug Dose Adjustment of Non-Renally Eliminated Drugs in CKD Patients – What is the Evidence?” at the 14th NephroPharmacology Meeting in Heidelberg, Germany, October 2015. **Nolin TD**
- Promoted to the Associate Dean for Graduate and Postdoctoral Programs at the University of Pittsburgh School of Pharmacy **Poloyac SM**
- Elected as President of the ACCP Critical Care PRN. **Smithburger PL**
- Continued leadership of International Advanced Clinical Training Program. **Seybert AL, Falcione BA, Smithburger PL, Coons JC, Kane-Gill SL**
- Launched the PreCISE-Rx clinical pharmacogenomics implementation and research initiative at Pitt/UPMC. **Empey PE, Coons JC, Stevenson J**

Awards

- University of Pittsburgh Chancellor's Distinguished Teaching Award. **Benedict NJ**
- American Association of Colleges of Pharmacy (AACP) Innovations in Teaching Award. **Empey PE**
- University of Pittsburgh School of Pharmacy, 2016 Rho Chi Innovations in Teaching Award. **Coons JC**
- 2015-2016 UPMC Pharmacy Residency Program Preceptor of the Year. **Falcione BA**
- Society of Critical Care Medicine (SCCM) Patient and Family Support Specialty Award and invited oral presentation for this research. **Kane-Gill SL, Smithburger PL**
- SCCM, Clinical Pharmacy and Pharmacology Section Medication Safety Award for evaluating off-label drug use as a risk for adverse drug events in the ICU. **Kane-Gill SL, Smithburger PL**
- Competitively awarded and completed the American Association of Colleges of Pharmacy Academic Leadership Fellowship Program **Poloyac SM**

Selected Critical Care Publications

- **Adams SM, Anderson K, Coons JC, Smith RB, Meyer SM, Parker LS, Empey PE.** PGx Test2Learn™: Advancing pharmacogenomics education in the core PharmD curriculum through student personal genomic testing. *Am J Pharm Educ* 2016;80(1):Article 3.
- **Benedict NJ** and Hess M. History and Future of Critical Care Pharmacy Practice. *Am J Health-Syst Pharm.* 2015;72:2101-5.
- Buckley MS, Park AS, Anderson CS, Barletta JF, Gerkin R, O'Malley, Wicks LM, **Kane-Gill SL.** Impact of a clinical pharmacist stress ulcer prophylaxis management program on inappropriate use in hospitalized patients. *Am J Med* 2015;128:905-913.
- Callaway CW, Elmer J, Guyette FX, Molyneaux BJ, **Anderson K, Empey PE,** Gerstel SJ, Holquist K, Repine MJ, Rittenberger JC. Dexmedetomidine reduces shivering during mild hypothermia in waking subjects. *PLOS One.* 2015 Aug 3;10(8):e0129709. PMID: 26237219. PMCID: PMC4523180.
- **Coons JC,** Miller T, Simon MA, Ishizawar DC, Mathier MA. Oral treprostinil for the treatment of pulmonary arterial hypertension in patients transitioned from parenteral or inhaled prostacyclins: case series and treatment protocol. *Pulm Circ* 2016;6(1). DOI: 10.1086/685111.
- Du L, **Empey PE,** Ji J, Chao H, Kochanek PM, Bayliss H, Clark RS. Probenecid and N-Acetylcysteine Prevent Loss of Intracellular Glutathione and Inhibit Neuronal Death after Mechanical Stretch Injury In Vitro. *J Neurotrauma.* 2016 Mar 22. PMID: 26830358
- Dixon CE, Bramlett HM, Dietrich WD, Shear DA, Yan HQ, Deng-Bryant Y, Mondello S, Wang KK, Hayes RL, **Empey P,** Povlishock J, Tortella FC, Kochanek PM. Cyclosporine Treatment in Traumatic Brain Injury: Operation Brain Trauma Therapy. *Neurotrauma.* 2016 Mar 15;33(6):553-66. PMID: 26671075.

- **Poloyac SM.** Chapter 8: Drug and Fatty Acid Cytochrome P450 Metabolism In Critical Care. In: Xie W, ed. *Drug Metabolism in Diseases*. Philadelphia, PA: Elsevier. In press.
- Kochanek PM, Bramlett HM, Shear DA, Dixon CE, Mondello S, Dietrich WD, Hayes RL, Wang KK, **Poloyac SM**, **Empey PE**, Povlishock J, Mountney A, Browning M, Deng-Bryant Y, Yan HQ, Jackson TC, Catania M, Glushakova O, Richieri S, Tortella FC. Synthesis of Findings, Current Investigations, and Future Directions: Operation Brain Trauma Therapy. *J Neurotrauma*. 2015 Dec 16. PMID: 26671284.
- Shaik JS, **Poloyac SM**, Kochanek PM, Alexander H, Tudorascu DL, Clark RS, Manole MD. 20-Hydroxyeicosatetraenoic Acid Inhibition by HET0016 Offers Neuroprotection, Decreases Edema, and Increases Cortical Cerebral Blood Flow in a Pediatric Asphyxial Cardiac Arrest Model in Rats. *J Cereb Blood Flow Metab*. 2015 Jun 10. PMID: 26058691
- Donnelly MK, Crago EA, Conley YP, Balzer JR, Ren D, Ducruet AF, Kochanek PM, Sherwood PR, **Poloyac SM**. 20-HETE is associated with unfavorable outcomes in subarachnoid hemorrhage patients. *J Cerebral Blood Flow Metab* 2015; 35(9): 1515-22. PMID: 25920956
- Hadir G, **Falcione BA**, Nguyen MH. Diagnostic modalities for invasive mould infections among hematopoietic stem cell transplant and solid organ recipients: performance characteristics and practical roles in clinics *Journal of Fungi*. 2015; 1(2):252-276.
- **Hagos FT**, Daood MJ, Ocque AJ, Nolin TD, Bayir H, **Poloyac SM**, Kochanek PM, Clark RSB, **Empey PE**. Probenecid increases plasma and brain exposure of *N*-acetylcysteine through a mechanism involving inhibition of OAT1 and OAT3 transporters. *Xenobiotica*, 2016 Jun 9:1-8.
- Hedges A*, **Coons JC**, Saul M, Smith RE. Clinical effectiveness and safety outcomes associated with prothrombin complex concentrates. *J Thromb Thrombolysis* 2016;42:6-10.
- Jin H, Wang T, **Falcione BA**, Olsen KM, Chen K, Tang H, Hui J, Zhai S. Trough concentration of voriconazole and its relationship with efficacy and toxicity: a systematic review and meta-analysis. *J Antimicrob Chemother*. 2016; 71(7):1772-85.
- Margulies SS, Anderson G, Atif F, Badaut J, Clark RSB, **Empey PE**, Guseva M, Hoane M, Pauly J, Ragupathi R, Scheff S, Stein DG, Tang H, Hicks R. Combination Therapies for Traumatic Brain Injury: Retrospective Considerations. *1/1/*. 2016 Jan 1;33(1):101-12. PMID: 25970337.
- Mountney A, Bramlett HM, Dixon CE, Mondello S, Dietrich WD 3rd, Wang KK, Caudle KL, **Empey P**, Poloyac SM, Hayes RL, Povlishock J, Tortella FC, Kochanek PM, Shear DA. Simvastatin Treatment in Traumatic Brain Injury: Operation Brain Trauma Therapy. *J Neurotrauma*. 2016 Mar 15;33(6):567-80. PMID: 26541177.
- de Caestecker M, Humphreys BD, Liu KD, Fissell WH, Cerda J, **Nolin TD**, Askenazi D, Mour G, Harrell FE, Pullen N, Okusa M, Faubel S, for the Acute Kidney Injury Advisory Group of the American Society of Nephrology. Bridging translation by improving preclinical study design in AKI. *J Am Soc Nephrol* 2015;26(12):2905-16. PMID 26538634.
- Vijayan A, Faubel S, Askenazi DJ, Cerda J, Fissell WH, Heung M, Humphreys BD, Koyner JL, Liu KD, Mour G, **Nolin TD**, Bihorac A, for the Acute Kidney Injury Advisory Group of the

American Society of Nephrology. Clinical use of the urine biomarker [TIMP-2] × [IGFBP7] for acute kidney injury risk assessment. *Am J Kidney Dis*. 2016;68(1):19-28. PMID: 26948834.

- Rivosecchi RM, **Kane-Gill SL**, Svec S, Campbell S, **Smithburger PL**. Giving your patients M.O.R.E.: The implementation of a non-pharmacologic protocol to prevent intensive care delirium. *J Crit Care* 2015; 31:206-11.
- Romagnoli KM, Boyce RD, **Empey PE**, Adams S, Hochheiser H. Bringing clinical pharmacogenomics information to pharmacists: a qualitative study of information needs and resource requirements. *International Journal of Medical Informatics. Int J Med Inform*. 2016 Feb; 86:54-61. PMID: 26725696.
- **Smithburger PL**, Buckley MS, Lat I, Culver MA, Handler SM, Sokol S, **Kane-Gill SL**. A multicenter evaluation of off-label use and associated adverse drug reactions in adult medical intensive care units. *Crit Care Med* 2015; 43:1612-1621.
- Sutherland SM, Chawla LS, **Kane-Gill SL**, Hsu RK, Kramer AA, Goldstein SL, Kellum JA, Ronco C, Bagshaw SM for the 15th ADQI Consensus Group. Utilizing the electronic health record to predict acute kidney injury risk and outcomes: Workgroup statements from the 15th ADQI consensus conference. *Can J Kidney Health Dis* 2016;3:11
- Sorensen TD, Shapiro NL, **Benedict N**, Edwards KL, Chan A, Covey D, Daniels C, Hagemann T, Hemstreet B, Miller W, Musselman ME. Recommendations for Aligning PGY2 Pharmacy Residency Training and Pharmacy Specialist Board Certification. *Pharmacotherapy: The Journal of Human Pharmacology and Drug Therapy*. 2016 Apr 1.
- Viehman JA, Oleksiuk LM, Sheridan KR, Byers KE, He P, **Falcione BA**, Shields RK. Adverse Events Lead to Drug Discontinuation More Commonly among Patients Who Receive Nafcillin than among Those Who Receive Oxacillin. *Antimicrob Agents Chemother*. 2016;22;60(5):3090-5.
- Verlinden NV*, **Coons JC**. Disopyramide for hypertrophic cardiomyopathy: a pragmatic reappraisal of an old drug. *Pharmacotherapy* 2015;35(12):1164-72.
- Wang T, **Benedict N**, Olsen K, Luan R, Zhu X, Zhou R, Tang H, Peng Y. Effect of critical care pharmacist's intervention on medication errors: systematic review of observational studies. *Journal of Critical Care*. 2015,30(5):1101-1106.
- Willyerd F, **Empey PE**, Philbrick A, Ikonovic M, Puccio A, Kochanek P, Okonkwo D, Clark RSB. Expression of ATP-Binding Cassette Transporters B1 and C1 after Severe Traumatic Brain Injury in Humans. *J Neurotrauma*. 2016 Jan 15;33(2):226-31. PMID: 25891836.
- Wong A, **Benedict NJ**, Armahizer MJ, **Kane-Gill SL**. Evaluation of adjunctive ketamine to benzodiazepines for management of alcohol withdrawal syndrome. *Ann Pharmacother*. 2015;49:14-9.
- Wong A, **Benedict NJ**, Lohr BR, Pizon AF, and **Kane-Gill SL**. Management of benzodiazepine-resistant alcohol withdrawal across a healthcare system: Benzodiazepine dose-escalation with or without propofol. *Drug and alcohol dependence*. 2015,154:296-299

Grants

- Pittsburgh Health Care Data Alliance: Center for Commercial Applications of Healthcare Data at Pitt, Early Stage Research Award. “MEDivate”; 2015-2016. **Empey PE** (PI), **Coons JC** (Co-I)
- National Association of Chain Drug Stores. “Test2LearnTM: Community Pharmacists Pharmacogenomics Education Certificate Program” 2016-2021. **Empey PE** (PI). **Coons JC**. **Adams S**
- McCune Foundation. Development of pharmacogenomics. Role: Co-I; 2015-2017. **Empey PE**
- National Institutes of Health – R01 LM011838-01 (Boyce). Addressing gaps in clinically useful evidence on drug-drug interactions. Role: Co-I; 2014-2018. **Empey PE**
- Agency for Healthcare Research and Quality - R18HS02420-01. Transforming the Medication Regimen Review Process of High-Risk Drugs Using a Patient-Centered Telemedicine-Based Approach to Prevent Adverse Drug Events in the Nursing Home. Role: PI, **Kane-Gill SL**. 9/01/15-6/30/18
- National Institutes of Health R01 (Friedman, PI). Hormonal Regulation of NHERF1 in Bone. Role: Co-I; 2015-2020. **Nolin TD**.
- National Institutes of Health R21 (Stubbs, PI). Randomized, Controlled Pilot Study of Rifaximin Therapy in Chronic Kidney Disease. Role: Co-I; 2016-2018. **Nolin TD**
- National Institutes of Health. U19 AI068021-11 (Greenberger, PI). CORE F: Signature-Directed, Sequential Delivery of Radiation Mitigators Role: Co-I; **Poloyac SM**. 9/1/15 -8/31/20
- National Institutes of Health, *University of Pittsburgh Clinical and Translational Science Institute*. TL1 (Reis, PI) Role: Co-Director of Predoctoral Training. 07/01/2016 – 6/30/2021. **Poloyac SM**

Selected Invited Presentations

- Select topics in prevention and supportive care in critical care patients. ASHP Critical Care Pharmacy Preparatory Review Course: Core Therapeutic Modules Series (2015-16). **Benedict N**
- Sepsis for the critical care pharmacist. ASHP Critical Care Traineeship Program “Distance Training Webinar”; Pittsburgh, PA (2013-2017). **Benedict N**
- Presented Cardiology Practice and Research Network Focus Session lecture, entitled, “Bivalirudin versus Heparin During Percutaneous Coronary Intervention: Review of the Recent Literature” at the American College of Clinical Pharmacy Global Conference on Clinical Pharmacy in San Francisco, CA, USA, October 19, 2015. **Coons JC**
- Creating data-driven systems to personalize care through pharmacogenomics. Fondazione Ri.MED *Personalized Medicine* in Rome, Italy, October 2015. **Empey PE**

- Test2Learn™: Advancing pharmacogenomics education in the core PharmD curriculum through student personal genomic testing. American Association of Colleges of Pharmacy in National Harbor, MD. July 2015. **Empey PE**
- A Cross-Institutional Approach to Multi-Disciplinary Graduate Education and Personal Strengths Development for Team Science and Business Meeting. American Association of Colleges of Pharmacy in National Harbor, MD. July 2015. **Empey PE**
- Get Smart: Know When Antibiotics Work Collaborations, Pennsylvania Department of Health, Harrisburg, PA. April 2015 **Falcione BA**
- Striving for Early Detection of Drug Associated AKI. 45th SCCM Critical Care Congress; Orlando, FL: January 2016. **Kane-Gill SL**
- Decision Support - Preventing Drug Errors. Critical Care Canada Forum, Toronto, ON. **Kane-Gill SL**
- Opportunities for Improved Medication Safety in Patients with Decreased Kidney Function. Maine Medical Center, Department of Medicine, Medical Grand Rounds, Portland, ME, September 2015. **Nolin TD**.
- Drug Dose Adjustment of Non-Renally Eliminated Drugs in CKD Patients – What is the Evidence? Keynote Lecture at 14th NephroPharmacology Meeting, Heidelberg, Germany, October 2015. **Nolin TD**
- AACP Academic Leadership Fellows Program Debate; Tampa, FL. “Change Management is a Reactive Process of Managing Resistance During Change” February, 2016. **Poloyac SM**.
- AACP Academic Research Fellows Program. Invited Presentation; Bethesda, MD. “Leading a Research Center in Academic Pharmacy” November, 2015. **Poloyac SM**
- Simulation in Pharmacy Education: ACCP Teaching and Learning Academy-American College of Clinical Pharmacy, Phoenix, AZ, April 10, 2016. **Seybert AL**
- Simulation in Pharmacy Education: From Theory to Impact-University of Florida Department of Pharmacotherapy and Translational Research Seminar Series, Gainesville, FL, April 14, 2016. **Seybert AL**

UPMC Infectious Diseases and Antibiotic Management Program (AMP)

Faculty

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

Bonnie A. Falcione, PharmD, Associate Professor and AMP Clinical Pharmacist

Resident

Rachel Marini, PharmD, PGY2 Infectious Diseases Pharmacy Resident

Selected Publications

- Evaluation of the in vitro activity of ceftazidime-avibactam and ceftolozane-tazobactam against meropenem-resistant *Pseudomonas aeruginosa* isolates. Buehrle DJ, Shields RK, Chen L, Hao B, Press EG, Alkrouk A, **Potoski BA**, Kreiswirth BN, Clancy CJ, Nguyen MH. *Antimicrob Agents Chemother.* 2016; 22:3227-31.
- Dosing practices of intravenous acyclovir for herpes encephalitis in obesity: results of a pharmacist survey. Wong A, Pickering AJ, **Potoski BA**. *J Pharm Pract.* 2016 Apr 10 [Epub ahead of print].
- Adverse events lead to drug discontinuation more commonly among patients who receive nafcillin than among those who receive oxacillin. Viehman JA, Olesiuk LM, Sheridan KR, Byers KE, He P, **Falcione BA**, Shields RK. *Antimicrob Agents Chemother.* 2016;60:3090-5.
- Haidar G, **Falcione BA**, Nguyen MH. Diagnostic modalities for invasive mould infections among hematopoietic stem cell transplant and solid organ recipients: performance characteristics and practical roles in clinics. *Journal of Fungi.* 2015; 1(2):252-276.

Selected Presentations

- **Potoski BA**, Shields RK, Hao B, Haidar G, Doi Y, Clancy CJ, Nguyen MH. Clinical outcomes of patients with infections due to carbapenem-resistant Enterobacteriaceae (CRE) treated with ceftazidime-avibactam (C/A). ASM Microbe, Boston, MA; June 2016.
- Haidar G, Clancy CJ, Shields RK, Doi Y, **Potoski BA**, Nguyen MH. Ceftolozane-tazobactam (C/T) is effective against most multidrug-resistant (MDR) *P. aeruginosa* (PA) infections, but resistance may emerge on therapy. ASM Microbe, Boston, MA; June 2016.
- **Marini RV**, Nguyen MH, Press EG, **Potoski B**, Clancy CJ, Shields RK. In vitro evaluation of oritavancin against vancomycin-resistant Enterococci (VRE). UPMC Pharmacy Residency Research Day. June 2016.
- Rivosecchi RM, Clancy CNJ, Shields RK, Clark L, Humar A, **Ensor CR**, **Falcione BA**, Venkataramanan R, Nguyen M-H. Isavuconazole Prophylaxis (Isa Px) Among Solid Organ Transplant (Sot) Patients (Pts): Preliminary Impressions On Dosing And Interactions With Tacrolimus. Oral presentation at ASM Microbe 2016, Boston, MA, June 2016.
- **Falcione BA**. Vaccines for Post Emergent Splenectomy – A New Protocol and Electronic Health Record PowerPlan to Address Inpatient Needs and Prevent Gaps in Continuity of Care, Department of Trauma Surgery, University of Pittsburgh Medical Center, Presbyterian, Pittsburgh, PA; November, 2015.

The UPMC Infectious Diseases and Antibiotic Management has continued to build on our previously established momentum in improving the outcomes in patients with highly drug-resistant pathogens, specifically carbapenem-resistant Enterobacteriaceae (CRE). Previously, in 2014, our group showed that by using clinical decision support software to identify, in real-time, those patients infected with CRE, patient outcomes could be improved by rapid provision of recommendations by our service to the patient's primary team. We subsequently built on that model in 2016 by using the existing intervention framework to incorporate a newly available and highly active antibiotic (ceftazidime/avibactam) to the recommendations provided by our service. We subsequently showed that this therapy and framework enhanced patient outcomes compared to previously identified best available therapy.

Additionally, Dr. Marini, a pharmacy resident at the time, collaborated with Drs. Ryan Shields and Hong Nguyen to investigate the in-vitro activity of several antibiotics against a common multiply-resistant bacteria, Vancomycin-Resistant Enterococcus. Her findings have allowed our team to liaise directly with the microbiology laboratory leadership to identify needed susceptibility testing methodology for this specific pathogen. Although our team and the microbiology laboratory are still in the process of working towards this goal, once established it will allow providers the ability to choose best available therapy at the time of initial susceptibility testing, thereby decreasing the need for requesting additional susceptibilities, and minimizing the time to effective therapy.

UPMC System Formulary Management and Drug Use Policy

School of Pharmacy faculty members led the development of medication formulary management and drug use policy/protocol work to create evidence-based guidelines that promote safe and cost-effective use of medications for inpatients at UPMC. Continuing to build on the rigorous foundation of the nationally recognized UPMC formulary management work, 20 hospitals of the UPMC are supported by the members of the UPMC System Pharmacy Service Line infrastructure. Faculty and clinical pharmacy specialists across UPMC sites are critical in designing and implementing strategies to incorporate guidelines into daily practice. Pharmacists at UPMC, including clinical faculty, unit-based clinical pharmacists, operations-based pharmacists, and postgraduate year (PGY) 1 and PGY2 hospital-based UPMC residents, medical staff, nursing and other clinical staff use these guidelines in the interdisciplinary care of patients throughout the UPMC System.

Faculty

Susan J. Skledar, MPH, Professor

Colleen M. Culley, PharmD, Associate Professor

Major Accomplishments

During FY16, School of Pharmacy faculty members achieved the following:

In the past year, developed UPMC system-wide medication use guidelines, protocols, and policies, including the following:

- **158** formulary guidelines/reviews for medication use across UPMC hospitals. **Skledar SJ, Culley CM**, other faculty, clinical pharmacists, and PGY1/PGY2 residents mentored by the faculty.
- **2** medication therapeutic class/ safety interchanges to ensure medication safety and promote cost-effectiveness for UPMC patients. **Culley CM**
- **10** reference tools were created and/or maintained, including ‘Do Not Tube’ list, ‘No-buy’ list, extravasation table, therapeutic interchange chart, automatic intravenous to oral switch medication chart, automatic renal dosing chart, standard infusion list, urgent bleeding reversal algorithm, non-urgent bleeding reversal algorithm, and ketamine computerized provider order entry (CPOE) order sets for palliative care **Skledar SJ, Culley CM**
- Led the maintenance of the 14 System Pharmacy policies and created 4 new UPMC-wide hospital policies, which are guidance documents for pharmacy institutional practice and meet standards of internal and external regulatory and accreditation bodies. New policies included Continued Use of Intrathecal Pain Management Pumps upon Admission, Automated Medication Dispensing

Systems, Pharmacist Review and Remote Verification of Physician Orders, Pharmaceutical Product Specifications and Purchasing. **Skledar SJ**

- Mentored 6 Carnegie Mellon University Heinz College graduate students in data analytics and health policy on a project entitled, “Comparative effectiveness of prophylactic anticoagulation modalities in orthopedic joint replacement surgery: an observational, retrospective analysis.” Post-surgical thrombotic and bleeding occurrences were quantified and evaluated from an economic perspective to recommend the safest preventative anticoagulation regimens at UPMC. **Skledar SJ**
- Invited member of the Pharmacy Quality Alliance (PQA) National Quality Measures Update Panel to help ensure PQA-endorsed measures align with current evidence and remain viable in the accountable care and health care marketplace. **Skledar SJ**
- Educated pharmacists preparing to obtain their national critical care board certified pharmacotherapy specialist (BCPS) certification in the topic area of Pharmacy Practice Management at a two-day ASHP-sponsored review course. **Skledar SJ**
- Evaluation of adverse event detection system developed as part of an AHRQ-sponsored clinical trial in the UPMC-owned skilled nursing facilities using TheraDoc®, clinical surveillance system. **Culley CM** (UPMC Corporate Pharmacy Supertrainer)
- Invited member of ASHP National Health-System Pharmacy Award Selection Panel for 2015-16 (and 2016-17) **Skledar SJ**
- Invited member to AACP Task Force on Bridging to Assessment in Experiential Education, 2016 (current) **Skledar SJ**
- Hosted 4 web-based teleconference site visits to discuss health system formulary management practices: Salt Lake Veterans Affairs Hospital; University Hospitals Health System; Relypsa Medical Affairs; Sutter Health **Skledar SJ**

Selected Publications (*student pharmacist)

- Zavilla CM*, **Skledar SJ**. Spring Isn't the Only Time of Year for Allergies. American Society of Health-System Pharmacists. SafeMedication.com: Your Trusted Source of Drug Information. Available at: <http://www.safemedication.com/seasonal-allergies>. Published 2015 October.
- **Skledar SJ**, Lachell CM*, Chelly JEA. Pharmacodynamics and clinical efficacy of fentanyl iontophoretic transdermal system for postoperative pain in hospitalized patients. *Exp Opin Drug Metab Tox* 2015 Nov. DOI:10.1517/17425255.2015.1112788.
- Zavilla CM*, **Skledar SJ**, Lang MB, Gross C. Implementation of a new dantrolene formulation for care of patients with malignant hyperthermia across a 15-facility health care system. *Am J Health-Syst Pharm* 2016; 73: 463-7.
- **Skledar SJ**. A fix for hospitals' safety gap with off-label drugs [interview]. *Pharmacy Practice News*. Available at: <http://www.pharmacypracticenews.com/Policy/Article/04-16/A-Fix-for-Hospitals'-Safety-Gap-With-Off-Label-Drugs/35882>. Published 2016 April.

- **Pruskowski J**, Arnold R, **Skledar SJ**. Development of a health-system level palliative care clinical pharmacist position. *Am J Health-Syst Pharm* 2016. (accepted for publication Mar 2016)
- **Culley CM**, Perera S, Marcum ZA, Kane-Gill SL, Handler SM. Using a clinical surveillance system to detect drug-associated hypoglycemia in nursing home residents. *J Am Ger Soc*. 2015;63(10):2125-9. [Epub ahead of print]
- **Culley CM**, DiBridge JN*, Wilson GL Jr. Off-label use of agents for management of serious or life-threatening angiotensin converting enzyme inhibitor-induced angioedema. *Ann Pharmacother*. 2016;50(1):47-59. [Epub ahead of print]
- **Pater KS**, **Culley CM**. Carded for cold medicine. *American Association of Pharmaceutical Scientists (AAPS) Blog*. February 9, 2016 <http://aapsblog.aaps.org/2016/02/09/carded-for-cold-medicine/>

Selected Invited Presentations

- **Skledar SJ**. “Special Topics Elective Course in Healthcare Quality and Medication Use Policy.” Roundtable presentation. American Association of Colleges of Pharmacy (AACCP) & Association of Faculties of Pharmacy of Canada (AFPC) Annual Meeting. Baltimore, MD. July 13, 2015.
- **Skledar SJ**. “Staying on-track with off-label use of medications.” ASHP 50th Midyear Clinical Meeting, New Orleans LA. December 7, 2015.
- **Skledar SJ**. “Stand Out from the Crowd: Branding Yourself.” Pharmacy Student Colloquium Series for P2 Class. University of Pittsburgh School of Pharmacy, Pittsburgh, PA. February 4, 2016.
- **Skledar SJ**. “A method for teaching continuous quality improvement methodology to student pharmacists through a practical application project.” Podium platform presentation. Pharmacy Quality Alliance Annual Meeting. Arlington VA. May 18, 2016.
- **Skledar SJ**. “Pharmacy Practice Management: Part 1.” ASHP 2016 Critical Care Pharmacy Specialty Certification Review Course, Baltimore, MD. ASHP Summer Meeting 2016. June 12, 2016.
- **Skledar SJ**. “Pharmacy Practice Management: Part 2.” ASHP 2016 Critical Care Pharmacy Specialty Certification Review Course, Baltimore, MD. ASHP Summer Meeting 2016. June 12, 2016.

Selected Poster Presentations (*student pharmacist)

- Geronian J*, **Skledar SJ**. Defining criteria for specialty medications in the inpatient setting. AMCP 2015 Nexus Meeting, Orlando FLA, October 27, 2015.
- Zavilla C*, **Skledar SJ**. Implementation of a new dantrolene formulation for care of patients with malignant hyperthermia across a 15-facility health system. ASHP 50th Midyear Clinical Meeting. New Orleans, LA. December 7, 2015.
- He, H*, **Skledar SJ**. Measuring the impact of computerized order entry rules on formulary compliance, prescriber action, and economics. ASHP 50th Midyear Clinical Meeting, New

Orleans LA. December 7, 2015; and Pennsylvania Pharmacists' Association Mid-Year Meeting, January 2016.

- Saver J*, **Skledar SJ**, **Thorpe J**. Use of quality measures to quantify opioid overuse and mortality. Poster presentation. Pharmacy Quality Alliance Annual Meeting. Arlington VA. May 18, 2016 (~PQA poster presenter winner May 2016).
- Garcia EA*, **Culley CM**, Snell K, Handler SM. Antimicrobial stewardship program baseline alert assessment for nursing homes (NHs) using a clinical surveillance system. University of Pittsburgh School of Pharmacy. Rho Chi "Posters, Professors, and Progress" Symposium. Pittsburgh, PA; 2015 November 4.
- Garcia EA*, **Culley CM**, Handler SM. Database management using the TheraDoc® Clinical Surveillance Software System. University of Pittsburgh School of Pharmacy. Rho Chi "Student Research and Poster Presentation" Session. Pittsburgh, PA; 2016 February 24.
- Garcia EA*, **Culley CM**, Snell K, Handler SM, Aspinall MB. Antimicrobial stewardship program baseline alert assessment for nursing homes (NHs) using a clinical surveillance system. Poster presented at 2016 Research Day sponsored by the Aging Institute of UPMC Senior Services and the University of Pittsburgh. Pittsburgh, PA; 2016 Mar 31. [Pharmacy-24]

Geriatrics (Benedum and Shadyside Senior Care Institute) Program

The mission of care is:

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

Faculty

Christine M. Ruby-Scelsi, PharmD, Assistant Professor

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

Pharmacy Fellow

Jennifer Greene Naples, PharmD

Pharmacy Resident

Kristin Hart, PharmD

Major Accomplishments

During FY16, School of Pharmacy faculty members achieved the following:

- Recruited the third resident for our fully accredited PGY2 Geriatric Pharmacy Residency program. This program is **one of twelve** post-graduate residency programs nationally in geriatric pharmacy practice and is accredited by the American Society of Health System Pharmacy (ASHP). **Ruby CM**.
- Created **one of two** geriatric pharmacy fellowship programs nationally; successfully graduating the third fellow for this T-32 funded program. **Hanlon JT** and **Ruby CM**.

- The Geriatric clinics are models for interprofessional geriatric pharmacy practice. Both have received Level 3 Patient Centered Medical Home (PCMH) status by the National Committee for Quality Assurance (NCQA). The pharmacists practice in face-to-face scheduled office encounters for acute and chronic conditions and telephonic care for transitions-of-care encounters. **Ruby CM.**
- Led a **pharmacist driven transitions- of- care program focusing on Senior Care patients discharged from UPMC affiliated nursing homes** (such as Heritage, Charles Morris, Canterbury) and several non-UPMC facilities (such as Asbury Heights and Health South). This program includes medication reconciliation, comprehensive medication review, sharing of discharge information across sites, and confirmation of home care services. **Ruby CM.**
- Added new sites to the Senior Care Transitions of Care program facilities and provided at least 150 patient transition-of-care encounters. **Ruby CM.**
- Participated as a pharmacy faculty member for the HRSA-funded Geriatric Education Center at the University of Pittsburgh. **Ruby CM.**
- Initiated two quality improvement projects relating to the transition-of -care protocols at Senior Care. **Ruby CM.**
- Organized and led three pharmacist provided immunization clinics at Senior Care. **Ruby CM.**
- Developed two student Special Topics summer elective courses focusing on transitions-of -care. **Ruby CM.**
- Trained numerous pharmacy learners (3 PGY2, 4 PGY1, 16 APPE, 8 IPPE and 6 Special Topic students) and medical residents over the last 2 years. **Ruby CM.**
- Mentored pharmacy students who created several medication education materials for geriatric patients and in services for house staff and nurses. **Ruby CM.**

Awards

- Inducted as a life-time fellow of the American Society of Consultant Pharmacists. **Ruby CM.**
- Nominee for PA State Chapter Secretary of the American Society of Consultant Pharmacists, (2year term) **Ruby, CM.**

Selected Presentations- Invited Speaker

- Concordance Among Anticholinergic Burden Scales. Won best Epidemiology paper at the American Geriatrics Society Annual Meeting, May 2015. **Naples JG and Hanlon JT.**
- Inappropriate Medications in the Older Adult. An invited speaker for the Advances in Geriatric Health Symposium sponsored by the Aging Institute; Robert Morris University; Corapolis, PA; May 20, 2015. **Ruby, CM.**
- Interprofessional Case Discussion. An invited speaker for the Interprofessional Forum, University of Pittsburgh Schools of the Health Sciences, Pittsburgh, PA; October 23, 2015. **Ruby, CM.**

Selected Publications

- Gavini M, Gennari AS, **Ruby CM**. Perceptions of care among high-risk geriatric patients, families or caregivers in a patient-centered medical home. *Consult Pharm* 2015;29:153-62.
- **Naples, JG, Marcum ZA**, Perera S, Gray SL, Newman AB, Simonsick EM, Yaffe K, Shorr RI, and **Hanlon JT**. Concordance of anticholinergic burden scales. *J Amer Geriatr Soc* (accepted).
- **Naples JG, HanlonJT, Ruby-Scelsi CM**, Greenspan SL. In: Huang AR (editor). “Medication-related falls in older people. Causative factors and management strategies. 1st ed. New York, United States; Springer. (in press).
- Schonder KS, Hall DL, Farrah RM, **Ruby-Scelsi CM**, Benedict NJ, Thorpe CT, Kane-Gill SL, Coley KC, Meyer SM. Assessing Development of Professional Competence Across the Curriculum through Capstone Cases. Presented at the American Association of Colleges of Pharmacy Annual Meeting, National Harbor, MD; July, 2015.

UPMC Oncology Magee-Womens Hospital

Faculty

Thao K. Huynh, PharmD, Assistant Professor

Major Accomplishments

- Collaborated with the gynecology oncology team to provide comprehensive patient care services for > 1,000 patients
- Initiated a chemotherapy workgroup to standardize orders utilizing Via Oncology and EPIC
- Established hospital wide pharmacist enoxaparin dosing protocol for post-operative gynecology oncology patients
- Elected and served as ASHP House of Delegate Representative (alternate) for Pennsylvania
- Collaborated with Health Volunteers Overseas and American Society for Clinical Oncology to develop clinical oncology pharmacy services in Vietnam at Hue University of Medicine and Pharmacy

Selected Presentations

- Review of Clinical Evidence for Biosimilars in Oncology Practice. Presented at Pennsylvania Society of Health-System Pharmacy Annual Assembly; Lancaster, PA. October 2015.
- Chemotherapy Safety and Handling. Presented at Hue Central Hospital; Hue, Vietnam. June 2016.
- Pharmacy Education in the United States and Path to Clinical Oncology Pharmacist. Presented at Hue University of Medicine and Pharmacy; Hue, Vietnam. June 2016.
- Smoking Cessation in Head and Neck Cancer. Presented at Hue University of Medicine and Pharmacy; Hue, Vietnam. June 2016.

Pittsburgh Poison Center (PPC)

Faculty

Amanda S. Korenoski, PharmD, MHA
Assistant Professor, University of Pittsburgh School of Pharmacy

Major Accomplishments

In FY16, faculty and staff at the PPC:

- Responded to nearly 90,000 poison exposure and poison information calls, 47.8% of which were for children under the age of 6.
- Distributed over 2 million Mr. Yuk® stickers, as well as other poison prevention materials.
- Attended dozens of community events, educating the public on poison prevention
- Presented to over 1,000 physicians, pharmacists, medical and pharmacy residents/fellows, medical/pharmacy/nursing students on toxicology-related topics
- Successfully lobbied state government to grant \$350,000 to continue to provide poison information to residents and health care professionals in over 44 Pennsylvania counties
- Monitored emerging health dangers and provided real-time alerts to all emergency departments in western and central Pennsylvania
- Launched two social media channels to expand public outreach. Combined, over 800 community members “follow” the Pittsburgh Poison Center.
- Developed a caller satisfaction survey to assess (1) quality of customer service, (2) public awareness of poison center resources, and (3) cost savings by utilizing poison center services. To date, data has been collected from over 500 poison center calls.
- Partnered with the FBI Pittsburgh Division’s Heroin Outreach and Prevention Education committee to educate the community on the epidemic and bystander administration of naloxone for suspected opioid overdoses
- Continued partnerships with local, regional, and state health departments to provide information and expertise on poisoning exposures
- Partnered with Safe Kids Allegheny County to further incorporate poison prevention and home safety in their injury prevention campaigns

Clinical Pharmacogenomics Group

In 2015, the School of Pharmacy achieved a significant milestone with launching our pharmacogenomics initiative, “Pharmacogenomics-guided Care to Improve the Safety and Effectiveness of medications (Rx)” or “PreCISE-Rx”. The goal of PreCISE-Rx is to develop best practices in pharmacogenomics implementation, research, and education to achieve precision medicine. Our hypothesis is that the

prediction of individual patient phenotypes will improve medication outcomes by integrating genomics and clinical data. Specifically, that individualizing antiplatelet therapy in patients who undergo percutaneous coronary intervention (PCI) at UPMC based on a pharmacogenomics test will reduce negative clinical outcomes such as death, recurrent heart attack, re-hospitalization, and/or stent thrombosis in this population.

Faculty

Philip E. Empey, PharmD, PhD, Assistant Professor
James C. Coons, PharmD, Associate Professor
James M. Stevenson, PharmD, MS, Assistant Professor
Amy L. Seybert, PharmD, Associate Professor

Graduate Students

Solomon M. Adams, PharmD

Major Accomplishments

- Launching of clinical pharmacogenomics service in Dec 2015 which has provided CYP2C19 standard-of-care genotyping services to more than 500 patients presenting to UPMC Presbyterian Hospital through August 2016.
- Providing pharmacogenomics-based prescribing recommendations (EHR clinical notes) for every genotyped patient through a newly-created pharmacist-led Pharmacogenomics Service which led to treatment modifications when required in approximately 30% of patients carrying a loss-of-function variants.
- Built educational resources necessary to train clinicians and partnered with a leading pharmacy organization (National Association of Chain Drug Stores) to deploy a pharmacogenomics certificate program (Test2Learn) nationally.
- Modifying informatics frameworks and electronic health record systems (Powerchart and EPIC) for genomics-guided medication clinical decision support and alerting.
- Developing on-site clinical pharmacogenomics testing in a CLIA-certified environment.
- Sharing data with other innovative health systems with the NIH Implementing Genomics in Practice (IGNITE) research network.

Selected Presentations

- Test2Learn: Learning to apply pharmacogenomics in pharmacy practice. Pitt Pharmacy Gala. Pittsburgh, PA; 2015 Oct 24. **Adams SM, Stevenson JM, Coons JC, Berenbrok LB, Empey PE.**
- Implementing Pharmacogenomics to Achieve Precision Medicine. UPMC Shadyside Internal Medicine Grand Rounds. Pittsburgh, PA; 2016 Jan 21. **Adams SM, Stevenson JM, Coons JC, Empey PE.**
- Test2Learn – applications of concepts from weeks 1-6” Jewish Health Foundation Big Data Short Course. Pittsburgh, PA (5/5/2016). **Adams SM, Stevenson JM, Coons JC, Berenbrok LB, Empey PE.**

- Prospective Clinical Implementation of *CYP2C19*-Genotype Guided Antiplatelet Therapy After PCI: a Multi-Site Investigation of MACE Outcomes in a Real-World Setting. American Heart Association Scientific Sessions. New Orleans, LA; 2016 Nov 15. Cavallari LH, Denny JC, Lee CR, Beitelshes AL, Duarte JD, Kimmel SE, Voora D, McDonough CW, Gong Y, Wei W, Pratt VM, Chumnumwat S, **Coons JC**, Cooper-DeHoff RM, Dillon C, Hamadeh IS, Hines L, Howell LA, Jeng LJ, Lee YM, Skaar TC, Sriramoju VB, **Stevenson JM**, Vesely MR, Wake D, **Empey PE**, Kreutz RP, Stouffer GA, Wilke RA, Limdi NA, Roden DM, Shuldiner AR, Johnson JA, Peterson JF.

Press

- UPMC using genetic testing as potential guide on medication. Published in: The Pittsburgh Post-Gazette. February 10, 2016. <http://www.post-gazette.com/business/healthcare-business/2016/02/10/UPMC-using-genetic-testing-as-potential-guide-on-medication/stories/201602100078>
- UPMC to use genetic tests in heart patient regimen. Published in: The Pittsburgh Tribune. February 10, 2016. <http://triblive.com/news/healthnews/9945897-74/upmc-patients-genetic?showmobile=false>

Grants

- National Association of Chain Drug Stores. Test2Learn: Community Pharmacists Pharmacogenomics Education Certificate Program. \$124,856 Direct. This award supports the creation and delivery of a hands-on pharmacogenomics training program. **Adams SM, Stevenson JM, Coons JC, Berenbrok LB, Empey PE.**

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 FY16

- **\$23.5 million:** The total School of Pharmacy expenditures in FY16 from all sources.
- **\$24.05 million:** The market value of the School's endowment at the end of FY16.
- **\$2,813,063:** Gifts in FY16; **\$446,377** from annual gifts.
- The School of Pharmacy has an allocation of and/or leases **85,042 SF** of space in **five (5) locations** in Oakland and the East End.
- **\$276 per SF:** Efficiency measured as expenditures divided by total number of square feet occupied.
- In FY16, the School of Pharmacy had **80 full-time faculty members** who received **19** awards for their accomplishments, **8** of which are national or regional awards.

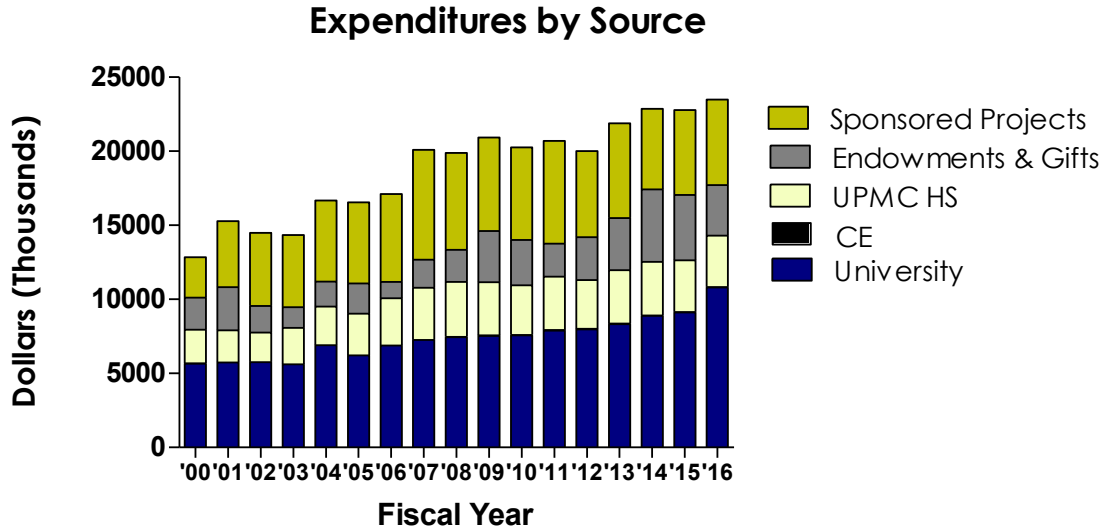
Of our **80** faculty members,

- **15 (18.8%)** have been elected to fellowship in one or more organizations.
- **23 (28.8%)** are board certified.
- **33 (41%)** are board certified, fellows, or both.
- **60:** The number of staff, of whom 31 are administrative and 29 are research
- Number of living alumni: **5,104**
- 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.
 - **#1** among all University schools and programs in alumni engagement.
- **27.43 percent** of the alumni were engaged with the School of Pharmacy and/or University in some way.
- **7** major print communications were each mailed to **6,100** stakeholders and **10** others to a more limited distribution list.
- **6,782** users visited the School's Web site monthly (average of 12 months).

FINANCIAL RESOURCES

Budget

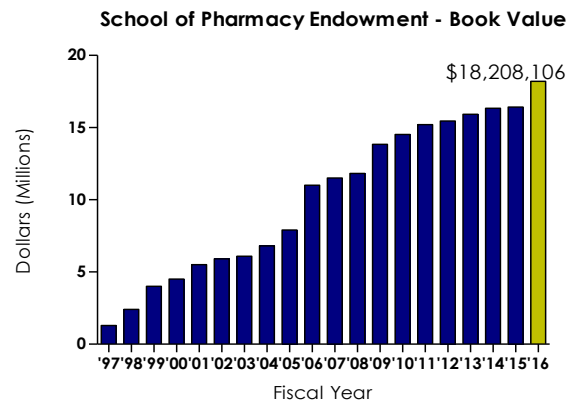
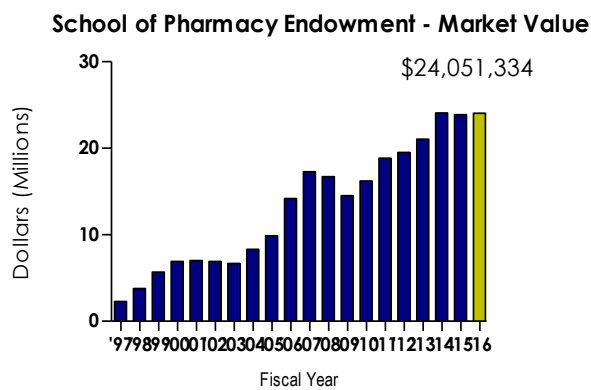
Sources of funding for the School of Pharmacy include allocation from the University of Pittsburgh, UPMC, continuing education and auxiliary accounts, gifts and endowments, and sponsored project awards. The graph below represents financial expenditures for fiscal years '00 through '16.



The School of Pharmacy’s expenditures in FY16 totaled \$23,485,181. Sponsored projects accounted for 25% of the expenses in FY16 and 34% in FY06. Together, the University (46%), sponsored project awards (25%), and UPMC (15%) accounted for over 80% of the School’s funding in FY16.

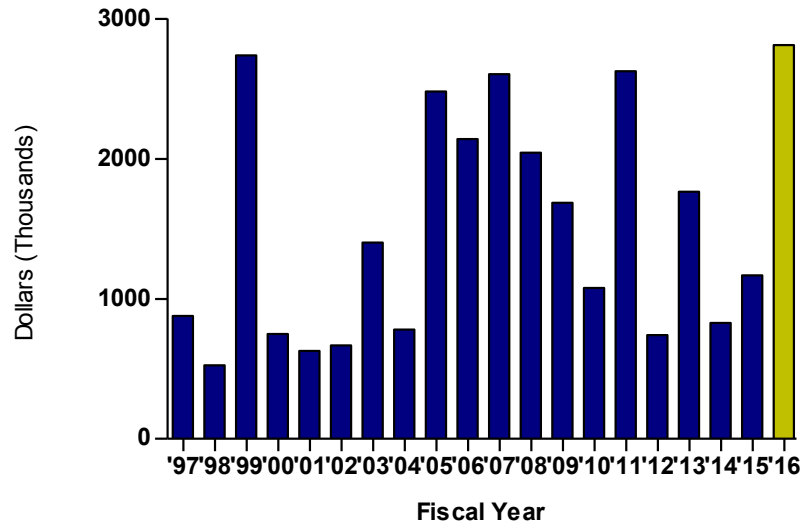
Institutional Advancement

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



In FY16, the School of Pharmacy received charitable gifts, pledges, and grants totaling \$2,813,063 from a total of 693 individuals, foundations, corporations, and other organizations. Of the total, \$122,936 was from corporations and organizations and was primarily designated to benefit technological renovations and research.

Total Gifts & Pledges by Year

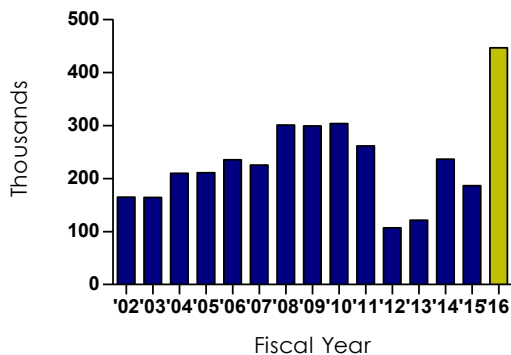


FY16 Giving to the School of Pharmacy by Source

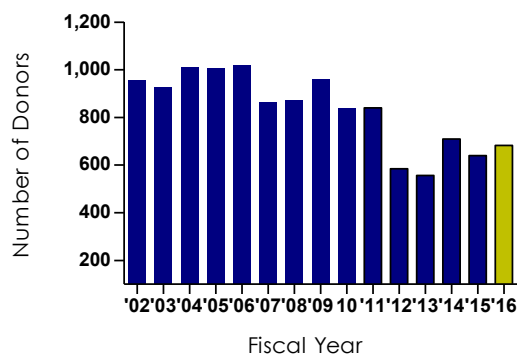
	Alumni	Foundations	Corporations	Organizations	Friends
Amount	\$2,461,005	\$48,000	\$116,366	\$6,570	\$181,122
Percentage	87.48%	1.71%	4.14%	.23%	6.44%

An increase in both total gifts and pledges from the previous year led to an increase in total annual gifts (\$446,377) and in annual donors (683 donors) as demonstrated in the graphs below.

Annual Gift Amount



Annual Donors



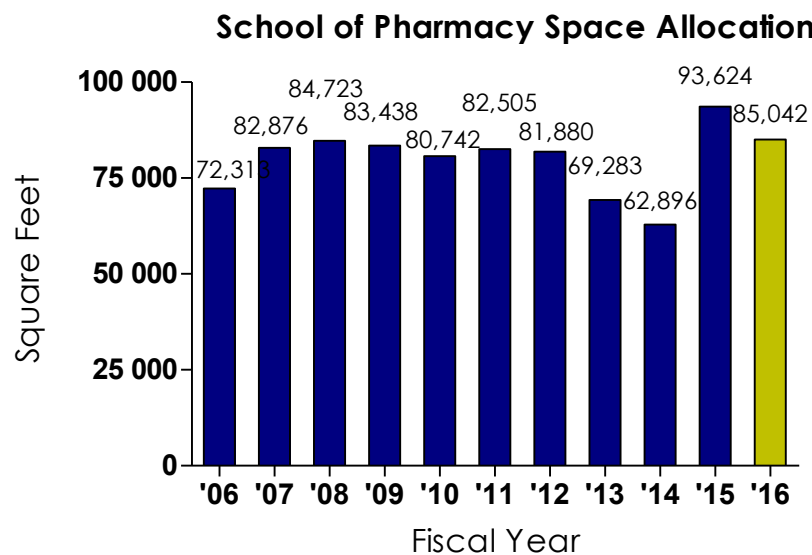
PHYSICAL FACILITIES

At the close of FY16, the School of Pharmacy occupied a total 85,042 SF, including:

- 57,625 SF in Salk Hall*
- 22,852 SF in Salk Pavilion*
- 2,283 SF Commons in Salk Pavilion*
- 916 SF in BST III*
- 1,366 SF (leased) The Offices at Baum

*University space

The graph shows a decrease from the previous year due to ending a lease for one group.



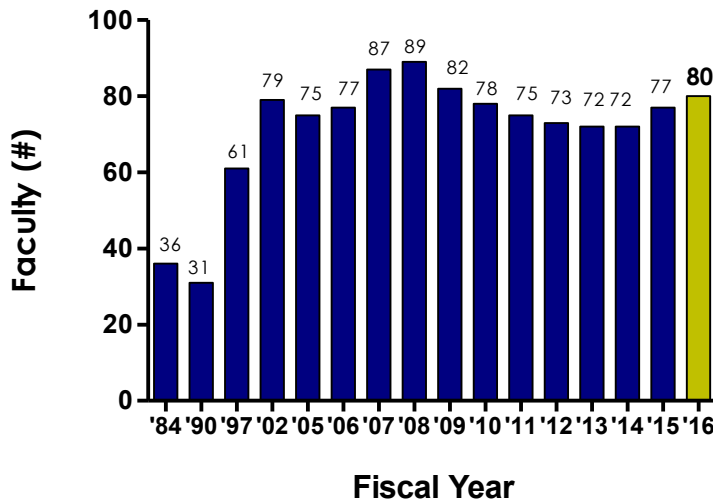
THE RESOURCE OF PEOPLE

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

Faculty

Eighty full-time and eight 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.

Full-Time Faculty Members



In the Department of Pharmaceutical Sciences:

- Christian Fernandez, PhD was recruited from St. Jude Children’s Research Hospital.
- Lisa C. Rohan, PhD was promoted to professor.

In the Department of Pharmacy and Therapeutics:

- Lorin Grieve, PharmD joined the faculty.
- Bonnie Falcione, PharmD was promoted to associate professor.
- Tom Nolin, PharmD, PhD was promoted to associate professor and awarded tenure.
- Janice L. Pringle, PhD and Susan J. Skledar, RPh, MPH were promoted to professor.

Full-Time Faculty Rank by Department of Primary Appointment*

Faculty Rank	Pharmaceutical Sciences	Pharmacy and Therapeutics	Total for School of Pharmacy
Professor	15	4	19
Associate Professor	2	18	20
Assistant Professor	8	19	27
Instructor	0	1	1
Research Professor	0	0	0
Research Associate Professor	1	0	1
Research Assistant Professor	4	0	4
Visiting Assistant Professor	0	1	1
All Faculty	30	43	73

*Part-time Faculty (numbers not in table) include:

- Department of Pharmaceutical Sciences: 4
- Department of Pharmacy and Therapeutics: 4

In FY16, School of Pharmacy faculty members earned a total of 19 major awards. Details of the awards are in the table. The categories of awards/honors are research (4), education (9), patient care (4), and other (2).

FY16: Faculty Awards, Honors, and Recognitions

Faculty Member	Award	Organization
Neal J. Benedict	Innovation in Education Award	University of Pittsburgh
	Chancellor's Distinguished Teaching Award	University of Pittsburgh
James Coons	Innovation in Teaching Award	University of Pittsburgh Rho Chi Society
Amy Donihi	Richard L. Simmons, MD, Speak up for Patients Award	University of Pittsburgh Medical Center (UPMC)
Scott Drab	Rho Chi Outstanding Scholarly Contribution Award	University of Pittsburgh Rho Chi Society
	Cohen Teacher of the Year Award	University of Pittsburgh School of Pharmacy
Christopher Ensor	Innovation in Teaching Award	University of Pittsburgh Rho Chi Society
Robert B. Gibbs	Graduate Faculty of the Year	University of Pittsburgh School of Pharmacy
Deanne Hall	APhA Immunization Award Individual Effort-Honorable Mention	American Pharmacists Association (APhA)
Donna Huryn	Philadelphia ACS Section Award 2015	American Chemical Society, Philadelphia
Lauren Jonkman	Chancellor's Distinguished Public Service Award	University of Pittsburgh
Susan Meyer	Faculty Member of the Year	University of Pittsburgh School of Pharmacy APhA-ASP Chapter
Shilpa Sant	Rising Star Early Career Faculty Award	Cellular and Molecular Bioengineering, Biomedical Engineering Society
Susan J. Skledar	Faculty Preceptor of the Year, 2016	University of Pittsburgh School of Pharmacy
Pamela L. Smithburger	Lambda Kappa Sigma National Advisor Award	Lambda Kappa Sigma
Melissa Somma McGivney	Script Your Future	American Association of Colleges of Pharmacy and National Consumers League
Raman Venkataramanan	Mentor Award	American Society of Transplantation
Da Yang	Career Development Award	RPCI-UPCI Ovarian Cancer SPORE
Michael A. Zemaitis	Cardinal Health Generation Rx Award	Pennsylvania Pharmacists Association (PPA)

Fellowships in Organizations and Board Certification

Election to fellowship and board certification are two characteristics of faculty members who have distinguished themselves. Of the 80 faculty members, 16 (20.0%) have been elected to fellowship in one or more organization, 23 (28.8%) are board certified, and 36 (45%) 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.

FY16: 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
Sandra Kane-Gill	FCCM	American College of Critical Care Medicine	Pharmacy and Therapeutics
	FCCP	American College of Clinical Pharmacy	
Patricia Kroboth	FCCP	American College of Clinical Pharmacy	Pharmaceutical Sciences
	FAAPS	American Association of Pharmaceutical Scientists	
Melissa Somma McGivney	FCCP	American College of Clinical Pharmacy	Pharmacy and Therapeutics
	FAPhA	American Pharmacists Association	
Thomas Nolin	FCCP	American College of Clinical Pharmacy	Pharmacy and Therapeutics
	FCP	American College of Clinical Pharmacology	Pharmacy and Therapeutics
	FASN	American Society of Nephrology	Pharmacy and Therapeutics
Samuel M. Poloyac	FCCM	American College of Critical Care Medicine	Pharmaceutical Sciences
	FAACP	American Association of Colleges of Pharmacy	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 Society	Pharmaceutical Sciences
	FAPA	American Psychopathological Association	
Raman Venkataramanan	FACCP	American College of Clinical Pharmacology	Pharmaceutical Sciences
	FAAPS	American Association of Pharmaceutical Scientists	

FY16: 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
	BCACP	Ambulatory Care Pharmacy	
Deanne Hall	CDE	Diabetes Educator	Pharmacy and Therapeutics
	BCACP	Ambulatory Care Pharmacy	
Thao Huynh	BCOP	Oncology Pharmacy	Pharmacy and Therapeutics
Heather Johnson	BCPS	Pharmacotherapy	Pharmacy and Therapeutics
Lauren Jonkman	BCPS	Pharmacotherapy	Pharmacy and Therapeutics
Karen Pater	BCPS	Pharmacotherapy	Pharmacy and Therapeutics
	CDE	Diabetes Educator	
Brian Potoski	BCPS (AQ-ID)	Pharmacotherapy/Added Qualification in Infectious Diseases	Pharmacy and Therapeutics
Jennifer A. Pruskowski	BCPS	Pharmacotherapy	Pharmacy and Therapeutics
	CGP	Geriatric Pharmacist	
	CPE	Certified Pain Educator	
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

For FY 16, the School of Pharmacy ranks first (#1!) in the University in overall alumni engagement. Also, PittPharmacy ranks #1 in Life Members in the Alumni Association. In the 10 years that the University of Pittsburgh has been ranking its schools and programs in alumni engagement, the School of Pharmacy has held the number one spot in FY07, FY09, and FY16, ranking second in FY08, FY10, FY15, and third in FY11, FY12, and FY14. “Engagement” is the percentage of alumni who make gifts to the School/University, participate in events, are Life Members in the Alumni Association, participate in online forums, and have provided active email addresses.

In FY16:

- 27.43 percent of the 5,104 School of Pharmacy living alumni were engaged with the School of Pharmacy and/or University in some way.
- School of Pharmacy alumni ranked:
 - First (27.43) in alumni engagement and participation amongst schools and programs with more than 100 alumni.
 - First (11.17 percent) in life and in regular memberships in the Pitt Alumni Association 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 2015 on Friday, October 9, with a welcoming celebration held in the new Commons between Salk Hall and the Research Pavilion. Over 120 alumni were in attendance.
 - School of Pharmacy hosted two receptions at national professional and scientific meetings:
 - American Society of Health-System Pharmacists Midyear Clinical Meeting and Exposition on December 7, 2015 in New Orleans, Louisiana.
 - American Pharmacists Association Annual Meeting, March 5, 2016, in Baltimore, Maryland. The Pennsylvania Pharmacy Association and Pennsylvania Schools of Pharmacy jointly hosted the reception.
- The School of Pharmacy also hosted:
 - The Twenty-fourth Annual Career Roundtables, October 21, 2015, O'Hara Student Center Ballroom. Thirty-six alumni participated in this student-centered event. Alumni from twenty-two 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.

Immediately following the roundtables, alumni participated in the P3 Networking and Etiquette reception at the University Club. This event allowed P3 students preparing to embark on rotations to hone their networking skills in a reception-style environment.

The 11th Annual RxTravaganza, October 24, 2015, Cathedral of Learning. 260 alumni, faculty, and PittPharmacy friends attended the event. The event raised over \$67,000 for student scholarships through the generous sponsorship by CeCity, Rite Aid, The Tighe Foundation, fluidEdge Consulting, Giant Eagle, Thompson Pharmacy, Universal Printing Company, UPMC and UPMC Health Plan, Value Drug, McKesson, CVS, Dr. Sarah Kalser, and Peter and Denise Kreckel.

The evening honored four Rising Stars: Tim Davis, PharmD '00, Tanya Fabian, PharmD '98, John Kim, PharmD '99, and Stephanie McGrath, PharmD '07, and four Distinguished Alumni: Simone Karp, BS '86, Lloyd Myers, BS '84, Peter Kreckel, BS '81, and John (Jack) Tighe III, BS '78.

- The Joseph A. Gatto Scholarship Golf Invitational, May 16, 2016, Shannopin Country Club. Seventy-two golfers participated, and the event raised \$21,100 for the Alumni

Scholarship Fund. In the past twelve years, more than \$243,430 has been raised for student scholarships.

Board of Visitors

Dean Patricia Kroboth and select faculty and staff met with members of the PittPharmacy Board of Visitors on May 11 and 12, 2016. Within the context of the revised University and School strategic plans, the group focused on continuous quality improvement in the educational programs at the School, strategies to enhance diversity and inclusion, and noteworthy research being conducted by PittPharmacy faculty. The Board toured the newly constructed Salk Commons and Research Pavilion and provided input on future space renovations for Salk Hall.

Board of Visitors 2015–16

Herbert S. Shear, Chair, Board of Visitors
Chairman, Shear Family Office

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

Maria A. Croyle, BS '92, RPh, PhD
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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 FY16:

- Sixty staff members served in:
 - administrative roles (31)
 - research roles (29)
- The PittPharmacy staff is extraordinary and has remarkable commitments to excellence and innovation, to supporting research and scholarship, and to service in local and national organizations.
- Administrative staff presented at national meetings including presentations at the AACP Annual Meeting, where Kellie Mitchell completed her year as Chair of the Administrative and Financial Officers SIG.
- Other staff made presentations at the Society of Research Administrators (SRA) meeting.
- Several administrative staff members serve as leaders on committees and councils external to the School of Pharmacy, including within the University.
- Five PittPharmacy staff members received service awards from the School of Pharmacy for their tenure and commitment to the School.

Information Technology

FY16, the Information Technology staff:

- Handled 1,705 Technology Help Tickets
 - Web and online: 621
 - Network/Server Administration: 354
 - Desktop and Classroom Support: 730
- Implemented a database to allow students to track their PittForm submissions.

Communications

The Web site continues to be a primary tool by which varied constituents learn about the School of Pharmacy, with an average 6,782 monthly users. PittPharmacy is active in social media and has a presence in Twitter, Facebook, YouTube, and LinkedIn.

In FY16, the Communications Team:

- Produced and mailed:
 - Seven major print communications to the School of Pharmacy's 6,100 stakeholders.
 - Ten print pieces were produced and mailed to a more limited distribution recipient list of potential PharmD students and high school counselors.

This specific group, approximately 600 students and their families and 60 high school counselors, have received postcard invitations to tour the school and attend promotional workshops. For the first time in FY16, PittPharmacy shared the student-produced PittCapsule newsletter and current PittPharmacy magazines with this group of potential future students.

- Developed electronic publications to enhance both efficiency and effectiveness. ePittPharmacy is the current news medium on the PittPharmacy Web Site for the School. Faculty, student, and school awards, accomplishments, grants and events are publicized weekly on the Web site. This is the main media vehicle for all outside publicity and current news changes weekly.
- ePittPharmacy email blasts are sent quarterly and more often for special events. Blasts to stakeholders include current news, CE programs, and special events, e.g. Homecoming, RxGala. The email list has 3,891 active recipients, which includes 70 percent of our living alumni.
- Began to produce videos to increase audience engagement on School Web site. These will be used for recruitment and inclusion for potential students and their families

Extending Our Global Reach





Extending Our Global Reach

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

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

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

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

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

GLOBAL REACH BY THE NUMBERS FOR FY16

During FY16:

- The School of Pharmacy engaged in partnerships with **27** international organizations on **5** continents, including Africa, Asia, Australia, North America, and Europe. The agreements include:
 - **15** 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.
- **38** international visiting scholars studied at the School of Pharmacy.
- **20** P4 PharmD students participated in **20** rotations in **9** different countries at **9** different sites.
- **15 P1, P2, and P3** students and **4 residents** also completed international rotations.
- **54** international students are enrolled in degree programs and comprise **10.2%** of our students: **4** PharmD students; **35** PhD students; **13** Master of Science students; **2** Non-Thesis Master of Science Students.

GLOBAL AND INTERNATIONAL PARTNERSHIPS

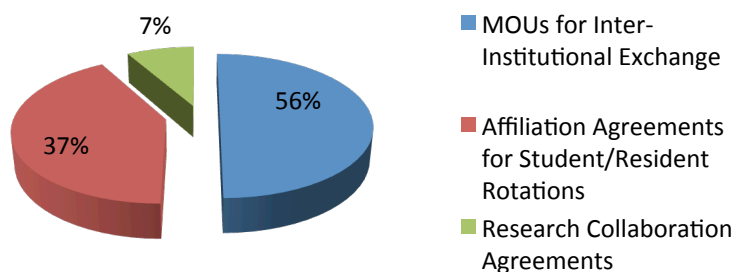
Partnerships

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

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

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

Proportion of International Agreements FY16



FY16: Agreements with International Organizations

Institution	Location
Australia	
Austin Health Hospital	Perth, Australia
Sir Charles Hospital (Nedlands)	Nedlands, Australia
Canada	
Memorial University of Newfoundland	Newfoundland, Canada
China	
Botanical Society of Yunnan	Yunnan Province, China

Institution	Location
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
Sun Yat-Sen University	Guangzhou, China
West China Hospital	Chengdu, China
England	
King's College	London, England
Honduras	
Hombro a Hombro Pittsburg-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
Namibia	
University of Namibia	Windhoek, Namibia
Singapore	
National University of Singapore	Singapore
Palestine	

Institution	Location
Ashraf Pharmacy	West Bank, Palestine
Philippines	
Philippine General Hospital	Manila, Philippines
University of Philippines	Manila, Philippines
Portugal	
University of Lisboa- Faculty of Pharmacy	Lisbon, Portugal
Scotland	
HCDumfermline – Douglas Street	Dunfermline, Scotland
South Africa	
Kwazulu-Natal Research Institute for TB-HIV	Durban, South Africa

PROGRAMS

Summer Visiting Research Program

Initiated in summer 2014 and led by Professor Wen Xie, the School of Pharmacy designed a summer research program in partnership with the Sun Yat-Sen University School of Pharmaceutical Science in Guangzhou, China. The admissions committee, composed of faculty from both universities, selected six competitive third year bachelor's students from Sun Yat-Sen University to participate as summer research interns at the University of Pittsburgh during July 2014, who were chaperoned by faculty advisors from Sun Yat-Sen University. In FY15 and FY16, the program continued and five competitive bachelor's students were chosen to participate in July 2015 and July 2016, respectively. In addition to students from Sun Yat-Sen University, the FY16 Summer Visiting Research Program also included two undergraduate students from the University of Puerto Rico, who were supervised by Dr. Christian Fernandez.

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

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

One of the six students from the FY14 group enrolled in the one-year non-thesis master's program for Fall 2015 and works under the supervision of Dr. Wen Xie. The same student was admitted to our PhD program for Fall 2016 and works under the supervision of Dr. Wen Xie. One of the five students from the FY15 group enrolled in the two-year thesis master's program for Fall 2016 and works under the supervision of Dr. Lisa Rohan.

Clinical Training Program

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

With the goal to extend this fee-based training program to other organizations in Singapore, three new trainees were accepted for FY15. Clinical pharmacists Janice Li from National University Hospital System and Michelle See from Changi General Hospital focused on critical care while pharmacist Yashi Saw from National University Hospital System specialized in clinical cardiology. Under the direction of Dr. Amy Seybert, all three pharmacists began their training in summer 2015. They completed their training in June 2016.

For FY16, one trainee, Lim Paik Shia from Singapore General Hospital, was accepted and began her training in July 2016. She is specializing in ambulatory care.

PharmD Student International Learning and Experiences

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

In FY16, a total of **36 PharmD** students were the direct beneficiaries of the growing number of international partnerships.

- 20 PharmD students completed P4 APPE rotations abroad. Sixteen P1, P2, and P3 students completed international experiences including:
 - 1 P1 student developed a new site relationship in Lisbon, Portugal
 - 4 students with international experiences through IPSF exchange
 - 1 P1 student to Beijing and Shanghai
 - 1 P3 student to Chengdu
 - 9 P1 and P2 students to Namibia

An example of the student work includes:

- Assessment of patient perspectives to HIV medication regimens and associated adverse events at an HIV clinic in Manila, Philippines

Spring Break in Namibia: a Global Health Experience Course

A course was developed to provide P1 through P3 students the opportunity to experience health care in another part of the world. For the inaugural class, 9 students (4 P1s and 5 P2s) joined Dr. Lauren Jonkman in Namibia over the week of spring break. Before leaving, students participated in a rigorous preparatory course designed to ensure that students were well aware of the key principles in global health, determinants of health, historical context for care in Namibia, and tuberculosis. During the course of their one week experience, students worked with P4 Namibian pharmacy students in their tuberculosis clinical rotation, sat in on classes throughout the professional program, and shadowed interviewed recent graduate pharmacist interns at Windhoek Central Hospital. The experience culminated in a joint presentation for faculty and students at the University of Namibia and a celebration of the relationship between the 2 schools. This experience will continue to be offered twice annually for PharmD students at Pitt.

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; in FY16, one student completed the elective.

Global Health Area of Concentration

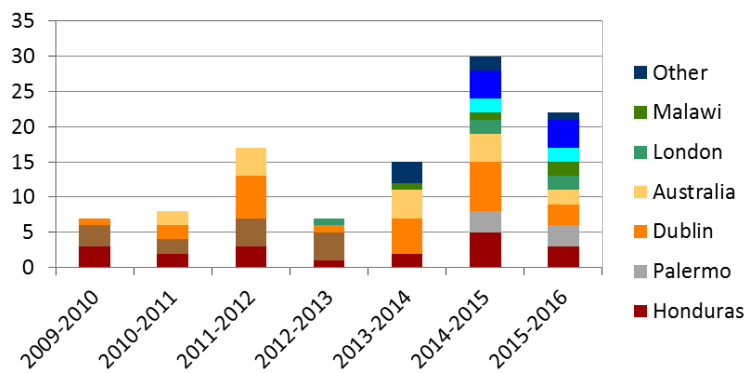
In FY16, a total of 28 students were enrolled in the Global Health Area of Concentration (GH-ARCO). The co-directors of the GH-ARCO are Sharon Connor, PharmD and Lauren Jonkman, PharmD. Five students in the class of 2016 graduated, each having participated in at least one global health APPE rotation and each having completed a mentored independent research project.

International Advanced Pharmacy Practice Experiences (APPEs)

In FY16, 20 P4 students completed international advanced pharmacy practice rotations. One student arranged an international rotation using a personal relationship (Portugal). The remaining rotations are long-lasting School of Pharmacy partnerships.

- Farmer’s Pharmacy in Dublin, Ireland: 3 students
- Shoulder to Shoulder Pittsburgh-San José, San José del Negrito, Honduras: 1 student
- Baobab Health Trust in Lilongwe, Malawi: 2 students
- Sir Charles Gairdner Hospital in Nedlands, Australia: 2 students
- Philippine General Hospital, Philippines: 4 students
- ISMETT, Palermo, Italy: 3 students
- Kings College Hospital, London, United Kingdom: 2 students
- Changhai Hospital, Shanghai, China: 1 student
- Peking University People’s Hospital, Beijing, China: 1 student
- Faculdade de Farmacia, Universidade de Lesboa, Portugal: 1 student

Number of Students Completing P4 International APPEs



Global Health Residency and Rotations

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

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

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

- Baobab Health Trust 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: 3 residents: 1 PGY2 global health resident, 1 PGY1 UPMC St. Margaret pharmacy practice resident, and 1 PGY2 UPMC St. Margaret geriatrics specialty resident.

International Visiting Scholars

In total, the School of Pharmacy hosted 38 international visiting scholars at differing levels of training during FY16. In FY16, 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.

FY16 Visiting Scholars

Name	Home Institution	Hosted By
Venkatakrishnam Balasubramanian	SASTRA University	Dr. Shilpa Sant's Lab
Melissa Chapman	King's College London	Dr. Janice L. Pringle's Lab
Si Chen	Second Military Medical University, China	Dr. Xiang-Qun Xie's Lab
Prithvirajan Durairajan	SASTRA University, India	Dr. Shilpa Sant's Lab
Shi Fang	Sun Yat-sen University	Dr. Samuel Poloyac's Lab
Li Gao, MD	Peking University People's Hospital	Dr. Wen Xie's Lab
Na Goa, PhD	Zhengzhou University	Dr. Xiaochao Ma's Lab
Vijetha Gurunathan	SASTRA University	Dr. Shilpa Sant's Lab
Yifei He	Sun Yat-sen University	Dr. Song Li's Lab
Jianping Hu, PhD	Leshan Normal University, China	Dr. Xiang-Qun Xie's Lab
Yu-Kun Huang, MD, PhD	Xiangya Hospital, China	Dr. Song Li's Lab
Jing Li	Fudan University	Dr. Amy Seybert
Janice Xuanhui Li, BS, MS	National University Hospital, Singapore	Dr. Amy Seybert
Wensi Li, PhD	Fudan University	Dr. Amy Seybert

Zuojun Li, PharmD	Third Xiangya Hospital of Central South University	Dr. Song Li's Lab
Lei Liang, PhD	Guangzhou Liuhuaqiao Hospital	Dr. Song Li's Lab
Lim Paik Shia, PharmD	Singapore General Hospital	Dr. Amy Seybert
Xueying Liu, PhD	Fourth Military Medical University, China	Dr. Xiang-Qun Xie's Lab
Yanhua Liu, PhD	Ningxia Medical University	Dr. Song Li's Lab
Yiying Liu	Sun Yat-sen University	Dr. Xiaochao Ma's Lab
Xiangyu Ma	Sun Yat-sen University	Dr. Shilpa Sant's Lab
Yongdong Niu, MD, PhD	Medical College of Shantou University	Dr. Wen Xie's Lab
Supraja Ranganathan	SASTRA University	Dr. Shilpa Sant's Lab
Abdul Sami, BS, MS	University of Arid Agriculture Rawalpindi, Pakistan	Dr. Shilpa Sant's Lab
Kishor Sarkar, PhD	Indian Institute of Science, India	Dr. Shilpa Sant's Lab
Yashi Saw, BS, MS	National University Hospital, Singapore	Dr. Amy Seybert
Woon Wei, Michelle See, PharmD	Changi General Hospital, Singapore	Dr. Amy Seybert
Ki Sa Sung, PhD	SungKyunKwan University	Dr. Song Li's Lab
Xin Tong	Sun Yat-sen University	Dr. Wen Xie's Lab
Xisha Wang, PhD	Guangdong Pharmaceutical University.	Dr. Xiang-Qun Xie's Lab
Xuemei Wu, PhD	Fujian Medical University Union Hospital	Dr. Raman Venkataramanan's Lab
Zhiyuan Wu, BS, MMed	Shanghai Medical College, Fudan University	Dr. Da Yang's Lab
Dan Xu, PhD	Medical School of Wuhan University	Dr. Wen Xie's Lab
Bo Yang, PhD	Wuhan University, College of Life Sciences, China	Dr. Da Yang's Lab
Qianyu Zhai, MD	Medical School of Chinese PLA	Dr. Song Li's Lab
Yu Zhang, BS	Peking Union Medical College, China	Dr. Xiang-Qun Xie's Lab
Min Zhao, BS, MS	Shenyang Pharmaceutical University, China	Dr. Song Li's Lab
Zanmei Zhao, MD, PhD	Peking University Third Hospital, China	Dr. Wen Xie's Lab

School of Pharmacy Long Range Plan 2020





PittPharmacy

Excellence Innovation Leadership

University of Pittsburgh
School of Pharmacy

LONG-RANGE PLAN

2016 to 2020

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

Our Excellence, Innovation and Leadership Journey

Building, renewing and revising our Long-Range Plan is a journey that began in 2001 and continues to this day in the form of Long-Range Plan 2016-2020. To date, we have forged four long-range plans that have unified the faculty, staff, students, and alumni around goals and their achievement.

From the beginning our plans have been:

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

In 2015, the University of Pittsburgh embarked on a University-wide strategic planning process for 2016-2020, organized under five priority areas, many of which are similar to previously-articulated School of Pharmacy strategic priorities. In the years ahead, the members of the School of Pharmacy will work with a focus to:

- Be Leaders in Advancing Educational Excellence
- Engage in Research of Impact As a School of Distinction
- Build Healthy and Engaged Communities
- Build Foundational Strength
- Embrace Diversity and Inclusion



The Bubble chart to the right shows the centrality of innovation, which is not expressed as a strategic priority, in each of the strategic priority areas. The color themes of the bubbles throughout the Long-Range Plan show the intermixing of strategic priority areas.

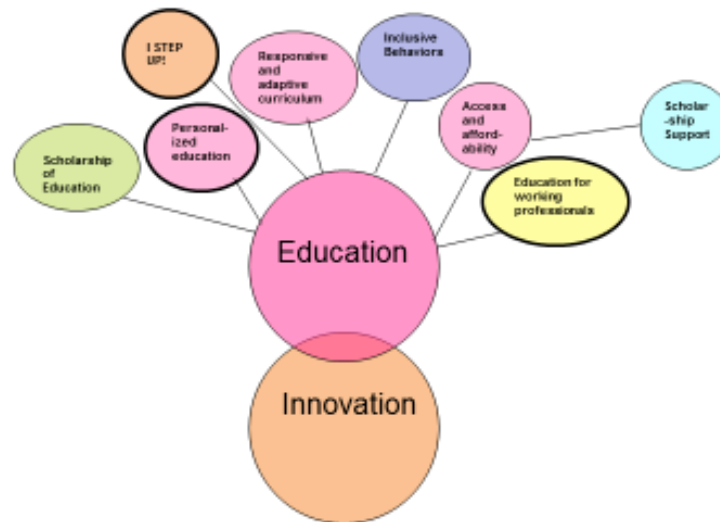
The “we believe” statements associated with each strategic area drive the goals and actions to achieve outcomes.

Measures for yearly tracking of milestones had previously been organized in a dashboard format referred to as “Progress At a GlancE” (PAGE). A more detailed “scorecard” is now under development, incorporating new university-required measures of success.

Goal 1: Leader in Pharmacy and Pharmaceutical Science 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.

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



We will:

- **Provide students with a personalized education** that will efficiently prepare them to innovate, lead, and identify opportunities to improve health using clinical and research principles of the pharmacy and pharmaceutical sciences.
 - Develop a personalized approach to academic advising and support strategies that support students as they utilize their own unique strengths, talents, and interests to explore career opportunities and develop expertise.
 - Enrich students through advancement of self-awareness, professionalism, and leadership experiences.
 - Develop structured training and support for faculty mentors for all of our learners
 - Expand opportunities for student research and inquiry
- **Evolve our adaptive and responsive curricula (I STEP UP!)*** to meet practice and research challenges
 - Continue to innovate and embed learning strategies that will propel learners faster to defined levels of mastery. This includes peer-learning, high-fidelity simulations, portfolios, and technology tools.
 - Build and implement educational processes by which students develop and display expertise in problem identification, solving and decision-making

**Innovation in Simulation and Technology in Education and Practice at the University of Pittsburgh!*

-
- Educate innovators and entrepreneurs to advance pharmacy and health care, building experiences to engage in real-world challenges
 - Establish courses and programs to develop leaders in development and application of big data analytics
 - Increase engagement of faculty, preceptors and others including teaching assistants in teaching through professional development. .
 - Demonstrate the value of our educational programs through innovative assessment programs
 - **Contextualize learning so that we enhance inclusiveness through language, behaviors and broader understanding of cultures and sensitivities not our own.**
 - Provide students with experiences that develop knowledge, skills, and attitudes consistent with a culture of inclusiveness
 - Provide in-depth experiences with other cultures.
 - **Promote access and affordability**
 - Enhance our recruitment of and maintain our record for retaining students
 - Grow scholarship support for deserving and fiscally challenged students
 - Develop greater flexibility in curricula to enhance affordability
 - Continually evaluate and, when feasible, develop dual-degree, joint degree, combined degree and 3-2 programs for efficiency and value.
 - Create a supportive structure for early and effective academic intervention
 - **Build educational opportunities for working professionals** to acquire knowledge to meet practice and research challenges
 - Select priority areas for courses, programs, workshops, non-degree certificates, badging, micro-credentials and potentially dual-format offerings (CE and/or credit).
 - Develop online and on-site educational programs for international and domestic professionals.

Goal 2: Engage in Research of Impact as a School of Distinction

We believe that the faculty of the School of Pharmacy has expertise to bridge the drug discovery, development, and delivery gap for the chemical to drug transition.

We believe that the promise of personalized medicine will be realized through development and application of big data analytics.

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 will:

- **Identify and engage in strategic research opportunities** in drug development and post-marketing evaluations of medications
 - Achieve focused growth in strategic areas that take advantage and build on current PittPharmacy strengths
- **Lead the data-driven revolution** in the discovery, development and optimal use of medications.
 - Capture the power of “Target Hunter” and the multiple “knowledge bases” of chemical, genes, and drugs to discover and repurpose drugs.
 - Use vast and growing amount of health information to inform therapeutic decisions for the benefit of populations
 - Capture patient-specific medication outcomes and utilized information from electronic health records to identify risk for adverse effects
 - Develop a core with combined expertise to clean, link and extract data, efficiently handle large data and securely store data and personal health information

-
- **Develop a translational pharmacogenomics research program** to utilize patient-specific information as a component of personalized patient care
 - Integrate School of Pharmacy faculty into the Personalized Medicine Institute.
 - Establish processes for incorporating pharmacogenomics into new and existing drug use protocols and measuring clinical outcomes
 - Apply pharmacogenomics in the day-to-day practice of pharmacists in collaboration with our health system and community partners.
 - **Position the School to participate in research collaborations** and partnerships with industry.
 - Support research initiatives so as to become “knowledge experts” for campus and external researchers to pursue development of chemicals into drugs
 - Continue and expand initiatives in clinical and translational drug research and education
 - **Extend our global research reach**
 - Develop global research collaborations leveraging technology to benefit the international community
 - Establish bidirectional global exchange and partnerships that are mutually beneficial in areas of research, professional development and practice

Goal 3: Build Healthy and Engaged Communities

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

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

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.

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



We will:

- **Build healthy communities of patients**
 - Partner with health systems including UPMC, pharmacies and pharmacy chains, payers and other entities to continually pilot, implement, evaluate and replicate best practices in pharmacist-based patient care
 - Partner with the University of Pittsburgh to enhance employee health
 - Use vast and growing amount of health information to inform therapeutic decisions for the benefit of individual patients
 - Contributed solutions to America’s prescription drug abuse crisis and improve the safety of the public through policy, research, and patient care demonstration programs.
- **Establish bidirectional global exchange and partnerships** that are mutually beneficial in areas of research, professional development and practice
 - Create global partnerships to promote health, wellness, and the appropriate use of medications through pharmacist-provided care.

- **Reimagine the delivery of health care provided by pharmacists**
 - Expand our pioneering **PittPharmacy Innovations Lab** as the incubator and concept-testing environment through multidisciplinary teamwork with corporate partners.
 - Demonstrate leadership through creative community-based pharmacist innovations, pioneering novel methods of education, research collaboration and implementing sustainable pharmacist-provided care
- **Develop a powerful synergy through enhanced diversity and a culture of inclusion** in and among our students, staff, faculty and communities.
- **Build and strengthen partnerships** with alumni, corporations, foundations, and governmental and non-governmental organizations
 - Expand relationship-building with new graduate alumni
 - Recruit alumni for networking and mentorship for learners
- **Recruit and retain faculty and staff** as our major resource for achieving the goals of the School of Pharmacy
 - Expand development opportunities for faculty and staff.
 - Create faculty mentorship programs

Goal 4: Build Foundational Strength

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.

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



We will:

- **Develop the needed fiscal, physical, technological and other resources** through partnerships with stakeholders and communities to advance our mission
 - Financial
 - Technology
 - Space
- **Use a range of technologies and social media** to optimize communication with future and current students, alumni and other partners
- **Strengthen administrative and operational efficiency** within the School
 - Facilitate processes that are easy, agile and accurate so as to optimize staff and faculty time and financial resources
- **Enhance our internal culture so that we are prepared to partner for mutual benefit**

Goal 5: Embrace Diversity and Inclusion

We believe that a special and powerful synergy will evolve from a diverse community with an inclusive culture.



We will:

- **Assure that inclusion and diversity become part of the context in which we make every decision.**
 - Transform our School climate
 - Enrich student experiences through engagement (See educational initiatives)
 - Attract and retain a diverse University Community - student body, faculty, and staff
 - Expand access from underrepresented communities through targeted programs and support
 - Implement training programs to avoid implicit bias in student admissions, and in faculty and staff searches, recruiting, and hiring.

