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
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### Long-Range Plan 2020

| Long-Range Plan 2020 |   |
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.

![Total Number of Students Enrolled](chart)

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 PHARMD 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**

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<tr>
<th>SilverScripts Spring 2016 P1 Students</th>
<th>Community Interactions Collective Patients</th>
</tr>
</thead>
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<tr>
<td>Comprehensive Medication Review</td>
<td></td>
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<tr>
<td>151</td>
<td></td>
</tr>
<tr>
<td>Targeted Medication Review</td>
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<td>13</td>
<td></td>
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<td>Referrals for Vaccination</td>
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<tr>
<td>63</td>
<td></td>
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<td>Blood Pressure Assessment</td>
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<tr>
<td>252</td>
<td></td>
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<tr>
<td>Total Encounters</td>
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<td>479</td>
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**Drug Therapy**

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<tr>
<th>Drug Therapy Problems (DTPs) Identified</th>
<th>Count</th>
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</thead>
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<tr>
<td>Unnecessary Drug Therapy</td>
<td>23</td>
</tr>
<tr>
<td>Needs Additional Drug Therapy</td>
<td>58</td>
</tr>
<tr>
<td>Needs Different Drug Product</td>
<td>11</td>
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<tr>
<td>Dosage Too Low</td>
<td>14</td>
</tr>
<tr>
<td>Adverse Drug Reaction</td>
<td>26</td>
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<tr>
<td>Dosage Too High</td>
<td>4</td>
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<tr>
<td>Noncompliance</td>
<td>53</td>
</tr>
<tr>
<td>Referral to other health care provider</td>
<td>39</td>
</tr>
<tr>
<td>Total # Drug Therapy Problems Identified</td>
<td>189</td>
</tr>
<tr>
<td>Year</td>
<td># Students</td>
</tr>
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<td>------</td>
<td>------------</td>
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<td>2016</td>
<td>114</td>
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**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.

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<th>P4 Class Patient Impact FY16</th>
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<td>Patient Interactions</td>
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<td>Drug Therapy Problems Identified</td>
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<tr>
<td>Drug Therapy Recommendations</td>
</tr>
<tr>
<td>Adverse drug events identified</td>
</tr>
<tr>
<td>Adverse drug events averted</td>
</tr>
</tbody>
</table>

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.

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<td>Anthony Albert (P4) Aaron Devanathan (P4) Christina Xia (P4)</td>
<td>Comparative effectiveness analysis of single and combination therapies for pulmonary arterial hypertension in a tertiary healthcare system</td>
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<tr>
<td>Elizabeth Crish (P4)</td>
<td>Evaluation of the implementation of delirium screening and a non-pharmacologic delirium prevention protocol in intensive care units</td>
</tr>
<tr>
<td>Kimberly Frantz (P4)</td>
<td>A unique institutional program for evaluation of innovative medication use in a pediatric tertiary care center</td>
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<tr>
<td>Hannah Greivenkamp (P4)</td>
<td>Health education and recovery together (HEART): implementation of health education classes in substance abuse rehabilitation</td>
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<tr>
<td>Karen Hoang (P4)</td>
<td>Development of an inhaler technique assessment tool for pharmacist incorporation into primary care</td>
</tr>
<tr>
<td>Brittany Jordan (P3)</td>
<td>Predictors on medication non-adherence behaviors in older adults</td>
</tr>
<tr>
<td>Cameron Ninos (P4)</td>
<td>A description of the etiologies of liver cirrhosis and the use of Vitamin K in a hospitalized cohort at an academic medical center</td>
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<td>-------------------</td>
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</tr>
<tr>
<td>Briana Thompson (P4)</td>
<td>Results of drug-drug interaction evaluations for patients starting direct acting antiviral therapy for Hepatitis C: implications for treatment</td>
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| 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**

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<tr>
<td>Brandon Barry (P2)</td>
<td>An evaluation of successful point-of-care testing implementation by community pharmacists in Pennsylvania</td>
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<tr>
<td>Emily Bobrsynski (P3)  Taylor Buck (P3)  Jennifer Fever (P3)</td>
<td>The Medication Access and Adherence Tool (MAAT): an opportunity to improve medication adherence through targeted interventions by community pharmacists</td>
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<tr>
<td>Maeghan Moss (P3)  Kaitlyn Zeis (P3)</td>
<td>Impact of the Appointment-Based Model (ABM) on influenza vaccination rates in a community pharmacy</td>
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<tr>
<td>Daniela Policicchio (P3)</td>
<td>Uncovering asthma management needs in college-age students</td>
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<tr>
<td>Christine Ross (P3)</td>
<td>The Medication Access and Adherence Tool (MAAT): an opportunity to improve medication adherence through targeted interventions by community pharmacists</td>
</tr>
<tr>
<td>Emily Steltenpohl (P3)</td>
<td>An evaluation on point-of-care testing implementation by community pharmacists in Pennsylvania</td>
</tr>
<tr>
<td>Brittany Stocks (P3)</td>
<td>Exploring community pharmacists’ preparedness in dispensing medications for pets</td>
</tr>
<tr>
<td>Taylor Watterson (P3)</td>
<td>Implementing medication synchronization in a chain pharmacy: the role of pharmacy interns</td>
</tr>
</tbody>
</table>

**Pennsylvania Pharmacists Association Mid-Year Conference**

<table>
<thead>
<tr>
<th>Primary Author</th>
<th>Poster Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allyson Seitz (P2)  Kelsey Colletti (P2)  Lauren Shirley (P2)  Carly Parris (P2)</td>
<td>Patient care impact of SilverScripts program in elderly population</td>
</tr>
<tr>
<td>Name</td>
<td>Project Description</td>
</tr>
<tr>
<td>-----------------------------</td>
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<tr>
<td>Alexa Hospodar (P2)</td>
<td>Determining anticoagulant and antiplatelet therapy in atrial fibrillation patients undergoing PCI: weighing stroke and bleeding risk</td>
</tr>
<tr>
<td>Kelsey Haller (P2)</td>
<td></td>
</tr>
<tr>
<td>Abby Meyer (P2)</td>
<td></td>
</tr>
<tr>
<td>Carly Beck (P2)</td>
<td>UPMC St. Margaret Free Medication Program</td>
</tr>
<tr>
<td>Kasey Martik (P3)</td>
<td></td>
</tr>
<tr>
<td>Rebecca Wyliaz (P2)</td>
<td>The need for adolescent-geared medication adherence apps</td>
</tr>
<tr>
<td>Kayla McFeely (P3)</td>
<td>Expanding patient access to hormonal contraceptives through pharmacist-led initiatives</td>
</tr>
<tr>
<td>April Wolski (P3)</td>
<td></td>
</tr>
<tr>
<td>Serena Lamping (P3)</td>
<td>Community pharmacist’s role in supporting persons with Alzheimer’s disease</td>
</tr>
<tr>
<td>Rachel Gribbin (P3)</td>
<td></td>
</tr>
<tr>
<td>Alexandria Lavella (P3)</td>
<td>Expanding care to the underserved while maximizing a limited budget</td>
</tr>
<tr>
<td>Scott Bechtel (P3)</td>
<td>A retrospective analysis of statin use based on ASCVD risk in adults</td>
</tr>
<tr>
<td>Kimberly Lor (P3)</td>
<td></td>
</tr>
<tr>
<td>Alyson Sapirstein (P3)</td>
<td></td>
</tr>
<tr>
<td>Karen Quach (P2)</td>
<td>Medication-related barriers identified by patients in an urban community health center after hospital discharge</td>
</tr>
<tr>
<td>Wenqi Chen (P1)</td>
<td></td>
</tr>
<tr>
<td>Rami El Chammas (P1)</td>
<td></td>
</tr>
<tr>
<td>Ann McAndrew (P1)</td>
<td></td>
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<tr>
<td>Huiling Zhang (P1)</td>
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<tr>
<td>Shannon Ye (P1)</td>
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<tr>
<td>Jenn Fever (P3)</td>
<td>The need for clinical pharmacists in pediatric oncology clinics</td>
</tr>
<tr>
<td>Emily Bobrzynski (P3)</td>
<td></td>
</tr>
<tr>
<td>Christine Ross (P3)</td>
<td></td>
</tr>
<tr>
<td>Maeghan Moss (P3)</td>
<td>Impact of the Appointment-Based Model (ABM) on influenza vaccination rates in a community pharmacy</td>
</tr>
<tr>
<td>Kaitlin Zeis (P3)</td>
<td></td>
</tr>
<tr>
<td>Daniela Policicchio (P3)</td>
<td>Uncovering asthma management needs in college-aged students</td>
</tr>
<tr>
<td>Taylor Buck (P3)</td>
<td></td>
</tr>
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<td></td>
</tr>
<tr>
<td>Brittny Stocks (P3)</td>
<td>Exploring community pharmacists’ preparedness In dispensing medications for pets</td>
</tr>
<tr>
<td>Doreen Foy (P2)</td>
<td>Integrating interprofessional electives into the PharmD curriculum</td>
</tr>
<tr>
<td>Stephanie Tchen (P3)</td>
<td></td>
</tr>
<tr>
<td>Carolyn Ubinger (P3)</td>
<td></td>
</tr>
<tr>
<td>Brenda Fuh (P3)</td>
<td></td>
</tr>
<tr>
<td>Heather Johnson (P2)</td>
<td>Evolving roles for student leadership in the SilverScripts program</td>
</tr>
<tr>
<td>Julie Mandel (P2)</td>
<td></td>
</tr>
<tr>
<td>Elyse Tomaszewski (P2)</td>
<td></td>
</tr>
<tr>
<td>Aleta Figurelli (P3)</td>
<td>Pharmacist-prescribed hormonal contraceptives: current practice and opportunities</td>
</tr>
<tr>
<td>Olivia Marchionda (P2)</td>
<td>Pharmacy and nursing students collaboration at SilverScripts</td>
</tr>
<tr>
<td>Nicolette Diehl (P2)</td>
<td></td>
</tr>
<tr>
<td>Brittany Lewis (P2)</td>
<td>Patient medication assistance programs at the Birmingham Free Clinic</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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-portfolios 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

<table>
<thead>
<tr>
<th>Fall Term</th>
<th>Residency Status</th>
<th>Early Assurance</th>
<th>Application Pathway*</th>
<th>Students with 4-Year Degree (% of class)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PA (%)</td>
<td>Non-PA (%)</td>
<td>Pitt</td>
<td>Community College</td>
</tr>
<tr>
<td>2002</td>
<td>92</td>
<td>8</td>
<td>37</td>
<td>5</td>
</tr>
<tr>
<td>2003</td>
<td>86</td>
<td>14</td>
<td>36</td>
<td>3</td>
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<tr>
<td>2004</td>
<td>85</td>
<td>15</td>
<td>52</td>
<td>28</td>
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<td>2005</td>
<td>92</td>
<td>8</td>
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<td>2006</td>
<td>87</td>
<td>13</td>
<td>50</td>
<td>44</td>
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<tr>
<td>2007</td>
<td>88</td>
<td>12</td>
<td>42</td>
<td>53</td>
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<tr>
<td>2008</td>
<td>86</td>
<td>14</td>
<td>47</td>
<td>42</td>
</tr>
<tr>
<td>2009</td>
<td>85</td>
<td>15</td>
<td>51</td>
<td>39</td>
</tr>
</tbody>
</table>
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.
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.

Class of 2016

| Percent | Residency/Fellowship | Hospital/Long-term Care | Community/Specialty Pharmacy | Industry | Other
<table>
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<tbody>
<tr>
<td>42%</td>
<td></td>
<td></td>
<td></td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>4%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3%</td>
</tr>
<tr>
<td>1%</td>
<td></td>
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</table>

Comparison of NAPLEX Pass Rates: First-Time Candidates

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

*Jan–Aug scores
Comparison Multistate Pharmacy Jurisprudence Examination® (MPJE®) Results:

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

* 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

<table>
<thead>
<tr>
<th>Organization</th>
<th>Award</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rho Chi Society</td>
<td>Outstanding Chapter in Region II Award</td>
</tr>
<tr>
<td>Rho Chi Society</td>
<td>Awarded $500 to support Alpha Omicron Chapter’s project proposal, “Students, Special Topics and Scholarly Work”</td>
</tr>
<tr>
<td>SNPhA – APhA-ASP</td>
<td>Pitt Division of Student Affairs - Blue Stars Red Carpet Award for Outstanding Program of the Year</td>
</tr>
<tr>
<td>PittPharmacy Students</td>
<td>Achieving Independence Competition for the THIRD YEAR In a ROW by the Pennsylvania Pharmacists Association (PPA)</td>
</tr>
<tr>
<td>PittPharmacy Students</td>
<td>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)</td>
</tr>
<tr>
<td>PittPharmacy Students</td>
<td>ACCP Clinical Challenge “Elite Eight” from a field of 108 Teams</td>
</tr>
<tr>
<td>PittPharmacy Students</td>
<td>OTC Winners by the Pennsylvania Pharmacists Association (PPA)</td>
</tr>
<tr>
<td>PittPharmacy Students</td>
<td>SNPhA Service Grant Competition Winners</td>
</tr>
<tr>
<td>LKS</td>
<td>Raised over $2000 to benefit the National Ovarian Cancer Coalition</td>
</tr>
<tr>
<td>Kappa Psi</td>
<td>Awarded Outstanding Chapter of the Year</td>
</tr>
<tr>
<td>ASHP</td>
<td>Outstanding Student Organization of the Year 2015-2016</td>
</tr>
</tbody>
</table>

Recognition and Awards: Individual Students

<table>
<thead>
<tr>
<th>Student</th>
<th>Award</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daisy Zhu (P3)</td>
<td>APhA – ASP Member of the National Communications Standing Committee</td>
<td>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</td>
</tr>
<tr>
<td>Karen Quach (P3)</td>
<td>Bridging the Gaps Summer</td>
<td>Working with the underserved populations in interprofessional</td>
</tr>
<tr>
<td>Student</td>
<td>Award</td>
<td>Description</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Nicolette Diehl (P3)</td>
<td>Internship Program</td>
<td>teams to provide service while gaining a better understanding of the social determinants</td>
</tr>
<tr>
<td>Dylan Atkinson (P3)</td>
<td>Paul G. Canono Legislative Intern - Selected through the American Society of Consultant Pharmacists</td>
<td>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</td>
</tr>
<tr>
<td>Dylan Atkinson (P3)</td>
<td>National Association of Chain Drug Stores (NACDS)</td>
<td>Represent PittPharmacy by meeting with legislators on Capitol Hill to discuss pharmacy issues</td>
</tr>
<tr>
<td>Michelle Myers (P3)</td>
<td>Paul G. Canono Legislative Intern - Selected through the American Society of Consultant Pharmacists</td>
<td>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 firsthand how politics shape pharmacists practice across the nation</td>
</tr>
<tr>
<td>Neil Turco (P4) Cameron Ninos (P4)</td>
<td>ACCP – American College of Clinical Pharmacy Association</td>
<td>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</td>
</tr>
<tr>
<td>Lauren Wooley (P3)</td>
<td>Pittsburgh Schweitzer Fellows Program</td>
<td>Will work with FOCUS Pittsburgh to implement medication management and education services</td>
</tr>
<tr>
<td>Michelle Myers (P3)</td>
<td>Awarded a Nationality Rooms Scholarship</td>
<td>Selected by the Polish Room Committee</td>
</tr>
<tr>
<td>Lauren Wooley (P3)</td>
<td>Pittsburgh Schweitzer Fellows Program</td>
<td>Will work with FOCUS Pittsburgh to implement medication management and education services</td>
</tr>
<tr>
<td>Michelle Myers (P3)</td>
<td>Awarded a Nationality Rooms Scholarship</td>
<td>Selected by the Polish Room Committee</td>
</tr>
<tr>
<td>Sophia Yang (P4)</td>
<td>George F. Archambault Scholarship</td>
<td>Selected by APhA</td>
</tr>
<tr>
<td>Sophia Yang (P4)</td>
<td>Pediatric Oncology Education (POE) summer internship</td>
<td>St. Jude Children’s Research Hospital in Memphis, Tennessee</td>
</tr>
<tr>
<td>Sophia Yang (P4)</td>
<td>US Public Health Junior Commissioned Officer Student Training Program</td>
<td>US Public Health Service with the Indian Health Service</td>
</tr>
</tbody>
</table>
### Student Awards at Graduation

<table>
<thead>
<tr>
<th>Award Title</th>
<th>Student Awardee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lilly Achievement Award</td>
<td>Neil Turco</td>
</tr>
<tr>
<td>John Herman Wurdack Award</td>
<td>Chelsea Zavilla</td>
</tr>
<tr>
<td>TEVA Pharmaceuticals Outstanding Student Award</td>
<td>Vince Netto</td>
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<tr>
<td>APhA Academy of Students of Pharmacy Senior Recognition Certificate</td>
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<td>Pennsylvania Pharmacists Association Outstanding Pharmacy Student Award</td>
<td>Kelsey Moss</td>
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<td>Mylan Pharmaceutical Excellence in Pharmacy Award</td>
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<td>University of Pittsburgh, School of Pharmacy, Advancement of Patient Care Services Award</td>
<td>Valerie Nolt</td>
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<td>Robert W. Taylor Award for Outstanding Performance in Patient Care Rotation</td>
<td>Jessica Lewis</td>
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<td>University of Pittsburgh, School of Pharmacy, Innovations in Community Practice Award</td>
<td>Alyssa Kunkle</td>
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<tr>
<td>University of Pittsburgh, School of Pharmacy, Excellence in Clinical Communication Award</td>
<td>Meera Vachhani</td>
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<td>Merck Award</td>
<td>Svetlana Avshalumov, Chelsea Henderson, Georgina Waldman</td>
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<tr>
<td>US Public Health Service–Excellence in Public Health Pharmacy Practice Award</td>
<td>Sophia Yang</td>
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<tr>
<td>Natural Medicines Comprehensive Database Recognition Award</td>
<td>Michelle Myers</td>
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</table>
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 dieticians, 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 Heath. 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
Total Number of Types of Residency Programs: 13

<table>
<thead>
<tr>
<th>Last Name</th>
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<th>Year</th>
<th>PharmD School</th>
<th>Plans for FY17</th>
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<td>Ferealem</td>
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<td>Wingate University</td>
<td>Clinical pharmacist, Carilion Roanoke Memorial Hospital, Roanoke, VA</td>
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<td>Anna</td>
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<td>Patient Care Surgery Pharmacist, Nationwide Children’s Hospital, Columbus OH</td>
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<tr>
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<td>Year</td>
<td>PharmD School</td>
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<td>PGY1</td>
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<td>Vu</td>
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<td>Solid Organ Transplant</td>
<td>PGY2</td>
<td>University of Colorado</td>
<td>Clinical Pharmacist, University of Kansas Medical Center, Kansas City, MO</td>
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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

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<td>Jaclyn Niggemyer</td>
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<td>Muhammad Sheheryar</td>
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<td>William Wilson</td>
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<td>Children’s Hospital of Pittsburgh of UPMC</td>
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<td>Tanya Mumau</td>
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<td>Kyle Strnad</td>
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**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, pharmaceutics, 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.

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).
  o 2 of the 9 are US citizens.
  o 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

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*CPS – Clinical Pharmaceutical Scientist Program

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

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†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 Jhunjhunwala, 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-phenylsulfonyl)prop-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


• Prokopienko, A. Contrast-Induced Nephropathy: Effects of Media Type and Comparison of Prevention Strategies. *Pharmacotherapy.* 5/16/2016.;8 (online update).


• **Anderson KB**, Poloyac SM. Drug Metabolism and Therapeutic Hypothermia. Critical Connections. 6/30/2015.


• 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. AAPSJ. 2015 May;17(3):737-53.


• 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


Presentations, Posters, and Podium Presentations


- Biomedical Engineering Society Annual Meeting, Tampa, FL. Biodegradable and biocompatible pegylated poly (ester amide) elastomers with increased processability. \textit{Xue Y, Patel A.} October 9, 2015.


- 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. \textit{Kiesel, B.} April 18, 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-acetylcysteine 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 morbidity 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.


• 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.


• 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.


• 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.


• 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.


• 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.


• 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.

## POSTDOCTORAL FELLOWS

**School of Pharmacy Postdoctoral Associates FY16**

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

<table>
<thead>
<tr>
<th>Source</th>
<th>FY10</th>
<th>FY11</th>
<th>FY12</th>
<th>FY13</th>
<th>FY14</th>
<th>FY15</th>
<th>FY16</th>
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<td>PHS</td>
<td>$9,083,208</td>
<td>$7,229,748</td>
<td>$4,967,911</td>
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<td>$6,058,477</td>
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Direct Costs: Research Funding

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<th>Source</th>
<th>FY10</th>
<th>FY11</th>
<th>FY12</th>
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<th>FY16</th>
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<tr>
<td>Federal-Oth</td>
<td>$856,030</td>
<td>$1,268,055</td>
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<td>Industry</td>
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<td>$518,140</td>
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<td>1,253,199</td>
<td>$1,649,131</td>
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<td>$330,043</td>
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<td>Found/Assoc</td>
<td>$296,641</td>
<td>$305,600</td>
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<td>$1,347,135</td>
<td>$1,363,123</td>
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<td>Other</td>
<td>$187,737</td>
<td>$111,157</td>
<td>0</td>
<td>0</td>
<td>$180,224</td>
<td>$507,487</td>
<td>$251,459</td>
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<td>TOTAL</td>
<td>$10,483,842</td>
<td>$9,432,700</td>
<td>$6,976,303</td>
<td>$9,987,393</td>
<td>$10,937,673</td>
<td>$9,714,833</td>
<td>$9,551,076</td>
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</tbody>
</table>

Direct Costs (Thousands)
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
Anne Barbosa
Yuhan Bi
Xinran Cai
Yichao Chen
Mohammed Ghazwani
Komal Pradhan
Madhav Sachar
Xiaolan Zhang

Postdoctoral Fellows
You-Jin Choi, PhD
Wojciech Garbcz, 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
Danddan Tian
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


• 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-


Invited Presentations


- “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, Nemacolin 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. Prokopienko, 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).

• 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:
  o “Film Antiretroviral Microbicide Evaluation (FAME).” July 2015. Role co-PI.
  o “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:
  o “De-intensifying unnecessary medications in VA CLC residents nearing end of life.” Department of Veterans Affairs. Role: PI.
  o “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**


• Hiruy H, Fuchs EJ, Marzinke MA, Bakshi RP, Breakey JC, Aung WS, Manohar M, Yue C, Cañó 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.


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.
- “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.

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

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
• “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 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/](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**


* 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)-induced osteoclast (OCL) formation were lost upon p62-/- gene deficiency.


* 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 cannabinoird 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.


* 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.


**Selected Invited Presentations**


• **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 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 Jhunjunwala

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)

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 where 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 Pharmaceutics 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 Pharmaceutics 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**


Selected Invited Presentations


• “Rectal Suppositories”, Presented by Lisa Rohan at the Center for Disease Control, March 2016 Atlanta, Georgia.


• 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 access 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


**Presentations**


**Research Details**

**FY16 PHS Funding**

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FY16 Federal Other Funding

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**FY16 Industry Funding**

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**FY16 Foundation/Association Funding**

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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

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<td>Jan H. Beumer, PharmD, PhD</td>
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<td>Kim C. Coley, PharmD</td>
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<td>Colleen M. Culley, PharmD</td>
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<td>Scott R. Drab, PharmD, CDE, BC-ADM</td>
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<td>Drug and Alcohol Dependence Experimental and Clinical Psychopharmacology Clinical Psychology Review Prevention Science International Journal of Person Centered Medicine</td>
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<td>Research in Social and Administrative Pharmacy</td>
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<td>Current Drug Metabolism World Journal of Gastroenterology Drug Metabolism Letters Drug Metabolism Reviews Molecular Endocrinology Drug Metabolism and Disposition</td>
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Faculty Participation in NIH Review Committees and Panels

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<td>Robert B. Gibbs, PhD</td>
<td>Pharmaceutical Sciences</td>
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<td>Donna M. Huryn, PhD</td>
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<td>Paul A. Johnston, PhD</td>
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<td>Levent Kirisci, PhD</td>
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<td>Thomas D. Nolin, PharmD, PhD</td>
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<td>Samuel M. Poloyac, PharmD, PhD</td>
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<td>Lisa C. Rohan, PhD</td>
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<td>Shilpa Sant, PhD</td>
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<td>Carolyn Thorpe, PhD, MPH</td>
<td>Pharmacy and Therapeutics</td>
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<td>Raman Venkataramanan, PhD</td>
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<td>Xiang-Qun (Sean) Xie, PhD</td>
<td>Pharmaceutical Sciences</td>
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School of Pharmacy Publications in Peer-Reviewed Journals

Research


• 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


• Huss J, Garbacz W, Xie W. Constitutive Activities of Estrogen-related Receptors: Transcriptional


- Kauffman Y, Capozzolo N, Drab S, Deloge A, Brandão C, Smith RB. Brazilian Pharmacists'


- Lassman AB, Pugh SL, Gilbert MR, Aldape KD, Geinoz S, **Beumer JH**, Christner SM, Komaki


• Radomski TR, Zhao X, Thorpe CT, Thorpe JM, Good CB, Mor MK, Fine MJ, Gellad WF. VA


• 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].


**Patient Care**


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


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

- 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.

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 Pharmacist’s 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 Principals of Insulin Therapy. Ohio Society of Health System Pharmacists; Cincinnati, OH, January 21, 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.


• 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)


- 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.


- 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)**


• 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. 

• 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.

• 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.


• European Society for Patient Adherence, COMpliance, and Persistence (ESPACOMP). Prague, Czech Republic. November 12-14, 2015. ESPACOMP Workshop 1


• “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).


Selected Publications


Invited Presentations


Select Presentations

Special Session


Posters


**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

- Carmichael JM, Hall DL. Evolution if ambulatory care pharmacy practice in the last 50 years. Am J Heath-Sys Pharm. 2015;72:2087-91. (Invited publication)


Invited Presentations

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


• 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 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


**Refereed Presentations**


• “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.


Invited Presentations


- “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.


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


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.


- “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.


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 MEDlvate app. The MEDlvate 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.

- MEDlvate 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:


- 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.


Programmatic Accomplishments

• Pennsylvania Pharmaceutical Care Network Training (2014-present) – Melissa S. McGivney, Mindy Kozinski
  o 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
  o Developed training and mentoring program for community-based faculty selected by NACDS Foundation via nomination of their Dean.
  o Coordinate content experts in research and community practice to train faculty.
  o Facilitated learning for 5 Scholars (2012-13); 8 Scholars (2013-14); 8 Scholars (2014-15); 5 Scholars (2015-16).
  o 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
  o Co-developer and co-coordinator of residency research coalition.
  o Progressive on-line education with regular group discussions.
  o 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.
  o Residents present work at PPA and APPhA and are all required write and submit a grant application: 33/33 abstracts accepted to APhA, 13/16 received grants to support research.

  o Integrated preceptors, alumni, chain pharmacy leadership and students to learn together in a series of 4 CLIP Workshops embedded with Community Pharmacist Practice 2.
  o Invited in 4 nationally recognized Keynote Lecturers and provided CE.
  o 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)**


**Community Practice Grants Awarded**


• 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)**


**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**


**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 OB/GYN pharmacology year 4. Venkataramanan R

Grants/Research


• 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_Pham_Competencies_final1.pdf


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)


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).


Invited Presentations and Published Abstracts


• 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


• 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, 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.


- Christopher R. Ensor, PharmD; Katherine M. Harrigan, BS; Raman Venkatramanan, 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


• Miah MK, Bastian J, Shaik I, Caritis S, Venkataramanan R. Intravaginal administration of 17-OHPC is safe in rats. Submitted for AAPS 2016.


• The ISHLT 2016 Annual Meeting Recap. American College of Clinical Pharmacy CE Webinar. May 2016. 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 May 2016. Shullo MA


• 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


• 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


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 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, 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**


- 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**


• 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


Selected Presentations


- 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.


- **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*)


Selected Invited Presentations

• Skledar SJ. “Staying on-track with off-label use of medications.” ASHP 50th Midyear Clinical Meeting, New Orleans LA. December 7, 2015.


• 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.


Selected Poster Presentations (*student pharmacist)


• 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


**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


- 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


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


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

• 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.

Press


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.

Expenditures by Source

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.

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.
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.
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*

<table>
<thead>
<tr>
<th>Faculty Rank</th>
<th>Pharmaceutical Sciences</th>
<th>Pharmacy and Therapeutics</th>
<th>Total for School of Pharmacy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professor</td>
<td>15</td>
<td>4</td>
<td>19</td>
</tr>
<tr>
<td>Associate Professor</td>
<td>2</td>
<td>18</td>
<td>20</td>
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<tr>
<td>Assistant Professor</td>
<td>8</td>
<td>19</td>
<td>27</td>
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<tr>
<td>Instructor</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Research Professor</td>
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<td>0</td>
<td>0</td>
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<tr>
<td>Research Associate Professor</td>
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<td>0</td>
<td>1</td>
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<tr>
<td>Research Assistant Professor</td>
<td>4</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Visiting Assistant Professor</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>All Faculty</td>
<td>30</td>
<td>43</td>
<td>73</td>
</tr>
</tbody>
</table>

*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

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

### 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

<table>
<thead>
<tr>
<th>Name</th>
<th>Fellowship</th>
<th>Department</th>
<th>Department</th>
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</thead>
<tbody>
<tr>
<td>Kim Coley</td>
<td>FCCP</td>
<td>American College of Clinical Pharmacy</td>
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<tr>
<td>Barry Gold</td>
<td>AAAS</td>
<td>American Association for the Advancement of Science</td>
<td>Pharmaceutical Sciences</td>
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<tr>
<td>Donna Huryn</td>
<td>FACS</td>
<td>American Chemical Society</td>
<td>Pharmaceutical Sciences</td>
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<tr>
<td>Sandra Kane-Gill</td>
<td>FCCM</td>
<td>American College of Critical Care Medicine</td>
<td>Pharmacy and Therapeutics</td>
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<tr>
<td></td>
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<td>American College of Clinical Pharmacy</td>
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<tr>
<td>Patricia Kroboth</td>
<td>FCCP</td>
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<td>Pharmaceutical Sciences</td>
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<td>FAAPS</td>
<td>American Association of Pharmaceutical Scientists</td>
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<tr>
<td>Melissa Somma</td>
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<tr>
<td>McGivney</td>
<td>FAPhA</td>
<td>American Pharmacists Association</td>
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<tr>
<td>Thomas Nolin</td>
<td>FCCP</td>
<td>American College of Clinical Pharmacy</td>
<td>Pharmacy and Therapeutics</td>
</tr>
<tr>
<td></td>
<td>FCP</td>
<td>American College of Clinical Pharmacology</td>
<td>Pharmacy and Therapeutics</td>
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<tr>
<td></td>
<td>FASN</td>
<td>American Society of Nephrology</td>
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<tr>
<td>Samuel M. Poloyac</td>
<td>FCCM</td>
<td>American College of Critical Care Medicine</td>
<td>Pharmaceutical Sciences</td>
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<td>FAACP</td>
<td>American Association of Colleges of Pharmacy</td>
<td>Pharmaceutical Sciences</td>
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<tr>
<td>Christine Ruby-Scelsi</td>
<td>FASCP</td>
<td>American Society of Consultant Pharmacists</td>
<td>Pharmacy and Therapeutics</td>
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<td>Paul Schiff</td>
<td>FAPhA</td>
<td>American Pharmacists Association</td>
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<tr>
<td>Amy Seybert</td>
<td>FASHP</td>
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<td>Randall Smith</td>
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<td>Ralph Tarter</td>
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<td>American Psychopathological Association</td>
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<td>Raman Venkataramanan</td>
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### FY16: Faculty Board Certifications

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<th>Name</th>
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<th>Department</th>
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<tr>
<td>Sherrie Aspinall</td>
<td>BCPS</td>
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<td>James Coons</td>
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<td>Colleen Culley</td>
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<td>Amy Calabrese Donihi</td>
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<tr>
<td>Scott Drab</td>
<td>CDE</td>
<td>Pharmacy and Therapeutics</td>
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<td>BC-ADM</td>
<td>Advanced Diabetes Management</td>
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<tr>
<td>Philip Empey</td>
<td>BCPS</td>
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<td>Christopher R. Ensor</td>
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<tr>
<td>Tanya Fabian</td>
<td>BCPP</td>
<td>Psychiatric Pharmacy</td>
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<tr>
<td>Bonnie Falcione</td>
<td>BCPS (AQ-ID)</td>
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<td>Roberta Farrah</td>
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<td>Deanne Hall</td>
<td>BCACP</td>
<td>Ambulatory Care Pharmacy</td>
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<td>CDE</td>
<td>Diabetes Educator</td>
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<td>Thao Huynh</td>
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<td>Oncology Pharmacy</td>
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<td>Heather Johnson</td>
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<td>Jennifer A. Pruskowski</td>
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<td>Amy L. Seybert</td>
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<td>Pamela Smithburger</td>
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<td>Ralph Tarter</td>
<td>ABPP</td>
<td>Clinical Psychology</td>
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<td>Lauren Trilli Carradine</td>
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<tr>
<td>Gordon J. Vanscoy</td>
<td>CACP</td>
<td>Certified Anticoagulation Care Provider</td>
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</table>

### 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
Glaxo Wellcome Endowed Professor of Pharmaceutics
The University of Texas at Austin
College of Pharmacy

Daniel J. Cobaugh, BS ’87, PharmD, FAACT, DABAT
Assistant Vice President and Editor in Chief, ASHP

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

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

Carla Y. White, BS ’89 Pharm, RPh
Assistant Dean, Innovative Leadership and Diversity
UNC Eshelman School of Pharmacy

Richard Kruzynski, BS ’77, RPh, MBA
Immediate Past President of PharMEDium Services, LLC
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:
  o Seven major print communications to the School of Pharmacy’s 6,100 stakeholders.
  o 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

| MOUs for Inter-Institutional Exchange | 56% |
| Affiliation Agreements for Student/Resident Rotations | 37% |
| Research Collaboration Agreements | 7% |

FY16: Agreements with International Organizations

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<tr>
<td>Institution</td>
<td>Location</td>
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<tr>
<td>Changhai Hospital</td>
<td>Shanghai, China</td>
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<td>Fudan University</td>
<td>Shanghai, China</td>
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<tr>
<td>Kunming Institute of Botany, Chinese Academic of Sciences, State Key Laboratory of Phytochemistry and Plant Resources</td>
<td>Yunnan Province, China</td>
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<td>Beacon Hospital</td>
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<td>Universita degli Studi di Palermo/ UPMC ISMETT, (translated as Mediterranean Institute for Transplantation and High Specialization Therapies)</td>
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<td>National University of Singapore</td>
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<td><strong>Palestine</strong></td>
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### 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](image)
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.

<table>
<thead>
<tr>
<th>Name</th>
<th>Home Institution</th>
<th>Hosted By</th>
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<tbody>
<tr>
<td>Venkatakrishnam Balasubramanian</td>
<td>SASTRA University</td>
<td>Dr. Shilpa Sant’s Lab</td>
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<td>Melissa Chapman</td>
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<td>Dr. Janice L. Pringle’s Lab</td>
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<td>Si Chen</td>
<td>Second Military Medical University, China</td>
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<td>Prithvirajan Durairajan</td>
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<td>Shi Fang</td>
<td>Sun Yat-sen University</td>
<td>Dr. Samuel Poloyac’s Lab</td>
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<td>Li Gao, MD</td>
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<td>Na Goa, PhD</td>
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<td>Vijetha Gurunathan</td>
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<td>Jing Li</td>
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<td>Janice Xuanhui Li, BS, MS</td>
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<td>Wensi Li, PhD</td>
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<tr>
<td>Name</td>
<td>Affiliation</td>
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<tr>
<td>Zuojun Li, PharmD</td>
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<td>Lei Liang, PhD</td>
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<td>Lim Paik Shia, PharmD</td>
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<tr>
<td>Xueying Liu, PhD</td>
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<td>Abdul Sami, BS, MS</td>
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<td>Kishor Sarkar, PhD</td>
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<td>Yashi Saw, BS, MS</td>
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<td>Zanmei Zhao, MD, PhD</td>
<td>Peking University Third Hospital, China</td>
<td>Dr. Wen Xie's Lab</td>
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School of Pharmacy
Long Range Plan 2020
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.
  o 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.
  o Enrich students through advancement of self-awareness, professionalism, and leadership experiences.
  o Develop structured training and support for faculty mentors for all of our learners
  o Expand opportunities for student research and inquiry

• **Evolve our adaptive and responsive curricula (I STEP UP!)* to meet practice and research challenges**
  o 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.
  o Build and implement educational processes by which students develop and display expertise in problem identification, solving and decision-making

*I 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
  
  o Integrate School of Pharmacy faculty into the Personalized Medicine Institute.
  
  o Establish processes for incorporating pharmacogenomics into new and existing drug use protocols and measuring clinical outcomes
  
  o 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.
  
  o Support research initiatives so as to become “knowledge experts” for campus and external researchers to pursue development of chemicals into drugs
  
  o Continue and expand initiatives in clinical and translational drug research and education

• **Extend our global research reach**
  
  o Develop global research collaborations leveraging technology to benefit the international community
  
  o 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
  o Expand our pioneering PittPharmacy Innovations Lab as the incubator and concept-testing environment through multidisciplinary teamwork with corporate partners.
  
  o 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
  o Expand relationship-building with new graduate alumni
  
  o 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
  o Expand development opportunities for faculty and staff.
  
  o 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
  o Financial
  o Technology
  o 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
  o Facilitate processes that are easy, agile and accurate so as to optimize staff and faculty time and financial resources
  o 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.**
  o Transform our School climate
  o Enrich student experiences through engagement (See educational initiatives)
  o Attract and retain a diverse University Community - student body, faculty, and staff
  o Expand access from underrepresented communities through targeted programs and support
  o Implement training programs to avoid implicit bias in student admissions, and in faculty and staff searches, recruiting, and hiring.

*Pharmacy Long-Range Plan: Our Journey of Excellence, Innovation, and Leadership 2016 – 2020*