



ANNUAL REPORT

2012–2013

University of Pittsburgh
School of Pharmacy

Dear Friends,

What a great year we have had and what a great start on implementing Long-Range Plan 2018. This Annual Report serves as a mechanism for benchmarking our accomplishments in FY13 against previous years and chronicles our history by three major themes of our mission: education, research, and practice. In this letter, I convey a few key accomplishments in the context of selected “we believe” statements and actual goals articulated in our Long-Range Plan.



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 adopted a new tuition policy that supported a philosophy of learning; tuition is now based on the “cost of a PharmD education” rather than a cost per credit basis. This allows students to take summer courses and opt for additional course work during the year without additional tuition.
- Our commitment to personalizing education has gained momentum with 38 students enrolled in Areas of Concentration (ARCO) in FY13, up from 26 students in FY12, including ARCOs in Global Health, Research, and Pharmacy Business Administration. ARCOs offer professional concentrations, allowing PharmD students to personalize their education and focus on specific areas of expertise and interest while establishing a strong foundation in pharmacy.
- The PharmD program remains a program of excellence. In May 2013, 106 students graduated with their PharmD degree. An impressive 100% of our graduates passed the North American Pharmacist Licensure Exam and Multistate Pharmacy Jurisprudence Examination on the first attempt, with scores that remained above state and national averages. Thirty-four percent (34%) of the class of 2013 continued training in post-PharmD residencies or fellowships.

We believe pharmacists can play an essential role in the prevention of illness and in the promotion of health and wellness.

- The Grace Lamsam Pharmacy Program partners with nine clinics to provide medications and pharmacy care to uninsured and underinsured people of Allegheny County. Faculty and student pharmacists are part of the healthcare teams that have improved the health of over 75,000 residents in Allegheny County in the past 15 years.
- Through advanced practice residencies, we trained 32 residents from 18 schools of pharmacy in 12 states in FY13. The 21 PGY1 and 11 PGY2 residents trained in 13 types of residencies with us and our partners at 10 institutions.

We will address America's drug abuse crisis and improve the safety of the public through policy, research, and patient care demonstration programs.

- In partnership with the Health Policy Institute, Pitt Pharmacy hosted a meeting of members of the Office of the Governor and key staff to discuss "Prescription Drug Monitoring" for controlled substances. (November 2012)
- In January 2013, we signed a Scope of Work with the Commonwealth Department of Health with Drs. Michael Zemaitis and Janice Pringle as principal and co-investigator, respectively. They made targeted policy recommendations to establish a PDMP (Prescription Drug Monitoring Program) in Pennsylvania based on their analysis of the best research and evidence available.
- At the beginning of FY14, Representative Matt Baker introduced HB 1694, legislation to create the Prescription Drug Monitoring Program (and database) (September 20, 2013).
- In Allegheny County, faculty members and students are addressing the drug overdose problem in our communities. We are promoting Allegheny County's community access to naloxone, a narcotic antagonist, through Project Lifeline. By making naloxone available to patients and members of the community, overdoses from opiate prescriptions and other drugs are being treated in the community and lives are being saved.

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

- Faculty members are developing novel formulations of drugs that save and improve lives.
 - Lisa Rohan, associate professor of pharmaceutical sciences, developed the first-ever vaginal-film drug-delivery system and is using it to deliver anti-HIV agents. Lisa and her team now have two drugs in clinical trials: dapivirin and tenofovir. These projects are funded by the Gates Foundation and NIH in an effort to stem the HIV global pandemic.
 - Song Li, professor of pharmaceutical sciences, developed a unique liposomal formulation capable of coating the esophagus and used it to prevent irradiation-induced esophagitis, which is a serious complication of radiation therapy for patients with oral, nasopharyngeal, and lung cancer. To date, there has been no effective preventive treatment.
 - Sean (Xiang-Qun) Xie, professor of pharmaceutical sciences, developed computational strategies and methods to identify drugs that interact with proteins. He used these methods to identify a potential structure in silico and then synthesized the novel compound in the lab that is patented for its effect against multiple myeloma, a cancer for which few effective treatments are available.
- The School maintains its superb research reputation, ranking #9 in National Institutes of Health funding among schools of pharmacy for FY13 with \$9.3 million in support, the second highest amount generated in our history.

- To have greater impact, we broadened the scope of our Pharmaceutical Sciences Graduate Program and in FY13 grew to total of 70 PhD (51) and MS (19) students. The MS program grew exponentially in FY13, up from a total of 4 students in FY12. Of the 19 students enrolled, 8 were in the research track and 11 were in the new non-thesis track.
- Graduate students had an exceptionally productive year, publishing 40 peer-reviewed papers and making 52 presentations at local, national, and international scientific meetings. Five graduate students received national competitive fellowships and four received regional or national awards for their research.

We will create global partnerships that will advance pharmacy care to promote health wellness, and the appropriate use of medications.

- Through efforts in 2013, our international reach extends to six continents with 7 Memoranda of Understanding and 9 Affiliation Agreements; the latter are agreements that are exclusively for Pitt student experiences in other countries. Entities in China (5), Singapore (1), and the United Kingdom (1) signed Memoranda of Understanding. As a result of the agreements:
 - Our first two PharmD students went to Shanghai Jiao-Tong University in summer 2013, where they observed in hospitals and attended a global conference on drug development and Traditional Chinese Medicine.
 - An additional seven students had international experiences in other countries through Affiliation Agreements.
 - Pitt Pharmacy hosted 11 international visiting scholars from 8 universities or hospitals.
 - Faculty gave 91 invited research presentations, including 9 presentations at 9 universities in 2 countries and 20 presentations at 11 international scientific meetings in 9 countries.

We will partner with our stakeholders and communities to develop the resources to advance our mission. We believe that members of the extended School of Pharmacy family are united in our pride in our past and in our ability to shape our future.

- In FY13, the School of Pharmacy augmented its ability to provide active learning environments through the transformation of two spaces.
 - We envisioned a space that would promote active peer learning and facilitate the implementation of faculty teaching innovations. Salk 402—a classroom destroyed by fire—was transformed into the Novo Nordisk Learning Center, an innovative teaching and learning environment that boasts small group learning in a large group setting. The Learning Center has outstanding design characteristics and technology that encourage peer group work. The technology allows three projection options; the instructor can 1. project the same image to all 19 monitors; 2. allow students to connect their PCs for small group work; and 3. allow a single group to share their work on all 19 monitors through the central media system.
 - Salk 526 was changed from an office into a small learning space equipped with technology that allows interactive teaching with two other universities. These investments in transformation of space and technology encourage faculty to adapt and continually evolve their teaching methods to further engage students in their own learning.

- In a show of gratitude and commitment to the School, the PharmD Class of 2013 pledged \$25,000 toward technology innovation to create “The Timmy Room” in memory of classmate Timothy Robert Cook. This classroom is a media-equipped small classroom that will allow interactive learning and small group connection to other universities and off-site entities and individuals.
- Our loyal alumni were once again very engaged and ranked as #1 in life memberships in the Pitt Alumni Association in schools and programs. Alumni ranked #3 in overall engagement with 33.3 % of the 5,126 living alumni engaging in some way.
- The much anticipated construction of our new research Salk Pavilion and the Commons that connects the pavilion to Salk Hall gained impressive speed during FY13 as the building took visible shape. Salk Pavilion is the first new construction that the School will occupy in our 135 years history. The construction brings exciting opportunities for the coming years, including new research endeavors and renovations to Salk Hall to create new teaching and learning spaces.

The School of Pharmacy celebrated the anniversary of its founding 135 years ago. Clearly, the School of Pharmacy that we and all those before us have built during the 135 years of accomplishment is reason to celebrate. I hope that you share my sense of how exciting and full of opportunity our future is. As we enter the next period of change and growth, together we can lay the foundation for another successful 135 years.

Sincerely,



Patricia D. Kroboth, Dean
December 2013

**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

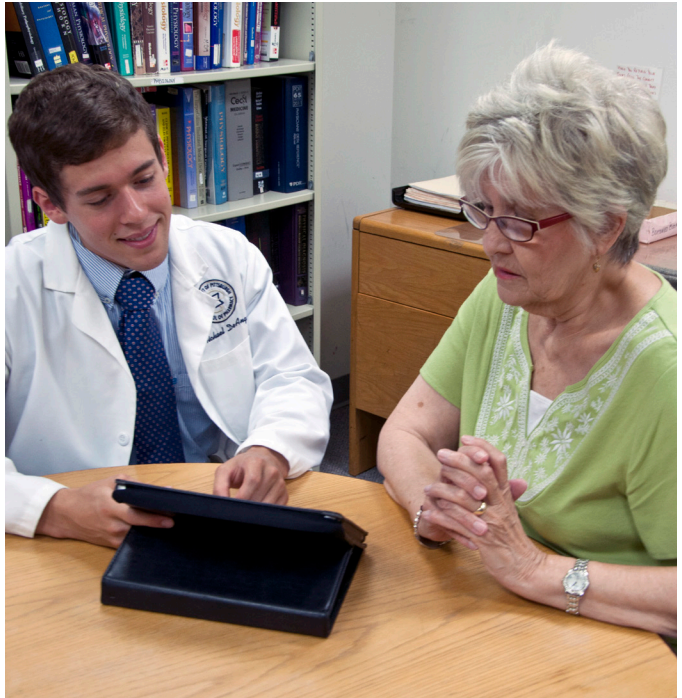
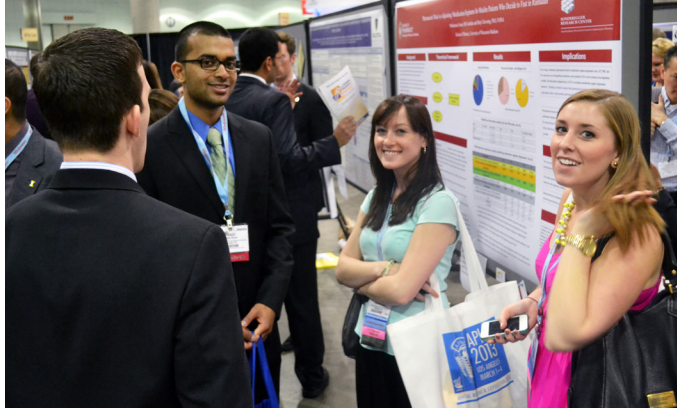
Table of Contents

| | Page |
|---|------|
| <u>Educating the Next Generation of Practitioners and Scientists</u> | |
| Education by the Numbers for FY13 | 1 |
| PharmD Program | 1 |
| Residency Program | 2 |
| Graduate Program | 3 |
| PharmD Program: Educating the Next Generation of Practitioners | 4 |
| Innovations in Student Learning | 4 |
| Students | 6 |
| Experiential Learning | 9 |
| Graduating Class of 2013 | 13 |
| Professional Development: Educating the Next Generation of Practitioners | 14 |
| Residency Program: Educating the Next Generation of Practitioners | 15 |
| Graduate Program: Educating the Next Generation of Scientists | 19 |
| Graduate Program in Pharmaceutical Sciences Details | 20 |
| Combined PharmD–PhD Program | 24 |
| Postdoctoral Fellows | 36 |
| Invited Education Presentations | 36 |
| <u>Advancing Human Health Through Research</u> | |
| Research by the Numbers for FY13 | 1 |
| Research Funding | 1 |
| Research Details | 2 |
| Research Recognition of Faculty | 9 |
| Research Overview | 27 |
| Center for Pharmacogenetics | 27 |
| Center for Development and Delivery of Pharmaceutical Agents | 33 |
| Pharmaceutics Group and Microbicide Clinical Trials Network | 41 |
| Central Laboratory Core | |
| Center for Education and Drug Abuse Research (CEDAR) | 44 |
| Center for Clinical Pharmaceutical Sciences | 45 |
| Computational Chemical Genomics Screening (CCGS) Center | 53 |
| <u>Advancing the Health of the Public Through Partnerships</u> | |
| Patient Care by the Numbers for FY13 | 1 |
| Programs for Community-Dwelling Patients | 3 |
| Community Chain Partnerships | 3 |
| University Diabetes Care Associates | 5 |
| Program Evaluation Research Unit (PERU) | 6 |
| The Grace Lamsam Pharmacy Program for the Underserved | 7 |
| UPMC Clinics and Retail Pharmacies | 9 |
| UPMC Presbyterian Ambulatory Clinics and Falk Pharmacy | 9 |
| UPMC St. Margaret Family Medicine | 10 |
| Transitions of Care | 10 |
| Hospital-Based Programs | 13 |
| UPMC Pharmacy Transplant Group | 13 |
| UPMC Pharmacy Critical Care Group | 18 |
| UPMC Pharmacy General Inpatient Group | 22 |
| UPMC Infectious Diseases and Antibiotic Management Program (AMP) | 23 |
| Health System Formulary Management and Drug Use Policy | 24 |
| Geriatrics (Benedum and Shadyside Senior Care Institute) Program | 27 |
| UPMC Oncology Magee-Womens Hospital of UPMC | 28 |
| UPMC–Western Psychiatric Institute and Clinic | 29 |

| | Page |
|--|------|
| Securing an Adequate Resource Base | |
| <hr/> | |
| Resources by the Numbers for FY13 | 1 |
| Financial Resources | 2 |
| Budget | 2 |
| Institutional Advancement | 2 |
| Physical Facilities | 5 |
| The Resource of People | 6 |
| Faculty | 6 |
| Alumni and Alumni Engagement | 10 |
| Board of Visitors | 11 |
| Enhancing Our Resource Base Through Efficiency and Effectiveness | 12 |
| Staff | 12 |
| Information Technology | 12 |
| Communications | 12 |
| Global and International Partners | 13 |
| Partnerships | 13 |
| PharmD Students as Beneficiaries | 15 |
| International Scholars | 15 |
| | |
| Long-Range Plan 2018 | |
| <hr/> | |
| Long-Range Plan 2018 | |
| Long-Range Plan 2006—2012—2018 | |

**Educating the
Next Generation of
Practitioners and Scientists**



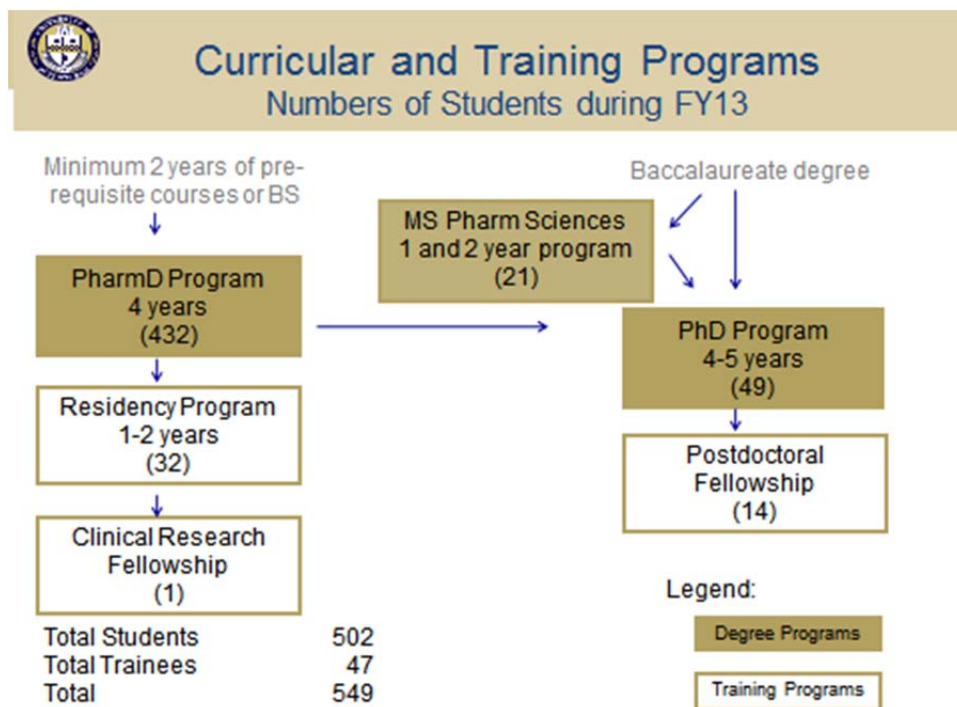


Educating the Next Generation of Practitioners and Scientists

The School builds on its rich tradition of excellence in education, continuing to fulfill its teaching mission to provide the innovators to solve the complex medication-based problems of today and tomorrow and ultimately enhance the health and well-being of people’s lives. The School prepares pharmacists of the future through the PharmD program and advanced practice residencies and prepares future scientists through its graduate programs.

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

This strategic outcome serves as the overall objective for the PharmD, residency, and graduate programs for the School of Pharmacy.



EDUCATION BY THE NUMBERS FOR FY13

PHARM D PROGRAM

In FY13:

- **111** students enrolled in the PharmD Class of 2016 with average GPA and PCAT scores of 3.67 and 78%, respectively.
- **11.7** –The number of applicants per seat through open admission.

- **169** scholarships totaling **\$413,000** were awarded to **145** PharmD students.
- University of Pittsburgh pharmacy student organizations won **6** national or regional awards.
- PharmD students presented **26** papers/posters at national meetings.
- **302** pharmacists in **27** states and **4** countries provided **742** APPE rotations for **106** fourth professional year students.
- In April 2013, **103** students received the BS in pharmaceutical sciences at the end of their second professional year.
- **106** students received PharmD degrees in the 2012 graduating class.

RESIDENCY PROGRAM

In FY13:

- The School partnered with **10** institutions/entities that provided **13** types of residency programs.
- **32** residents participating in our affiliated residency programs came from **18** schools of pharmacy in **12** states.
- **21** PGY1 and **11** PGY2 residents participate in the residency training program.
- **28** of **32** residents presented their research results at national or regional meetings.
- **16** residents were awarded certificates for completion of the Teaching Mastery Program, which includes development of skills in both clinical precepting as well as teaching within the pharmacy curriculum.
- **12** of our **21** PGY1 pharmacy residents have been accepted into PGY2 specialty residency programs.
- **1** PGY2 resident accepted a clinical position at an academic medical center.
- **4** pharmacy residents continued their careers as clinical pharmacists with UPMC Health System.
- **5** residents accepted faculty positions at schools of pharmacy.
- **4** residents were recently board certified pharmacotherapy specialists.

GRADUATE PROGRAM: EDUCATING THE NEXT GENERATION OF SCIENTISTS

GRADUATE AND POSTDOCTORAL PROGRAM BY THE NUMBERS FOR FY13

In FY13:

- **70** students were enrolled: **51** PhD students; **8** Master of Science students; **11** Non-Research Master of Science Students.
- **23** new students matriculated: **7** PhD students; **4** Master of Science students; **11** Non-Research Master of Science Students.
- **3** students received degrees in pharmaceutical sciences; **3** students graduated with Master of Science degrees.
- **29% (14/49)** of the PhD students are U.S. citizens or permanent residents.
- **49% (24/49)** of the PhD students have degrees from schools of pharmacy.
- **12% (6/49)** of the PhD students have PharmD degrees from US schools of pharmacy.
- **4** PhD students are in their second year of competitive fellowships.
- **6** students received regional or national awards for excellence in research.
- **40** peer-reviewed manuscripts or book chapters were published by graduate students.
- Graduate students gave **52** presentations at regional and national scientific meetings.
- **14** postdoctoral fellows were engaged in research in School of Pharmacy laboratories.

BS in Pharmaceutical Sciences

In FY11, the Office of the Provost approved the School's proposal to award the Bachelor of Science in Pharmaceutical Sciences (BSPS) degree to students enrolled in the PharmD degree program after the completion of a minimum of 120 credit hours. Students cannot enroll in the BSPS program without admission to the PharmD program. With the degree, students are eligible to earn credit through selected electives toward University-approved certificates and graduate programs. The BSPS degree also provides eligibility for training programs including the NIH National Service Award (NRSA) Institutional Training Grants (T32). The latter awards are intended to enhance research training opportunities for individuals who are training for careers in specified areas of biomedical, behavioral, and clinical research.

In April 2013, 103 students received the BS in pharmaceutical sciences at the end of their second professional year.

PHARMD PROGRAM: EDUCATING THE NEXT GENERATION OF PRACTITIONERS

As a recognized national leader in pharmacy education, the School of Pharmacy is building the rich tradition of excellence in education to provide world-class learning opportunities for our 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 broad array of individualized learning opportunities, such as Areas of Concentration, Special Topics courses, research engagement, travel to state, regional, and national meetings, and international experiential learning rotations, to allow each student to personalize his or her educational program.
- 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.
- 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 June 30, 2016.

Innovations in Student Learning

We are investing in and committed to continually improving our teaching strategies, learning environments, and student experiences.

SIMULATED PATIENT CARE EXPERIENCES

Standardized Patients and Colleagues – 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. Additionally, professionals trained as standardized physicians provide student opportunities to practice interprofessional communication skills to effectively navigate through difficult conversations.

Virtual Patient Simulation – Faculty members are developing and using computer-based, virtual patients to integrate case-based teaching of complex therapeutic concepts and clinical decision-making processes into the curriculum. Their specific work with a branched-outcome decision-making model has enhanced the therapeutics component of the curriculum.

Human Patient Simulators – The Peter M. Winter Institute for Simulation, Education and Research (WISER) center remains a valuable resource for use in our 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 FY13, the School invested in hiring 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.

AREAS OF CONCENTRATION (ARCO)

In FY13 a total of 38 students were enrolled in ARCOs:

- Eleven students in the ARCO-Global Health (4-P2, 6-P3, 1-P4).
- Fifteen students in the ARCO-Research (1-P2, 6-P3, and 8-P4 students).
- Twelve students were accepted into the ARCO-Pharmacy Business Administration (6-P3 and 6-P4 students).

STRIDES IN CURRICULAR IMPROVEMENT AND OVERSIGHT

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.

The School's Curriculum Assessment Committee is responsible for monitoring the effectiveness of the PharmD curriculum and the achievement of student learning outcomes. As a result of the School's successful self study and reaccreditation in 2009-10, the School has become nationally recognized for its assessment approaches and commitment to a culture of assessment.

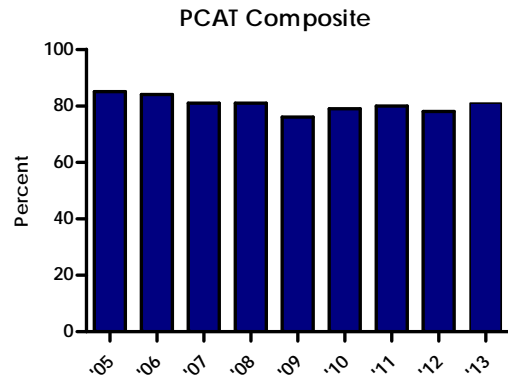
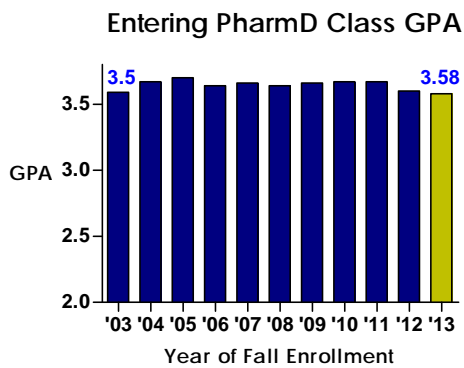
Implementation of e-Portfolio - The School has a tradition of students using portfolios to demonstrate achievement since the 1990s. In FY10, the School invested in the development of a customized e-portfolio platform in which students build an assessment portfolio to show integration of learning across courses and progressive development across the curriculum. In FY11, an adaptation of the platform was developed to support the creation of professional portfolios by students nearing the end of the curriculum and preparing for interviews. In FY13, more robust processes for faculty and peer evaluation of portfolios were implemented, supported by new rubrics to clearly communicate expectations and feedback, as well as standardized training for individuals serving as portfolio reviewers. Each semester, every student in the P1 and P2 years meets individually with a faculty member to discuss progress in the curriculum. Every P3 and P4 student meets with either a faculty member or practitioner for focused career planning and mentoring.

Interprofessional Education - The School is a partner with the other health sciences schools across campus in developing interprofessional education and training experiences for health professions students. All P1 students 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. Dr. Susan Meyer is engaged in a number of national initiatives focused on advancing interprofessional education and preparation of future health care providers for team-based collaborative practice. Other members of the faculty, including Drs. Pamela Smithburger, James Pschirer, and Christine Ruby-Scelsi working with groups of students drawn from across multiple health professions programs to address their preparation for interprofessional collaborative practice.

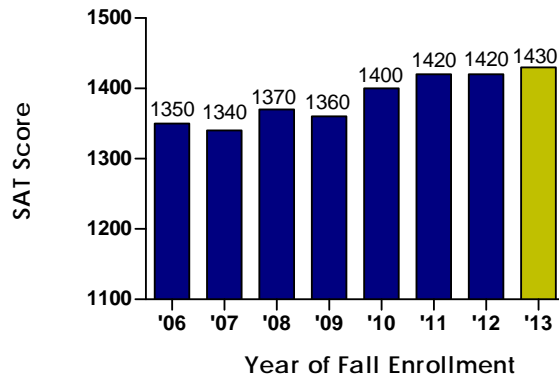
Students

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

Two-thirds of our full-time faculty participated in interviewing applicants. Their work resulted in the selection of an excellent group of 111 students for the Class of 2016.



SAT Scores of Matriculated Students Offered Conditional Acceptance as Freshmen



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

During FY13, we recruited the class of 2017 for fall enrollment.

- Conditional admission Class of 2017

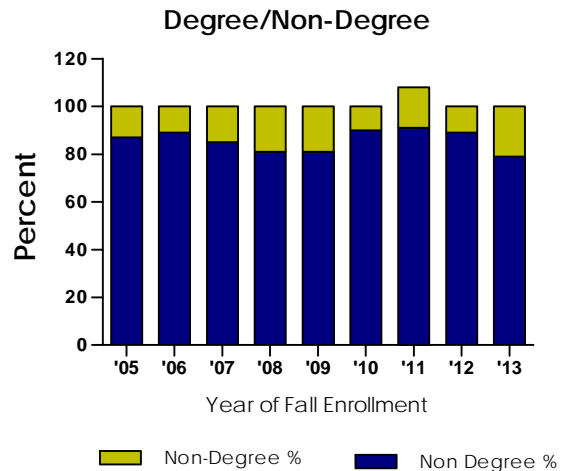
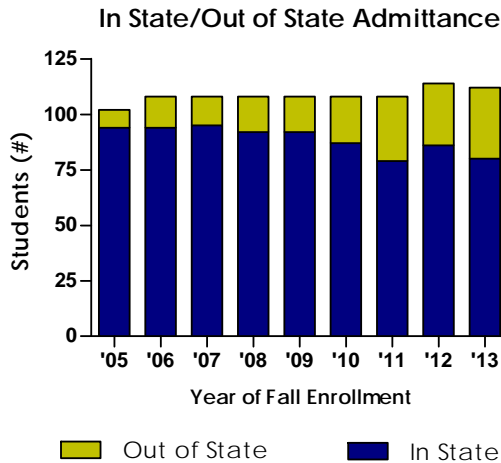
- 50 students applied for PharmD program after sophomore year
- 49 were interviewed
- 45 were qualified and admitted to the program
- Open Enrollment Class of 2017
 - 548 applied to the PharmD program
 - 155 were interviewed
 - 110 were offered admission
 - 68 accepted the offers

Much of the demographic data is summarized in the table below. In addition, 36% are men vs. 39% in Class of 2016; 5% are from an underrepresented minority vs. 1% in the previous class. The data in the table and figures show a steady increase in the percentage of out-of-state students and in students with four-year degrees.

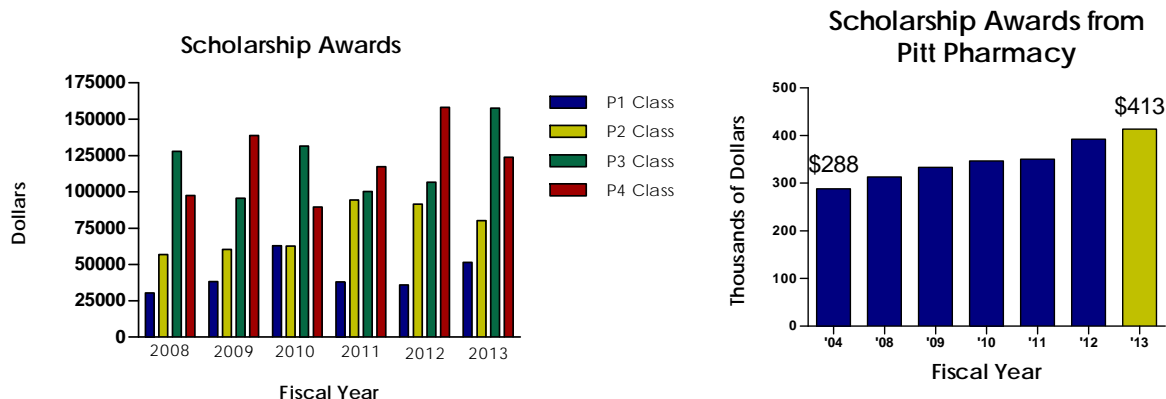
First-Year Class Enrollments 2002-2013

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

*Total across Applications Pathway sums to the total students enrolled.



In addition, the School of Pharmacy gave 143% more in scholarship funds during FY13 than it did in FY04 as shown in the figure on the right.



Student Presentations at National and Regional Meetings

| Student Name | Poster Title |
|------------------|---|
| Eric Abanquah | School of Pharmacy led multidisciplinary approach in preventative care in a subsidized housing community |
| Tony Amos | Comparing risk adjusted models for 30-day readmission in a general medicine population |
| Sarah Brinley | Interprofessional Education Enhanced by High Fidelity Simulation |
| Chelsee Claar | Hemoglobin levels prior to hepatitis c genotype 1 treatment as an indicator of anemia development |
| Andrew Coogan | Development and validation of a novel assay to measure N-acetylcysteine (NAC) and glutathione (GSH) concentrations in human serum and cerebrospinal fluid (CSF). |
| Erin Diehl | Anemia as a predictor of sustained virologic response in patients receiving hepatitis c phenotype 1 treatment |
| Jamie Eckardt | Determining adherence to an electronic drip request protocol at a large academic teaching hospital |
| Maria Felton | Time and attendance metrics: improving pharmacy staff attendance and timeliness at a large academic teaching facility |
| William Ginsberg | Classifying types of medication requests between pharmacy and nursing departments in a large academic teaching hospital before and after pharmacy workflow improvements |
| Emily Graham | Monitoring the monitoring: achievement of target vancomycin concentrations and use of appropriate monitoring strategies |
| Nicole Kovacic | Impact of Intuniv Approval on Guanfacine Exposures in Pediatric Patients |
| Nadia Kudla | Client perceptions of smoking cessation during alcohol and other drug treatment |

| Student Name | Poster Title |
|-------------------|--|
| Alicia Lichvar | Extrapyramidal symptoms caused by a single prophylactic dose of oral perphenazine 4 mg or 8mg for post-operative nausea and vomiting |
| Lindsay McCartney | Workarounds to an opioid dose range checking alert in elderly patients |
| David Meyer | Opportunities in pharmacist mediated hypertension control |
| Erika Morgan | Evaluation of propofol discontinuation as a result of elevated triglyceride levels |
| Lindsey Riharchik | Improving Efficiency and Accuracy of Daily Cart Fill Process in a Large Academic Teaching Facility |
| Sarah Rindfuss | Management of benzodiazepine-resistant alcohol withdrawal syndrome |
| Ryan Rivosecchi | Impact of a central delivery model at a large academic teaching facility |
| Deanna Rowe | Implementation of a virtual call system in a large academic teaching hospital |
| Stephen Sapienza | Genotype-guided antiplatelet therapy protocol development at a large academic medical center |
| Ruth Seiffert | Impact of cart fill delivery changes on missing medications in an academic medical center |
| Michael Stanley | Quality improvement actions following medication event reporting at a tertiary academic medical center |
| Luke Swintek | Evaluation of the clinical impact of the calcium channel blockers-direct acting antivirals interaction in chronic hepatitis C patients |
| Elsa Tchakoute | Identifying key characteristics in the selection of an electronic clinical intervention documentation system for pharmacists |
| Kailey Troutman | Antiemetic Use Patterns in Pediatric Oncology Patients: A Survey of Practitioners |

Experiential Learning

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 7 students had international experiences including experiential rotations.

- UPMC ISMETT, (translated as Mediterranean Institute for Transplantation and High Specialization Therapies) facility in Palermo, Italy. (4 students; Cynthia Bou-Abboud, Bianca Napolitan, Erin Mathis, and Andrew Santeusanio)
- Farmer's Pharmacy in Dublin, Ireland. (1 student; Chelsea Fitzgerald)
- Hombro a Hombro Pittsburgh-San Jose, San Jose de Negrito, Yoro District, Honduras. (1 student; Kristin James)
- Kings College in London, England. (1 student; Indrani Kar)

Other International Student Experiences

In summer 2013, the School sent two PharmD students for our first exchange to China. Cathy Cao (P3) and Katie McGuire (P3) traveled to Shanghai to attend a global conference on drug development and Traditional Chinese Medicine. Both students also had observerships in two Chinese hospitals—one a westernized hospital and one that follows Traditional Chinese Medicine. The students focused their observership on the differences in pharmacy practice in the two hospitals and also compared to common hospital practice in the United States.

Introductory Pharmacy Practice Experience (IPPE) and Advanced Pharmacy Practice APPE Rotations Experience (APPE) Rotations

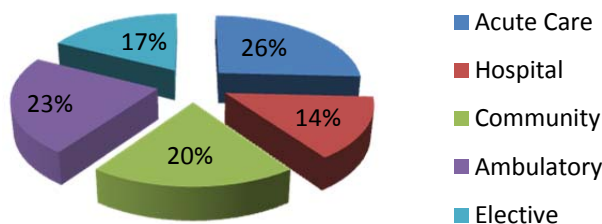
IPPE Rotations

- 49 preceptors supervised 111 P1 students
- 85 preceptors supervised 109 P2 student
- 102 preceptors supervised 106 P3 students

APPE Rotations

- 302 preceptors supervised P4 students during 742 five- or six-week rotations for 106 students.

APPE Distribution by Rotation Type



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 2012-13 awardees were:

- Dr. Bonnie Falcone, Assistant Professor, Department of Pharmacy and Therapeutics. Dr. Falcone provides acute care rotations at UPMC Presbyterian Hospital in the Medical Surgical/Trauma Intensive Care units for P3 and P4 students.
- Dr. Timothy Davis, owner of Brighton Pharmacy, Beaver Health Mart, and Panther Specialty Pharmacy. Dr. Davis provides a community rotation for P4 students.

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

- This year, Dr. Karen Pater, Assistant Professor, Department of Pharmacy and Therapeutics was the recipient of the honor.

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

- Dr. Stephanie McGrath was the 2012-2013 Recipient.

National Recognition and Awards: Student Organizations

| Organization | Award |
|--|---|
| American Pharmacists Association-Academy of Student Pharmacists (APhA-ASP) | Region 2 Generation Rx Award |
| Rho Chi | Chapter Project Award for <i>Posters, Professors, and Progress</i> |
| Student Society of Health-System Pharmacists | Chapter established and recognized by the American Society of Health-System Pharmacists |

Recognition and Awards: Individual Students

| Student | Award | Description |
|------------------------|--|--|
| Pamela Lyons (P2) | Placed second in National Patient Counseling Competition | Competition hosted by the American Pharmacists Association-Academy of Student Pharmacists |
| Joshua Niznik (P2) | Won Make Your Mark t-shirt competition | Competition hosted by the American Pharmacists Association-Academy of Student Pharmacists |
| Kyle McCormick (P3) | Elected to state-level office (director) | Student member of the Pennsylvania Pharmacists Association Board of Directors |
| Jessa Koch (P3) | Paul Ambrose Scholar | Competitive interprofessional program focused on public and population health issues |
| Indrani Kar (P4) | Leadership Scholarship Award | Awarded to 12 students nationally by the American Pharmacists Association |
| Jessa Koch (P3) | Presented at the Teaching Prevention 2013 | Teaching Prevention is the annual conference of the Association for Prevention Teaching and Research |
| Kailey Troutman (P3) | Ethel J. Heath Award | Competitive recognition awarded by the Lambda Kappa Sigma International Office for merit, knowledge, and service |
| Natalie Valentino (P3) | Ruth Davies Flaherty Award | Lambda Kappa Sigma chapter member selected for exemplary service |
| Anna Bondar (P2) | Leadership Award | Awarded to 12 students nationally by the American Society of Health-System Pharmacists for demonstrated |

| Student | Award | Description |
|--|--|--|
| | | leadership |
| Brandon Antinopolous (P3) Kyle McCormick (P3) Ravi Patel (P3) Natalie Pratte (P3) | Achieving Independence Award | Competition of the Pennsylvania Pharmacists Association that recognizes student entrepreneurship and creativity |
| Brahim Shettima (P3) Erin Burke (P4) | Appropriate Medication Use Award | Competition sponsored by the Pennsylvania Pharmacists Association |
| Brandon Antinopolous (P3) Trey Draude (P2) Gordon Watkins (P2) | Selected to participate in Government Relations Advocacy for Student Pharmacists (GRASP) | Advocacy training seminar hosted by the Pennsylvania Pharmacists Association |
| Trey Draude (P2) | Selected for JRCOSTEP | Junior Commissioned Officer Student Training and Extern Program (JRCOSTEP), Division of the Civilian Volunteer Medical Reserve Corps under Office of the Surgeon General |
| Danielle Mayer (P3) Ryan Winstead (P2) Sophia Yang (P1) | Selected as Pittsburgh Schweitzer Fellows | One-year fellowship focusing on reducing disparities in health and health care and on developing leaders in service |
| Deanna Rowe (P3) | Allegheny County Pharmacists Association Scholarship | Selection recognizes dedication to the profession of pharmacy |
| Ukwen Akpoji (P2) Joni Carroll (P2) Trey Draude (P2) Kyle McGrath (P2) Gordon Watkins (P2) | National Association of Chain Drug Stores Million Hearts Campaign | Student team (on behalf of the Class of 2015) selected for a grant award from the National Association of Chain Drug Stores to support health fairs supporting the Million Hearts/NACDS Foundation "Heart to Heart Community Health Fairs" |

Student Awards at Graduation

| Award Title | Student Awardee |
|---|--|
| APhA Academy of Student Pharmacists Recognition Certificate | Elyse Weitzman |
| Facts and Comparisons Award of Excellence in Clinical Communication | Ryan Rivosecchi |
| John Herman Wurdack Award | Kajal Patel |
| Lilly Achievement Award | Lucas Berenbrock |
| Merck Award | Alicia Lichvar Sandra Rindfuss Indrani Kar |
| Mylan Pharmaceutical Excellence in Pharmacy Award | Tony Amos |
| Natural Medicines Comprehensive Database Recognition Award | Natalie Capozolo |
| Pennsylvania Pharmacists Association Outstanding Student Award | Erin Burke |
| Robert W. Taylor Award for Outstanding | Nadia Kudla |

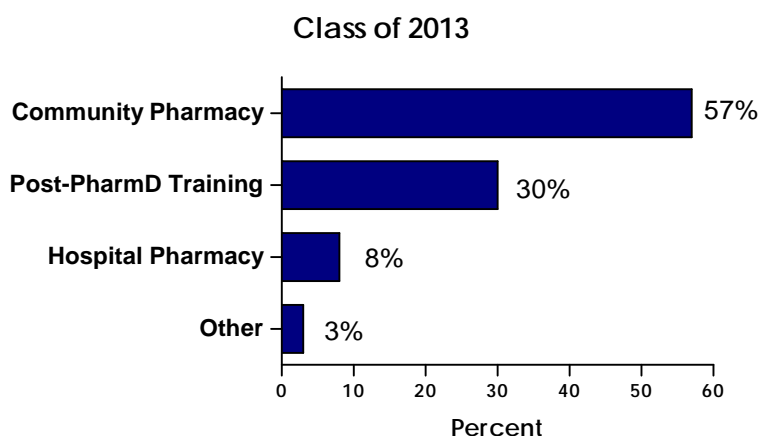
| Award Title | Student Awardee |
|--|---------------------------------------|
| Performance in Patient Care Rotation | |
| TEVA Pharmaceuticals Outstanding Student Award | Andrew Coogan |
| U.S. Public Health Service Award for Excellence in Public Health Pharmacy Practice | Zarah Mayewski |
| University of Pittsburgh School of Pharmacy Patient Care Award | Laura Mincemoyer Lindsay McCartney |
| University of Pittsburgh School of Pharmacy – Pharmacy Communications Award Natural Standard Academic Award | Kailey Troutman Cari Cline |

Graduating Class of 2013

106 students received their PharmD diplomas at the May 2013 Commencement Ceremony.

In calendar year 2012, 100% of students passed the North American Pharmacist Licensure Exam on their first attempt and 100% passed the Multistate Pharmacy Jurisprudence Examination on their first attempt. School graduates have consistently exceeded state and national averages for scores and pass rates on these two examinations.

Thirty-four percent (34%) of the class of 2013 continued training in a post-PharmD residencies or fellowships. Other graduates obtained employment in a variety of pharmacy practice settings.



Comparison of NAPLEX Pass Rates: First-Time Candidates

| Year | Pitt Candidates Pass/Total | Pitt Pass Rate (%) | State Pass Rate (%) | National Pass Rate (%) |
|-------|----------------------------|--------------------|---------------------|------------------------|
| 2013 | 102/105 | 97.14 | 98.48 | 95.59 |
| 2012 | 106/106 | 100.00 | 98.0 | 96.40 |
| 2011 | 103/105 | 98.0 | 97.8 | 96.6 |
| 2010 | 104/107 | 97.2 | 87.6 | 91.5 |
| 2009 | 102/102 | 100 | 98.0 | 97.5 |
| 2008* | 26/27 | 96.3 | 93.5 | 92.2 |
| 2007 | 97/98 | 98.9 | 90.9 | 95.3 |

*Jan–April 2008 scores

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

| Year | Pitt Candidates Pass/Total* | Pitt Pass Rate (%) | State Pass Rate** (%) | National Pass Rate** (%) |
|------|-----------------------------|--------------------|-----------------------|--------------------------|
| 2013 | 74/75 | 98.67 | 97.07 | 93.95 |
| 2012 | 91/91 | 100 | 95.1 | 92.5 |
| 2011 | 89/89 | 100 | 96.6 | 95.6 |
| 2010 | 70/73 | 95.9 | | 93.9 |
| 2009 | 77/77 | 100 | | 92.1 |
| 2008 | 66/67 | 98.5 | | 91.4 |
| 2007 | 73/75 | 97.3 | | 91.3 |

* 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.

PROFESSIONAL DEVELOPMENT: EDUCATING THE NEXT GENERATION OF PRACTITIONERS

DM Educate® - 3rd Edition: Comprehensive Diabetes Management

The third edition of DM Educate was launched with two new topics, Medication Safety and Insulin Dosing, as well as 13 significantly revised topics. In FY13, over 700 health professionals and over 60 schools of pharmacy in the US and abroad accessed DM Educate.

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 FY13:

- Fall Continuing Education Seminar: “Cardiovascular Medicine Update” featured presentations by Assistant Professors Neal J. Benedict, PharmD, and Philip E. Empey, PharmD, PhD. Fifty-one (51) pharmacists and student pharmacists attended the program. The intent of this program was to educate participants about 1) the benefits and challenges involved in using the newest anticoagulants and 2) the emerging role of pharmacogenetics in cardiology.
- Spring Continuing Education Seminar: “Pharmacy Practice Seminar” featured presentations by Michael J. Romano, BS, Assistant Professor Bonnie A. Falcione, PharmD, BCPS (AQ-ID), and pharmacy practice resident Terri L. Shigle, PharmD. Fifty-six (56) pharmacists and student pharmacists attended. The goals of this program were to 1) educate participants on the scope of work of the Pennsylvania Board of Pharmacy and the processes used to conduct its business; 2) show the benefits of an antimicrobial stewardship program; and 3) provide information on selected new drugs approved for the use in the US since 2011.

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.

BY THE NUMBERS FOR FY13 (RESIDENCY CLASS 2012-13):

- The School partnered with **10** institutions/entities that provided **13** types of residency programs.
- **32** residents participating in our affiliated residency programs came from **18** schools of pharmacy in **12** states.
- **21** PGY1 and **11** PGY2 residents participate in the residency training program.
- **28** of **32** residents presented their research results at national or regional meetings.
- **16** residents were awarded certificates for completion of the Teaching Mastery Program, which includes development of skills in both clinical precepting as well as teaching within the pharmacy curriculum.
- **12** of our **21** PGY1 pharmacy residents have been accepted into PGY2 specialty residency programs.
- **1** PGY2 resident accepted a clinical position at an academic medical center.
- **4** pharmacy residents continued their careers as clinical pharmacists with UPMC Health System.
- **5** residents accepted faculty positions at schools of pharmacy.
- **4** residents were recently board certified pharmacotherapy specialists.

Residents 2012-2013

Total Residents: 32

Locations for the 3 PGY1 Programs: 10

Total Number of Types of Residency Programs: 13

Locations for the 10 PGY2 programs: 4

| Last Name | First Name | Pitt Residency Program | Year | PharmD School | Plans for FY13 |
|--------------|-----------------|-----------------------------------|------|--|--|
| Bhuiyan | Jennifer | Underserved | PGY2 | St. John's University | Assistant Clinical Professor Northeastern University Bouve College of Health Sciences School of Pharmacy |
| Bohnenberger | Kristin | Pharmacy | PGY1 | Wilkes University Nesbitt School of Pharmacy | Fellowship, Toxicology/Emergency Medicine USVI-Florida Poison Information Center, Shands-Jacksonville |
| Bragg | Scott | Family Medicine | PGY2 | West Virginia University | Assistant Professor South Carolina College of Pharmacy, MUSC |
| Cadwalader | John Carroll | Pharmacy | PGY1 | Massachusetts College of Pharmacy and Health Sciences- Worcester | PGY2 Health System Pharmacy Administration, UPMC Presbyterian |
| Castelli | Gregory | Pharmacy | PGY1 | Wilkes University Nesbitt School of Pharmacy | PGY2 Family Medicine, UPMC St. Margaret |
| Crooks | Rebecca | Pharmacy | PGY1 | University of Pittsburgh | Clinical Pharmacist UPMC Bedford Memorial Hospital |
| Dombrowski | Sarah Krahe | Community Pharmacy Rite Aid | PGY1 | University of Pittsburgh | PGY2 Family Medicine, UPMC St. Margaret |
| Eplin | Dwight David | Oncology | PGY2 | West Virginia University | Oncology Clinical Pharmacy Specialist UPMC Shadyside |
| Fleischman | Megan | Ambulatory Care | PGY2 | University of Wisconsin | Clinical Assistant Professor University of Illinois-Chicago College of Pharmacy and College of Medicine – Rockford Campus |
| Guido | Laura | Pharmacy | PGY1 | Duquesne University | Medical Science Liaison California |
| Ingemi | Amanda | Transplant | PGY2 | University of Rhode Island | Transplant Clinical Specialist Virginia |
| Johnson | Amanda | Pharmacy | PGY1 | University of Pittsburgh | PGY2 Health System Pharmacy Administration, UPMC Presbyterian |
| Kattner | Lauren | Pharmacy | PGY1 | University of the Sciences, Philadelphia | Pediatric clinical pharmacist St. Christopher's Hospital for Children , Philadelphia, PA |
| Kloet | Megan | Critical Care | PGY2 | University of Florida | Research |
| Kolonich | Harold | Pharmacy | PGY1 | Duquesne University | Unknown |

| Last Name | First Name | Pitt Residency Program | Year | PharmD School | Plans for FY13 |
|-----------|------------|--|------|---|--|
| Miller | Taylor | Cardiology | PGY2 | University of Pittsburgh | Unit Based Pharmacist – Cardiology UPMC Presbyterian |
| Millisor | Vanessa | Pharmacy | PGY1 | South Carolina College of Pharmacy | PGY2 Pediatric Oncology, St. Jude Children’s Research Hospital, Memphis, Tennessee |
| Pickering | Aaron | Pharmacy | PGY1 | Duquesne University | PGY2 Infectious Disease UPMC Presbyterian |
| Politz | Tiffany | Medication Safety | PGY2 | South Dakota State University | Medication Safety and Quality Clinical Pharmacist with Virtua Health |
| Sacha | Lauren | Pharmacy | PGY1 | St. John Fisher College Wegmans School of Pharmacy | PGY2 Transplant UPMC Presbyterian |
| Saunders | Jessica | Managed Care Pharmacy-UPMC Health Plan | PGY1 | Hampton University | Managed Care Pharmacy |
| Schwier | Nicholas | Pharmacy | PGY1 | St. John Fisher College Wegmans School of Pharmacy | PGY2 Cardiology UPMC Presbyterian |
| Seaton | Stephanie | Geriatrics | PGY2 | St. Louis College of Pharmacy | Assistant Professor of Pharmacy Practice St. Louis College of Pharmacy |
| Shigle | Terri Lynn | Pharmacy | PGY1 | Ohio Northern University | PGY2 Oncology UPMC Presbyterian Shadyside |
| Simpson | Amanda | Pharmacy | PGY1 | University of Pittsburgh | Unit-Based Pharmacist UPMC Presbyterian |
| Sisco | Kate | Pharmacy | PGY1 | University of Pittsburgh | Critical Care Pharmacist, Johns Hopkins |
| Smith | Michael | Internal Medicine | PGY2 | University of Pittsburgh | Assistant Professor University of the Sciences, Philadelphia |
| Stevens | Brad | Managed Care Pharmacy – CVS Caremark | PGY1 | University of Pittsburgh | Clinical Advisor, CVS Caremark Pittsburgh |
| Thompson | Johanna | Pharmacy | PGY1 | University of Washington | PGY2 Family Medicine University of Utah |
| Winter | Sarah | Family Medicine | PGY2 | Duquesne University | Ambulatory Care Specialist, AGH/West Penn, Pittsburgh |
| Wojtusik | Amanda | Pharmacy | PGY1 | University of Rhode Island | PGY2 Family Medicine UPMC St. Margaret |
| Yarabinec | Daniel | Pharmacy | PGY1 | University of Pittsburgh | Clinical Pharmacy Baylor All Saints Hospital Dallas, Texas |

Residents Recruited for 2013-2014

Total Residents: 48
 Total Number of Types or Residency Programs: 14

Locations for the 3 PGY1 programs: 11
 Locations for the 10 PGY2 programs: 4

| Program Type | Location | | Resident | Education | |
|----------------------------|---|-----------------------------|----------------------------|---|--|
| PGY1 Community Pharmacy | University of Pittsburgh School of Pharmacy | Giant Eagle | Elizabeth McCartney | University of Pittsburgh | |
| | | Rite Aid | Kristine Ossman | St John Fisher College Wegmans School of Pharmacy | |
| PGY1 Managed Care Pharmacy | CVS-Caremark | | Meghan Tauber | University of Minnesota | |
| | UPMC Health Plan | | Sean Chitwood | Mercer University College of Pharmacy and Health Sciences - Atlanta | |
| | | | Glenna Shutzberg | University of Pittsburgh | |
| PGY1 Pharmacy Practice | UPMC Presbyterian, WPIC | | Derek Bremmer | South Carolina University | |
| | | | Genevieve Hale | Nova Southeastern | |
| | | | Chelsea Harrison | Duquesne University | |
| | | | Ashley Hedges | University of North Carolina | |
| | | | Alicia Lichvar | University of Pittsburgh | |
| | | | Adam MacLasco | Northeastern University | |
| | | | Erin Mathis (WPIC) | University of Pittsburgh | |
| | | | Ryan Rivosecchi | University of Pittsburgh | |
| | | | Gwendolyn Wilkening (WPIC) | Southwestern Oklahoma State University | |
| | | | UPMC Mercy | | Deanna Buehrle |
| | Abigail Gregg | University of Buffalo | | | |
| | Emanuel Nites | University of Pittsburgh | | | |
| | Robert Tunney | Duquesne University | | | |
| | Arin Whitman | Duquesne University | | | |
| | UPMC Hamot | | Jennifer Ballman | Duquesne University | |
| | | | Megan Doyle | Creighton University | |
| | | | Chelsey Nichole Rashid | Lake Erie College of Osteopathic Medicine | |
| | Children's Hospital of Pittsburgh of UPMC | | Mary Riedy | Duquesne University | |
| | UPMC St. Margaret | | Priscilla Ko | Texas Tech University | |
| | | | Nadia Kudla | University of Pittsburgh | |
| | | | Ashley Higbea | Virginia Commonwealth University | |
| | | | Lucas Hill | University of Missouri- Kansas City | |
| | | | Sarah Rindfuss | University of Pittsburgh | |
| | UPMC Shadyside | | Holly Filip | Duquesne University | |
| | | | Michele Hebda | Creighton University | |
| | UPMC McKeesport | | Jessica Butala | University of Michigan | |
| | PGY2 Ambulatory Care Pharmacy | UPMC Presbyterian-Shadyside | | Marie Davies | Campbell University |
| | PGY2 Cardiology Pharmacy | UPMC Presbyterian-Shadyside | | Justin Harris | Philadelphia College of Pharmacy |
| | | | | Nicholas Schwier | St John Fisher College Wegmans School of Pharmacy |
| | PGY2 Critical Care Pharmacy | UPMC Presbyterian-Shadyside | | Ashley Hogue | University of Pittsburgh |
| | | | | Adrian Wong | Northeastern University |
| | PGY2 Family Medicine | UPMC St. Margaret | | Gregory Castelli | Wilkes University ,Nesbitt |

| Program Type | Location | Resident | Education |
|---|--|----------------------------|---|
| | | | School of Pharmacy |
| | | Sarah Krahe Dombrowski | University of Pittsburgh |
| | | Amanda Wojtusik | University of Rhode Island |
| PGY2 Geriatrics | UPMC Presbyterian Shadyside | Madhavi Gavini | University of Florida College of Pharmacy |
| PGY2 Geriatrics | UPMC St. Margaret | Teresa Breslin | Wayne State University |
| | | Amy Haver | Duquesne University |
| PGY2 Health System Pharmacy Administration | UPMC Presbyterian | John Carroll Cadwalader | Massachusetts College of Pharmacy and Health Sciences-Worcester |
| | | Amanda Johnson | University of Pittsburgh |
| PGY2 Infectious Disease Pharmacy | UPMC Presbyterian- Shadyside | Aaron Pickering | Duquesne University |
| PGY2 Internal Medicine Pharmacy | UPMC Presbyterian- Shadyside | Not recruited for | |
| PGY2 Oncology Pharmacy | UPMC Presbyterian- Shadyside | Terri Lynn Shigle | Ohio Northern University |
| PGY2 Solid Organ Transplant Pharmacy | UPMC Presbyterian- Shadyside | Lauren Sacha | St John Fisher College Wegmans School of Pharmacy |
| PGY2 Specialized Area of Pharmacy: Underserved Care | University of Pittsburgh School of Pharmacy | Marisa Sochacki | The University of Toledo College of Pharmacy |

GRADUATE PROGRAM: EDUCATING THE NEXT GENERATION OF SCIENTISTS

BY THE NUMBERS FOR FY13: GRADUATE AND POSTDOCTORAL PROGRAM

In FY13:

- **A total of 70 students are enrolled in the graduate program: 66 full-time and 4 part-time students: 51 PhD students; 8 Master of Science students; 11 Non-Research Master of Science Students.**
- **23 new students matriculated: 7 PhD students; 4 Master of Science students; 11 Non-Research Master of Science Students.**
- **3 students received degrees in pharmaceutical sciences; 3 students graduated with Master of Science degrees.**
- **29% (14/49) of the PhD students are U.S. citizens or permanent residents.**
- **49% (24/49) of the PhD students have degrees from schools of pharmacy.**
- **12% (6/49) of the PhD students have PharmD degrees from US schools of pharmacy.**
- **4 PhD students are in their second year of competitive fellowships.**
- **6 students received regional or national awards for excellence in research.**

- **40** peer-reviewed manuscripts or book chapters were published by graduate students.
- Graduate students gave **52** presentations at regional and national scientific meetings.
- **14** postdoctoral fellows were engaged in research in School of Pharmacy laboratories.

Graduate Program in Pharmaceutical Sciences Details

This program prepares students for positions in academia, government, and industry. Three degrees are offered: the PhD, the Thesis-based Master of Science (MS), and the recently developed Non-Research based MS. 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 Non-Research based MS degree is a one-year program designed to prepare students for employment in the pharmaceutical and biotechnology fields. Each degree program offers four tracks: Biochemical Pharmacology, Medicinal Chemistry, Pharmaceutics, and Clinical Pharmaceutical Sciences (a specialized program to train students in clinical and translational science).

Admission and Enrollment Demographics

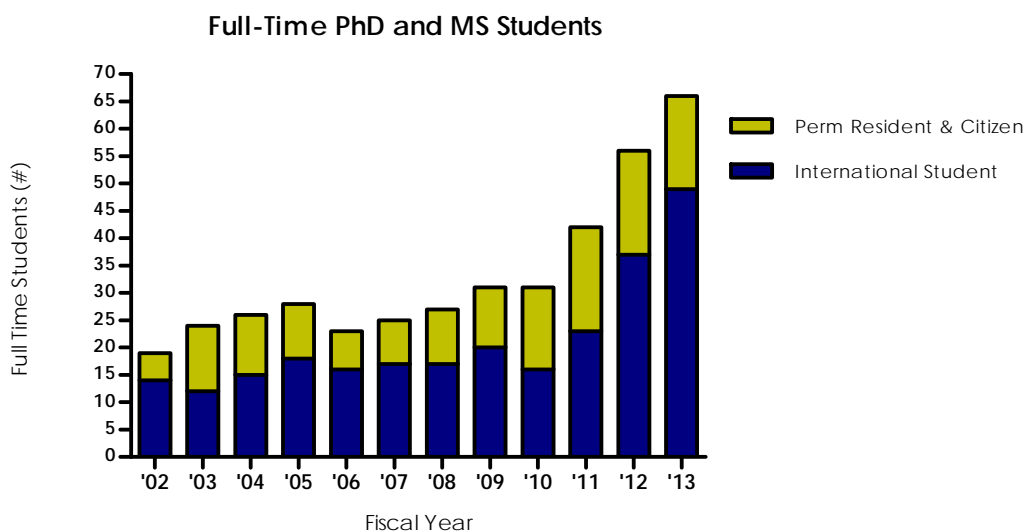
2012-2013

- 6 PhD students enrolled from over 170 applicants for Fall 2012
- 1 PhD student was admitted for Spring 2013
 - 1 permanent resident with a PharmD degree from a US school of pharmacy
 - 6 non-US citizens – 3 with degrees from schools of pharmacy
- 3 MS students were selected for Fall 2012
- 14 Non-Research based MS students were selected for Fall 2012

During FY13, the School of Pharmacy had **66** full-time and **4** part-time students enrolled in the Pharmaceutical Sciences Graduate Program. The part-time students included two in the PhD program, one in the MS program, and one in the Non-Research MS student.

Of the **66** full-time students: **49** are PhD students; **7** are Master of Science students; **10** are Non-Research Master students

- **29% (14/49)** of the PhD students are US citizens or permanent residents.
- **51% (25/49)** of the PhD students have pharmacy degrees.
- **6** students passed their comprehensive examination and achieved PhD candidate status.



2013-2014 Admission Demographics

- The school received 145 applications for the PhD program, 55 for the MS program and 12 for the Non-Research MS
- 13 PhD students were offered admission and enrolled in Fall 2013.
 - 4 of the 13 are either US citizens or permanent residents.
 - 1 with a PharmD degree
- 7 MS students were offered admission for Fall 2013 and 3 students enrolled.
- 28 NTMS students were offered admission for Fall 2013 and 18 students enrolled.

Students Completing Graduate Degrees in 2012-2013

Jilong Li, MS

Advisor: Song Li, PhD

Graduation: August 2012 (Defense completed July 2012)

Thesis Title: Downregulation of DNA Methyltransferase 1

Current Position: PhD Student Ohio State University

Yahia Alghazwani, MS

Advisor: Raman Venkataramanan, PhD

Graduation: December 2012 (Defense completed October 2012)

Thesis Title: Regulation of Glucuronidation (UGT1A9) Pathway During Pregnancy

Current Position: PhD Student Massachusetts College of Pharmacy and Health Services

Zhuzhu Wang, MS

Advisor: Peter Wipf, PhD

Graduation: April 2013 (Defense completed April 2013)

Thesis Title: Development of New Chemotherapeutics for Head and Neck Squamous Cell Carcinoma (HNSCC).

Current Position: PhD Student Duquesne University

Awards to Graduate Students

National

- ZuWei Zhai received the 2012-2013 Student Initiated Programs Award American Association of Pharmaceutical Scientists, for "How we got here: Career development in basic and clinical pharmaceutical sciences. \$4,000.00
- Mengxi Jiang, received the Best Oral Presentation Award chosen for her podium presentation "Steroid sulfatase enhances hepatic estrogen activity and protects mice from obesity and type 2 diabetes" at the 5th Great Lakes Nuclear Receptor Conference (GLNRC) held in Chicago, October 12-13, 2012.
- Salwa Albusaysi's poster presentation at the American Association of Pharmaceutical Sciences, Student Chapter Northeastern Regional Research Forum, West Virginia University, Morgantown, WV was awarded second place.
- Osama Y. Alshogran podium presentation at the American Association of Pharmaceutical Sciences, Student Chapter Northeastern Regional Research Forum, West Virginia University, Morgantown, WV was awarded first place.

Travel Awards

- Mengxi Jiang received the Endocrine Society Travel Award to attend the 5th Great Lakes Nuclear Receptor Conference at Northwestern University, Chicago Illinois.
- Kareem Khoury received the ACS Division of Medicinal Chemistry Travel Award to attend the American Chemical Society Annual Meeting.
- Zu Wei Zhai received a University of Pittsburgh Graduate and Professional Student Government (GPSG) Travel Award to attend and present at the Society for Prevention Research, Annual Meeting, San Francisco, CA.
- Yifei Zhang received a University of Pittsburgh Graduate and Professional Student Government (GPSG) Travel Award to attend and present 10th International Nanomedicine and Drug Delivery Symposium, Atlantic City, NJ.
- Ananda Chowdhury received a Graduate Program Council travel award to attend the Biophysical Society 57th Annual Meeting. Philadelphia, PA.

Research or Presentation Awards

- Ananda Chowdhury's poster was awarded a podium presentation at the University of Pittsburgh School of Pharmacy 4th Annual Research Retreat held at the O'Hara Student Center on campus.
- Mengxie Jiang's poster was awarded a podium presentation at the University of Pittsburgh School of Pharmacy 4th Annual Research Retreat held at the O'Hara Student Center on campus.
- Ellen Press's poster was awarded a podium presentation at the University of Pittsburgh School of Pharmacy 4th Annual Research Retreat held at the O'Hara Student Center on campus.

- Wei Zhang's poster was awarded a podium presentation at the University of Pittsburgh School of Pharmacy 4th Annual Research Retreat held at the O'Hara Student Center on campus.
- Xiaolan Zhang's poster was awarded a podium presentation at the University of Pittsburgh School of Pharmacy 4th Annual Research Retreat held at the O'Hara Student Center on campus.
- Salwa Albusaysi's podium presentation at the American Association of Pharmaceutical Sciences, Student Chapter Pittsburgh Regional Research Symposium, Duquesne University, Pittsburgh, PA was awarded second place.
- Ziv Kirshner's poster presentation at the American Association of Pharmaceutical Sciences, Student Chapter Pittsburgh Regional Research Symposium, Duquesne University, Pittsburgh, PA, was awarded second place.

Competitive Fellowships

- Kareem Khoury received an American Chemical Society Medicinal Chemistry Fellowship for his proposal "Synthesis and Evaluation of potent small molecule p53/MDM2 antagonists" Mentor-Alexander Döemling, PhD. (August 2011-August 2012)
- Yifei Zhang has been awarded a two-year pre-doctoral fellowship from American Heart Association for her proposal "Novel Polymeric Vectors for Pulmonary uPA Gene Therapy." Mentor- Wen Xie, MD, PhD. (July 2011-June 2013)
- Katherine Eichenger received an AFPE Pre-Doctoral Fellowship in Pharmaceutical Science for her proposal "Immunomodulation of the neonatal response to Respiratory Syncytial Virus (RSV) using inhaled interferon gamma (IFN γ)" Mentor-Kerry Empey, PharmD, PhD. (September 2013-August 2014)
- Mengxi Jiang was chosen to receive the 2012 George Wang Memorial Student Assistance Fund Award in Pharmacogenetics based on her research proposal, "The Steroid Sulfatase Prevents Bile Acid Toxicity by Activating the LXR Signaling Pathway." Mentor-Wen Xie, MD, PhD.
- Ziv Kirshner received the inaugural Abraham "Barry" Cohen Fellowship Award in Biological Sciences at the 2013 International Sephardic Education Foundation (ISEF) in New York City. This award is given to a young researcher who shows promising achievements in both pharmaceutical industry and fundamental research in academia.

Other Awards

- Ananda Chowdhury won the Medicinal Chemistry Track Best Poster Award, University of Pittsburgh, School of Pharmacy, June 21, 2013.
- Mengxi Jiang won the Biochemical Pharmacology Track Best Poster Award, University of Pittsburgh, School of Pharmacy, June 21, 2013.
- Ellen Press won the Clinical Pharmaceutical Scientist Track Best Poster Award, University of Pittsburgh, School of Pharmacy, June 21, 2013.
- Xiaolan Zhang won the Pharmaceutics Track Best Poster Award, University of Pittsburgh, School of Pharmacy, June 21, 2013.

- Ziv Kirshner won the Teaching Assistant of the Year Award, University of Pittsburgh, School of Pharmacy, June 21, 2013.
- Lindsay Ferguson-Kramzer, won the Randy and Renee Juhl Pharmacy Graduate Scholar Award, University of Pittsburgh, School of Pharmacy, June 21, 2013.
- Sung Tae Kim won the Pharmaceutical Sciences Graduate Student Excellence Award, University of Pittsburgh, School of Pharmacy, June 21, 2013.
- Kareem Khoury won the Norman R. and Priscilla A. Farnsworth Student Award, University of Pittsburgh. June 21, 2013.
- Osama Alshogran won the Pharmacodynamic Research Award, University of Pittsburgh, June 21, 2013.

Publications, Presentations

In FY13, graduate students:

- Published 40 papers in peer-reviewed journals.
- Made 52 presentations at local, national, and international scientific meetings.

The School of Pharmacy hosted the Third Annual Graduate Student and Postdoc Research Retreat at O'Hara Student Center on campus in June 2013. Graduate student awards were announced at the banquet:

- | | |
|----------------------------|--|
| • Kareem Khoury | Norman R. and Priscilla A. Farnsworth Student Award |
| • Sung Tae Kim | Graduate Student Excellence Award |
| • Ziv Kirshner | Teaching Assistant of the Year Award |
| • Ananda Chowdhury | Medicinal Chemistry Track, Best Poster Award |
| • Ellen Press | Clinical Pharmaceutical Scientist Track, Best Poster Award |
| • Mengxi Jiang | Biochemical Pharmacology Track, Best Poster Award |
| • Xiaolan Zhang | Pharmaceutics Track, Best Poster Award |
| • Wei Zhang | Post Doctorate, Best Poster Award |
| • Lindsay Ferguson-Kramzer | Randy and Renée Juhl Pharmacy Graduate Scholar Award |
| • Osama Alshogran | Pharmacodynamic Research Award |

Combined PharmD-PhD Program

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

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

2012–2013 Pharmaceutical Sciences Graduate Students

| Name | Advisor | Track | Enrollment | PhD/MS |
|-------------------------|---------------------|--------------------------|------------|--------|
| Akil, Ayman | Rohan, Lisa | Pharmaceutics | Sep-07 | PhD |
| Albusaysi, Salwa | Fabian, T | Pharmaceutics | Jan-11 | PhD |
| Alghazwani, Yahia Salim | Venkataramanan, R. | Pharmaceutics | Jan-10 | MS |
| Almazroo, Omar | Venkataramanan, R. | Pharmaceutics | Sep-11 | PhD |
| Almehizia, Abdulrahman | Xie, Sean | MedChem | Sep-09 | PhD |
| Alqarni, Mohammed | Xie, Sean | MedChem | Jan-11 | PhD |
| Alshabi, Ali Mohamed | Venkataramanan, R. | CPS* | Jan-12 | PhD |
| AlShogram, Osama | Nolin, Tom | CPS* | Sep-10 | PhD |
| Altawalbeh, Shoroq | Thorpe, Joshua | CPS* | Sep-12 | PhD |
| Amin, Yashesh | Folan, Maggie | Non-Thesis Master | Sep-12 | NTMS |
| Alvarez, Celeste | Wipf, Peter | MedChem | Sep-11 | PhD |
| Anderson, Kacey | Poloyac, Samuel | CPS* | Sep-10 | PhD |
| Barnas, George | Gibbs, Robert | Non-Thesis Master | Sep-12 | NTMS |
| Bian, Ke | Dixit, Baldwant | Non-Thesis Master | Sep-12 | NTMS |
| Cheng, Haizi | Xie, Sean | MedChem | Jan-13 | PhD |
| Chen, Yichao | Li, Song | Pharmaceutics | Sep-12 | MS |
| Chowdhury, Ananda | Xie, Sean | MedChem | Sep-08 | PhD |
| Donnelly, Mark | Poloyac, Samuel | Pharmaceutics/CPS | Sep-06 | PhD |
| Eichinger, Katherine | Empey, Kerry | CPS* | Sep-11 | PhD |
| Fang, Cheng | Xie, Sean | MedChem | Sep-12 | PhD |
| Feturi, Firuz | Venkataramanan, R. | Pharmaceutics | Sep-11 | PhD |
| Gao, Xinyi | Gill, Sandra Kane | Non-Thesis Master | Sep-12 | NTMS |
| Gao, Yuanyue | Venkataramanan, R. | Pharmaceutics | Sep-11 | PhD |
| Ghazwani, Mohammed | Li, Song | Pharmaceutics | Jan-10 | PhD |
| Gong, Tiantian | Rohan, Lisa | Pharmaceutics | Sep-10 | PhD |
| Grab, Sheila | Rohan, Lisa | Pharmaceutics | Sep-11 | PhD |
| Hagos, Fanuel | Empey, Phil | CPS* | Sep-12 | PhD |
| Hammad, Layal | Wipf, Peter | MedChem | Sep-12 | MS |
| Hu, Minlu | Rohan, Lisa | Pharmaceutics | Sep-10 | PhD |
| Ihunnah, Chibueze | Xie, Wen | Biochemical Pharmacology | Sep-09 | PhD |
| Jiang, Mengxi | Xie, Wen | Biochemical Pharmacology | Sep-09 | PhD |
| Joshi, Rujuta | Venkataramanan, R. | Pharmaceutics | Sep-11 | PhD |
| Kalluri, Hari | Venkataramanan, R. | Pharmaceutics | Sep-11 | PhD |
| Khoury, Kareem | Doemling, Alexander | MedChem | Sep-08 | PhD |
| Kim, Sung Tae | Kwon, Yong Tae | Biochemical Pharmacology | Sep-09 | PhD |
| Kirshner, Ziv | Gibbs, Robert | Biochemical Pharmacology | Sep-11 | PhD |
| Kramzer, Lindsay | Rohan, Lisa | Pharmaceutics/CPS | Sep-09 | PhD |
| Li, Jilong | Li, Song | Pharmaceutics | Sep-11 | MS |
| Li, Jing | Smith, Randall | Non-Thesis Master | Sep-12 | NTMS |
| Li, Junyi | Gibbs, Robert | Biochemical Pharmacology | Sep-12 | MS |
| Li, Lingjue | Poloyac, Samuel | Non-Thesis Master | Sep-12 | NTMS |

| Name | Advisor | Track | Enrollment | PhD/MS |
|---------------------------|-------------------------|--------------------------|------------|--------|
| Liu, Hesong | Vollmer, Regis | Non-Thesis Master | Sep-12 | NTMS |
| Long, Tao | Yao, Jeff | Biochemical Pharmacology | Sep-11 | PhD |
| Lu, Jianqin | Li, Song | Pharmaceutics | Sep-10 | PhD |
| Lu, PeiPei | Xie, Wen | Biochemical Pharmacology | Sep-11 | PhD |
| Mehrans, Jennifer | Gold, Barry | Non-Thesis Master | Sep-12 | NTMS |
| Parise, Robert | Venkataramanan, R. | Pharmaceutics/CPS* | Sep-05 | PhD |
| Pinchevsky, Diana | Fabian/ Poloyac | Pharmaceutics/CPS* | Jan-08 | PhD |
| Pouland, Timothy | Day, Billy | MedChem | Sep-09 | PhD |
| Press, Ellen | Poloyac, /Sheilds, Ryan | CPS* | Sep-12 | MS |
| Qin, Fangfei | Wipf, Peter | Pharmaceutics | Sep-12 | PhD |
| Regev, Galit | Rohan, Lisa | Pharmaceutics | Sep-11 | PhD |
| Reinfeld, Daniel | Rohan, Lisa | Non-Thesis Master | Sep-12 | NTMS |
| Shaik, Sadik Basha Jafra | Poloyac, Samuel | Pharmaceutics/CPS* | Sep-07 | PhD |
| Shawaqfeh, Mohammad | Venkataramanan, R. | Pharmaceutics/CPS | Sep-07 | PhD |
| Thanukrishnan, Harisudhan | Poloyac, Samuel | CPS* | Sep-12 | PhD |
| Walbi, Ismail | Beumer, Jan | Pharmaceutics/CPS | Jan-12 | MS |
| Walsh, Dustin | Nolin, Thomas | CPS* | Sep-11 | PhD |
| Wang, Zhuzhu | Wipf, Peter | MedChem | Sep-10 | PhD |
| Whetstone, Ryan | Gold, Barry | MedChem | Sep-07 | PhD |
| Xu, Qi | Xie, Sean | MedChem | Sep-11 | MS |
| Xue, Yingfei | Day, Billy | Non-Thesis Master | Sep-12 | NTMS |
| Yan, Jiong | Xie, Wen | Biochemical Pharmacology | Sep-12 | PhD |
| Yang, Tianyi | Wipf, Peter | MedChem | Sep-12 | PhD |
| Zhai, ZuWei | Tarter/Ridenour | Pharmaceutics/CPS* | Sep-08 | PhD |
| Zhang, Peng | Li, Song | Pharmaceutics | Sep-10 | PhD |
| Zhang, Yifei | Li, Song | Pharmaceutics | Sep-09 | PhD |
| Zhang, Xiaolan | Li, Song | Pharmaceutics | Sep-11 | PhD |
| Zhou, Tian | Rohan, Lisa | Pharmaceutics | Sep-08 | PhD |
| Zhou, Xiang | Li, Song | Non-Thesis Master | Sep-12 | NTMS |

*CPS – Clinical Pharmaceutical Scientist Program

Students Selected for the Pharmaceutical Sciences PhD and Research-based MS Graduate Program, Beginning in Fall 2013

| Name | Advisor | Track | PhD/MS/NTMS |
|-------------------|-----------------|--------------------------|-------------|
| Adams, Solomon | Poloyac, Samuel | CPS* | PhD |
| Bi, Yuhan | Xie, Wen | Biochemical Pharmacology | PhD |
| Chen, Yuzhe | Sant, Shilpa | Pharmaceutics | MS |
| Fancher, Ashley | Xie, Sean | Medicinal Chemistry | PhD |
| Kochanek, Stanton | Johnston, Paul | Biochemical Pharmacology | PhD |
| Li, Jing | Rohan, Lisa | Pharmaceutics | PhD |

| Name | Advisor | Track | PhD/MS/NTMS |
|-------------------|--------------|--------------------------|-------------|
| Li, Lingjue | Poloyac, Sam | CPS | PhD |
| Liu, Shinlan | Ma, Xiaochao | Biochemical Pharmacology | PhD |
| Ma, Shifan | Xie, Sean | Medicinal Chemistry | MS |
| Mukundan, Shilpaa | Sant, Shilpa | Pharmaceutics | PhD |
| Sachar, Madhav | Ma, Xiaochao | Biochemical Pharmacology | PhD |
| Walbi, Ismail | Beumer, Jan | Pharmaceutics | PhD |
| Wang, Nuozhou | Xie, Sean | Medicinal Chemistry | PhD |
| Xu, Jieni | Li, Song | Pharmaceutics | MS |
| Xue, Yingfei | Day, B illy | Medicinal Chemistry | PhD |
| Zhou, Xiang | Yao, Jeffrey | Biochemical Pharmacology | PhD |

*Clinical Pharmaceutical Scientist Program and Pharmaceutics Track

Students Selected for the Pharmaceutical Sciences Non-Research Based MS Graduate Program, Beginning in Fall 2013*

| | |
|----------------------|----------------|
| Almowalad, Jamal | Shah, Nimit |
| Hu, Guanxing | Shehu, Amina |
| Hu, Ziheng | Danfeng, Shen |
| Jhunjhunwala, Kuhal | Sun, Xiaohuan |
| Kulmanova, Bibissara | Wang, Liwei |
| Li, Hewen | Wu, Yijun |
| Li, Nan | Xie, Xinyan |
| Mason, Daniel | Xu, Xiaomeng |
| Odunze, Uchechukwu | Yang, Xiaole |
| Patel, Akhil | Zhang, Hongfei |

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

Graduate Student Publications and Presentations

Publications

- Lotrich FE, **Albusaysi S**, Ferrell RE. Brain derived neurotrophic factor serum levels and genotype: association with depression during interferon alpha treatment. *Neuropsychopharmacology*. 2013 May;38(6):985-95.
- Yang P, Wang L, Feng R, **Almehizia AA**, Tong Q, Myint KZ, Ouyang Q, **Alqarni MH**, Wang L, Xie XQ. Novel Triaryl Sulfonamide Derivatives as Selective Cannabinoid Receptor 2 Inverse Agonists and Osteoclast Inhibitors: Discovery, Optimization, and Biological Evaluation. *J Med Chem*. 2013 Mar 14;56(5):2045-58.
- Yang P, Myint KZ, Tong Q, Feng R, Cao H, **Almehizia AA**, **Alqarni MH**, Wang L, Bartlow P, Gao Y, Gertsch J, Teramachi J, Kurihara N, Roodman GD, Cheng T, Xie XQ. Lead Discovery,

Chemistry Optimization, and Biological Evaluation Studies of Novel Biamide Derivatives as CB2 Receptor Inverse Agonists and Osteoclast Inhibitors. *J Med Chem.* 2012 Nov 26;55(22):9973-87.

- **Chowdhury A**, Feng R, Tong Q, Zhang Y, Xie XQ. Mystic and TarCF as fusion protein partners for functional expression of the cannabinoid receptor 2 in Escherichia coli. *PI* 2012 Jun;83(2):128-34.
- Xie XQ, **Chowdhury A**. Advances in methods to characterize ligand-induced ionic lock and rotamer toggle molecular switch in G protein-coupled receptors. *Methods Enzymol.* 2013;520:153-74.
- Li J, **Ghazwani M**, **Zhang Y**, Lu J, Li J, Fan J, Gandhi CR, Li S. miR-122 regulates collagen production via targeting hepatic stellate cells and suppressing P4HA1 expression. *J Hepatol.* 2013 Mar;58(3):522-8.
- Agashe H, **Hu M**, Rohan L. Formulation and Delivery of Microbicides. *Curr HIV Res.* 2012 Jan 1;10(1):88-96.
- Strader MB, Hervey WJ 4th, Costantino N, Fujigaki S, Chen CY, Akal-Strader A, **Ihunnah CA**, Makusky AJ, Court DL, Markey SP, Kowalak JA. A coordinated proteomic approach for identifying proteins that interact with the E. coli ribosomal protein S12. *J Proteome Res.* 2013 Mar 1;12(3):1289-99.
- Ou Z, Shi X, Gilroy RK, Kirisci L, Romkes M, Lynch C, Wang H, Xu M, **Jiang M**, Ren S, Gramignoli R, Strom SC, Huang M, Xie W. Regulation of the human hydroxysteroid sulfotransferase SULT2A1 by ROR α and ROR γ and its relevance in human liver diseases. *Mol Endocrinol.* 2013 Jan;27(1):106-15.
- Xiao L, Wang J, **Jiang M**, Xie W, Zhai Y. The emerging role of constitutive androstane receptor and its cross talk with liver X receptors and peroxisome proliferator-activated receptor A in lipid metabolism. *Vitam Horm.* 2013;91:243-58.
- **Jiang M**, Xie W. Role of the Constitutive Androstane Receptor in Obesity and Type 2 Diabetes, A Case Study of the Endobiotic Function of A Xenobiotic Receptor Drug Metabolism. *Drug Metab Rev.* 2013 Feb;45(1):156-63.
- **Kalluri H** and Hardinger KL. Current state of renal transplant immunosuppression: Present and future. *World J Transplant* 2012; 2(4): 51-68.
- Sinha MK, **Khoury K**, Herdtweck E, Dömling A. New Cyclization Scaffolds by a Truly Ugi 4-Component Reaction. *Org Biomol Chem.* 2013 Aug 7;11(29):4792-6.
- Sinha MK, **Khoury K**, Herdtweck E, Dömling A. Tricycles via a Novel Ugi Variation and Pictet-Spengler Reaction in one pot. *Chemistry - A European Journal.* 2013 Jun 17;19(25):8048-52.

- **Khoury K**, Sinha MK, Nagashima T, Herdtweck E, Dömling A. Efficient Assembly of Iminodicarboxamides by a “Truly” Four-Component Reaction. *Angew Chem Int Ed Engl.* 2012 Oct 8;51(41):10280-3.
- Koes D, **Khoury K**, Huang Y, Wang W, Bista M, Popowicz GM, Wolf S, Holak TA, Dömling A, Camacho CJ. Enabling Large-Scale Design, Synthesis and Validation of Small Molecule Protein-Protein Antagonists. *PLoS ONE* 7(3): e32839.
- Huang Y, **Khoury K**, Chanas T, Dömling A. Multicomponent Synthesis of Diverse 1,4-Benzodiazepine Scaffolds. *Org. Lett.*, 2012, 14 (23), pp 5916–5919.
- **Khoury K**, Dömling A. p53/MDM2 inhibitors. *Curr Pharm Des.* 2012;18(30):4668-78.
- **Khoury K**, Holak, T. Dömling, A. p53/MDM2 Antagonists: Towards Nongenotoxic Anticancer Treatments. *Protein-Protein Interactions in Drug Discovery* (2013-02-25) p. 129-163.
- Tasaki T, **Kim ST**, Zakrzewska A, Lee BE, Kang MJ, Yoo YD, Cha-Molstad HJ, Hwang J, Soung NK, Sung KS, Kim SH, Nguyen MD, Sun M, Yi EC, Kim BY, Kwon YT. UBR box N-recognin-4 (UBR4), an N-recognin of the N-end rule pathway, and its role in yolk sac vascular development and autophagy. *Proc Natl Acad Sci U S A.* 2013 Mar 5;110(10):3800-5.
- Lee MJ, Kim DE, Zakrzewska A, Yoo YD, Kim SH, **Kim ST**, Seo JW, Lee YS, Dorn GW 2nd, Oh U, Kim BY, Kwon YT. Characterization of arginylation branch of N-end rule pathway in G-protein-mediated proliferation and signaling of cardiomyocytes. *J Biol Chem.* 2012 Jul 6;287(28):24043-52.
- **Kim ST**, Tasaki T, Zakrzewska A, Yoo YD, Sa Sung K, Kim BY, Cha-Molstad H, Hwang J, Kim KA, Kim BY, Kwon YT. The N-end rule proteolytic system in autophagy. *Autophagy.* 2013 Apr 15;9(7). [Epub ahead of print]
- **Li J, Lu J, Zhang Y, Ghazwani M, Zhang P**, Gao, X and Li, S. (2013) RNAi in Liver Diseases in Cheng K. and Ram IM. (eds). *Advanced Delivery and Therapeutic Applications of RNAi*, West Chester: Wiley, 327-336.
- **Lu J**, Huang Y, Zhao W, Chen Y, Li J, Gao X, Venkataramanan R, Li S. Design and Characterization of PEG-Derivatized Vitamin E as a Nanomicellar Formulation for Delivery of Paclitaxel, *Mol. Pharmaceutics*, 2013, 10 (8): 2880–2890.
- **Lu J**, Huang Y, Zhao W, Marquez RT, Meng X, Li J, Gao X, Venkataramanan R, Wang Z, Li S. PEG-Derivatized Embelin as a Novel Nanomicellar Carrier for Targeted Delivery of Paclitaxel to Breast and Prostate Cancers. *Biomaterials* 34; 1591-600, 2012.
- Huang Y, **Lu J**, Gao X, Li J, Zhao W, Sun M, Stolz DB, Venkataramanan R, Rohan LC, Li S. PEG-derivatized embelin as a dual functional carrier for the delivery of paclitaxel. *Bioconjugate Chemistry* 23; 1443-51, 2012.

- Gao X, Huang Y, Makhov AM, Epperly M, **Lu J, Grab S, Zhang P**, Rohan L, Xie XQ, Wipf P, Greenberger J, Li S. Nanoassembly of surfactants with interfacial drug-interactive motifs as tailor-designed drug carriers. *Mol Pharm*. 2013 Jan 7;10(1):187-98.
- Yan J, Kaur S, DeLucia M, Hao C, **Mehrens J**, Wang C, Golczak M, Palczewski K, Gronenborn AM, Ahn J, Skowronski J. Tetramerization of SAMHD1 Is Required for Biological Activity and Inhibition of HIV Infection. *J Biol Chem*. 2013 Apr 12;288(15):10406-17.
- Ahn J, Hao C, Yan J, DeLucia M, **Mehrens J**, Wang C, Gronenborn AM, Skowronski J. HIV/simian immunodeficiency virus (SIV) accessory virulence factor Vpx loads the host cell restriction factor SAMHD1 onto the E3 ubiquitin ligase complex CRL4DCAF1. *J Biol Chem*. 2012 Apr 6;287(15):12550-8.
- **Parise RA**, Anyang BN, Eiseman JL, Egorin MJ, Covey JM, Beumer JH. Formation of active products of benzaldehyde dimethane sulfonate (NSC 281612, DMS612) in human blood and plasma and their activity against renal cell carcinoma lines. *Cancer Chemother Pharmacol*. 2013 Jan;71(1):73-83.
- Shields RK, Nguyen MH, **Press EG**, Updike CL, Clancy CJ. Caspofungin MICs correlate with treatment outcomes among patients with *Candida glabrata* invasive candidiasis and prior echinocandin exposure. *Antimicrob Agents Chemother*. 2013 Aug;57(8):3528-35.
- Shields RK, Nguyen MH, **Press EG**, Kwa AL, Cheng S, Du C, Clancy CJ. The presence of an FKS mutation rather than MIC is an independent risk factor for failure of echinocandin therapy among patients with invasive candidiasis due to *Candida glabrata*. *Antimicrob Agents Chemother*. 2012 Sep;56(9):4862-9.
- Tandon M, Wang L, **Xu Q**, Xie X, Wipf P, Wang QJ. A Targeted Library Screen Reveals a New Inhibitor Scaffold for Protein Kinase D. *PLoS ONE* 7(9): e44653.
- Ridenour TA, Ahlqvist O, **Zhai Z**, Kirisci L, Vanyukov MM, Tarter R. Geographic Clustering of and Effect of Barriers on Neurobehavior Disinhibition Risk for Substance Use Disorder: Implications for Neighborhood-level Prevention Strategy. *Am J Drug Alcohol Abuse* (2013) Accepted.
- Kirisci L, Tarter R, Ridenour T, **Zhai ZW**, Fishbein D, Reynolds M, Vanyukov M. Age of alcohol and cannabis use onset mediates the association of transmissible risk in childhood and development of alcohol and cannabis disorders: Evidence for common liability. *Exp Clin Psychopharmacol*. 2013 Feb;21(1):38-45.
- **Zhang YF**, Huang YX, **Zhang P**, Gao X, Gibbs RB, Li S. Incorporation of a selective sigma-2 receptor ligand enhances uptake of liposomes by multiple cancer cells. *Int J Nanomedicine*. 2012; 7: 4473-4485.

- **Zhang YF**, Li J, Gao X, Li S. (2012) Targeted delivery to pulmonary endothelium. Vij N. (ed) *Pulmonary Nanomedicine: Diagnostics, Imaging and Therapeutic*, Singapore: Pan Stanford Publishing, 193-234.
- **Zhang P**, Huang Y, Makhov AM, Gao X, Zhang P, Li S. Characterization of spherulites as a lipidic carrier for low and high molecular weight agents. *Pharm Res.* 2013 Jun;30(6):1525-35.
- **Zhou T, Hu M**, Cost M, Poloyac S, Rohan L. Expression of Transporters and Metabolizing Enzymes in the Female Lower Genital Tract: Implications on Microbicide Research. *AIDS Res Hum Retroviruses.* 2013 May 17. [Epub ahead of print]
- **Zhang X, Lu J**, Huang Y, Zhao W, **Chen Y**, Li J, Gao X, Venkataramanan R, Sun M, Stolz DB, Zhang L, Li S. PEG-Farnesylthiosalicylate Conjugate as a Nanomicellar Carrier for Delivery of Paclitaxel. *Bioconjugate Chemistry* 24; 464-72, 2013.

Presentations, Posters, and Podium Presentations: Graduate Students

- American Association of Pharmaceutical Sciences, Student Chapter Pittsburgh Regional Research Symposium, Duquesne University, Pittsburgh, PA. The association between BDNF and the development of depression in HCV patients taking INF-alpha therapy. November 30, 2012. **Albusaysi S.**
- American Association of Pharmaceutical Sciences, Student Chapter Northeastern Regional Research Forum, West Virginia University, Morgantown, WV. The association between BDNF and the development of depression in HCV patients taking INF-alpha therapy. May 4, 2013. **Albusaysi S.**
- 4th Annual Graduate Student and Post-Doctoral Research Retreat. O'Hara Student Center, University of Pittsburgh, Pittsburgh, PA. Brain Derived Neurotrophic Factor (BDNF) serum levels and genotype: association with depression during Interferon alpha therapy in HCV patients. June 21, 2013. **Albusaysi S.**
- American Association of Pharmaceutical Sciences, Student Chapter Northeastern Regional Research Forum, West Virginia University, Morgantown, WV. Important Binding Residues of CB2 Receptor Determined by In Silico Modeling and Site-Directed Mutagenesis. May 4, 2013. **Alqarni M.**
- American Association of Pharmaceutical Sciences, Student Chapter Pittsburgh Regional Research Symposium, Duquesne University, Pittsburgh, PA. Impact of Female Hormones on Regulation of Hepatic Drug Metabolism . November 30, 2012. **Alshabi A.**
- American Association of Pharmaceutical Sciences, Student Chapter Northeastern Regional Research Forum, West Virginia University, Morgantown, WV. Impact of Female Hormones on Regulation of Hepatic Drug Metabolism. May 4, 2013. **Alshabi A.**
- American Association of Pharmaceutical Sciences, Student Chapter Northeastern Regional Research Forum, West Virginia University, Morgantown, WV. The Effect of Experimental Kidney Failure on Warfarin Reduction in Rats, May 3, 2013. **Alshogran O.**

- American Association of Pharmaceutical Sciences, Student Chapter Northeastern Regional Research Forum, West Virginia University, Morgantown, WV. The Effect of Experimental Kidney Failure on Warfarin Reduction in Rats, May 4, 2013. **Alshogran O.**
- American Association of Pharmaceutical Sciences, Student Chapter Northeastern Regional Research Forum, West Virginia University, Morgantown, WV. Effect of hypothermia on ABCG2- and ABCB1- mediated transport, May 4, 2013. **Anderson K.**
- 4th Annual Graduate Student and Post-Doctoral Research Retreat. O’Hara Student Center, University of Pittsburgh, Pittsburgh, PA. Effect of Hypothermia on ABCG2- and ABCB1- Mediated Drug Transport. June 21, 2013. **Anderson K.**
- Biophysical Society 57th Annual Meeting. Philadelphia, PA. Production, characterization and refolding of G-Protein Coupled CB2 Receptor from inclusion bodies. February 4, 2013 **Chowdhury A.**
- 4th Annual Graduate Student and Post-Doctoral Research Retreat. O’Hara Student Center, University of Pittsburgh, Pittsburgh, PA. Production, Characterization and Refolding of G-Protein Coupled CB2 Receptor from Inclusion Bodies. June 21, 2013. **Chowdhury A.**
- American Association of Pharmaceutical Sciences, Student Chapter Pittsburgh Regional Research Symposium, Duquesne University, Pittsburgh, PA. Association of SNPs on Genes Affecting EET Levels and the Development of Ischemic Complications in Patients with aSAH. November 30, 2012. **Donnelly M.**
- American Association of Pharmaceutical Sciences Annual Meeting. Chicago, IL. Association of SNPs on Genes Affecting EET Levels and the Development of Ischemic Complications in Patients with aSAH. October 15, 2012. **Donnelly M.**
- Autumn Immunology Conference, Chicago, IL. Pharmacokinetic (PK) and pharmacodynamic (PD) response to intranasal IFN γ : pups vs. adults. November 17, 2012. **Eichinger K.**
- Science2012—Translation, University of Pittsburgh’s 12th Annual Celebration of Science and Technology, Pittsburgh, PA. Age related pharmacokinetic (PK) and pharmacodynamic (PD) differences in response to intranasal IFN γ , October 5, 2012. **Eichinger K.**
- 4th Annual Graduate Student and Post-Doctoral Research Retreat. O’Hara Student Center, University of Pittsburgh, Pittsburgh, PA. Pharmacokinetic (PK) and Dose Response to Intranasal IFN γ : Infant vs. Adult Mice. June 21, 2013. **Eichinger K.**
- American Association of Pharmaceutical Sciences, Student Chapter Northeastern Regional Research Forum, West Virginia University, Morgantown, WV. Sensitive and Specific Cocktail Assay for Rapid and Simultaneous Assessment of Rat Cytochrome P450Activities in Rat Hepatic Microsomes using LC-MS/MS. May 4, 2013. **Feturi F.**
- 4th Annual Graduate Student and Post-Doctoral Research Retreat. O’Hara Student Center, University of Pittsburgh, Pittsburgh, PA. Sensitive and Specific Cocktail Assay for Rapid and Simultaneous Assessment of Rat Cytochrome P450Activities in Rat Hepatic Microsomes using LC-MS/MS. June 21, 2013. **Feturi F.**

- 12th Annual McGowan Institute for Regenerative Medicine Scientific Retreat , Nemaacolin Woodlands, Farmington, PA. Novel strategy to overcome skin rejection in vascularized composite allo-transplantation VCA. March 8, 2013. **Feturi F.**
- 4th Annual Graduate Student and Post-Doctoral Research Retreat. O’Hara Student Center, University of Pittsburgh, Pittsburgh, PA. Nanocrystal Formulation Development of CSIC, a Highly Potent anti-HIV Drug Candidate. June 21, 2013. **Gong T.**
- 4th Annual Graduate Student and Post-Doctoral Research Retreat. O’Hara Student Center, University of Pittsburgh, Pittsburgh, PA. Continuous infusion of Mycophenolate mofetil for Acute Graft-Versus-Host-Disease Prophylaxis in Pediatric Bone Marrow Transplant Patients. June 21, 2013. **Joshi R.**
- 2013 Annual Fellows Conference: Advances in Organ Transplantation. Cambridge, MA. Cold Ischemia, Renal Transplantation and Treatment with Tacrolimus alters the mRNA Expression of Transporters in Transplanted Kidneys. April 19, 2013. **Kalluri H.**
- American Association of Pharmaceutical Sciences, Student Chapter Northeastern Regional Research Forum, West Virginia University, Morgantown, WV. Cold Ischemia, Renal Transplantation and Treatment with Tacrolimus alter Expression of Renal Transporters. May 3, 2013. **Kalluri H.**
- American Association of Pharmaceutical Sciences, Student Chapter Northeastern Regional Research Forum, West Virginia University, Morgantown, WV. Cold Ischemia, Renal Transplantation and Treatment with Tacrolimus alter Expression of Renal Transporters. May 4, 2013. **Kalluri H.**
- American Association of Pharmaceutical Sciences 2013 Transporters Workshop. Bethesda, MD. Cold Ischemia, Renal Transplantation and Treatment with Tacrolimus Alters the Expression of Key Renal Drug Transporters in transplanted Rat Kidneys. March 18, 2013. **Kalluri H.**
- American Chemical Society National Meeting. Philadelphia, PA. Parallel discovery and co-crystallization of multiple small molecule scaffolds to inhibit P53/MDM2/MDM4 using ANCHOR.QUERY. August 21, 2012. **Khoury K.**
- Society for Neuroscience Annual Meeting. New Orleans, LA. GPR30 Underlines Estrogen-Mediated Increase in Acetylcholine Release in Response to Food: A Potential Role For Orexin, October 12, 2012. **Kirshner Z.**
- American Association of Pharmaceutical Sciences, Student Chapter Pittsburgh Regional Research Symposium, Duquesne University, Pittsburgh, PA. GPR30 Underlines Estrogen-Mediated Increase in Acetylcholine Release in Response to Food: A Potential Role For Orexin. November 30, 2012, **Kirshner Z.**
- American Association of Pharmaceutical Sciences, Student Chapter Northeastern Regional Research Forum, West Virginia University, Morgantown, WV. Does estradiol affects hypothalamic orexin-containing neurons via g-protein estrogen receptor (gper-1). May 3, 2013 **Kirshner Z.**

- 4th Annual Graduate Student and Post-Doctoral Research Retreat. O'Hara Student Center, University of Pittsburgh, Pittsburgh, PA. Does Estradiol Affects Hypothalamic Orexin-Containing Neurons Via G-Protein Estrogen Receptor (GPR30). June 21, 2013. **Kirshner Z.**
- American Association of Pharmaceutical Sciences, Student Chapter Northeastern Regional Research Forum, West Virginia University, Morgantown, WV. Do Estradiol and G1 Affect Aromatase Expression in the Brain. May 3, 2013. **Li J.**
- 4th Annual Graduate Student and Post-Doctoral Research Retreat. O'Hara Student Center, University of Pittsburgh, Pittsburgh, PA. Do Estradiol and G-1 Affect Aromatase Expression in the Brain. June 21, 2013. **Li J.**
- 10th International Nanomedicine and Drug Delivery Symposium, Atlantic City, NJ. PEG-Derivatized Embelin as a Novel Nanomicellar Carrier for Targeted Delivery of Paclitaxel to Breast and Prostate Cancers. December 6, 2012. **Lu J.**
- 4th Annual Graduate Student and Post-Doctoral Research Retreat. O'Hara Student Center, University of Pittsburgh, Pittsburgh, PA. Design and Characterization of PEG-Derivatized Vitamin E as a Nanomicellar Formulation for Delivery of Paclitaxel. June 21, 2013. **Lu J.**
- American Association of Pharmaceutical Sciences, Student Chapter Pittsburgh Regional Research Symposium, Duquesne University, Pittsburgh, PA. Small Molecule Perturbagens of Cytoplasmic Dynein. November 30, 2012, **Pouland T.**
- 4th Annual Graduate Student and Post-Doctoral Research Retreat. O'Hara Student Center, University of Pittsburgh, Pittsburgh, PA. Screening for Small Molecule Perturbogens of the Motor Protein Cytoplasmic Dynein Heavy Chain 1. June 21, 2013. **Pouland T.**
- University of Pittsburgh Department of Medicine Research Day, Pittsburgh, PA. Predictors of caspofungin failure among patients with invasive candidiasis. May 23, 2013. **Press E.**
- 52nd Interscience Conference on Antimicrobial Agents and Chemotherapy, an American Society for Microbiology meeting, San Francisco, CA. In vitro and in vivo responses of *Acinetobacter baumannii* isolates to colistin and doripenem following previous exposure. September 10, 2012 **Press E.**
- 52nd Interscience Conference on Antimicrobial Agents and Chemotherapy, an American Society for Microbiology meeting, San Francisco, CA. FKS mutation is a risk factor for failure of echinocandin therapy among patients with invasive candidiasis due to *Candida glabrata* but not other *Candida* species. September 11, 2012. **Press E.**
- 52nd Interscience Conference on Antimicrobial Agents and Chemotherapy, an American Society for Microbiology meeting, San Francisco, CA. Discrepancies between colistin MICs and inhibition of *Acinetobacter* and *Klebsiella* during time-kill assays. September 12, 2012. **Press E.**
- 4th Annual Graduate Student and Post-Doctoral Research Retreat. O'Hara Student Center, University of Pittsburgh, Pittsburgh, PA. *In vitro* Classification of *Candida* Bloodstream Isolates. June 21, 2013. **Press E.**

- American Association of Pharmaceutical Sciences Annual Meeting. Chicago, IL. Imbalance In Vasoconstrictive And Vasodilatory Eicosanoids And Prostaglandins Are Associated With Cerebral Blood Flow Dysregulation After Pediatric Asphyxial Cardiac Arrest. October 18, 2012. **Shaik J.**
- American Association of Pharmaceutical Sciences, Student Chapter Pittsburgh Regional Research Symposium, Duquesne University, Pittsburgh, PA. Structure and Docking Studies for New PKD Inhibitors. November 30, 2012. **Xu Q.**
- American Association of Pharmaceutical Sciences, Student Chapter Pittsburgh Regional Research Symposium, Duquesne University, Pittsburgh, PA. Latent structure of parental attachment in early adolescents with vs. without paternal substance use disorder. November 30, 2012. **Zhai Z.**
- Duquesne University Chronic Pain Research Consortium, Pittsburgh, PA. The role of parental attachment in substance use: Implications for pain research. March 18, 2013. **Zhai Z.**
- Pediatric Academic Societies Annual Meeting, Washington, D.C. Detecting substance abuse risk even before substance initiation: A screen for well-child check-ups of 9- to 12-year-olds. May 7, 2013. **Zhai Z.**
- Society for Prevention Research, Annual Meeting, San Francisco, CA. Addiction risk factors and inhalant use in 10- to 15-year-olds with chronic stress. May 29, 2013. **Zhai Z.**
- Society for Prevention Research, Annual Meeting, San Francisco, CA. Parental attachment in early adolescents and the risk of substance use disorder. May 30, 2013. **Zhai Z.**
- 4th Annual Graduate Student and Post-Doctoral Research Retreat. O'Hara Student Center, University of Pittsburgh, Pittsburgh, PA. PEG-Farnesylthiosalicylate Conjugate as a Nanomicellar Carrier for Delivery of Paclitaxel. June 21, 2013. **Zhang X.**
- 10th International Nanomedicine and Drug Delivery Symposium, Atlantic City, NJ. Enhanced uptake of liposomes by cancer cells via sigma-2 receptor ligand decoration. December 6, 2012. **Zhang Y.**
- 4th Annual Graduate Student and Post-Doctoral Research Retreat. O'Hara Student Center, University of Pittsburgh, Pittsburgh, PA. MiR-29b Inhibits Collagen Maturation in Hepatic Stellate Cells through Down-regulating the Expression of HSP47 and Lysyl Oxidase. June 21, 2013. **Zhang Y.**

Postdoctoral Fellows

School of Pharmacy Postdoctoral Associates FY13

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

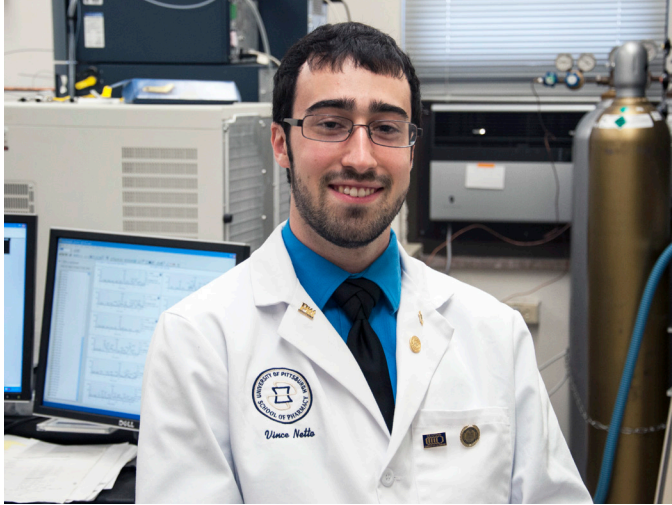
Invited Education Presentations

- Implementing Pharmacogenomics to Achieve Personalized Medicine, Department of Biomedical Informatics Colloquium (Platform presentation), Pittsburgh, PA, 12/13/2012, **Empey P.**
- Integration of Pharmacy Sciences & Pharmacy Practice: Complementary, not Competitive , David J. Slatkin Symposium, Chicago State University School of Pharmacy, Chicago, IL, 10/19/2012, **Howrie Schiff D.**
- The challenges associated with conducting HTS/HCS campaigns in the current academic funding environment , Screen Design and Assay Special Interest Group at the 2nd Annual Conference of the Society for Laboratory Automation and Screening, Orlando, FL, 01/16/2013, **Johnston P.**
- Closing the Assessment Loop: Techniques to Meet Improvement and Accountability Expectations, American Association of Colleges of Pharmacy, Kissimmee, Florida, 07/17/2012, **Meyer S.**
- Interprofessionalism in Practice, Chatham University, Pittsburgh, Pennsylvania, 09/04/2012, **Meyer S.**
- Interprofessionalism as Diversity, Northeast Ohio Medical University, Cleveland, Ohio, 06/03/2013, **Meyer S.**

- Integrating Quality Metrics with Focused Interventions to Improve Medication Adherence, Seventh National Pay for Performance Summit, Los Angeles, CA, 03/24/2012, **Pringle J.**
- Medical Residency Sustainability Planning Workshop, Substance Abuse and Mental Health Services, Bethesda, MD, 10/06/2012, **Pringle J.**
- Experiential Education Section: Interprofessional High-fidelity Simulations in the Curriculum: Two Innovations for the Price of One!, AACP, Kissimmee, FL, 07/14/2013, **Seybert A.**
- Simulation Preceptorship, Midwestern University College of Pharmacy, Chicago, IL, 06/14/2013, **Seybert A.**
- Utilization of High Fidelity Simulation in the PharmD Curriculum, Midwestern University Chicago College of Pharmacy, Chicago, IL, 06/14/2013, **Smithburger P.**
- Pharmaceutical Outcomes Research: Current Needs and Future Directions, University of North Carolina - Chapel Hill, Chapel Hill, NC, 05/16/2013, **Thorpe J.**

Advancing Human Health Through Research





Advancing Human Health Through Research

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

By 2018, the School of Pharmacy will:

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

RESEARCH BY THE NUMBERS FOR FY13

- **#9** among schools of pharmacy in NIH support for FY12 with \$9.3 million in funding, the second highest amount ever generated by our school.
- **32** faculty members were principal investigators.
- **95**: the number of active research projects.
- In FY13, funded research projects generated **\$13,451,595** in total support.
- FY13 research expenses were **\$6,384,418** in direct costs and **\$2,277,467** in indirect costs.
- FY13 annual costs were **\$13.45 million**, with **\$9.99 million** in direct costs
- Faculty members were awarded **4** patents and **3** provisional patents, **8** invention disclosures, and **2** licenses/options.

Our faculty members were recognized for their accomplishments and their expertise in ways outside of their grant awards.

- **28** faculty members served on scientific journal editorial boards.
- **13** faculty members served on NIH grant review committees.
- **91** invited presentations by faculty
 - Research – 70
 - Patient Care – 9
 - Education – 12
- **184** publications
 - Research – 154
 - Patient Care – 27
 - Education – 3

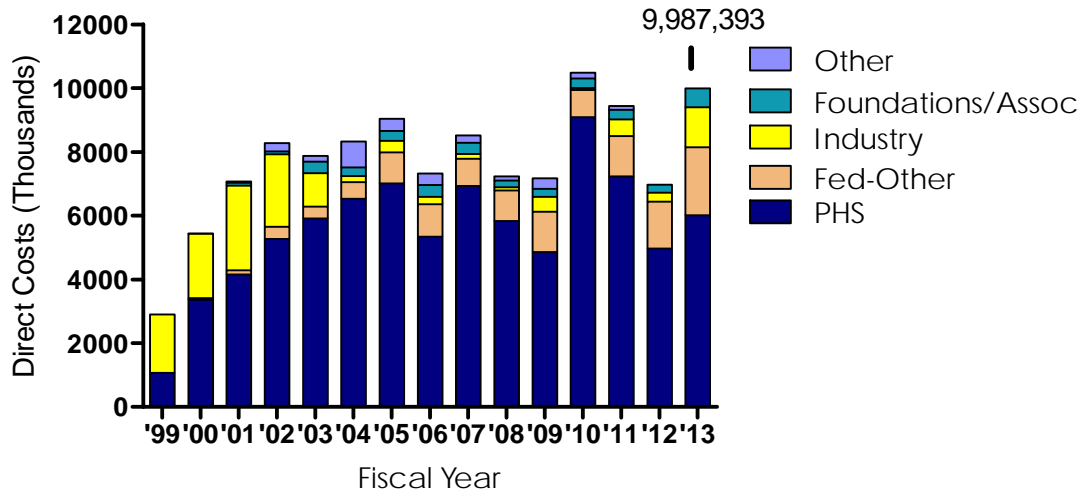
RESEARCH FUNDING

Research in the School of Pharmacy is focused on medication discovery, development, and delivery and drug use in improving human health.

Annual Grant Costs by Source

The annual costs for FY13 were **\$13.45 million**, with **\$9.99 million in direct costs** (shown in the following graph) and \$ 3.46 million in indirect costs. The graph and tables below provide the detail regarding FY13 sources of funding for direct costs.

Direct Costs: Research Funding



Direct Costs for Research by Funding Category

| Source | FY02 | FY04 | FY07 | FY10 | FY11 | FY12 | FY13 |
|--------------|--------------------|--------------------|--------------------|---------------------|--------------------|--------------------|--------------------|
| PHS | \$5,269,880 | \$6,534,485 | \$6,934,873 | \$9,083,208 | \$7,229,748 | \$4,967,911 | \$6,006,199 |
| Federal-Oth | 257,268 | 519,572 | 846,586 | 856,030 | 1,268,055 | 1,469,405 | 2,143,548 |
| Industry | 2,277,596 | 812,198 | 156,419 | 60,226 | 518,140 | 289,323 | 1,253,199 |
| Found/Assoc | 86,523 | 272,805 | 351,468 | 296,641 | 305,600 | 249,664 | 584,447 |
| Other | 261,494 | 189,872 | 222,110 | 187,737 | 111,157 | 0 | 0 |
| TOTAL | \$8,152,761 | \$7,233,517 | \$8,511,456 | \$10,483,842 | \$9,432,700 | \$6,976,303 | \$9,987,393 |

RESEARCH DETAILS

FY13 PHS Funding

| Investigator | Agency | AgencyNum | Title | Direct \$ | Indirect \$ | Total |
|--------------|--------|---------------|---|-----------|-------------|---------|
| B. Day | NIH | R01 CA129127 | The Role of PKD3 in Prostate Carcinogenesis | 816 | 420 | 1,236 |
| B. Day | NIH | P41 GM094055 | Protein Protein Interaction Directed Libraries | 249,604 | 128,546 | 378,150 |
| B. Day | NIH | 1RC4 DK090770 | Small Molecule-Mediated Augmentation of Kidney Regeneration | 80,000 | 41,200 | 121,200 |

| Investigator | Agency | AgencyNum | Title | Direct \$ | Indirect \$ | Total |
|---------------------|--------|---------------|---|-----------|-------------|---------|
| B. Day | NIH | R01 AI057083 | Small Molecule Inhibitors of HIV Nef | 32,092 | 16,527 | 48,619 |
| B. Day | NIH | R56 NS065789 | PINK1 Regulation of Neuronal and Mitochondrial Homeostasis | 9,583 | 4,936 | 14,519 |
| B. Day | NIH | R01 DK090242 | Regulation of Mitochondrial Metabolism by Lysine Acetylation | 9,572 | 4,930 | 14,502 |
| B. Day/ P. Johnston | NIH | R01 CA160423 | Development of a Novel HCS Assay to Screen for Disruptors of AR-TIF2 Interactions | 175,871 | 92,331 | 268,202 |
| M. Donnelly | NIH | F31 NR012608 | Role of 20-HETE and EETs in Cerebrovascular Complications after aSAH | 27,366 | 0 | 27,366 |
| X. Gao | NIH | R01 EB016516 | Ultrasound Activated Microbubbles for Targeted siRNA Delivery to Tumor (Villanueva) | 3,149 | 1,653 | 4,802 |
| R. Gibbs | NIH | R01 NS060005 | Environmental Enrichment and Cholinergic Mechanisms After TBI (Kline) | 7,811 | 4,022 | 11,833 |
| C. Ihunnah | NIH | 5F31 DK095589 | Estrogen Sulfotransferase in Human Adipogenesis | 30,312 | 0 | 30,312 |
| P. Johnston | NIH | R21 NS073889 | HCS Assay to Identify Disruptors of AR-TIF2 Protein-Protein Interactions | 38,550 | 19,853 | 58,403 |
| P. Johnston | NIH | U24 AI082673 | Novel Modifiers of Toll-like and RIG-like Receptor Signaling | 21,766 | 11,215 | 32,981 |
| S. Kane | NIH | R01 LM010964 | Interactive Search and Review of Clinical Records with Multilayered Semantic Annotation | 6,740 | 3,471 | 10,211 |
| L. Kirisci | NIH | K02 DA017822 | Quantifying and Tracking Risk for Substance Use Disorder | 125,450 | 9,970 | 135,420 |
| Y. Kwon | NIH | R01 HL083365 | Role of Ubiquitin in Cardiovascular System | 225,437 | 109,486 | 334,923 |
| S. Li / X. Gao | NIH | R01 HL091828 | Non Viral Gene Therapy for Lung Injury | 201,598 | 103,759 | 305,357 |
| S. Li / X. Gao | NIH | U19 AI068021 | Mitochondrial Targeting Against Radiation Damage | 86,654 | 41,689 | 128,343 |
| S. Li / X. Gao | NIH | R21 CA155983 | Polymeric System for Synergistic Targeting of AR Signaling in Prostate Cancer | 130,500 | 67,208 | 197,708 |
| S. Li | NIH | R21 CA173887 | Nanomicellar Formation for Synergistic Targeting of Prostate Cancer | 97,875 | 78,750 | 176,625 |

| Investigator | Agency | AgencyNum | Title | Direct \$ | Indirect \$ | Total |
|-------------------|--------|--------------|--|-----------|-------------|-----------|
| S. Poloyac | NIH | R01 NR004339 | Determining Genetic and Biomarker Predictors of DCI and Long term Outcomes after a SAH | 82,324 | 30,666 | 112,990 |
| S. Poloyac | NIH | R01 NS069247 | Overcoming Membrane Transporters to Improve CNS Drug Therapy | 23,918 | 12,318 | 36,236 |
| S. Poloyac | NIH | R01 NS037459 | Cyclooxygenase 2 and Ischemic Neuronal Injury | 6,195 | 3,190 | 9,385 |
| S. Poloyac | NIH | R01 HD069620 | Understanding the Impact of Antipsychotic Drugs on Recovery after TBI | 7,807 | 4,021 | 11,828 |
| S. Poloyac | NIH | UL1 TROOO005 | University of Pittsburgh Clinical and Translational Science Institute | 12,713 | 4,365 | 17,078 |
| S. Poloyac | NIH | R01 NR013610 | Epigenomics of Patient Outcomes after Aneurysmal SAH | 12,401 | 6,511 | 18,912 |
| S. Poloyac | NIH | R21 AT003892 | CAM Herbal Cocktails for Boosting Antioxidant Activity | 46,312 | 362 | 46,674 |
| L. Rohan | NIH | U19 AI082623 | RT Inhibitor CSIC and Entry Inhibitor Retrocyclin RC101 as Microbicides | 151,753 | 43,170 | 194,923 |
| L. Rohan | NIH | R33 A1089801 | Microbicide Properties of RT Inhibitor Combinations | 123,413 | 68,467 | 191,880 |
| L. Rohan | NIH | U19 A1082639 | Alternative Formulations of Tenofovir & UC781 Project 1 & Core C | 629,736 | 200,447 | 830,183 |
| L. Rohan | NIH | U19 A1082637 | Combination HIV Antiretroviral Rectal Microbicide Prog (CoreC) | 172,375 | 81,583 | 253,958 |
| A. Seybert | NIH | R01 LM010019 | Using Medical Records Repositories to Improve the Alert System Design | 15,162 | 780 | 15,942 |
| R. Tarter | NIH | P50 DA005605 | Drug Abuse Vulnerability: Mechanisms and Manifestations | 1,231,269 | 466,317 | 1,697,586 |
| R. Tarter | NIH | K05 DA031248 | Longitudinal Modeling of SUD Etiology | 125,650 | 10,052 | 135,702 |
| C. Thorpe | NIH | R21 DK090634 | Medication Oversupply and Outcomes in Patients with Diabetes | 123,750 | 63,731 | 187,481 |
| C. Thorpe | NIH | R01 HS018368 | Guideline Adherence and Short/Long-term Health Outcomes in Patients with Diabetes | 19,643 | 10,116 | 29,759 |
| R. Venkataramanan | NIH | U10 HD047905 | Impact of Pregnancy on Drug Absorption, Disposition and End Organ Response (Caritis) | 155,591 | 80,129 | 235,720 |

| Investigator | Agency | AgencyNum | Title | Direct \$ | Indirect \$ | Total |
|-------------------|--------|-----------------|---|------------------|------------------|------------------|
| R. Venkataramanan | NIH | U01 CA121947 | AIDS Malignancy Clinical Trials Collaboration | 185,786 | 95,680 | 281,466 |
| R. Venkataramanan | NIH | UH2 TR000496 | All-Human Microphysical Model of Metastasis Therapy | 56,652 | 29,742 | 86,394 |
| R. Venkataramanan | NIH | T32 HD071859 | Training in basic and Clinical Pharmacology in Pregnancy | 60,662 | 4,490 | 65,152 |
| W. Xie | NIH | R01 ES014626 | Regulation of Sulfotransferases by LXR and Its Implication in Pathophysiology (NCE) | 256,037 | 84,160 | 340,197 |
| W. Xie | NIH | R01 DK083952 | A Novel Role of the Aryl Hydrocarbon Receptor in Hepatic Steatosis | 184,883 | 95,215 | 280,098 |
| W. Xie | NIH | R21 ES019629 | The Regulation of Human Hydroxysteroid Sulfotransferase by Nuclear Receptor ROR | 150,000 | 77,250 | 227,250 |
| W. Xie | NIH | R01 HD073070 | The Perinatal Pharmacology of the Nuclear Receptor | 207,500 | 108,938 | 316,438 |
| X. Xie | NIH | P50 GM067082 | New Concepts, Methodologies and Scaffolds for Diversity-Oriented Organic Synthesis (Wipf) | 55,149 | 28,402 | 83,551 |
| X. Xie | NIH | R01 DA025612 | Structure and Function of CB2 Ligand and G-protein Recognition Pockets | 221,574 | 109,075 | 330,649 |
| X. Xie | NIH | R21 HL109654 | Screen and Design p18 Chemical Probes for Hematopoietic Stem Cell Self-Renewal | 125,000 | 75,293 | 200,293 |
| M. Zemaitis | NIH | HHSN 2712011001 | Pain Education Center of Excellence: Pain Challenges in Primary Care | 2,198 | 1,132 | 3,330 |
| TOTAL | | | | 6,006,199 | 2,535,568 | 8,541,767 |

FY13 Other Federal Funding

| Investigator | Agency | Title | Direct \$ | Indirect \$ | Total |
|--------------|---------------|---|-----------|-------------|---------|
| S. Connor | HRSA | Health Center Cluster | 19,809 | 10,202 | 30,011 |
| C. Culley | AHRQ | Enhancing the Detection and Management of Adverse Drug Events in the Nursing Home | 13,217 | 6,807 | 20,024 |
| R. Farrah | Univ. of Iowa | A Collaborative Model to Improve BP Control and Minimize Racial Disparities-CCC | 12,125 | 6,245 | 18,370 |
| R. Gibbs | NSF | Role of GPR30 in Estrogen-Mediated Effects on Cholinergic Function and Cognition | 96,548 | 49,722 | 146,270 |
| D. Huryn | SAIC - Fr | Evaluation of Rationally-designed Small Molecules | 93,525 | 49,101 | 142,626 |
| D. Huryn | SAIC-Fr | Discovery and Optimization of Inhibitors of STAT3 Activation for the Treatment of Squamous Cell Carcinoma of the Head and Neck TO6 next phase | 272,915 | 143,281 | 416,196 |
| D. Huryn | SAIC-Fr | Inhibitors of the Artemis Endonuclease for Cancer Chemo | 40,894 | 12,469 | 53,363 |
| P. Johnston | SAIC-Fr | Discovery and Optimization of Inhibitor of STAT3 Activatin for the Treatment of Squamous cell Carcinoma of the Head and Neck | 73,482 | 38,578 | 112,060 |
| P. Johnston | STONY | Development of a High Content Screening Assay to Identify Inhibitors of STAT3 Nuclear Import | 77,472 | 39,898 | 117,370 |
| S. Kane | AHRQ | Enhancing the Detection and Management of Adverse Drug Events in the Nursing Home | 23,408 | 12,055 | 35,463 |
| J. Pringle | MERCY | New Lease on Life | 48,387 | 11,613 | 60,000 |
| J. Pringle | PA DOH | Pennsylvania Client Placement Criteria | 32,229 | 8,315 | 40,544 |
| J. Pringle | SAMSHA | The Pennsylvania Medical Residency Training Program | 354,180 | 20,820 | 375,000 |
| J. Pringle | ORE DOJ | Media Literacy to Improve Evidence-Based Prescribing Among Family Medicine Trainees | 327,997 | 22,707 | 350,704 |
| J. Pringle | Allegh | Strategic Prevention Framework State Incentive Grant | 30,556 | 6,319 | 36,875 |
| L. Rohan | ImQuest | Development of a Novel Nanoparticle Pyrimidinedione Vaginal | 6,816 | 4,005 | 10,821 |
| L. Rohan | UST | Thermostable Vaginal Probiotic Microbicide | 19,172 | 10,132 | 29,304 |
| L. Rohan | Univ of FL | Aminoglycoside Microbicides to Restore Natural Expression of anti-HIV1 Retrocyclins | 58,080 | 25,278 | 83,358 |
| L. Rohan | Advance Tech | Release of Assays from EVA Rings | 120,254 | 61,194 | 181,448 |
| L. Rohan | Gladstone Ins | Exploring HIV-Host Interactions in the Female Reproduct | 17,440 | 8,982 | 26,422 |
| C. Scelsi | HRSA | Geriatric Eduation Center | 7,087 | 567 | 7,654 |
| X. Xie | NCI | Evaluation of Rationally-designed Small Molecules Directed against the c-Myc Oncoprotein | 13,986 | 7,203 | 21,189 |

| Investigator | Agency | Title | Direct \$ | Indirect \$ | Total |
|--------------|---------|---|------------------|----------------|------------------|
| X. Xie | NCI | Discovery and Optimization of Inhibitors of STAT3 Activation for the Treatment of Squamous Cell Carcinoma of the Head and Neck TO6 MOD 05 | 350,066 | 180,284 | 530,350 |
| W. Xie | ST JUDE | Regulation of PXR by Cell Cycle and Phosphorylation | 8,358 | 4,304 | 12,662 |
| M. Zemaitis | PA DOH | Establishment of an Effective Prescription drug Monitoring Program (PDMP) in Pennsylvania | 25,545 | 3,065 | 28,610 |
| Total | | | 2,143,548 | 743,146 | 2,886,694 |

FY13 Industry Funding

| Investigator | Agency | Title | Direct \$ | Indirect \$ | Total |
|---------------------------------|-----------------|--|------------------|----------------|------------------|
| N. Benedict/ S. Kane/ J. Thorpe | HOSPIRA | Clinical Quality Improvement of Benzodiazepine - Resistant Alcohol Withdrawal Syndrome | 19,169 | 10,831 | 30,000 |
| K. Empey | Vaccine Pty | RSV Vaccine/Advax Pilot Study | 13,829 | 7,813 | 21,642 |
| D. Hall / J. Pringle | BRAUN | Military Drug Management System | 68,289 | 18,984 | 87,273 |
| K. Khoury | ACSDMC | Synthesis and Evaluation of Potent Small Molecule p53/MDM2 Antagonists | 26,000 | 0 | 26,000 |
| J. Pringle | Takeda | Proposed Evaluation Plan for the Electronic Quality Improvement Platform for Plans & Pharmacies | 122,917 | 24,583 | 147,500 |
| J. Pringle | MERCK | Prospective Study to Assess the Effect of Adherence Interventions on Reducing Patients Non-Fulfillment and/or Non-Persistence to Chronic Medications | 855,172 | 47,185 | 902,357 |
| L. Rohan | IPM | Development of Vaginal Quick Dissolve Films | 8,841 | 1,326 | 10,167 |
| R. Smith | Novo | DM Educate Comprehensive Diabetes Management Course Enhancements and Updates to Improve Diabetes Education | 104,762 | 5,238 | 110,000 |
| R. Venkataramanan | ProStrakan Inc. | Pharmacokinetics and Bioavailability of Granisetron Transdermal System (Sancuso) in Pregnancy | 34,220 | 8,555 | 42,775 |
| Total | | | 1,253,199 | 124,515 | 1,377,714 |

FY13 Foundation and Association Funding

| Investigator | Agency | Title | Direct \$ | Indirect \$ | Total |
|--------------------------------------|-------------------------|---|----------------|---------------|----------------|
| J. Coons/ P.Empey | ASHP | Pharmacist-Delivered Pharmacogenomic Care | 24,961 | 0 | 24,961 |
| A. Donihi | ASHP | Implementation of an Inpatient Bulk Meds to Home Program | 23,148 | 1,852 | 25,000 |
| S. Kane/ Smithburger J. Thorpe | ASHP | A Multicenter Evaluation of Off-Label Medication use and Adverse Drug Event in Adult Intensive Care Unit Patients. | 18,448 | 1,476 | 19,924 |
| S. Krahe- Dombrowski | APhA | Identifying key factors associated with successful integration of patient care services into dispensing workflow: a traditional community chain pharmacy evaluation | 1,000 | 0 | 1,000 |
| S. Krahe- Dombrowski | PPA | Identifying key factors associated with successful integration of patient care services into dispensing workflow: a traditional community chain pharmacy evaluation | 1,000 | 0 | 1,000 |
| S. Meyer | Josiah Macy Jr. Fdn. | Inter-Professional Modeling and Caring for the Elderly | 21,815 | 2,181 | 23,996 |
| M. McGivney | NACDS | Community Pharmacy Faculty Scholars Program | 32,298 | 4,845 | 37,143 |
| J. Pringle | JEWISH | Pharmacy Pay for Performance (P4P) Model | 20,000 | 0 | 20,000 |
| J. Pringle | PQA | Phase II Pennsylvania Demonstration Project | 62,046 | 6,204 | 68,250 |
| T. Ridenour | Stouton Farm Fdn. | Screening During well-Child Check- Ups for Older Children at Risk for Substance Abuse | 103,314 | 17,563 | 120,877 |
| L. Rohan | Gates Fndtn | Films as a Vaginal Drug Delivery Platform | 252,417 | 26,852 | 279,269 |
| G. Watkins | NACDS | Pitt Pharmacies Million Heart March | 1,000 | 0 | 1,000 |
| Y. Zhang | AHA | Novel Polymeric Vectors for Pulmonary uPA Gene Therapy | 23,000 | 0 | 23,000 |
| Total | | | 584,447 | 60,973 | 645,420 |

RESEARCH RECOGNITION OF FACULTY

Faculty members received various forms of recognition for their accomplishments and their expertise during FY13.

- 28 faculty members served on scientific journal editorial boards.
- 13 faculty members served on NIH grant review committees.
- 91 – the number of invited research presentations by faculty.
 - 24 presentations at 16 universities in 9 states
 - 38 Presentations at 31 scientific meetings in 13 states
 - 9 presentations at 9 universities in 2 countries
 - 20 presentations at 11 international scientific meetings in 9 countries

Members of Editorial Boards

| Faculty Member | Number | Editorial Board |
|---------------------------------------|--------|---|
| Jan H. Beumer, PharmD, PhD | 3 | The Open Chemical and Biomedical Methods Journal Journal of Chromatography and Separation Techniques Cancer Chemotherapy and Pharmacology |
| Colleen M. Culley, PharmD, BCPS | 1 | Clin-Alert |
| Billy W. Day, PhD | 2 | Current Molecular Pharmacology Toxicology In Vitro |
| Scott R. Drab, PharmD, CDE, BC-ADM | 1 | Inside Pharmacy |
| Christopher R. Ensor, PharmD, BCPS-CV | 1 | Progress in Transplantation |
| Robert B. Gibbs, PhD | 1 | Hormones and Behavior |
| Barry Gold, PhD | 3 | Editorial Advisory Board of Burger's Medicinal Chemistry and Drug Discovery Editorial Advisory Board of Future Medicinal Chemistry Editorial Advisory Board for medicinal Chemistry Communications |
| Donna Hury, PhD | 2 | Organic Letters ACS Medicinal Chemistry Letters |
| Paul A. Johnston, PhD | 1 | Journal of Assays and Drug Development Technologies |
| Sandra L. Kane-Gill, PharmD, MS, FCCM | 5 | Critical Care Medicine Journal of Hospital Administration Annals of Pharmacotherapy-Adverse Reactions and Medication Panel Advances in Pharmacoepidemiology and Drug Safety International Scholarly Research Network (ISRN) Critical Care |
| Levent Kirisci, PhD | 3 | Bipolar Disorder: International Journal of Psychiatry and Neurosciences International Journal of Person-Centered Medicine Journal of Substance Abuse and Rehabilitation |
| Edward P. Krenzelok, PharmD | 2 | Lexi-Comp Clinical Toxicology |
| Song Li, MD, PhD | 3 | Journal of Gene Medicine Biological Procedure Online American Journal of Cancer Therapy and Pharmacology |
| Susan M. Meyer, PhD | 1 | American Journal of Pharmaceutical Education |
| Thomas D. Nolin, PharmD, PhD | 1 | American Journal of Kidney Diseases |
| Janice L. Pringle, PhD | 2 | Journal of American Pharmacists Association |

| Faculty Member | Number | Editorial Board |
|---|--------|---|
| | | Journal of Pharmacy Education |
| Tara J. Pummer, PharmD | 1 | Pennsylvania Pharmacist Association |
| Ty A. Ridenour, PhD | 3 | Current Drug Abuse Reviews Drug and Alcohol Dependence Prevention Science |
| Lisa C. Rohan, PhD | 2 | AIDS Research and Therapy Journal of Sexually Transmitted Diseases |
| Shilpa Sant, PhD | 1 | Journal of Pharmacovigilance |
| Amy L. Seybert, PharmD | 3 | Simulation in Pharmacy Education International Scholarly Research Network (ISRN) Critical Care Cardiovascular Pharmacotherapy |
| Pamela Smithburger, PharmD | 1 | Journal of Hospital Administration |
| Ralph E. Tarter, PhD | 8 | Directions in Substance Abuse Counseling (Advisory Board) Journal of Developmental and Physical Disabilities American Journal on Addictions Journal of Child and Adolescent Substance Abuse (Book review editor) Drug and Alcohol Dependence Experimental and Clinical Psychopharmacology Clinical Psychology Review Prevention Science |
| Gordon J. Vanscoy, PharmD, CACP, MBA | 4 | American Journal of Oncology Review Journal of Thrombosis and Thrombolysis Drug Formulary Review Learnsomething Advisor Information Network |
| Raman Venkataramanan, PhD | 7 | Journal of Clinical Pharmacology Therapeutic Drug Monitoring The Open Clinical Chemistry Journal The Open Pharmacology Journal Current Clinical Pharmacology The Journal of Transplantation American Journal of Analytical Chemistry |
| Regis R. Vollmer, PhD | 1 | Editor, Clinical and Experimental Hypertension |
| Wen Xie, MD, PhD | 6 | Current Drug Metabolism World Journal of Gastroenterology Drug Metabolism Letters Drug Metabolism Reviews Molecular Endocrinology Drug Metabolism and Disposition |
| Xiang-Qun (Sean) Xie, MBA, PhD | 4 | American Journal of Molecular Biology The AAPS Journal Pharmacology and Toxicology Intel International Science and Engineering |

Faculty Participation in NIH Review Committees and Panels

| Faculty Member | Department | No. of Panels |
|--------------------------------|---------------------------|---------------|
| Jan H. Beumer, PharmD, PhD | Pharmaceutical Sciences | 1 |
| Billy W. Day, PhD | Pharmaceutical Sciences | 1 |
| Barry Gold, PhD | Pharmaceutical Sciences | 1 |
| Donna Huryn, PhD | Pharmaceutical Sciences | 3 |
| Song Li, MD, PhD | Pharmaceutical Sciences | 1 |
| Samuel M. Poloyac, PharmD, PhD | Pharmaceutical Sciences | 2 |
| Ty A. Ridenour, PhD | Pharmaceutical Sciences | 1 |
| Lisa C. Rohan, PhD | Pharmaceutical Sciences | 3 |
| Carolyn T. Thorpe, PhD, MPH | Pharmacy and Therapeutics | 1 |
| Michael M. Vanyukov, PhD | Pharmaceutical Sciences | 3 |
| Raman Venkataramanan, PhD | Pharmaceutical Sciences | 4 |
| Wen Xie, MD, PhD | Pharmaceutical Sciences | 4 |
| Xiang-Qun (Sean) Xie, PhD | Pharmaceutical Sciences | 2 |

School of Pharmacy Publications in Peer-Reviewed Journals

Research

- Abel E, **Kane-Gill SL**, **Seybert AL**, Kellum J. Direct thrombin inhibitors for management of heparin-induced thrombocytopenia in patients receiving renal replacement therapy: comparison of clinical outcomes. *Am J Health-Syst Pharm*, 2012, Sep 15;69(18):1559-67. doi: 10.2146/ajhp110540
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Patient Care

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- **Smithburger PL**, Campbell SC, **Kane-Gill SL**. Alteplase treatment of acute pulmonary emboli in the intensive care unit. *Crit Care Nurse*, 2013, Apr;33(2):17-27. doi: 10.4037/ccn2013626
- **Smithburger PL**, **Seybert AL**, **Kane-Gill SL**. Drug-Drug Interactions in the Medical Intensive Care Unit: An Assessment of the Frequency, Severity, and the Medications Involved. *Int J Pharm Pract*, 2012, Dec;20(6):402-8. doi: 10.1111/j.2042-7174.2012.00221.x. Epub 2012 Jun 7.
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Education

- Havrda DE, Engle JP, Ray SM, Haines SL, **Kane-Gill SL**, Ballard SL, Crannage AJ, Rochester CD, Parman MG. Guidelines for residency teaching experiences. *Pharmacotherapy*, 2013, epub ahead of print.
- **Kane-Gill SL**, Post JP, **Smithburger PL**, **Seybert AL**. “Bump”: Using a mobile app to enhance human patient simulation learning. *Simul Healthc*, 2012, Oct;7(5):326-7. doi: 10.1097/SIH.0b013e31825e8bcf.
- **Smithburger P**, **Kane-Gill S**. Use of high fidelity simulation for interprofessional education in an ICU environment. *Crit Care Med*, 2012, 20.

RESEARCH OVERVIEW

Center for Pharmacogenetics

Faculty

Yong Tae Kwon, Associate Professor
 Song Li, Associate Professor
 Wen Xie, Professor
 Jiang Li, Research Assistant Professor

Graduate Students (PhD students)

Chibueze Ihunnah
Peipei Lu
Jianqin Lu
Mengxi Jiang
Sung Tae Kim

Jiong Yan
Peng Zhang
Xiaolan Zhang
Yifei Zhang

Postdoctoral Fellows

Xiongjie Shi
Wojciech Garbaz

Major Accomplishments

- Dr. Takafumi Tasaki and colleagues in the **Kwon lab** found that UBR4, the recognition component of the N-end rule pathway, is a new component of autophagy machinery, called phagophore, and regulates the activity of the autophagy-lysosomal system (Tasaki et al., *Proc. Natl. Acad. Sci. USA* 110:3800-3805, 2013).
- Dr. Takafumi Tasaki and colleagues in the **Kwon lab** constructed knockout mice lacking UBR4 and found that UBR4-deficient mouse embryos die at midgestation due to impaired angiogenesis and vascular smooth muscle cell functions (in preparation).
- Sung Tae Kim and colleagues in the **Kwon lab** found that UBR4 mediates the heterophagy of maternal proteins in the yolk sac of mouse embryos (Kim et al., *Autophagy* 2013 Apr 15, Epub ahead of print).
- Dr. Takafumi Tasaki from the **Kwon lab** in collaboration with a University of Minnesota group characterized the role of the N-end rule pathway in the degradation of integrase of human immunodeficiency virus-1 (HIV-1) (Boso et al., *Virol J.* 2013 Jul 13, Epub ahead of print).
- The **Kwon group** in collaboration with a University of Texas Health Science Center group characterized the role of the UBR2 ubiquitin ligase, a recognition component of the N-end rule pathway, in signaling of tumor cells. (Zhang et al., *FASEB J.* 27:2893-2901, 2013).
- The **Kwon group** in collaboration with a Seoul National University group conducted a proteomic analysis that revealed that CD147/EMMPRIN confers chemoresistance in cancer stem cell-like cells. (Kang et al., *Proteomics* 13:1714-1725).
- **Song Li's** group has developed several novel dual-functional carriers that are highly efficient in delivery of poorly water-soluble drugs and in synergistic action with co-delivered anticancer agents. His group has also developed a new concept that incorporation of a drug-interactive group into lipid surfactants at interfacial region will not only increase drug loading capacity but also improve the formulation stability. These studies have led to the publication of a series of manuscripts and the filing of two provisional patent applications.
- **Song Li** has served as a regular member in NIH Developmental Therapeutics study section and as an ad hoc member in a number of other NIH and DOD study sections.
- **Song Li** received a new grant R21CA173887: Nanomicellar Formulation for Synergistic Targeting of Prostate Cancer, 05/01/2013 – 04/30/2015, \$366,217.

- **Wen Xie** received a 5-year (04/01/13 – 03/31/18) NIH R01 grant titled “The Perinatal Pharmacology of the Nuclear Receptor FXR.” The goal of this project is to study the perinatal function of the nuclear receptor FXR.
- **Wen Xie** was invited to serve as an *ad hoc* member of the NIH special emphasis panel “Developmental Pharmacology.” July 2012.
- **Wen Xie** was named Joseph Koslow Endowed Chair in Pharmaceutical Sciences. October 2012.
- **Wen Xie** was invited to serve as an *ad hoc* member of the NIH special emphasis panel “Systemic Injury by Environmental Exposure (SIEE)” February and June, 2013.
- **Wen Xie** was invited to serve as an ad hoc member of the NCI Program Project (P01) Special Emphasis Panel II. June 12-13, 2013.

Selected Publications

- Tasaki T, Kim ST, Zakrzewska A, Lee BE, Kang M, Yoo YD, Hwang J, Sung NK, Sung KS, Kim S, Nguyen MD, Sun M, Yi EC, Kim BY, and **Kwon YT**. UBR4, an N-recognin of the N-end rule pathway, and its role in yolk sac vascular development and autophagy. *Proc. Natl. Acad. Sci. USA* 110:3800-3805 (2013).
- Kim ST, Tasaki T, Zakrzewska A, Yoo YD, Sung KS, Kim S, Cha-Molstad H, Hwang J, Kim KA, Kim BY, and **Kwon YT**. The N-end rule proteolytic system in autophagy. *Autophagy*. In Press. (2013).
- Boso G, Tasaki T, **Kwon YT**, and Somia NV. The N-end rule and retroviral infection: no effect on integrase. *Virology J*. In Press. (2013).
- Zhang G, Lin R, **Kwon YT**, and Li Y. Signaling mechanism of tumor cell-induced upregulation of E3 ubiquitin ligase UBR2/E3- \square -II. *FASEB J*. 27:2893-2901. (2013).
- Kang M, Kim HP, Lee KS, Yoo YD, **Kwon YT**, Kim TY, and Yi EC. Proteomic analysis reveals that CD147/EMMPRIN confers chemoresistance in cancer stem cell-like cells. *Proteomics* 13:1714-1725. (2013).
- Yoo YD, Han DH, Jang JM, Zakrzewska A, Kim SY, Lee YJ, and **Kwon YT**. Molecular characteristics of cancer stem-like cells derived from human breast cancer cells. *Anticancer Res*. 33:763-777. (2013).
- Song X, Kim S, Zhou Z, Lagasse E, **Kwon YT**, and Lee YJ. Hyperthermia enhances mapatumumab-induced apoptotic death through ubiquitin-mediated degradation of cellular FLIP(long) in human colon cancer cells. *Cell Death Diseases*. In Press. (2013).
- Kim SO, Sakchaisri K, Soung NK, Jang JH, Kim YS, Lee KS, **Kwon YT**, Asami Y, Ahn JS, Erikson RL, and Kim BY. STK295900, a Dual Inhibitor of Topoisomerase 1 and 2, Induces G(2) Arrest in the Absence of DNA Damage. *PLoS One* 8:e53908. (2013).
- Kim SY, Kang JW, Song X, Kim BK, Yoo YD, **Kwon YT**, and Lee YJ. Role of the IL-6-JAK1-STAT3-Oct-4 pathway in the conversion of non-stem cancer cells into cancer stem-like cells. *Cell Signalling*. In Press. (2013).

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- He L, Lee J, Jang JH, Sakchaisri K, Hwang J, Cha-Molstad HJ, Kim KA, Ryoo IJ, Lee HG, Kim SO, Soung NK, Lee KS, **Kwon YT**, Erikson RL, Ahn JS, Kim BY. Osteoporosis regulation by salubrinal through eIF2a mediated differentiation of osteoclast and osteoblast. *Cell Signalling* 25:552-560. (2013).
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- Lee MK, Kim DE, Zakrzewska A, Kim S, Kim ST, Seo JW, Lee YS, Dorn II GW, Kim BY, and **Kwon YT**. Characterization of the arginylation branch of the N-end rule pathway in G-protein-mediated proliferation and signaling of cardiomyocytes. *J. Biol. Chem.* 287:24043-24052. (2013).
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- Gao X, Huang Y, Makhov AM, Epperly M, Lu J, Grab S, Zhang P, Rohan LC, Xie XQ, Wipf P, Greenberger J, and **Li S**. Nano-assembly of surfactants with interfacial drug-interactive motifs as tailor-designed drug carriers. *Molecular Pharmaceutics* 10: 187-198, 2013. PMID: 23244299
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- Lu J, Huang Y, Zhao W, Marquez RT, Meng X, Li J, Gao X, Venkataramanan R, **Li S**. PEG-derivatized embelin as a novel nanomicellar carrier for targeted delivery of paclitaxel to breast and prostate cancers. *Biomaterials* 34: 1591-1600, 2013. PMID: 23182923

- Huang Y, Lu J, Gao X, Li J, Zhao W, Sun M, Stolz BD, Venkataramanan V, Rohan LC, and **Li S**. PEG-derivatized embelin as a dual functional carrier for the delivery of paclitaxel. *Bioconjugate Chemistry* 23: 1443-1451, 2012. PMID: 22681537
- Gao J, **Xie W**. Targeting xenobiotic receptors PXR and CAR for metabolic diseases. *Trends Pharmacol Sci*. 33: 552-558 (2012).
- Williams JA, Thomas AM, Li G, Kong B, Zhan L, Inaba Y, **Xie W**, Ding WX, Guo GL. Tissue specific induction of p62/*Sqstm1* by farnesoid X receptor. *PLoS ONE* 7: e43961 (2012).
- He J, Gao J, Xu M, Ren S, Stefanovic-Racic M, O'Doherty RM, **Xie W**. PXR ablation alleviates diet-induced and genetic obesity and insulin resistance in mice. *Diabetes* 62: 1876-1887 (2013).
- Jiang M, **Xie W**. Role of the constitutive androstane receptor in obesity and type 2 diabetes, a case study of the endobiotic function of a xenobiotic receptor. *Drug Metab Rev*. 45: 156-163 (2013).
- Chai X, Zeng S, **Xie W**. Nuclear receptors PXR and CAR: implications for drug metabolism regulation, pharmacogenomics and beyond. *Expert Opin Drug Metab Toxicol*. 9: 253-66 (2013).
- Swanson HI, Wada T, Xie W, Renga B, Zampella A, Distritti E, Fiorucci S, Kong B, Thomas AM, Guo GL, Narayanan R, Yepuru M, Dalton J, Chiang JY. Role of nuclear receptors in lipid dysfunction and obesity-related diseases. *Drug Metab Dispos*. 41: 1-11 (2013).
- Ou Z, Shi X, Gilroy RK, Kirisci L, Romkes M, Lynch C, Wang H, Xu M, Jiang M*, Ren S, Gramignoli R, Strom SC, Huang M, **Xie W**. Regulation of the human hydroxysteroid sulfotransferase SULT2A1 by ROR alpha and ROR gamma and its potential relevance to human liver diseases. *Mol Endocrinol* 27: 106-115 (2013).
- Xiao L, Wang J, Jiang M, **Xie W**, Zhai Y. The emerging role of constitutive androstane receptor and its cross talk with liver X receptors and peroxisome proliferator-activated receptor alpha in lipid metabolism. *Vitam Horm* 91: 243-258 (2013).
- He J, Hu B, Shi X, Weidert ER, Lu P, Xu M, Huang M, Kelley EE, **Xie W**. Activation of the aryl hydrocarbon receptor sensitizes mice to non-alcoholic steatohepatitis by deactivating the mitochondrial sirtuin deacetylase Sirt3. *Mol Cell Biol* 33: 2047-2055 (2013).
- Zhang Y, Li JL, Fu Q, Wang XD, Liu LS, Wang CX, **Xie W**, Chen ZJ, Shu WY, Huang M. Associations of ABCB1, NFKB1, CYP3A, and NR1I2 polymorphisms with cyclosporine trough concentrations in Chinese renal transplant recipients. *Acta Pharmacol Sin*. 34: 555-560 (2013).
- Jin L, Feng X, Rong H, Pan Z, Inaba Y, Qiu L, Zheng W, Lin S, Wang R, Wang Z, Wang S, Liu H, Li S, Xie W, Li Y. The antiparasitic drug ivermectin is a novel FXR ligand that regulates metabolism. *Nat Commun*. 4: 1937 (2013).
- Zhang J, Wei Y, Hu B, Huang M, **Xie W**, Zhai Y. Activation of human stearyl-coenzyme A desaturase 1 contributes to the lipogenic effect of PXR in HepG2 cells. *PLoS ONE* 8: e67959 (2013).

- Kittayaruksakul S, Zhao W, Xu M, Ren S, Lu J, Wang J, Downes M, Evans RM, Venkataramanan R, Chatsudthipong V, **Xie W**. Identification of three novel natural product compounds that activate PXR and CAR and inhibit inflammation. *Pharm Res* 2013 Jul 30. [Epub ahead of print]

Selected Invited Research Presentations

- The 2013 Annual Meeting of Korea Society of Biochemistry and Molecular Biology (KSBMB), KOEX, Seoul, Korea. ‘The N-end rule pathway in protein aggregation and neurodegenerative diseases.’ May 14, 2013. **Kwon YT**.
- “*The Endobiotic Function of Xenobiotic Receptors and Enzymes in Obesity and Type 2 Diabetes*,” School of Basic Medical Sciences, Capital Medical University, Beijing, China. July 2, 2012. **Xie W**.
- “*Nuclear Receptors in Pathophysiology and Molecular Toxicology*,” Penn State Summer Symposium on “Xenobiotic Receptors: Physiological Regulators and Mediators of Toxicity.” State College, PA, July 22-24, 2012. **Xie W**.
- “*Endobiotic Function of Xenobiotic Receptors and Enzymes in Metabolic Disease*,” Laboratory of Reproductive and Developmental Toxicology (LRDT), National Institute of Environmental Health Sciences (NIEHS), NIH, Research Triangle Park, NC. September 7, 2012. **Xie W**.
- “*The Endobiotic Function of Xenobiotic Receptors and Enzymes in Obesity and Type 2 Diabetes*,” Department of Biochemistry and Molecular Pathology, Northeast Ohio Medical University (NEOMED), Rootstown, Ohio. November 6, 2012. **Xie W**.
- “*Orphan Nuclear Receptors in Intestinal Homeostasis*,” Gut Homeostasis in Major Chronic Diseases Conference, National Natural Science Foundation of China (NSFC), Shanghai, China. November 12-13, 2012. **Xie W**.
- “*The Hepatic Functions of Orphan Nuclear Receptors*,” Department of Gastroenterology, Shanghai Changzheng Hospital, Second Military Medical University, Shanghai, China. November 13, 2012. **Xie W**.
- “*Nuclear Receptor-Mediated Gene Regulation in Xenobiotic and Endobiotic Metabolism*,” Department of Pharmaceutical Sciences, School of Pharmacy, University of Maryland. Baltimore, Maryland. April 10, 2013. **Xie W**.
- “*Xenobiotic Receptors, Gene Regulation, and Metabolic Diseases*,” School of Basic Medical Sciences, Capital Medical University, Beijing, China. June 4, 2013. **Xie W**.
- “*Nuclear Receptors in Drug Metabolism and Liver Diseases*,” Department of Pharmaceutical Analysis and Drug Metabolism, College of Pharmaceutical Sciences, Zhejiang University, Hangzhou, Zhejiang, China. June 5, 2013. **Xie W**.

Center for Development and Delivery of Pharmaceutical Agents (CDDPA)

Faculty

Jan H. Beumer, PharmD, PhD, Associate Professor
Billy W. Day, PhD, Professor
Philip E. Empey, PharmD, PhD, Assistant Professor
Barry Gold, PhD, Professor
Donna Huryn, PhD, Research Professor
Paul A. Johnston, PhD, Research Associate Professor
Song Li, MD, PhD, Professor
Lee A. McDermott, PhD, Visiting Research Assistant Professor
M. Beth Minnigh, PhD, Assistant Professor
Thomas D. Nolin, PharmD, PhD, Assistant Professor
Samuel M. Poloyac, PharmD, PhD, Associate Professor
Lisa C. Rohan, PhD, Associate Professor
Shilpa Sant, PhD, Assistant Professor
Vinayak Sant, PhD, Assistant Professor
Dennis P. Swanson, MS, Professor
Raman Venkataramanan, PhD, Professor
Lirong Wang, PhD, Research Assistant Professor
Peter Wipf, PhD, Professor (Department of Chemistry)
Xiang-Qun Xie, PhD, Professor
Haitao Yang, PhD, Assistant Professor
Jeffrey K. Yao, PhD, Research Professor
Xiang Gao, PhD, Research Assistant Professor
Jiang Li, MD, PhD, Research Assistant Professor

Graduate Students

| | |
|--------------------------|-----------------------|
| Ayman Akil, BS | Shilpa Mukundan, BS |
| Yichao Chen, BS | Galit Regev, BS |
| Yuzhe Chen, BS, MS | Ismail Walbi, BS |
| Lindsay Ferguson, PharmD | Jieni Xu, BS |
| Mohammed Ghazwani, BS | Yifei Zhang, BS, MS |
| TianTian Gong, BS, MS | Peng Zhang, BS, MS |
| Sheila Grab, BS | Xiaolan Zhang, BS, MS |
| Minlu Hu, BS | Tian Zhou, BS, MS |
| Tao Long, BS | Xiang Zhou, BS, MS |
| Jianqin Lu, BS | |

Postdoctoral Fellows

Wei Zhang, PhD
Maria Jaramillo, PhD
Yixian Huang, PhD

The goal of the Center for Drug Development and Delivery of Pharmaceutical Agents (CDDPA) is to partner with industry and academia to develop therapeutic molecules for clinical trials. The CDDPA integrates the following areas of research:

Drug Development

- computational molecular modeling
- lead compound generation - assay development, high throughput and high content screening
- medicinal chemistry and structure activity relationship development
- in vitro metabolic stability and metabolite identification
- cytochrome P450 and glucuronosyltransferase screening

Drug Delivery

- analytical development and validation
- formulation development – dosage forms and delivery systems
- formulation assessment
- stability

Support Services

- regulatory affairs
- IND development

Major Accomplishments

- Patents 2012 Provisional Patent application Pitt Ref. No. 02659 Klarquist Ref. No. 8123- 88867-01 For MELANOMA CHEMOPREVENTION Application No. 61/643,098. Country: U.S. **Beumer J.**
- Class of HDAC Inhibitors Expands the Renal Progenitor Cells Population and Improves the Rate of Recovery from Acute Kidney Injury. US Patent Application No.: 61/720,621. **McDermott L.**
- New Grant: Nanomicellar Formulation for Synergistic Targeting Prostate Cancer Source of Support: NIH/NCI Identification No.: NCI R21- CA173887 Principal Investigator: **Li S.**
- Patent (Provisional): 61/724,234/61/727,582: Compounds for Inhibiting Nef and Methods of Using the Compounds. **Iyer P, Day B.**
- CBC S08-221 Task Order 6 “Discovery and optimization of inhibitors of STAT3 activation for the treatment of squamous cell carcinoma of the head and neck”. Task Element 5, **Johnston PA.**
- PCT Patent Application No. PCT/US2012/059558; filed on October 10, 2012, “Small Molecules Targeting Androgen Receptor Nuclear Localization and/or Level in Prostate Cancer. **Johnston P.**
- International Patent on “Compounds and methods for inhibition of AP endonuclease-1/redox factor-1.” **Gold B, Xie X-Q.**
- Received 2012 The Ninth Pittsburgh Schizophrenia Research Award, **Yao J.**
- Received VA Senior Research Career Scientist Award (2013 - 2020), **Yao J.**
- Received VA Merit Review grant on "Phospholipid-Arachidonate-Eicosanoid Signaling in Schizophrenia," **Yao J.**

- Completed enrollment for the Phase I clinical trial evaluating a vaginal film containing the anti-HIV agent dapivirine. This clinical trial is the first to look at the vaginal film as a potential dosage form for HIV prevention drugs. **Rohan LC.**
- Advanced the rectal specific HIV prevention product developed in the lab to entry into the clinic. This is the first clinical trial to evaluate a rectal specific dosage form for HIV prevention. A combination product has been developed in the lab and toxicity testing is currently being conducted through support from the Comprehensive Resources for Topical Microbicides and Biomedical Prevention (CRMP) Program at NIAID. **Rohan LC.**
- Funding for the Pharmaceuticals Group over the past year has been provided through 10 separate NIH grants and several grants from not for profit organizations, foundations, and individual donors. The group was awarded supplemental funding of \$488,132 to their U19 cooperative grant entitled “Alternative Formulations of Tenofovir and UC781”. They were awarded a 15-month, \$758,000 project that will assess the feasibility of thin film dosage forms for vaginal delivery of contraceptive or HIV prevention drugs from The Bill & Melinda Gates Foundation and were awarded a grant through the NIH to assist with product development efforts for a major Pharmaceutical company. **Rohan LC.**
- Received the 225th Anniversary Medallion from Chancellor Mark A. Nordenberg University of Pittsburgh for work in development of products to improve human health. This award recognizes alumni who have built better lives through their life's work. **Rohan LC.**
- Embelin Derivatives as a Simple, Effective, Dual-Functional Delivery System for Water-Insoluble Drugs. [Provisional Patent Application (No.: 61/621,352) has been filed]. **Li S, Huang Y, Gao X, Lu J.**
- Society of Critical Care Medicine Young Investigator Award, January 2013 (first pharmacist to receive this), **Empey P.**
- New Grant: **Empey (PI).** University of Pittsburgh – Central Research Development Fund (CRDF) Grant - “Evaluating the role of the transporter ABCG2 following traumatic brain injury.”
- New Grant: **Empey/Coons** (multiple-PIs), Smith AJC, Saul MI, **Kirisci L, Skledar SJ,** Sapienza SP. American Society of Health System pharmacists – PPMI Grant - “Pharmacist-Delivered Pharmacogenomic Care.”
- New Grant: **Empey P.** National Institutes of Health, KL2 TR000146-07 (supplement), University of Pittsburgh Multidisciplinary Clinical Research Scholars Program (CTSA KL2), Implications of hypothermia on drug transport.
- Named Fellow of the American College of Critical Care Medicine, **Poloyac S.**
- Named as an Associate Director of Drug Metabolism of the Safar Center for Resuscitation Research, **Poloyac S.**
- Nominated as a standing member and served as a regular ad hoc member of the NIH study section NSD-K, **Poloyac S.**
- Served as an invited member of the AACP Research and Graduate Affairs Committee, **Poloyac S.**

Selected Publications

- **Johnston PA**, Shinde SN, Hua Y, Shun TY, Lazo JS, **Day BW**. Development and Validation of a High-Content Screening Assay to Identify Inhibitors of Cytoplasmic Dynein-Mediated Transport of Glucocorticoid Receptor to the Nucleus. *Assay Drug Dev Technol*, 2012, 10: 432-456.
- Emert-Sedlak LA, Narute P, Shu ST, Poe JA, Shi H, Yanamala N, Alvarado JJ, Lazo JS, Yeh JJ, **Johnston PA**, Smithgall TE. Effector Kinase Coupling Enables High-Throughput Screens for Direct HIV-1 Nef Antagonists with Antiretroviral Activity. *Chem Biol*, 2013, 20: 82-91.
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- Srinivasan A, Wang L, Cline C J, Xie Z, Sobol RW, **Xie X-Q, Gold B**, The identification and characterization of human AP endonuclease-1 inhibitors. *Biochemistry*, 2012, 51, 6246-6259.
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- Zhou T, Hu M, Cost M, **Poloyac S, Rohan L**. Expression of Transporters and Metabolizing Enzymes in the Female Lower Genital Tract: Implications for Microbicide Research. *AIDS Res Hum Retroviruses*. 2013 May 17. PMID: 23607746

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- Boyce RD, Freimuth RR, Romagnoli KM, **Pummer T**, Hochheiser H, **Empey PE**. Toward semantic modeling of pharmacogenomic knowledge for clinical and translational decision support. *Proceedings of the 2013 AMIA Summit on Translational Bioinformatics*. San Francisco, March 2013. In Press
- **Poloyac SM**, **Empey PE**. Drug dosing during hypothermia: to adjust, or not to adjust, that is the question. *Pediatr Crit Care Med*. 2013 Feb;14(2):228-9. PMID: 23388572
- Thampatty BP, Klamerus MM, Oberly PJ, Feldman KL, Bell MJ, Tyler-Kabara EC, Adelson PD, Clark RSB, Kochanek PM, **Poloyac SM**. Hypothermia decreased cerebrospinal fluid asymmetric dimethylarginine levels in traumatic brain injured children. *Ped Crit Care Med* 2013; 14(4):403-412.

Selected Invited Research Presentations

- Oral Therapy in Oncology, Challenges and Opportunities. Experimental Therapeutics Program, Ohio State University Comprehensive Cancer Center. Columbus, OH. June 19, 2013, **Beumer J**.
- In vitro investigations of antiretroviral and anticancer agents. Aids Malignancy Consortium (AMC) pharmacology subcommittee. Bethesda, MD. May 8, 2013, **Beumer J**.
- Why drug concentrations matter in preclinical development and clinical practice. Johns Hopkins School of Medicine / Sidney Kimmel Comprehensive Cancer Center. Baltimore, MD. April 24, 2013, **Beumer J**.
- Oral Therapy in Oncology, Challenges and Opportunities. Medical Grand Rounds. Division of Hematology/Oncology, Department of Medicine, Indiana University. Indianapolis, IN. March 8, 2013, **Beumer J**.
- Drug Exposure in Oncology. Medical Grand Rounds. Roswell Park Cancer Institute in Buffalo, NY. March 1, 2013, **Beumer J**.

- Human mass balance studies. 11th International Isotope Symposium on the Synthesis and Applications of Isotopes and Isotopically Labelled Compounds. Heidelberg, Germany, American Chemical Society, Raleigh, NC. September 9-13, 2012, **Beumer J, Gold B.**
- Seven Years of HTS/HCS at the University of Pittsburgh - It's the Collaborations Baby! ACADEMIC SCREENING WORKSHOP, Select Biosciences, Baltimore, MD. September 20, 2012, **Johnston PA.**
- Development and Implementation of an AR-GFP nuclear localization HCS on the ImageXpress Ultra Platform to identify compounds with potential for prostate cancer therapy. Society for Biomolecular Imaging and Informatics and RTCA Imaging Symposium, RTP, NC. October 11, 2012, **Johnston PA.**
- Development, optimization and validation of a HCS biosensor assay to identify compounds that disrupt AR-TIF2 protein-protein interactions. Novel Biosensor for Screening Session at the 10th Annual CHI High Content Analysis Conference, San Francisco, CA. January 1, 2013, **Johnston PA, Strock C, Hua Y.**
- The Center for Craniofacial Regeneration, University of Pittsburgh, April 2013, USA, **Sant S.**
- 3rd annual meeting, Cellular and Molecular Bioengineering, Biomedical Engineering Society (CMBE-BMES) Jan 2013, Hawaii, USA, Recipient of Rising Star/Fellow Award, **Sant S.**
- Invited speaker on "Homeostatic Imbalance of Antioxidant Defense System and Its Clinical Relevancies in Schizophrenia" at The Federation of European Neuroscience Society Satellite Symposium "Novel insights in the development of synaptic dynamics: The excitatory/inhibitory balance from neurobiology to psychiatric disorders," Barcelona, Spain, **Yao J.**
- 2012 Pittsburgh Schizophrenia Conference Award Lecture on "Oxidative stress, Omega-3 Fatty Acids and Schizophrenia" at the 29th Annual Pittsburgh Schizophrenia Conference, Pittsburgh, PA, **Yao J.**
- **Dr. Lisa Rohan** was invited to present at the Think Tank on Drug Delivery Systems for HIV Prevention (DDS) (NIH/NIAID/DAIDS/PSP and BMGF) organized by the PreClinical Microbicide Prevention Research Branch on February 22, 2013.
- **Dr. Lisa Rohan** was a key speaker at the Product Development Workshop organized by CONRAD, National Institutes of Health (NIH), National Institutes of Allergy and Infectious Disease (NIAID), Division of AIDS (DAIDS), Prevention Science Program (PSP), and The Bill and Melinda Gates Foundation (BMGF) which was held in Arlington, VA.
- **Dr. Lisa Rohan** was an invited speaker at the Gates Foundation in October 2012.
- **Dr. Lisa Rohan** was invited by the NIAID to conduct CRMP Regulatory Training (CMC) for the NIH in Washington on Nov 5, 2012.
- Nano-Assembly of Surfactants with Interfacial Drug-Interactive Motifs as Tailor-Designed Drug Carriers. University of Michigan School of Pharmacy, Ann Arbor, MI, October 10, 2012, **Li S.**

- Rational Design of Lipidic Vectors for Poorly Water-Soluble Therapeutic Agents. Clinical and Translational Medicine Research Center, Guangxi Medical University, Nanning, China, November 5, 2012, **Li S.**
- Rational Design of Lipidic Vectors for Poorly Water-Soluble Therapeutic Agents. Xi'an Jiaotong University School of Life Science and Technology, Xi'an, China, November 7, 2012, **Li S.**
- Dual-Functional Delivery Systems for Synergistic Targeting of Cancers. The 4th International Conference of Tumor Targeted Therapy and the 1st Conference of Personalized Cancer Therapy, Suzhou, China, November 9-12, 2012 (VIP Guest and Speaker), **Li S.**
- Generic Tacrolimus. International Transplant Congress, Berlin July 13, 2012, **Venkataramanan R.**
- So You Want to Be a Pharmacist, University of Pittsburgh School of Pharmacy July 27, 2012, **Venkataramanan R.**
- Conversion from Prograf to generic tacrolimus, Sandoz, Chile August 12, 2012, **Venkataramanan R.**
- Conversion from Prograf to generic tacrolimus, Sandoz, Paraguay, August 6, 2012, **Venkataramanan R.**
- Preparation of Abstracts School of Pharmacy, University of Pittsburgh, September 11, 2012, **Venkataramanan R.**
- Drug Disposition in Liver, UPMC Pathology, September 26, 2012, **Venkataramanan R.**
- The Pruner, the Graftor and the Transporter, UPMC Pathology, October 2, 2012, **Venkataramanan R.**
- Basic Science Update, NICHD – OPRU, November 5, 2012, **Venkataramanan R.**
- HIV drug and Anticancer Drug Interactions, AMC², November 20, 2012, **Venkataramanan R.**
- Generic Tacrolimus, CHP Pittsburgh, November 26, 2012, **Venkataramanan R.**
- Translational Research in Transplantation-Transporters in kidney² UPMC Pathology, April 16, 2013, **Venkataramanan R.**
- Clinical Studies in Liver Transplantation³, UPMC Transplant Institute, May 10, 2013, **Venkataramanan R.**
- Basic Science Study update OPRU NICHD, May 29, 2013, **Venkataramanan R.**
- Translational Studies in Pregnancy and Transplantation GSK; June 13, 2013, **Venkataramanan R.**
- Generic Tacrolimus in pediatric patients, International Pediatric Transplant Congress, Warsaw Poland, July 2013, **Venkataramanan R.**

- Ethnic variation in drug response: Is it all pharmacogenetics? SCCM Critical Care Congress in San Juan, Puerto Rico, January 2013, **Empey P.**
- Phenytoin concentrations are elevated in children receiving therapeutic hypothermia following traumatic brain injury. SCCM Critical Care Congress in San Juan, Puerto Rico, January 2013, **Empey P.**
- Pharmacogenomics in Cardiology: A Future for Personalized Medicine? University of Pittsburgh School of Pharmacy Fall Continuing Education Program in Pittsburgh, PA, October 2012, **Empey P.**
- Implementing Pharmacogenomics to Achieve Personalized Medicine. Department of Biomedical Informatics Colloquium, Pittsburgh, December 2012, **Empey P.**
- The Role of Xenobiotic Transporters in Tissue Defense Following Brain Injury, Safar Center for Resuscitation Research Experimental Brain Injury Meeting. Pittsburgh, August 2012, **Empey P.**
- Brain Cytochrome P450 Enzymes and Stroke: Translating Relevance from Rats to Humans, University of Kentucky College of Pharmacy; Lexington, KY, February 2013, **Poloyac SM.**
- Drug Issues in Therapeutic Hypothermia, Critical Care PRN Presentation, American College of Clinical Pharmacy; Hollywood, FL, October 2012, **Poloyac SM.**
- Too Cool for a Breakdown? Drug Metabolism in Therapeutic Hypothermia, North American Congress of Clinical Toxicology; Las Vegas, NV, October 2012. **Poloyac SM.**

Pharmaceutics Group and Microbicide Clinical Trials Network Central Laboratory Core

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

Faculty

Lisa Rohan, PhD, Associate Professor
Haitao Yang, PhD, Assistant Professor

Research Staff

Marilyn Cost
Phillip Graebing
Lin Wang
Yuan Shi

Graduate Students

Ayman Akil
Lindsay Ferguson, PharmD
Minlu Hu
TianTian Gong
Tian Zhou
Galit Regev
Sheila Grab

Postdoctoral Fellows

Wei Zhang, PhD

Major Accomplishments

- Completed enrollment for the Phase I clinical trial evaluating a vaginal film containing the anti-HIV agent dapivirine. This clinical trial is the first to look at the vaginal film as a potential dosage form for HIV prevention drugs.
- Advanced the rectal specific HIV prevention product developed in the lab to entry into the clinic. This is the first clinical trial to evaluate a rectal specific dosage form for HIV prevention. A combination product has been developed in the lab and toxicity testing is currently being conducted through support from the Comprehensive Resources for Topical Microbicides and Biomedical Prevention (CRMP) Program at NIAID.
- The group has developed essential data toward identification of transporters and metabolizing enzymes in reproductive tissues of humans and other animal models. This is the first systematic evaluation conducted for vagina and the data will be critical for development of more effective vaginal microbicide products. This data will also impact development of vaginal drug delivery systems for other therapeutic areas.
- Funding for the Pharmaceuticals Group over the past year has been provided through 10 separate NIH grants and several grants from not for profit organizations, foundations, and individual donors. The group was awarded supplemental funding of \$ 488,132 to their U19 cooperative grant entitled “Alternative Formulations of Tenofovir and UC781”. They were awarded a 15-month, \$758,000 project that will assess the feasibility of thin film dosage forms for vaginal delivery of contraceptive or HIV prevention drugs from The Bill & Melinda Gates Foundation and were awarded a grant through the NIH to assist with product development efforts for a major Pharmaceutical company.
- Dr. Rohan received the 225th Anniversary Medallion from Chancellor Mark A. Nordenberg University of Pittsburgh for work in development of products to improve human health. This award recognizes alumni who have built better lives through their life's work.

Selected Publications

This year the Pharmaceuticals Group has published 14 peer reviewed scientific manuscripts and 2 Review Articles and 1 book chapter. Additionally 6 manuscripts have been submitted for review.

- Zhang W, Parniak M, Mitsuya H, Sarafianos S, Graebing P, **Rohan LC**. Preformulation studies of EFdA, a novel nucleoside reverse transcriptase inhibitor for HIV prevention. *Drug Development and Industrial Pharmacy*. 2013 July 10 {Epub ahead of print} PMID 23841536
- Obitte NC, **Rohan LC**, Adeyeye CM, Parniak MA, Esimone CO. The utility of self-emulsifying oil formulation to improve the poor solubility of the anti HIV drug CSIC. *AIDS Res Ther*. 2013 May 31;10(1):14.
- Zhou T, Hu M, Cost M, Poloyac S, **Rohan LC**. Expression of Transporters and Metabolizing Enzymes in the Female Lower Genital Tract: Implications for Microbicide Research. *AIDS Res Hum Retroviruses*. 2013 May 17. PMID: 23607746
- Tasoglu S, **Rohan LC**, Katz DF, Szeri AJ. Transient swelling, spreading and drug delivery by a dissolved anti-HIV microbicide-bearing film. *Phys Fluids* (1994). 2013 Mar;25(3):31901. PMID: 23554549

- Nixon B, Stefanidou M, Mesquita PM, Fakioglu E, Segarra T, **Rohan LC**, Halford W, Palmer KE, Herold BC. Griffithsin Protects Mice from Genital Herpes by Preventing Cell-to-Cell Spread. *J Virol*. 2013 Jun;87(11):6257-69. Epub 2013 Mar 27. PMID: 23536670
- Wood MP, Cole AL, Ruchala P, Waring AJ, Rohan LC, Marx P, Tarwater PM, Gupta P, Cole AM. A compensatory mutation provides resistance to disparate HIV fusion inhibitor peptides and enhances membrane fusion. *PLoS One*. 2013;8(2):e55478. PMID: 23393582
- Eade CR, Cole AL, Diaz C, **Rohan LC**, Parniak MA, Marx P, Tarwater PM, Gupta P, Cole AM. The anti-HIV microbicide candidate RC-101 inhibits pathogenic vaginal bacteria without harming endogenous flora or mucosa. *Am J Reprod Immunol*. 2013 Feb;69(2):150-8. PubMed PMID: 23167830
- Dezzutti CS, Brown ER, Moncla B, Russo J, Cost M, Wang L, Uranker K, Kunjara Na Ayudhya RP, Pryke K, Pickett J, Leblanc MA, **Rohan LC**. Is wetter better? An evaluation of over-the-counter personal lubricants for safety and anti-HIV-1 activity. *PLoS One*. 2012;7(11):e48328. PubMed PMID: 23144863
- Gupta P, Lackman-Smith C, Ratner D, **Rohan LC**, Patton D, Bharat Ramratnam B and Cole AM. Antiviral Activity of Retrocycline RC-101, a Candidate Microbicide against Cell-Associated HIV-1. *AIDS Research and Human Retroviruses* 2012 Aug 27. PMID:22924614

Selected Invited Presentations

- Dr. Rohan was invited to present at the Think Tank on Drug Delivery Systems for HIV Prevention (DDS) (NIH/NIAID/DAIDS/PSP and BMGF) organized by the PreClinical Microbicide Prevention Research Branch on February 22, 2013.
- She was also a key speaker at the Product Development Workshop organized by CONRAD, National Institutes of Health (NIH), National Institutes of Allergy and Infectious Disease (NIAID), Division of AIDS (DAIDS), Prevention Science Program (PSP), and The Bill and Melinda Gates Foundation (BMGF) which was held in Arlington, VA. She presented a talk entitled “Vaginal Film Development for ARV Delivery” at the MTN Annual Meeting held in Bethesda, MD.
- Dr. Rohan also was an invited speaker at the Gates Foundation in October 2012 and was invited to speak at the MPT Product Prioritization Stakeholder Meeting in Washington, DC on October 26, 2012.
- Additionally Dr. Rohan was invited by the NIAID to conduct CRMP Regulatory Training (CMC) for the NIH in Washington on Nov 5, 2012.

International Impact

The Pharmaceuticals Group continues to have international impact. In addition to their research efforts in the area of improving global health, the group continues to support and train international investigators. The group collaborates with investigators in Africa, Europe, India, and Australia. As part of the Microbicide Trials Network Comparative Assessment Core the group provides scientific support to the MTN community which includes clinical sites in the US as well as in Peru, Malawi, Zambia, Uganda, Zimbabwe, India, South Africa, and Thailand.

Center for Education and Drug Abuse Research

The year 2013 marked the 23rd anniversary of the Center for Education and Drug Abuse Research (CEDAR). The Center has enrolled 775 families from the Pittsburgh metropolitan area in a longitudinal study of substance abuse. These families are in varying stages of follow-up. Our overarching mission is to understand the development of addiction between childhood and adulthood.

Faculty

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

Graduate Student

ZuWei Zhai, BA

Postdoctoral Fellow

Michelle Horner, DO

Major Accomplishments

- CEDAR derived and validated a quantitative measure of heritable risk for addiction termed the transmissible liability index.
- CEDAR provided the infrastructure for obtaining three new federal grants. We have established a collaboration with Walter Reed National Medical Center.

Selected Publications

- **Kirisci L, Tarter R, Ridenour T, Zhai Z-W, Fishbein D, & Vanyukov, M.** (2013). Age of alcohol and cannabis use onset mediates the association of transmissible risk in childhood and development of alcohol and cannabis disorders: Evidence for common liability. *Experimental and Clinical Psychopharmacology*, 21(1), 38-45.
- **Kirisci L, Tarter R, Reynolds M, Ridenour T, Stone C, Vanyukov M.** (2012). Computer adaptive testing of liability to addiction: Identifying individuals at risk, *Drug and Alcohol Dependence*, 123, S79-S86.
- **Tarter R, Kirisci L, Ridenour T, & Bogen D.** (2012). *Application of person-centered medicine in addiction. International Journal of Person Centered Medicine*, 2, 240-249.
- **Tarter R, Kirisci L, Kirillova G, Reynolds M, Gavaler J, Ridenour T, Horner M, Clark D, & Vanyukov M.** (2013). Relationship among addiction risk, HPA and HPG neuroendocrine systems, and neighborhood quality: Results of a 10-year prospective study. *Drug and Alcohol Dependence*, 127, 228-231.
- **Kirisci L, Tarter R, Ridenour T, Reynolds M, & Vanyukov M.** (2013). Longitudinal modeling of transmissible risk in boys who subsequently develop cannabis use disorder. *The American Journal of Drug and Alcohol Abuse*, 39(3), 180-185.

Center for Clinical Pharmaceutical Sciences

Faculty

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

Graduate Students

| | |
|---------------------------------|----------------------------|
| Omar A. Almazroo, BS, MS | Tiantian Gong, BS, MS |
| Ali Mohamed Alshabi, BS, MS | Fanuel Hagos, BS, MS |
| Osama Y. Alshogran, BS, MS | Hari V Kalluri, PharmD |
| Shoroq Altawalbeh, PharmD | Lingjue Li, BS |
| Kacey B. Anderson, BS | Robert A. Parise, BS |
| Mark K. Donnelly, BS | Ellen Press, BS, MS |
| Katherine Eichinger, MS, PharmD | Hari Thanukrishnan, BS, MS |
| Lindsay M. Ferguson, PharmD | |

Major Accomplishments

- **Jan Beumer** is currently setting up a CLIA-based laboratory within the UPCI Clinical Pharmacology Analytical Facility (CPAF), so that real-time plasma drug level measurements may be taken, thereby allowing clinicians to more appropriately and accurately titrate drug dosing for individual patients. In addition, several clinical studies are planned where therapeutic drug monitoring of both new as well as well-established cancer agents will be undertaken.
- **Kerry Empey**'s lab presented their primary research at five national and local meetings this past year. The lab has also received funding for six of the ten NIH-, foundation-, and industry-type grants submitted in the past year.
- **Kerry Empey** developed and mentored a residency research project that brought together residents, PharmD students, clinical graduate students, clinical pharmacists, unit-based pharmacists, and research faculty to conduct an ambitious clinical research study; this project has resulted in her first manuscript submission this summer, with another one anticipated in the fall.
- **Kerry Empey**'s 2nd year PhD student, Katherine Eichinger, was awarded an American Foundation for Pharmaceutical Education Pre-Doctoral Fellowship in the Clinical Pharmaceutical Sciences. This highly competitive and prestigious Fellowship sets Katie apart from her peers; she is among a very distinguished group of men and women to have received the AFPE Pre-Doctoral Fellowship since its initiation in 1942.

- **Phil Empey** won the Society of Critical Care Medicine Young Investigator Award in January 2013 and was the first pharmacist to do so in the history of the award.
- **Phil Empey's** PhD student, Kacey Anderson, won the ACRT/SCTS Burroughs Wellcome Fund Travel Award to attend the Translational Science 2013 meeting in Bethesda, MD and present the talk "Phenytoin concentrations are elevated in children receiving therapeutic hypothermia following traumatic brain injury" in April 2013.
- **Phil Empey's** PhD student, Kacey Anderson, won the travel award for her abstract entitled "Effect of hypothermia on ABCG2- and ABCB1-mediated drug transport," to be presented at the American College of Clinical Pharmacology in Bethesda. September 22nd-24th, 2013.
- **Empey, Phil** was awarded the following grants:
 - Empey (PI). University of Pittsburgh – Central Research Development Fund (CRDF) Grant - "Evaluating the role of the transporter ABCG2 following traumatic brain injury"
 - Empey, Phil/Coons (multiple-PIs), Smith AJC, Saul MI, Kirisci L, Skledar SJ, Sapienza SP. American Society of Health System pharmacists – PPMI Grant - "Pharmacist-Delivered Pharmacogenomic Care"
 - Empey, Phil National Institutes of Health, KL2 TR000146-07 (supplement), University of Pittsburgh Multidisciplinary Clinical Research Scholars Program (CTSA KL2) Implications of hypothermia on drug transport.
- **Maggie Folan** was elected as Chair to the AACP Graduate Education SIG.
- **Maggie Folan** was invited to serve on the 2013-2014 AACP Research and Graduate Affairs Committee.
- **Sandy Kane-Gill** was selected as American College of Clinical Pharmacy Committee Chair for 2014 Annual Meeting.
- **Sandy Kane-Gill** was appointed as Chair of the Paragon Quality Improvement Committee of the Society of Critical Care Medicine.
- **Sandy Kane-Gill** and Pamela L. Smithburger won the Society of Critical Care Medicine, Clinical Pharmacy and Pharmacology Section Medication Safety Award for evaluating the impact of transfer summaries as part of an active surveillance system for the detection of ADEs in the ICU.
- **Sandy Kane-Gill** was awarded the following grants:
 - Grant Total: \$ 591,195. Interactive search and review of clinical records with multilayer semantic annotation. Co-Investigator (salary support 5%), Chapman (PI), Subcontract UCSD. National Library of Medicine, 2011 (09/30/11- 09/29/15) Kane-Gill SL
 - Grant total \$20,000. A multicenter evaluation of off-label medication use and adverse drug events in adult intensive care unit patients. Principal Investigator. ASHP New Investigator Research Grant, 2012, Smithburger PL, Kane-Gill SL
 - Grant Total: \$30,000. Clinical Quality Improvement of Benzodiazepine-Resistant Alcohol Withdrawal Syndrome. Hospira Pharmaceuticals, 2012, Benedict NJ, Kane-Gill SL, Smithburger PL, Falcione BA
 - Grant Total: \$25,000 Transforming the role of the hospital pharmacists to improve patients' access, adherence and self-management of medications after discharge. The

- Beckwith Institute. 2013 (6/1/13-6/1/14) Seybert AL, Kane-Gill SL
- Grant Total: \$1,248,265 Preventing adverse drug events in intensive care units. Co-Investigator. (salary support 16%) RO1-Agency for Healthcare Research and Quality. Kane-Gill SL
 - **Tom Nolin** is a Fellow (FASN), Other, American Society of Nephrology.
 - **Tom Nolin** was appointed a member of Acute Kidney Injury Advisory Group, American Society of Nephrology
 - **Tom Nolin** was appointed a *Co-Chair of* Kidney Health Initiative (KHI) Pharmacokinetics Workgroup, American Society of Nephrology and Food and Drug Administration Collaborative
 - **Sam Poloyac** was named Fellow of the American College of Critical Care Medicine
 - **Sam Poloyac** was nominated as a standing member and served as a regular ad hoc member of the NIH study section NSD-K
 - **Sam Poloyac** was named as an Associate Director of Drug Metabolism of the Safar Center for Resuscitation Research
 - **Lisa Rohan** received the 225th Anniversary Medallion from Chancellor Mark A. Nordenberg University of Pittsburgh. This award recognizes alumni who have built better lives through their life's work
 - **Carolyn Thorpe** was awarded the following pilot grants:
 - Communication about Type 2 Diabetes Treatment Decisions in Older Patients with Comorbid Dementia, **Aging Institute of UPMC Senior Services and the University of Pittsburgh**, Seed Grant Pilot Funding Program, \$19,914 (direct, total), 7/1/2013-6/30/2014.
 - Supporting medication adherence in Veterans with dementia and their caregivers. **Department of Veterans Affairs, Health Services Research and Development**, CHERP Competitive Pilot Funding Program, \$35,000 (direct, total), 10/1/13-9/30-14.
 - **Josh Thorpe** was awarded the following pilot grants:
 - Exploring End-of-Life (EOL) Care in VA Community Living Centers Source: Pilot grant, Department of Veteran Affairs, Health Services Research & Development Role: Co-PI.
 - Improving the Usefulness of Veteran Healthcare Experiences Surveys: A Preliminary Needs Assessment Source: Pilot grant, Department of Veteran Affairs, Health Services Research & Development, Role: Co-PI.
 - **Raman Venkataramanan** received a T-32 post doctoral training grant on maternal fetal pharmacology – first such award in the USA from NICHD.
 - **Raman Venkataramanan** was invited to an international presentation on tacrolimus – Paraguay, Chile.

Selected Publications

- **Beumer JH**, Chu E, Salamone SJ. Body Surface Area Based Chemotherapy Dosing; Appropriate in the 21st Century? *Journal of Clinical Oncology*. 2012; 30(31): 3896-3897.

- **Beumer JH.** Without Therapeutic Drug Monitoring, There is No Personalized Cancer Care. *Clinical Pharmacology and Therapeutics.* 2013; 93(3): 228-230. PMID: X
- Bakkenist CJ, Czambel RK, Clump DA, Greenberger JS, **Beumer JH**, Schmitz JC. Radiation therapy induces the DNA damage response in peripheral blood. *Oncotarget 2013.* Epub/In Press
- Parise RA, Anyang BN, Eiseman JL, Egorin MJ, Covey JM, **Beumer JH.** Formation of active products of benzaldehyde dimethane sulfonate (NSC 281612, DMS612) in human blood and plasma and their activity against renal cell carcinoma lines. *Cancer Chemotherapy and Pharmacology.* 2012; 71(1): 73-83. PMID: PMC3536923
- Smith MA, Hibino M, Falcione B, Eichinger KM, Patel R, **Empey KM.** A review of the immunosuppressive aspects of analgesics and sedatives used in patients at risk for ventilator-associated pneumonia. *Annals Pharmacotherapy.* Submitted June 2013.
- **Empey KM,** Orend JG, Peebles, Jr. RS, Norris KA, Oury TD, Kolls JK. Stimulation of immature lung macrophages with intranasal interferon gamma in a novel neonatal mouse model of respiratory syncytial virus. *PLoS One.* 2012; 7(7):e40499.Epub2012 Jul6. PMID:22792355
- Kurkjian C, Hollifield M, Lines JL, Rogosky A, **Empey KM,** Qureshi M, Brown SA, Garvy BA. Alveolar macrophages in neonatal mice are inherently unresponsive to Pneumocystis infection. Spotlight article, *Infect and Immun.* June 4, 2012. PMID: 22665378
- Cousar JL, Conley YP, Willyerd FA, Sarnaik AA, Puccio AM, **Empey PE,** Kochanek PM, Okonkwo DO, Clark RSB. Influence of ATP-Binding Cassette Polymorphisms on Neurological Outcome after Traumatic Brain Injury in Humans. *Neurocrit Care (In Press).* PMID: 23896815
- Smithburger PL, Smith RB, Kane-Gill SL, **Empey PE.** Variability of Dexmedetomidine Use and Effectiveness in a Medical Intensive Care Unit. *American Journal of Critical Care.* In Press
- **Empey PE,** Velez de Mendeizabal N, Bell MJ, Bies R, Kochanek PM, Adelson PD, Poloyac SM. Therapeutic hypothermia decreases phenytoin elimination in children with traumatic brain injury. *Crit Care Med.* In Press. PMID 23896831
- Boyce RD, Freimuth RR, Romagnoli KM, Pummer T, Hochheiser H, **Empey PE.** Toward semantic modeling of pharmacogenomic knowledge for clinical and translational decision support. *Proceedings of the 2013 AMIA.*
- Poloyac SM, **Empey PE.** Drug dosing during hypothermia: to adjust, or not to adjust, that is the question. *Pediatr Crit Care Med.* 2013 Feb;14(2):228-9. PMID: 23388572
- Willyerd FA, **Empey PE,** Kochanek PM, Clark RSB. "Barriers to Drug Delivery for Brain Trauma." In: *Vascular Mechanisms in CNS Trauma.* Lo EH, Lok J, Ning M, Whalen MJ. ed. 2013. Springer Press; NY, NY.
- Buckely MS, **Kane-Gill SL,** Patel SA. Clinical and economic evaluation of an evidence-based institutional epoetin-utilization management program. *Clin Ther* 2013;35:294-302.

- Anthes, AM*, Harinstein LM*, Smithburger PL, Seybert AL, **Kane-Gill SL**. Improving adverse drug event detection in critically ill patients through screening intensive care unit transfer summaries. *Pharmacoepidemiol Drug Saf* 2013; 22:510-16.
- Armahizer MJ*, Seybert AL, Smithburger PL, **Kane-Gill SL**. Drug-drug interactions contributing to QT prolongation in the ICU. *J Crit Care* 2013; 28:243-9.
- Harinstein LM*, **Kane-Gill SL**, Smithburger PL, Culley CM, Reddy VK, Seybert AL. Use of a laboratory-drug combination alert to detect drug-induced thrombocytopenia in critically ill patients. *J Crit Care* 2012;27:242-249.
- Abel E*, **Kane-Gill SL**, Seybert AL, Kellum J. A clinical outcomes comparison between direct thrombin inhibitors (DTIs) for the management of heparin-induced thrombocytopenia (HIT) in patients receiving hemodialysis. *Am J Health-Syst Pharm* 2012; 69:1559-67.
- **Kane-Gill SL**, Forsberg EA*, Verrico MM, Handler SM. Comparison of three pharmacovigilance algorithms in the ICU setting: a retrospective and prospective evaluation of ADRs. *Drug Saf* 2012;35:645-53.
- Gurbel PA, Bliden KP, Logan DK, Kereiakes DJ, Lasseter KC, White A, Angiolillo DJ, **Nolin TD**, Maa JF, Bailey WL, Jakubowski JA, Ojeh CK, Jeong YH, Tantry US, Baker BA. The influence of smoking status on the pharmacokinetics and pharmacodynamics of clopidogrel and prasugrel: The PARADOX study. *J Am Coll Cardiol* 2013 Apr 16 Epub. PMID: 23602770
- Bliden KP, Baker BA, **Nolin TD**, Jeong YH, Bailey WL, Tantry US, Gurbel PA. Thienopyridine efficacy and cigarette smoking status. *Am Heart J* 2013;165(5):693-703. PMID: 23622905
- Singh T, Maw TT, Henry BL, Unruh ML, Hallows KR, **Nolin TD***. Use of extracorporeal therapy for dabigatran removal in the treatment of acute bleeding: A single center experience. *Clin J Am Soc Nephrol*. 2013 May 23 Epub. PMID: 23704302
- Empey PE, Valez de Mendizabal N, Bell M, Bies RR, Anderson KB, Kochanek PM, Adelson PD, **Poloyac SM**. Phenytoin concentrations are elevated in children receiving therapeutic hypothermia following traumatic brain injury. *Crit Care Med* 2013. In Press
- Thampatty BP, Klamerus MM, Oberly PJ, Feldman KL, Bell MJ, Tyler-Kabara EC, Adelson PD, Clark RSB, Kochanek PM, **Poloyac SM**. Hypothermia decreased cerebrospinal fluid asymmetric dimethylarginine levels in traumatic brain injured children. *Ped Crit Care Med* 2013; 14(4):403-412.
- Robinson GFWB, Erlen JA, Rubio DM, Kapoor WN, **Poloyac SM**. Development, implementation, and evaluation of an interprofessional course in translational research. *Clin Trans Sci* 2012; 6(1): 50-6.
- Zhang W, Parniak M, Mitsuya H, Sarafianos S, Graebing P, **Rohan LC**. Preformulation studies of EFdA, a novel nucleoside reverse transcriptase inhibitor for HIV prevention. *Drug Development and Industrial Pharmacy*. In Press

- Zhou T, Hu M, Cost M, Poloyac S, **Rohan LC**. Expression of Transporters and Metabolizing Enzymes in the Female Lower Genital Tract: Implications for Microbicide Research. *AIDS Res Hum Retroviruses*. 2013 May 17.
- Dezzutti CS, Brown ER, Moncla B, Russo J, Cost M, Wang L, Uranker K, Kunjara Na Ayudhya RP, Pryke K, Pickett J, Leblanc MA, **Rohan LC**. Is wetter better? An evaluation of over-the-counter personal lubricants for safety and anti-HIV-1 activity. *PLoS One*. 2012;7(11):e48328.
- **Rohan LC**, Zhang W, Chapter 8: Vaginal Microbicide Films in Delivery and Development of anti-HIV Microbicides, Pan Stanford Publishing. In Press
- Gellad W, Donohue JM, Zhao X, Mor MK, **Thorpe CT**, Smith J, Good CB, Fine MJ, Morden NE. Brand-name prescription drug use among diabetes patients in the VA and Medicare Part D. *Annals of Internal Medicine*. (in press)
- **Thorpe CT**, Fahey LE, Johnson H, Deshpande M, Thorpe JM, Fisher EB. (2013). Facilitating healthy coping in patients with diabetes: A systematic review. *The Diabetes Educator*, 39(1): 35-54. PMID: PMC3549032
- Bartels C, Saucier JM, **Thorpe CT**, Kind AJH, Pandhi N, Hansen KE, Smith MA. (2012). Monitoring diabetes in patients with and without rheumatoid arthritis: A Medicare study. *Arthritis Therapy and Research*, 14:R166 (18 July 2012). PMID: PMC3580560
- Kennelty KA*, **Thorpe JM**. Use of pharmacists or pharmacies as a Medicare Part D information sources. *Journal of the American Pharmacists Association*. 2012 Nov-Dec;52(6):e205-9.
- **Thorpe JM**, Thorpe CT, Kennelty KA, Gellad W, Schulz S. The impact of family caregivers on potentially inappropriate medication use in non-institutionalized older adults with dementia. *Am J Geriatr Pharmacother*. 2012 Aug;10(4):230-41.
- Caritis SN, Sharma S, **Venkataramanan R**, Hankins GD, Miodovnik M, Hebert MF, Umans JG, Benedetti T, Mattison D, Zajicek A, Fischer D, Jackson A; Eunice Kennedy Shriver National Institute of Child Health and Human Development Obstetrical-Fetal Pharmacology Research Units Network. Pharmacology and placental transport of 17-hydroxyprogesterone caproate in singleton gestation. *Am J Obstet Gynecol.*, 5, 207, 2012.
- Momper JD, Zhao Y, Shapiro R, Schonder KS, Gao Y, Randhawa PS, **Venkataramanan R**. Pharmacokinetics of low-dose cidofovir in kidney transplant recipients with BK virus infection. *Transpl Infect Dis*, 1, 15, 2013.
- Sharma S, Ellis EC, Gramignoli R, Dorko K, Tahan V, Hansel M, Mattison DR, Caritis SN, Hines RN, **Venkataramanan R**, Strom SC. Hepatobiliary disposition of 17-OHPC and taurocholate in fetal human hepatocytes: a comparison with adult human hepatocytes. *Drug Metab Dispos.*, 2, 41, 2013.

Selected Invited Presentations

- Oral Therapy in Oncology, Challenges and Opportunities, Experimental Therapeutics Program, Ohio State University Comprehensive Cancer Center, Columbus, OH, 6/19/13. **Beumer JH**.
- Why drug concentrations matter in preclinical development and clinical practice. Johns Hopkins

Medicine / Sidney Kimmel Comprehensive Cancer Center, Baltimore, MD, 4/24/13. **Beumer JH.**

- Drug Exposure in Oncology, Medical Grand Roundsk, Roswell Park Cancer Institute in Buffalo, NY, 3/1/13. **Beumer JH.**
- Human mass balance studies, 11th International Isotope Symposium on the Synthesis and Applications of Isotopes and Isotopically Labelled Compounds, Heidelberg, Germany, 9/9/12. **Beumer JH.**
- Immune Modulation to Improve Neonatal RSV Infection, University of Pittsburgh Institute for Clinical Research Education, 5/13. **Empey KM.**
- Overcoming an Immature Situation: Immunotherapy in a Neonatal Mouse Model of RSV Infection, Division of Pulmonary, Allergy, and Critical Care Medicine, University of Pittsburgh, PA, 2/28/12. **Empey KM.**
- Ethnic variation in drug response: Is it all pharmacogenetics?, SCCM Critical Care Congress in San Juan, Puerto Rico, 1/13. **Empey PE.**
- Phenytoin concentrations are elevated in children receiving therapeutic hypothermia following traumatic brain injury, SCCM Critical Care Congress in San Juan, Puerto Rico, 1/13. **Empey PE.**
- Implementing Pharmacogenomics to Achieve Personalized Medicine, Department of Biomedical Informatics Colloquium, 12/12. **Empey PE.**
- The Role of Xenobiotic Transporters in Tissue Defense Following Brain Injury, Safar Center for Resuscitation Research Experimental Brain Injury Meeting, 8/12. **Empey PE.**
- Interrater Reliability of a Grading Tool to Assess Students' Self-Care Recommendations, NMA Annual Conference, Cincinnati, OH, 9/12. Pater K, **Folan M**, Coley K.
- Assessing and Managing Sedation, Virginia Region 5 Society of Health System Pharmacists Meeting, Virginia Beach, VA, 6/13. **Kane-Gill SL.**
- Guidelines for Resident Teaching Experiences, Eastern State Conference for Residents and Preceptors (ESCRP) 32nd Annual Conference, Hershey, PA, 5/13. **Kane-Gill SL.**
- Bridge to the Future: The Importance of Pharmacists' Contributions to Scholarship- Publishing your way Forward, Eastern State Conference for Residents and Preceptors (ESCRP) 32nd Annual Conference, Hershey, PA, 5/13. **Kane-Gill SL.**
- Safe Medication Use in the ICU: Optimizing Surveillance and Applying ADE Prevention Strategies, Department of Pharmacy Practice Seminar Series, Purdue University, Indianapolis, IN, 4/13. **Kane-Gill SL.**
- Controlling Costs in an Era Of \$100,000 Therapeutics, 42nd SCCM Critical Care Congress, San Juan, Puerto Rico, 1/13. **Kane-Gill SL.**

- Safe Medication Use Guidelines: Developing a Medication Safety Surveillance Program for your ICU based on Evidence, 42nd SCCM Critical Care Congress, San Juan, Puerto Rico, 1/13. **Kane-Gill SL.**
- Experimental Kidney Failure Leads to Increased Exposure to Warfarin Metabolites, Kidney Week 2012, the American Society of Nephrology Annual Meeting, San Diego, CA, 11/3/12. **Nolin TD.**
- Practical Guidelines for Drug Dosing in Patients with Renal Disease/Geriatrics, National Kidney Foundation 2013 Spring Clinical Meeting, Orlando, FL, 4/2/13. **Nolin TD.**
- Toxicokinetic Factors that are Important in Determining the Effectiveness of Extracorporeal Elimination Techniques, European Association of Poisons Centres and Clinical Toxicologists (EAPCCT) XXXIII International Congress, Copenhagen, Denmark, 5/28/13. **Nolin TD.**
- Drug Issues in Therapeutic Hypothermia. American College of Clinical Pharmacy; Hollywood, FL. Critical Care PRN Presentation titled: October 2012. **Poloyac SM.**
- Too Cool for a Breakdown? Drug Metabolism in Therapeutic Hypothermia. North American Congress of Clinical Toxicology; Las Vegas, NV. October 2012. **Poloyac SM.**
- Think Tank on Drug Delivery Systems for HIV Prevention (DDS) (NIH/NIAID/DAIDS/PSP and BMGF) PreClinical Microbicide Prevention Research Branch. February 22, 2013, Bill and Melinda Gates Foundation, Washington, DC. **Rohan LC.**
- Product Development Workshop CONRAD, National institutes of Health (NIH), National Institutes of Allergy and Infectious Disease (NIAID), Division of AIDS (DAIDS), Prevention Science Program (PSP), The Bill and Melinda Gates Foundation (BMGF). February 20, 2013, Arlington, VA. **Rohan LC.**
- Medication oversupply in Medicare Part D and privately insured patients with diabetes, AcademyHealth Annual Research Meeting, Baltimore, MD, 6/13, **Thorpe CT.**, Johnson, HM., Dopp, AL., Ronk, K., Thorpe, JM., Everett, CM., Mott, DA., Chewning, BA., Smith, MA.
- Juggling health risks and caregiving realities in managing coexisting diabetes and dementia, American Society on Aging 2013 Aging in America Conference, Chicago, IL, 3/13. **Thorpe CT,** Feil D, Maslow K.
- Racial Disparities in Congestive Heart Failure: Age, Site of care, and 30-day Readmission, AcademyHealth research meeting, Jia P, Chewning B, **Thorpe JM.**
- Three Proposed Indicators to Examine Pharmacy Workforce Area Needs, AcademyHealth research meeting, Kennelty KA, **Thorpe JM,** Chewning B.
- Are Caregivers in Poor Health Able to Effectively Facilitate Access to Preventive Care in Dependent Older Adults, AcademyHealth research meeting. **Thorpe JM,** Thorpe CT, Schulz, R.
- Translational Studies in Pregnancy and Transplantation, GSK, 6/13/13. **Venkataramanan R.**

- Conversion from Prograf to generic tacrolimus, Sandoz, Paraguay, 08/06/12. **Venkataramanan R.**
- Conversion from Prograf to generic tacrolimus, Sandoz, Chile, 8/1/12. **Venkataramanan R.**

Computational Chemical Genomics Screening (CCGS) Center

Faculty

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

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

Peng Yang, PhD, Research Associate

Graduate Students

Chao Ma, PhD

Kyaw Ze Yar Myint, PhD

Ananda Chowhurry, MS

Qi Xu, BS

Abdulrahman Almehezia, BS

Mohammed Hamed Alqarni, BS

Abdulrahman Almehezia, BS

Mohammed Hamed Alqarni, BS

Cheng Fang, MS

Haizi Cheng, MS

Jinxu Wang, BS (exchange student)

Postdoctoral Fellows

Qin Ouyang, PhD.

Patrick Bartlow, PhD

Peng Zhang, PhD

Tong Qin, MD

Haibin Liu, MS, Visiting Scholar

Major Accomplishments

- Received four NIH grants with annual NIH grant funding of \$635,682 in FY2012.
- Discovered for the first time that CB2 receptor is highly expressed in multiple myeloma (MM) cells and also first discovered novel CB2 ligands with therapeutic potential for multiple myeloma and osteoporosis (Patent approved: Xie et al, Patent USSN: 61/576,041).
- Discovered the first p62ZZ chemical inhibitor with potential for multiple myeloma intervention (Patent approved: Xie, et al PCT/US2012/049911; WO2013/022919).
- Awarded a joint patent for discovery of new compounds and methods for inhibition of AP endonuclease-1/redox factor-1 (hAPE1) activity (PCT/US2013/023653, USSN: 61/593,276).
- Received a consortium agreement with FDA to build allergen domain specific chemogenomics knowledgebase and carry out *in silico* prediction and QSAR modeling studies.
- Received an Exemplary Service Award in NSF Fellowship Pitt Computational Biology Undergraduate Research Program.
- Invited as a Guest Editor of AAPS Journal, Theme Issue “New Paradigms in Pharmaceutical Sciences: In Silico Drug Discovery.”

- Invited as an expert reviewer for Netherlands Organization for Scientific Research (NWO), Council for Chemical Sciences; The Wellcome Trust Fund, Sir Henry Wellcome Fellowship, London, UK; and Chinese Natural Science Foundation.
- Served as a regular member of NIH Biophysics of Neural Systems (BPNS) Study Section Review Panel.

Selected Publications

- Yang P, Wang L, Feng R, Almezhia AA, Tong Q, Myint K-Z, Qin Ouyang, Alqarni MH, Wang L, Xie* X-Q, “Novel Triaryl Sulfonamide Derivatives as Selective Cannabinoid Receptor 2 Inverse Agonists and Osteoclast Inhibitors: Discovery, Optimization, and Biological Evaluation”, Yang, P. et al *J Med Chem* 56(2013), 2045-2058; Ouyang, Q et al *ACS Med. Chem. Lett.* 4(2013), 387-392; *J. of Med. Chem.* 55(2012), 9973-9987.
- Wang L, Ma C, Wipf P, Liu H, Su W and Xie X-Q*. “TargetHunter: An In Silico Target Identification Tool for Predicting Therapeutic Potential of Small Organic Molecules Based on Chemogenomics Database.” *AAPS J.* 15(2013), 395-406.
- Ma C, Wang LR, Yang P, Tong Q, Myint KZ, and Xie X-Q*. “LiCABEDS II. Modeling of Ligand Selectivity for G-protein Coupled Cannabinoid Receptors,” *J. Chem. Inf. Model.*, 53(2013),11-26.
- Myint, K., Wang, LR, Tong, Q and Xie, X-Q*. “Molecular Fingerprint-based Artificial Neural Networks QSAR (FANN-QSAR) for Ligand Biological Activity Predictions.” *Molecular Pharmaceutics* 9(2012), 2912-23.
- LaPorte , M., Sammi Tsegay, S., Hong , KB, Lu, C, Fang , C, Wang , L, Xie, X-Q and Floreancig, P. “Construction of a Spirooxindole Amide Library through Nitrile Hydrozirconation-Acylation- Cyclization Cascade.” *ACS Comb Sci.* 15(2013), 344-349. (Journal Coverpage: Fang, Wang and Xie*)
- Gao X, Huang Y, Makhov AM, Epperly M, Lu J, Grab S, Zhang P, Rohan L, Xie X-Q, Wipf P, Greenberger J, Li S. “Nanoassembly of surfactants with interfacial drug-interactive motifs as tailor-designed drug carriers.” *Mol Pharm.* 10 (2013):187-98.
- Tandon, M*, Wang, L*, Xu, A, Xie, X-Q, Wipf, P and Wang*, QJ. “A Targeted Library Screen Reveals a New Selective Inhibitor Scaffold for Protein Kinase D.” *Plos One* 2012;7(9):e44653. 23028574

Meetings and Invited Speaker

- Xie X-Q. “Novel Small Chemical Inhibitors Targeting p18INK4C Protein for Hematopoietic Stem Cell Expansion,” *3rd International Forum on Stem Cells*, Tianjin China (2012).
- Xie X-Q. “Cannabinoid receptor CB2. A new drug target for multiple myeloma intervention” *International Cannabinoid Research Society Symposium*, and “Cloud computing webserver for cannabinoid research,” (www.CBLigand.org/CBID), Freiburg, Germany (2012).
- Xie X-Q. Session Chair, *4th International Conference on Drug Discovery & Therapy*: “Novel Target and Novel Chemical Agents Potential for Multiple Myeloma Treatment,” Dubai, UAE (2012).

- Myint K-Z, Wang L, and Xie X-Q. Fingerprint-based Artificial Neural Networks Approach to predict GPCR Cannabinoid Ligand Binding Activities. Podium Presentation in Ligand-based Drug Discovery Symposium, Division of Computers in Chemistry, *243rd ACS National Meeting*, San Diego, CA (2012).
- Xie X-Q. “Target Hunter for Natural Product Drug Discovery Research,” *West China School of Pharmacy, Sichuan University, Chengdu, China* (2013).

Invited Research Presentations

- Management of benzodiazepine-resistant alcohol withdrawal syndrome, American Society of Health System Pharmacists, Las Vegas, NV, 12/3/2012, **Benedict N.**
- Patient Reported Outcome (PROS) For Quality of Sedation and the Correlation with the Sedation Agitation Scale (SAS), Society of Critical Care Medicine, San Juan, Puerto Rico, 01/14/2013, **Benedict N.**
- Human mass balance studies, 11th International Isotope Symposium on the Synthesis and Applications of Isotopes and Isotopically Labelled Compounds, Heidelberg, Germany, 09/09/2012, **Beumer J.**
- In vitro investigations of antiretroviral and anticancer agents, AIDS Malignancy Consortium Pharmacology Subcommittee, Bethesda, MD, 05/08/2013, **Beumer J.**
- Oral Therapy in Oncology, Challenges and Opportunities, Division of Hematology/Oncology, Department of Medicine, Indiana University, Indianapolis, IN, 03/08/2013, **Beumer J.**
- Exposure Response Relationships and Therapeutic Drug Monitoring in Oncology, International Association of Therapeutic Drug Monitoring and Clinical Toxicology (IATDMCT), Salt Lake City, Utah, 09/24/2013, **Beumer J.**
- Why drug concentrations matter in preclinical development and clinical practice, Johns Hopkins Medicine/Sidney Kimmel Comprehensive Cancer Center, Baltimore, MD, 04/24/2013, **Beumer J.**
- Oral Therapy in Oncology, Challenges and Opportunities, Ohio State University Comprehensive Cancer Center, Columbus, OH, 06/19/2013, **Beumer J.**
- Drug Exposure in Oncology, Roswell Park Cancer Institute, Buffalo, NY, 03/01/2013, **Beumer J.**
- Overcoming an Immature Situation: Immunotherapy in a Neonatal Mouse Model of RSV Infection, Division of Pulmonary, Allergy, and Critical Care Medicine, University of Pittsburgh, Division of Pulmonary, Allergy, and Critical Care Medicine, 02/28/2012, **Empey K.**
- The Role of Xenobiotic Transporters in Tissue Defense Following Brain Injury, Safar Center for Resuscitation Research - Brain Injury Research Group (Platform presentation), Pittsburgh, PA, 08/22/2012, **Empey P.**
- Impact of drug transporters on traumatic brain injury, University of Pittsburgh Multidisciplinary Clinical Research Scholar Program – Multidisciplinary Advisory Committee (MAC) meeting (Platform presentation), Pittsburgh, PA, 05/08/2013, **Empey P.**

- N3-Methyladenine lesions in DNA and their removal by base excision repair, American Chemical Society, Raleigh, NC, 10/15/2012, **Gold B.**
- Are We Closer to Building a Perfect Screening Library, Society for Laboratory Automation & Screening (SLAS), Orlando FLA, 01/15/2013, **Huryn D.**
- Development, optimization and validation of a HCS biosensor assay to identify compounds that disrupt AR-TIF2 protein-protein interactions, In the High Content Screening Session of the Assay Development and Screening Track at the 2nd Annual Conference of the Society for Laboratory Automation and Screening , Orlando, FL, 01/15/2013, **Johnston P.**
- Development, optimization and validation of a HCS biosensor assay to identify compounds that disrupt AR-TIF2 protein-protein interactions, Novel Biosensor for Screening Session at the 10th Annual CHI High Content Analysis Conference, San Francisco, CA, 01/09/2013, **Johnston P.**
- Screening Strategies to Identify Hits with Potential for the Development of Novel Prostate Cancer Therapeutics, Prostate Cancer Program Seminar at the University of Pittsburgh Cancer Institute, Pittsburgh, PA, 04/29/2013, **Johnston P.**
- Seven Years of HTS/HCS at the University of Pittsburgh - It's the Collaborations Baby!, Select Biosciences, Academic Screening Workshop, Baltimore, MD, 09/20/2012, **Johnston P.**
- Development and Implementation of an AR-GFP nuclear localization HCS on the ImageXpress Ultra Platform to identify compounds with potential for prostate cancer therapy, Society for Biomolecular Imaging and Informatics and RTCA Imaging Symposium, RTP, NC, Research Triangle Park, NC, 10/11/2012, **Johnston P.**
- Safe Medication Use in the ICU: Optimizing Surveillance and Applying ADE Prevention Strategies, Purdue University, Indianapolis, 04/17/2013, **Kane-Gill S.**
- Substance use and psychiatric comorbidity in alcohol use disorders, American Academy of Addiction Psychiatry, Aventura, FL, 12/06/2012, **Kirisci L.**
- Measurement models for person-centered medicine, International Network of Person-Centered Medicine, Geneva, Switzerland, 05/01/2013, **Kirisci L.**
- Screening youth for current and future SUD: Person-centered multivariate assessment, International Network of Person-Centered Medicine, Geneva, Switzerland, 05/01/2013, **Kirisci L.**
- Rational Design of Lipidic Vectors for Poorly Water-Soluble Therapeutic Agents, Clinical and Translational Medicine Research Center, Guangxi Medical University, Nanning, China, 11/05/2012, **Li S.**
- Dual-Functional Delivery Systems for Synergistic Targeting of Cancers, The 4th International Conference of Tumor Targeted Therapy and the 1st Conference of Personalized Cancer Therapy, Suzhou, China, 11/09/2012, **Li S.**
- Nano-Assembly of Surfactants with Interfacial Drug-Interactive Motifs as Tailor-Designed Nano-Assembly of Surfactants with Interfacial Drug-Interactive Motifs as Tailor-Designed Drug Carriers, University of Michigan School of Pharmacy, Ann Arbor, MI, 10/10/2012, **Li S.**

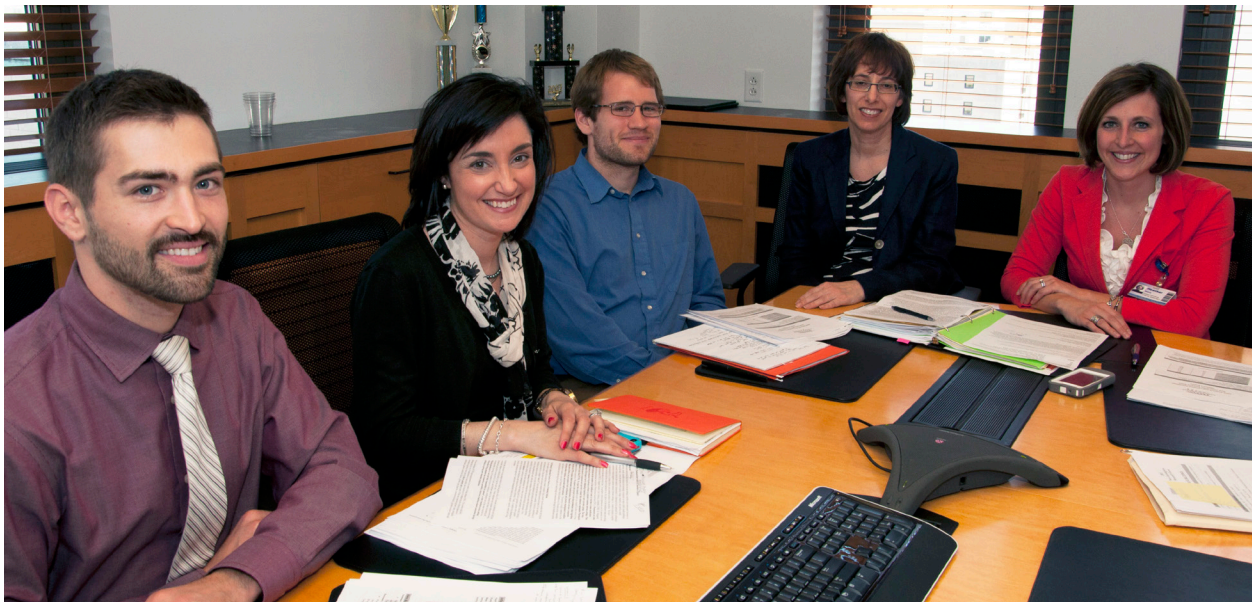
- Rational Design of Lipidic Vectors for Poorly Water-Soluble Therapeutic Agents, Xi'an Jiaotong University School of Life Science and Technology, Xi'an, China, 11/07/2012, **Li S**.
- Experimental Kidney Failure Leads to Increased Exposure to Warfarin Metabolites, The American Society of Nephrology Annual Meeting, San Diego, CA, 11/3/2012, **Nolin T**.
- Interactive Case Studies: Lithium and Salicylate Poisoning, The European Association of Poisons Centres and Clinical Toxicologists (EAPCCT), Copenhagen, Denmark, 5/28/2013, **Nolin T**.
- Interrater Reliability of a Grading Tool to Assess Students' Self-Care recommendations, Nonprescription Medicines Academy, Cincinnati, OH, 09/28/2012, **Pater K**.
- Drug Issues in Therapeutic Hypothermia, American College of Clinical Pharmacy, American College of Clinical Pharmacy, Hollywood, FL, 10/1/2012, **Poloyac S**.
- Too Cool for a Breakdown? Drug Metabolism in Therapeutic Hypothermia, North American Congress of Clinical Toxicology, Las Vegas, NV, 10/1/2012, **Poloyac S**.
- Brain Cytochrome P450 Enzymes and Stroke: Translating Relevance from Rats to Humans, University of Kentucky College of Pharmacy, University of Kentucky College of Pharmacy, Lexington, KY, 2/1/2013, **Poloyac S**.
- Adding Personalized Prevention to our Toolbox: From Idea toward Actualization, Research Triangle Institute, Research Triangle Park, NC, 05/15/2013, **Ridenour T**.
- Solving the clinician's dilemma: Clinical trials within contexts that offer high external validity, Research Triangle Institute, Silver Spring, MD, 04/01/2013, **Ridenour T**.
- Discussant for Using System Science Modeling for Prevention Research and Programming. Invited Symposium II, Society for Prevention Research, San Francisco, CA, 05/31/2013, **Ridenour T**.
- CRMP Regulatory Training (CMC) for NIH, NIAID NIH, Washington DC, 11/5/2012, **Rohan L**.
- MPT Product Prioritization Stakeholder Meeting, CAMI, Washington DC, 10/26/2012, **Rohan L**.
- Vaginal Film Development for ARV Delivery, MTN Annual Meeting, Bethesda, MD, 2/12/2013, **Rohan L**.
- Product Development Workshop, CONRAD, National Institutes of Health (NIH), National Institutes of Allergy and Infectious Disease (NIAID), Division of AIDS (DAIDS), Prevention Science Program (PSP), The Bill and Melinda Gates Foundation (BMGF), Arlington, VA, 2/20/2013, **Rohan L**.
- Characterization of BMP4 gradients in early odontogenesis using mandibular mesenchymal cells encapsulated in hydrogels, Cellular and Molecular Bioengineering-Biomedical Engineering Society, Hawaii, 01/02/2013, **Sant S**.

- Biomimetic microenvironments for drug discovery and regenerative therapies, Central Leather Research Institute, Chennai, India, 12/12/2012, **Sant S.**
- Biomimetic microenvironments for drug discovery and regenerative therapies, CU Shah College of Pharmacy, SNDT University, Mumbai, India, 12/03/2012, **Sant S.**
- Biomimetic microenvironments for drug discovery and regenerative therapies, Indian Institute of Technology (IIT) Madras, Chennai, India, Biotechnology Institute, IIT Madras campus, India, 12/12/2012, **Sant S.**
- Biomimetic microenvironments for drug discovery and regenerative therapies, Indian Institute of Technology (IIT), Mumbai, IIT Mumbai, Materials Science and Engineering, 12/04/2012, **Sant S.**
- Design and development of biomaterial scaffolds for heart valve tissue engineering, International Conference on Design of Biomaterials (BIND12), Indian Institute Science (IISc) Bangalore, India, 12/10/2012, **Sant S.**
- Micro/Nanotechnologies to mimic in vivo microenvironments, The Center for Craniofacial Regeneration, University of Pittsburgh, The Center for Craniofacial Regeneration, University of Pittsburgh, 04/12/2013, **Sant S.**
- Biomimetic microenvironments for drug discovery and regenerative therapies, Vivekanand Education Society's College of Pharmacy, Mumbai University, India, Vivekanand Education Society's College of Pharmacy, India, 12/05/2012, **Sant S.**
- Session Chair: Innovative Pharmacotherapeutic Approaches to Thoracic Transplant and Mechanically Assisted Patients 33rd Annual Meeting and Scientific Sessions, International Society of Heart and Lung Transplant, Montreal, 04/18/2013, **Shullo M.**
- Person Centered Multivariate Assessment, International College of Person Centered Medicine, Geneva, Switzerland, 04/29/2013, **Tarter R.**
- Neuroscience of Alcohol and Other Substance Abuse, National Academy of Neuropsychology, Nashville, TN, 11/07/2012, **Tarter R.**
- Juggling health risks and caregiving realities in managing coexisting diabetes and dementia, American Society on Aging, Chicago, IL, 03/14/2013, **Thorpe C.**
- Methodology of quantitative evaluation of risky sexual and research protocol compliance behaviors for sample selection in HIV prevention trials, HIV/AIDS Network Coordination Behavior Science Working Group, Miami Beach FL, 06/06/2012, **Vanyukov M.**
- Liability indices: Measuring psychopathology risk at the individual level, NINR/NIH, Washington DC, 05/29/2013, **Vanyukov M.**
- HIV drug and Anticancer Drug Interactions, AMC, San Diego, CA, 11/20/2012, **Venkataramanan R.**
- Translational Studies in Pregnancy and Transplantation, GSK, King of Prussia, PA, 6/13/2013, **Venkataramanan R.**

- Conversion from Prograf to generic tacrolimus, Sandoz Chile, Santiago, Chile, 8/1/2012, **Venkataramanan R.**
- Conversion from Prograf to generic tacrolimus, Sandoz, Paraguay, Asuncion, Paraguay, 08/06/2012, **Venkataramanan R.**
- Drug Disposition in Liver, UPMC Pathology, Pittsburgh, PA, 9/26/2012, **Venkataramanan R.**
- Nuclear Receptors PXR and CAR in the Crossroad of Drug Metabolism and Energy Metabolism, 10th International ISSX Meeting, Toronto, Ontario, Canada, 09/29/2013, **Xie W.**
- Novel Small Chemical Inhibitors Targeting p18INK4C Protein for Hematopoietic Stem Cell Expansion, 3rd International Forum on Stem Cells, TianJin, China, 12/03/2012, **Xie X.**
- CAR and PXR-Novels Therapeutic Targets in Obesity and Diabetes, American Association of Pharmaceutical Scientists (AAPS), San Antonio, TX, 11/10/2013, **Xie W.**
- The Endobiotic Function of Xenobiotic Receptors and Enzymes in Obesity and Type 2 Diabetes, Department of Biochemistry and Molecular Pathology, Northeast Ohio Medical University (NEOMED), Rootstown, Ohio, 11/06/2012, **Xie W.**
- The Hepatic Functions of Orphan Nuclear Receptors, Department of Gastroenterology, Shanghai Changzheng Hospital, Second Military Medical University, Shanghai, China, 11/13/2012, **Xie W.**
- Nuclear Receptor-Mediated Gene Regulation in Xenobiotic and Endobiotic Metabolism, Department of Pharmaceutical Sciences, School of Pharmacy, University of Maryland, Baltimore, MD, 04/10/2013, **Xie W.**
- Endobiotic Function of Xenobiotic Receptors and Enzymes in Metabolic Disease, Laboratory of Reproductive and Developmental Toxicology (LRDT), National Institute of Environmental Health Sciences (NIEHS), Research Triangle Park, NC, 09/07/2012, **Xie W.**
- Orphan Nuclear Receptors in Intestinal Homeostasis, National Natural Science Foundation of China, Shanghai, China, 11/12/2012, **Xie W.**
- The Endobiotic Function of Xenobiotic Receptors and Enzymes in Obesity and Type 2 Diabetes, School of Basic Medical Sciences, Capital Medical University, Beijing, China, 07/02/2012, **Xie W.**
- Nuclear Receptors in Pathophysiology and Molecular Toxicology, Summer Symposium on “Xenobiotic Receptors: Physiological Regulators and Mediators of Toxicity”, State College, PA, 07/22/2012, **Xie W.**
- Target Hunter for Natural Product Research, West China School of Pharmacy, Sichuan University, Chengdu, China, 05/09/2013, **Xie X.**

**Advancing the
Health of the Public
Through Partnerships**





Advancing the Health of the Public Through Partnerships

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

The School of Pharmacy will:

- **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 FY13

In FY13, School of Pharmacy faculty members:

- Mentored 13 faculty from around the country over the two years of the Faculty Scholars Program. The Faculty Scholars Program for community-based pharmacy research results from funding by the National Association of Chain Drug Stores Foundation.
- Trained 7 residents statewide in the Community Residency Research Coalition – TOP TIER (Training Outpatient Pharmacists Techniques In Evidence-Based Research). 29: number of total residents trained in 5 programs since its inception in 2009-2010.
- Led the program that administered > 3,900 seasonal influenza vaccines to outpatients during influenza season.
- Provided anticoagulation management for 1195 patients with a INR in goal range of 75%.
- Published a book chapter that highlights the pharmacist's role in the medication reconciliation process, specifically addressing medication reconciliation during the four stages of transitions of care.
- Facilitated care transitions for 2,771 patients performing a total of 9,023 medication-related interventions and helped to resolve 1,115 prescription insurance issues.
- Provided oversight of the pharmacy program for Health Care for the Homeless Clinic, dispensing almost 9000 prescriptions to uninsured patients through the efforts of 14 faculty members, residents, and volunteers.
- Created 1 of 12 post-graduate residency programs nationally in geriatric pharmacy practice.

- Created 1 of 10 post-graduate residency programs nationally in medication use safety pharmacy practice.
- Planned and launched 2 training programs to improve patient care, including:
 - Developed an inpatient pilot program at UPMC Presbyterian incorporating shared decision-making into the transition of care process. It focuses on identifying medication access and adherence problems and working with patients and the healthcare team through shared-decision making to resolve problems.
 - Developed “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.
- Named as Director of Pharmacotherapy for the Artificial Heart Program with in the Heart and Vascular Institute of UPMC.
- Created inpatient kidney transplant service with faculty and unit-based staff that is responsible for induction immunosuppression for all new kidney transplants and part of the interdisciplinary daily rounding team.
- 1 of 4 critical pharmacists in the nation to serve as Faculty for the American Society of Health-System Pharmacists (ASHP) Foundation Critical Care Trainee Program.
- Educated 1338 high-risk hospitalized patients including 525 patients newly started on warfarin and 456 patients newly started on insulin. In approximately 25% of these patients, pharmacists also made at least one recommendation for optimizing the patient’s medication regimen.
- Developed 32 guidelines/reviews and 19 electronic health record protocols were developed for use of medications in the hospital setting across UPMC.
- Facilitated development of 17 medication therapeutic class interchanges across UPMC inpatient sites, to optimize medication inventory, while ensuring equal safety and cost-effectiveness for UPMC patients.
- Provided medication reconciliation and medication management in 2800 oncology hospitalized patients.
- Gave 92 invited presentations on patient care or professional training.
- Received 33 grants for impacting the lives of the people in the communities in which we live and work.
- Authored 95 publications related to patient care or professional training.

PROGRAMS FOR COMMUNITY-DWELLING PATIENTS

Community Chain Partnerships

Faculty

Melissa S. McGivney, PharmD, Associate Professor

Stephanie H. McGrath, PharmD, Assistant Professor

Resident

Sarah Dombrowski, PharmD

Major Accomplishments

In FY13, School of Pharmacy faculty members:

- Successfully graduated the 7th Community Resident, **Sarah Dombrowski**, PharmD, and recruited 8th Resident, **Kristine Ossman**, PharmD (Class of 2013 St. John Fisher College) (Rite Aid).
- Engaged students in a series of practice enhancement projects lead by Luke Berenbrok, PharmD (Class of 2013) and **Stephanie McGrath**, PharmD. Led intern engagement in advancing clinical patient care in 5 Rite Aid districts and at Giant Eagle.
- Awarded NACDS Foundation Community PREP Grant for \$50,000 over 3 years to support and expand residency training at Giant Eagle.
- Successfully recruited 1st Community Residency Candidate, **Elizabeth McCartney**, PharmD (Class of 2013, University of Pittsburgh) (Giant Eagle).

Programmatic Accomplishments

- **NACDS Foundation Faculty Scholars Program (2012-present)**
 - Developed training and mentoring program for community-based faculty selected by NACDS Foundation via nomination of their Dean.
 - Coordinated content experts in research and community practice to train faculty.
 - Facilitated learning for 5 Scholars (2012-13); 8 Scholars (2013-14).
- **Statewide Community Residency Research Coalition – TOP TIER (Training Outpatient Pharmacists Techniques In Evidence-Based Research) 2009-present**
 - Progressive on-line education with regular group discussions.
 - Includes 5 community residency programs from Wilkes University, Temple University, Duquesne University, Allegheny General Hospital and University of Pittsburgh: 5 residents 2009-10; 6 residents 2010-11, 6 residents 2011-12, 5 residents 2012-13, 7 residents 2013-14.
 - Residents present work at PPA, APhA, and are all required write and submit a grant application: 22/22 abstracts accepted to APhA, 9/11 received grants to support research.
- **Community Leadership Innovation and Practice (CLIP) Workshop Series (2013-present)**
 - Integrated preceptors, alumni, chain pharmacy leadership and students to learn together in a series of 4 CLIP Workshops embedded with Experiential Learning 4.
 - Invited in 4 nationally recognized Keynote Lecturers and provided CE.
 - Organized 3 addition small group interactive sessions for CE.

- Engaged chain pharmacy leadership (Rite Aid, Walgreens, CVS, Giant Eagle) and independent pharmacy owners who are alumni to meet and talk with students.
- **Student Presentations: PPA and APhA**
 - 16 students presented 11 innovative community practice posters at PPA: January, 2013 – Camp Hill, PA.
 - Six students presented 5 community research posters at APhA: March, 2013 – Los Angeles, CA.

Selected Publications (related to community dwelling patients)

- **McGrath SH, Holiday S.** Documentation. In: *Community and Clinical Pharmacy Services: A Step-By-Step Approach*. 1st ed. New York: McGraw Hill; 2013.

Community Practice Grants Awarded

- **Somma McGivney MA, McGrath SH, Jonkman L, Klatt PM.** “Community PREP Grant” NACDS Foundation \$50,000. March, 2013.
- **Somma McGivney MA, Smith RB.** “NACDS Foundation Faculty Scholars Program”. NACDS Foundation \$65,223. March, 2013.
- Watkins G, Daude T, McGrath K, Carrol J, Akpoji U, **Somma McGivney MA.** “Million Hearts Community Initiative” Class of 2014 Student Grant - NACDS Foundation \$1000. March, 2013.
- **Dombrowski SK*, McGrath SH, Bacci J, Coley KC, Somma McGivney MA.** “Identifying key factors associated with successful integration of patient care services into dispensing workflow: a traditional community chain pharmacy evaluation.” PPA Education Foundation. \$1000. January, 2013.
- **Dombrowski SK*, McGrath SH, Bacci J, Coley KC, Somma McGivney MA.** “Identifying key factors associated with successful integration of patient care services into dispensing workflow: a traditional community chain pharmacy evaluation.” APhA Foundation. \$1000. December, 2012.

Selected Invited Presentations (National/International)

- **Dombrowski S, Bacci J, Farrah B, McGrath SH.** Impact of a Community Pharmacy Experience in a Family Medicine Residency Program. STFM Meeting May 2013, Baltimore, Maryland.
- Berenbrock L, **Bacci J, McCartney E, Menard A, McGivney MS, McGrath SH.** Students as Catalysts for Change: Implementation and Expansion of Medication Therapy Management (MTM) Services within a Community Chain Pharmacy. APhA Annual Meeting March 2013.
- **Dombrowski S, McGrath SH, Bacci J, Bobby B, Coley K, McGivney MS.** Key Factors Associated with Successful Integration of Patient Care Services into Dispensing Workflow: a Traditional Community Chain Pharmacy Evaluation. APhA Annual Meeting March 2013.

University Diabetes Care Associates

One of the first pharmacist run diabetes care centers located in a community independent pharmacy with an interdisciplinary team of pharmacists, a dietician, a podiatrist, and an exercise physiologist. Over the past 22 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 FY13, School of Pharmacy faculty members:

- 41 primary care physicians referred patients for 870 office visits.
- Precepted up to 15 Doctor of Pharmacy students in an ambulatory care rotation.
- Offers residency training for one to two residents per year. 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 (related to community dwelling patients)

- **Drab SR.** The Evolving Role of the Diabetes Educator. *American Journal of the Medical Sciences*. 345(4):307-313, April 2013.

Selected Invited Presentations (National/International)

- Rationale for Early Use of Insulin Therapy. Virginia Society of Health System Pharmacists; Norfolk, VA, July 10, 2012. **Drab SR.**
- Identification & Prevention of Diabetes Complications. Virginia Society of Health System Pharmacists; Virginia Beach, VA, August 21, 2012. **Drab SR.**
- Examining the Basics of Insulin Therapy. Presented to: Virginia Society of Health System Pharmacists; Winchester, VA, October 17, 2012. Central Virginia Pharmacists Society; Charlottesville, VA, December 12, 2012. **Drab SR.**
- Optimizing Type 2 Diabetes Care in African Americans and Patients with Renal Impairment: Examining the Role of DPP-4 Inhibitors in Special Populations. American Society of Health-System Pharmacists 2012 Midyear Clinical Meeting; Las Vegas, NV, December 3, 2012. **Drab SR.**
- Reevaluating Overall Glycemic Control: The Role of the Pharmacist in Diabetes Management. American Society of Health-System Pharmacists 2012 Midyear Clinical Meeting; Las Vegas, NV, December 4, 2012. **Drab SR.**
- Challenging Situations for Patients with Type 2 Diabetes. Allegheny County Pharmacists Association; Pittsburgh, PA, January 16, 2013. **Drab SR.**
- Diabetes & Pregnancy: Management Guide. Richmond Pharmacists Association; Richmond, VA, February 20, 2013. **Drab SR.**

- Improving Glycemic Control and Preventing Hypoglycemia in the Hospital Setting. Jackson Madison County General Hospital Grand Rounds; Jackson, TN, March 5, 2013. **Drab SR.**
- Optimizing Diabetes Management with in the Health Care System. Academy of Managed Care Pharmacists Annual Meeting and Expo. San Diego, CA, April 4, 2013. **Drab SR.**

Program Evaluation Research Unit (PERU)

Faculty

Janice L. Pringle, PhD, Associate Professor

Selected Publications (related to community dwelling patients)

- Felter EM, Nolan BA, Colombi A, Albert SM, **Pringle JL.** We're working hard, but is it hardly working? Why process is critical in the delivery of worksite health promotion programs. *J Occup Environ Med.* 2013 May; 55(5):586-92.
- **Pringle JL;** Kowalchuk AA; Meyers JA; Seale JP. Equipping Residents to Address Unhealthy Alcohol and Drug Use: The National SBIRT Residency Training Project. 2012. *Journal for Graduate Medical Education,* 4(1), 58-63.
- **Pringle JL;** Melczak M; Johnjulio W; Campopiano M; Gordon A; Costlow M. Pennsylvania SBIRT Medical and Residency Training: Developing, Implementing, and Evaluating an Evidence-Based Program. Accepted for publication, *Substance Abuse,* 2012.

Community Practice Grants Awarded

- “Development, Implementation, and Evaluation of an Evidence-Based Screening, Brief Intervention, Referral to Treatment (SBIRT) Curriculum in Medical Residency Training Programs” (SAMHSA) Annual contract award with the University of Pittsburgh, School of Pharmacy. \$1,875,000. 2008-2013. **Pringle JL.**
- “New Lease on Life” SAMHSA (Substance Abuse and Mental Health Services Administration). \$300,000. 2009-2014. **Pringle JL.**
- “Pharmacy Outcomes for Chronic Medication Use” Pharmacy Quality Alliance (PQA). \$102,500. 2010-2012. **Pringle JL.**
- “Media Literacy to Improve Evidence-Based Prescribing among Family Medicine Trainees” Oregon State Attorney General’s Office. \$1,550,594. 2011-2012. **Pringle JL.**
- “Military Drug Management System for Advanced Pharmaceutical Clinical Decision Support (CDS) for Integration into the Military Health Systems (MHS)” (Braun Technologies). \$87,273. 2011-2013. **Pringle JL.**
- “Prospective Study on a Pharmacist-led Intervention to Improve Medication Adherence” (Merck). \$902,357. 2011-2013. **Pringle JL.**
- “Pennsylvania Client Placement Criteria” (Pennsylvania Department of Health, Department of Drug and Alcohol Programs). \$40,544. 2012-2013. **Pringle JL.**

- “Pharmacy Pay for Performance (P4P) Models” (Jewish Healthcare Foundation). \$20,000. 2012-2013. **Pringle JL.**
- “Evaluation of the Electronic Quality Improvement Platform for Plans and Pharmacies (EQuIPP) Implementation Phase” (Takeda Pharmaceuticals). \$147,500. 2012-2013. **Pringle JL.**
- “Evaluation of the Impact of Sample Medication on Subsequent Medication Adherence” (MedVantx). \$40,987. 2013. **Pringle JL.**

Selected Invited Presentations (National/International)

- Strategies for Improving Medication Adherence within Community Pharmacies. A Collaborative Approach to Diabetes Care. Meeting Patient Demand while Reducing Costs and Reducing Readmissions. Buffalo, NY, October, 2012. **Pringle JL.**
- Medical Residency Sustainability Planning Workshop. Screening, Brief Intervention and Referral to Treatment Grantee Meeting. Substance Abuse and Mental Health Services Administration. Bethesda, MD , October 2012. **Pringle JL.**

The Grace Lamsam Pharmacy Program for the Underserved

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

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

Faculty:

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

Residents:

Jennifer Bhuiyan, PharmD

Major Accomplishments

In FY13, the Grace Lamsam Program:

- Continued in partnership with UPMC Matilda Theiss Health Center as a 340B Leading Practice Site (Peer to Peer Leader) by the Pharmacy Services Support Center in partnership with Health Resources and Service Administration, Health Systems Bureau, Office of Pharmacy Affairs. An award of \$12,500 provided a partial stipend for a resident.

- Provided oversight of the pharmacy program for Health Care for the Homeless Clinic, dispensing almost 9000 prescriptions to uninsured patients through the efforts of 14 faculty members, residents, and volunteers.
- Mentored and hosted the 2012 Project CHANCE Student Pharmacist Award. The American Pharmacists Association Academy of Student Pharmacists (APhA-ASP), in collaboration with the Pharmacy Services Support Center (PSSC) of the Health Resources and Services Administration (HRSA) Office of Pharmacy Affairs awarded our APhA-ASP Chapter a \$10,000 grant for the University of Pittsburgh pharmacy and dental student-based initiative to promote prevention and maintenance of hypertension in a free clinic. This award promotes interprofessional collaboration and delivers comprehensive pharmacy services within a 340B-eligible entity.
- Provided experiences for six pharmacy practice residents at the Birmingham Free Clinic.
- Provided experiences for 151 pharmacy students through IPPEs and APPEs.
- Provided care for approximately 200 patient care visits at the North Side Christian Health Center Pharmacy Services Clinic.
- Established longitudinal patient-care experiences for one ambulatory care resident at the North Side Clinic.
- Participated in the HRSA Patient Safety and Clinical Pharmacy Services Collaborative through the Matilda Theiss Center and provided care for approximately 300 patient care visits.
- Presented a poster at the Annual International Pharmaceutical Federation meeting: A Model for a Residency in Global Health, **Connor SE** and **Jonkman LJ** 2012 FIP Congress in Amsterdam (the Netherlands).

Selected Publications

- Sales I, **Jonkman L**, **Connor S**, Hall D. A Comparison of Educational Interventions to Enhance Cultural Competency in Pharmacy Students. *AJPE* May 2013 77 (4): Article 76.
- Kauffman Y, **Jonkman L**, Lupu A and **Connor S**. Exploring the value of clinical pharmacy services for patients with diabetes in safety net settings. *Res Social Adm Pharm* published online December 5, 2012.

Invited Presentations

- Contract Pharmacy Implementation and Integrity. American Pharmacist Association Annual Meeting, Los Angeles, CA March 3, 2013. Horne G, Feldman J, **Connor S** and Brown B

UPMC CLINICS AND RETAIL PHARMACIES

UPMC Presbyterian Ambulatory Clinics and Falk Pharmacy

Faculty

Deanne L. Hall, PharmD, Associate Professor

Karen S. Pater, PharmD, Assistant Professor

Residents

Megan Fleischman, PharmD

Patient Care Activities for FY13

- Led the program that administered > 3,900 seasonal influenza vaccines during influenza season.
- Provided anticoagulation management for 1195 patients with a INR in goal range of 75%
- Provided diabetes education on a weekly basis to individuals and group education classes on a monthly basis.
- Educate family medicine physicians and residents in addition to precepting PGY1 and PGY2 Family Medicine and Geriatric pharmacy residents, pharmacy students, and medical students learning at the family health centers.
- Provide medication therapy management for all patients seen at the health centers including from obstetrics, gynecology and contraception care, pediatrics, adult medicine, psychiatry, and geriatrics. Each of our three health centers sees a patient volume of up to 1,200 visits per month.

Major Accomplishments

In FY13, School of Pharmacy faculty members:

- President Elect, Allegheny County Pharmacist Association. (**Pater KS**)
- Represented School at the 2012 American Pharmaceutical Association Self-Care Institute, Washington, DC. (**Pater KS**)
- Attended the Nonprescription Medicines Academy, Cincinnati, OH. (**Pater KS**)

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

- Hume A, Kirwin J, Bieber HL, Couchenour RI, **Hall DL**, Kennedy AK, Allen-LaPointe NM, Burckhardt CD, Schilli K, Seaton T, Trujillo J, Wiggins B. American College of Clinical Pharmacy White Paper. Improving Care Transitions: Current Practice and Future Opportunities for Pharmacists. *Pharmacotherapy*. 2012;32(11):326–337.
- **Pater K**, Isaacs D. Medication Reconciliation. In: *Fundamental Skills for Patient Care in Pharmacy Practice* 1st edition. Jones & Bartlett Learning, LLC. 2013, 223-261.
- **Sales I, Jonkman L, Connor S, Hall D**. A comparison of educational interventions to enhance cultural competence in pharmacy students. *Am J Pharm Ed*. 2013; 77 (4) Article 76.
- **Elrod SS, Snyder ME, Hall DL, McGivney MA, Smith RB**. Practice change in community pharmacy: A case study of multiple stakeholders' perspectives. *INNOVATIONS in Pharmacy*. 2012, Vol. 3, No. 3, Article 82.

Selected Invited Presentations (National/International)

- Special Session: Mischief Managed: Spells and Charms to Make Team-Based Learning More Magical. AACP Annual Meeting, July 16, 2012. ACPE#. **Pater KS.**
- Relationship between race, uric acid levels, urate-lowering drugs, and resource use in patients with gout. American College of Rheumatology Annual Meeting, Washington, DC. Nov 2012. **Coley KC, Saul MI, Pater KS.**
- Sustainable Medication Review in Low-Income Senior Housing. GSA Annual Meeting, San Diego, CA Nov 2012. Albert S, Agimi Y, **Pater K.**
- Overview of a pharmacist anticoagulation service. Shanghai, China. Pharmacy directors and Pharmacists. May 2013. **Hall DL.**
- Clinical Pharmacy in the Unites States. Shanghai, China via Skype. Shanghai Clinical Pharmacists. May 2013. **Hall DL.**
- Determinants of Drug Therapy Problems Among Medicaid Patients Receiving a Telephonic Medication Therapy Management Program. ISPOR 15th Annual European Conference, Berlin, Germany Nov 2012. Snyder, ME, Frail CK, Jaynes H, **Pater KS, Zillich AJ.**
- Interrater Reliability of a Grading Tool to Assess Students' Self-Care Recommendations. NMA Annual Conference, Cincinnati, OH, September 2012. **Pater K, Folan M, Coley K.**
- The Pain Problem: The Impact of Student Pharmacist on Patient's Knowledge of Acetaminophen Use in the Community. American Pharmacists Association Annual Meeting. Los Angeles, CA, March 2013. **Bucci M**, Yurchick K**, Hall DL.**

*Past Pharmacy Residents

*PharmD Students

UPMC St. Margaret Family Medicine

Faculty

Roberta Farrah, PharmD, Assistant Professor

Residents

Scott Bragg, PharmD

Sarah Winter, PharmD

Patient Care Activities for FY13

- Educate family medicine physicians and residents in addition to precepting PGY1 and PGY2 Family Medicine and Geriatric pharmacy residents, pharmacy students, and medical students learning at the family health centers.
- Provide medication therapy management for all patients seen at the health centers including from obstetrics, gynecology and contraception care, pediatrics, adult medicine, psychiatry, and geriatrics. Each of our three health centers sees a patient volume of up to 1,200 visits per month.

Selected Publications

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

Selected Invited Presentations (National/International)

- Impact of community pharmacy experience in a family medicine residency program. Society of Teacher of Family Medicine (STFM) spring conference, Baltimore, May 2013. Dombrowski S, Klatt PM, **Farrah RM**.

Transitions of Care

Faculty

Kim Coley, PharmD, Professor

Amy Donihi, PharmD, Associate Professor

Tanya Fabian, PharmD, PhD, Assistant Professor

Sandra Kane-Gill, PharmD, MS, Associate Professor

Patricia Kroboth, PhD, Dean

Rima Mohammad, PharmD, Assistant Professor

Karen Pater, PharmD, Assistant Professor

Tara Pummer, PharmD, Assistant Professor

Christine Ruby, PharmD, Assistant Professor

Amy Seybert, PharmD, Associate Professor

Major Accomplishments

In FY13, School of Pharmacy faculty members:

- Published a book chapter that highlights the pharmacist's role in the medication reconciliation process, specifically addressing medication reconciliation during the four stages of transitions of care. **Pater K**.
- Developed and implemented a pharmacist driven transition of care program focusing on Senior Care patients discharged from UPMC affiliated nursing homes (Heritage, Charles Morris, Canterbury, Asbury Heights and Health South). This program includes medication reconciliation, comprehensive medication review, sharing of discharge information across sites, and confirmation of home care services. **Ruby C**.
- Led the multidisciplinary transitions of care team at WPIC which was a finalist for the 2012 Fine Award for Excellence in Healthcare Teamwork. **Fabian T**.
- Led the transitions of care program piloted at UPMC Presbyterian, which was:
 - A finalist for the 2012 Fine Award for Excellence in Healthcare Teamwork.
 - One of eight programs across the United States to receive the "2012 ASHP-APhA Best Practice in Transitions of Care" award. **Coley K, Donihi A, Mohammad R and Kroboth P**.
- The WPIC MEDPACT (Medication and Education at Discharge – Pharmacist Assisted Care Transitions) program, led by Dr. Tanya Fabian, has

- assisted over 5,000 patients with transitions of care education, assistance, and discharge planning.
- provided over 33% of patients with discharge medications, leading to a significant reduction in 30-day unplanned psychiatric readmissions to WPIC.
- facilitated care transitions for 2,771 patients performing a total of 9,023 medication-related interventions and helped to resolve 1,115 prescription insurance issues. **Fabian T**

Selected Publications

- **Pater K**, Isaacs D. Medication Reconciliation. In: *Fundamental Skills for Patient Care in Pharmacy Practice* 1st edition. Jones & Bartlett Learning, LLC. 2013, 223-261.
- The transitions of care program developed by **Coley K, Donihi A, Mohammad R and Kroboth P** was featured in several publications including AACP's *Academic Pharmacy Now* and *Pharmacy Practice News*.

Selected Invited Presentations (National/International)

- The role of the pharmacist in the medication reconciliation process and transitions of care. Fall 2013 Pennsylvania Pharmacists Association meeting, Gettysburg, PA. **Pater K**.
- Transitions of care and elderly patients in the Patient Centered Medical Home. 2012 Midyear Clinical Meeting of the American Society of Health System Pharmacists, Las Vegas, NV. **Ruby C**.
- Medication and Education at Discharge: Pharmacist Assisted Care Transitions (MEDPACT) to Reduce Psychiatric Hospital Readmissions. College of Psychiatric and Neurologic Pharmacists, Colorado Springs, Colorado. **Fabian T**.
- Error Proofing Healthcare through Accountability, Collaboration and Education. Jewish Healthcare Foundation Patient Safety Fellowship Series, Pittsburgh, Pennsylvania. **Fabian T**.
- Use of a medication access and adherence tool (MAAT) to identify patients at highest risk for medication related problems. ACCP Annual Meeting, Hollywood, Florida. **Coley K, Donihi A, Mohammad R, Kroboth P**.
- Pharmacist-centered hospital to home care transition initiative improves patient outcomes. ACCP Annual Meeting, Hollywood, Florida. The poster was named the winner of the Adult Medicine PRN Best Poster award and was a "Best Paper" finalist at the 2012 ACCP Annual Meeting. **Coley K, Donihi A, Mohammad R and Kroboth P**.

Grants

- **Seybert A, Coley K, Kane-Gill S and Pummer T** developed an inpatient pilot program at UPMC Presbyterian incorporating shared decision-making into the transition of care process. It focuses on identifying medication access and adherence problems and working with patients and the healthcare team through shared-decision making to resolve problems. The team received a \$24,450 grant from The Beckwith Institute to implement and evaluate this pilot program.
- **Coley K, Thorpe C, and McGivney M** partnered with UPMC St. Margaret Hospital on developing, "PIVOTS: Pharmacist led InterVention On Transitions of Seniors." This program places geriatric clinical pharmacists in a direct patient care role that manages elderly patients as

they transition across different levels of geriatric care. This program was awarded a \$19,999 grant from the ASHP Foundation for this pilot work.

HOSPITAL-BASED PROGRAMS

UPMC Pharmacy Transplant Group

Faculty

Christopher Ensor, PharmD, Assistant Professor
Heather J. Johnson, PharmD, Assistant Professor
Kristine S. Schonder, PharmD, Assistant Professor
Michael A. Shullo, PharmD, Associate Professor
Raman Venkataramanan, PhD, Professor

PhD Students

Hari Kalluri, PhD Candidate
Hari Thanukrishnan, PhD Candidate
Fairuz Feturi, PhD Candidate
Omar Almazroo, PhD Candidate
Ali Alshabi, PhD Candidate
Mohammad Shawafeq, PhD Candidate
Rujuta Joshi Yahia, PhD Candidate

Fellows

Chithambaram Pillai Venkateswaran, PhD
Imam Shaik, PhD
Yang Zhao, PhD

Residents

Amanda Ingemi, PharmD

Major Accomplishments

In FY13, School of Pharmacy faculty members:

- Served as Session Chair for: A Lifecycle Journey in Cystic Fibrosis and Lung Transplantation. ISHLT 33rd Annual Meeting and Scientific Sessions, Montreal QC, Canada.- **Ensor CR.**
- Established comprehensive pharmacy services in Lung Transplantation at UPMC Presbyterian. – **Ensor CR.**
- Served as Chair, Scientific Council on Pharmacy and Pharmacology 2012-13, International Society for Heart and Lung Transplantation. **Ensor CR.**
- Developed Pharmacotherapy Scholars Program, an intensive focused P4 training program for Student Pharmacists interested in pharmacy residency training and clinical pharmacy practice. **Ensor CR.**

- Served as Section editor, Transplant Pharmacotherapy, Progress in Transplantation. **Ensor CR.**
- Abstract referee, International Society for Heart and Lung Transplantation 33rd Annual Meeting and Scientific Sessions, Montreal Quebec Canada April 2013. **Ensor CR, Shullo MA.**
- Served as Session Chair for: Innovative Pharmacotherapeutic Approaches to Thoracic Transplant and Mechanically Assisted Patients. 33rd Annual Meeting and Scientific Sessions. International Society of Heart and Lung Transplant. **Shullo MA.**
- Served on the Program Committee for the 33rd Annual Meeting and Scientific Sessions International Society of Heart and Lung Transplant. **Shullo MA.**
- Served as Chair, Scientific Council on Pharmacy and Pharmacology 2013-14, International Society for Heart and Lung Transplantation. **Shullo MA.**
- Named as Director of Pharmacotherapy for the Artificial Heart Program with in the Heart and Vascular Institute of UPMC. **Shullo MA.**
- Implemented vaccine recommendations into evaluation clinic. **Schonder K.**
- Completed approximately 1,300 patients evaluations in pre-transplant evaluation and reviewed approximately 1,400 patients for selection committee clinic. **Schonder K.**
- Created inpatient kidney transplant service with faculty and unit-based staff that is responsible for induction immunosuppression for all new kidney transplants and part of the interdisciplinary daily rounding team. **Schonder K.**
- Received T-32 post doctoral training grant on Maternal fetal pharmacology – first such award in the USA from NICHD. **Venkat R.**
- International presentation on tacrolimus. **Venkat R.**
- Received eighth year of funding from NICHD for work on pharmacology in pregnancy. **Venkat R.**
- Received a second year of NCI award for drug interaction between HIV drugs and anticancer drugs. **Venkat R.**
- Initiated collaboration with MIT on Human on a CHIP project along with Alan Wells from Pathology. **Venkat R.**

Grants/Research

- "Training in Basic and Clinical Pharmacology in Pregnancy." Co-PI, Active, NICHD. **Venkat R.**
- "Impact of Pregnancy on Drug Absorption, Disposition and End Organ Response." Co-PI, Active, NICHD. **Venkat R.**
- "AIDS Malignancy Clinical Trials Collaboration (Beumer)." PI, Active, NCI. **Venkat R.**

- “All-Human Microphysical Model of Metastasis Therapy.” Co-Investigator, Active, NIH. **Venkat R.**
- “Remodulin in Prevention of I/R injury.” Co-PI, Active, United Therapeutics. **Venkat R.**
- “Pharmacokinetics and Bioavailability of Granisetron Transdermal Systems (Sancuso) in Pregnancy.” Co-PI, Active, Prostraken. **Venkat R.**
- “Tamiflu in Pregnancy.” Co-PI, Active, Roche Inc. **Venkat R.**

Selected Publications

- Milfred-LaForest SK, Chow SL, Didomenico RJ, Dracup K, **Ensor CR**, Gattis-Stough W, Heywood JT, Lindenfeld JA, Page RL, Patterson JH, Vardeny O, Massie BM. Clinical pharmacy services in heart failure: An opinion paper from the Heart Failure Society of America and American College of Clinical Pharmacy Cardiology Practice and Research Network. Co-published: *J Card Fail* 2013;19:354-69 and *Pharmacotherapy* 2013;33:529-48.
- Staino C, Lewin JJ, Nesbit TW, Sullivan B, **Ensor CR***. Survey of transplant-related pharmacy services at large comprehensive transplant centers in the United States. *Prog Transplant* 2013;23:23-7.
- **Ensor CR**, Doligalski CT. Proliferation signal inhibitor toxicities after thoracic transplantation. *Expert Opin Drug Metabol Tox* 2013; 9:63-77.
- Kruer R, **Ensor CR**. Colloids in the intensive care unit. *Am J Health-Syst Pharm* 2012; 69:1635-42.
- Hynicka LM, **Ensor CR**. Prophylaxis and treatment of respiratory syncytial virus in adult immunocompromised patients. *Ann Pharmacother* 2012; 46:558-66.
- Elsner JL, Smith JM‡, **Ensor CR***. Intravenous neostigmine for postoperative acute colonic pseudo-obstruction. *Ann Pharmacother* 2012; 46:430-5.
- **Ensor CR**, Doligalski CT. Antibody mediated rejection of the cardiac allograft. In: Moffatt-Bruce S, ed. *Cardiac Transplantation*. Rijeka, Croatia: InTech, 2012:23-40. ISBN 979-953-307-052-9.
- Shields RK, Nguyen HM, **Shullo MA**, Silveira FP, Kwak EJ, Abdel Massih RC, Bermudez CA, Bhama JK, Toyoda Y, Kormos RL, Clancy CJ. Invasive aspergillosis among heart transplant recipients is rare but occurs in clusters and causes rapid death due to septic shock. *Scand J Infect Dis*. 2012 Dec; 44(12):982-986. Epub 2012 Jul 2.
- Cahoon WD, **Ensor CR**, **Shullo MA**. Alemtuzumab for cytolytic induction immunosuppression in cardiac transplantation. *Prog Transplant*. 2012 Dec; 22(4):344-9; quiz 350. Review.
- Zeevi A, Lunz J, Feingold B, **Shullo M**, Bermudez C, Teuteberg J, Webber S. Persistent strong anti-HLA antibody at high titer is complement binding and associated with an increased risk of

antibody mediated rejection in heart transplant recipients. *J Heart Lung Transplant*. 2013 Jan; 32(1):98-105. Nov 8 Epub 2012 Nov 8.

- Bhama JK, Shulman J, Bermudez CA, Bansal A, Ramani R, Teuteberg JJ, **Shullo M**, McNamara DM, Kormos RL, Toyoda Y. Heart transplantation for adults with congenital heart disease: results in the modern era. *J Heart Lung Transplant*. 2013 May; 32(5):499-504. Epub 2013 Mar 6.
- Khandhar SJ, Yamamoto H, Teuteberg JJ, **Shullo MA**, Bezerra HG, Costa MA, Selzer F, Lee JS, Marroquin OC, McNamara DM, Mulukutla SR, Toma C. Optical coherence tomography for characterization of cardiac allograft vasculopathy after heart transplantation (OCTCAV study). *J Heart Lung Transplant*. 2013 Jun; 32(6):596-602. Epub 2013 Mar 15.
- Huang Y, Lu J, Gao X, Li J, Zhao W, Sun M, Stolz DB, **Venkataramanan R, Rohan LC, Li S**. PEG-derivatized embelin as a dual functional carrier for the delivery of paclitaxel. *Bioconjug Chem*, 7, 23, 2012.
- Corcoran TE, **Venkataramanan R**, Hoffman RM, George MP, Petrov A, Richards T, Zhang S, Choi J, Gao YY, Oakum CD, Cook RO, Donahoe M. Systemic delivery of atropine sulfate by the MicroDose Dry-Powder Inhaler. *J Aerosol Med Pulm Drug Deliv*. 1, 26, 2012.
- Caritis SN, Sharma S, **Venkataramanan R**, Hankins GD, Miodovnik M, Hebert MF, Umans JG, Benedetti T, Mattison D, Zajicek A, Fischer D, Jackson A. Eunice Kennedy Shriver National Institute of Child Health and Human Development Obstetrical-Fetal Pharmacology Research Units Network. Pharmacology and placental transport of 17-hydroxyprogesterone caproate in singleton gestation. *Am J Obstet Gynecol*., 5, 207, 2012.
- Momper JD, Zhao Y, Shapiro R, **Schonder KS**, Gao Y, Randhawa PS, **Venkataramanan R**. Pharmacokinetics of low-dose cidofovir in kidney transplant recipients with BK virus infection. *Transpl Infect Dis*, 1, 15, 2013.
- Cuppett CD, Zhao Y, Caritis S, Zhang S, Zhao W, **Venkataramanan R**. Effect of endogenous steroid hormones on 17-alpha-hydroxyprogesterone caproate metabolism. *Am J Obstet Gynecol*, 6, 86, 2013.
- Sharma S, Ellis EC, Gramignoli R, Dorko K, Tahan V, Hansel M, Mattison DR, Caritis SN, Hines RN, **Venkataramanan R**, Strom SC. Hepatobiliary disposition of 17-OHPC and taurocholate in fetal human hepatocytes: a comparison with adult human hepatocytes. *Drug Metab Dispos.*, 2, 41, 2013.
- Lu J, Huang Y, Zhao W, Marquez RT, Meng X, Li J, Gao X, **Venkataramanan R**, Wang Z, Li S. PEG-derivatized embelin as a nanomicellar carrier for delivery of paclitaxel to breast and prostate cancers. *Biomaterials*, 5, 34, 2013.
- Pillai VC, Strom SC, Caritis SN, **Venkataramanan R**. A sensitive and specific CYP cocktail assay for the simultaneous assessment of human cytochrome P450 activities in primary cultures of human hepatocytes using LC-MS/MS. *J Pharm Biomed Anal*, 74, 2013.
- Goyal RK, Han K, Wall DA, Pulsipher MA, Bunin N, Grupp SA, Mada SR, **Venkataramanan R**. Sirolimus pharmacokinetics in early postmyeloablative pediatric blood and marrow transplantation. *Biol Blood Marrow Transplant*, 4, 19, 2013.

- Roy D, Sin SH, Lucas A, **Venkataramanan R**, Wang L, Eason A, Chavakula V, Hilton IB, Tamburro KM, Damania B, Dittmer DP. mTOR inhibitors block Kaposi sarcoma growth by inhibiting essential autocrine growth factors and tumor angiogenesis. *Cancer Res.*7, 73, 2013.
- Zhang X, Lu J, Huang Y, Zhao W, Chen Y, Li J, Gao X, **Venkataramanan R**, Sun M, Stolz DB, Zhang L, **Li S**. PEG-farnesylthiosalicylate conjugate as a nanomicellar carrier for delivery of paclitaxel. *Bioconjug Chem*, 3, 24, 2013.
- Caritis SN, Zhao Y, Bettinger J, **Venkataramanan R**. Qualitative and quantitative measures of various compounded formulations of 17-alpha hydroxyprogesterone caproate. *Am J Obstet Gynecol*, 6, 208, 2013.
- Caritis SN, Zhao Y, **Venkataramanan R**, Bettinger J. Reply. *Am J Obstet Gynecol.*, 13, 208, 2013 Letter and Commentary.
- Gramignoli R, Tahan V, Dorko K, Skvorak KJ, Hansel MC, Zhao W, **Venkataramanan R**, Ellis EC, Jorns C, Ericzon BG, Rosenborg S, Kuiper R, Soltys KA, Mazariegos GV, Fox IJ, Wilson EM, Grompe M, Strom SC. New potential cell source for hepatocyte transplantation: Discarded livers from metabolic disease liver transplants. *Stem Cell Res*, 1, 11, 2013.

Book Chapters

- 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); 2012.
- Teuteberg JJ, Mathier MA, **Shullo MA**. Cardiac Transplantation and Circulatory Support Devices. In: Antman EM, Sabatine MS, eds. *Cardiovascular Therapeutics, A Companion to Braunwald's Heart Disease*. Philadelphia: Elsevier, 2013:307-32
- **Howrie DL** and **Venkataramanan R**. A pathway to individualized medicine. In *Textbook of Pediatric and Congenital Cardiology, Cardiac Surgery and Intensive Care*, 2013 (Accepted).

Invited Presentations

- Current controversies in anticoagulation: The AT9/2011 CHEST practice guidelines. ACPE accredited CE symposium. Collaboration with the MSHP Education Committee, Baltimore MD. August 2012. **Ensor CA**.
- Therapy updates: The risks and benefits of immunosuppression in the modern era. ACPE accredited CE symposium. 47th ASHP Midyear Clinical Meeting, Las Vegas NV. December 2012. **Ensor CA**.
- The risks and benefits of immunosuppression in the modern era. ACPE accredited CE symposium. 47th ASHP Midyear Clinical Meeting, Las Vegas NV. December 2012. **Ensor CA**.
- Current controversies in anticoagulation: The AT9/2011 CHEST practice guidelines. ACPE accredited CE symposium. Collaboration with the MSHP Education Committee, Baltimore MD. August 2012. **Ensor CA**.

- You Can Build It vs. Let's Build Something Together: Building On Strength to Find Residency Opportunities. Residency Pearl Session: National Pharmacy Residency Preceptors Conference, Washington DC, August 16-18, 2012. **Johnson HJ.**
- Pharmacology and Clinical Practice Update – Hepatitis C. University of Pittsburgh School of Nursing's 2012-2013 Continuing Education Program, Pittsburgh, PA, October 13, 2012. **Johnson HJ.**
- Evolving Literature Guiding the Management of Chronic Hepatitis C, GI/Liver/Nutrition PRN Focus Session--Updates in Gastrointestinal Topics, ACCP Annual Meeting, Hollywood, FL, October 21-24, 2012. **Johnson HJ.**
- Translational Studies in Pregnancy and Transplantation – GSK **Venkat R.**
- Basic Science Study update. OPRU-NICHD **Venkat R**
- Transporters in kidney. Pathology Translational Research in Transplantation. **Venkat R.**
- Formulate Analyze and Interpret. Pathology. **Venkat R.**
- HIV drug and Anticancer Drug Interactions. AMC. **Venkat R.**
- Conversion from Prograf to generic tacrolimus. Sandoz, Paraguay. **Venkat R.**
- Conversion from Prograf to generic tacrolimus. Sandoz, Chile. **Venkat R.**
- Generic Tacrolimus. International Transplant Congress. **Venkat R.**

UPMC Pharmacy Critical Care Group

Faculty

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

Residents

Megan Kloet, PharmD, PGY2 Critical Care Resident

Major Accomplishments

In FY13, School of Pharmacy faculty members were:

- Chosen as one of four critical pharmacists in the nation to serve as Faculty for the American Society of Health-System Pharmacists (ASHP) Foundation Critical Care Trainee Program. **Benedict NJ.**
- Appointed representative of the American Pharmacists Association to solicit recognition of Critical Care as a Board Certified Specialty; petition approved by BPS in April 2013. **Falcione B.**
- Named the Associate Director of Drug Metabolism for the Safar Center for Resuscitation Research. **Poloyac SM.**
- Nominated as a standing member and served as a regular ad hoc member of the NIH study section NSD-K. **Poloyac SM.**
- Appointed as the Chair of the Research Committee, American College of Clinical Pharmacy, Critical Care PRN. **Smithburger PL.**
- Selected as American College of Clinical Pharmacy Program Committee Chair for 2014 Annual Meeting. **Kane-Gill SL.**
- Appointed as Chair of the Paragon Quality Improvement Committee of the Society of Critical Care Medicine. **Kane-Gill SL.**

Awards

- Honored distinction as the first pharmacist to receive the Society of Critical Care Medicine Young Investigator Award. **Empey PE.**
- Named a Fellow of the American College of Critical Care Medicine. **Poloyac SM.**
- Faculty Preceptor of the Year, University of Pittsburgh, School of Pharmacy. **Falcione B.**
- Rho Chi Innovation in Teaching Award, University of Pittsburgh, School of Pharmacy. **Falcione B.**
- Society of Critical Care Medicine, Clinical Pharmacy and Pharmacology Section Medication Safety Award for evaluating the impact of transfer summaries as part of an active surveillance system for the detection of ADEs in the ICU. **Kane-Gill SL, Smithburger PL.**

Selected Critical Care Publications

- Raina A, **Coons JC**, Kanwar M, et al. Transitioning from parenteral treprostinil to inhaled treprostinil in patients with pulmonary arterial hypertension. *Pulm Circ* 2013; 3(1):116-120.
- Kanwar M, Agarwal R, Barnes M, **Coons J**, et al. Role of phosphodiesterase-5 inhibitors in heart failure: emerging data and concepts. *Curr Heart Fail Rep* 2013; 10(1):26-35.
- **Empey PE**, Valez de Mendizabal N, Bell M, Bies RR, Anderson KB, Kochanek PM, Adelson PD, **Poloyac SM.** Phenytoin concentrations are elevated in children receiving therapeutic hypothermia following traumatic brain injury. *Crit Care Med* 2013 (in press).

- Robinson GFWB, Erlen JA, Rubio DM, Kapoor WN, **Poloyac SM**. Development, implementation, and evaluation of an interprofessional course in translational research. *Clin Trans Sci* 2012; 6(1): 50-6.
- Boyce RD, Freimuth RR, Romagnoli KM, **Pummer T**, Hochheiser H, **Empey PE**. Toward semantic modeling of pharmacogenomic knowledge for clinical and translational decision support. *Proceedings of the 2013 AMIA Summit on Translational Bioinformatics*. San Francisco, March 2013. (In Press).
- **Smithburger PL, Smith RB, Kane-Gill SL, Empey P**. Identification of Patient Predictors for Dexmedetomidine Effectiveness for ICU Sedation. *American Journal of Critical Care* 2013. (in press).
- **Smithburger PL, Kane-Gill SL**, Kloet MA, Lohr B, **Seybert AL**. Advancing interprofessional education through the use of high fidelity human patient simulators. *Pharmacy Practice* 2013 (in press).
- **Smithburger PL, Kane-Gill SL, Seybert AL**. Significance of Potential Drug Interactions in the Medical Intensive Care Unit. *Int J Pharm Pract*. 2012 Dec; 20(6):402-8.
- **Benedict NJ**, Schonder KS, Corman SL, McGee JB. Using virtual patients to replace lecture and promote self-directed learning. *American Journal of Pharmaceutical Education*. Accepted – In Press.
- Tabas G, **Benedict N**, McGee J, Korytkowski M, Rao H. A Novel Approach to Teaching the Management of Diabetic Ketoacidosis Using Virtual Patient Technology. *Teaching and Learning in Medicine*. Accepted – In Press.
- Abel EE, **Kane-Gill SL, Seybert AL**, Kellum JA. direct thrombin inhibitors (DTIs) for management of heparin-induced thrombocytopenia (HIT) in patients receiving renal replacement therapy: comparison of clinical outcomes. *Am J Health-Syst Pharm* 2012; 69:1559-67.
- **Kane-Gill SL**, Forsberg EA, **Verrico MM**, Handler SM. Comparison of three pharmacovigilance algorithms in the ICU setting: a retrospective and prospective evaluation of ADRs. *Drug Saf* 2012; 35:645-53.
- **Seybert AL, Smithburger PL**, Kobulinsky LR, **Kane-Gill SL**. Simulation based learning versus problem based learning in an acute care course. *Simul Healthc* 2012; 7:162-165.
- Harinstein LM, **Kane-Gill SL, Smithburger PL, Culley CM, Reddy VK, Seybert AL**. Use of a laboratory-drug combination alert to detect drug-induced thrombocytopenia in critically ill patients. *J Crit Care* 2012; 27:242-249.

Grants

- Grant total: \$24,961. Pharmacist-Delivered Pharmacogenomic Care. American Society of Health-System Pharmacists (ASHP) Research and Education Foundation Pharmacy Practice Model Initiative (PPMI) Demonstration Grant. **Coons JC, Empey PE**.

- Grant Total: \$ 591,195. Interactive search and review of clinical records with multilayer semantic annotation. Co-Investigator (salary support 5%), Chapman (PI), Subcontract UCSD. National Library of Medicine, 2011 (09/30/11- 09/29/15). **Kane-Gill SL.**
- Grant total \$20,000. A multicenter evaluation of off-label medication use and adverse drug events in adult intensive care unit patients. Principal Investigator. ASHP New Investigator Research Grant, 2012. **Smithburger PL, Kane-Gill SL.**
- Grant Total: \$30,000. Clinical Quality Improvement of Benzodiazepine-Resistant Alcohol Withdrawal Syndrome. Hospira Pharmaceuticals, 2012. **Benedict NJ, Kane-Gill SL, Smithburger PL, Falcione BA.**
- Implications of hypothermia on drug transport - 3 yr KL2 Competitive Renewal (2012-2015) PI, Approved. **Empey P.**
- Grant Total: \$25,000 Transforming the role of the hospital pharmacists to improve patients' access, adherence and self-management of medications after discharge. The Beckwith Institute. 2013 (6/1/13-6/1/14). **Seybert AL, Kane-Gill SL.**
- Grant Total: \$1,248,265 Preventing adverse drug events in intensive care units. Co-Investigator. (salary support 16%) RO1-Agency for Healthcare Research and Quality. **Kane-Gill SL.**

Selected Invited Presentations

- Experiential Education Section: Interprofessional High-fidelity Simulations in the Curriculum: Two Innovations for the Price of One! American Association of Colleges of Pharmacy Annual Meeting 2012, Kissimmee, FL. July 2012. **Seybert AL, Smithburger PL.**
- Utilization of High Fidelity Simulation in the PharmD Curriculum, Midwestern University Chicago College of Pharmacy Faculty Retreat, Chicago, IL. **Seybert AL, Smithburger PL.**
- Incorporation of high fidelity simulation learning experiences within a didactic and experiential curriculum. AACP Annual National Conference "Special Session". Kissimmee, FL; July 18, 2012. **Benedict NJ.**
- Safe Medication Use Guidelines: Developing a Medication Safety Surveillance Program for your ICU based on Evidence. Presented at the 42nd SCCM Critical Care Congress, San Juan, Puerto Rico. **Kane-Gill SL.**
- Controlling Costs in an Era Of \$100,000 Therapeutics. Presented at the 42nd SCCM Critical Care Congress, San Juan, Puerto Rico. **Kane-Gill SL.**
- Efficacy, Safety and Economic Considerations in Developing Medication-use Evaluations. Presented at the 45th ASHP Midyear Clinical Meeting, Las Vegas, NV. **Kane-Gill SL.**
- Bridge to the Future: The Importance of Pharmacists' Contributions to Scholarship- Publishing your way Forward. Eastern State Conference for Residents and Preceptors (ESCRP) 32nd Annual Conference, Hershey, PA. **Kane-Gill SL.**
- Ethnic variation in drug response: Is it all pharmacogenetics? Presented at the 42nd SCCM Critical Care Congress, San Juan, Puerto Rico. **Empey PE.**

- Phenytoin concentrations are elevated in children receiving therapeutic hypothermia following traumatic brain injury. Presented at the 42nd SCCM Critical Care Congress, San Juan, Puerto Rico. **Empey PE.**
- The Role of Xenobiotic Transporters in Tissue Defense Following Brain Injury. Safar Center for Resuscitation Research Experimental Brain Injury Meeting. **Empey PE.**
- Emerging Solutions in Pulmonary Arterial Hypertension: Empowering Pharmacists in Treatment Decisions. Presented at the 45th ASHP Midyear Clinical Meeting, Las Vegas, NV. **Coons JC.**
- Pulmonary Arterial Hypertension: Knowing the Current Therapeutic Options. Presented at the California and Nevada Societies of Health-System Pharmacists Annual Meeting, Las Vegas, NV. **Coons JC.**

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

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

Faculty

Amy Calabrese Donihi, PharmD, Associate Professor
Rima A. Mohammad, PharmD, Assistant Professor

PGY2 Resident

Michael Smith, PharmD, BCPS, PGY2 Internal Medicine Resident

Major Accomplishments

In FY13, School of Pharmacy faculty members:

- Served as Chair of the American College of Clinical Pharmacy GI/Liver/Nutrition PRN.
Mohammad RA
- Educated 1,338 high-risk hospitalized patients including 525 patients newly started on warfarin and 456 patients newly started on insulin. In approximately 25% of these patients, pharmacists also made at least one recommendation for optimizing the patient's medication regimen. **Donihi AC, Colega C**

Awards

- American Society of Health-System Pharmacists (ASHP) and American Pharmacists Association (APhA) Medication Management in Care Transitions Best Practice for *The Pharmacist Advocates in Care Transitions model*. **Coley KC, Mohammad R, Donihi AC, Kroboth P.**

- 2012, American College of Clinical Pharmacy (ACCP) The Great Eight—2012 Annual Meeting Best Paper Finalist for Pharmacist-Centered Hospital to Home Care Transition Initiative Improves Patient Outcomes (also, ACCP Adult Medicine PRN Best Poster). **Coley KC, Mohammad R, Donihi AC, Kroboth P.**
- 2012, Jewish Healthcare Foundation Fine Award Finalist for *The Pharmacist Advocates in Care Transitions model*. **Coley KC, Mohammad R, Donihi AC, Kroboth P.**

Publications

- Hawkins K, **Donihi AC**, Korytkowski MT. Glycemic management in medical and surgical patients in the non-ICU setting. *Curr Diab Rep* 2013; 13:96-106.
- Magaji V, Nayak S, **Donihi AC**, Willard L, Jampana S, Parachur N, Eder RA, Johnston J, Korytkowski M. Comparison of Insulin Infusion Protocols Targeting 110-140 mg/dL in Patients after Cardiac Surgery. *Diabetes Technology and Therapeutics* 2012;14:1013-1017.
- **Mohammad RA**, Regal R, Alaniz C. Combination therapy for the treatment and prevention of hepatic encephalopathy. *Ann Pharmacother*. 2012 Nov;46(11):1559-63.
- American College of Clinical Pharmacy (ACCP), Kirwin J, Canales AE, Bentley ML, Bungay K, Chan T, Dobson E, Holder RM, Johnson D, Lilliston A, **Mohammad RA**, Spinler SA. ACCP white paper: process indicators of quality pharmacist services in various types of transitions of care. *Pharmacotherapy*. 2012 Nov; 32(11):e338-47.
- **Mohammad RA**. Complications of Chronic Liver Disease. In: Pharmacotherapy Self-Assessment Program (PSAP), 7th edition, Book 11: *Gastroenterology/Nutrition*. 2012.
- **Mohammad RA**, Matzke GR. Drug Therapy Individualization for Patients with Chronic Kidney Disease. In Joseph T. DiPiro, Robert L. Talbert, Gary C. Yee, Gary R. Matzke, Barbara G. Wells, L. Michael Posey: *Pharmacotherapy : A Pathophysiologic Approach*, 9th ed. In press.

Grants

- Grant Total: \$25,000. “Implementation of an Inpatient Bulk Meds to Home Program at a Large Academic Medical Center.” ASHP Foundation, 2012-2014, **Donihi AC** Principal Investigator.

UPMC Infectious Diseases and Antibiotic Management Program (AMP)

Faculty

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

Gregory A. Eschenauer, PharmD, AMP Pharmacist

Ryan K. Shields, PharmD, Assistant Professor, School of Medicine, and AMP Pharmacist

Resident

None during this period

Publications

- Qureshi ZA, Paterson DL, **Potoski BA**, Kilayko MC, Sandovsky G, Sordillo E, Polsky B, Adams-Haduch JM, Doi Y. Treatment Outcome of Bacteremia due to KPC-Producing *Klebsiella pneumoniae*: Superiority of Combination Antimicrobial Regimens. *Antimicrob Agents Chemother* 2012; 56:2108-13.
- Eschenauer GA, Carver PL, Lin SW, Klinker KP, Chen YC, **Potoski BA**, **Shields RK**, Clancy CJ, Nguyen MH, Lam SW. Fluconazole versus an echinocandin for *Candida glabrata* fungemia: a retrospective cohort study. *J Antimicrob Chemother*. 2013; 68:922-6.
- Hong JH, Clancy CJ, Cheng S, **Shields RK**, Chen L, Doi Y, Zhao Y, Kreiswirth BN, Nguyen MH. Characterization of porin expression in *Klebsiella pneumoniae* carbapenemase (KPC)-producing *Klebsiella pneumoniae* identifies isolates most susceptible to the combination of colistin and carbapenems. *Antimicrob Agents Chemother* 2013; 57:2147-53.
- **Shields RK**, Clancy CJ, Gillis LM, Kwak EJ, Silveira FP, Abdel Massih RC, Potoski BA, Eschenauer GA, Nguyen MH. Epidemiology and clinical outcomes of extensively drug-resistant *Acinetobacter baumannii* infections among solid-organ transplant recipients. *PLoS One* 2012; 7(12):e52349.
- Fukuta Y, Clarke LG, **Shields RK**, Wagener MM, Pasculle AW, Doi Y. Lack of seasonality in the occurrence of multidrug-resistant *Acinetobacter baumannii* complex. *Infect Control Hosp Epidemiol* 2012; 33:1051-2.
- **Shields RK**, Clancy CJ, Minces LR, Kwak EJ, Silveira FP, Abdel Massih RC, Toyoda Y, Bermudez CA, Bhama JK, Shigemura N, Pilewski JM, Crespo M, Nguyen MH. *Staphylococcus aureus* infections in the early period after lung transplantation: Epidemiology, risk factors, and outcomes. *J Heart Lung Transplant* 2012; 31:1199-206.
- **Shields RK**, Nguyen MH, Shullo MA, Silveira FP, Kwak EJ, Abdel Massih RC, Toyoda Y, Bermudez CA, Bhama JK, Kormos RL, Clancy CJ. Invasive aspergillosis among heart transplant recipients is rare but occurs in clusters and causes rapid death due to septic shock. *Scand J Infect Dis* 2012; 44:982-6.
- **Shields RK**, Nguyen MH, Du C, Press E, Cheng S, Clancy CJ. The presence of an FKS mutation rather than minimum inhibitory concentration is an independent risk factor for failure of echinocandin therapy among patients with invasive candidiasis due to *Candida glabrata*. *Antimicrob Agents Chemother* 2012; 56:4862-9.

Health System Formulary Management and Drug Use Policy (formerly UPMC Presbyterian Drug Use and Disease State Management [DUDSM] Program)

School of Pharmacy faculty members led the development of medication formulary management and drug use policy/protocol work to create evidence-based guidelines that promote safe and cost-effective use of medications for patients at UPMC. In December of 2012, the strong local and nationally recognized work of the DUDSM Program at UPMC Presbyterian was formally expanded across the 14 hospitals of the UPMC as a part of the new infrastructure of the System Pharmacy Service Line. Faculty and hospital-based clinical pharmacists are critical in designing and implementing strategies to

incorporate guidelines into daily practice. Pharmacists at UPMC, including the clinical faculty, unit-based clinical pharmacists, operations-based pharmacists, and postgraduate year (PGY) 1 and PGY2 hospital-based UPMC residents use these guidelines in the care of patients throughout the UPMC System.

Faculty

Susan J. Skledar, MPH, Associate Professor and DUDSM Director
Colleen M. Culley, BS, PharmD, Associate Professor, Schools of Pharmacy and Medicine
Shelby L. Corman, PharmD, MS, Assistant Professor
Tara L. Pummer, PharmD, Assistant Professor

PhD Students*

*(were an official part of Program until November 2012)

Mohammad Shawaqfeh, PharmD
Dustin Walsh, PharmD
Hari Kalluri, PharmD
Katherine Eichinger, PharmD

Major Accomplishments

During FY13, School of Pharmacy faculty members:

- In the past year, **32** guidelines/reviews and **19** electronic health record protocols were developed for use of medications in the hospital setting across UPMC. **Skledar SJ, Corman SL, Culley CM, Pummer TL**, other faculty and PGY1/PGY2 residents mentored by the faculty.
- The group led the revision and/or creation of 9 UPMC-wide hospital policies, which are guidance documents for pharmacy institutional practice and meet standards of internal and external regulatory and accreditation bodies. **Skledar SJ**.
- Were integral in the transition of the UPMC Presbyterian DUDSM Program work as it was elevated to the System Pharmacy Service Line to provide the infrastructure for medication formulary management and drug use policy/protocol work covering the 14-hospital UPMC System. **Skledar SJ, Culley CM**.
- Facilitated development of **17** medication therapeutic class interchanges across UPMC inpatient sites, to optimize medication inventory, while ensuring equal safety and cost-effectiveness for UPMC patients. **Skledar SJ, Culley CM, Pummer TL**.
- Created new UPMC system-wide policies for evaluation of new medications for hospitalized patients, patients bringing medications from home into the hospital, and complementary and alternative therapies. **Skledar SJ**.
- Worked with UPMC group purchasing agent, H.C. Pharmacy Central, Inc., pharmacy leadership, and legal/risk specialists across UPMC to develop a system-wide policy to guide selection and contracting with external compounding manufacturers to ensure safety and integrity of externally-compounded products. **Skledar SJ, Lang MB [Alumna]**.
- Continued responsibility for expansion of intravenous intelligent infusion (“smart”) pump devices and safety technology to include 6,000 pumps across 19 UPMC facilities and ambulatory infusion centers. **Skledar SJ, Nicolai C [Adjunct Faculty]**.

- Conducted a national podcast on “Data Analytics for Smart IV Infusion Pumps” for the American Society of Health-System Pharmacists (ASHP).
- Highlighted in the *American Journal of Health-System Pharmacy* as a ASHP Pharmacy Practice Model Spotlight for work with smart pumps in reducing intravenous medication errors: ASHP Newslink: Smart Pump Program Reduces I.V. Medication Errors. http://www.ashpmedia.org/ppmi/docs/casestudy_skledar.pdf
- Served as a national faculty mentor for 9 hospital/health-systems as part of ASHP’s *Mentored Adult Immunization Impact Program*, a program in conjunction with ASHP Advantage, for inpatient hospitals to improve vaccination rates for their patients. **Skledar SJ.**
- Participated on an interdisciplinary team that developed the first inpatient protocol for use of pharmacogenomic testing for the cardiac medication, clopidogrel, to find non-responders and optimize drug therapy. This protocol was the basis for a multi-faculty ASHP Pharmacy Practice Model Initiative demonstration grant awarded to UPMC. **Coons JC, Empey PE, Skledar SJ.**
- Will receive the 2013 ASHP Distinguished Service Award from the ASHP Section of Inpatient Care Practitioners for work with service to ASHP, teaching and mentoring, and advancing the practice of pharmacy in the hospital setting. **Skledar SJ.**
- Developed a rounding report in the UPMC-owned skilled nursing facilities using TheraDoc, clinical surveillance system, to improve data time and quality of data gathering for practitioners. **Culley CM.**

Selected Publications

- Clinical practice guidelines for antimicrobial prophylaxis in surgery: ASHP Report. **Culley CM, Skledar SJ.** Contract authors. American Society of Health-Systems Pharmacists. *Am J Health-Syst Pharm.* 2013; 70: 195-283.
Press release:
<http://www.ashp.org/menu/AboutUs/ForPress/PressReleases/PressRelease.aspx?id=736>
- **Skledar SJ,** Niccolai CN, Schilling D, Costello S, Mininni N, Ervin KC, Urban A. Quality improvement analytics for intravenous infusion pumps. *Am J Health-Syst Pharm.* 2013; 70: 680-6.
- **Skledar SJ,** Continuous Quality Improvement Principles. In Larson C and Saine D ed. 1st edition. *The Medication Safety Officer’s Handbook.* American Society of Health-System Pharmacists. Bethesda, MD 2013.
- Thorpe-Jamison PT, **Culley CM,** Perera S, Handler SM. Evaluating the impact of computer-generated rounding reports on physician workflow in the nursing home: a feasibility time-motion study. *J Am Med Dir Assoc.* 2013;14(5):358-62. [Epub ahead of print]

Selected Invited Presentations

- Pittsburgh PA and national webcast: Mentored Adult Immunization Impact Program. National moderator for hospital/health systems in creation and implementation of inpatient immunization programs. American Society of Health System Pharmacists ASHP Advantage Program. National webcasts: Aug 23, 2012; Oct 29, 2012; Jan 16, 2013. Available at: <http://immunizeadults.org/about.html>. **Skledar SJ.**

- National podcast: Quality Improvement Analytics for Intravenous Infusion Pumps: How to Keep Your Smart-Pump "SMART." *Am J Health-Syst Pharm.* April 2013. Niccolai C, **Skledar SJ.**
- National webcast: Approaches to EZ Alert Administration. Brown Bag Session held for national TheraDoc Pharmacy users. December 20, 2012. **Culley CM.**

Geriatrics (Benedum and Shadyside Senior Care Institute) Program

The mission of care is the:

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

Faculty

Christine M. Ruby-Scelsi, PharmD, Assistant Professor

Zachary A. Marcum, PharmD, MS, Assistant Professor

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

Pharmacy Residents

Stephanie M. Seaton, PharmD, PGY2 Geriatric Pharmacy Resident

Major Accomplishments

- Recipient of Leadership in Education Award, American Society of Consultant Pharmacists. **Ruby CM.**
- Created one of twelve post-graduate residency programs nationally in geriatric pharmacy practice. **Ruby CM.**
- Created a pharmacist-led transition of care program for patients discharged from three UPMC-affiliated nursing homes. Led by: **Ruby CM.**
- Faculty inducted as cabinet Secretary for the Geriatric Special Interest Group (SIG) of the American Association of Colleges of Pharmacy. **Ruby CM.**
- Created and delivered a 4-week interprofessional course at Asbury Heights Nursing Center. Enrolled medical, nursing and pharmacy students. Led by: **Ruby CM.**

National Presentations- Invited Speaker

- Beers, Antihypertensives, and Medical Home: An Update in Geriatric Practice. An invited speaker for the American Society of Health-System Pharmacists Midyear Clinical Meeting, Las Vegas, NV; December 6, 2012. **Ruby CM.**

Selected Publications

- **Ruby CM** and Nolin T. Geriatric Pharmacotherapy. In: Robnett and Chop ed. *Gerontology for the Health Care Professional.* 2nd Ed. Burlington: Jones and Bartlett, 2014 (in press).

- **Marcum ZA**, Amuan ME, **Hanlon JT**, **Aspinall SL**, Handler SM, **Ruby CM**, Pugh MJ. Prevalence of unplanned hospitalizations caused by adverse drug reactions among older veterans. *J Am Geriatr Soc* 2012; 60.
- Peron EP and **Ruby CM**. A Primer on Medication Use in Older Adults for the Non-Clinician. *Generations: Journal of the American Society on Aging* 2011; 4 (35).
- **Marcum ZA**, Pugh MV, Amuan ME, **Aspinall SL**, Handler SM, **Ruby CM**, **Hanlon JT**. Prevalence of potentially preventable unplanned hospitalizations caused by therapeutic failures and adverse drug withdrawal events among older Veterans. *J Gerontol A Biol Sci Med Sci* 2012; 67:867-874. PMID: 22389461
- Gellad WF, Good CB, Amuan ME, **Marcum ZA**, **Hanlon JT**, Pugh MV. Facility-level variation in potentially inappropriate prescribing for older veterans. *J Am Geriatr Soc* 2012; 60:1222-1229. PMID: 22726206
- Donohue JM, **Marcum ZA**, Gellad WF, Lave JR, Men A, **Hanlon JT**. Medicare Part D and potentially inappropriate medication use in the elderly. *Am J Manag Care* 2012; 18:e315-22. PMID:23009330
- Marcum ZA, Vande Griend JP, Linnebur SA. FDA drug safety communications: a narrative review and clinical considerations for older adults. *Am J Geriatr Pharmacother* 2012;10:264-271. PMID: 22683398
- **Marcum ZA**, **Hanlon JT**. Inappropriate Medication Use and Medication Errors in the Elderly. In Wehling M, Burkhardt H. (editors), *Drug Therapy in the Elderly*. 2nd Ed., Berlin Heidelberg New York:Springer-Verlag. 2013. pp 43-50.
- **Marcum ZA**, Peron E, **Hanlon JT**. Medication use in older adults. In: Newman A, Cauley J (editors). *The Epidemiology of Aging*. New York:Springer Publishing Company 2013:317-327.
- **Marcum ZA**, Arbogast KL, Behrens MC, Logsdon MW, Francis SD, Jeffery SM, **Aspinall SL**, **Hanlon JT**, Handler SM. Utility of an adverse drug event trigger tool in Veterans Affairs nursing homes. *Consult Pharm* 2013;28:99-109. PMID: 23395810
- **Marcum ZA**, Sevick MA, Handler SM. Medication Non-Adherence: A Diagnosable and Treatable Medical Condition. *Journal of the American Medical Association (JAMA)* 2013;309:2105-6.

UPMC Oncology Magee-Womens Hospital of UPMC

School of Pharmacy faculty member provides care to oncology patients at Magee Womens Hospital in a variety of ways. The faculty member works to: Precept pharmacy students and residents on the oncology inpatient unit, where they manage patients' medication therapy as part of the patient care team. Educate medical residents on medication management of gynecology oncology patients. Provide care to the inpatient oncology patients by rounding with the multidisciplinary care team, counsel patients on chemotherapy medications, supportive care medications and discharge medications. Serve as a consultant to the outpatient oncology clinics and infusion center to provide consults to providers and patients to optimize management of chemotherapy and supportive medications.

Faculty

Lindsay Lippman, PharmD, Clinical Instructor

PGY2 Resident

Dwight Eplin, PharmD, PGY2 Oncology Resident

Major Accomplishments

- Provided medication reconciliation and medication management in 2,800 oncology hospitalized patients.
- Implemented new DVT prophylaxis guidelines to extend DVT prophylaxis in post-surgical gynecology/oncology patients.

UPMC – Western Psychiatric Institute and Clinic

Faculty

Tanya J. Fabian, PharmD, PhD-Assistant Professor

Director of Pharmacy Research and Pharmacy Services, Western Psychiatric Institute and Clinic

Residents

Miriam Bora, PharmD

Publications

- **Fabian TJ**, Cain ZJ, Ammerman D, Eudicone JM, Tang Y, Rollin LM, Forbes RA, Berman RM, Baker RA. Improvement in functional outcomes with adjunctive aripiprazole versus placebo in major depressive disorder: a pooled post hoc analysis of 3 short-term studies. *Primary Care Companion: CNS Disorders*. 2012; 14(56).
- Kreys TM, **Fabian TJ**, Saul MI, Haskett RF, Coley KC. An Evaluation of Inpatient Treatment Continuation Rates and Hospital Readmission Rates in Bipolar Disorder Patients Treated with Aripiprazole or Quetiapine. *Journal of Psychiatric Practice*. 2013.

Book Chapters

- **Fabian TJ**. Aging Changes and Pharmacotherapy Principles. In: *Geriatric Psychiatry*. Miller MD, et al. Winder K (ed). Oxford University Press, New York, New York, Chapter 4. 2013.

Invited Patient Care Presentations

- Ethnic variation in drug response: Is it all pharmacogenetics? Society of Critical Care Medicine (Platform presentation), San Juan, Puerto Rico, 01/22/2013, **Empey P**.
- A lifecycle journey in cystic fibrosis and lung transplantation. International Society for Heart and Lung Transplantation, Montreal, Quebec, Canada, 04/18/2013, **Ensor C**.
- Controlling Costs in an Era Of \$100,000 Therapeutics. SCCM, Puerto Rico, 01/21/2013, **Kane-Gill S**.

- Safe Medication Use Guidelines: Developing a Medication Safety Surveillance Program for your ICU based on Evidence. SCCM, Puerto Rico, 01/19/2013, **Kane-Gill S.**
- Top Ten Medication Pitfalls to Avoid. National Kidney Foundation, Orlando, FL, 4/2/2013, **Nolin T.**
- Toxicokinetic Factors that are Important in Determining the Effectiveness of Extracorporeal Elimination Techniques. The European Association of Poisons Centres and Clinical Toxicologists (EAPCCT), Copenhagen, Denmark, 5/28/2013, **Nolin T.**
- Practical Guidelines for Drug Dosing in Patients with Renal Disease/Geriatrics., The National Kidney Foundation, Orlando, FL, 4/2/2013, **Nolin T.**
- Measuring Up. What's Around the Corner for Quality Improvement? Academy of Managed Care Pharmacy (AMCP), San Francisco, CA, 04/21/2012, **Pringle J.**
- Meeting Keynote Address: Advancing a Comprehensive and Consistent Practice for Clinical Pharmacists—The Future Is Now: Community/Ambulatory Perspective. ACCP, Hollywood, FL, 10/21/2012, **Somma McGivney M.**

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 as well as our international partners appear in this section.

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

RESOURCES BY THE NUMBERS FOR FY13

- **\$21.8 million:** The total School of Pharmacy expenditures in FY13 from all sources.
- **\$20.8 million:** The market value of the School's endowment at the end of FY13.
- **\$24,496,542:** The Capital Campaign total at the end of FY13.
- **\$1.76 million:** Gifts in FY13; **\$121,516** from annual gifts, a **12.5%** increase.
- The School of Pharmacy has an allocation of and/or leases **69,283 SF** of space in **seven (7) locations** in Oakland, the South Side, and the East End.
- **\$315 per SF:** Efficiency, which equals expenditures per SF; up 1.33 fold from FY06 due to increase expenditure and loss of space.
- In FY13, the School of Pharmacy had **72 full-time faculty members** who received:
 - **4** recognitions/awards for educational accomplishments
 - **6** recognitions/awards for research
 - **2** recognitions/awards for practice
 - **4** recognitions/awards for service

Of our 72 faculty members,

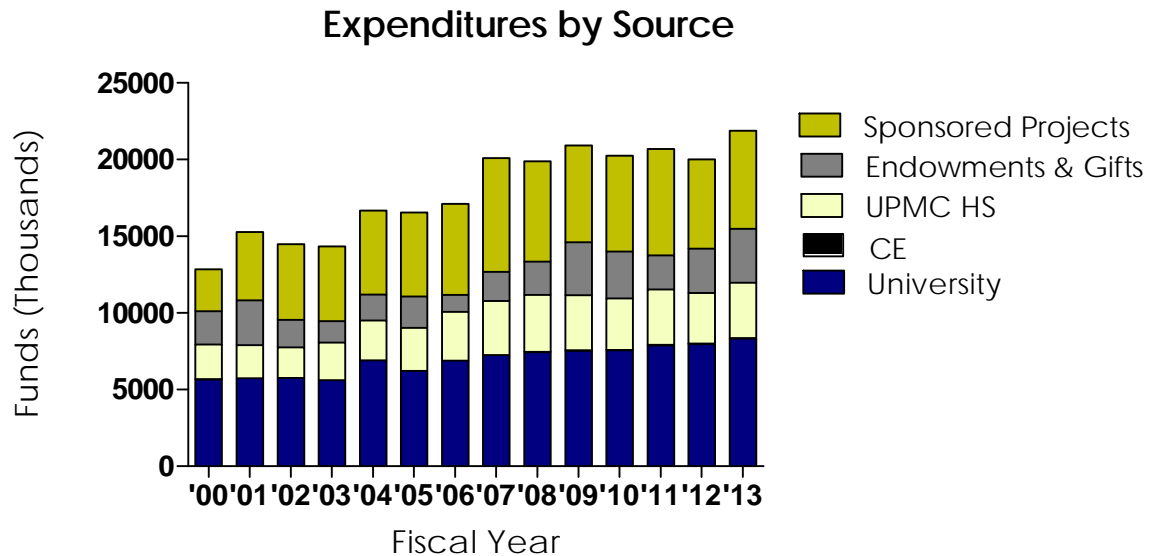
- **18 (25.0%)** have been elected to fellowship in one or more organizations.
- **24 (33.3%)** are board certified.
- **39 (54.2%)** are either board certified or fellows, or both!
- **67:** the number of staff, of whom **31** are administrative and **36** are research
- Number of living alumni: **5,126**
- The School of Pharmacy's alumni ranked:
 - **#1** in life memberships in the Pitt Alumni Association in schools and programs with more than 100 alumni
 - **#3** among all University schools and programs in alumni engagement
- **33.3 percent** of the alumni were engaged with the School of Pharmacy and/or University in some way

- **9** major print communications were each mailed to **6,100** individuals
- **11** international visiting scholars visited the School of Pharmacy and **9** PharmD students participated in international rotations.
- The School of Pharmacy has now formalized partnerships with **15** international organizations in Africa, Asia, Australia, Central America, and Europe.

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 '13.



The School of Pharmacy’s total expenditures are 1.51 times higher in FY13 (\$21,876,525 million) than they were in FY02 (\$14, 482,930). Sponsored projects accounted for 29% of the expenses in FY13 and 34% in FY02. Together, the University (38.1%), sponsored project awards (29%), and UPMC (16.5%) accounted for over 83% of the School’s funding in FY13.

Institutional Advancement

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

Capital Campaign

On July 1, 1997, the University launched the Capital Campaign to support students, teaching and learning, and the research of faculty. To date, the School of Pharmacy has raised \$24,496,542 in gifts and pledges for the School’s portion of the Capital Campaign. Of this amount, a total of \$21,944,716 has been

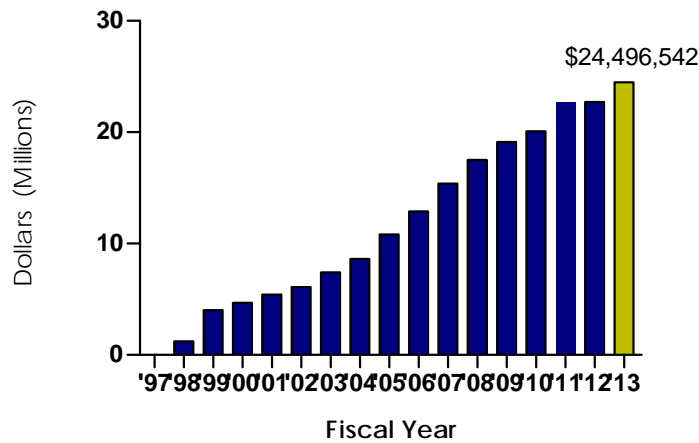
received and \$2,551,826 is due in pledges and gifts. At the close of FY13 the University of Pittsburgh achieved and exceeded its Capital Campaign goal of \$2 billion.

School of Pharmacy Capital Campaign by Gift Designation
Gifts and Pledges*
 July 1, 1997 – June 30, 2013

| Designation | Amount |
|------------------------|---------------------|
| Individual Major Gifts | \$5,914,453 |
| Foundations | 1,503,586 |
| Corporations | 6,473,306 |
| Other Organizations | 2,062,662 |
| Planned Giving | 6,542,836 |
| Individual Other Gifts | 1,999,699 |
| Total | \$24,496,542 |

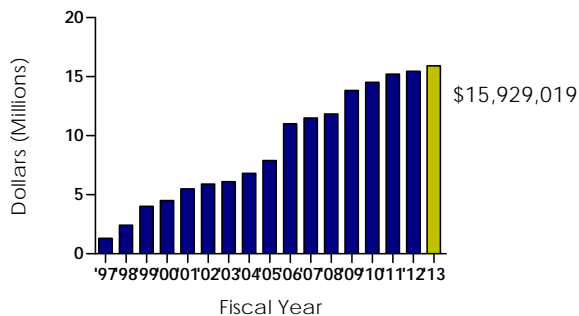
*Includes Voluntary Support (gifts) received during FY13

Capital Campaign
Total Gifts and Pledges

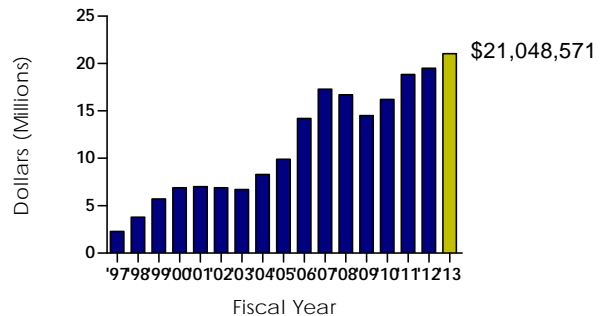


The book value of the School of Pharmacy endowment has continued to grow through gifts as shown in the graph below. It is not surprising that the market value of the endowment has fluctuated with the economic situation of the nation. As the economy has recovered, so has the market value of the endowment.

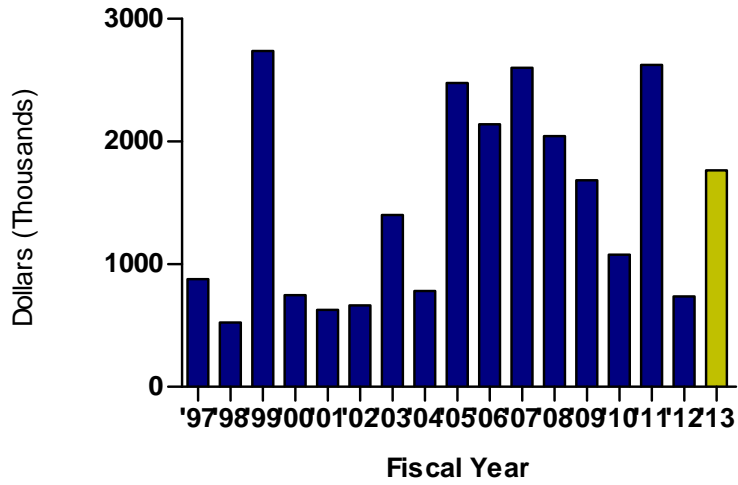
School of Pharmacy Endowment - Book Value



School of Pharmacy Endowment - Market Value



Total Gifts & Pledges by Year

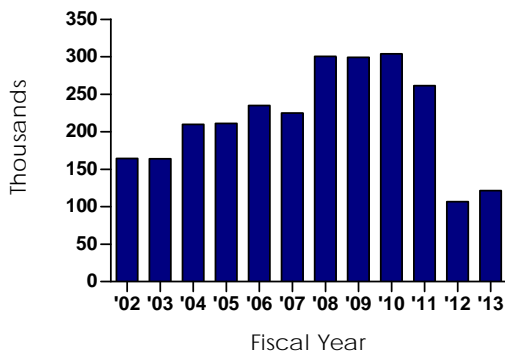


FY13 Giving to the School of Pharmacy by Source

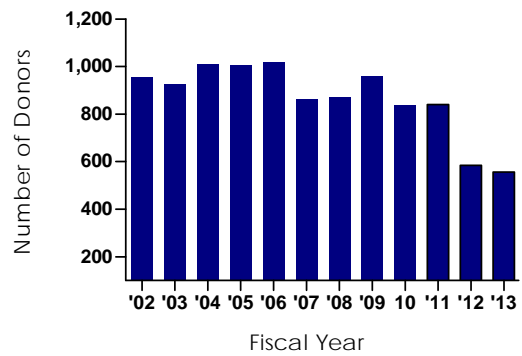
| | Alumni | Foundations | Corporations | Organizations | Friends |
|------------|-----------|-------------|--------------|---------------|----------|
| Amount | \$235,673 | \$112,566 | \$580,529 | \$773,456 | \$63,036 |
| Percentage | 13% | 6% | 33% | 44% | 4% |

As shown in the graphs below, the annual gift amount was \$121,516, a 13% increase from FY12 despite the 5% decrease in number of annual donors in FY13 to 556.

Annual Gift Amount



Annual Donors



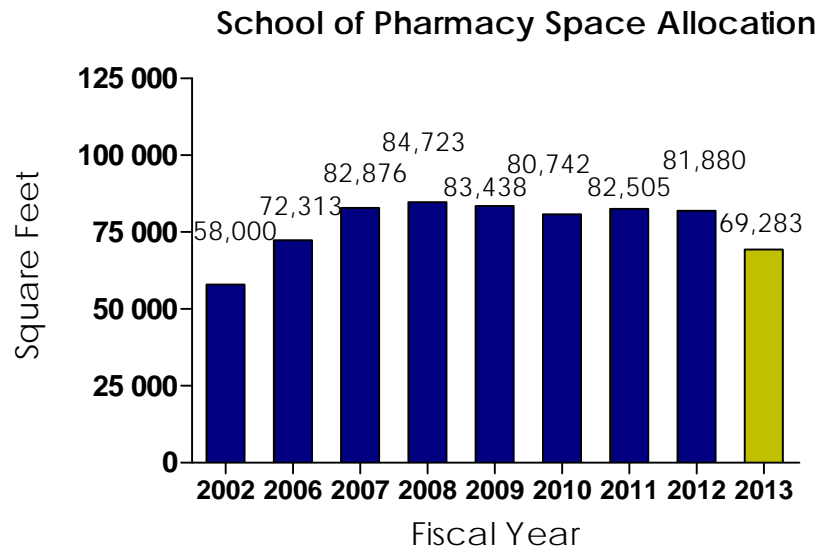
PHYSICAL FACILITIES

At the close of FY13, the School of Pharmacy occupied a total of 69,283 SF, including:

- 47,466 SF in Salk Hall*
- 4,305 SF in BSTIII*
- 13,590 SF (leased) in Birmingham Towers
- 2,074 SF (leased) in Parkvale Building
- 1,091 SF in Falk Clinic (UPMC)
- 757 SF in South Presby Tower (UPMC)

*University space

As shown in the graph below, the space allocation to pharmacy has decreased. Losses of UPMC-provided office space in Montefiore, Presbyterian, and Victoria Hall for faculty who provide service to UPMC totaled 12,775 SF and explains the decrease. The School of Pharmacy is now at its lowest amount of space in at least eight years.



In the past year, the School of Pharmacy made significant investments to transform our educational environment and increase personalized education, primarily through the reconfiguration of two classrooms. These investments in transformation of space and technology encourage faculty to adapt and continually evolve their teaching methods to further engage students in their own learning.

The former Salk 402 classroom—destroyed by fire nearly a year ago—has been transformed into the Novo Nordisk Learning Center, an innovative teaching and learning environment that boasts small group learning in a large group setting. The new Learning Center has outstanding design characteristics and technology to allow instructors the flexibility to project to the monitors, to allow students to connect their PCs for small group work, and to allow a single group to share their work with the entire class through the central media system.

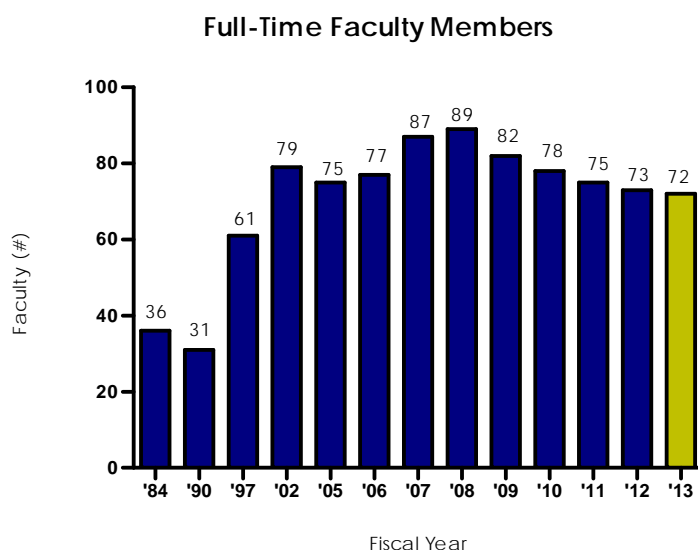
Additionally, Salk 526 was changed from an office into a small learning space equipped with technology that allows interactive teaching with two other universities.

THE RESOURCE OF PEOPLE

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

Faculty

Seventy-two full-time and seven 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.



Two faculty members were named emeritus professors in FY13:

- Balwant N. Dixit, PhD, Professor of Pharmaceutical Sciences, retired in January 2013 after 50 years of service.
- Edward P. Krenzelok, PharmD, DABAT, Gordon J. Vanscoy Chair and Professor of Pharmacy and Therapeutics, retired in January 2013.

In the Department of Pharmaceutical Sciences:

- Levent Kirisci, PhD was awarded tenure in FY13.
- Four new faculty members were recruited, including three assistant professors—Shilpa Sant, PhD from Brigham and Women's Hospital, Harvard Medical School; Vinayak Sant, PhD from Patheon, Inc in Mississauga, Canada; and Haitao Yang, PhD from The Population Council in New York. LiRong Wang, PhD from the University of Pittsburgh also joined as a research assistant professor.
- In April 2013, Yong Tae Kwon, PhD accepted a position in Korea at Seoul National University. Xiang Gao, PhD, Jinhan He, PhD, and Ren-Tian Feng, PhD all elected to return to China for various employment opportunities.

In the Department of Pharmacy and Therapeutics, three new faculty members were recruited.

- Associate Professor James Coons, PharmD, BCPS (AQ Cardiology) joined in the area of cardiovascular disease;
- Assistant professor Christopher Ensor, PharmD, BCPS (AQ Cardiology) joined in the area of thoracic transplantation;
- Assistant Professor Sean Kim, PhD joined in the area of pharmacometrics.

In October 2012, Shelby Corman, PharmD, BCPS left the faculty when she accepted a position as Senior Clinical Outcomes Scientist for Pharmerit International in Bethesda, MD.

Full-Time Faculty Rank by Department of Primary Appointment*

| Faculty Rank | Pharmaceutical Sciences | Pharmacy and Therapeutics | Total for School of Pharmacy |
|---------------------------------------|-------------------------|---------------------------|------------------------------|
| Professor | 16 | 1 | 17 |
| Associate Professor | 2 | 15 | 17 |
| Assistant Professor | 6 | 23 | 29 |
| Instructor | 0 | 3 | 3 |
| Research Associate Professor | 1 | 0 | 1 |
| Research Assistant Professor | 3 | 0 | 3 |
| Visiting Research Assistant Professor | 2 | 0 | 2 |
| All Faculty | 30 | 42 | 72 |

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

Department of Pharmaceutical Sciences: 4

Department of Pharmacy and Therapeutics: 3

In FY13, School of Pharmacy faculty earned a total of 16 major awards in recognition of their work in research, education, patient care, and/or service. Details of each award are in the table below.

FY 13: Faculty Awards and Honors

| Faculty Member | Award | Organization |
|-------------------------|--|--|
| Philip E. Empey | Young Investigator Award | Society of Critical Care Medicine |
| Denise L. Howrie Schiff | 2012 Award for Excellence in Assessment | American Association of Colleges of Pharmacy |
| Sandra L. Kane-Gill | Clinical Pharmacy and Pharmacology Section Medication Safety Award | Society of Critical Care Medicine |
| Rima A. Mohammad | Adult Medicine PRN Best Poster | American College of Clinical Pharmacology |
| Thomas D. Nolin | Fellow | American Society of Nephrology |
| Samuel M. Poloyac | Fellow | American College of Critical Care Medicine |
| Tara Pummer | Distinguished Paper award | AMIA Summit on Translational Bioinformatics |
| Lisa C. Rohan | 225th Anniversary Medallion | University of Pittsburgh (recognizes alumni who have built better lives through their life's work) |
| Christine Ruby-Scelsi | Leadership in Education Award | American Society of Consultant Pharmacists |
| Shilpa Sant | Rising Star-Fellow Award | Cellular and Molecular Bioengineering-Biomedical |

| Faculty Member | Award | Organization |
|----------------------|---|--|
| | | Engineering Society |
| Pamela Smithburger | ACCP Volunteer Recognition Citation | American College of Clinical Pharmacology |
| Pamela Smithburger | SCCM Presidential Citation | Society of Critical Care Medicine |
| Gordon J. Vanscoy | 225th Anniversary Medallion | University of Pittsburgh (recognizes alumni who have built better lives through their life's work) |
| Regis R. Vollmer | Chancellor's Distinguished Teaching Award | University of Pittsburgh |
| Xiang-Qun (Sean) Xie | Exemplary Service Award in NSF Fellowship | National Science Foundation |
| Wen Xie | Distinguished Alumnus | Peking University Health Science Center/Beijing Medical University |

Fellowships in Organizations and Board Certification

Election to fellowship and board certification are two characteristics of faculty members who have distinguished themselves. Of the 72 faculty members, 18 (25.0%) have been elected to fellowship in one or more organization, 24 (33.3%) are board certified, and 39 (54.2%) 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.

FY13: Faculty Elected to Fellowship in Professional or Scientific Organizations

| Name | Fellowship | | Department |
|------------------------|------------|---|-------------------------------------|
| Kim Coley | FCCP | American College of Clinical Pharmacy | Pharmacy and Therapeutics |
| Judith Gavalier | FACN | American College of Nutrition | Pharmaceutical Sciences |
| Barry Gold | AAAS | American Association for the Advancement of Science | Pharmaceutical Sciences |
| Donna Huryn | FACS | American Chemical Society | Pharmaceutical Sciences |
| Randy Juhl | FAPhA | American Pharmacists Association | Pharmaceutical Sciences |
| Sandra Kane-Gill | FCCM | American College of Critical Care Medicine | Pharmacy and Therapeutics |
| | FCCP | American College of Clinical Pharmacy | |
| Joanne Kowiatek | FASHP | American Society of Health-Systems Pharmacists | Pharmacy and Therapeutics (Adjunct) |
| Edward Krenzelo | FAACT | American Association of Clinical Toxicology | Pharmacy and Therapeutics |
| Patricia Kroboth | FCCP | American College of Clinical Pharmacy | Pharmaceutical Sciences |
| | FAAPS | American Association of Pharmaceutical Scientists | |
| Melissa Somma McGivney | FCCP | American College of Clinical Pharmacy | Pharmacy and Therapeutics |
| Thomas Nolin | FCCP | American College of Clinical Pharmacy | Pharmacy and Therapeutics |
| | FCP | American College of Clinical Pharmacology | Pharmacy and Therapeutics |
| | FASN | American Society of Nephrology | Pharmacy and Therapeutics |

| Name | Fellowship | | Department |
|-----------------------|------------|---|---------------------------|
| Christine Ruby-Scelsi | FASCP | American Society of Consultant Pharmacists | Pharmacy and Therapeutics |
| Paul Schiff | FAPhA | American Pharmacists Association | Pharmaceutical Sciences |
| | FAAPS | American Association of Pharmaceutical Scientists | |
| Amy Seybert | FASHP | American Society of Health-System Pharmacists | Pharmacy and Therapeutics |
| | FCCP | American College of Clinical Pharmacy | |
| Susan Skledar | FASHP | American Society of Health-System Pharmacists | Pharmacy and Therapeutics |
| Randall Smith | FAAPS | American Association of Pharmaceutical Scientists | Pharmaceutical Sciences |
| Ralph Tarter | FAPS | American Psychological Society | Pharmaceutical Sciences |
| | FAPA | American Psychopathological Association | |
| Raman Venkataramanan | FACCP | American College of Clinical Pharmacology | Pharmaceutical Sciences |
| | FAAPS | American Association of Pharmaceutical Scientists | |

FY13: Faculty Board Certifications

| Name | Certification | | Department |
|-----------------------|---------------|--|---------------------------|
| Sherrie Aspinall | BCPS | Pharmacotherapy | Pharmacy and Therapeutics |
| James Coons | BCPS (AQ-CV) | Pharmacotherapy (Added Qualification in Cardiology) | Pharmacy and Therapeutics |
| Shelby Corman | BCPS | Pharmacotherapy | Pharmacy and Therapeutics |
| Colleen Culley | BCPS | Pharmacotherapy | Pharmacy and Therapeutics |
| Amy Calabrese Donihi | BCPS | Pharmacotherapy | Pharmacy and Therapeutics |
| Scott Drab | CDE | Diabetes Educator | Pharmacy and Therapeutics |
| | BC-ADM | Advanced Diabetes Management | |
| Philip Empey | BCPS | Pharmacotherapy | Pharmacy and Therapeutics |
| Christopher R. Ensor | BCPS (AQ-CV) | Pharmacotherapy (Added Qualification in Cardiology) | Pharmacy and Therapeutics |
| Tanya Fabian | BCPP | Psychiatric Pharmacy | Pharmacy and Therapeutics |
| Bonnie Falcione | BCPS | Pharmacotherapy | Pharmacy and Therapeutics |
| Roberta Farrah | BCPS | Pharmacotherapy | Pharmacy and Therapeutics |
| Deanne Hall | CDE | Diabetes Educator | Pharmacy and Therapeutics |
| | BCACP | Ambulatory Care Pharmacy | |
| Heather Johnson | BCPS | Pharmacotherapy | Pharmacy and Therapeutics |
| Lauren Jonkman | BCPS | Pharmacotherapy | Pharmacy and Therapeutics |
| Edward Krenzelo | DABAT | Toxicology | Pharmacy and Therapeutics |
| Lindsay Lippman | BCOP | Oncology | Pharmacy and Therapeutics |
| Rima Mohammad | BCPS | Pharmacotherapy | Pharmacy and Therapeutics |
| Karen Pater | BCPS | Pharmacotherapy | Pharmacy and Therapeutics |
| | CDE | Diabetes Educator | |
| Brian Potoski | BCPS (AQ-ID) | Pharmacotherapy/Added Qualification in Infectious Diseases | Pharmacy and Therapeutics |
| Christine Ruby-Scelsi | BCPS | Pharmacotherapy | Pharmacy and Therapeutics |
| Pamela Smithburger | BCPS | Pharmacotherapy | Pharmacy and Therapeutics |

| Name | Certification | | Department |
|----------------|---------------|---------------------|---------------------------|
| Dennis Swanson | BCNP | Nuclear Pharmacy | Pharmacy and Therapeutics |
| Ralph Tarter | ABPP | Clinical Psychology | Pharmaceutical Sciences |
| Lauren Trilli | BCPS | Pharmacotherapy | Pharmacy and Therapeutics |

Alumni and Alumni Engagement

In the seven years that the University of Pittsburgh has been ranking its 18 schools and programs in alumni engagement, the School of Pharmacy has held the #1 spot in FY07 and FY09, ranking second in FY08 and FY10 and third in FY11 and FY12. The term “engagement” is the percentage of alumni who make gifts to the School/University, participate in events, have Life memberships in the Alumni Association, participate in online forums, and have provided active email addresses.

In FY13:

- 33.33 percent of the 5,126 School of Pharmacy living alumni were engaged with the School of Pharmacy and/or University in some way.
- School of Pharmacy alumni ranked:
 - first (11.70 percent) in life and in regular memberships in the Pitt Alumni Association in schools and programs with more than 100 alumni.
 - third (37.05 percent) in participation in School and University programs in schools and programs with more than 100 alumni.
- Alumni demonstrated their commitment to the University and the School in many ways, including participation in events sponsored by the School and/or the Alumni Society:
 - Pharmacy alumni celebrated Homecoming 2012 with a Tail Gate Homecoming Party held at the William Pitt Union.
 - School of Pharmacy hosted two receptions at national professional and scientific meetings:
 - American Society of Health-System Pharmacists Midyear Clinical Meeting, December 2-6, 2012, Las Vegas, Nevada.
 - American Pharmacists Association Annual Convention, Pennsylvania Pharmacy Association Reception (jointly hosted by the Pennsylvania Schools of Pharmacy), March 3, 2012, Los Angeles, California.
- The School of Pharmacy also hosted:
 - The Twenty First Annual Career Roundtables, October 24, 2012, William Pitt Union Ballroom. Thirty-one alumni participated in this student event. Alums from 23 practice areas met with the P1 students and answered questions about their individual practice area giving the students a better perspective of the many opportunities a degree in pharmacy can offer.
 - The Joseph A. Gatto Scholarship Golf Invitational, May 17, 2013, Quicksilver Golf Course. Seventy-eight golfers participated, and the event raised \$17,071.76 for the Alumni Scholarship Fund. In the past ten years, more than \$176,000 has been raised for student scholarships.

This year, the School’s annual Rxtravaganza Gala, the School’s annual celebration for alumni and friends, was moved to the fall and will celebrate the 135th Anniversary of the founding of the School of Pharmacy. The event will be called *We Have Something in Commons* and will be held on October 26, 2013 in the Cathedral of Learning Commons.

- The School’s Alumni Society will recognize two alumni as Distinguished Alumni:
 - Zane Gates, BS ’90, the director of the Altoona Community Health Center, Partnering for Health Services and the founder of the Gloria Gates Foundation.
 - Roger Morris, BS ’86, is partner in Quarles & Brady’s Health Care Practice Group and a member of the American Society for Pharmacy Law.
- The School’s Alumni Society recognized two alumni Rising Stars:
 - Adam Welch, PharmD ’03, associate professor of Pharmacy Practice at Wilkes University and the acting chairperson of Pharmacy Practice.
 - Michelle Zingone Farland, PharmD ’04, assistant professor in the Department of Clinical Pharmacy at the University of Tennessee College of Pharmacy, Knoxville campus; she also serves as an ambulatory care clinical specialist.

Board of Visitors

Dean Patricia Kroboth and the faculty hosted the School of Pharmacy Board of Visitors on May 13 and 14, 2013. Discussions focused on research achievements, productivity and support, new strategies for teaching and learning, and emerging opportunities. The Board recommended actions for the School and University that included resources needed going forward. Board members met with selected faculty and students.

The visit culminated with a meeting at which the Board members presented their report to Senior Vice Chancellor for the Health Sciences Arthur Levine.

Board of Visitors 2012–13

Herbert S. Shear, Chair
Chief Executive Officer
GENCO ATC

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

William L. Bailey, PharmD
Senior Director, Field Medical Affairs
Daiichi Sankyo, Inc.

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

Richard J. Bertz, PhD ’95
Vice President and Head, Clinical Pharmacology
and Pharmacometrics, Bristol-Myers Squibb

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

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

*Did not attend in 2013

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

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

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. Those elements are core to the goals of efficiency and effectiveness.

Staff

In FY13:

- Sixty-seven staff members served in the following roles:
 - administrative staff (31)
 - research staff (36)
- All administrative staff members participate in the Staff and Resource Technology Sessions (STARs) during the course of the year. The goal of the group is to enhance the administrative and technical capabilities of the staff as well as the potential for personal job satisfaction.
- Several administrative staff members serve as leaders on committees and councils external to the School of Pharmacy. Service in leadership roles and participation on national committees provides opportunity to enhance the reputation of the school and allows for professional development.

Information Technology

FY13, the Information Technology staff:

- Handled 1,209 Technology Help Tickets
 - Web and online: 282
 - Network/Server Administration: 178
 - Desktop and Classroom Support: 749
- Developed and supervised a team of student workers responsible for video capture of classroom lectures.
- Integrated the Technology Resource Team with the Student IT Committee for better communication and awareness of technology issues that affect student's experiences.
- In cooperation with University /CSSD, implemented a CSSD stand-alone print station which allows students to print inside Salk Hall against the University print quota.

Communications

The website continues to be a primary tool by which varied constituents learn about the School of Pharmacy, and overall use has more than doubled comparing FY13 to FY12 figures (Monthly average of 37,973 users in FY13 compared to 16,000 in FY12).

The Facebook Fan Page continues to be a location for a growing interaction among members of the School of Pharmacy and various constituencies including current students as well as alumni. Page "likes" have almost doubled over FY12 numbers.

The Communications Team achieved the following in FY12-13:

- Launched *ePittPharmacy*- electronic news site for the School of Pharmacy.
- Launched Meet Our Students- section of the web site to highlight accomplishments of the students, from the student's point of view.
- Launched a new students.pharmacy.pitt.edu web portal for PharmD students.
- Launched updated sections of the public website:
 - PharmD Program
 - MS/PhD Programs
 - Residency Programs
 - Research Programs
- Created a Linked-In Group for School of Pharmacy Alumni
- There were 9 major print communications to the School of Pharmacy's constituents of 6,100 within the total of 35 print pieces developed and produced by the Communications Team.
- The specialized site for the Salk Pavilion and Renovation project was launched successfully coordinating 5 postcard productions and mailings, 5 unique videos that were developed and produced for the Web site along with construction of the new website for communications about progress on the new facility. Pharmacy constituents were invited to participate via stories and caption submissions and donate through this building site.
- The notification process was improved to coordinate with the *ePittPharmacy* electronic news and information platform. Faculty, staff and students are able to submit and expand on news about the school. This electronic process also streamlines our most current news to outside media.
- The School of Pharmacy continues to use electronic communication for cost effectiveness. Email blasts to our constituents have increased notifying them of events (Homecoming, RxGala) and workshops (CLIP, Tucci Lecture, Koch Lecture).

GLOBAL AND INTERNATIONAL PARTNERS

Global and International Partnerships

Partnerships

The faculty and staff of the School of Pharmacy embraced the Global Vision that the University of Pittsburgh articulated in 2012.

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

- Pursue research and scholarship that increase global understanding.
- Develop our students into global citizens and leaders.

- Improve people’s lives by studying and solving the world’s most critical problems.

In FY13, members of the School took steps to form additional partnerships with prestigious universities and organizations in other countries. The School of Pharmacy placed a strategic focus on China, a nation whose presence in the pharmaceutical field is undeniable. Universities in Beijing, Shanghai, Guangzhou, and Chengdu hosted various members of our school. The result is that by the end of FY13, the School of Pharmacy had signed formal agreements with five entities from China, one university from Singapore, and one university from the United Kingdom. Memorandums of Understanding were signed with seven universities, research centers, and organizations:

Shanghai, China

- Fudan University
- Shanghai Jiao Tong University

Yunnan Province, China

- Botanical Society of Yunnan
- Kunming Institute of Botany, Chinese Academy of Sciences; State Key Laboratory of Phytochemistry and Plant Resources (in Kunming)

Guangzhou, China

- Sun Yat-Sen University (China)

London, United Kingdom

- King’s College

Singapore

- National University of Singapore (Singapore)

These partnerships are in addition to the eight existing relationships with whom Affiliation Agreements already existed:

Sicily, Italy

- UPMC ISMETT, (translated as Mediterranean Institute for Transplantation and High Specialization Therapies) facility in Palermo, Italy.

Dublin, Ireland

- Farmer’s Pharmacy
- UMPC Beacon Hospital

Yoro District, Honduras

- Hombro a Hombro Pittsburgh-San Jose, San Jose de Negrito, Yoro District, Honduras.

Australia

- Sir Charles Hospital (Nedlands)
- Austin Health Hospital (Perth)

Mangochi, Malawi

- Malawi Children’s Village

Manila, Philippines

- Philippine General Hospital

During FY13, faculty worked toward developing a significant partnership with the Shanghai Pharmacists Association, with the purpose of collaborating to accelerate the growth of clinical pharmacy education in China. As FY14 began, discussions about partnerships in Asia and Africa were initiated. In some cases, the first step after signing the agreements was that we hosted scholars. In other cases, our faculty or students were hosted in the partner’s country.

PharmD Students as Beneficiaries

A total of nine PharmD students were the direct beneficiaries of the growing number of international partnerships. In FY13, two P2 PharmD students went to Shanghai Jiao Tong University School of Pharmacy to attend a global conference on Drug Development and Traditional Chinese Medicine. The students also had observerships in two Chinese hospitals—one a westernized hospital and one that follows Traditional Chinese Medicine. The students focused their on the comparison of hospital pharmacy practice in the two Chinese hospitals and a typical American hospital.

An additional seven P4 students elected to complete advanced pharmacy practice experience rotations at international sites that included:

- UPMC ISMETT, (translated as Mediterranean Institute for Transplantation and High Specialization Therapies) facility in Palermo, Italy.
- Farmer’s Pharmacy in Dublin, Ireland.
- Hombro a Hombro Pittsburgh-San Jose, San Jose de Negrito, Yoro District, Honduras.
- Kings College in London, England.

International Scholars

The School of Pharmacy hosted 11 international visiting scholars at differing levels of training during FY13. These visitors are listed in the table below.

FY13 Visiting Scholars

| Name | Home Institution | Hosted By |
|---------------------------|---|---|
| Xiaojuan Chai, BS | Zhejiang University, China | Dr. Wen Xie’s Lab |
| Yan Guo, MS | Shanghai Jiao-Tong University School of Medicine | Dr. Wen Xie’s Lab |
| Chun-Chieh Ho, PharmD | National Cheng Kung University Hospital, Taiwan | Department of Pharmacy and Therapeutics |
| Bingfang Hu, BS | Sun Yat-Sen University, China | Dr. Wen Xie’s Lab |
| Lin Huang, PhD | Peking University People’s Hospital, China | Office of the Dean |
| Suhyeon Kim, PhD | World Class Institute of the Korea Research Institute of Bioscience and Biotechnology | Dr. Yong Tae Kwon’s Lab |
| Suticha Kiyayarusakul, BS | Mahidol University, Thailand | Dr. Wen Xie’s Lab |
| Haibin Lu, MS | Sun Yat-Sen University, China | Dr. Xiang-Qun Xie’s Lab |
| Qin Ouyang, PhD | Third Military Medical University, China | Dr. Xiang-Qun Xie’s Lab |
| Lushan Yu, PhD | Zhejiang University, China | Dr. Wen Xie’s Lab |
| Jinxu Wang, BS | Sun Yat-Sen University, China | Dr. Xiang-Qun Xie’s Lab |

School of Pharmacy Long-Range Plan 2018



School of Pharmacy

Our Excellence, Innovation and Leadership Journey

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

From the beginning our plans have been:

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

One of the first orders of business in 2001 was developing shorter mission and vision statements for the school. To align our plan with the University of Pittsburgh goals, we used the five statements articulated in “Pitt in the Year 2000: Pursuing Our Full Potential” to structure our plan. That document succinctly stated that “the University of Pittsburgh is:

- Aggressively pursuing excellence in undergraduate education;
- Building on national prominence in research;
- Ensuring cost effectiveness and efficiency;
- Securing an adequate resource base;
- Partnering in community development.”

We modified those statements to describe five broad categories of achievement specific to our school. Today, we continue to espouse that the School of Pharmacy will:

- be a leader in pharmacy education;
- be a research school of distinction;
- be a leader in standardizing the elements of practice so that pharmacists enhance the care of patients in the community, in institutions, and during transitions of care;
- increase effectiveness and efficiency and will enhance the professional growth of faculty and staff;
- increase its resource base.

Within the first year, we developed goals and measurable outcomes within each of the above broad categories. By 2008, we had developed “Progress At a Glance” (PAGE) as the dashboard to standardize the presentation of our accomplishments. We use that document today.

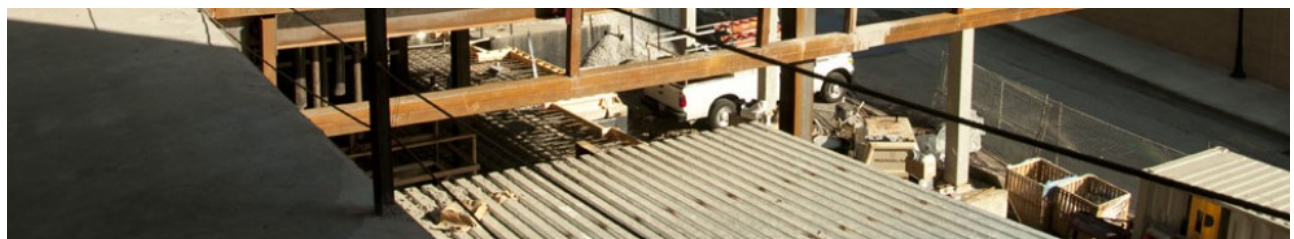
As we embarked on the second iteration of our long-range plan in 2005, the characteristics of excellence, innovation, and leadership had crystallized in everything we did. We knew they had to appear in our mission. Thus, we undertook revising not only our mission, but also our vision and values. The characteristics of excellence, innovation, and leadership have become a hallmark since we adopted our updated mission in 2006. Simultaneously, we took a fresh look at realized the need for a more succinct statement of values. The year-long process through which periodic discussions forged cohesiveness among the faculty and staff not only about the specific values, but also the order of the statements.

From the very first planning session at a retreat in 2001, we included not only all faculty members, but also administrative and office staff in the goal setting and planning. Our Board of Visitors, students and alumni also had opportunities for input. Our process is sustainably “highly participative.”

In 2012, we began developing the third iteration of our plan. To keep the process fresh and meaningful, we chose to make a few bold statements that could be easily remembered. These statements are expressed within the context of our original five themes. We have since combined the goals of efficiency and effectiveness within the area of resources, so only four are obvious.

On the following pages, the reader will find our current plan, Long-Range Plan 2018 followed by the longer Long-Range Plan 2006 – 2012 – 2018. The latter weaves excellence, innovation, and leadership along with goals pertinent to each of the major element. For this printing, specified measurable outcomes do not appear. Note that goals and measurable outcomes continue to be tracked on our dashboard PAGE document (not presented).

The images from 2013 show two phases of construction on Salk Pavilion, the new research facility.



Long-Range Plan 2018
School of Pharmacy
Adopted June 2012

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

By 2018, we will have:

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

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

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

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

By 2018, we will have:

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

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

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

By 2018, we will have:

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

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

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

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

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

By 2018, we will have:

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

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

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

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

By 2018, we will have:

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

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

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

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

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

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

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

By 2018, we will have:

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

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

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

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

By 2018, we will have:

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

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

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

By 2018, we will have:

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

Long-Range Plan 2006--2012—2018

Educating the Next Generation of Practitioners and Scientists

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

Adopted 2005



PHARMD PROGRAM

The School of Pharmacy will:

Excellence

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



Innovation and Leadership

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

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



The School of Pharmacy will:

Excellence

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

Innovation and Leadership

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



The School of Pharmacy will:

Excellence

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

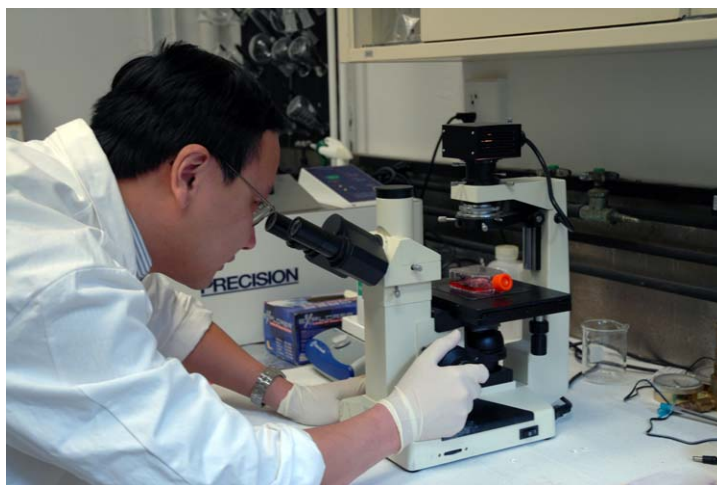
Innovation and Leadership

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

Advancing Human Health through Research

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

Adopted 2005



The School of Pharmacy will:

Excellence

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

Innovation and Leadership

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

Enhancing the Health of the Community through Partnerships

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

Adopted 2007



The School of Pharmacy will:

Excellence

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

Pharmacy Long-Range Plan: Our Journey of Excellence, Innovation, and Leadership 2001 – 2018

Innovation and Leadership

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

Enhancing Our Capabilities through Increased Efficiency and Effectiveness

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

Renewed 2005



The School of Pharmacy will:

Excellence

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

Innovation and Leadership

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



Securing an Adequate Resource Base

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

Renewed 2005

HUMAN RESOURCES

The School of Pharmacy will:

Excellence

Faculty

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

Staff

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

Alumni, Friends, and Other Constituencies



51. Deliver high-quality and timely print and digital publications to internal and external stakeholders
 52. Create and sustain a Web site that is easily navigated, features high-quality imaging and that provides up-to-date information.
 53. Retain our place among the top schools on campus for alumni engagement.
 54. Engage and support non-faculty preceptors who provide educational experiences for our students.
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FINANCIAL RESOURCES

We will:

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

PHYSICAL RESOURCES



We will:

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

