

University of Pittsburgh
School of Pharmacy

ANNUAL REPORT
2011–2012



October 2012



Dear Friends,

Right now, our School of Pharmacy has momentum and it is wonderful. Only some of that momentum derives from specific accomplishments of FY12. Part of our momentum comes also from the visions, beliefs, and goals in Long Range Plan 2018 that we articulated this year. What feeds these visions and goals—and our momentum—is our cumulative progress and foundation built on two previous Long-Range Plans (2006 and 2012). Let’s look at the evidence. Data are from FY12 unless otherwise stated.

- The School’s reputation continues to rise, moving up in U.S. News and World Report rankings to #14 (of 125 schools) in 2012, an increase from #19 in 2009 and #23 in 2006. The rankings, which are based on our PharmD program, are the result of subjective survey data only and are therefore circumspect.
- We believe that pharmacists improve health outcomes in patients and that our superb faculty provides one of the finest educational PharmD programs in the country. Pitt is a leader in preparing students as patient care providers. Highly academically qualified students are trained to interact with patients from their very first semester, while they are also taking Biochemistry and Anatomy and Physiology.
- An amazing 100% of our PharmD graduates who sought residency positions placed in a residency and the number who sought residencies (34 of 108 graduates, 31.5%) was the highest ever in FY12. The placement percentage and number are so impressive because nationally, only 50% of those seeking residencies are placed. The data demonstrates how well prepared Pitt PharmD students are to compete on a national scale.
- Our students and our faculty are increasingly globally and internationally engaged. In FY12, 15.7% (17 of 108) of our fourth year PharmD students completed five-week rotations in 5 countries at 6 locations. This compares with one international rotation for one student in 2005. Connections in London and in Beijing and Shanghai were made during FY12 for expansion in FY13. Faculty offered a Global Health Residency Program in FY12 for the first time. In FY13, the newly approved Area of Concentration in Global Health will be available to PharmD students.
- Our faculty members are innovators who, in FY12, were granted two Investigational New Drug (IND) applications (Lisa Rohan), one patent with provisional status (Song Li’s lab, Jianquin Lu, Yixian Huang), three patents (Sean Xie, Barry Gold), and three licenses (Alexander Doemling, Randy Smith, Xiang Gao). Two invention disclosures (Prema Iyer, Amy Seybert) were filed. The inventions and licenses spanned basic, clinical, and teaching applications.

- Our faculty members are also award-winning researchers and practitioners. Six faculty members received national awards and three were awarded five fellowships in five organizations. Now, 18 of 73 faculty members (24.6%) have been elected as fellows in national organizations. More than 50% of our faculty members are board certified (clinical specialties), fellows, or both.
- Our graduate program, which includes our PhD and MS programs, reached an all-time high for numbers of students enrolled, with 52 PhD students and 4 MS students. This goal was driven by our Long-Range Plan expressed in 2002, when we stated that in order for the School to increase its impact, we needed to have at least 50 full-time PhD students (compared to 19 in 2002). Research capacity and funding to support tuition and stipends for PhD students had to be addressed in order to meet this goal. We exceeded 50 for the first time in FY12.
- The School of Pharmacy has one of the premier and largest residency programs in the country in partnership with 9 institutions that provide 13 types of residency programs for 40 residents in FY12. In addition, the School received an expansion grant from ASHP for the second consecutive year and graduated the first residents from four programs.
- We have unquestionably the finest community pharmacy program in the country. Supporting that claim are the facts that:
 - The School received the only NACDS Scholars Award to train a network of national community pharmacy faculty to conduct practice-based research.
 - The advances of the national Pharmacy Quality Alliance (PQA) five-partner project (our faculty member developed the intervention and pharmacist training and evaluated outcome) demonstrated a successful mechanism in a pharmacy chain for 300 community pharmacists to increase medication adherence. PQA sets the star ratings for CMS that affect reimbursement.
 - A faculty member from our School was selected as one of the 73 Center for Medicare and Medicaid Services Innovation Advisors —the only pharmacy faculty member to be selected nationwide.
 - A comprehensive transition of care medication review and education program for patients transitioning from hospital to community was a finalist for the American College of Clinical Pharmacy Best Practice Award. Two transitions programs, one in medicine and one in psychiatry, are finalists for the Fine Foundation Award.
 - Students are also agents of change. A group of P3 students who had learned the billing process for OutcomesMTM (a third party entity that facilitates the pharmacist billing procedure for patient care), took on a project to teach pharmacists to use OutcomesMTM and bill for patient care, thus helping to overcome the financial barrier to patient care in the community.
 - A form entitled, the PITT (Patient Intervention and Tracking Tool) Form allows students to submit a “bill” for patient interactions in a community setting. During FY12, a small group of students transformed the paper version to a computerized automated format for ease of use by students and faculty.
- Faculty members are impacting programs and policy to address the Prescription Drug Overdose problem in Allegheny County and the Commonwealth of Pennsylvania. They are:
 - Working with the Office of the Governor to establish a computerized state-wide Prescription Drug Monitoring Program;

- Establishing physician-pharmacist collaborative practice agreements with pain specialists;
- Making community access to naloxone through Project Lifeline to treat overdoses from heroin and other opiates.
- Major advances in drug delivery through the laboratories of Dr. Lisa Rohan and Dr. Song Li.
 - Dr. Rohan, the Co-Director of the Microbicide Clinical Trials Network, and her lab have developed a vaginal film product containing the anti-HIV agent, dapivirin, that is in clinical trials to prevent the spread of HIV. She has also developed a vaginal film dosage form for tenofovir that will enter clinical trials and evaluations in 2013.
 - Dr. Song Li and his colleagues are evaluating polymeric vectors for pulmonary gene therapy and a dual functional micellar delivery system that shows synergistic activity with co-delivered anticancer agents.
- Our loyal alumni were once again very engaged and ranked as #3 among the University's schools and programs with more than 100 alumni. The School has ranked #1 or #3 in all the years of the rankings.
- Several important actions solidified our administrative foundation and made available new opportunities:
 - Amy Seybert was appointed as chair of the Department of Pharmacy and Therapeutics, a role in which she has dual responsibilities to the University of Pittsburgh and to UPMC.
 - The establishment of the Computational Chemical Genomics Screening Center was approved with Qiangqun (Sean) Xie as the founding director.
 - Four exceptional faculty members were recruited to join the School of Pharmacy for FY13.
 - We started our capital campaign entitled, "Honor our Past, Shape our Future" as a way to garner the much needed support for Salk Hall renovations and programmatic support.
 - Four wonderful and experienced staff members left in June through the Voluntary Early Retirement Program.
- And finally, momentum on new space is building—the retaining wall and foundation are in place. Soon steel beams will appear and Salk Pavilion and the Commons will take shape.

I hope that you now see why I started my letter by saying that our School of Pharmacy has momentum. I also hope that you share my sense of how wonderful it is. With your help, we can do even more.

Sincerely,



Patricia D. Kroboth
Dean

**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

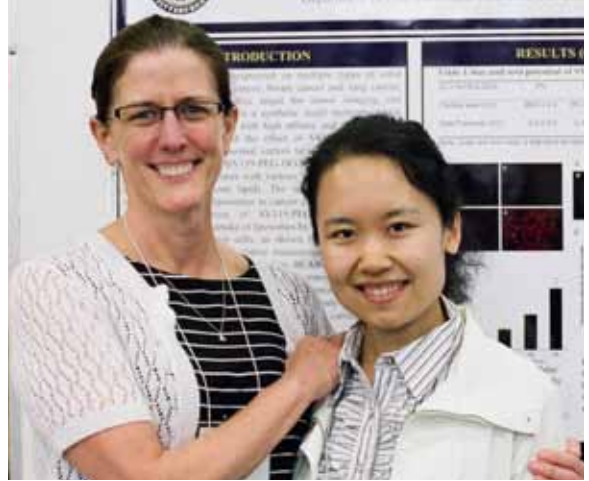
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**Educating the
Next Generation of
Practitioners and Scientists**





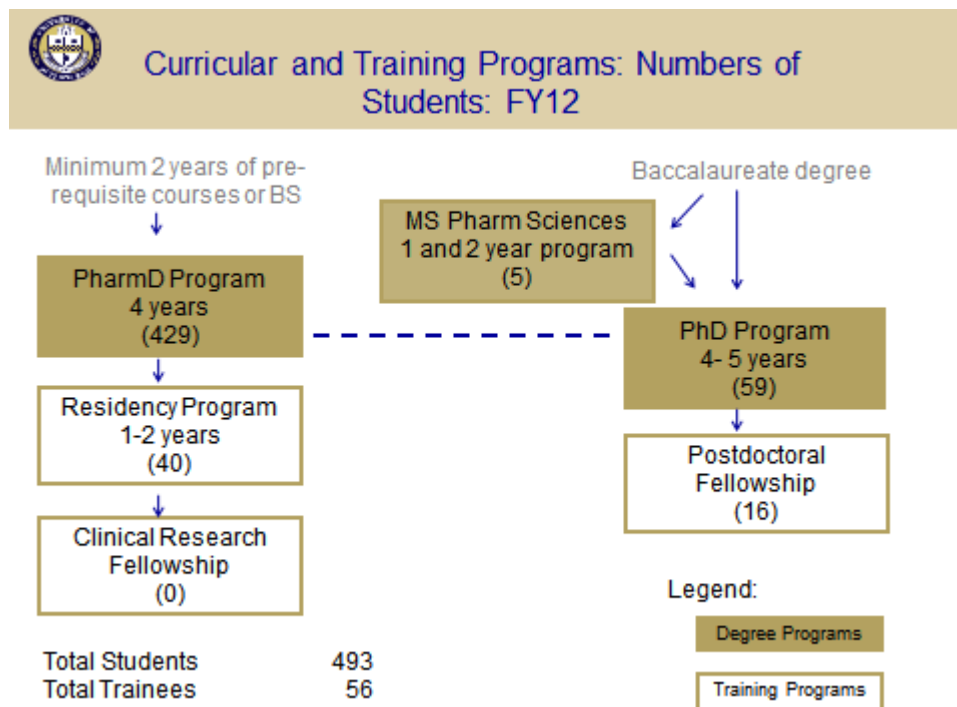
Educating the Next Generation of Practitioners and Scientists

The School builds on its rich tradition of excellence in education, continuing to fulfill its teaching mission to 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.

By 2012, the School of Pharmacy will have:

- **Become a national leader in pharmacy education.**

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 FY12

PHARMD PROGRAM

In FY12:

- **108** students enrolled in the PharmD Class of 2015 with average GPA and PCAT scores of 3.67 and 80%, respectively.
- **11.7** –The number of applicants per seat through open admission.
- **150** scholarships totaling **\$392,157** were awarded to **125** PharmD students.

- University of Pittsburgh pharmacy student organizations won **6** national or regional awards.
- PharmD students presented **2** papers/posters at national meetings.
- **310** pharmacists in **20** states and **4** countries provided **756** APPE rotations for **108** fourth professional year students.
- **92** students received the BS in pharmaceutical sciences at the end of their second professional year; April 2012 was the first time this degree was awarded to PharmD students.
- **108** students received PharmD degrees in the 2012 graduating class.
- **100%** of the **34** PharmD graduates who sought a residency position placed in a residency.

RESIDENCY PROGRAM

In FY12:

- The School partnered with **9** institutions/entities that provided **13** residency programs.
- **25** PGY1 and **15** PGY2 residents participate in the residency training program.
- The **40** residents in our affiliated residency programs came from **21** schools of pharmacy in **13** states.
- **100%** residents presented their research results at national or regional meetings.
- **17** 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.
- **13** of **24** PGY1 pharmacy residents have been accepted into PGY2 specialty residency programs.
- **4** of **4** graduating management residents accepted hospital pharmacy management positions
- **8** pharmacy residents continued their careers as clinical pharmacists with UPMC Health System.
- **3** residents accepted faculty positions at schools of pharmacy.
- **3** residents were recently board certified pharmacotherapy specialists.

GRADUATE PROGRAM: EDUCATING THE NEXT GENERATION OF SCIENTISTS

GRADUATE AND POSTDOCTORAL PROGRAM BY THE NUMBERS FOR FY12

In FY12:

- **56** students were enrolled: **52** PhD students and **4** Master of Science students.
- **21** new students matriculated: **19** PhD students and **2** Master of Science students.
- **6** students received degrees in pharmaceutical sciences; **5** PhD degrees were awarded after successful defense of their dissertations and **1** student graduated with Master of Science degree.
- **37% (19/52)** of the PhD students are U.S. citizens or permanent residents.
- **52% (27/52)** of the PhD students have pharmacy degrees.
- **6** PhD students are in their second year of competitive fellowships.
- **5** students received regional or national awards for excellence in research.
- **18** peer-reviewed manuscripts were published by graduate students.
- Graduate students gave **28** presentations at national and international scientific meetings.
- **16** postdoctoral fellows were engaged in research in School of Pharmacy laboratories.

PHARM D 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. We contribute to the national dialogue about the scholarship of teaching, learning, and assessment through publications and presentations. We are empowering 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. We provide student pharmacists and graduate pharmacists with support and resources through a life-time 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, which represents the maximum of six years between comprehensive evaluations.

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, actors 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 addition, the School has invested in two simulation mannequins, four arms, and a wound care foot that are housed in Salk Hall for students' use to improve their clinical skills.

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. Typically, students will have completed the pre-professional component and the first four academic terms (semesters) of the nine-term (semester) PharmD program. Students cannot enroll in the BSPS program without admission to the PharmD program. With official graduate status, students are eligible to earn credit through selected electives toward University-approved certificates. Additionally, the award of the BSPS degree 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 2012, 92 students received the BS in pharmaceutical sciences at the end of their second professional year.

Areas of Concentration (ARCO)

During FY12, 26 students were enrolled in one of two existing ARCOs and one additional ARCO was approved that accepted an addition five students for a total of 31 students. In FY12:

- The area of concentration in global health (ARCO-GH) was approved by the University; five students have committed to the program of study.
- Fifteen students are engaged in the ARCO-Research (2-P2, 9-P3, and 3-P4 students).
- 6 new students were accepted into the ARCO-Pharmacy Business Administration, bringing the total to 11 students (6-P3 and 5-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 long tradition of students using portfolios to demonstrate achievement. Over time, faculty members have tested several e-portfolio platforms. 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 FY12, more robust processes for faculty and peer evaluation of portfolios were implemented, supported by new rubrics to clearly communicate expectations and feedback.

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. 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.

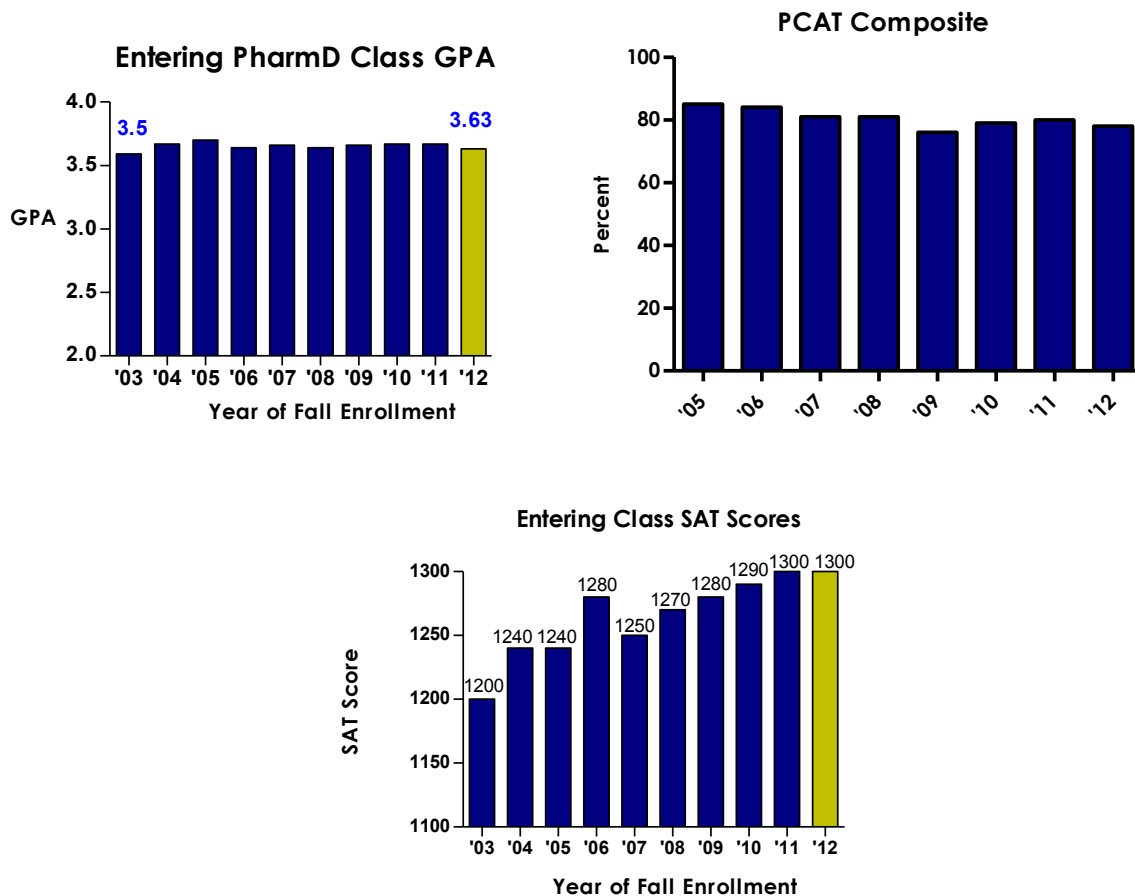
Selected Invited Presentations

- Integrating Interprofessional Education (IPE) into a PharmD Curriculum, American Association of Colleges of Pharmacy Annual Meeting, San Antonio, Texas, July 2011. **Meyer, SM** as invited session moderator.
- Interprofessional Care for the 21st Century: Redefining Education and Practice, Jefferson Interprofessional Education Center, Thomas Jefferson University, Philadelphia, Pennsylvania, May 2012. **Meyer SM** as invited keynote speaker.
- Building Your Foundation for Interprofessional Education, Interprofessional Education Collaborative Institute, Herndon, Virginia, May 2012. **Meyer SM** as invited keynote speaker.

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 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.



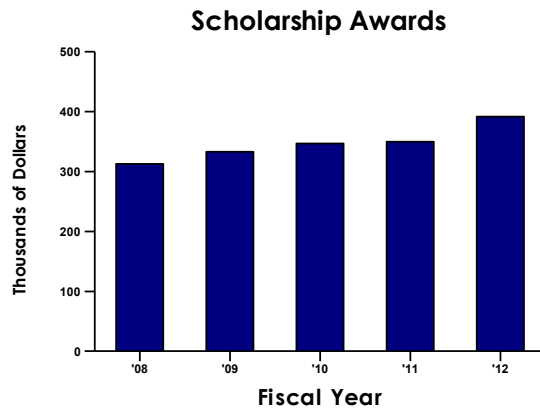
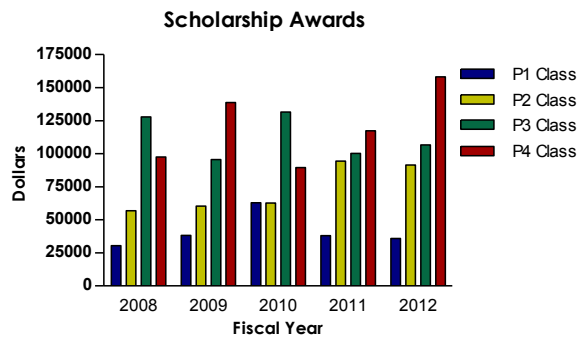
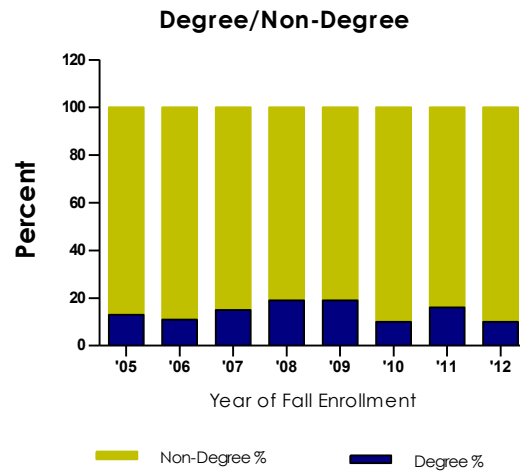
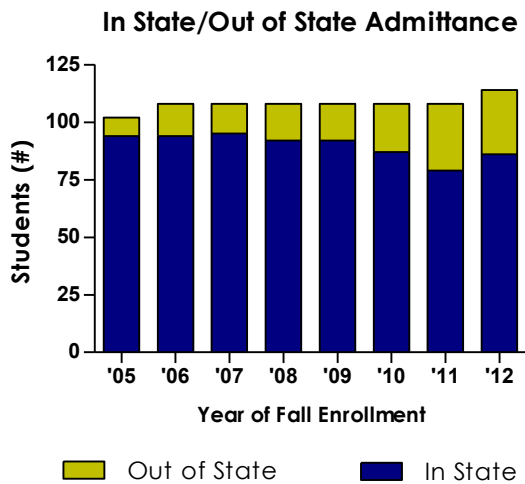
During FY12, we recruited the class of 2016 for fall enrollment.

- Conditional admission Class of 2016
 - 59 students applied for PharmD program after sophomore year
 - 59 were interviewed
 - 54 were qualified and admitted to the program
- Open Enrollment Class of 2016
 - 534 applied to the PharmD program
 - 98 were interviewed
 - 75 were offered admission
 - 57 accepted the offers
- The entering Class of 2016
 - 39% are men
 - 23% are out-of-state students
 - 8% have a college degree prior to entering the PharmD program
 - 1% were an underrepresented minority

First-Year Class Enrollments 2002-2012

Fall Term	Residency Status		Application Pathway*				Students with 4-Year Degree (% of class)	
	PA (%)	Non-PA (%)	Conditional Acceptance	Educational Institution or Type for Students Accepted through Open Admission				
				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

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



Student National and Regional Awards and Recognition

- Lucas Berenbrock (P3) placed in the top 10 in the National Patient Counseling Competition hosted by the American Pharmacists Association-Academy of Student Pharmacists.
- Christina Elgin (P2) received the American Pharmacists Association Ron Williams Scholarship to attend the Utah School on Alcoholism and Other Drug Dependencies (Utah School). The Utah School is an internationally recognized program intended to increase awareness of the health and social problems of alcoholism and other drug dependencies among health professionals and students in the health professions.
- Shailly Shah (P4) received a travel award from the American College of Clinical Pharmacy (ACCP) Nephrology Practice and Research Network to attend the ACCP annual conference. ACCP is a professional and scientific society that provides leadership, education, advocacy, and resources for pharmacists to advance clinical practice and research.
- Anna Bondar (P2) was selected as a Paul Ambrose Scholar, a competitive interprofessional program through the Association for Prevention Teaching and Research focused on public and population health issues.
- Indrani Kar (P3) was elected as national member-at-large to the Phi Lambda Sigma Board of Directors.
- Daniel Yarabinec (P4) was awarded a Kappa Psi Pharmaceutical Foundation scholarship.
- Elyse Weitzman (P3) was selected as the Gloria N. Francke Scholar by the American Pharmacists Association Foundation.
- Elyse Weitzman (P3) was elected as the Region 2 delegate to the American Pharmacists Association-Academy of Student Pharmacists Nominating Committee.
- Ravi Patel (P2), Jessa Koch (P2), and Anna Bondar (P2) received Patient Safety Fellowships through an education program of the Jewish Healthcare Foundation. The program is organized under the auspices of the Pittsburgh Regional Health initiative. Students develop skills in team building, problem solving, and leadership, while studying systemic programs in health care delivery.
- Alicia Lichvar (P3), Jessa Koch (P2), and Lauren Cirrincione (P1) were selected as Pittsburgh Schweitzer Fellows.
- Anastasia Sidor (P4), Amanda Johnson (P4), Andrew Clark (P4), and Daniel Daily (P4) co-authored a paper presented to the Family Medicine Education Consortium in Boston, Massachusetts.
- Nicole Kovacic (P3), Erika Morgan (P3) and Tamiko Yamatani (P2) participated in the Government Relations Advocacy for Student Pharmacists (GRASP) program hosted by the Pennsylvania Pharmacists Association.
- Tamiko Yamatani (P2) was elected to serve as the student member of the Pennsylvania Pharmacists Association Board of Directors.

- Brahim Shettima (P2) and Erin Burke (P3) were elected as student officers on the Pennsylvania Pharmacists Association Student Board of Directors.
- The School's chapter of the American Pharmacists Association-Academy of Student Pharmacists was one of five national winners of a Project CHANCE grant.
- The School's chapter of the American Pharmacists Association-Academy of Student Pharmacists finished in the top 15 nationally in the PharmFlix video competition.
- The School's Rho Chi chapter was recognized as national Chapter of the Year.
- The School's Phi Lambda Sigma chapter was recognized as national Chapter of the Year.
- The School's Kappa Psi chapter was recognized as Province 2 Chapter of the Year.

Experiential Learning Rotations

International Rotations

Students may complete APPE rotations at international sites as long as they are fulfilling an elective experience. This year a total of 17 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; Amanda Nguyen, Megan Sculley, Julia Sasanko and Svetlana Goldman)
- UPMC Beacon Hospital in Dublin, Ireland. (2 students; Kristy Klima and Rebecca Fetzer)
- Farmer's Pharmacy in Dublin, Ireland. (4 students; Kristina Sucic, Katelyn Schultz, Katherine Lynch and Kaytlin Sisco)
- Hombro a Hombro Pittsburgh-San Jose, San Jose de Negrito, Yoro District, Honduras. (3 students; Alisa Snyder, Katie Steward and Kristin James)
- Sir Charles Hospital, Nedlands, Western Australia. (2 students; Cortlyn Latsha and Justine Parker)
- Austin Health, Victoria Australia. (2 students; Chas Hoffmann and Jennifer Smith)

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

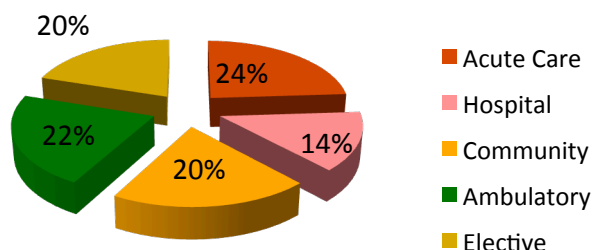
IPPE Rotations

- 72 preceptors supervised 109 P1 students
- 72 preceptors supervised 106 P2 student
- 106 preceptors supervised 106 P3 students

APPE Rotations

- 310 preceptors supervised P4 students during 756 five- or six-week rotations for 108 students.

APPE Distribution by Rotation Type



Students in the P4 year have the opportunity to nominate 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 2011-12 awardees were:

- Dr. Neal Benedict, Assistant Professor, Department of Pharmacy and Therapeutics. Dr. Benedict provides acute care rotations at UPMC Presbyterian Hospital in the Medical Surgical/Trauma and Medical Intensive Care units for P3 and P4 students.
- Dr. Nancy Keefer, Clinical Pharmacist – Conemaugh Memorial Medical Center. Dr. Keefer provides an acute care rotation for P4 students.

National Recognition and Awards: Student Organizations

Organization	Award
American Pharmacists Association-Academy of Student Pharmacists (APhA-ASP)	One of five national winners of a Project CHANCE grant
	Finished in top 15 nationally in PharmFlix Video competition
Rho Chi	Region 2 Chapter Achievement Award National Chapter Achievement Award
Phi Lambda Sigma (PLS)	National Chapter of the Year
Kappa Psi	Province 2 Chapter of the Year

Recognition and Awards: Individual Students

Student	Award	Description
Lucas Berenbrok (P3)	Placed in Top 10 in National Patient Counseling Competition	Competition hosted by the American Pharmacists Association-Academy of Student Pharmacists
Christina Elgin (P2)	Received American Pharmacists Association Ron Williams Scholarship to attend the Utah School on Alcoholism and Other Drug Dependencies	Internationally recognized program is intended to increase awareness of the health and social problems of alcoholism and other drug dependencies among health professionals and students in the health professions
Shailly Shah (P4)	Received American College of Clinical Pharmacy Nephrology Practice and Research Network Travel Award	The American College of Clinical Pharmacy is a professional/scientific society that provides leadership, education, advocacy, and resources for pharmacists to advance clinical practice and research.
Anna Bondar (P2)	Paul Ambrose Scholar	Competitive interprofessional program focused on public and population health issues
Indrani Kar (P3)	Elected as national member-at-large to the Phi Lambda Sigma Board of Directors	Phi Lambda Sigma is the national pharmacy leadership society
Daniel Yarabinec (P4)	Won Kappa Psi Pharmaceutical Foundation Scholarship.	Kappa Psi is a professional co-ed pharmacy fraternity whose members engage in volunteer community service activities
Elyse Weitzman (P3)	Selected as Gloria N. Francke Scholar	Competitive scholarship awarded by the by the American Pharmacists Association Foundation
Elyse Weitzman (P3)	Elected Region 2 delegate for the APhA-ASP Nominating Committee	National committee within the American Pharmacists Association-Academic of Student Pharmacists
Anastasia Sidor (P4) Amanda Johnson (P4) Andrew Clark (P4) Daniel Dailey (P4)	Co-authored a paper presented at the Family Medicine Education Consortium, Boston, Mass.	The Family Medicine Education Consortium, Inc. is a not-for-profit corporation that supports educational and scholarly needs related to the practice of family medicine
Nicole Kovacic (P3) Erika Morgan (P3) Tamiko Yamatani (P2)	Selected to participate in Government Relations Advocacy for Student Pharmacists (GRASP) program	Advocacy training seminar hosted by the Pennsylvania Pharmacists Association
Tamiko Yamatani (P2)	Elected to state-level office (director)	Student member of the Pennsylvania Pharmacists Association Board of Directors
Brahim Shettima (P2) Erin Burke (P3)	Elected to state-level office (Shettima-chair; Burke-corresponding secretary)	Student officers on the Pennsylvania Pharmacists Association Student Board of

Student	Award	Description
		Directors
Lauren Cirrincione (P1) Jessa Koch (P2) Alicia Lichvar (P3)	Selected as Pittsburgh Schweitzer Fellows	One-year fellowship focusing on reducing disparities in health and health care and on developing leaders in service
Ravi Patel (P2) Jessa Koch (P2) Anna Bondar (P2)	Received Patient Safety Fellowship	Patient Safety Fellowships are organized under the auspices of the Pittsburgh Regional Health Initiative with funding from the Jewish Healthcare Foundation (JHF). Students develop skills in team building, problem solving, and leadership, while studying systemic problems in health care delivery
Indrani Kar (P3)	Won first place in professional category for poster presented at Health Disparities Poster Session	Poster session sponsored by the University of Pittsburgh Schools of the Health Sciences

Student Awards at Graduation

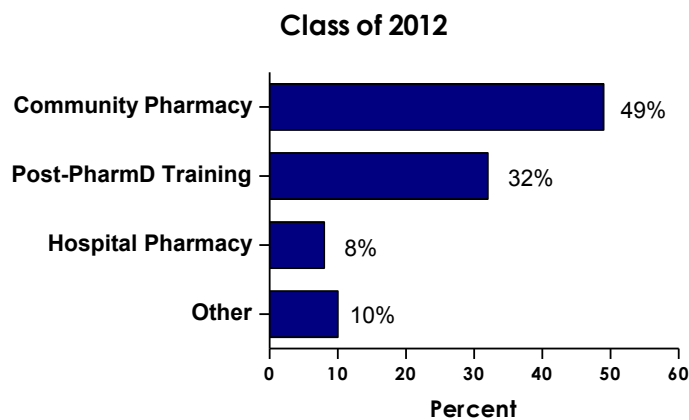
Award Title	Student Awardee
APhA Academy of Student Pharmacists Recognition Certificate	Katie Steward
Facts and Comparisons Award of Excellence in Clinical Communication	Abbey Schram
John Herman Wurdack Award	Shannon Harrison
Lilly Achievement Award	Brad Stevens
Merck Award	Oriyomi Alimi Amanda Johnson Melissa Ruminski
Mylan Pharmaceutical Excellence in Pharmacy Award	Edward Paiewonsky
Natural Medicines Comprehensive Database Recognition Award	Marina Shkyeva
Pennsylvania Pharmacists Association Outstanding Student Award	Nicholas Wytiaz
Robert W. Taylor Award for Outstanding Performance in Patient Care Rotation	Laura Muchesko
TEVA Pharmaceuticals Outstanding Student Award	Oriyomi Alimi
U.S. Public Health Service Award for Excellence in Public Health Pharmacy Practice	Michele Doan
University of Pittsburgh School of Pharmacy Patient Care Award	Alisa Snyder
University of Pittsburgh School of Pharmacy – Pharmacy Communications Award	Shailly Shah

Graduating Class of 2012

108 students received their PharmD diplomas at the May 2012 Commencement Ceremony.

In calendar year 2011, 98% 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.

Of the 108 graduates, 34 students (31.5%) continued training in a post-PharmD residency. An amazing 100% of those who pursued residencies placed. 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 (%)
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
2006	90/95	94.7	87.3	93.6
2005	79/80	98.8	85.3	91.3
2004	81/86	94.2	95.6	95.0
2003	20/22	90.9	89.2	88.2
2002	81/84	96.4	96.5	95.5

⁺Jan–April 2008 scores

Comparison Multistate Pharmacy Jurisprudence Examination® (MPJE®) Results: First-Time Candidates Any State

Year	Pitt Candidates Pass/Total	Pitt Pass Rate (%)	State Pass Rate** (%)	National Pass Rate** (%)
2011	99/99	100%	97.3	92.2
2010	207/214	96.7	93.5	93.1
2009	180/187	96.3	91.3	90.5
2008+	104/108*	96.3	91.7	91.8
2007	102/106*	96.2	90.0	91.5
2006	96/104	92.3	84.5	89.4
2005	166/183	90.7	87.5	88.6
2004	157/165	95.0	86.0	87.5
2003	143/147	97.3	93.2	92.1
2002	110/113	97.3	93.2	92.1

+ Jan–June 2008 scores

* Includes all University of Pittsburgh School of Pharmacy graduates taking the MPJE in any state as a first-time candidate for that state.

** For all first-time candidates.

PROFESSIONAL DEVELOPMENT: EDUCATING THE NEXT GENERATION OF PRACTITIONERS

Pennsylvania Project

The Pennsylvania Project (supported in 2010-11 by grants from the Highmark Foundation and the DSF Charitable Foundation) is an educational initiative led by Pitt in partnership with the Pennsylvania Coalition of Colleges and Schools of Pharmacy. With support from grants to Pitt, faculty from all seven schools of pharmacy in Pennsylvania partnered to develop a continuing education program that includes Web-based instruction (Part 1) and a one-day live course (Part 2) to assist pharmacists to develop and enhance pharmacist-led patient care practices in Pennsylvania. Hundreds of pharmacists have completed the online educational program; nine live training programs have been conducted throughout Pennsylvania.

The Pennsylvania Project educational program and its participants have spurred the establishment of the Pennsylvania Pharmaceutical Care Network that is under development by the Pennsylvania Pharmacists Association. The Network will connect pharmacists throughout Pennsylvania with payers, allowing more patients to be served.

Major Accomplishments

- **335** pharmacists completed and received continuing education credit for The Pennsylvania Project–Part 1 (online program).
- **138** pharmacists completed and received continuing education credit for The Pennsylvania Project–Part 2 (live program).
- **15** faculty members drawn from across the seven schools of pharmacy in Pennsylvania have been trained to deliver the live training session.
- **9** live training sessions have been conducted.

DM Educate®: Comprehensive Diabetes Management

DM Educate on-line course has been available to schools of pharmacy since 2006 and for CE since 2007. Over 12,000 students and pharmacists have taken the course. For FY 2012, eight of the twenty-two modules are being updated with newly contracted faculty contributors.

Major Accomplishments

- 91 schools of pharmacy worldwide use the course in some fashion
- CE accreditation for three healthcare professions: pharmacists, nurses and dietitians

Grants

Smith, RB, Drab SR, Hill CL, Martin SS. “DM Educate Comprehensive Diabetes Management Course, Enhancements and Updates to Improve Diabetes Education.” Novo Nordisk. \$110,000 April 2012-April 2013.

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 FY12:

- Fall Continuing Education Seminar: “Current Topics in Pharmacy Practice” featured presentations by Patricia Epple, CAE, and assistant professors Tanya Fabian and Kristine Schonder in 402 Salk Hall with 64 attendees. The intent of this continuing education program was to educate attendees about legislative issues affecting pharmacy practice in Pennsylvania, recent advances in the management of depression, and current recommendations for pediatric immunizations.

RESIDENCY PROGRAM: EDUCATING THE NEXT GENERATION OF PRACTITIONERS

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

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

RESIDENCY PROGRAM BY THE NUMBERS FOR FY12

- The School partnered with **9** institutions/entities that provided **13** types of residency programs.
- **25** PGY1 and **15** PGY2 residents participate in the residency training program.

- **40** residents participating in our affiliated residency programs came from **21** schools of pharmacy in **13** states.
- **100%** residents presented their research results at national or regional meetings.
- **17** 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.
- **13** of **24** PGY1 pharmacy residents have been accepted into PGY2 specialty residency programs.
- **4** of **4** graduating management residents accepted hospital pharmacy management positions.
- **8** pharmacy residents continued their careers as clinical pharmacists with UPMC Health System.
- **3** residents accepted faculty positions at schools of pharmacy.
- **3** residents were recently board certified pharmacotherapy specialists.

Residents 2011-2012

Program Type	Resident	Education	Plans for FY13
PGY1 Community Pharmacy	Jennifer Bacci	University of Pittsburgh	Rite Aid Pharmacist, Pittsburgh, PA
	Michelle Macguire	The Ohio State University	PGY2 Ambulatory Care – The Ohio State University
PGY1 Managed Care Pharmacy	Sara Burnheimer	Duquesne University	UPMC Health Plan
	Amy Patel	Rutgers University	UPMC Health Plan
	Anokhi Shah	Philadelphia College of Pharmacy	TBD
PGY1 Pharmacy Practice	Maho Hibino	Michigan State University	PGY2 Oncology University of Washington Medical Center
	Megan Kloet	University of Florida	PGY2 Critical Care –UPMC Presbyterian
	Ian McGrane	University of Montana	PGY2 Psychiatric Pharmacy, North Chicago VA
	Roshni Patel	University of Pittsburgh	PGY2 Ambulatory Care, University of Maryland
	Stephanie Seaton	St Louis College of Pharmacy	PGY2 Geriatrics – UPMC Presbyterian
	Michael Smith	University of Pittsburgh	PGY2 Internal Medicine – UPMC Presbyterian
	Nicholas Campbell	Duquesne University	PGY2 Critical Care - AGH
	Derek Evans	West Virginia University	PGY2 Critical Care – UPMC Passavant/Presbyterian
	Taylor Miller	University of Pittsburgh	PGY2 Cardiology – UPMC Presbyterian
	Kelli Phipps	Duquesne University	UPMC Mercy
	David Portman	Ohio Northern University	Clinical Pharmacist, West Penn Hospital
	Jamie Dalton	Virginia Commonwealth University	TBD
	Amanda Reeve	University of Montana	TBD

Program Type	Resident	Education	Plans for FY13
	Justyna Wasielewski	LECOM School of Pharmacy	TBD
	Emily Polischuk	Duquesne University	Clinical Pharmacist, Children's
	Amber Baker	Creighton University	PGY2 Oncology –University of California, San Diego
	Scott Bragg	West Virginia University	PGY2 Family Medicine – UPMC St. Margaret
	Susan Kidd	Northeastern Ohio Universities Colleges of Medicine and Pharmacy	Pursuing clinical pharmacist position
	Sarah Winter	Duquesne University	PGY2 Family Medicine – UPMC St. Margaret
Combined PGY1 Pharmacy Practice & PGY2 Health System Pharmacy Admin.	Hany Edward	Florida A&M	Manager, Inova Fairfax Hospital, Washington DC
	Jorge Garcia	Nova Southeastern University	Manager, Broward General Medical Center Fort Lauderdale, FL
	Elaine Mebel	University of Georgia	Manager, Wes Penn Allegheny Health System
	Leyner Martinez	LECOM School of Pharmacy	Operations Coordinator – Arnold Palmer Hospital for Children/Winnie Palmer Hospital for Women and Babies, Orlando, FL
PGY2 Ambulatory Care Pharmacy	Ibrahim A Sales	University of South Carolina	Assistant Professor King Saud University, College of Pharmacy, Riyadh, Saudi Arabia
PGY2 Cardiology Pharmacy	Accredited, not recruited		
PGY2 Critical Care Pharmacy	Brian Lohr	Duquesne University	Clinical Pharmacist – UPMC Passavant
PGY2 Drug Information	Accredited, not recruited		
PGY2 Family Medicine	Nicole D'Antonio	Duquesne University	UPMC McKeesport
	Gia Russo-Alvarez	Duquesne University	Clinical Pharmacist, Cleveland Clinic
PGY2 Infectious Disease Pharmacy	Louise Gillis	University of Pittsburgh	Clinical Pharmacist - UPMC Shadyside
	Meredith Jernigan	University of North Carolina	Assistant Professor – Auburn University Harrison School of Pharmacy
PGY2 Internal Medicine Pharmacy	Amanda Lin	The Arnold & Marie Schwartz College of Pharmacy	Clinical Pharmacist – North Shore Long Island Jewish Medical Center, New York
PGY2 Oncology Pharmacy	Allison Stebbings	Northeastern University	Clinical Pharmacist – UPMC Shadyside
PGY2 Solid Organ Transplant Pharmacy	Gretchen Kipp	University of Pittsburgh	Clinical Pharmacist – UPMC Presbyterian
PGY2 Specialized Area of Pharmacy: Underserved Care	Ana Lupu	University of Pittsburgh	Pursuing clinical pharmacist position
PGY2 Specialized Area of Pharmacy: Underserved/Global Health	Yardlee Kauffman, MPH	University of Pittsburgh	Outcomes Fellowship – Kaiser Permanente, Colorado

Residents Recruited for 2012-2013

Total Residents: 38

Total Number of Types or Residency Programs: 13

Locations for the 3 PGY1 programs: 9

Locations for the 10 PGY2 programs: 3

Program Type	Location	Resident	Education
PGY1 Community Pharmacy	University of Pittsburgh School of Pharmacy	Sarah Krahe-Dombrowski	University of Pittsburgh
PGY1 Managed Care Pharmacy	CVS-Caremark	Brad Stevens	University of Pittsburgh
	UPMC Health Plan	Jessica Saunders Stephanie Stoneham	Hampton University St. John Fisher College Wegmans School of Pharmacy
PGY1 Pharmacy	UPMC Presbyterian-Shadyside, WPIC	Kristin Bohnenberger	Wilkes University Nesbitt School of Pharmacy
		Mariam Bora	University of Pittsburgh
		Amanda Johnson	University of Pittsburgh
		Vanessa Millisor	South Carolina College of Pharmacy
		Nicholas Schwier	St. John Fisher College Wegmans School of Pharmacy
		Amanda Simpson	University of Pittsburgh
	UPMC Mercy	Daniel Yarabinec	University of Pittsburgh
		John Cadwalader	Massachusetts College of Pharmacy Health Science
		Laura Guido	Duquesne University
		Harold Kolonich	Duquesne University
		Aaron Pickering	Duquesne University
	UPMC Hamot	Terri Shigle	Ohio Northern University
		Elizabeth Badgley	University at Buffalo School of Pharmacy and Pharmaceutical Sciences
		Emily Czeck Celeste Sejnowski	University of Toledo Duquesne University
	Children's Hospital of Pittsburgh of UPMC	Lauren Kattner	Philadelphia College of Pharmacy
	UPMC McKeesport	Rebecca Crooks	University of Pittsburgh
	UPMC St. Margaret	Greg Castelli	Wilkes University Nesbitt School of Pharmacy
		Lauren Sacha	St. John Fisher College Wegmans School of Pharmacy
		Kate Sisco	University of Pittsburgh
		Johanna Thompson	University of Washington
Amanda Wojtusik		University of Rhode Island School of Pharmacy	
PGY2 Ambulatory Care Pharmacy	UPMC Presbyterian-Shadyside	Megan Fleischman	University of Wisconsin School of Pharmacy

Program Type	Location	Resident	Education	
PGY2 Cardiology Pharmacy	UPMC St. Margaret	Taylor Miller	University of Pittsburgh	
PGY2 Critical Care Pharmacy		Megan Kloet	University of Florida	
UPMC Passavant (ASHP Expansion Grant)		Derek Evans	West Virginia University School of Pharmacy	
PGY2 Drug Information		Unfilled		
PGY2 Geriatrics		Stephanie Seaton	St. Louis College of Pharmacy	
PGY2 Infectious Disease Pharmacy		Unfilled		
PGY2 Internal Medicine Pharmacy		Michael Smith	University of Pittsburgh	
PGY2 Medication Use Safety		Tiffany Chapman	South Dakota State University	
PGY2 Oncology Pharmacy		David Eplin	West Virginia University School of Pharmacy	
PGY2 Solid Organ Transplant Pharmacy		Amanda Ingemi	University of Rhode Island	
PGY1/PGY2 Health System Pharmacy Administration/MHA		Unfilled		
PGY2 Family Medicine		UPMC St. Margaret	Scott Bragg	West Virginia University School of Pharmacy
			Sarah Winter	Duquesne University

Residents in the School of Pharmacy Masters Program in Pharmacy Administration

Resident	Year	School Attended for PharmD
Hany Edward	PGY2	Florida A&M
Jorge Garcia	PGY2	Nova Southeastern Univ.
Elaine Mabel	PGY2	University of Georgia
Leyner Martinez	PGY2	LECOM School of Pharmacy

GRADUATE PROGRAM: EDUCATING THE NEXT GENERATION OF SCIENTISTS

GRADUATE AND POSTDOCTORAL PROGRAM BY THE NUMBERS FOR FY12

In FY12:

- **56** students were enrolled: **52** PhD students and **4** Master of Science students.
- **21** new students matriculated: **19** PhD students and **2** Master of Science student.
- **6** students received degrees in pharmaceutical sciences; **5** PhD degrees were awarded after successful defense of their dissertations and **1** student graduated with Master of Science degree.
- **37% (19/52)** of the PhD students are U.S. citizens or permanent residents.
- **52% (27/52)** of the PhD students have pharmacy degrees.
- **6** PhD students are in their second year of competitive fellowships.
- **5** students received regional or national awards for excellence in research.
- **18** peer-reviewed manuscripts were published by graduate students.
- Graduate students gave **28** presentations at national and international scientific meetings.
- **16** postdoctoral fellows were engaged in research in School of Pharmacy laboratories.

Graduate Program in Pharmaceutical Sciences Details

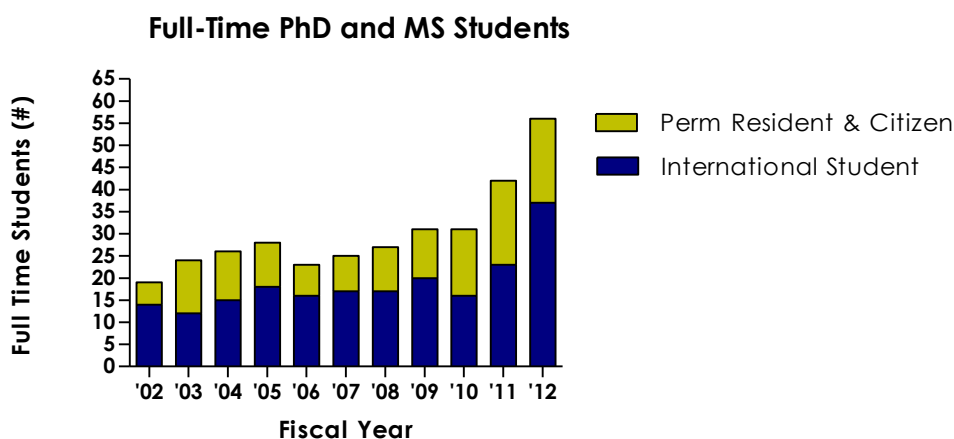
This program prepares students for positions in academia, government, and industry. Three degrees are offered: the PhD, the Thesis-based Master of Science (MS) and the recently developed Non-Thesis based MS (NTMS). The PhD program provides students with the foundation to become independent researchers as either basic scientists or clinical pharmaceutical scientists. The MS provides students the opportunity to develop basic and/or clinical research skills preparing them for entry into a PhD program or employment. The NTMS degree is a one-year program designed to prepare students for employment in the pharmaceutical and biotechnology fields. Each degree program offers four tracks: Biochemical Pharmacology, Medicinal Chemistry, Pharmaceutics and Clinical Pharmaceutical Sciences (a specialized program to train students in clinical and translational science).

2011-2012 Admission Demographics

- 16 PhD students were selected from over 220 applicants for Fall 2011
 - 5 US citizens – 2 with PharmD degree
 - 11 non-US citizens – 9 with Pharmacy degrees
- 1 MS student was selected for Fall 2011.
- 1 PhD (non-citizen) student with a PharmD joined in May 2012

2012-2013 Admission Demographics

- 6 PhD students were selected from over 170 applicants for Fall 2012
 - 1 US citizen with a PharmD degree
 - 5 non-US citizens – 3 with Pharmacy degrees
- 3 MS students were selected for Fall 2012
- 14 NTMS students were selected for Fall 2012



During FY12, the School of Pharmacy had **56** full-time students enrolled in the Pharmaceutical Sciences Graduate Program.

- **52** PhD students and **4** Master of Science students.
- **37% (19/52)** of the PhD students are U.S. citizens or permanent residents.
- **52% (27/52)** of the PhD students have pharmacy degrees.
- **6** students passed their comprehensive examination and achieved PhD candidate status.

Students Completing Graduate Degrees in 2011-2012

Yijun Huang, PhD

Advisor: Alex Doemling, PhD

Graduation:

Dissertation Title: Discovery of Small Molecule Inhibitors of Protein-Protein Interactions.

Current Position: Post-Doctoral Fellow, University of Pennsylvania Medical School

Jie Gao, PhD

Advisor: Wen Xie, MD, PhD

Graduation: April 2012 (Defense completed January 2012)

Dissertation Title: The Role of Constitutive Androstane Receptor and Estrogen Sulfotransferase in Energy Homeostasis.

Current Position: Post-Doctoral Fellow, University of California Los Angeles Medical School

Jennifer Bonner, PharmD, PhD

Advisor: Raman Venkataramanan, PhD

Graduation: April 2012 (Defense completed January 2012)

Dissertation Title: Intestinal Drug Absorption, Cytochrome P450-Mediated Metabolism, and Transport after Small Bowel Transplantation.

Current Position: Research Scientist, Simcyp Ltd, Sheffield UK

Shashi Sriram, PhD

Advisor: Yong Tae Kwon, PhD

Graduation: December 2012 (Defense completed April 2012)

Dissertation Title: The N-End Rule Pathway: Molecular Principles of Structural Recognition and Rational Design Opportunities.

Current Position:

Rebecca Hammond, PhD

Advisor: Robert Gibbs, PhD

Graduation: December 2012 (Defense completed May 2012)

Dissertation Title: The Role of Gpr30 in Mediating Estrogen Effects on Neurons and Cognitive Performance.

Current Position: First Year Law Student, University of Pittsburgh School of Law

Ali Alshabi, MS

Advisor: Dexi Liu, PhD

Graduation: April 2012 (Defense completed December 2011)

Thesis title: Hydrodynamic Gene Transfer of Alpha-Galactosidase (GLA) in the GLA Knockout Mouse Partially Reverses Biochemical Deficits.

Current Position: PhD student, Graduate Program in Pharmaceutical Sciences, University of Pittsburgh School of Pharmacy

Awards**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

Travel Awards

- Amin Akil won the International Microbicides Conference Travel Grant to present at the 2011 meeting in Sydney Australia, April 2012
- Shaik, Sadik Basha JafraSahik received a grant to attend and present at the Winter Eicosanoid Conference 2012, Baltimore, Maryland, March 2012
- Shashi Sriram won a scholarship to attend the 2012 National Meeting of the Federal Laboratory Consortium for Technology Transfer, Pittsburgh PA

Research or Presentation Awards

- Ananda Chowdhury's poster was awarded a podium presentation at the University of Pittsburgh School of Pharmacy 3rd Annual Research Retreat held at the O'Hara Student Center on campus.
- Mark Donnelly's poster was awarded a podium presentation at the University of Pittsburgh School of Pharmacy 3rd Annual Research Retreat held at the O'Hara Student Center on campus.
- Mengxi Jiang's poster was awarded a podium presentation at the University of Pittsburgh School of Pharmacy 3rd Annual Research Retreat held at the O'Hara Student Center on campus.
- Jianqin Lu's poster was awarded a podium presentation at the University of Pittsburgh School of Pharmacy 3rd Annual Research Retreat held at the O'Hara Student Center on campus.
- Xiongjie Shi's poster was awarded a podium presentation at the University of Pittsburgh School of Pharmacy 3rd Annual Research Retreat held at the O'Hara Student Center on campus.

Competitive Fellowships

- Mark Donnelly received an NRSA Pre-doctoral Fellowship (F31) for his proposal "Role of 20-HETE and EETs in Cerebrovascular Complications after aSAH" Mentor- Samuel Poloyac, PharmD, PhD. (Funded January 2011-January 2012)
- Lindsay Ferguson received an AFPE Pre-Doctoral Fellowship in Pharmaceutical Science for her proposal "Effects of Vaginal Fluid on the Stability of Microbicide Candidates: Preclinical Evaluations and Drug Delivery Strategy Development" Mentor-Lisa Rohan, PhD. (September 2011-August 2012)
- Rebecca Hammond received an NRSA Pre-doctoral Fellowship (F31) for her proposal "The Role of GPR30 in Mediating Estrogen Effects on Neurons and Cognitive Performance." Mentor- Robert Gibbs, PhD. (April 1, 2011- March 31, 2013)
- 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)
- Diana Pinchevsky received an AFPE Pre-Doctoral Fellowship In Pharmaceutical Science for her proposal "Identifying genetic factors that link depression and cardiovascular diseases to translate the findings to biomolecular pathophysiology research and patients' outcomes." Mentor-Tanya Fabian, PharmD, PhD. (September 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)

Other Awards

- Ananda Chowdhury won the Medicinal Chemistry Track Best Poster Award, University of Pittsburgh, School of Pharmacy, June 4, 2012.
- Mark Donnelly won the Clinical Pharmaceutical Scientist Track Best Poster Award, University of Pittsburgh, School of Pharmacy, June 4, 2012.

- Sheila Grab won the Teaching Assistant of the Year Award, University of Pittsburgh, School of Pharmacy, June 4, 2012.
- Chibueze Ihunnah won the Graduate Student Excellence Award University of Pittsburgh, School of Pharmacy, June 4, 2012.
- Mengxi Jiang won the Biochemical Pharmacology Track Best Poster Award, University of Pittsburgh, School of Pharmacy, June 4, 2012.
- Sung Tae Kim won the Teaching Assistant of the Year Award, University of Pittsburgh, School of Pharmacy, June 4, 2012.
- Jianqin Lu won the Pharmaceutics Track Best Poster Award, University of Pittsburgh, School of Pharmacy, June 4, 2012.
- Xiongjie Shi won the Post Doctorate Best Poster Award, University of Pittsburgh, School of Pharmacy, June 4, 2012.
- Yifei Zhang won the Norman R. and Priscilla A. Farnsworth Student Award, University of Pittsburgh. June 4, 2012.

Publications, Presentations

In FY12, graduate students:

- Published 17 papers in peer-reviewed journals.
- Made 28 presentations at 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 2012. Graduate student awards were announced at the banquet:

- | | |
|--------------------|--|
| • Yifei Zhang | Norman R. and Priscilla A. Farnsworth Student Award |
| • Chibueze Ihunnah | Graduate Student Excellence Award |
| • Sung Tae Kim | Teaching Assistant of the Year Award |
| • Sheila Grab | Teaching Assistant of the Year Award |
| • Ananda Chowdhury | Medicinal Chemistry Track, Best Poster Award |
| • Mark Donnelly | Clinical Pharmaceutical Scientist Track, Best Poster Award |
| • Mengxi Jiang | Biochemical Pharmacology Track, Best Poster Award |
| • Jianqin Lu | Pharmaceutics Track, Best Poster Award |
| • Xiongjiu Shi | Post Doctorate, Best Poster Award |

Clinical Pharmaceutical Scientist Program

The Clinical Pharmaceutical Scientist Program is a specialized track of the graduate program that trains students to be independent clinical and translational researchers. Students utilize contemporary research approaches to generate new discoveries applicable to the disposition and activity of drugs in humans. The newly formed Center for Clinical Pharmaceutical Sciences is now responsible for directing this program.

Major Accomplishments

- **Sam Poloyac** published a book chapter titled “Pharmacologic considerations in patients undergoing therapeutic hypothermia”.
- **Sam Poloyac** published the initial results from his currently funded project to determine biomarker predictors of delayed cerebral ischemia in subarachnoid hemorrhage patients (R01NR004339). These results were published in the journal *Stroke*.
- **Sam Poloyac** was appointed to the research committee of the Clinical Pharmacy and Pharmacology Section of the Society of Critical Care Medicine.
- **Sam Poloyac** was appointed to the programming committee to the Winter Eicosanoid Conference.
- **Jan Beumer** was awarded a Clinical Research Junior Scholar Award, Research, University of Pittsburgh Cancer Institute, University of Pittsburgh.
- **Kim Coley** Collaborating and Advancing Relationships: Pharmacist Advocates in Care Transitions (CARE PACT). PI, Active, JHF Foundation
- **Kerry Empey** A novel approach to treating infant respiratory syncytial virus (RSV) disease: therapeutic stimulation of immature alveolar macrophages to enhance anti-viral activity PI, Submitted, Central Medical Research Fund, University of Pittsburgh, Office of Research
- **Kerry Empey**, Maternal RSV vaccination of BALB/c mice using RSV F subunit and novel plant-derived adjuvant PI, Approved, Vaxine pty ltd. Sydney, Australia
- **Kerry Empey** is now a Graduate School Faculty member
- **Kerry Empey** was appointed to the Clinical Pharmaceutical Sciences Curriculum Committee, Pitt School of Pharmacy
- **Phil Empey** Implications of hypothermia on drug transport – 3-yr Competitive Renewal (2012-2015) PI, Approved, NIH
- **Phil Empey** was appointed Chair of Pharmacogenomics Working Group, School of Pharmacy
- **Sandy Kane-Gill** received a multicenter evaluation of off-label medication use and adverse drug events in adult intensive care unit patients. Co-PI, Approved, ASHP Foundation 2012 New Investigator Research Grant
- **Sandy Kane-Gill** was recognized for SCCM, Clinical Pharmacy and Pharmacology Section Technology Patient Safety , Research, Society of Critical Care Medicine, National, 463
- **Sandy Kane-Gill** was recognized for ACCP Critical Care PRN Research Award, Research, American College of Clinical Pharmacy, National, 465
- **Tom Nolin** is a Fellow (FCCP), Other, American College of Clinical Pharmacy, National, 490
- **Tom Nolin** is a Fellow (FCP), Other, American College of Clinical Pharmacology, National, 491

- **Tom Nolin** was appointed a member of Kidney Week 2012 Programming Committee, American Society of Nephrology, National
- **Tom Nolin** was appointed a member of the Editorial Advisory Board, American Journal of Kidney Diseases, National
- **Lisa Rohan** was awarded a grant Release Assays from EVA Ring Segments PI, Active, NIH
- **Lisa Rohan** was appointed a member of the Pharmacology Best Practices Working Group, NIH, National
- **Lisa Rohan** was appointed a member of the Scientific Programming Committee, International Microbicides Conference, National
- **Carolyn Thorpe** received the Optimizing Type 2 Diabetes Medication Therapy in Older Patients with Comorbid Dementia PI, Submitted, American Diabetes Association Career Development Award
- **Carolyn Thorpe** was a Co-investigator for Variation in Use of Glucose Test Strips among Older Veterans with Diabetes. Department of Veterans Affairs, Health Services Research & Development, Center for Health Equity Research & Promotion pilot grant
- **Joshua Thorpe** aided in Developing MIDUS Medication Data Via Linkage to the Multum Lexicon. Co-Investigator, Active, National Institute of Health, National Institute on Aging The Midlife in the United States (MIDUS) is an NIA sponsored survey to comprehensively evaluate the health and well-being of a nationally-representative sample of aging adults in the United States. The primary objective of this grant is to enhance the scope and quality of the medication data available to all users of the MIDUS data. It will also, thereby, enhance the capacity of researchers to examine questions about the influence of medication use on health and aging with greater precision via a focus on effects of specific active ingredients or therapeutic outcomes.

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, (PharmD 2009, University of Pittsburgh) completed the Certificate in Clinical and Translational Science, University of Pittsburgh, July 2011. L. Rohan laboratory.

2011–2012 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

Name	Advisor	Track	Enrollment	PhD/MS
Almazroo, Omar	Venkataramanan, R.	Pharmaceutics	Sep-11	PhD
Almehizia, Abdulrahman	Xie, Sean	MedChem	Sep-09	PhD
AlSaggar, Mohammad	Liu, Dexi	Pharmaceutics	Sep-10	PhD
Alshabi, Ali Mohamed	Liu, Dexi	Pharmaceutics	Jan-10	MS
AlShogram, Osama	Nolin, Tom	CPS*	Sep-10	PhD
Alvarez, Celeste	Wipf, Peter	MedChem	Sep-11	PhD
Anderson, Kacey	Poloyac, Samuel	CPS*	Sep-10	PhD
Bonner, Jennifer	Venkataramanan, R.	Pharmaceutics/CPS*	Sep-04	PhD
Chen, Weiquing (Emily)	Xie, Wen	Pharmaceutics	Sep-10	PhD
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
Feturi, Firuz	Venkataramanan, R.	Pharmaceutics	Sep-11	PhD
Ferguson, Lyndsay	Rohan, Lisa	Pharmaceutics/CPS	Sep-09	PhD
Gao, Jie	Xie, Wen	Biochemical Pharmacology	Sep-06	PhD
Gao, Yuanyue	Venkataramanan, R.	Pharmaceutics	Sep-11	PhD
Ghazwani, Mohammed	Li, Song	Pharmaceutics	Jan-10	MS
Gong, Tiantian	Rohan, Lisa	Pharmaceutics	Sep-10	PhD
Grab, Sheila	Rohan, Lisa	Pharmaceutics	Sep-11	PhD
Hammond, Rebecca	Gibbs, Robert	Biochemical Pharmacology	Sep-07	PhD
Hu, Minlu	Rohan, Lisa	Pharmaceutics	Sep-10	MS
Huang, Yijun	Doemling, Alexander	MedChem	Sep-08	PhD
Ihunnah, Chibueze	Xie, Wen	Biochemical Pharmacology	Sep-09	PhD
Jiang, Mengxi	Xie, Wen	Biochemical Pharmacology	Sep-09	PhD
Jennings, Crystal	Empey, Phil	CPS*	Sep-11	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
Li, Jilong	Li, Song	Pharmaceutics	Sep-11	PhD
Long, Tao	Yao, Jeff	Biochemical Pharmacology	Sep-11	PhD
Lu, Jianqin	Li, Song	Pharmaceutics	Sep-10	MS
Lu, PeiPei	Xie, Wen	Biochemical Phamacology	Sep-11	PhD
Momper, Jeremiah	Venkataramanan, R.	Pharmaceutics/CPS*	Sep-06	PhD
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
Regev, Galit	Rohan, Lisa	Pharmaceutics	Sep-11	PhD
Shaik, Sadik Basha Jafra	Poloyac, Samuel	Pharmaceutics/CPS*	Sep-07	PhD

Name	Advisor	Track	Enrollment	PhD/MS
Shawaqfeh, Mohammad	Venkataramanan, R.	Pharmaceutics/CPS	Sep-07	PhD
Sriram, Shashikanth	Kwon, Yong Tae	Biochemical Pharmacology	Jan-07	PhD
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	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	Liu, Dexi	Pharmaceutics	Sep-08	PhD

*CPS – Clinical Pharmaceutical Scientist Program

Students Selected for Pharmaceutical Sciences Graduate Program Beginning in Fall 2012

Name	Advisor	Track	PhD/MS/NTMS
Altawalbeh, Shoroq	Thorpe, Joshua	CPS*	PhD
Amin, Yashesh	Folan, Maggie	Non-Thesis Master	NTMS
Barnas, George	Gibbs, Robert	Non-Thesis Master	NTMS
Bian, Ke	Dixit, Baldwant	Non-Thesis Master	NTMS
Chen, Yichao	Yao, Jeffrey	Non-Thesis Master	NTMS
Fang, Cheng	Xie, Sean	MedChem	PhD
Gao, Xinyi	Gill, Sandra Kane	Non-Thesis Master	NTMS
Hagos, Fanuel	Undecided	CPS*	PhD
Hammad, Layal	Undecided	MedChem	MS
Li, Junyi	Li, Song	Biochemical Pharmacology	MS
Li, Jing	Smith, Randall	Non-Thesis Master	NTMS
Li, Lingjue	Poloyac, Samuel	Non-Thesis Master	NTMS
Liu, Hesong	Vollmer, Regis	Non-Thesis Master	NTMS
Lu, Jianqin	Li, Song	Pharmaceutics	PhD
Mehrans, Jennifer	Gold, Barry	Non-Thesis Master	NTMS
Press, Ellen	Poloyac, Samuel/Sheilds, Ryan	CPS*	MS
Qin, Fangfei	Wipf, Peter	Pharmaceutics	PhD
Reinfeld, Daniel	Rohan, Lisa	Non-Thesis Master	NTMS
Thanukrishnan, Harisudhan	Poloyac, Samuel	CPS*	PhD
Xue, Yingfei	Day, Billy	Non-Thesis Master	NTMS
Yan, Jiong	Xie, Wen	Biochemical Pharmacology	PhD
Yang, Tianyi	Undecided	MedChem	PhD
Zhou, Xiang	Li, Song	Non-Thesis Master	NTMS

*Clinical Pharmaceutical Scientist Program and Pharmaceutics Track

Graduate Student Publications

- **Akil, A**, Parniak, MA, Dezzutti, CS, Moncla, BJ, Cost, MR, Li, M, Rohan, LC. Development and characterization of a vaginal film containing dapivirine, a non-nucleoside reverse transcriptase inhibitor (NNRTI), for prevention of HIV-1 sexual transmission. *Drug Delivery and Translational Research*. 1(3): p. 209-222 (2011).
- Cost, M, Dezzutti, CS, Clark, MR, Friend, DR, **Akil, A**, Rohan, LC. Characterization in an ex vivo ectocervical model of UC781/Tenofovir Combination Gel Products for HIV-1 Prevention. *Antimicrob Agents Chemother* (2012).
- **Donnelly M**, Miller T, Crago E, Sherwood P, Horowitz M, Poloyac S. Cytochrome P450 eicosanoid levels in cerebrospinal fluid and delayed cerebral ischemia in subarachnoid hemorrhage patients. Abstract #55. *Pharmacotherapy* 2011; 31: 326e.
- **Ferguson LM**, Rohan LC. The importance of the vaginal delivery route for antiretrovirals in HIV prevention. *Ther Deliv* 2011 Dec;2(12):1535-15550.
- **Gao J**, He J, Shi X, Stefanovic-Racic M, O'Doherty R, Garcia-Ocaña, A, Xie, W. Sex-specific effect of estrogen sulfotransferase (EST) on mouse models of type 2 diabetes. *Diabetes* doi:10.2337/db11-1152, 2012.
- Agashe H, **Hu M**, Rohan LC. Formulation and Delivery of Microbicides. *Current HIV Research*. 2012(10): 88-96.
- **Ihunnah CA**, Jiang M, Xie W. Nuclear receptor PXR, Transcriptional Circuits and Metabolic Relevance. *Biochim Biophys Acta*, 2011.
- Simrat PS, Bin Zhang S, Niu Y, **Jiang M**, Gao J, Zhai Y, Lee JH, Uppal H, Tian H, Tortorici MA Poloyac SM, Qin W, Venkataramanan R, Xie W. (2011) Activation of LXR Increases Cetaminophen Clearance and Prevents Its Toxicity. *Hepatology* 54: 2208-17.
- Ihunnah C, **Jiang M**, Xie W. (2011) Nuclear receptor PXR, transcriptional circuits and metabolic relevance. *Biochim Biophys Acta* 1812: 956-963.
- Yan, H, Qiao, J, Pei, Y, **Long, T**, Ding, W, Xie, K. Molecularly imprinted solid-phase extraction coupled to liquid chromatography for determination of Sudan dyes in preserved bean curd. *Food Chemistry*. Volume 132, Issue1, 1 May 2012, Pages 649-654.
- **Sriram, SM**, Han, DH, Kim, ST. Partners in Crime: Ubiquitin-Mediated Degradation and Autophagy. *Science Signaling*. 4 (178), jc4, 2011.
- **Sriram, SM**, Tasaki, T, Kwon, YT. N-End Rule Pathway: Progress and Future. *Nature Reviews Molecular Cell Biology*. 12 (11): 735-747, 2011.
- Tasaki, T, **Sriram, SM**, Kwon, YT. Regulation of Protein Function by the N-terminal Degradation Signals. *Annual Review of Biochemistry*. 81, 2012.
- Li J, **Zhang YF**, Kuruba R, Gao X, Gandhi CR, Xie W, Li S. Roles of miR-29a in the Antifibrotic Effect of FXR in Hepatic Stellate Cells. *Molecular Pharmacology* 2011 Jul; 80(1):191-200.

- **Zhang X**, Huang J, Chang PR, Li J, Chen Y, Wang D, Jinghua YJ. Structure and properties of polysaccharide nanocrystal-doped supramolecular hydrogels based on cyclodextrin inclusion. *Chen. Polymer* 51 (2010) 4398.
- **Zhang X**, Hui Z, Wan D, Huang H, Huang H, Yuand H, Yu J. Alginate microspheres filled with carbon nanotube as a drug carrier. *International Journal of Biological Macromolecules*. 47 (2010) 389.
- Duan K, **Zhang X**, Tanga X, Yua J, Liu S, Wang D, Li Y, Huang J. Fabrication of cationic nanomicelle from chitosan-graft-polycaprolactone as the carrier of 7-ethyl-10-hydroxy-camptothecin. *Colloids and Surfaces B. Biointerfaces* 76 (2010) 475.

Graduate Student Accepted Presentations, Posters, and Podiums

- 14th International Winter Eicosanoid Conference, Baltimore, MD. Association of SNPs on Genes Affecting CYP Eicosanoid Levels and the Development of Ischemic Complications in SAH Patients. March 13, 2012. **Donnelly M**.
- American Association of Clinical Pharmacology (AACCP) Annual Meeting, Pittsburgh, PA. Effect of CYP Eicosanoid CSF Levels on Delayed Cerebral Ischemia in SAH Patients. October 18, 2011. **Donnelly M**.
- 2nd University of Pittsburgh School of Pharmacy Research Retreat, Seven Springs, PA. Association between CYP Eicosanoid Levels and Delayed Cerebral Ischemia in Subarachnoid Hemorrhage Patients, June 7, 2011. **Donnelly M**.
- Magee-Women's Research Institute, Pittsburgh PA. Vaginal Film Acceptability and Preferences in Pittsburgh Women. June 1, 2011, **Ferguson, L**.
- University of Pittsburgh. School of Pharmacy, Drug Development 3Lecture. Special Considerations for Biological Therapeutics, April 11, 2012. **Ferguson, L**
- University of Pittsburgh. School of Pharmacy, Center for Pharmacogenetics. Thymoquinone Effects on Liver Fibrosis. April 19, 2012. **Ghazwani, M**.
- International Microbicides Conference, Sydney, Australia. Co-Solvent Strategy Applied in Film Formulation for a Hydrophobic NNRTI CSIC. April 16, 2012. **Gong, T**.
- 3rd Annual AAPS Pittsburgh Chapters Student Research Symposium, Duquesne University, Pittsburgh, PA. Dapivirine, Non-Nucleoside Reverse Transcriptase Inhibitor, Permeability and Concentration in Excised Human Cervical Tissue. October 20, 2011, **Akil A**.
- International Microbicides Conference, Sydney, Australia. Dapivirine Tissue Levels and Distribution in Human Cervical Tissue ex vivo After Exposure to Dapivirine Vaginal Film. April 16, 2012. **Akil, A**.
- International Microbicides Conference, Sydney, Australia. Development and Characterization of Tenofovir/Maraviroc Combination Film for Vaginal Application. April 16, 2012. **Akil, A**.

- 2011 Society for Neuroscience Annual Meeting. Washington, DC. Treatment with a GPR30 antagonist impairs acquisition of a spatial learning task. November 13, 2011. **Hammond R.**
- 3rd Annual AAPS Pittsburgh Chapters Student Research Symposium, Duquesne University, Pittsburgh, PA The Impact of Commonly Used Excipients on Cervical Tissue Permeability. 10/20/2011. **Hu, M.**
- Pharmacology & Chemical Biology Research Retreat, University of Pittsburgh, PA. Gender-Specific Effect of Estrogen Sulfotransferase (EST) on Type 2 Diabetes. February 3, 2012. **Gao, J.**
- 2nd University of Pittsburgh School of Pharmacy Research Retreat, Seven Springs, PA. The Androgenized Female Liver: Regulation of Hepatic Glucose Homeostasis in Female by Estrogen Sulfotransferase. June 7, 2011. **Gao, J.**
- 2012 Winter Eicosanoid Conference 2012, Baltimore, Maryland. Imbalance in Vasoconstrictive and Vasodilatory Eicosanoids and Prostaglandins are associated with Cerebral Blood Flow Dysregulation after Pediatric Asphyxial Cardiac Arrest" March 2012. **Shaik, SB.**
- 2011 American Association of Pharmaceutical Scientists Annual Meeting Washington D.C. Soluble Epoxide Hydrolase (sEH) Inhibitor Trans-4-[4-(3-Adamantan-1-yl-Ureido)-Cyclohexyloxy]-Benzoic Acid (t-AUCB) Model is Neuroprotective in A Rat Temporary Focal Ischemia. October 2011. **Shaik, SB.**
- International Small Bowel Transplant Symposium. Washington, DC. Mechanistic Analysis of Vitamin B6 Deficiency following small bowel Transplantation. October 16, 2011. **Shawaqfeh, M.**
- 3rd Annual AAPS Pittsburgh Chapters Student Research Symposium, Duquesne University, Pittsburgh, PA. Response Inhibition, Orbital Frontal Cortex Activity and Psychological Dysregulation in Early Adolescents. 1 October 20, 2012 **Zhai, Z.**
- 2011 Western Psychiatric Institute and Clinic Poster Session. Pittsburgh PA. Orbital Frontal Cortex Predicts Executive Cognitive Functioning in Early Adolescent. June 2, 2011. **Zhai, Z.**
- 2012 Society for Prevention Research. Washington DC, Latent Structure of Parental Attachment in Early Adolescents With Vs. Without Paternal Substance Use Disorder. May 29, 2012. **Zhai, Z.**
- 2011 Nuclear Receptor Club Conference. Pittsburgh, PA. Roles of miR-29a in the Antifibrotic Effect of FXR in Hepatic Stellate Cells. November 4, 2011, **Zhang, Y.**
- 3rd Annual AAPS Pittsburgh Chapters Student Research Symposium, Duquesne University, Pittsburgh, PA. Interspecies Difference in Vector Expression Persistency after Hydrodynamic Delivery. October 20, 2012. **Zhou, T.**
- 2nd Annual Mylan School of Pharmacy Research. Duquesne University. Pittsburgh, PA. Quick Dissolve Films as Drug Delivery Systems for Combination Microbicides. October 20, 2011. **Akil AY.**

- Mid-Atlantic Area Graduate Student Symposium (MAGSS). Duquesne University, Pittsburgh, PA. Expression of the functional human Cannabinoid Receptor 2 fusion protein in E.coli membrane. July 27, 2011. **Chowdhury AN**.
- 2nd Annual Mylan School of Pharmacy Research. Duquesne University, Pittsburgh, PA. GPR30: Effects on Basal Forebrain Cholinergic Function and Spatial Learning. Pharmaceutical Research: Sharing today's Innovation for Tomorrow's Advances. October 20, 2011. **Hammond RE**.
- Gordon Med Chem Conference 2011. Discovery of potent P53/MDM2/MDM4 inhibitors using ANCHOR.QUERY. August 10, 2011. **Khoury KA**.

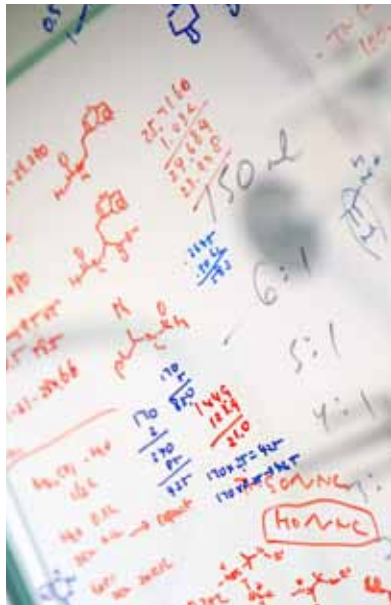
Postdoctoral Fellows

School of Pharmacy Postdoctoral Associates FY12

Name	Degree	Degree/University	Field	Country
Cao, Haiping	PhD	Chinese Academy of Sciences	Organic Chemistry	China
Chithambarampillai, Venkateswaran	PhD	Texas Tech	Pharmacology and Toxicology	USA
Gao, Mingming	PhD	China Pharmaceutical University	Microbial and Biochemical Pharmacy	China
Hu, Nan	PhD	Nankai University	Biochemistry and Molecular Biology	China
Huang, Yixian	PhD	Shanghai Institute of Organic Chemistry	Organic Synthesis	China
Inaba, Yuka	PhD	Tokyo Medical and Dental University	Biomedical Science	Japan
Kanefuji, Tsutsumu	MD	Niigata University-Medical Degree	Medicine	Japan
Rong, Hui	MD	Changzhi Medical College-Medical Degree	Pathology and Pathophysiology	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
Srinivasan, Ajay	PhD	University of Pune	Biotechnology	India
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, Jielu	PhD	Virginia Polytechnic Institute and State University	Bioorganic and Medicinal Chemistry	USA

Advancing Human Health Through Research





Advancing Human Health Through Research

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

By 2018, the School of Pharmacy will:

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

RESEARCH BY THE NUMBERS FOR FY12

- **24** faculty members were principal investigators.
- **87**: the number of active research projects.
- **\$39,095,717** in total active grants.
- Funded projects generated **\$9,478,368** in total costs.
- Faculty were awarded **2** INDs, **3** patents, **1** provisional patent, and **3** licenses.
- Faculty submitted **2** invention disclosures.

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

- **24** faculty members served on scientific journal editorial boards.
- **9** faculty members served on NIH grant review committees.
- **69** – the number of invited research presentations by faculty.
- **149** publications
 - Cedar – 15
 - Pre-Clinical – 63
 - Education – 11
 - Clinical and Translational - 60

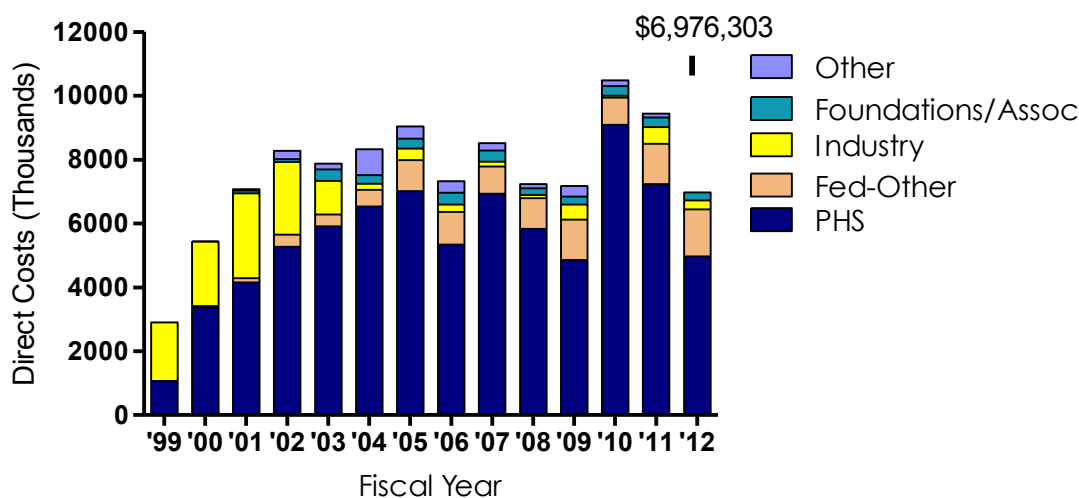
RESEARCH FUNDING

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 FY12 were **\$9.4 million** with **\$6.9 million in direct costs** (shown in the following graph) and \$2.5 million in indirect costs. The graph and tables below provide the detail regarding FY12 sources of funding for direct costs.

Direct Costs: Research Funding



Direct Costs for Research by Funding Category

Source	FY06	FY07	FY08	FY09	FY10	FY11	FY12
PHS	\$5,338,778	\$6,934,873	\$5,829,075	\$4,856,912	\$9,083,208	\$7,229,748	\$4,967,911
Federal-Oth	1,024,805	846,586	961,814	1,264,891	856,030	1,268,055	1,469,405
Industry	232,777	156,419	99,363	468,401	60,226	518,140	289,323
Found/Assoc	369,428	351,468	209,084	255,048	296,641	305,600	249,664
Other	355,421	222,110	134,181	327,396	187,737	111,157	
TOTAL	\$7,321,209	\$8,511,456	\$7,233,517	\$7,172,648	\$10,483,842	\$9,432,700	\$6,976,303

RESEARCH DETAILS

FY12 PHS Funding

Investigator	Agency	Agency #	Title	Direct \$	Indirect \$	Total
B. Day	NIH	R01 NS037459	Cyclooxygenase 2 and Ischemic Neuronal Injury	19,995	10,297	30,292
B. Day	NIH	R01 CA090787	Mechanisms and Prevention of Etoposide-Induced Leukemia	10,092	5,197	15,289
B. Day	NIH	R56 NS065789	PINK1 Regulation of Neuronal and Mitochondrial Homeostasis	20,265	8,500	28,766
B. Day	NIH	P41 GM094055 -1	Protein Protein Interaction Directed Libraries	237,143	109,017	346,160
B. Day	NIH	R01 DK090242- 01A1	Regulation of Mitochondrial Metoblism by Lysine Acetylation	9,756	5,024	14,780

Investigator	Agency	Agency #	Title	Direct \$	Indirect \$	Total
B. Day	NIH	R01 AI057083	Small Molecule Inhibitors of HIV Nef	29,182	15,029	44,210
B. Day	NIH	1RC4 DK090770	Small Molecule-Mediated Augmentation of Kidney Regeneration	113,831	52,585	166,416
B. Day	NIH	R01 CA129127	The Role of PKD3 in Prostate Carcinogenesis	905	466	1,371
M. Donnelly	NIH	F31 NR012608	Role of 20-HETE and EETs in Cerebrovascular Complications after aSAH	15,196	-	15,196
R. Gibbs	NIH	R01 NS06005	Environmental Enrichment and Cholinergic Mechanisms After TBI	3,937	2,027	5,964
R. Hammond	NIH	R36AG039 381-01	Role of GPR30 in Mediating Estrogen Effects on Neurons and Cognitive Performance	22,133	14,792	36,925
R. Hammond	NIH	F31 AG034035	The Role of GRP30 in Mediating Estrogen Effects on Neurons and Cognitive Performance	23,881	-	23,881
L. Kirisci	NIH	K02 DA017822	Quantifying and Tracking Risk for Substance Use Disorder	125,095	10,008	135,103
Y. Kwon	NIH	R01HL0833 65	Role of Ubiquitin in Cardiovascular System	105,273	41,514	146,786
S. Li	NIH	U19 AI068021 07	Mitochondrial Targeting Against Radiation Damage	64,365	31,327	95,692
S. Li	NIH	R01 HL091828	Non Viral Gene Therapy for Lung Injury	125,915	60,829	186,744
S. Li	NIH	R21 CA155983	Polymeric System for Synergistic Targeting of AR Signaling in Prostate Cancer	95,270	49,033	144,304
S. Poloyac	NIH	HD069620	Understanding the Impact of Antipsychotic Drugs on Recovery after TBI	1,888	972	2,860
S. Poloyac	NIH	R01 NS069247	Overcoming Membrane Transporters to Improve CNS Drug Therapy	49,345	16,142	65,487
S. Poloyac	NIH	R01 NR004339	Determining Genetic and Biomarker Predictors of DCI and Long term Outcomes after a SAH	109,462	51,081	160,543
L. Rohan	NIH	U19 AI082623	RT Inhibitor CSIC and Entry Inhibitor Retrocyclin RC101 as Microbicides	170,089	51,382	221,471
L. Rohan	NIH	R21 A1088586	Development of a Novel Nanoparticle Pyrimidinedione Vaginal	72,769	39,722	112,491
L. Rohan	NIH	R33 A1089801	Microbicide Properties of RT Inhibitor Combinations	48,257	27,347	75,604
L. Rohan	NIH	U19 A1082639	Alternative Formulations of Tenofovir & UC781 Project 1 & Core C	659,903	162,486	822,389

Investigator	Agency	Agency #	Title	Direct \$	Indirect \$	Total
L. Rohan	NIH	U19 A1082637	Combination HIV Antiretroviral Rectal Microbicide Prog (CoreC)	245,993	108,045	354,038
A. Seybert	NIH	R01 LM010019	Using Medical Records Repositories to Improve the Alert System Design	22,329	11,500	33,829
R. Tarter	NIH	R01 DA020130	Drug Abuse and Risky Sex in Borderline Personality	104,069	49,941	154,010
R. Tarter	NIH	P50 DA005605	Drug Abuse Vulnerability: Mechanisms and Manifestations	1,111,063	438,518	1,549,581
R. Tarter	NIH		Longitudinal Modeling of SUD Etiology	28,909	2,313	31,222
C. Thorpe	NIH	R21DK0906 34	Medication Oversupply and Outcomes in Patients with Diabetes	101,344	27,924	129,267
R. Venkatara manan	NIH	U10 HD047905	Impact of Pregnancy on Drug Absorption, Disposition and End Organ Response	51,669	26,609	78,278
R. Venkatara manan	NIH	U01 CA121947	AIDS Malignancy Clinical Trials Collaboration	57,050	27,947	84,997
W. Xie	NIH	R01 DK083952	A Novel Role of the Aryl Hydrocarbon Receptor in Hepatic Steatosis	315,250	150,197	465,446
W. Xie	NIH	R01 ES014626	Regulation of Sulfotransferases by LXR and Its Implication in Pathophysiology (NCE)	174,546	75,915	250,461
W. Xie	NIH	R21 ES019629	The Regulation of Human Hydroxysteroid Sulfotransferase by Nuclear Receptor ROR	197,011	96,276	293,287
X. Xie	NIH	P50 GM067082	New Concepts, Methodologies and Scaffolds for Diversity-Oriented Organic Synthesis	58,577	30,167	88,744
X. Xie	NIH	R21 HL109654	Screen and Design p18 Chemical Probes for Hematopoietic Stem Cell Self- Renewal	146,853	75,580	222,433
X. Xie	NIH	R01 DA025612	Structure and Function of CB2 Ligand and G-protein Recognition Pockets	219,304	102,600	321,903
TOTAL				4,967,911	1,988,309	6,956,220

FY12 Other Federal Funding

Investigator	Agency	Title	Direct \$	Indirect \$	Total
C. Culley	AHRQ	Enhancing the Detection and Management of Adverse Drug Events in the Nursing Home {Handler}	12,473	6,423	18,896
B. Day	DOD	Molecular and Functional Characterization of the Lupus Platelet (Ahearn)	21,365	11,003	32,368
R. Farrah	Univ. of Iowa	A Collaborative Model to Improve BP Control and Minimize Racial Disparities-CCC	15,152	7,803	22,955
R. Gibbs	NSF	Role of GPR30 in Estrogen-Mediated Effects on Cholinergic Function and Cognition	75,494	38,770	114,264
D. Huryn	SAIC - Frederick	Discovery and Optimization of Inhibitors of STAT3 Activation for the Treatment of Squamous Cell Carcinoma of the Head and Neck	6,540	3,368	9,908
D. Huryn	SAIC - Frederick	Administrative Support for the UP-CDC	106,513	54,057	160,570
D. Huryn	SAIC - Frederick	Discovery and Optimization of Inhibitors of STAT3 Activation for the Treatment of Squamous Cell Carcinoma of the Head and Neck TO6 MOD 05	47,150	23,188	70,338
D. Huryn	NCI	Evaluation of Rationally-designed Small Molecules Directed against the c-Myconcoprotein	9,019	4,645	13,664
P. Johnston	Stonybrook Univ.	Development of a High Content Screening Assay to Identify Inhibitors of STAT3 Nuclear Import	17,359	8,940	26,299
S. Kane	AHRQ	Enhancing the Detection and Management of Adverse Drug Events in the Nursing Home	5,787	2,980	8,767
S. Li	Dept. of Defense	Targeted Co-delivery of Synthetic MicroRNA and micro RNA Expression Vector for Rapid and Sustained Inhibition of Breast Cancer	33,193	16,258	49,451
S. Poloyac	UNCCH	Cytochrome P450 Derived Eicosanoids and Inflammation	14,712	7,577	22,289
S. Poloyac	VA	Phospholipid-Arachidonate-Eicosanoid Signaling in Schizophrenia	39,245	-	39,245
B. Potoski	Wayne	High-Dose Daptomycin for Enterococcal Infections	2,473	618	3,091
J. Pringle	ORE DOJ	Media Literacy to Improve Evidence-Based Prescribing Among Family Medicine Trainees	77,854	610	78,464
J. Pringle	MERCY	New Lease on Life	53,775	12,906	66,681
J. Pringle	SAMSHA	The Pennsylvania Medical Residency Training Program (MR- SBIRT)	297,948	14,031	311,980
J. Pringle	Allegheny County	Strategic Prevention Framework State Incentive Grant (SPF-SIG)	126,576	26,176	152,752
T. Ridenour	PA DOH	Reducing the Cognitive Consequences of Cannabis Use by Adolescents-Lewis	6,347	1,269	7,616

Investigator	Agency	Title	Direct \$	Indirect \$	Total
L. Rohan	Univ of Louisville	Antiviral Lectins as Microbicides	859	502	1,361
L. Rohan	UCal	Compartment-Specific Topical Microbicide Form.	225,044	117,023	342,067
L. Rohan	UST	Thermostable Vaginal Probiotic Microbicide	25,337	14,447	39,784
L. Rohan	Univ of Fl	Aminoglycoside Microbicides Restonatural Expression	45,329	18,637	63,966
L. Rohan	Advance Tech	Release of Assays from EVA Rings	5,669	3,345	9,014
C. Scelsi	HRSA	Geriatric Education Center	7,050	564	7,614
R. Tarter	UMICH	Archiving Drug Abuse and HIV Data Sets	90,322	23,303	113,625
C. Thorpe	UWISC	Guideline Adherence and Short/Long-term Health Outcomes in Patients with Diabetes	17,650	9,090	26,740
R. Venkataraman	MWRC		59,658	30,724	90,381
W. Xie	St. Jude Children's Hospital	Regulation of PXR by Cell Cycle and Phosphorylation	18,209	7,022	25,231
X. Xie	NCI	Evaluation of Rationally-designed Small Molecules Directed against the c-Myc Oncoprotein (TE 12)-Huryn	5,304	2,732	8,036
TOTAL			1,469,405	468,012	1,937,417

FY12 Industry Funding

Investigator	Agency	Title	Direct \$	Indirect \$	Total
K. Coley	Takeda	Reclassification of ICD-9 Coding for Patients with Gout: Evaluation of Patient Characteristics, Prescribing Patterns and Resource Use {NCE}	18,921	4,730	23,651
L. Kirisci	EXACT	Developmentally Sensitive Measurement of Risk for Substance Use Disorder	32,586	16,782	49,368
K. Khoury	ACSDMC	Synthesis and Evaluation of Potent Small Molecule p53/MDM2 Antagonists	21,667	-	21,667
J. Pringle	MERCK	Prospective Study to Assess the Effect of Adherence Interventions on Reducing Patients Non-Fulfillment and/or Non-Persistence to Chronic Medications	26,258	5,252	31,509
L. Rohan		Film Based Microbicide Delivery Systems	27,320	383	27,703
L. Rohan		Development of Vaginal Quick Dissolve Films	15,937	2,391	18,328
R. Smith	Novo	Self-Directed On-Line Learning Platform for Mobile Devices	139,807	-	139,807
R. Smith	Novo	DM Educate Comprehensive Diabetes Management Course Enhancements and Updates to Improve Diabetes Education	6,828	341	7,169
TOTAL			289,323	29,879	319,202

FY12 Foundation and Association Funding

Investigator	Agency	Title	Direct \$	Indirect \$	Total
K. Coley	ASHP	Development of a Continuity of Care Record: Bridging the Medication Use Gap from Hospital to Home	11,237	899	12,136
K. Coley	JEWISH	Pharmacists as Advocates in Care Transitions	60,640	-	60,640
M. Maguire	APAF	Pharmacist Provided Patient Care Service in an Outpatient Mental Health Setting: A Multi-stakeholder Qualitative Analysis	1,000	-	1,000
S. Meyer	Josiah Macy Jr. Fdn.	Inter-professional Modeling and Caring for the Elderly (IP-MACY) {Kanter}	21,815	2,181	23,997
J. Pringle	PQA	Phase II Pennsylvania Demonstration Project	63,571	6,357	69,927
J. Pringle	Stauton Farm Fdn.	Allegheny General Hospital Emergency Department Pilot Program	29,648	5,040	34,688
J. Pringle	Astra Zeneca	Qualitative Analysis of an Innovative Practice in Community Pharmacy	2,000	-	2,000
T. Ridenour	Staunton Farm Fdn.	Screening During well-Child Check-Ups for Older Children at Risk for Substance Abuse	5,986	1,018	7,004
C. Scelsi	ACCP	Medication Used at the End of Life	28,302	-	28,302
M. Somma	NACDS	Community Pharmacy Faculty Scholars Program	2,465	370	2,835
Y. Zhang	AHA	Novel Polymeric Vectors for Pulmonary uPA Gene Therapy	23,000	-	23,000
TOTAL			249,664	15,865	265,529

RESEARCH RECOGNITION OF FACULTY

Faculty members received various forms of recognition for their accomplishments and their expertise during FY12.

- 24 faculty members served on scientific journal editorial boards.
- 9 faculty members served on NIH grant review committees.
- 69 – the number of invited research presentations by faculty.
 - 25 presentations at 15 universities in 13 states
 - 27 Presentations at 25 scientific meetings in 12 states
 - 4 presentations at 4 universities in 2 countries
 - 13 presentations at 7 international scientific meetings in 6 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	2	Clin-Alert American Journal of Health-System Pharmacy
Billy W. Day, PhD	2	Current Molecular Pharmacology Toxicology In Vitro
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 Huryn, 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	4	Critical Care Medicine Journal of Hospital Administration Annals of Pharmacotherapy-Adverse Reactions and Medication Panel Advances in Pharmacoepidemiology and Drug Safety
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
Susan M. Meyer, PhD	1	American Journal of Pharmaceutical Education
Thomas D. Nolin, PharmD, PhD	2	American Journal of Kidney Diseases Journal of Clinical Pharmacology
Tara J. Pummer, PharmD	1	Pennsylvania Pharmacist Association
Ty A. Ridenour, PhD	3	Current Drug Abuse Reviews Addiction Prevention Science
Lisa C. Rohan, PhD	2	AIDS Research and Therapy Journal of Sexually Transmitted Diseases
Amy L. Seybert, PharmD	1	American Journal of Pharmacy Education
Michael A. Shullo, PharmD	1	International Society of Heart and Lung Transplant
Pamela Smithburger, PharmD	1	Journal of Hospital Administration

Faculty Member	Number	Editorial Board
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	3	American Journal of Oncology Review Journal of Thrombosis and Thrombolysis Drug Formulary Review
Raman Venkataramanan, PhD	6	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	2	American Journal of Molecular Biology The AAPS Journal

Faculty Participation in NIH Review Committees and Panels

Faculty Member	No. of Panels
Billy W. Day, PhD	1
Barry Gold, PhD	1
Song Li, MD, PhD	1
Ty A. Ridenour, PhD	1
Lisa C. Rohan, PhD	1
Michael M. Vanyukov, PhD	1
Raman Venkataramanan, PhD	4
Wen Xie, MD, PhD	1
Xiang-Qun (Sean) Xie, PhD	2

Invited Research Presentations

- 11th International Isotope Symposium on the Synthesis and Applications of Isotopes and Isotopically Labelled Compounds, Heidelberg, Germany, Human Mass Balance Studies, 09/09/2012, **Beumer J.**
- Pharmacogenomics and Population Pharmacology Committee, Alliance Group Meeting 2011 Fall Meeting, Chicago, IL, Busulfan Pharmacokinetics in Young and Older Patients with AML, 11/17/2011, **Beumer J.**
- University of Pittsburgh, School of Pharmacy, Department of Pharmaceutical Sciences - Wine and Whimsy, Pittsburgh, PA, Role of ABCG2 in Traumatic Brain Injury, 05/17/2012, **Empey P.**
- Division of Pulmonary, Allergy, and Critical Care Medicine, University of Pittsburgh, Overcoming an Immature Situation: Immunotherapy in a Neonatal Mouse Model of RSV Infection, 02/28/2012, **Empey K.**
- International Conference on Antimicrobial Agents and Chemotherapy, Chicago, IL USA, Monoclonal Antibodies and Immune Modulation in RSV Disease, 09/19/2011, **Empey K.**
- University of Pittsburgh, School of Pharmacy, Department of Pharmacy and Therapeutics, Immune Modulation for the Improvement of Infectious Disease Outcomes, 03/18/2011, **Empey K.**
- Center for Vaccine Research, University of Pittsburgh, Center for Vaccine Research, Pittsburgh, PA, Immune Enhancement Strategies for Fighting Infectious Diseases, 02/08/2011, **Empey K.**
- Pediatric Infectious Diseases Research Seminar Series, Children's Hospital of Pittsburgh, The Role of Infant Lung Macrophages in Respiratory Syncytial Virus., 01/21/2011, **Empey K.**
- BIT's 1st Annual Symposium of Drug Delivery Systems, Drug Delivery Systems, Shenzhen, China, Targeted Delivery of an Antifibrotic Nuclear Receptor Ligand to Hepatic Stellar Cells, 11/3/2011, **Gao X.**
- University of Nebraska Medical Center, Omaha NE, Development of Inhibitors of AP Endonuclease 1, 09/08/2011, **Gold B.**
- Pittsburgh Chromatin Club Minisymposium, Pittsburgh PA, Finding DNA Damage - Looking for Waldo, 12/02/2011, **Gold B.**
- University of Georgia, Athens, GA, Electrostatic Potential of DNA, 02/01/2012, **Gold B.**
- American Chemical Society, Baltimore, MD, Adventures in Academic Drug Discovery, 6/1/2012, **Huryn D.**
- University of Pittsburgh Chemical Methodology and Library Design Center, Pittsburgh, PA, The Future of Alzheimer's Disease Therapy: New Treatment for an 'Old' Disease, 05/18/2012, **Huryn D.**

- High Throughput Screening Session, Academic Screening Workshop, Select Biosciences, Bridgewater, NJ, Successful Drug Discovery in Academia: Need for Pharma's Best Practices?, 10/06/2011, **Johnston P.**
- High Content Screening Session, Academic Screening Workshop, Select Biosciences, Bridgewater, NJ, HCA 2011, a Personal Perspective., 10/06/2011, **Johnston P.**
- High Content Screening Session, at the 9th Annual CHI High Content Analysis Conference, San Francisco, CA., Development, Validation and Implementation of a 97,000 Compound HCS Campaign to Identify Selective Inhibitors of the STAT3 Signaling Pathway in a Head and Neck Squamous Cell Carcinoma Cell Line, 01/11/2012, **Johnston P.**
- Molecular Devices Incorporated Webex Presentation., Webex, Development, Validation and Implementation of a 97,000 Compound HCS Campaign to Identify Selective Inhibitors of the STAT3 Signaling Pathway in a Head and Neck Squamous Cell Carcinoma Cell Line , 04/25/2012, **Johnston P.**
- Molecular Devices Incorporated Scientific Advisory Board meeting., Santa Clara, CA, Emerging Trends in High Content Imaging and Cancer Biology , 05/24/2012, **Johnston P.**
- ACCP, Pittsburgh, PA, Severity and Preventability of Drug-Induced Hypotension, 10/23/2011, **Kane-Gill S.**
- International College of Person-Centered Care, Geneva, Switzerland, Bibliographical Clearinghouse and Data Base, 04/30/2012, **Kirisci L.**
- The University of Tennessee, Knoxville, TN, The N-end Rule Pathway: Its Functions and Mechanisms in Cellular Proteolysis, 08/22/2011, **Kwon Y.**
- Seoul National University School of Medicine, Seoul, Korea, The N-end rule pathway, 05/01/2012, **Kwon Y.**
- The 3rd Military Medical University, Chongqing, China, From Chongqing to Pittsburgh – A Tale of FXR, 07/29/2011, **Li S.**
- Xijing Hospital, The 4th Military Medical University, Xi'an, China, Targeting the FXR in Hepatic Stellate Cells for the Treatment of Liver Fibrosis, 08/06/2011, **Li S.**
- BIT 1st Annual World Congress of Molecular & Cell Biology, Beijing, China, Targeting the FXR in Hepatic Stellate Cells for the Treatment of Liver Fibrosis, 08/08/2011, **Li S.**
- Department of Biochemistry and Molecular Biology, Mayo Clinic, Rochester, MN, Targeting of Farnesoid X Receptor for the Treatment of Cardiovascular and Hepatic Diseases, 11/01/2011, **Li S.**
- University of Pittsburgh Center for Medical Countermeasures against Radiation (CMCR) Seminar Series, Pittsburgh, PA , Rational Design of Delivery Systems for Mitochondria-Targeted Antioxidants, 12/07/2011, **Li S.**

- M.D. Anderson Cancer Center, Houston, TX, Targeting Hepatic Stellate Cells for the Treatment of Liver Fibrosis, 03/23/2012, **Li S.**
- University of Pittsburgh AKI Symposium, Pittsburgh, PA, Drug in AKI and RRT, 09/08/2011, **Nolin T.**
- University of Arkansas for Medical Sciences, College of Medicine, Department of Biochemistry and Molecular Biology Faculty Seminar Series, Little Rock, AR, Altered Drug Disposition and Response in Kidney Disease: The Role of Nonrenal Clearance, 11/16/2011, **Nolin T.**
- University of Florida, College of Pharmacy, Department of Pharmacotherapy and Translational Research/Center for Pharmacogenomics Seminar Series, Gainesville, FL, Unraveling the Effect of Kidney Disease on Nonrenal Drug Clearance, 02/24/2012, **Nolin T.**
- University of Alabama at Birmingham, School of Medicine, Department of Medicine, Division of Nephrology, Nephrology Research and Training Center Noon Conference, Birmingham, AL, Unraveling the Effects of Kidney Disease on Drug Disposition and Response: The Warfarin Conundrum, 03/19/2012, **Nolin T.**
- Winter Eicosanoid Conference, Baltimore, MD, Eicosanoids in the Brain, Mediators of Injury or Protection?, 03/15/2012, **Poloyac S.**
- Society of Critical Care Medicine, Houston, TX, Pharmacological Considerations in Patients Undergoing Therapeutic Hypothermia, 06/22/2011, **Poloyac S.**
- University of North Carolina, Division of Experimental Therapeutics Seminar, Chapel Hill, NC, Brain Cytochrome P450 Enzymes and Stroke: Discovering the Relationship with Patient Complications, 06/14/2011, **Poloyac S.**
- Healthcare Intelligence Network, Webinar, Improving Medication Adherence Benchmarks through Community Pharmacists, 05/02/2011, **Pringle J.**
- Substance Abuse and Mental Health Services Administration, Washington, DC, Screening and Brief Intervention (SBI) for Medication Adherence: Background and the PA Collaborative Project, 06/01/2011, **Pringle J.**
- Substance Abuse and Mental Health Services Administration, Rockville, MD, SBIRT State Medicaid Activation Strategies: The Never-Ending Story, 06/01/2011, **Pringle J.**
- American Diabetes Association Annual Meeting, San Diego, CA, Motivational Interviewing for Diabetes Self-Management, 06/01/2011, **Pringle J.**
- Pharmacy Quality Alliance, Washington, DC, Screening and Brief Intervention (SBI) for Medication Adherence: Background and the PA Collaborative Project, 06/01/2011, **Pringle J.**
- National Association for Media Literacy Education Conference, New Orleans, LA, Media Literacy for Family Medicine Trainees, 07/01/2011, **Pringle J.**

- Prevention Science Methodology Group, Tampa, FL, Comparison of Three Analytic Approaches for Small Sample Within-subject Prevention Research, 05/15/2011, **Ridenour T.**
- Research Triangle Institute, Durham, NC, Advancing Transdisciplinary Translation for Prevention of Drug Abuse and Addiction, 04/26/2012, **Ridenour T.**
- Virginia Academy of Science, Norfolk, VA, Testing the validity of the anticipated DSM-5 inhalant use disorder diagnosis: An item response theory analysis. , 05/27/2012, **Ridenour T.**
- International Microbicide Conference, Sydney, Australia, Films as a Versatile Drug Delivery System, 04/18/2012, **Rohan L.**
- International Microbicide Conference, Sydney, Australia, Formulation Optimization and Characterization of a Vaginal Film Containing EFdA, 04/18/2012, **Rohan L.**
- International Microbicide Conference, Sydney, Australia, Development and Characterization of Tenofovir-Maraviroc Combination Film for Vaginal , 04/18/2012, **Rohan L.**
- International Microbicide Conference, Sydney, Australia, Dapivirine Tissue Levels and Distribution in Human Cervical Tissue ex vivo After Exposure to Dapivirine Vaginal Film, 04/18/2012, **Rohan L.**
- International Microbicide Conference, Sydney, Australia, Dapivirine and Maraviroc Topical Gels are Safe and Protect Ectocervical Tissue from HIV-1, 04/18/2012, **Rohan L.**
- International Microbicide Conference, Sydney, Australia, Pharmacokinetics of Vaginally Applied Tenofovir Formulations; Plasma Uptake, 04/18/2012, **Rohan L.**
- International Microbicide Conference, Sydney, Aaustralia, Development and Assessment of Rectal Specific Combination Microbicide Gel containing Tenofovir and Griffithsin, 04/18/2012, **Rohan L.**
- American Geriatrics Society, Presidential Poster Session, Seattle, Washington, Anithypertensive Drug Class Use Associated with Urinary Incontinence in Community-Dwelling Older Women, 05/04/2012, **Ruby-Scelsi C.**
- American College of Clinical Pharmacy, Pittsburgh, PA, SCRIPT: Medical Home Initiative, 10/18/2011, **Somma McGivney M.**
- University of Pittsburgh Center for Research on Healthcare Health Services Research Seminar, Pittsburgh, PA, Receipt of Diabetes Monitoring in Older Medicare Beneficiaries with Co-Morbid Dementia, 01/03/2012, **Thorpe C.**
- VA Pittsburgh Healthcare System Geriatrics Research Education and Clinical Center (GRECC) Lecture Series, Pittsburgh, PA, Receipt of Diabetes Monitoring in Older Medicare Beneficiaries with Co-Morbid Dementia, 02/17/2012, **Thorpe C.**
- Center for the Study of Health System Change /VA CHERP/RAND Seminar Series, Pittsburgh, PA, Potentially Inappropriate Prescribing in Persons with Dementia, 02/15/2012, **Thorpe J.**

- AAPS PPDM Education Award lecture, University of Louisiana, Monroe, LA. April 2012, Drug Transporters in Kidney Transplant Patients – Bed to bench, 04/16/2012, **Venkataramanan R.**
- National Institute of Environmental Health Sciences (NIEHS), Research Triangle Park, NC, Endobiotic Function of Xenobiotic Receptors and Enzymes in Metabolic Disease, 09/07/2012, **Xie W.**
- Penn State Summer Symposium, State College, PA, Nuclear Receptors in Pathophysiology and Molecular Toxicology, 07/22/2012, **Xie W.**
- Beckman Research Institute, City of Hope, Duarte, California, The Endobiotic Function of Xenobiotic Receptors and Enzymes, 05/16/2012, **Xie W.**
- Experimental Biology 2012 Meeting/ASPET, San Diego, CA, PXR and CAR as Therapeutic Targets for Obesity and Type 2 Diabetes, 04/21/2012, **Xie W.**
- Case Comprehensive Cancer Center, Case Western Reserve University, Cleveland, OH, Nuclear Receptor-Mediated Sulfotransferase Regulation in Breast Cancer and Prostate Cancer, 04/10/2012, **Xie W.**
- University of Toledo, Toledo, OH, Nuclear Receptor-Mediated Sulfotransferase Regulation in Pathophysiology, 03/28/2012, **Xie W.**
- 51th Society of Toxicology Annual Meeting, San Francisco, CA, A Novel Function of the Xenobiotic Receptor CAR in Obesity and Type 2 Diabetes, 03/11/2012, **Xie W.**
- Pittsburgh Area Nuclear Receptor Coregulator Club (PANRC), Pittsburgh, PA, Nuclear Receptor Controlled Metabolic Homeostasis, 11/04/2011, **Xie W.**
- 17th North American ISSX Regional Meeting , Atlanta, GA, Nuclear Receptor-Mediated Sulfotransferase Regulation in Estrogen And Androgen Homeostasis, 10/16/2012, **Xie W.**
- Peking University Health Science Center, Beijing, China, Nuclear Receptor-Mediated Gene Regulation in Molecular Toxicology, 07/04/2012, **Xie W.**
- 4th International Conference on Drug Discovery & Therapy, Dubai, UAE, Novel Target and Novel Chemical Agents Potential for Multiple Myeloma Treatment, 02/14/2012, **Xie X.**

Patient Care Invited Talks

- UPMC-Emergency Room Professionals, Pittsburgh, Pa, Dabigatran Exilate, 04/22/2012, **Benedict N.**
- American Diabetes Association, Philadelphia, PA, Preparing Diabetes Patients for Hospital Discharge--A Standardized Team, 06/12/2012, **Donihi A.**
- Pennsylvania Academy of Family Physicians, Farmington, PA, Caring for Older Adults with Type 2 Diabetes: Real World Experiences with Insulin Therapy in Older Adults, 11/04/2011, **Drab S.**

- Mercy Hospital Grand Rounds, Miami, FL, Translating Evidence into Practice in Managing Inpatient Hyperglycemia, 11/17/2011, **Drab S.**
- Grand Rounds Presentation UPMC Hamot, Erie, PA, Management of Hyperglycemia in Acute-Care Settings and the Transition to Ambulatory Care, 05/09/2012, **Drab S.**
- Society of Critical Care Medicine, Houston, TX, Genes to predict drug response, 02/07/2012, **Empey P.**
- American College of Clinical Pharmacy, Pittsburgh, PA, Adverse Drug Events in the ICU: Learn Using High Fidelity Patient Simulation Cases, 10/18/2011, **Empey P.**
- UPMC - Pathology Grand Rounds, Pittsburgh, PA, Pharmacogenomics, 01/11/2012, **Empey P.**
- American Society of Health Systems Pharmacists, New Orleans, LA, Improving Pharmacy and Nursing Collaboration: Implementation of a Senior Pharmacy Technician Program, 12/6/2011, **Fabian T.**
- Children's Hospital of Pittsburgh, Oncology Division, Pittsburgh, PA, Principles and Applications of Cancer Chemotherapy in Pediatric Oncology, 1/12/2012, **Howrie Schiff D.**
- Children's Hospital of Pittsburgh, Pediatric Physician Staff, Pittsburgh, Therapeutic Drug Monitoring, 12/11/2012, **Howrie Schiff D.**
- Internal Medicine Acute Management Series, House-staff Monthly Conference at Presbyterian, VA and Shadyside Hospitals, Department of Medicine, University of Pittsburgh, Pittsburgh, PA., Presbyterian and VA, Common Drug Errors, 08/24/2011, **Kane-Gill S.**
- ACCP, Pittsburgh, PA, The Great Masquerader: Recognizing ADRs in the ICU Learning Using Simulation, 10/23/2011, **Kane-Gill S.**
- ASHP, New Orleans, LA, Strategies for Improving the Safe Use of IV Medications in the Critical Care Setting, 12/06/2011, **Kane-Gill S.**
- SCCM, Houston, TX, Establishing a Safety Culture in the ICU: Making Systematic Changes Using ADE Data, 02/06/2012, **Kane-Gill S.**
- Austin Society of Health System Pharmacists, Austin, TX, Assessing and Managing Sedation, 05/08/2012, **Kane-Gill S.**
- University of Pittsburgh, Department of Medicine, Renal Electrolyte Division Noon Conference, Pittsburgh, PA, Antimicrobial Drug Use During RRT, 05/24/2012, **Nolin T.**
- National Kidney Foundation 2012 Spring Clinical Meeting, Washington, DC, Approach for Drug Dosage Adjustments in an Era of Standardized Creatinine, Equation Overload, and Real Patients, **Nolin T.**
- AMCP, San Francisco, CA, Meeting the Challenges of Contemporary PAH Management, 04/20/2012, **Seybert A.**

- International Society of Heart and Lung Transplant, Prague, Czech Republic, Late Post-Transplant Journey: Immunosuppressive Challenges with the Development of Skin Cancer and Pre-cancerous Colon Polyp. An Approach to Innovative Immunosuppression in the Face of Malignancy, 04/19/2012, **Shullo M.**
- Hospital and Health-System Association of Pennsylvania, Lancaster, PA, Implementing Intravenous Infusion Smart Pumps Technology: Standardizing Practices and Care, 9/8/2011, **Skledar S.**
- Society of Critical Care Medicine, Houston, Texas, Sedation and Delirium Treatment: Optimization to Enhance Mobilization Efforts, 02/06/2012, **Smithburger P.**
- UPMC, Pittsburgh, PA, Antithrombin III, 01/09/2012, **Smithburger P.**
- First Latin American Congress on Hepato Pancreatic and Biliary Surgery, Argentina, Generic Substitution of Tacrolimus, 03/28/2012, **Venkataramanan R.**

Invited Education Talks

- University of Pittsburgh, School of Dental Medicine, Pittsburgh, PA, Educational Technologies in Higher Education, 04/30/2012, **Benedict N.**
- University of Nova Southeastern, Davie, FL (web conference), Virtual Patients Platform at the University of Pittsburgh School of Pharmacy , 05/07/2012, **Benedict N.**
- University of Pittsburgh, School of Pharmacy, Pittsburgh, Pa, Virtual Patient Technology in Higher Education: A Workshop, 08/05/2011, **Benedict N.**
- Asian Studies Center, University of Pittsburgh, Pittsburgh, PA, Mental Illness and Substance Abuse in Immigrants from the Indian Subcontinent to North America , 11/09/2011, **Dixit B.**
- Sri Venkateshwara Temple, Pittsburgh, PA, Mental Illness and Substance Abuse in Immigrants from the Indian Subcontinent to North America” , 06/16/2012, **Dixit B.**
- Drake University School of Pharmacy, Des Moines, IA, Blood Glucose Monitoring: The Importance of Pattern Management and Patient Engagement, 09/28/2011, **Drab S.**
- American Association of Colleges of Pharmacy Annual Meeting, San Antonio, TX, WIKI Workshop I - Using WIKI Technology, 7/11/2012, **Falcione B, Howrie Schiff D.**
- American Association of Colleges of Pharmacy Annual Meeting, San Antonio, TX WIKI Workshop II - Using WIKI Technology to Assess Individual Student Contributions to Group Work, 7/11/2012, **Falcione B, Howrie Schiff D.**
- ASHP, New Orleans, LA, Economic Implications of Postoperative Pain Management, 12/05/2011, **Kane-Gill S.**
- APhA, New Orleans, LA, Acetaminophen Poisoning, 03/09/2012, **Krenzelok E.**

- Am Society of Health-System Pharmacists, New Orleans, LA, Evaluation of Drug Information Databases by Specialists in Poison Information, 12/06/2011, **Krenzelok E.**
- American Association of Colleges of Pharmacy, San Antonio, TX, Integrating Interprofessional Education (IPE) into a PharmD Curriculum, 07/11/2011, **Meyer S.**
- American Association of Colleges of Pharmacy, San Antonio, TX, Curriculum and Educational Resources for Teaching Public Health: Application to the Practice of and Academic Pharmacy, 07/12/2011, **Meyer S.**
- Josiah Macy Jr. Foundation, Alexandria, Virginia, IPE Involving All Health Professional Schools in an Academic Health Center, 04/02/2012, **Meyer S.**
- Thomas Jefferson University, Philadelphia, PA, Keynote Presentation: Interprofessional Care for the 21st Century: Redefining Education and Practice, 05/19/2012, **Meyer S.**
- Interprofessional Education Collaborative, Herndon, Virginia, Keynote Presentation: Building Your Foundation for Interprofessional Education, 05/21/2012, **Meyer S.**
- McKeesport Lion's Club, McKeesport Hospital, McKeesport, PA, Medication Safety: Annual Diabetes Update, 11/11/2011, **Pater K.**
- American Association of Colleges of Pharmacy Annual Meeting, San Antonio, TX, Model for Mass Dissemination of Pharmacist Motivational Interviewing Training (Poster), 07/10/2011, **Pringle J.**
- American Association of Colleges of Pharmacy Annual Meeting, San Antonio, TX, Teaching Pharmacy Students the Principles for Successful Implementing Pharmacy Care Innovations (Poster), 07/11/2011, **Pringle J.**
- Merck, Inc., Florida, Relationship-Centered Care: Engaging in Effective Communication with Patients, 04/01/2011, **Pringle J.**
- University of Pittsburgh, Schools of the Health Sciences, Pittsburgh, PA, Interprofessional Forum, 09/16/2011, **Ruby-Scelsi C.**
- Haine Middle School Career Day, Cranberry Township, PA, Choosing a Career in Pharmacy, 11/18/2011, **Ruby-Scelsi C.**
- ACCP, Pittsburgh, PA, Critical Care PRN Focus Session—Adverse Drug Events in the ICU: Learn Using High Fidelity Patient Simulation Cases- Drug-Induced Adverse Event Case 1, 10/18/2011, **Seybert A.**
- AACP, Webinar, Simulation in Pharmacy Education and Pharmacy Practice, 01/25/2012, **Seybert A.**
- UPMC- Lung CRNP lecture series, UPMC Presbyterian, Pittsburgh, PA, Overview of Transplant Immunosuppression, 05/15/2012, **Shullo M.**

- UPMC Cardiology Fellow Lecture Series, UPMC Presbyterian, Immunosuppression in Heart Transplant, 03/29/2012, **Shullo M.**
- American Pharmacists Association, New Orleans, LA, Writing and Research: Clinical Track Perspective, 03/12/2012, **Somma McGivney M.**
- Pennsylvania Pharmacists Association, King of Prussia, PA, Successful Research Examples in Community Practice, 09/23/2011, **Somma McGivney M.**
- UPMC Presbyterian Pain Management Resource Nurses, UPMC Presbyterian Conference Center, Pittsburgh, PA, Safe Use of Opioid Analgesics, 01/09/2012, **Verrico M.**
- AACP, San Antonio, TX, Integrating Science and Practice in the Pharmacotherapy of Cardiovascular Disease, 07/09/2011, **Vollmer R.**
- US Attorney, W&J University, Washington, PA, Prescription Drug Abuse and Diversion, 06/27/2012, **Zemaitis M.**

School of Pharmacy Publications in Peer-Reviewed Journals

CEDAR

- De Genna NM, **Feske U**, Larkby C, Angiolieri T, Gold MA. Pregnancies, abortions and birth in women with and without borderline personality disorder. *Women's Health Issues*, 2012 Jul;22(4):e371-7.
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- Zhang YX, Xie ZJ, Wang LR, Lazo JS, Gertsch J, Schreiber B, **Xie X-Q**. Mutagenesis and computer modeling studies of a GPCR conserved residue W5.43(194) in ligand recognition and signal transduction for CB2 receptor. *International Immunopharmacology*, 2011 Sep;11(9):1303-10. Epub 2011 May 1.

RESEARCH OVERVIEW

Center for Pharmacogenetics

Faculty

Yong Tae Kwon, PhD, Associate Professor
 Song Li, MD, PhD, Professor
 Wen Xie, MD, PhD, Professor
 Xiang Gao, PhD, Research Assistant Professor
 Jiang Li, PhD, Research Assistant Professor
 Jinhan He, PhD, Instructor

Graduate Students

Mohammed Ghazwani, BS
 Chibueze Ihunnah, BS
 Mengxi Jiang, BS
 Sung Tae Kim, BS, MS
 Jilong Li, BS
 Jianqin Lu, BS
 Peipei Lu, BS, MS
 Peng Zhang, BS, MS
 Xiaolan Zhang, BS, MS
 Yifei Zhang, BS, MS

Postdoctoral Fellows

Xiongjie Shi, PhD
 Yixian Huang, PhD

Major Accomplishments

- Takafumi Tasaki and colleagues in the Kwon lab found that mouse embryos lacking UBR4, a recognition component of the N-end rule pathway, die at midgestation associated with defects in vascular development of the yolk sac. The vascular development is arrested during remodeling of primary capillary plexus into mature vessels. These results elucidate a new function of the N-end rule pathway in mammalian development.
- Sung Tae Kim and colleagues in the Kwon lab found that UBR4 is a component of the autophagy-lysosome system, whose knockout results in autophagic induction and misregulation of the I κ B/NF- κ B pathway and cellular responses to amino acid starvation.

- Yong Tae Kwon’s lab found that p62, the autophagic adaptor, is a component of the N-end rule pathway. P62 binds to N-end rule peptides through the ZZ domain, and this induces a conformational change, leading to autophagic induction of p62 function.
- Yong Tae Kwon’s lab found that the N-end rule pathway operates in the endoplasmic reticulum (ER). A number of ER chaperones posttranslationally acquire the pro-N-degron Glu or Asp when their signal sequences are cleaved off upon translation of nascent polypeptides into the ER lumen. These pro-N-degrons are arginylated by ATE1 R-transferase upon exposure to the cytosol to mediate protein quality control through autophagy.
- Yong Tae Kwon received a 4-year NIH R01 grant (04/01/12-03/31/16, NHLBL: \$1,500,000) “*Role of ubiquitin in cardiovascular system*” (R01 HL083365).
- Dr. Yixian Huang and Jianqin Lu from Song Li’s lab have developed a PEG-embelin conjugate-based dual functional micellar delivery system that shows synergistic activity with co-delivered anticancer agents in vitro and in vivo. This work has been published in *Bioconjugate Chemistry*. A provisional patent application has also been filed.
- Dr. Xiang Gao from Song Li’s lab has developed a PEG-lipopeptide-based novel delivery system that may prove to be useful for delivery of a range of structurally dissimilar therapeutic agents.
- Dr. Jiang Li from Song Li’s lab has identified a novel function for miR-122 in regulating collagen maturation in hepatic stellate cells.
- Yifei Zhang from Song Li’s lab received an American Heart Association Predoctoral fellowship “*Novel Polymeric Vectors for Pulmonary uPA Gene Therapy*” (Yifei Zhang, P.I., Song Li, Mentor), Total cost: \$46,000
- Song Li was invited to serve for the NIH Developmental Therapeutics (DT) Study Section
- Chibueze Ihunnah from Wen Xie’s lab received an NIH Predoctoral fellowship “*Estrogen Sulfotransferases in Human Adipogenesis*” (Chibueze Ihunnah, P.I., Wen Xie, Mentor), Total cost: \$64,700
- Wen Xie was invited to serve as a member of the Scientific Advisory Board, *17th North American ISSX Regional Meeting*, Atlanta, GA. October 16-20, 2011.
- Wen Xie was invited to serve as an *Ad hoc* Reviewer, DOD Prostate Cancer Preapplication-Clinical and Experimental Therapeutics-3 (PRE-CET-3) peer review (July, 2011)
- Wen Xie was invited to serve as an *Ad hoc* Reviewer, Dutch Digestive Foundation research grants (July-August, 2011)
- Wen Xie was invited to serve as an *ad hoc* member of the NIH special emphasis panel “*Developmental Pharmacology.*” August 2-3, 2011
- Wen Xie was invited to serve as an *Ad hoc* Reviewer, Polish National Science Center (September 2011)

- Wen Xie was invited to serve as an *Ad hoc* Reviewer, DOD Prostate Cancer Preapplication-Clinical and Experimental Therapeutics-1 (PRE-CET-1) peer review (May, 2012, on-line review)
- Wen Xie was invited to serve as an *Ad hoc* Reviewer, “Research projects in the field of the effects of the exposure to environmental risk factors on cancer”, Cancer TMOI of the French National Alliance for Life and Health Sciences (AVIESAN) jointly with the French National Cancer Institute (INCa). May 2012
- Wen Xie was invited to serve as an Editorial Board Member, *Drug Metabolism and Disposition*
- Wen Xie was invited to serve as a Review Editor, Editorial Board of *Frontiers in Molecular and Structural Endocrinology*
- Wen Xie was invited to serve as Guest Editor for *Drug Metabolism Reviews (DMR)*, to organize a Nuclear Receptor Thematic Issue of DMR

Selected Publications

- Lee, MJ, DE Kim, A Zakrzewska, S Kim, ST Kim, JW Seo, YS Lee, GW Dorn II, BY Kim, and YT Kwon. (2012) 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.
- Tasaki, T, SM Sriram, KS Park, and YT Kwon. (2012) The N-end rule pathway. *Ann Rev Biochem* 81:1-29.
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- Kwon, O, NK Soung, NR Thimmegowda, SJ Jeong, JH Jang, DO Moon, JK Chung, KS Lee, YT Kwon, RL Erikson, JS Ahn, and Kim BY. (2012) Patulin induces colorectal cancer cells apoptosis through EGR-1 dependent ATF3 up-regulation. *Cell Signaling* 24:943-950.
- He, L, JH Jang, HG Choi, SM Lee, MH Nan, SJ Jeong, ZD, YT Kwon, KS Lee, KW Lee, JK Chung, JS Ahn and BY Kim. Oligomycin A Enhances Apoptotic Effect of TRAIL through CHOP-mediated Death Receptor 5 Expression. *Mol Carcinogenesis* (in press).
- Meisenberg, C, PS Tait, II Dianova, K Wright, MJ Edelman, N Ternette, T Tasaki, BM Kessler, JL Parsons, YT Kwon and GL Dianov. (2012) Ubiquitin ligase UBR3 regulates cellular levels of the essential DNA repair protein APE1 and is required for genome stability. *Nu Acids Res* 40:701-711.
- Sriram, SM, BY Kim, and YT Kwon. (2011) The N-end rule pathway: emerging functions and molecular principles of substrate recognition. *Nat Re Mol Cell Bio* 12:735-747.
- Sriram, SM, DH Han, and ST Kim. (2011) Partners in crime: ubiquitin-mediated degradation and autophagy. *Science Signal* 4:jc4, 2011.

- 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.
- Zhang, Y, Huang, Y, Zhang, P, Gao, X, Gibbs, RB, and Li, S. Incorporation of a selective sigma-2 receptor ligand enhances uptake of liposomes by multiple cancer cells. *International Journal of Nanomedicine* (in press)
- Greenberger, JS, Clump, D, Kagan, V, Bayir, H, Lazo, JS, Wipf, P, Li, S, Gao, X, and Epperly, MW. Strategies for discovery of small molecule radiation protectors and radiation mitigators. *Frontiers in Radiation Oncology* 1: 59, 2011.
- Kim, H, Bernard, ME, Epperly, MW, Shen, H, Amoscato, A, Dixon, TM, Doemling, AS, *Li, S, *Gao, X, Wipf, P, Wang, H, Zhang, X, Kagan, VE, and Greenberger, JS. Amelioration of Radiation Esophagitis by Orally Administered p53/Mdm2/Mdm4 Inhibitor (BEB55) or GS-Nitroxide. *In Vivo* 25: 841-848, 2011.
- He J, Lee JH, Febbraio M, Xie W. The emerging roles of fatty acid translocase (FAT)/CD36 and the aryl hydrocarbon receptor (AhR) in fatty liver disease. *Exp Biol Med (Maywood)*. 236: 1116–1121 (2011) PMID: 21885479.
- Wada T, Ihunnah CA, Gao J, Chai X, Zeng S, Philips BJ, Rubin JP, Marra KG, Xie W. Estrogen sulfotransferase inhibits adipocyte differentiation. *Mol Endocrinol* 25: 1612-1623 (2011) PMID: 21816900.
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- Li G, Thomas AM, Williams JA, Kong B, Liu J, Inaba Y, Xie W, Guo GL. Farnesoid X receptor induces murine scavenger receptor class B type I via intron binding. *PLoS ONE* 7: e35895 (2012) PMID: 22540009
- Gao J, He J, Shi X, Stefanovic-Racic M, Xu M, O'Doherty RM, Garcia-Ocana A, Xie W. Sex-specific effect of estrogen sulfotransferase (EST) on mouse models of type 2 diabetes. *Diabetes* 61: 1543-1551 (2012) PMID: 22438574
- Lo WS, Lim YP, Chen CC, Hsu CC, Souček P, Yun CH, Xie W, Ueng YF. A dual function of the furanocoumarin chalepensis in inhibiting Cyp2a and inducing Cyp2b in mice: the protein stabilization and receptor-mediated activation. *Arch Toxicol*. 2012 Jul 12. [Epub ahead of print] PMID: 22790670
- Gao J, Xie W. Targeting xenobiotic receptors PXR and CAR for metabolic diseases. *Trends in Pharmacological Sciences* (Accepted) (Peer-reviewed review article).

- 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* (Accepted)

Selected Invited Research Presentations

- World Class University (WCU) Distinguished Lecture Series. Seoul National University. Seoul, Korea. The N-end rule pathway. May 1, 2012. (Kwon YT)
- “*From Chongqing to Pittsburgh – A Tale of FXR*”. The 3rd Military Medical University, Chongqing, China, July 29, 2011. (Li S)
- “*Targeting the FXR in Hepatic Stellate Cells for the Treatment of Liver Fibrosis*”. Xijing Hospital, The 4th Military Medical University, Xi’an, China, August 6, 2011. (Li S)
- “*Targeting the FXR in Hepatic Stellate Cells for the Treatment of Liver Fibrosis*”. *BIT 1st Annual World Congress of Molecular & Cell Biology*. Beijing, China, August 6-8, 2011 (invited speaker). (Li S)
- “*Targeting of Farnesoid X Receptor for the Treatment of Cardiovascular and Hepatic Diseases*”. Department of Biochemistry and Molecular Biology, Mayo Clinic, Rochester, MN 55905, November 1, 2011. (Li S)
- “*Rational Design of Delivery Systems for Mitochondria-Targeted Antioxidants*”. University of Pittsburgh Center for Medical Countermeasures against Radiation (CMCR) Seminar Series, Pittsburgh, December 7, 2011. (Li S)
- “*Targeting Hepatic Stellate Cells for the Treatment of Liver Fibrosis*”. New Horizons in GI and Liver Cancers Lecture Series. M.D. Anderson Cancer Center, Houston, TX 77030, March 23, 2012. (Li S)
- “*Nuclear Receptor-Mediated Gene Regulation in Molecular Toxicology*” The Third Hospital of the Peking University Health Science Center. Beijing, China. July 4, 2011. (Xie W)
- “*Nuclear Receptor-Mediated Sulfotransferase Regulation in Estrogen And Androgen Homeostasis*” *17th North American ISSX Regional Meeting* (as Speaker and Session Chair), Atlanta, GA. October 16-20, 2011. (Xie W)
- “*Nuclear Receptor Controlled Metabolic Homeostasis*” Pittsburgh Area Nuclear Receptor Coregulator Club (PANRC), Pittsburgh, PA. November 4, 2011. (Xie W)
- “*A Novel Function of the Xenobiotic Receptor CAR in Obesity and Type 2 Diabetes*”, *51th Society of Toxicology Annual Meeting*, San Francisco, CA. March 11-15, 2012. (Xie W)
- “*Nuclear Receptor-Mediated Sulfotransferase Regulation in Pathophysiology*” Department of Pharmacology, College of Pharmacy and Pharmaceutical Sciences, University of Toledo. Toledo, Ohio. March 28, 2012. (Xie W)

- “*Nuclear Receptor-Mediated Sulfotransferase Regulation in Breast Cancer and Prostate Cancer*” Case Comprehensive Cancer Center, Case Western Reserve University, Cleveland, Ohio. April 10, 2012. (Xie W)
- “*PXR and CAR as Therapeutic Targets for Obesity and Type 2 Diabetes*”, Experimental Biology 2012 Meeting/ASPET, San Diego, CA. April 21-25, 2012. (Xie W)
- “*The Endobiotic Function of Xenobiotic Receptors and Enzymes*”, Beckman Research Institute, City of Hope, Duarte, California. May 16, 2012. (Xie W)
- “*Nuclear Receptor-Mediated Gene Regulation in Xenobiotic and Endobiotic Metabolism*”, The Third Military Medical University, Chongqing, China. June 11, 2012. (Xie W)
- “*Nuclear Receptor-Mediated Gene Regulation in Xenobiotic and Endobiotic Metabolism*”, School of Medicine, Shantou University, Shantou, Guangdong, China. June 18, 2012. (Xie W)
- “*Nuclear Receptor-Mediated Gene Regulation in Xenobiotic and Endobiotic Metabolism*”, School of Public Health, Sun Yat-Sen University. Guangzhou, China. June 19, 2012. (Xie W)
- “*The Endobiotic Function of Xenobiotic Receptors and Enzymes in Obesity and Type 2 Diabetes*” College of Life Science, Beijing Normal University. Beijing, China. June 28, 2012. (Xie W)

Drug Discovery Institute

Faculty

Billy Day, PhD, Professor
 Alex Doemling, PhD, Professor
 Barry Gold, PhD, Professor
 Donna Huryn, PhD, Professor
 Prema Iyer, PhD, Research Assistant Professor
 Paul Johnston, PhD, Research Associate Professor
 Lee McDermott, PhD, Research Assistant Professor
 Xiangqun (Sean) Xie, PhD, Professor

Graduate Students

Abdulrahman Almehezia, BPharm
 Ananda Chowdhury, BS, MSc
 Yijun Huang, BS, MS
 Kareem Khoury, BS
 Timothy R. Pouland, BS
 Zhuxu Wang, BS, MS
 Ryan D. Whetstone, BS, MS

Postdoctoral Fellows

Manjori Ganguly, PhD
 Ajay Srinivasan, PhD
 Haiping Cao, PhD
 Tadamichi Nagashima, PhD
 Vasilii Korotchenko, PhD
 Jieli Zhao, PhD
 Peng Yang, PhD
 LiRong Wang, PhD
 Kan Wang, PhD
 Wei Wang, PhD

The Drug Discovery Institute (DDI) is an interdepartmental institute with faculty, pre-doctoral and postdoctoral students from the Departments of Pharmaceutical Sciences, Chemistry, Pharmacology and

Chemical Biology, and Computational and Systems Biology. The focus of the DDI is to identify small molecules that can be used as chemical probes for biological activities and as leads for new therapies for human diseases.

Major Accomplishments

- Submitted invention disclosure on small molecule antagonists of Nef as a therapy for HIV. **Iyer, P.**
- Awarded new NIH NCI RO1 grant to develop a novel assay to screen for disruptors of AR-TIF2 interactions. **Johnston, PA.**
- NCI NExT supported CBC project Task order 6. Completed a high content screening campaign of 97,000 compounds to identify selective inhibitors of the activation of the STAT3 signaling pathway, characterized the hits to assist with the selection of four chemically tractable leads series, and conducted bioassays to support the ongoing chemistry lead optimization effort. **Johnston, PA.**
- Established Computational Chemical Genomics Screening (CCGS) Center in the School of Pharmacy to promote interdisciplinary research, education and training, and foster collaborations by providing state-of-the-art computational-chemical-genomics-based in-silico drug screening and design approaches. **Xie, X-Q.**
- Novel CB2 Inverse agonist for multiple myeloma and osteoporosis bone diseases". Patent USSN: 61/576,041. **Xie, X-Q.**
- Named Fellow of the American Chemical Society. **Huryn, DM.**
- Patent application: Compounds and methods for inhibition of AP endonuclease-1/redox factor-1. **Gold B.**
- Licensed Anchor Query, created by Alex Doemling (Pharmacy) and Carlos Comacho to a new startup company that will provide services to pharmaceutical companies in computational discovery of molecules to block protein-protein interactions. **Domling AS.**
- Completed the development, optimization and validation of a high throughput screening assay to identify small molecule inhibitors of the HIV Nef-dependent activation of Hck tyrosine kinase activity. Six Nef:Hck leads have been identified that reproducibly block Nef-dependent HIV-1 replication, dock to a site in the Nef dimerization interface model, and work against SIV in the same concentration range. **Johnston, PA.**
- Developed and validated a panel of biochemical assays to investigate the more likely intracellular target(s) of the Dex-induced GR-GFP translocation inhibitors. **Johnston PA.**

Selected Publications

- Balasubramani, M, Nakao, C, Uechi, G T, Cardamone, J, Kamath, K, Leslie, K L, Balachandran, R, Wilson, L, **Day BW** and Jordan, M A. (2011) Characterization and detection of cellular and proteomic alterations in stable stathmin-overexpressing, taxol-resistant BT549 breast cancer cells using offgel IEF/PAGE difference gel electrophoresis. *Muta Res* **722**, 154-164.

- Ballatore, C, Brunden, KR, Trojanowski, JQ, Lee, VM, Smith, AB, 3rd and **Huryn DM**. (2011) Modulation of protein-protein interactions as a therapeutic strategy for the treatment of neurodegenerative tauopathies. *Curr Top Med Chem* **11**, 317-330.
- Srinivasan, A and **Gold, B**. Small molecule inhibitors of DNA damage repair pathways: an approach to overcome tumor resistance to alkylating anticancer drugs. *Future Med Chem* **4**, 1093-1111 (2012).
- Singh, SK, Szulik, MW, Ganguly, M, Khutsishvili, I, Stone, MP, Marky, LA and **Gold, B**. Characterization of DNA with an 8-oxoguanine modification. *Nucleic Acids Res* **39**, 6789-6801 (2011).
- Ganguly, M, Szulik, MW, Donahue, PS, Clancy, K, Stone, MP and **Gold, B**. Thermodynamic signature of DNA damage: characterization of DNA with a 5-hydroxy-2'-deoxycytidine•2'-deoxyguanosine base pair. *Biochemistry* **51**, 2018-2027 (2012).
- Yang, P, Wang, L and Xie, XQ. (2012) Latest advances in novel cannabinoid CB2 ligands for drug abuse and their therapeutic potential. *Future Med Chem* **4**, 187-204.
- Wang, LR, Ma, C, Wipf, P and **Xie, XQ**. (2012) Linear and non-linear support vector machine for the classification of human 5-HT1A ligand functionality. *Molecular Informatics* **31**, 85-95.
- Ma, C, Wang, LR and **Xie, XQ**. (2011) GPU accelerated chemical similarity calculation for compound library comparison. *J Chem Inf Modelings*, **51**, 1521-1527.
- Zhang, YX, Xie, ZJ, Wang, LR, Lazo, JS, Gertsch, J, Schreiber, B and **Xie, XQ**. (2011) Mutagenesis and computer modeling studies of a GPCR conserved residue W5.43(194) in ligand recognition and signal transduction for CB2 receptor. *Internat Immunopharmacol* **11**, 1303-1310.
- Huang, Y, Wolf, S, Koes, D, Popowicz, G, Camacho, C, Holak, T and **Dömling, A**. (2012) Exhaustive Fluorine Scanning toward Potent p53-Mdm2 Antagonists *Chem Med Chem* **7**, 49-52.
- Ballatore, C, Soper, J, Piscitelli, F, James, M, Huang, L, Atasoylu, O, **Huryn, DM**, Trojanowski, JQ, Lee, VM, Brunden, KR and Smith, AB (2011) Cyclopentane-1,2-dione: A novel isostere for the carboxylic acid functional group. Application to the design of potent thromboxane (A2) receptor antagonists. *J Med Chem* **54**, 6969-6983.
- Fera, D, Schultz, DC, Hodawadekar, S, Reichman, M, Donover, PS, Melvin, J, Troutman, S, Kissil, JL, **Huryn, DM** and Marmorstein, R. (2012) Identification and characterization of small molecule antagonists of pRb inactivation by viral oncoproteins. *Chem & Bio* **19**, 518-528.
- Culyba, M, Hwang, Y, Attar, S, Madrid, PB, Bupp, J, **Huryn, DM**, Sanchez, L, Grobler, J, Miller, MD, Bushman, FD. (2012) Bulged DNA substrates for identifying poxvirus resolvase inhibitors," *Nucleic Acids Res* in press.
- Wang, W, Cao, H, Wolf, S, Camacho-Horvitz, MS, Holak, TA and **Dömling, A**. (2012) Benzimidazole-2-one: A novel anchoring principle for antagonizing p53-Mdm2. *Bioorg Med Chem* in press.

- Khoury, K and **Dömling, A.** (2012) P53 Mdm2 inhibitors. *Curr Pharm Des* in press.
- Arora, R, Shuda, M, Guastafierro, A, Feng, H, Toptan, T, Tolstov, Y, Normolle, D, Vollmer, L L, Vogt, A, **Dömling, A**, Brodsky, JL, Chang, Y and Moore, PS. (2012) Surviving is a therapeutic target in Merkel cell carcinoma. *Sci Transl Med* **4**, 133ra56.
- **Dömling, A**, Wang, W and Wang, K. (2012) Chemistry and biology of multicomponent reactions. *Chem Res* **112**, 3083-3135.
- Liu, H, William, S, Herdtweck, E, Botros, S and **Dömling, A.** (2012) MCR synthesis of praziquantel derivatives. *Chem Bio. Drug Des* **79**, 470-477.
- Daghestani, HN, Zhu, G, **Johnston, PA**, Shinde, SN, Brodsky, JL, Vallee, RB and **Day BW.** (2012) Characterization of inhibitors of glucocorticoid receptor nuclear translocation: a model of cytoplasmic Dynein-mediated cargo transport. *Assay Drug Dev Technol.* **10**, 46-60.
- McInnes, C, Estes, K, Baxter, M, Yang, Z, Boshra, FD, **Johnston, P**, Lazo, JS, Wang, J and Wyatt, MD (2012) Targeting subcellular localization through the Polo-Box domain: Non-ATP competitive inhibitors recapitulate a PLK1 phenotype. *Mol Cancer Ther* in press.
 - **Johnston, PA**, Shinde, SN, Hua, Y, Shun, TY, Lazo, JS and **Day, BW.** (2012) 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* in press.

Selected Invited Research Presentations

- Dept. Chemistry, Slippery Rock University. Slippery Rock, PA. Discovery, Design and Development of New Microtubule Stabilizers. September 24, 2010. **Day BW.**
- U.S.-Japan Society for Promotion of Science Alumni Association. Seattle, WA. High throughput chemical genetic screen identifies novel small molecule modulators of FGF signaling pathway. March 11, 2011. **Day BW.**
- Society for the Advancement of Native Americans and Chicanos in Science. Anaheim, CA. Recognition of DNA damage. September 30, 2010. **Gold B.**
- Department of Pharmaceutical Sciences, University of Georgia, Athens, GA. **Gold B.**
- University of Nebraska Medical Center Eppley Cancer Center, Omaha, NE **Gold B.**
- Pittsburgh Chromatin Club Mini-symposium, Pittsburgh, PA, **Gold B.**
- “Adventures in Academic Drug Discovery,” *ACS Mid-Atlantic Regional Meeting (MARM) 2012*, University of Maryland, Baltimore County (UMBC), Baltimore, MD **Huryn, DM.**
- Successful Drug Discovery in Academia: Need for Pharma's Best Practices? (6-OCT-2011) High Throughput Screening Session, ACADEMIC SCREENING WORKSHOP, Select Biosciences, Bridgewater, NJ. **PA Johnston.**
- HCA 2011, a Personal Perspective. (6-OCT-2011) High Content Screening Session, ACADEMIC SCREENING WORKSHOP, Select Biosciences, Bridgewater, NJ. **PA Johnston.**

- Development, Validation and Implementation of a 97,000 Compound HCS Campaign to Identify Selective Inhibitors of the STAT3 Signaling Pathway in a Head and Neck Squamous Cell Carcinoma Cell Line (11-JAN-2012). High Content Screening Session, at the 9th Annual CHI High Content Analysis Conference, San Francisco, CA. **PA Johnston.**
- Development, Validation and Implementation of a 97,000 Compound HCS Campaign to Identify Selective Inhibitors of the STAT3 Signaling Pathway in a Head and Neck Squamous Cell Carcinoma Cell Line (25-APR-2012). Molecular Devices Incorporated Webex Presentation. **PA Johnston.**
- Chair/Speaker, February 14, 2012, 4th *International Conference on Drug Discovery & Therapy*: “Novel Target and Novel Chemical Agents Potential for Multiple Myeloma Treatment” Dubai, UAE.
- Invited seminar speaker, April 24, 2012, “Computational Chemical Genomics Screening Center” Department of Immunology, University of Pittsburgh School of Medicine, Pittsburgh, PA
- Invited speaker, March, 28, 2012, “Computational Chemical Genomics Screening Center”, Department of Developmental Biology, University of Pittsburgh School of Medicine, Pittsburgh, PA
- Invited speaker, December 19, 2011 “GPCR Chemical Genomics for Drug Discovery”, Shanghai JiaoTong University, College of Pharmacy, Shanghai, China
- Invited speaker, December 28, 2011 “Computational GPCR Chemical Genomics for Drug Discovery”, Sun-Yat Sen University, College of Life Sciences, Guangzhou, China
- Invited speaker, July 28, 2011 “GPCR Chemical Genomics for Drug Discovery”, Shanghai NanKai University, College of Pharmacy, Tianjin, China
- Invited speaker, June, 10, 2012, “Cloud computing and High Throughput Experimental Chemical Genomics Screening Approaches for Lead Discovery”, Jinan University, GuangZhou, China
- Invited speaker, June, 20, 2012, “Cloud computing and High Throughput Experimental Chemical Genomics Screening Approaches for Natural Product Target Identification and Lead Discovery”, Kunming Institute of Botany, Chinese Academy of Sciences, Kunming, China
- Invited speaker, June, 23, 2012, “Computational Chemical Genomics Screening Approaches for Natural Product Target Identification and Lead Discovery”, XiShuanBanNan Tropical Botanic Garden, Chinese Academy of Sciences, XiShuanBanNan, China

Microbicide Product Pharmaceuticals Group and Microbicide Clinical Trials Network Central Laboratory Core

The Pharmaceuticals Group is involved with formulation development and design of drug delivery systems for microbicide products to prevent the spread of HIV and other sexually transmitted infections. This group also contributes to the development of in vitro models for formulation assessment to predict clinical outcome. The laboratory has experience with the development of microbicide products utilizing many dosage form platforms. Delivery systems are being designed for small molecule, protein and peptide, and genetically modified bacteria microbicide drug candidates.

Faculty

Lisa C. Rohan, PhD, Associate Professor

Research Staff

Marilyn R. Cost, MS
Phillip W. Graebing, BS
Lin Wang, MS
Yuan Shi, MS

Graduate Students

Ayman Akil, BS
Lindsay M. Ferguson, PharmD
Tiantian Gong, BS, MS
Sheila M. Grab
Minlu Hu, BS
Galit Regev
Tian Zhou, BS, MS

Postdoctoral Fellows

Hrushikesh Agashe, PhD
Wei Zhang, PhD

Major Accomplishments

- Successfully filed an IND for a vaginal film product designed in the lab containing the anti-HIV agent Dapivirine. The film is being evaluated in the clinic. This clinical trial is the first to look at the vaginal film as a potential dosage for HIV prevention drugs
- Successfully filed an IND for the rectal specific microbicide product for HIV prevention containing the antiviral tenofovir which was developed in the pharmaceuticals lab. The clinical trial planned to be initiated later this year will be the first rectal specific microbicide to be evaluated in the clinic. The group has successfully developed a series of combination rectal specific products which are being evaluated in animal studies for efficacy through a collaboration with the CDC.
- 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. 4 of these were newly funded within the past year. These new projects include an NIH contract to evaluate a novel combination vaginal ring formulation developed by a major pharmaceutical company, an NIH grant to fund the development of design for product to restore natural expression of an innate anti-HIV agent, a Gates Foundation grant which supports a clinical trial for an injectable HIV product developed by a major pharmaceutical company, and a CTSI grant to develop preliminary data demonstrating the utility of a new anti HIV drug candidate.
- Developed a vaginal film dosage form for tenofovir. This product is being evaluated and clinical evaluations are planned for 2013.
- Dr. Rohan was selected as a member of the Pharmacology Best Practices Working Group developed by the National Institute of Allergy and Infectious Diseases (NIAID), Division of AIDS (DAIDS), Prevention Sciences Program (PSP) & The Bill and Melinda Gates Foundation (BMGF).

Selected Publications

- Agashe, H, Hu, M, Rohan, LC. Formulation and Delivery of Microbicides. *Current HIV Research. Curr HIV Res.* 2012 Jan 1; 10(1):88-96. Review. PMID: 22264050.
- Ferguson L, Rohan LC. The importance of the vaginal delivery route for anti-retrovirals in HIV prevention. *Therapeutic Delivery. Ther Deliv.* 2011 Dec; 2(12):1535-1550. PMID:22468220
- Dezzutti,CS, Rohan, LC, Wang, L, Uranker K, Shelter C, Cost M, Lynam, JD, Friend, D. Reformulated Tenofovir Gel for use as a Dual Compartment Microbicide. *J Antimicrob Chemother.* 2012 May 11. [Epub ahead of print] PMID:22581908
- Cost, MR, Dezzutti, CS, Clark, M, Akil, A Rohan, LC. Characterization of UC781/Tenofovir Combination Gel Products for HIV-1 Prevention. *Antimicrob Agents Chemother.* 2012 Jun;56(6):3058-66. Epub 2012 Mar 19. PMID:22430977
- Ham A S., Rohan, L C., Boczar, A., Yang, L, Buckheit, KW, Buckheit, RW. Vaginal Film Drug Delivery of the Pyrimidinedione IQP-0528 for the Prevention of HIV Infection. *Pharm Rsh.* 2012 Mar 6. [Epub ahead of print] PMID:22392331
- Rinehart MT, Drake TK, Robles FE, Rohan LC, Katz D, Wax A. Time-resolved imaging refractometry of microbicidal films using quantitative phase microscopy. *J Biomed Opt.* 2011 Dec;16(12):120510. PubMed PMID: 22191912; PubMed CentralPMCID: PMC3253752.
- Wang L, Sassi AB, Patton D, Isaacs C, Moncla BJ, Gupta P, Rohan LC. Development of a liposome microbicide formulation for vaginal delivery of octylglycerol for HIV prevention. *Drug Dev Ind Pharm.* 2011 Dec [Epub ahead of print] PubMed PMID: 22149387.
- Moncla, B. J.,Pryke, K., Rohan, L. C., Graebing, P. W. Degradation of Naturally occurring and engineered antimicrobial peptides by proteases. *Advances in Bioscience and Biotechnology.* 2011 Dec; 2(6). 404-408
- Li M, Patton DL, Cosgrove-Sweeney Y, Ratner D, Rohan LC, Cole AM, Tarwater PM, Gupta P, Ramratnam B. Incorporation of the HIV-1 microbicide cyanovirin-N in a food product.. *J Acquir Immune Defic Syndr.* 2011 Sep 15. PMID:21926631
- Isaacs, C, Xu,W, Merz, G, Hillier, SL, Rohan, LC, Wen, G. Digallate Dimers of (-)-Epigallocatechin Gallate Inactivate Herpes Simplex Virus. *Antimicrobial Agents and Chemotherapy.* 2011 Sep 26. PMID:21947401

Selected Invited Presentations

- The main international microbicides conference was held in Sydney Australia this year. The work of the Pharmaceutics group was well represented with involvement with 18 invited poster or oral presentations at the meeting. Additionally Dr. Rohan was invited to chair several sessions at the meeting.
 - International Microbicides Conference Sydney Australia, invited key speaker. “Films as a Versatile Drug Delivery System” April 2012. **Rohan LC.**
 - International Microbicides Conference Sydney Australia, “Formulation, Optimization and Characterization of a Vaginal Film Containing EFdA, a Novel Nucleoside Reverse Transcriptase Inhibitor (NRTI), for HIV Prevention”. April 15-18, 2012. **Zhang, W, Rohan, LC.**

- International Microbicides Conference Sydney Australia,. “Development and characterization of Tenofovir-Maraviroc Combination Film for Vaginal Application” April 15-18, 2012. **Agashe, H.**
- International Microbicides Conference, Sydney, Australia. “Dapivirine Tissue Levels and Distribution in Human Cervical Tissue ex vivo After Exposure to Dapivirine Vaginal Film” April 15-18, 2012. **Akil, A.**
- International Microbicides Conference, Sydney, Australia. “Development and Assessment of Rectal Specific Comination Microbicide Gel containing Tenofovir and Griffithsin”. April 15-18, 2012. **Wang, L.**
- HIV Vaccine and Prevention Meeting, Bangkok, Thailand. “Ring Formulated NNRTI 5-chloro-3-(phenylsulfonyl)indole-2-carboxamide (CSIC) Showed No Cytotoxicity When Applied to the Vagina of Macaques and Retained Anti-Viral Activity”. September, 2011. **Gupta,P.**
- 19th Biennial Conference of the International Society for Sexually Transmitted Diseases Research, Quebec City, Canada. “Vaginal film microbicides for HIV prevention: a mixed methods study of women's preferences. July 10-13. 2011. **Fan MD.**
- CROI , Boston, MA, , “ Anti-HIV activity of rectal specific formulations of Tenofovir and UC781”. Feb 27- March 2, 2011. **Dezzutti C, Rohan LC.**
- CROI , Boston, MA, “Tenofovir Gel Reformulation Results in Improved Product Safety for Rectal Application”. Feb 27- March 2, 2011. **Dezzutti C, Rohan LC.**

International Impact

The Pharmaceuticals Group continues to have international impact. Major activities over the past year include working with international pharmaceutical companies to generate data in support of their HIV prevention products. They have also been called upon to evaluate funding proposals for the Bill & Melinda Gates Foundation as well as the Medical Research council (MRC) in the United Kingdom. Dr. Rohan also served as part of the Scientific Programing committee for the International Microbicides conference held in Sydney Australia. The Pharmaceuticals group continues to train scientists in this research area.

Center for Education and Drug Abuse Research

The year 2012 marked the 22nd 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
Ty A. Ridenour, PhD, Research Associate Professor
Michael Vanyukov, PhD, Professor

Graduate Student

ZuWei Zhai, BA

Postdoctoral Fellow

Michelle Horner, DO

Major Accomplishments

- **Ralph Tarter** received a Senior Scientist Development Award (K05) from NIDA.
- **Levent Kirisci** received a Phase II SBIR contract funded by NIDA.

Selected Publications

- 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.
- Ridenour, T, Minnes, S, Moldando-Molina, M, Clark, D, Tarter, R, & Reynolds, M (2011). Psychometrics and cross-cultural comparisons of the illustration-based *Assessment of Liability and Exposure to Substance Use and Antisocial Behavior for Children*. *The Open Family Studies Journal*, 4, 17-26.
- Ridenour, TA, Tarter, RE, Kirisci, L, & Vanyukov, MM (2011). Could a continuous measure of individual transmissible risk be useful in clinical assessment of substance use disorder? *Drug and Alcohol Dependence*, 119, 10-17.
- Reynolds, M, Tarter, R, Kirisci, L, & Clark, D (2011). Marijuana but not alcohol use during adolescence mediates the association between transmissible risk for substance use disorder and number of lifetime violent offenses. *Journal of Criminal Justice*, 39-218-223.
- Tarter, R, Kirisci, L, Mezzich, A, Ridenour, T, Fishbein, D, & Vanyukov, M (2012). Does the “gateway” sequence increase prediction of cannabis use disorder beyond deviant socialization? Implications for Prevention and Policy. *Drug and Alcohol Dependence*, 123, S72-S79.
- Vanyukov, M, Tarter, R, Kirillova, G, Kirisci, L, Reynolds, M, Kreek, M, Conway, K, Maher, B, Iacono, W, Brent, L, Neale, M, Clark, D. & Ridenour, T. (2012). Common liability to addiction and “gateway hypothesis”. Theoretical, empirical and evolutionary prospective. *Drug and Alcohol Dependence*, 123, S3-S17.

Center for Clinical Pharmaceutical Sciences

Faculty

Samuel M. Poloyac, PharmD, PhD, Associate Professor and Center Director
Jan H. Beumer, Pharm D, PhD, Assistant Professor
Kerry M. Empey, PharmD, PhD, Assistant Professor
Philip E. Empey, PharmD, PhD, Assistant Professor
Mary M. Folan, PhD, Assistant Professor
Margaret Beth Minnigh, PhD, Assistant Professor
Thomas D. Nolin, PharmD, PhD, Assistant Professor
Lisa C. Rohan, PhD, Associate Professor
Ryan K. Shields, PharmD, Instructor, School of Medicine
Susan J. Skledar, MPH, Associate Professor
Carolyn T. Thorpe, PhD, MPH, Assistant Professor
Joshua Thorpe, PhD, MPH, Associate Professor
Raman Venkataramanan, PhD, Professor

Graduate Students

Osama Y. Alshogran, BS, MS	Jeremiah D. Momper, PharmD
Kacey B. Anderson, BS	Robert A. Parise, BS
Jennifer J. Bonner, BA, PharmD	Diana N. Pinchevsky, PharmD
Mark K. Donnelly, BS	Sadik Basha Jafar Shaik, MPharm
Lindsay M. Ferguson, PharmD	Mohammad S. Shawaqfeh, MS, PharmD
Nisanne S. Ghonem, PharmD	Jiangquan (Jocelyn) Zhou, MA
Tiantian Gong, BS, MS	

Major Accomplishments

- **Sam Poloyac** published a book chapter titled “Pharmacologic considerations in patients undergoing therapeutic hypothermia”.
- **Sam Poloyac** published the initial results from his currently funded project to determine biomarker predictors of delayed cerebral ischemia in subarachnoid hemorrhage patients (R01NR004339). These results were published in the journal *Stroke*.
- **Sam Poloyac** was appointed to the research committee of the Clinical Pharmacy and Pharmacology Section of the Society of Critical Care Medicine.
- **Sam Poloyac** was appointed to the programming committee to the Winter Eicosanoid Conference.
- **Jan Beumer** was awarded a Clinical Research Junior Scholar Award, Research, University of Pittsburgh Cancer Institute, University of Pittsburgh.
- **Kim Coley** Collaborating and Advancing Relationships: Pharmacist Advocates in Care Transitions (CARE PACT). PI, Active, JHF Foundation
- **Kerry Empey** A novel approach to treating infant respiratory syncytial virus (RSV) disease: therapeutic stimulation of immature alveolar macrophages to enhance anti-viral activity PI, Submitted, Central Medical Research Fund, University of Pittsburgh, Office of Research

- **Kerry Empey**, Maternal RSV vaccination of BALB/c mice using RSV F subunit and novel plant-derived adjuvant PI, Approved, Vaxine pty ltd. Sydney, Australia
- **Kerry Empey** is now a Graduate School Faculty member
- **Kerry Empey** was appointed to the Clinical Pharmaceutical Sciences Curriculum Committee, Pitt School of Pharmacy
- **Phil Empey** Implications of hypothermia on drug transport – 3-yr Competitive Renewal (2012-2015) PI, Approved, NIH
- **Phil Empey** was appointed Chair of Pharmacogenomics Working Group, School of Pharmacy
- **Sandy Kane-Gill** received A multicenter evaluation of off-label medication use and adverse drug events in adult intensive care unit patients. Co-PI, Approved, ASHP Foundation 2012 New Investigator Research Grant
- **Sandy Kane-Gill** was recognized for SCCM, Clinical Pharmacy and Pharmacology Section Technology Patient Safety , Research, Society of Critical Care Medicine, National, 463
- **Sandy Kane- Gill** was recognized for ACCP Critical Care PRN Research Award, Research, American College of Clinical Pharmacy, National, 465
- **Tom Nolin** is a Fellow (FCCP), Other, American College of Clinical Pharmacy, National, 490
- **Tom Nolin** is a Fellow (FCP), Other, American College of Clinical Pharmacology, National, 491
- **Tom Nolin** was appointed a member of Kidney Week 2012 Programming Committee, American Society of Nephrology, National
- **Tom Nolin** was appointed a member of the Editorial Advisory Board, American Journal of Kidney Diseases, National
- **Lisa Rohan** was awarded a grant Release Assays from EVA Ring Segments PI, Active, NIH
- **Lisa Rohan** was appointed a member of the Pharmacology Best Practices Working Group, NIH, National
- **Lisa Rohan** was appointed a member of the Scientific Programming Committee, International Microbicides Conference, National
- **Carolyn Thorpe** received the Optimizing Type 2 Diabetes Medication Therapy in Older Patients with Comorbid Dementia PI, Submitted, American Diabetes Association Career Development Award
- **Carolyn Thorpe** was a Co-investigator for Variation in Use of Glucose Test Strips among Older Veterans with Diabetes. Department of Veterans Affairs, Health Services Research & Development, Center for Health Equity Research & Promotion pilot grant.

- **Joshua Thorpe** aided in Developing MIDUS Medication Data Via Linkage to the Multum Lexicon. Co-Investigator, Active, National Institute of Health, National Institute on Aging The Midlife in the United States (MIDUS) is an NIA sponsored survey to comprehensively evaluate the health and well-being of a nationally-representative sample of aging adults in the United States. The primary objective of this grant is to enhance the scope and quality of the medication data available to all users of the MIDUS data. It will also, thereby, enhance the capacity of researchers to examine questions about the influence of medication use on health and aging with greater precision via a focus on effects of specific active ingredients or therapeutic outcomes.

Selected Publications

- **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 [Accepted].
- **Shields RK**, Nguyen MH, Du C, Press E, Cheng S, Clancy CJ. 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 [Accepted].
- Crago EA, Thampatty BP, Sherwood PR, Kuo CWJ, Bender C, Balzer J, Horowitz M, and **Poloyac SM**. Cerebrospinal Fluid 20-HETE is Associated with Delayed Cerebral Ischemia and Poor Outcomes after Aneurysmal Subarachnoid Hemorrhage. *Stroke* 2011; 42(7): 1872-7.
- Empey PE, Miller TM, Philbrick AH, Melick J, Kochanek PM, and **Poloyac SM**. Mild hypothermia decreases fentanyl and midazolam steady-state clearance in a rat model of cardiac arrest. *Crit Care Med*. 2011; 40(4): 1221-8.
- Zhou J, Empey PE, Bies RR, Kochanek PM and **Poloyac SM**. Cardiac arrest and therapeutic hypothermia interaction with isoform-specific cytochrome P450 drug metabolism. *Drug Metab Dispos*. 2011; 39(12): 2209-18.
- **Beumer JH**, Parise RA, Kanterewicz B, Petkovich M, D'Argenio DZ, Hershberger PA. A local effect of CYP24 inhibition on lung tumor xenograft exposure to 1,25-dihydroxyvitamin D3 is revealed using a novel LC-MS/MS assay. *Steroids*, 5, 77, 2012
- **Empey KM**, Orend JG, Peebles 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.Epub 2012 Jul 6.
- **Empey PE**, Miller TM, Philbrick AH, Melick J, Kochanek PM, Poloyac SM. Mild hypothermia decreases fentanyl and midazolam steady-state clearance in a rat model of cardiac arrest. *Critical Care Medicine*, 4, 40, 2012
- **Kane-Gill SL**, Kirisci L, Verrico MM, Rothschild JM Identification of risk factors for adverse drug events in critically ill patients. *Critical Care Medicine*, , 40, 2012
- Gokhman R*, Seybert AL, Phrampus P, Darby J, **Kane-Gill SL**. Medication errors during medical emergencies in a large, tertiary care, academic medical center. *Resuscitation*, , 83, 2012

- Nyman HA, Dowling TC, Hudson JQ, St. Peter WL, Joy MS, **Nolin TD**. Use of the Cockcroft-Gault vs. MDRD Study equation to dose medications: An opinion of the Nephrology Practice and Research Network of the American College of Clinical Pharmacy Pharmacotherapy, 31, 11, 2011
- Gurbel PA, **Nolin TD**, Tantry US Clopidogrel efficacy and cigarette smoking status Journal of the American Medical Association, 307, 23, 2012
- Dezzutti CS, **Rohan LC**, Wang L, Uranker K, Shetler C, Cost M, Lynam JD, Friend D. Reformulated tenofovir gel for use as a dual compartment microbicide. Journal Antimicrobial Chemotherapy, , May 11., 2011
- Cost M, Dezzutti CS, Clark MR, Friend DR, Akil A, **Rohan LC**. Characterization of UC781-Tenofovir Combination Gel Products for HIV-1 Infection Prevention in an Ex Vivo Ectocervical Model. Antimicrobial Agents and Chemotherapy, , Jun;56(6):3058-66. , 2012
- Rinehart MT, Drake TK, Robles FE, **Rohan LC**, Katz D, Wax A.. Time-resolved imaging refractometry of microbicidal films using quantitative phase microscopy. Journal of Biomedical Optics, , 16(12), 2011
- Fan M, Ferguson L, **Rohan LC**, Chang J, Meyn LA, Hillier SL Preferred Physical Characteristics of Vaginal Film Microbicides for HIV Prevention in Pittsburgh Women AIDS and Behavior, , ,
- **Thorpe CT**, Flood GE, Kraft SA, Everett CM, Smith MA. Effect of patient selection method on provider group performance estimates. Medical Care, 8, 49, 2011
- **Thorpe CT**, Thorpe JM, Kind AJ, Bartels C, Everett CM, Smith MA. Receipt of recommended monitoring for diabetes mellitus in Medicare beneficiaries with diabetes and comorbid dementia. Journal of the American Geriatrics Society, 4, 60, 2012
- 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).
- **Thorpe JM**, Thorpe CT, Kennelty KA, Chewing BA. Depressive symptoms and reduced preventive care use in older adults: The mediating role of perceived access. Medical Care, 50, 4, 2012
- **Thorpe JM**, Thorpe CT, Kennelty KA. Evidence for subtypes of perceived healthcare barriers in older adults: An application of latent class analysis. BMC Health Services Research, 11, 1, 2011

Selected Invited Presentations

- *† **Shields RK**, Clancy CJ, Kwak EJ, Silveira FP, Abdel Massih RC, Potoski BA, Eschenauer G, Nguyen MH. Treatment with colistin and a carbapenem improves success rates against extreme and pandrug-resistant *Acinetobacter baumannii* and limits emergence of colistin resistance [Abstract K-960]. Presented at the 51st Interscience Conference on Antimicrobial Agents and Chemotherapy (Chicago), 2011. *Selected for oral presentation † Selected for ICAAC press release

- **Sam Poloyac** served as symposium coordinator and moderator for a session titled “Eicosanoids in the brain, mediators of injury or protection?” at the 2012 Winter Eicosanoids Conference.
- **Sam Poloyac** presented at the Society of Critical Care Medicine Annual Congress 2012; Houston, TX. “Pharmacological Considerations in Patients Undergoing Therapeutic Hypothermia” February 2012.
- **Sam Poloyac** presented at the University of North Carolina Division of Experimental Therapeutics Seminar, Chapel Hill, NC. “Brain Cytochrome P450 Enzymes and Stroke: Discovering the Relationship with Patient Complications.” June 2011.
- Monoclonal Antibodies and Immune Modulation in RSV Disease, International Conference on Antimicrobial Agents and Chemotherapy, Chicago, IL USA, 09/19/2011. **Empey KM.**
- Genes to predict drug response, Society of Critical Care Medicine, Houston, 02/07/2012. **Empey PE.**
- Pharmacogenomics, UPMC - Pathology Grand Rounds, Pittsburgh, 01/11/2012. **Empey PE.**
- Pharmacogenomics: moving towards personalized drug therapy, UPMC Nursing Magnet Fair, Pittsburgh, 03/01/2012. **Empey PE.**
- Probenecid co-administration increases n-acetylcysteine concentrations and improves cognitive outcomes following experimental pediatric traumatic brain injury., Association for Clinical Research Training (National K12 meeting), Washington, DC, 04/19/2012. **Empey PE.**
- The Great Masquerader: Recognizing ADRs in the ICU Learning Using Simulation, ACCP, Pittsburgh, 10/23/2011. **Kane-Gill SL.**
- Strategies for Improving the Safe Use of IV Medications in the Critical Care Setting., ASHP, New Orleans, 12/06/2011. **Kane-Gill SK.**
- Unraveling the Effect of Kidney Disease on Nonrenal Drug Clearance, University of Florida, College of Pharmacy, Department of Pharmacotherapy and Translational Research/Center for Pharmacogenomics Seminar Series, Gainesville, FL, 02/24/2012. **Nolin TD.**
- Unraveling the Effects of Kidney Disease on Drug Disposition and Response: The Warfarin Conundrum, University of Alabama at Birmingham, School of Medicine, Department of Medicine, Division of Nephrology, Nephrology Research and Training Center Noon Conference, Birmingham, AL, 03/19/2012. **Nolin TD.**
- Approach for Drug Dosage Adjustments in an Era of Standardized Creatinine, Equation Overload, and Real Patients, National Kidney Foundation 2012 Spring Clinical Meeting, Washington, DC . **Nolin TD.**
- films as a versatile drug delivery system, International Microbicide Conference, sydney australia, 04/18/2012. **Rohan LC.**
- Formulation Optimization and characterization of a vaginal film containing EFdA, International Microbicide Conference, sydney australia, 04/18/2012. **Rohan LC.**

- CoSolvent Strategy Applied in Film formulation development for a hydrophobic NNRTI CSIC, International Microbicide Conference, sydney australia, 04/18/2012. **Rohan LC.**
- Development and characterization of Tenofovir-Maraviroc Combination Film for Vaginal , International Microbicide Conference, sydney australia, 04/18/2012. **Rohan LC.**
- Dapivirine Tissue Levels and Distribution in Human Cervical Tissue ex vivo After Exposure to Dapivirine Vaginal Film, International Microbicide Conference, sydney australia, 04/18/2012. **Rohan LC.**
- Dapivirine and Maraviroc Topical Gels are Safe and Protect Ectocervical Tissue from HIV-1, International Microbicide Conference, sydney australia, 04/18/2012. **Rohan LC.**
- Pharmacokinetics of Vaginally Applied Tenofovir Formulations; Plasma Uptake, International Microbicide Conference, sydney australia, 04/18/2012. **Rohan LC.**
- Development and Assessment of Rectal Specific Comination Microbicide Gel containing Tenofovir and Griffithsin, International Microbicide Conference, sydney australia, 04/18/2012. **Rohan LC.**
- Receipt of Diabetes Monitoring in Older Medicare Beneficiaries with Co-morbid Dementia, University of Pittsburgh Center for Research on Healthcare Health Services Research Seminar, Pittsburgh, PA, 01/03/2012. **Thorpe CT.**
- Receipt of Diabetes Monitoring in Older Medicare Beneficiaries with Co-morbid Dementia, VA Pittsburgh Healthcare System Geriatrics Research Education and Clinical Center (GRECC) Lecture Series, Pittsburgh, PA, 02/17/2012. **Thorpe CT.**

Computational Chemical Genomics Screening (CCGS) Center

Faculty

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

Lirong Wang, PhD, Research Associate and Scientific Administrator

Graduate Students

Kyaw Myint, BS, MS

Chao Ma, BS, MS

Postdoctoral Fellows

Lin Fu, PhD

Peng Yang, PhD

Major Accomplishments

- CCGS center was officially approved January, 2012 with Dr. Sean Xie as Director and Dr. Lirong Wang as a Scientific Administrator (his appointment begins August 1, 2012). Once the center is fully functioning, more faculty members and their students/postdoc fellows will participate. The center was established to promote interdisciplinary research, education and training, and foster collaborations by providing our developed state-of-the-art computational-chemical-genomics-based in-silico drug screening and design approaches (<http://www.cbligand.org/CCGS>).

- Currently, the center has four NIH funding supports:
 - NIH P50 GM067082 (Xie, co-PI and Core Co-Director)
 - NIH NCI/SAIC 29XS127 Task Order 6 (Xie, co-PI and Core Director)
- Dr. Xie currently also serves as a PI on two additional NIH funded projects
 - NIH R01 DA025612 (Xie, PI)
 - NIH R21 HL109654 (Xie, PI)
- Two submitted grant applications (pending):
 - Novel Chemical Agents for Multiple Myeloma Intervention by Targeting New Pathway. J&J Invited grant (submitted on July 1, 2012)
 - A new R01 submitted NIH R01 “Cannabinoid Receptor-2 Pathway Modulation in Multiple Myeloma”
- The CCGS Director Dr. Xie has been serving as a **Regular Study Section Member** of NIH Biophysics of Neural Systems (BPNS) Study Section, Center for Scientific Review, NIH. He was invited as an **Ad hoc reviewer** for Special Emphasis Panel NIH ZRG1 CB-P (02). He is serving as **Guest Editor** of AAPS Journal, Theme Issue “New Paradigms in Pharmaceutical Sciences: In Silico Drug Discovery”. Since 2011. He was invited to serve as a member of the **Editorial Board of American Journal of Molecular Biology**. He was also invited as an **Expert Panel Reviewer** for Chinese Natural Sciences Foundation (CNSF) grant review panel for Pharmaceutical Sciences Program.
- New patents filed/approved (using the discovery technologies developed in the center):
 - **Xie, X-Q**, Feng, RT, and Peng Yang “Novel CB2 Inverse Agonists and Therapeutic Potential for Multiple Myeloma and Osteoporosis Bone Diseases”. (2012) Patent USSN: 61/576,041.
 - **Xie, X-Q**, Myint, K-Z, Roodman, D. and Kurihara, N., “Novel P62zz Chemical Inhibitor with Therapeutic Potential for Multiple Myeloma Treatment,” (2012) U.S. Patent 61/521,287.
 - Gold, B. and **Xie, X-Q**, Lirong Wang “Compounds and Methods for Inhibition of AP endonuclease-1/redox factor-1 (hAPE1) activity.” (2012) USSN: 61/593,276.

Selected Publications

- Peng Yang, Lirong Wang and **Xiang-Qun Xie**. Latest advances in novel cannabinoid CB2 ligands for drug abuse and their therapeutic potential. *Future Med Chem* 2012, 4(2):187-204.
- Wang, LR; Ma, C; Wipf, P and **Xie, XQ**.* “Linear and Non-linear Support Vector Machine for the Classification of Human 5-HT1A Ligand Functionality”, *Molecular Informatics*, 31(2012), 85-95.
- Ma, C, Wang, LR, **Xie, XQ**.* “GPU Accelerated Chemical Similarity Calculation for Compound Library Comparison” *J Chem Inf and Modelings*, **51**(2011), 1521–1527.
- Zhang YX, Xie, ZJ, Wang, LR, Lazo, JS, Gertsch, J, Schreiber B, **Xie XQ***: Mutagenesis and computer modeling studies of a GPCR conserved residue W5.43(194) in ligand recognition and signal transduction for CB2 receptor. *International Immunopharmacology* **11**(2011), 1303-10.

- Chen, J-Z., Myint, K-Z and **Xie, XQ.*** A Novel QSAR Approach for GPCR CB2-Antagonistic Triaryl Bis-Sulfone Analogs: A Combined Molecular Morphological and Pharmacophoric approach, *SAR and QSAR in Environmental Research* 22(2011), 525-44.
- Kyaw Myint, Chao Ma, Lirong Wang and **Xiang-Qun Xie***. “Fragment-based QSAR Algorithm Development for Compound Bioactivity Prediction”, *SAR QSAR Environ Res* 2011, 22(3)385-410.
- Kay M Brummond*, John Goodell, Matthew LaPorte, Lirong Wang and **Xiang-Qun Xie***. “Synthesis and In Silico Screening of a Library of Carboline-Containing Compounds”. *J Combi Chem* (accepted, in press), 2012 April.
- Ajay Srinivasan, Lirong Wang, Cari J. Cline, Zhaojun Xie, Robert W. Sobol, **Xiang-Qun Xie** and Barry Gold*. “The Identification and Characterization of Human AP Endonuclease-1 Inhibitors”. *Biochemistry (in press)*, 2012
- Manuj Tandon, Lirong Wang, Qi Xu, **Xiang-Qun Xie**, Peter Wipf and Q. Jane Wang. “A Targeted Library Screen Reveals a New Selective Inhibitor Scaffold for Protein Kinase D”. *PLoOne (in press)* 2012 May.
- Wang, L.R.; Ma, C.; Wipf, P. and **Xie, X.-Q.*** “TargetHunter™, an online web server for target prediction of small chemical molecules based on annotated chemogenomics data”. *J. of Chem. Inf. and Modelings* (2012)
- Feng, R, Tong, Q, Lentzsch, S, Roodman, GD, Sfeir, C and Xie, X-Q “Targeting cannabinoid receptor-2 pathway by phenylacetamide suppresses the proliferation of human myeloma cells through mitotic dysregulation and cytoskeleton disruption”, *Blood* (submitted).
- Yang P, Myint K-Z, Tong Q, Cao H, Almehizia AA, Feng R, Hamed AM, Wang L, Gertsch J, **Xie* X-Q.** “Discovery, synthesis and QSAR study of novel N,N'-((4-(dimethylamino)phenyl)methylene)bis(2-phenylacetamide) derivatives as selective CB2 receptor inverse agonists. “ *J. of Med. Chem.* (2012) (submitted)
- Kyaw-Zeyar Myint, Lirong Wang, Qin Tong and **Xiang-Qun Xie***. “Fingerprint-based Artificial Neural Networks QSAR (FANN-QSAR) for Ligand Biological Activity Predictions”. *Mol Pharmaceutics (submitted)*.

Meetings and Invited Speaker

- Chair/Speaker, February 14, 2012, 4th *International Conference on Drug Discovery & Therapy*: “Novel Target and Novel Chemical Agents Potential for Multiple Myeloma Treatment” Dubai, UAE
- Invited seminar speaker, April 24, 2012, “Computational Chemical Genomics Screening Center” Department of Immunology, University of Pittsburgh School of Medicine, Pittsburgh, PA
- Invited speaker, March, 28, 2012, “Computational Chemical Genomics Screening Center”, Department of Developmental Biology, University of Pittsburgh School of Medicine, Pittsburgh, PA

- Invited speaker, December 19, 2011 “GPCR Chemical Genomics for Drug Discovery”, Shanghai JiaoTong University, College of Pharmacy, Shanghai, China
- Invited speaker, December 28, 2011 “Computational GPCR Chemical Genomics for Drug Discovery”, Sun-Yat Sen University, College of Life Sciences, Guangzhou, China
- Invited speaker, July 28, 2011 “GPCR Chemical Genomics for Drug Discovery”, Shanghai NanKai University, College of Pharmacy, Tianjin, China
- Invited speaker, June, 10, 2012, “Cloud computing and High Throughput Experimental Chemical Genomics Screening Approaches for Lead Discovery”, Jinan University, GuangZhou, China
- Invited speaker, June, 20, 2012, “Cloud computing and High Throughput Experimental Chemical Genomics Screening Approaches for Natural Product Target Identification and Lead Discovery”, Kunming Institute of Botany, Chinese Academy of Sciences, Kunming, China
- Invited speaker, June, 23, 2012, “Computational Chemical Genomics Screening Approaches for Natural Product Target Identification and Lead Discovery”, XiShuanBanNan Tropical Botanic Garden, Chinese Academy of Sciences, XiShuanBanNan, China

Posters

- Kyaw Z. Myint, Lirong Wang and **Xiang-Qun Xie**. “Artificial Neural Networks Approach to Predict GPCR Cannabinoid Ligand Binding Activities”. Oral Presentation in Ligand-based Drug Discovery Symposium, Division of Computers in Chemistry, 243rd ACS National Meeting, San Diego, CA (2012)
- Lirong Wang, Chao Ma, Kyaw Zeyar Myint, Kay Brummond, Matthew LaPorte, Peter Wipf and **Xiang-Qun Xie** “Chemogenomics/Chemoinformatics Tools for Facilitating the Chemical Research in UPCMLD” Poster in 2012 CMLD Meeting on Frontiers in Accelerated Chemical Discovery, June 12, Bethesda, MD
- Peng Yang, Kyaw-Zeyar Myint, Qin Tong, Abdulrahman A. Almehizia, Rentian Feng, Alqarni Mohammed Hamed, Lirong Wang, and **Xiang-Qun Xie** “Osteoclast inhibitor: discovery, synthesis and QSAR study of novel bi-amide derivatives as selective CB2 receptor inverse agonists” Poster in 2012 CMLD Meeting on Frontiers in Accelerated Chemical Discovery, June 12, Bethesda, MD
- Lirong Wang, Matthew LaPorte, Peter Wipf and **Xiang-Qun (Sean) Xie**. “UPCMLD-ChemBioData: Data-Mining Compound Bioactivity from PubChem”. CMLD2011. Chicago (2011)

Patents Approved and Filed

- **Xie, X-Q***, Myint, KZY, Kurihara N, Roodman, D.(2011) “Novel p62-ZZ Chemical Inhibitor with Therapeutic Potential for Multiple Myeloma Treatment”, (this is a first chemical inhibitor discovered). US 61/521,287
- **Xie, X-Q.***, Feng, RT, and Peng Yang. (2012) “Novel CB2 Inverse Agonist for Multiple Myeloma and Osteoporosis Bone Diseases”. Patent USSN: 61/576,041.

Web Publications - Molecular information libraries and Data-mining Tools

- www.CBLigand.org/CBID the largest cannabinoid ligand database in the world. Web-interfaced drug or chemical repository architecture
- www.CBLigand.org/gdb13: World largest online chemical database (1 billion)
- www.CBLigand.org/UPCMLD: A chemical biology metabase for NIGM funded University of Pittsburgh UPCMLD, UPCMLD-ChemBioDB
- www.CBLigand.org/HTDocking High through put docking virtual screening for quick lead discovery
- www.CBLigand.org/LiCABEDS Novel machine learning algorithm for compound biological classification prediction. Ligand Classifier of Adaptively Boosting Ensemble Decision Stumps (LiCABEDS)
- www.CBLigand.org/5HT1A Web-interfaced GPCRs functionality predictor designed using machine learning SVM and KNN algorithms
- www.CBLigand.org/FPR False Positive Remover. Help to identify the false positive hits from high throughput screen experiments
- www.CBLigand.org/TargetHunter Off-target Predictor to help characterization of off-target activities of a drug molecule or new target identification
- www.CBLigand.org/BBB **BBB-permeability predictor** to predict drug or chemical compound permeability to cross blood brain barrie
- www.CBLigand.org/gpu GPU-accelerated molecular property calculation

**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, and transplant services. We are committed to advancing optimal patient care by leading medication therapy.

By 2018, the School of Pharmacy will have:

- **Become 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.**

PATIENT CARE BY THE NUMBERS FOR FY12

In FY12, School of Pharmacy faculty members:

- Provided care to more than **4,400** underserved and underinsured patients through the Grace Lamsam Pharmacy Program for the Underserved.
- Gave **55** invited presentations on patient care or professional training.
- Received PGY2 Expansion Grant from the American Society of Health-System Pharmacists (ASHP) Research and Education Foundation to expand our existing critical care residency program to UPMC Passavant.
- Graduated the first residents from four programs: PGY1 Pharmacy at WPIC, PGY1 Pharmacy with emphasis in Pediatrics at Children's Hospital of Pittsburgh of UPMC, PGY2 Underserved, and PGY2 Underserved/Global Health resident at the School of Pharmacy in a partnership with UPMC Matilda Theiss Health Center, a federally qualified health center.
- Expanded the UPMC residency program to UPMC McKeesport.
- Led the program that administered > **3,491** seasonal influenza vaccines during influenza season.
- Developed comprehensive pharmacy services for patients of all stages of abdominal transplantation.
- Led efforts to implement pharmacist documentation within the electronic medical record.
- Received **4** awards for contributions to community pharmacist practice development.
- Were recognized with **4** fellowships in national organizations.
- Educated more than **1,428** high-risk hospitalized patients including more than **578** patients newly started on warfarin and **240** patients newly started on insulin.

PROGRAMS FOR COMMUNITY-DWELLING PATIENTS

Faculty

Sharon E. Connor, PharmD, Assistant Professor
Scott R. Drab, PharmD, Associate Professor
Bobbie Farrah, PharmD, Assistant Professor
Deanne L. Hall, PharmD, Associate Professor
Lauren J. Jonkman, PharmD, Instructor
Melissa S. McGivney, PharmD, Associate Professor
Stephanie H. McGrath, PharmD, Assistant Professor
Karen S. Pater, PharmD, Assistant Professor
Janice L. Pringle, PhD, Research Associate Professor
Michael Zemaitis, PhD, Professor

Residents

Jennifer Bacci, PharmD, PGY1 Community
Yardlee S. Kauffman, PharmD, PGY2 Underserved/Global Health
Ana M. Lupu, PharmD, PGY2 Underserved Care
Michelle Maguire, PharmD, PGY1 Community
Ibrahim Sales, PharmD, PGY2 Ambulatory Care

Major Accomplishments

In FY12, School of Pharmacy faculty members:

- In partnership with UPMC Matilda Theiss Health Center were chosen as a 340B Leading Practice Site (Peer to Peer Leader) for 2012 and were awarded \$25,000 toward a resident stipend. The award was from the Pharmacy Services Support Center in partnership with Health Resources and Service Administration, Health Systems Bureau, Office of Pharmacy Affairs. **Connor SE, Jonkman LJ, Lupu AM and Kauffman YS.**
- Developed a new residency program, the Caring for Underserved/Global Health Track residency. **Connor SE and Jonkman LJ**
- Received 4 awards for contributions to community pharmacist practice development **McGivney MS**:
 - Community Residency Excellence in Precepting Award (American Pharmacists Association: 2012);
 - Wiederholt Prize (co-author) Best Paper in Social and Administrative Sciences (American Pharmacists Association 2012);
 - Pharmacist of the Year (Pennsylvania Pharmacists Association 2011);
 - Community Faculty of the Year (National Association of Chain Drug Stores 2011).
- Awarded a grant to develop and lead the NACDS Foundation Community Faculty Scholars Program. **McGivney MS.**
- Election as President, Pennsylvania Pharmacists Association Education Foundation 2012-2014. **McGivney MS.**
- Secured \$20,000 grant from Jewish Healthcare Foundation to support P4P (Pay for Performance) model development. **Pringle JL.**

- Selected as a SAMHSA (Substance Abuse and Mental Health Services Administration) Committee Member on CMS waivers. **Pringle JL.**
- Presented at Kings College in London England the results of the PQA-funded study demonstrating improved patient adherence following the application of brief screening and interventions. **Pringle JL.**
- Selected as CMMI Innovation Advisor. **Pringle JL.**
- Developed and licensed automated system for training pharmacists to provide effective brief interventions (EBI). **Pringle JL.**
- Led the administration of 3491 seasonal influenza vaccines. **Hall DL.**

Selected Publications (related to community dwelling patients)

- **Pringle J**, Kowalchuk AA, Meyers JA, Seale JP. Equipping Residents to Address Unhealthy Alcohol and Drug Use: The National SBIRT Residency Training Project. *Journal for Graduate Medical Education.* 2012; 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.
- **Pringle JL**, Kowalchuk AA, Meyers J, Seale JP. Taking on Public Enemy Number One via The National Alcohol SBIRT Project. Submitted for publication, *American Journal of Preventative Medicine.*
- Osborne MA*, Snyder ME, Hall DL, Coley KC, **McGivney MS.** Evaluating Pennsylvania pharmacists' provision of community-based patient care services to develop a statewide practice network. *INNOVATIONS in Pharmacy* 2011; 2(4): 1-9.
- **McGivney MS**, Hall DL, Stoehr GP, Donegan T. Silver Scripts: An introductory pharmacy practice experience. *Am J Pharm Educ* 2011; 75(8): Article 159.
- Hall DL, **Pater KS.** Implementation of a medication therapy management program in a hospital-based outpatient pharmacy. *Hosp Pharm* 2011;46(7):512-518.

Community Practice Grants Awarded

- **Drab SR**, Smith RB, Martin SS. DM Educate Course Updates. \$110,000.00, Novo Nordisk Professional Education Services Grant, Princeton, NJ, 2012.
- **Pringle JL.** “The Strategic Prevention Framework State Incentive Grant (SPF SIG)” Annual contract award with the University of Pittsburgh, School of Pharmacy. (\$147,500/year. 2006-2011.
- **Pringle JL.** “New Lease on Life” SAMHSA (Substance Abuse and Mental Health Services Administration). \$300,000. 2009-2014.
- **Pringle JL.** “A Patient Clinical Team Collaborative Model of Diabetes Self-Management” Annual contract award with the University of Pittsburgh, School of Pharmacy. \$127,886. 2009-2011.

- **Pringle JL.** “Development, Implementation, and Evaluation of an Evidence-Based Screening, Brief Intervention, Referral to Treatment (SBIRT) Curriculum in Medical Residency Training Programs” Annual contract award with the University of Pittsburgh, School of Pharmacy. \$1,875,000. 2008-2013.
- **Pringle JL.** “Media Literacy to Improve Evidence-Based Prescribing among Family Medicine Trainees” Oregon State Attorney General’s Office. \$1,550,594. 2011-2014.
- **Pringle JL.** “Pharmacy Outcomes for Chronic Medication Use” Pharmacy Quality Alliance (PQA). \$119,500.
- **McGivney MS, Smith RB.** “NACDS Foundation Faculty Scholars Program.” NACDS Foundation \$41,000. March, 2012.
- **Maguire M, McGivney MS, Montgomery J, Fabian T.** “Pharmacist-provided patient care services in an outpatient mental health setting: a multi-stakeholder qualitative analysis. APhA Foundation. \$1000. December, 2012

Selected Invited Presentations (National/International)

- **Pater KS.** Special Session: Mischief Managed: Spells and Charms to Make Team-Based Learning More Magical. AACP Annual Meeting, July 16, 2012.
- **McGivney MS.** “APhA/AACP Medication Therapy Management (MTM) Curricular Project Expert Panel Recommendations”. [Expert Panel Speaker] APhA Annual Meeting. New Orleans, LA. March, 2012.
- **McGivney MS.** “SCRIPT: Pharmacist’s Role in the Medical Home”. ACCP Annual Meeting. Pittsburgh, PA. October, 2011.
- **Pringle JL.** National Association of State Mental Health Program Directors, Inc. (NASMHPD). Organizational Development and Strategic Planning Webinar. September, 2011.
- **Pringle JL.** ScriptMed Conference. Las Vegas, NV. Putting the Patient First in Pharmacy Care Models and Research. November 8, 2011.
- **Pringle JL.** Institute for Healthcare Improvement Annual National Meeting. Orlando FL. Transforming Community Pharmacy Practice using a Scalable Web-based Platform with Focused Interventions to Improve Medication Adherence. December, 2011.
- **Pringle JL.** King’s College, London UK. Transforming Community Pharmacy Practice using a Scalable Web-based Platform with Focused Interventions to Improve Medication Adherence. March 2012.
- **Pringle JL.** Seventh National Pay for Performance Summit. Los Angeles, CA. Integrating Quality Metrics with Focused Interventions to Improve Medication Adherence. March 2012.
- **Pringle JL.** Academy of Managed Care Pharmacy (AMCP) 24th Annual Meeting & Expo. San Francisco, CA. Measuring Up. What is Around the Corner for Quality Improvement? April 2012.

- **Pringle JL.** Pharmacy Quality Alliance 7th Annual Meeting. Washington, DC. Linking Quality Measurement to Performance Improvement for Better Patient Care. June 2012.
- **Drab S.** Caring for Older Adults with Type 2 Diabetes: Setting Appropriate Targets in Older Patients. American Society of Consultant Pharmacists Annual Meeting; Phoenix, AZ, November 16, 2011.

HOSPITAL-BASED PROGRAMS

UPMC Pharmacy Transplant Group

Faculty

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

PhD Students

Jeremiah Momper, PhD Candidate

Residents

Gretchen Kipp, PharmD

Major Accomplishments

In FY12, School of Pharmacy faculty members:

- Served as Co-Chair of the National Quality Forum Steering Committee for the *Renal Consensus Standards Endorsement Maintenance Project*. The Committee develops quality measures used by organizations including the Centers for Medicare and Medicaid Services (CMS) and the Centers for Disease Control (CDC). **Schonder**
- Developed comprehensive pharmacy services for the peri-operative and post-operative management of abdominal transplant patients. The newly developed service could serve as a model of care that is in compliance with CMS regulations. **Schonder**
- Served as a Session Chair for: “Heart Transplantation in 2012.” American College of Cardiology(ACC) Annual Meeting. **Shullo**
- Were elected as Vice Chair/Chair Elect for the Pharmacy and Pharmacology Council of the International Society of Heart and Lung Transplant (ISHLT). **Shullo**

Selected Publications

- Guglielmo JB, Edwards EJ, Franks AS, Naughton CA, **Schonder KS**, Stamm PL, Thornton P, Popovich NG. Faculty development: a critical appraisal and recommended next steps. *Am J Pharm Educ* 2011, 75(6): Article 112.

- **Momper JD, Ridenour TA, Schonder KS, Venkataramanan R.** The impact of conversion from Prograf to generic tacrolimus in liver and kidney transplant recipients with stable graft function. *Am J Transplant* 2011,11(9):1861-7.
- **Schonder KS.** Pharmacology of immunosuppressive medications in solid organ transplantation. *Crit Care Nurs Clin North Am*, 2011;23(3):405-23.
- Basu A, Falcone J, Dvorchik I, Tan HP, **Schonder K**, Marsh JW, Zeevi A, Humar A, Shapiro R. Outcomes of renal transplantation in recipients with peak panel reactive antibody > 30% under tacrolimus-based immunosuppression. *Ann Transplant* 2011,16(3):5-13.
- Rathburn RC, Hester EK, Arnold LM, Chung AM, Dunn SP, Harinstein LM, Leber M, Murphy JA, **Schonder KS**, Wilhelm SM, Smilie KB. The importance of direct patient care in advanced pharmacy practice experiences. *Pharmacotherapy*, 2012,32(4):e88-97.
- **Momper JD, Zhao Y, Shapiro R, Schonder KS, Yao G, Randhawa PS, Venkataramanan R.** Pharmacokinetics of low-dose cidofovir in kidney transplant patients with BK virus infection. *Transplant Infect Dis*, accepted for publication.
- Zahr F, Genovese E, Mathier M, **Shullo M**, Lockard K, Zomak R, McNamara D, Toyoda Y, Kormos RL, Teuteberg JJ. Obese patients and mechanical circulatory support: Weight loss, adverse events and outcomes. *Ann Thorac Surg*, 2011; 92: 1420 – 1426.
- Ensor CR, Trofe-Clark J, McDevitt LM, Gabardi S, **Shullo MA.** Generic maintenance immunosuppression in solid organ transplantation. *Pharmacotherapy*, 2011; 31(11):1111-29.
- 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. *Scandinavian Journal of Infectious Diseases*. Epub July 25, 2012.

Invited Presentations

- Late Post-Transplant Journey: Immunosuppressive challenges with the development of Skin Cancer and Pre-cancerous Colon Polyp. An approach to innovative immunosuppression in the face of malignancy. International Society of Heart and Lung Transplantation. Annual Meeting. Prague, Czech Republic. April 2012 **Shullo**

UPMC Pharmacy Critical Care Group

Faculty

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

Residents

Brian Lohr, PharmD, PGY2 Critical Care Resident

Major Accomplishments

In FY12, School of Pharmacy faculty members:

- Selected as Society of Critical Care Medicine Program Committee Chair for 2012 Annual Congress, **Kane-Gill SL**
- Served as the UPMC system-wide Committee Chair sedation guideline and interruption protocol development for Medical Intensive Care Unit Mobility Project. **Smithburger PL**
- Won first place in the UPMC Quality and Safety Fair, “MICU Mobility”, **Smithburger PL**
- Co-authored the 2010 Alcohol Withdrawal Guidelines “Guidelines for the management of alcohol withdrawal for nursing and medical staff of the Surgical/Trauma ICU for use in patient care.” **Benedict N**
- Member of the ACCP committee to develop a guide for health professionals on “Educating Patients About Pharmacogenomics and Genetic Testing.” **Empey PE**

Awards

- 2012 Finalist for the “Simmy Award”, Simulation Journal Club at the International Meeting for Simulation in Healthcare **Seybert AL, Kane-Gill SL, Smithburger PL**
- 2012 SCCM, Clinical Pharmacy and Pharmacology Section Technology Patient Safety Award for using simulation-based learning to reduce medication errors in critically ill patients. **Seybert AL, Kane-Gill SL, Smithburger PL**
- 2012 SCCM, Clinical Pharmacy and Pharmacology Section Medication Safety Award for impact of pharmacist-conducted admission medication reconciliation program on unintended medication discrepancies. **Kane-Gill SL, Smithburger PL**
- 2011 ACCP Critical Care PRN Research Award **Kane-Gill SL**
- American College of Clinical Pharmacy Fellow, **Seybert AL**
- American Society of Health System Pharmacists, Fellow, **Seybert AL**

Selected Critical Care Publications

- **Kane-Gill SL, Kirisci L, Verrico MM, Rothschild JM.** Identification of risk factors for adverse drug events in critically ill patients. *Crit Care Med* 2012;40:823-828.
- Gokhman R*, **Seybert AL, Phrampus P, Darby J, Kane-Gill SL.** Medication errors during medical emergencies in a large, tertiary care, academic medical center. *Resuscitation* 2012;83:482-487
- **Kane-Gill SL, Visweswaran S, Saul MI, Wong I, Penrod L, Handler SM.** Computerized detection of adverse drug reactions in the medical ICU. *Int J Med Inform* 2011; 80:570-578.

- **Empey PE**, Miller TM, Philbrick AH, Melick J, Kochanek PM, **Poloyac SM**. Mild hypothermia decreases fentanyl and midazolam steady-state clearance in a rat model of cardiac arrest. *Critical Care Medicine*, 4, 40, 2012.
- **Seybert AL, Kane-Gill SL**. Elective course in acute care using online learning and patient simulation. *Am J Pharm Educ*, 2011;75:article 54.
- **Smithburger PL, Kane-Gill SL, Ruby-Scelsi CM, Seybert AL**. Comparative effectiveness of three teaching methods to teach seizure management to third professional year pharmacy students. *Simul Healthc*. 2012 Jan 30. PMID: 22293664

Grants

- Grant Total: \$175,000. “Simulation-Based Learning in Pharmacy Education.” Peter M. Winter Center for Simulation Education and Research, 2011-12, **Seybert AL** Principal Investigator.
- Grant Total: \$40,000. “Pharmacy Practice Residency Expansion Grant,” ASHP Foundation, 2011, Residency Program Director of Pharmacy, **Seybert AL**
- 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: \$2,500. Evaluating the impact of a dose range-checking alert for opioids in elderly patients requiring acute pain management. Principal Investigator Mentor. Cumberland Pharmaceuticals Resident Grant, 2011 (11/1/12-06/30/12) **Kane-Gill SL, Smithburger PL**
- Implications of hypothermia on drug transport - 3 yr KL2 Competitive Renewal (2012-2015) PI, Approved, **Empey P**

Selected Invited Presentations

- Meeting the Challenges of contemporary PAH Management. Academy of Managed Care Pharmacy 24th Annual Meeting 2012, San Francisco, CA, April 2012, **Seybert AL**
- 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**
- Establishing a Safety Culture in the ICU: Making Systematic Changes Using ADE Data Presented at the 41st SCCM Critical Care Congress, Houston, TX. **Kane-Gill SL**

- Strategies for Improving the Safe Use of IV Medications in the Critical Care Setting. Presented at the 44th ASHP Midyear Clinical Meeting, New Orleans, LA. **Kane-Gill SL**
- Economic Implications of Postoperative Pain Management Presented at the 44th ASHP Midyear Clinical Meeting, New Orleans, LA **Kane-Gill SL**
- October 2011 The Great Masquerader: Recognizing ADRs in the ICU Learning Using Simulation Presented at the ACCP 2011 Annual Meeting, Pittsburgh, PA. **Kane-Gill SL**
- Genes to predict drug response, Society of Critical Care Medicine, Houston. **Empey P**
- Temporal changes and cell-type specific localization of ATP-binding cassette/multi-drug resistance transporters after traumatic brain injury in mice. Society of Critical Care Medicine, Houston. **Empey P**

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

Amanda Lin, PharmD, PGY2 Internal Medicine Resident

Major Accomplishments

In FY12, School of Pharmacy faculty members:

- Elected Chair-Elect of the American College of Clinical Pharmacy GI/Liver/Nutrition PRN. **Mohammad RA**
- Led efforts to implement pharmacist documentation within the electronic medical record across the UPMC Health System. **Donihi AC**
- Educated 1428 high-risk hospitalized patients including 578 patients newly started on warfarin and 240 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**

- Led efforts to develop and implement pharmacy services for treating patients with hepatitis C using direct-acting antivirals within the UPMC Center of Liver Disease Clinic. **Mohammad RA, Lin A, Johnson H**

Selected Publications

- DeSimone ME, Blank GE, Virji M, **Donihi AC**, DiNardo MM, Simak DM, Buranosky RA, Korytkowski MT. Effect of an educational inpatient diabetes management program on medical resident knowledge and measures of glycemic control: a randomized controlled trial. *Endocrine Practice*. 2012; 18:238-249.
- Lowery JB, **Donihi AC**, Korytkowski MT. U-500 Insulin as a Component of Basal Bolus Insulin Therapy in Type 2 Diabetes. *Diabetes Technology and Therapeutics*. 2012;14:505-507.
- Deussenberry CM, Coley KC, Korytkowski MT, **Donihi AC**. Hypoglycemia in Hospitalized Patients Treated with Sulfonylureas. *Pharmacotherapy*. 2012;32:613-617.
- Kim JJ, Culley CM, **Mohammad RA**. Telaprevir: A novel oral protease inhibitor for hepatitis C virus infection. *Am J Health Syst Pharm* 2012;69:19-33.
- **Mohammad RA**, Eschenauer GA, Matzke GR. Drug Dosing in the Patient with Acute Renal Failure. In Vincent JL, Abraham E, Moore FA, Kochanek PM, Fink MP (eds): Textbook of Critical Care, 6th ed. Philadelphia, PA, Elsevier Saunders, 2011.

Selected Invited Presentations

- Philadelphia, PA. American Diabetes Association 72nd Scientific Sessions. **Donihi AC**. Preparing Diabetes Patients for Hospital Discharge--A Standardized Team. June 2012.

UPMC Infectious Diseases and Antibiotic Management Program (AMP)

Faculty

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

Gregory A. Eschenauer, PharmD, AMP Pharmacist

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

Resident

Louis Gillis, PharmD, PGY2 Infectious Diseases Resident

Meredith Jerigan, PharmD, PGY2 Infectious Diseases Resident

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.
- 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 [Accepted].

- **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 [Accepted].
- **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 [Accepted].
- **Shields RK**, Nguyen MH, Du C, Press E, Cheng S, Clancy CJ. 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 [Accepted].
- Jernigan MG, Press EG, Clancy CJ, Nguyen MH, **Shields RK**. Doripenem and colistin is synergistic and demonstrates bactericidal killing against pandrug-resistant *Klebsiella pneumoniae* isolates *in vitro*. *Antimicrob Agents Chemother* 2012;56(6):3395-8.
- Nguyen MH, Wissel M, **Shields RK**, Salomoni M, Hao B, Press EG, Shields R, Cheng S, Mitsani D, Vadnerkar A, Silveira FP, Kleiboeker S, Clancy CJ. Comparison of *Candida* real-time polymerase chain reaction assay and β -D-glucan for the diagnosis of invasive candidiasis. *Clin Infect Dis* 2012;54(9):1240-8.
- Mitsani DM, Nguyen MH, **Shields RK**, Toyoda Y, Kwak EJ, Silveira FP, Pilewski JM, Crespo M, Bermudez C, Bhama JK, Clancy CJ. A prospective, observational study of voriconazole prophylaxis among lung transplant recipients: Factors impacting voriconazole levels and associations between serum troughs, efficacy, and toxicity. *Antimicrob Agents Chemother* 2012;56(5):2371-7.
- Neofytos D, Lombardi L, **Shields RK**, Ostrander D, Warren L, Nguyen MH, Thompson CB, Marr KA. Administration of voriconazole in patients with renal dysfunction. *Clinical Infect Dis* 2012;54(7):913-21.
- **Shields RK**, Nguyen MH, Press E, Clancy CJ. Five-minute exposure to caspofungin results in prolonged post-antifungal effects and eliminates the paradoxical growth of *Candida albicans*. *Antimicrob Agents Chemother* 2011 55(7):3598-602.

Presentations and Published Abstracts

- Infectious Diseases PRN Focus Session – Infectious Diseases 102: Applying the Basics to Clinical Practice. “Mechanisms of Antimicrobial Resistance” American College of Clinical Pharmacy (ACCP) Annual Meeting, Pittsburgh, PA; October 16-19, 2011. **Potoski BA**
- ***Shields RK**, Minces LR, Clancy CJ, Kwak EJ, Silveira FP, Abdel Massih RC, Pilewski JP, Crespo M, Toyoda Y, Bhama JK, Nguyen MH. Chest wall infections in lung transplant recipients: Does surgical approach matter [Abstract K-542]. Presented at the 51st Interscience Conference on Antimicrobial Agents and Chemotherapy (Chicago), 2011.
 - ***Selected for oral presentation**

- ***Shields RK**, Clancy CJ, Kwak EJ, Silveira FP, Abdel Massih RC, Bhama JK, Toyoda Y, Nguyen MH. *Staphylococcus aureus* is a common cause of invasive disease and death among heart and lung transplant recipients [Abstract K-541]. Presented at the 51st Interscience Conference on Antimicrobial Agents and Chemotherapy (Chicago), 2011.
 - ***Selected for oral presentation**
- ***Minces LR**, Nguyen MH, Kwak EJ, Silveira FP, Abdel Massih RC, **Shields RK**, Pilewski JP, Crespo M, Toyoda Y, Clancy CJ. Indefinite valganciclovir prophylaxis among D+/R- lung transplant recipients reduces CMV disease, but is limited by toxicity [Abstract V-497]. Presented at the 51st Interscience Conference on Antimicrobial Agents and Chemotherapy (Chicago), 2011.
 - ***Selected for oral presentation**
- ***Shields RK**, Nguyen MH, Kwak EJ, Silveira FP, Abdel Massih RC, Potoski BA, Eschenauer G, Clancy CJ. Epidemiology, risk factors, and outcomes of klebsiella pneumonia carbapenemase (KPC) infections in solid organ transplant recipients [Abstract K-543]. Presented at the 51st Interscience Conference on Antimicrobial Agents and Chemotherapy (Chicago), 2011.
 - ***Selected for oral presentation**
- ***† Shields RK**, Clancy CJ, Kwak EJ, Silveira FP, Abdel Massih RC, Potoski BA, Eschenauer G, Nguyen MH. Treatment with colistin and a carbapenem improves success rates against extreme and pandrug-resistant *Acinetobacter baumannii* and limits emergence of colistin resistance [Abstract K-960]. Presented at the 51st Interscience Conference on Antimicrobial Agents and Chemotherapy (Chicago), 2011.
 - ***Selected for oral presentation** † **Selected for ICAAC press release**
- **‡ Shields RK**, Nguyen MH, Press EG, Kwak EJ, Silveira FP, Abdel Massih RC, Clancy CJ. Colistin plus doripenem and ampicillin/sulbactam is synergistic against extensive and pandrug-resistant *Acinetobacter baumannii* *in vitro* and effective as salvage therapy among transplant patients with ventilator-associated pneumonia [Abstract E-735]. Presented at the 51st Interscience Conference on Antimicrobial Agents and Chemotherapy (Chicago), 2011.
 - **‡ Selected for topical poster walk**
- ***Potoski BA, Klima KA**, Eschenauer GE, **Shields RK**, Nguyen MH, Doi Y. *De novo* emergence of colistin-resistant *Acinetobacter baumannii* after colistin exposure [Abstract K-964]. Presented at the 51st Interscience Conference on Antimicrobial Agents and Chemotherapy (Chicago), 2011.
 - ***Selected for oral presentation**
- ***Shields RK**, Nguyen MH, Kwak EJ, Silveira FP, Abdel Massih RC, Pilewski J, Crespo M, Toyoda Y, Bermudez C, Bhama J, Clancy CJ. Extensive- and pandrug-resistant *Acinetobacter baumannii* and KPC-producing *Klebsiella pneumoniae* primarily cause pneumonia among lung and heart transplant recipients and outcomes may be improved by treatment with a carbapenem and colistin. Presented at the 32nd annual ISHLT meeting (Prague, Czech Republic), 2012.
 - ***Selected for oral presentation**
- ***Shields RK**, Clancy CJ, Minces LM, Kwak EJ, Silveira FP, Abdel Massih RC, Pilewski J, Crespo M, Bhama J, Bermudez C, Toyoda Y, Nguyen MH. Early-onset *Staphylococcus aureus* disease is associated with chronic rejection and death among lung transplant recipients. Presented at the 32nd annual ISHLT meeting (Prague, Czech Republic), 2012.
 - ***Selected for oral presentation**

- *Johnson L, **Shields RK**, Clancy CJ. Diseases due to *Scedosporium* in the first year following solid organ transplantation often stem from pre-transplant colonization or surgical seeding and are associated with high mortality. Presented at the American Transplant Congress (Boston), 2012.
 - *Selected as Poster of Distinction
- ***Shields RK**, Clancy CJ, Kwak EJ, Silveira FP, Abdel Massih RC, Minces LR, Bogdanovich T, Nguyen MH. Extreme- and Pan-drug resistant *Acinetobacter baumannii* and Carbapenemase-producing *Klebsiella pneumoniae* infections following transplantation are associated with poor outcomes but respond best to combinations that include colistin and a carbapenem. Presented at the American Transplant Congress (Boston), 2012.
 - *Selected as Poster of Distinction

Drug Use and Disease State Management (DUDSM) Program

School of Pharmacy faculty members lead the DUDSM program to develop evidence-based guidelines to promote safe and cost-effective use of medications for patients at UPMC. Faculty and hospital-based clinical pharmacists in DUDSM 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 PGY1 and PGY2 UPMC residents use these guidelines in the care of patients at all UPMC hospitals.

Faculty

Susan J. Skledar, RPh, MPH, Associate Professor and Director
 Colleen M. Culley, PharmD, Associate Professor
 Shelby L. Corman, PharmD, MS, Assistant Professor
 Tara L. Pummer, PharmD, Assistant Professor

PhD Students

Mohammad Shawaqfeh, PharmD
 Dustin Walsh, PharmD
 Hari Kalluri, PharmD
 Katherine Eichinger, PharmD
 Jeremiah Momper, PharmD, PhD (graduated Fall 2011)

Major Accomplishments

DUDSM Program designed and implemented **45** guidelines and **26** electronic health record protocols for use of medications in the hospital setting across UPMC. The group led the revision and implementation of 38 local hospital policies and Presbyterian Shadyside and Western Psychiatric Institute and Clinics, as well as four system-wide policies, including two new policies **Skledar SJ, Corman SL, Culley CM, Pummer TL**, other faculty.

During FY12, Faculty:

- Received the 2011 American Society of Health-System Pharmacists' *National Best Practice Award* for work with smart pumps in the hospital setting **Skledar SJ, Nicolai**
- **ASHP Best Practices Award in Health-System Pharmacy**. Nicolai C, **Skledar SJ**. "Keeping our Smart Pumps Smart."

- Created criteria for evidence-based review and formulary consideration for complementary and alternative medications for UPMC. **Skledar SJ, Corman SL.**
- Expanded intravenous intelligent infusion (“smart”) pump devices and safety technology to >28 UPMC Cancer Center sites. Safety functionality of pumps now span over 6,000 pumps across 19 UPMC facilities.
- Created and facilitated 16 drug shortage action plans to maintain medication supplies for hospitalized patients across UPMC Skledar SJ, Gross PR, Guttendorf S.
- Averaged **99% compliance** with Surgical Care Improvement Project (SCIP) national core quality measure for the postoperative duration of antibiotics for UPMC Presbyterian surgical patients through daily surveillance and intervention (top national compliance tier is 100%). **Culley CM, Carroll BA, Skledar SJ.**
- Improved TheraDoc® data quality in UPMC programs that extend to skilled nursing facilities, including UPMC Senior Communities, Rx Partners, and UPMC Enterprise.
- Received UPMC System Awards to Pharmacy. This year’s theme was “Improving the Score.” An example of one of pharmacy’s award-winning pharmacy entries:
 - “Continuing to Ensure Safety with Low-dose Ketamine for Analgesia” (Pharmacy, Nursing, and Anesthesia (Pain Service Team): Pizzi L, **Skledar S, Pummer T, Morris T, Chelly J, Culley C, Haas L, Sacks T, Cope D, Niccolai C, Turner C, Schilling D, Burke A, Ross J, Bates L, Kammerer P.**

Selected Publications

- Kim JJ, **Culley CM**, Mohammad R. Telaprevir: an oral protease inhibitor for hepatitis C virus infection. *Am J Health-Syst Pharm.* 2012;69(1):19-33.
- Harinstein LM, Kane-Gill SL, Smithburger PL, **Culley CM**, Reddy VK, Seybert AL. Use of an abnormal laboratory value-drug combination alert to detect drug-induced thrombocytopenia in critically ill patients. *J Crit Care.* 2012;27(3):242-9. Epub 2012 Apr 18.
- Poloyac SM, Empey KM, Rohan LC, **Skledar SJ**, Empey PE, Nolin TD, Bies RR, Gibbs RB, Folan M, Kroboth PD. Core competencies for research training in the clinical pharmaceutical sciences. *Am J Pharm Educ.* 2011 Mar 10;75(2):27.
- Armahizer MJ, Johnson D, Deusenberry CM, Foley JJ, Krenzelok EP, **Pummer TL.** Evaluation of pharmacist utilization of a poison center as a resource for patient care. *J Pharm Pract.* 2012 Jul 25.
- **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 2012.
- Niccolai C, **Skledar SJ.** Updating smart pump libraries during drug shortages. *Pharmacy Purchasing & Products* 2012 April; 9 (4): 6-8.

Selected Invited Presentations

- Pittsburgh PA and national webcast. ASHP Mentored Adult Immunization Impact Program – Program Moderator for 9 national sites. 9 –site mentor for inpatient pharmacies. August 23, 2012 and October 31, 2012. **Skledar SJ**

Geriatrics (Benedum and Shadyside Senior Care Institute) Program

The mission of care is the:

- identification and resolution of drug-related problems in the population which is highly susceptible to adverse drug outcomes,
- enhanced adherence of medication regimens through education of patients and family members,
- 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 Fellows

Emily P. Peron, PharmD, Pharmacy Geriatrics Fellow

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 one of two existing pharmacy geriatrics fellowships in the country, with first graduate in June 2011, and second graduate in June 2012. **Ruby CM, Hanlon JT.**
- Created an interprofessional course at Asbury Heights Nursing Center. Enrolled medical, nursing and pharmacy students. **Led by: Ruby, CM.**

Selected Publications

- **Marcum ZA**, Perera S, Donohue JM, Boudreau RM, Newman AB, **Ruby CM**, Studenski SA, Kwok CK, Simonsick EM, Bauer DC, Satterfield S, and **Hanlon JT**. Analgesic use for knee and hip osteoarthritis in community-dwelling elders. *Pain Med*; 2011; 12 (11).
- **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.
- **Smithburger PL**, **Kane-Gill SL**, **Ruby CM**, **Seybert AL**. Comparative effectiveness of three learning strategies. *Sim Healthcare*, 2012.
- **Marcum ZA**, Pugh MJ, 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. *Journals of Gerontology Series A: Medical Sciences*, 2012.

- 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).
- **Ruby, CM**. Geriatrics- Delirium Section in Pharmacotherapy Self-Assessment Program, 7th edition (PSAP-VII), *American College of Clinical Pharmacy*, July 2011. (Invited Review)

UPMC – Western Psychiatric Institute and Clinic

Faculty

Tanya J. Fabian, PharmD, PhD, Assistant Professor

Graduate Students

Diane Pinchevsky, PharmD, PhD Candidate
Salwa Albusaysi, BS

PGY-1 Pharmacy Residents

Community Practice – Forbes Pharmacy:	Michelle Maguire, PharmD
Pharmacy Practice – WPIC:	Ian McGrane, PharmD

Major Accomplishments

During FY12, faculty:

- Developed a new PGY1 residency with grant funding from the American Society of Health-System Pharmacists (ASHP) Research and Education Foundation. This residency is in partnership with UPMC Presbyterian Shadyside.
- Redesigned the WPIC Pharmacy to include high-performance technology and automation in an entirely new location.
- Increased the number of preceptors by hiring three psychiatric clinical pharmacists and expand clinical services across inpatient and outpatient care. This expansion serves as the foundation for the development of a PGY2 Psychiatric Pharmacy Residency.
- Expanded the WPIC Transitions in Care program to all inpatient units and completed four times as many transitions compared to FY11.
- Were nominated as a Transitions in Care Program Finalist for the Fine Award for Excellence in Healthcare Teamwork that will be awarded in November 2012.

Pittsburgh Poison and Drug Information Center (PPDIC)

Pittsburgh Poison Center

Faculty

Edward P Krenzelok, PharmD

Major Accomplishments

In FY12, faculty and staff of the Poison Center:

- Managed 113,151 poison exposure and poison information calls.
- Responded to over 3200 requests for poison prevention materials and provided in excess of 725,000 sheets of Mr. Yuk stickers, brochures, and other materials to the residents of the PPC 44 county service region.
- Partnered with Giant Eagle pharmacies to distribute Mr. Yuk poison prevention and poison center awareness materials at 177 stores.
- Succeeded in having state funding increased from zero to \$350,000 for FY 2013.

In FY12, faculty and staff of the Drug Information Center:

- Responded to 5,708 total calls and drug information questions.
- Initiated the Medication Management Discharge Program in collaboration with UPMC Solano & Kokales Internal Medicine Associates Practice. Overall goals of the program include improvement in transition of care from the inpatient to the outpatient setting and prevention of medication related readmissions to the hospital.
- Produced six newsletters that were distributed to all healthcare practitioners throughout the UPMC Health System. Newsletters contained information about new medication approvals, adverse drug event alerts, and a selected drug information question and its response.
- Produced five evidence-based medication reviews through the P&T Committee/DUDSM Program formulary development process.

Selected Publications

- **Krenzelok EP**, Royal MA. Confusion: Acetaminophen Dosing Changes Based on NO Evidence in Adults. *Drugs Res Dev* 2012;doi:10.2165/11633010. Prepublication online: 4-26-12.
- **Krenzelok EP**, Mrvos R. A Regional Poison Information Center IVR Medication Identification System: Does It Accomplish Its Goal? *Clin Toxicol* 2011;49:858-861.
- **Krenzelok EP**. Repeated Supratherapeutic Acetaminophen (Paracetamol) use Resulting in a Fatality. *Ther Pharmacol Clin Toxicol* 2011;15:156-159.
- Mrvos R, Feuchter AC, Katz KD, Durback-Morris LF, Brooks DE, **Krenzelok EP**. Whole Fentanyl Patch Ingestion: A Multi-Center Case Series. *J Emerg Med* 2011: doi:10.1016/j.jemermed.2011.05.017

Invited Presentations

- **Krenzelok EP**. Friends and Foes in the Plant World. 13th International Congress of the Romanian Society of Pharmacology, Therapeutics and Clinical Toxicology. Poiana Brasov, Romania, June 11-14, 2012.
- Mrvos R, **Krenzelok EP**. Poisonings Associated with Medication Organizers. North American Congress of Clinical Toxicology. Washington, DC, September 21-26, 2011.

The Grace Lamsam Pharmacy Program for the Underserved

The Grace Lamsam Program serves primarily homeless and low-income 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, Assistant Professor

Residents:

Ana Lupu, PharmD
Yardlee Kauffman, PharmD

Major Accomplishments

In FY12, the Grace Lamsam Program:

- Was selected 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 \$25,000 provided a partial stipend for a resident.
- Established a new residency program in Global Health and Underserved Care.
- Provided oversight of the pharmacy program for Health Care for the Homeless Clinic, dispensing almost 9000 prescriptions to uninsured patients through the efforts of 15 faculty members, residents, and volunteers.
- Provided care for approximately 400 patient care visits at the North Side Christian Health Center Pharmacy Services Clinic.
- Established longitudinal patient-care experiences for one global health resident, one underserved care resident and one pharmacy practice resident at the North Side Clinic.
- Participated in the HRSA Patient Safety and Clinical Pharmacy Services Collaborative through the Mathilda Theiss Center and provided care for approximately 300 patient care visits.
- Presented a Special Session at the July 2011 AACP Annual Meeting entitled, “Incorporating Service Learning into the Patient Safety and Clinical Pharmacy Services Collaborative.” San Antonio, Texas. **Jonkman L, Connor S.**

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. The people of the School of Pharmacy are one of its greatest resources. This section includes the resource of people—the faculty, staff, and alumni of the School.

By 2012, the School of Pharmacy will have:

- **Increased the resource base of the School of Pharmacy.**

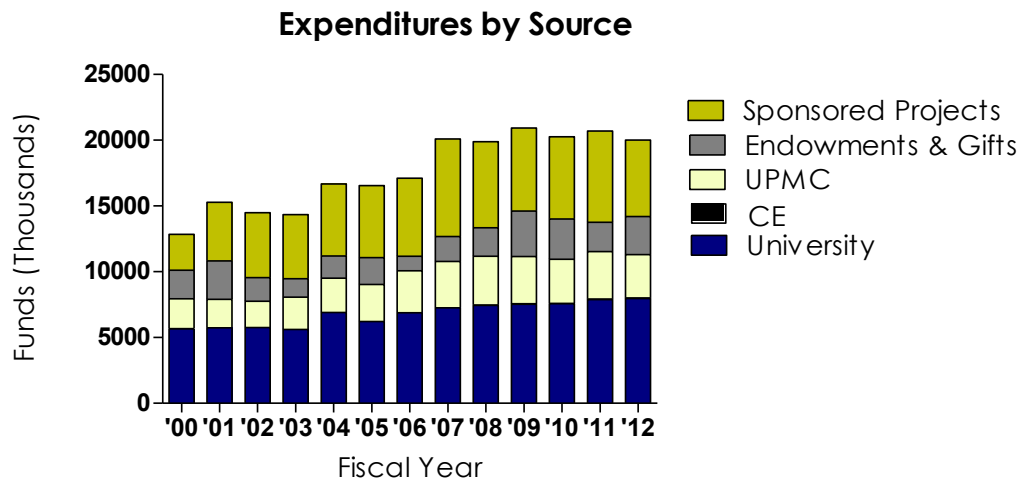
RESOURCES BY THE NUMBERS FOR FY12

- **\$20 million:** The total School of Pharmacy expenditures in FY12 from all sources.
- **\$19,509,764:** The market value of the School's endowment at the end of FY12.
- **\$22,731,282:** The Capital Campaign total at the end of FY12.
- Gifts in FY12 totaled **\$739,923, 23%** of which was contributed by corporations.
- Of the total FY12 gifts, **\$106,284** was from annual gifts.
- The School of Pharmacy has an allocation of and/or leases a total of 81,880 **SF** of space in 9 locations in Oakland and the South Side. Space allocation has decreased by 3.4% (**-2,863 SF**) since FY08.
- In FY12, the School of Pharmacy had **73** full-time faculty members who received:
 - **13** national recognitions/awards for educational accomplishments
 - **8** recognitions/awards for research
 - **10** recognitions/awards for practice
 - **14** national recognitions/awards for service
- Of our 73 faculty members,
 - **17 (23.3%)** have been elected to fellowship in one or more organizations.
 - **22 (30.1%)** are board certified.
 - **36 (49.3%)** are either board certified or fellows, or both!
- Number of staff: **66: 34** are administrative staff and **32** are research staff.
- Number of living alumni: **5,034**
- 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
- **37.05** percent of the alumni were engaged with the School of Pharmacy and/or University in some way

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 '12.



The graph demonstrates the overall growth of financial resources, particularly since 2000. The total expenditures for FY12 were \$20,000,121 with sponsored projects accounting for 29% of the expenses. Together, the University (39.9%), sponsored project awards (29%), and UPMC (16.4%) accounted for over 85% of the School's funding.

Institutional Advancement

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

Capital Campaign

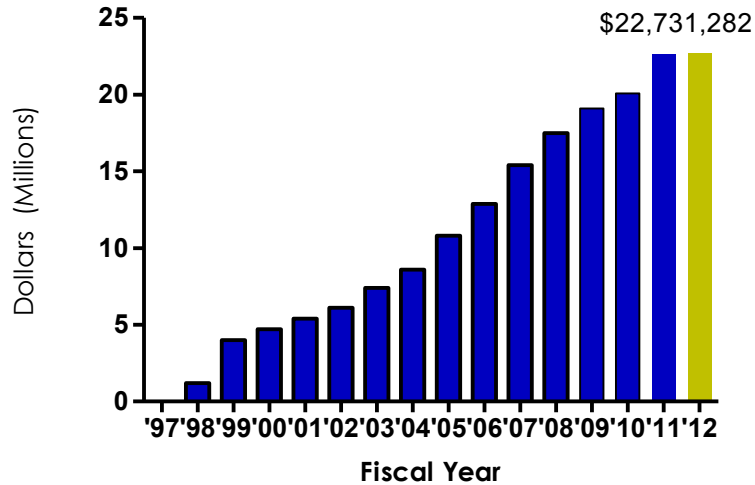
On July 1, 1997, the University launched the Capital Campaign to support students, teaching and learning, and the research of faculty. To date, the School of Pharmacy has raised \$22,731,282 in gifts and pledges for the School's portion of the Capital Campaign. Of this amount, a total of \$19,732,123 has been received and \$2,999,159 is due in pledges and gifts. At the close of FY12 the School of Pharmacy successfully achieved 85% of the goal. We continue to strive to raise the final \$4,180,265 to close the university capital campaign goal for the School of Pharmacy.

School of Pharmacy Capital Campaign by Gift Designation
Gifts and Pledges*
 July 1, 1997 – June 30, 2012

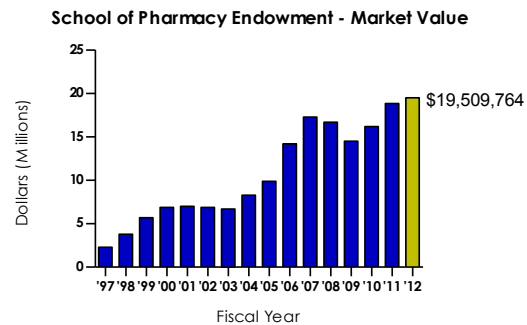
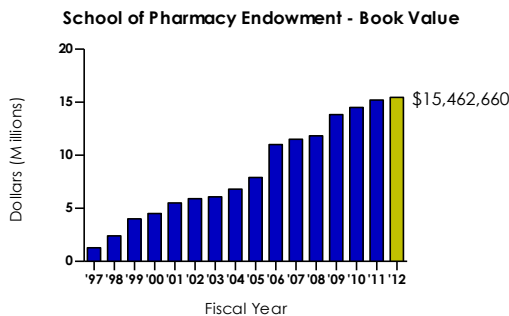
Designation	Amount
Individual Major Gifts	\$5,779,939
Foundations	1,373,519
Corporations	5,392,778
Other Organizations	1,792,929
Planned Giving	6,542,836
Individual Other Gifts	1,849,281
Total	\$22,731,282

*Includes Voluntary Support (gifts) received during FY11

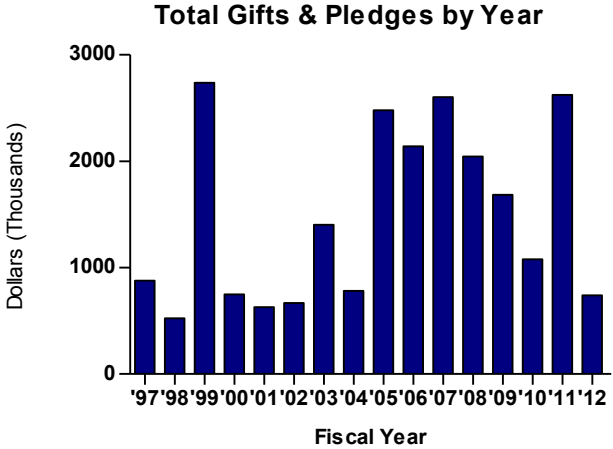
Capital Campaign
Total Gifts and Pledges



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 begun to recover, so has the market value of the endowment.



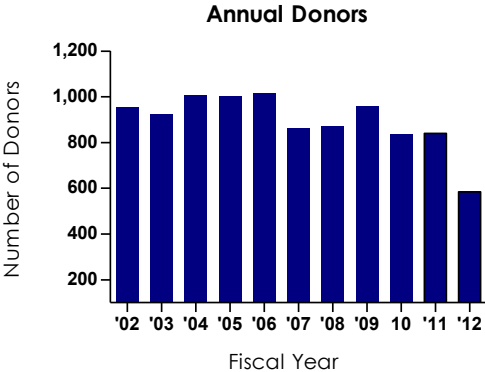
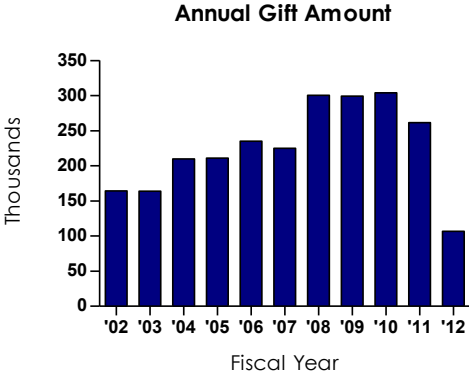
In FY12, the School of Pharmacy received charitable gifts, pledges, and grants totaling \$739,923 from a total of 789 individuals, foundations, corporations, and other organizations. A significant decrease, the result of 13.5% decrease in total donors and a drastic 90% reduction of support from corporations. Organizational support diminished by 57% as well as “friends of the school” support falling nearly 82%. Vacancies in the development and alumni offices are also contributing factors.



FY12 Giving to the School of Pharmacy by Source

	Alumni	Foundations	Corporations	Organizations	Friends
Amount	\$289,934	\$172,031	\$171,154	\$70,508	\$36,296
Percentage	39%	23%	23%	10%	5%

The total dollar amount in gifts and pledges decreased—a change due largely to decreases in corporate and foundation support. As shown in the graphs below, the annual gift amount was \$106,824, 60% decrease from FY11. The total number of annual donors in FY12 decreased over 30% to 585.



PHYSICAL FACILITIES

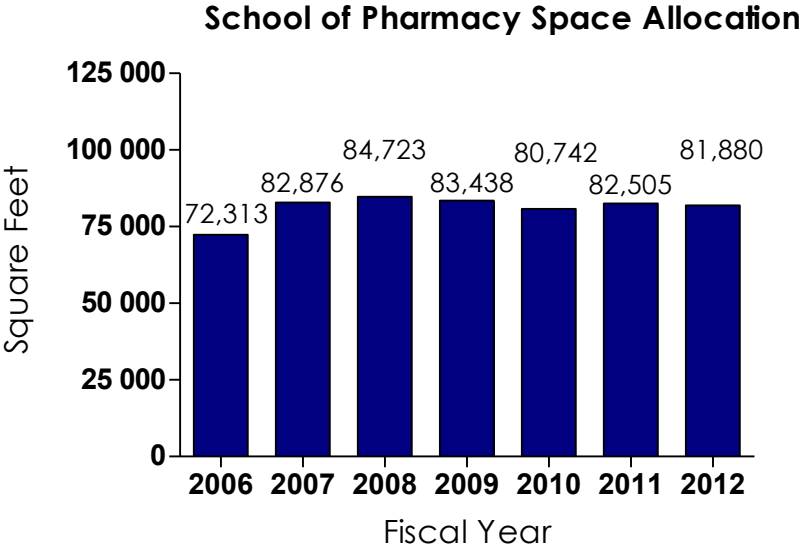
By 2012, we will have:

- **Increased the physical space allocated to the School of Pharmacy.**

At the close of FY12, the School of Pharmacy occupied a total of 81,880 SF, including:

- 47,466 SF in Salk Hall
- 4,305 SF in BSTIII
- 2,704 SF in UPMC Montefiore
- 6,514 SF in UPMC Presbyterian
- 1,091 SF in Falk Clinic
- 13,590 SF (leased) in Birmingham Towers
- 1,896 SF (leased) in Parkvale Building
- 3,557 SF in Victoria Street offices
- 757 SF in South Presby Tower

As shown in the graph below, the space allocation to pharmacy has decreased by 2.6% since 2008.

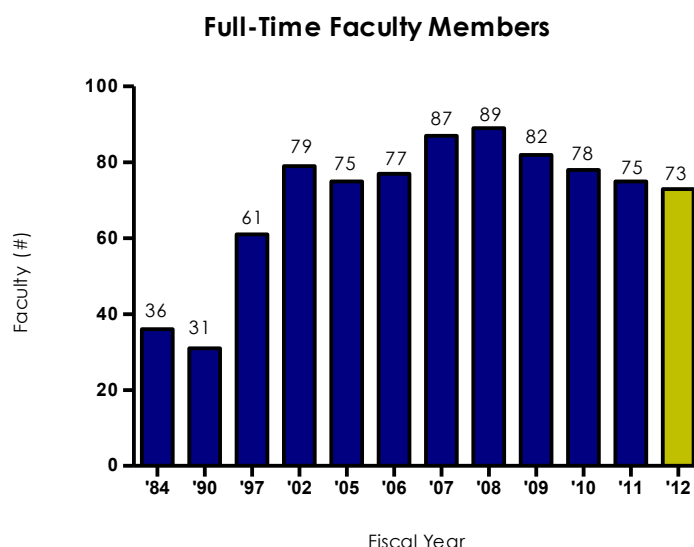


THE RESOURCE OF PEOPLE

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

Faculty

There are 73 full-time and 8 part-time faculty members in the School of Pharmacy, all of whom hold faculty appointments in either the Department of Pharmaceutical Sciences or the Department of Pharmacy and Therapeutics. The changes in number of faculty since 1984 are shown in the graph.



In the Department of Pharmaceutical Sciences, three faculty members earned promotions during FY12; Jan Beumer, PharmD, PhD was promoted to assistant professor, Song Li, MD, PhD was promoted to professor and Jinhan He, PhD was promoted to research instructor. After many years with the University of Pittsburgh, John Alvin, PhD retired in September 2011. Also in September 2011, Alexander Doemling, PhD accepted a position in Germany at the University of Groningen. In August 2011, Yong Li, PhD resigned and returned to China. Takafumi Tasaki, PhD resigned in January 2012 to return to Japan. Both Ulrike Feske, PhD and Frank Vitale are no longer with the School.

In the Department of Pharmacy and Therapeutics, three faculty members were promoted to associate professor, Michael A. Shullo, PharmD, Deanne Hall, PharmD, CDE, BCACP and Scott Drab, PharmD, CDE, BC-ADM. The Department recruited James Coons, PharmD as an associate professor of Cardiology who joined the faculty in July 2012.

Full-Time Faculty Rank by Department of Primary Appointment*

Faculty Rank	Pharmaceutical Sciences	Pharmacy and Therapeutics	Total for School of Pharmacy
Professor	17	3	20
Associate Professor	3	14	17
Assistant Professor	3	21	24
Instructor	0	4	4
Research Associate Professor	2	0	2
Research Assistant Professor	5	0	5
Research Instructor	1	0	1
All Faculty	31	42	73

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

Department of Pharmaceutical Sciences: 4

Department of Pharmacy and Therapeutics: 4

Fellowships in Organizations and Board Certification

Election to fellowship and board certification are two characteristics of faculty members who have distinguished themselves. Of the 73 faculty members, 18 (24.6%) have been elected to fellowship in one or more organization, 22 (30.1%) are board certified, and 37 (50.7%) 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.

FY12: 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 Clinical 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	

FY12: Faculty Board Certifications

Name	Certification		Department
Janet Amico	ABIM	Internal Medicine	Pharmaceutical Sciences
Sherrie Aspinall	BCPS	Pharmacotherapy	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
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
Ralph Tarter	ABPP	Clinical Psychology	Pharmaceutical Sciences
Lauren Trilli	BCPS	Pharmacotherapy	Pharmacy and Therapeutics

Alumni and Alumni Engagement

In the six 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” includes contributions to the University and participation in events, University support functions, percentage of email addresses available, and online participation.

In FY12:

- 37.05 percent of the 5,034 School of Pharmacy living alumni were engaged with the School of Pharmacy and/or University in some way.
- School of Pharmacy alumni ranked:
 - first (11.94 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 (among 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 hosted by the School and/or the Alumni Society:
 - Pharmacy alumni celebrated Homecoming 2011 with a Banana Split Homecoming Party.
 - Receptions at national professional and scientific meetings:
 - American Society of Health-System Pharmacists Midyear Clinical Meeting, December 6, 2011, Anaheim, Calif.
 - American Pharmacists Association Annual Convention, Pennsylvania Pharmacy Association Reception (jointly hosted by the Pennsylvania Schools of Pharmacy), March 27, 2011, Seattle, Wash.
 - The Twentieth Annual Career Roundtables, February 22, 2012, William Pitt Union Ballroom. Thirty-six alumni participated in this student event. Alums from 21 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 18, 2012, Quicksilver Golf Course. Eighty golfers participated, and the event raised \$20,266.85 for the Alumni Scholarship Fund. In the past nine years, more than \$159,000 has been raised for student scholarships.
 - *Rxtravaganza Gala 2012...All Aboard*, an annual celebration for alumni and friends, June 9, 2012, Soldiers and Sailors Memorial Hall in Oakland. More than 230 alumni and friends enjoyed the Saturday evening dinner and dancing extravaganza to benefit scholarships. Through the event, an additional \$27,595 was raised.
- The School’s Alumni Society recognized two Distinguished Alumni at *Rxtravaganza*:
 - Daniel J. Cobaugh, BS ’87, vice president of the American Society of Health-System Pharmacists (ASHP) Research and Education Foundation
 - David Rotella, BS ’81, Margaret and Herman Sokol Professor of Medicinal Chemistry at Montclair State University

Board of Visitors

Dean Patricia Kroboth and the faculty hosted the School of Pharmacy Board of Visitors on May 14 and 15, 2012. The overarching focus of the visit was the draft of Long-Range Plan 2018, *Providing the Innovators and the Discoveries to Solve Complex Medication-Based Problems of Today and Tomorrow*, with a focus on the appropriateness of the goals, current strengths of the School and capacity to achieve those goals, and necessary resources. Board members had the opportunity to meet with selected faculty, as well as students.

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

Board of Visitors 2011–12

Herbert S. Shear, Chair
Chief Executive Officer
GENCO ATC

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

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

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

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

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

Patrick Quinn
Senior Director of Trade
Novo Nordisk Inc.

John T. Tighe III
Founder, President and CEO
TMG Health, Inc.

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

* Did not attend in 2012

ENHANCING OUR RESOURCE BASE THROUGH EFFICIENCY AND EFFECTIVENESS

By 2012, the School of Pharmacy will have:

- **Increased effectiveness and efficiency and will have enhanced the personal growth and professional development of the staff.**

Fostering philanthropic support, assuring the efficient utilization of space, acquiring space for new and/or growing programs, 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 FY12:

- Sixty-six staff members served in the following roles:
 - administrative staff (34)
 - research staff (32)
- All 34 administrative staff members met the goal of attending at least one internal professional development program and one external professional development program. The goal was set to enhance the administrative and technical capabilities of the staff as well as the potential for personal job satisfaction.
- Administrative staff members enhance the reputation of the school by attending meetings, presenting at meetings, serving on committees, conducting training sessions both within the University and at the national level.
- Implementation of a new Staff Technology And Resource Session (STARS). STARS is a monthly meeting for administrative staff to enhance skills, improve communication and develop best-practices.

Information Technology

FY12, the Information Technology staff:

- Handled 1,357 Technology Help Tickets
 - Web and online technology: 308
 - Network/Server Administrator: 310
 - Desktop and Classroom Support: 739
- Expanded mobile device and technology skills program called “Tech brown-bag sessions,” formerly the iPad Coffee Hour.
 - Opened the program to graduate students and residents.
 - Provided more sessions at varying times to better meet the scheduling needs of faculty, staff, graduate students and residents.
- Created a map that illustrates all places where faculty are asked to provide data to the school, and the path of information to various school reports and other uses. The map will serve as a basis for making data more accessible and require less duplication of efforts.

- Expanded Curricular Map to include:
 - Drug classes and Disease states per course
 - The weekly schedule for the course
- Created a visitor log database.
- The PharmD IT committee drafted social media guidelines for student engagement in social media.
- Developed an Annual Review webapp for graduate students to report their yearly progress and successes similar to the webapp used by faculty.
- Implemented a new prescription management software in the 810 Pharmacy lab to better simulate tasks relating to compounding, and prescription filling.

Communications

The websites of the school received an average of 16,000 visitors per month. This includes the public site, student portal, faculty and staff portal, and online museum.

There are three major updates/ additions to the websites begun within FY12 to be completed by October 2012:

- Create a specialized site to highlight the construction of Salk Pavilion and renovation of Salk Hall. This project includes an innovative video component, and increased social media opportunities.
- The Curriculum Committee, working with Thomas Waters, developed a revised PharmD section to the website. Similarly, the Graduate Program web content was redesigned. These new sections were based upon a review of the strategic goals for the programs, and organizing and selecting page content to meet those goals.

School of Pharmacy Long-Range Plan 2012



School of Pharmacy

Vision for 2012

Long-Range Plan 2006–2012

During FY06, faculty and staff of the School of Pharmacy adopted revised mission, vision, and values statements and finalized a long-range strategic plan that extended through 2011; modifications were made with the input of faculty and staff to extend the plan through 2012.

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

Long-Range Plan 2006–2012

The School of Pharmacy first embarked on a new long-range planning process in 2001. The plan was developed and implemented with extensive faculty and staff participation, as well as input from students and other stakeholders. By design, the 2001 plan was outcome and mission driven, and closely aligned with the strategic focus areas of the University.

Based on the successful execution of the 2001 - 2006 Long-Range Plan, the leadership of the School of Pharmacy committed to continuing the disciplined planning process. In 2005, the faculty and staff embarked on planning for the current plan that originally extended through 2011, and was subsequently extended to 2012 to coincide with University planning. The Plan serves as a guide for our decisions; it determines what we aspire to become and what we are committed to achieving. Since 2001, the Long-Range Plan has helped our extended School of Pharmacy family discuss opportunities using common language, and make choices based on a common set of strategic priorities and values. The Plan is our framework for resource allocation and ensures that everyone is working toward the same outcomes.



The strategic outcomes are expressed in terms of what we will have become. By 2012, we will have become:

- A leader in pharmacy education;
- A research school of distinction;
- A leader in standardizing the elements of practice so that pharmacists enhance the care of patients in institutions, in the community, and during transitions of care.

Long-Range Plan Organization

Recognizing the wisdom of aligning our School with the University, our Plan coincides with the University's five strategic outcome areas. Our focus areas include:

- Educating the next generation of practitioners and scientists;
- Advancing human health through research;
- Enhancing the health of the community through partnerships;
- Increasing our capabilities by enhancing our efficiency and effectiveness;
- Assuring an adequate resource base.

The strategic outcomes within the Plan are organized using the subheadings of excellence, and innovation and leadership, where excellence refers to the organizational or operational recurring outcomes; innovation and leadership outcomes are strategic. The exception is “assuring an adequate resource base,” which is exclusively focused on excellence.

Annual retreats at the Johnstown and Greensburg campuses and at Southpointe along with half-day sessions on campus have been the major force for developing the Plan, measures, and tactics. PharmD student leaders engage with the process at their selected Annual Student Leadership Retreats and through the Dean's Advisory Board. It has been the firm belief of the School of Pharmacy leadership that the engagement of faculty, staff, students and trainees, and alumni of the School will result in the best possible chances for achieving the stated outcomes of our Long-Range Plan.



Environment: Assessment and Opportunities

Healthcare Issues

Despite technological advances in the ability to diagnose disease and the myriad of sophisticated and expensive medications available, there is a need for increased attention to the care management of individual patients, particularly those with chronic illnesses. Reports on the current state of health care in the United States show that:

- Only about 50% of individuals with chronic illness are treated according to accepted standards, and therapeutic outcomes are often suboptimal.
- 40% to 50% of patients discontinue their medications for chronic disease within one year of initiation of treatment.
- 34% of English-speaking adults aged 65 or older have inadequate health literacy to effectively use the U.S. healthcare system.
- 65% of U.S. adults are either overweight or obese.
- 10% of Americans suffer from chronic disabling conditions.
- The number of persons aged ≥ 65 years is expected to increase from approximately 35 million in 2000 to an estimated 71 million in 2030, and the number of persons aged ≥ 80 years is expected to increase from 9.3 million in 2000 to 19.5 million in 2030.
- Medical errors result in nearly 100,000 deaths annually, with medication errors claiming 7,000 lives yearly. Insulin, narcotics (pain killers), antibiotics, and anticoagulants are responsible for over 50% of those medication-related deaths.

In the report “Crossing the Quality Chasm: A New Health System for the 21st Century” (2001, p 117), the Institute of Medicine identified six redesign imperatives for health care organizations:

- Redesigning care processes;
- Effective use of information technologies;
- Knowledge and skills management;
- Development of effective teams;
- Coordination of care across patient conditions, services, and settings over time;
- Use of performance and outcome measurement for continuous quality improvement and accountability.

Currently, the predominant form of interaction between pharmacists and patients does not meet the needs of people with chronic diseases, particularly those with complicated and expensive drug regimens. In order for therapy to be effective, patients must understand the regimen, accept the responsibility for appropriate self-care, know how to monitor their response to therapy, and have the confidence to communicate with their various healthcare providers. Pharmacists have the knowledge and skill to make a difference, but are currently working in a service delivery model that focuses on the product, not on the information or care process.

Opportunities for the School of Pharmacy:

- Take the lead on a national basis to standardize the pharmacy patient care practice and prepare practicing pharmacists and student pharmacists to care for patients in a standardized way.
- Develop multi-disciplinary training programs for health professionals and disseminate nationally.
- Improve pharmacists' patient-education skills so that patients understand their drug therapies and leading health indicators.
- Partner with nurses and physicians to develop strategies and tactics to improve patient adherence and safety.
- Develop systems and practice models that:
 - improve access to health care;
 - educate consumers about the leading health indicators;
 - are team based;
 - reduce medication errors and increase safety;
 - empower patients to take responsibility for their daily care;
 - improve health outcomes.

Health Disparity

There is disparity in access to and quality of health care for racial and ethnic minorities and low socioeconomic status patients. For example:

- Patients of low socioeconomic position are less likely to receive recommended diabetes services and more likely to be hospitalized for diabetes and its complications.
- Many racial and ethnic minorities and persons of low socioeconomic position are more likely to die from HIV than others in the population. Minorities also account for a disproportionate share of new AIDS cases.
- African Americans and poorer patients have higher rates of avoidable hospital admissions (i.e., hospitalizations for health conditions that, in the presence of comprehensive primary care, rarely require hospitalization).

The Institute of Medicine (IOM) reported that the makeup of healthcare providers does not reflect the diversity in the population in the United States. Although 12% of the population is Latino, only 3.5% are physicians and less than 2% are nurses and pharmacists. African Americans make up 12.5% of our population, but only 5% are physicians and pharmacists. (IOM Report: "In the Nation's Compelling Interest: Ensuring Diversity in the Health Care Workforce", 2004).

Opportunities for the School of Pharmacy:

- Develop a curriculum that promotes cultural competency
- Recruit a more diverse faculty and student population.
- Develop patient awareness and education tools for patients with low health literacy, language barriers, and cultural diversity issues.
- Develop pharmacy care programs for diverse population.

Global Health Issues

The global nature of health care and health products was dramatically demonstrated by the shortfall in influenza vaccine in 2004 resulting from an American company's production facility in the United Kingdom being closed by regulatory actions. The differential cost of drugs among countries has made re-importation of drugs a high visibility political issue in the United States. Harmonization of regulatory requirements for drug development has been on-going for more than 15 years. Now the discovery and development process of new drugs by pharmaceutical companies is international. Most drugs are available globally within a few years of their introduction.

Health care in the United States is also affected by international health issues and developments such as the potential for a global epidemic of a new infection, including SARS, avian influenza, or pandemic influenza. Most experts agree that an influenza pandemic is inevitable and possibly imminent. (WHO report: Avian Influenza). In addition, recent outbreaks of Marburg virus in Africa represent potential future threats given the ease and rapidity of travel between countries. It is also important for United States health and government organizations to continue to partner with international agencies and sister organizations in other countries to address global health issues such as AIDS, tuberculosis and malaria. These partnerships can help improve health and well-being globally.

The terrorist activities in the world over the past decade and particularly the events on September 11, 2001, have greatly increased attention and resources to preparations for biological or chemical terrorism. Pharmacists play a key role in these activities ranging from detection, maintenance of stockpiles of antidotes and drugs for treating patients, and participation in the emergency response. The need for these activities and responsibilities will not, unfortunately, decline over the next five years.

Opportunities for the School of Pharmacy:

- Create international training experiences and partner with other schools on campus to enhance understanding of the threats to global health.
- Exchange faculty and students with universities in other countries.
- Create programs for faculty to experience teaching, research, and practice internationally.
- Include training for management of infectious disease outbreaks.
- Enhance the School of Pharmacy's role in regional emergency preparedness.
- Develop systems and training to assist pharmacists in taking a major role in immunizations.

Research

The National Institutes of Health (NIH) has a major role in setting the national research agenda and is the primary source of competitive research funding. The NIH will be faced with difficult budgeting issues over the next five years with the government's goal to cut the national deficit in half. In FY 2006, NIH has proposed a budget increase of only 0.7%, and it is unlikely that increases over the next five years will be much larger. This comes after a decade during which the NIH budget doubled. A review of the budget allocations by disease area over the last four years indicates that there have not been major shifts in the allocations over this time, and for the most part this will remain true. The NIH Director has begun a process of focusing on multidisciplinary approaches to problem solving, NIH Roadmap Initiative, and two other strategic initiatives—the NIH strategic plan for obesity research and the NIH neuroscience blueprint. Each of these initiatives will affect distribution of funds and have priority over some existing programs.

The progress made by the Human Genome Project has laid the groundwork for a better understanding of how genetics influences disease processes. Over the next five years, research on new technologies is needed to identify and validate functional elements that do not encode protein; monitor gene expression and gene products in real time; determine modulation of gene products in relevant cell types; determine protein abundance; develop non-invasive molecular phenotyping; and correlate genetic variation to human health and disease using haplotype information.

The existing and new methods will generate extensive databases of information requiring new computational biology approaches to effectively manage and use data. There will be increasing focus on identifying genetic contributions to disease and drug response.

The NIH Director has asked for increased funding for research project grants to preserve the ability of scientists to obtain individual funding. The small increase in funding will greatly intensify competition for the available grants. Increases in NIH funding at the School will require careful selection of new faculty to ensure competitiveness and focus on support mechanisms to enhance their chances of funding. The School will need to engage in interdisciplinary research programs and projects with other schools of the health sciences and departments in the University. Research developments in the schools of the health sciences and the new research infrastructure will facilitate the development of these interdisciplinary programs.

The increased competitiveness will make other peer-reviewed research funding sources more attractive to faculty. The Department of Defense, National Science Foundation, and other federal agencies will become more important.

Health services research will be very important in evaluating new pharmacy services, economic impacts, and outcomes from the application of evidence-based medicine. This interdisciplinary research will require expertise in operations, clinical and economic outcomes, business, education, and health policy.

Opportunities for the School of Pharmacy:

- Increase NIH-funded research awards to the School of Pharmacy by recruiting new faculty members who are prepared to be independent or who already are funded investigators to participate in pharmacogenetics, the multi-disciplinary drug discovery program, and other emphasis areas of the school.

- Increase the scope and funding for translational and clinical research, especially hospital-based research conducted by faculty members who have clinical backgrounds.
- Develop health services and health economics research programs on pharmacy care and systems.
- Enhance partnerships with other schools on campus to better position the faculty of the School of Pharmacy and the schools of the health sciences to compete for federal and foundation funding.

The Changing Role of Pharmacists

The Pharmacy Manpower Project reported that community pharmacists in the United States filled three billion prescriptions in 2001. Another 1.98 billion drug orders were fulfilled in hospitals. The number of prescriptions filled by community pharmacists is expected to reach 4 billion by 2010. While the number of prescriptions has continued to increase, there has been a shortage of community pharmacists to provide the service.

One report estimates the community pharmacist shortage today is about 7%-8% and could increase to 25%-27% (38,000) by 2010; this projection was based solely on fulfillment of prescriptions. Currently, the role of the pharmacist is diversifying to include not only order fulfillment, but also drug utilization review, administration, and direct patient care to enhance medication safety and effectiveness. The Pharmacy Manpower Project took into account the changing roles of pharmacists in its projections. The table shows that the increased number of prescriptions is expected to be filled by fewer pharmacists and that by 2020, a projected shortfall of 157,000 pharmacists is expected.

	2001 Estimated Deployment	2020 Forecast Need for Pharmacists
Order Fulfillment (Dispensing)	136,400	100,000
Patient Care	48,000	295,000
Other	12,300	22,000
Total Need	196,700	417,000
Total Supply	N/A	260,000
<i>Projected Shortfall</i>		<i>157,000</i>

The dramatic change in forecast is due to the number of pharmacists involved in patient care in community and institutional settings.

The shortfall in pharmacists has been addressed to some extent by increasing the number of pharmacists graduated each year. Fifteen new schools of pharmacy have been created since 1996, and more new schools are currently in development. In addition to new schools of pharmacy, at least four schools have increased to two or more campuses. There are currently six schools of pharmacy in Pennsylvania. One additional program will be developed in Philadelphia.

The shortage of pharmacists is also being addressed by application of technology and technical staff to prescription order fulfillment. The goal of the application of technology is to reduce the need for a pharmacist in the dispensing function and to provide decision support for drug interactions and

potential adverse drug events. An Arthur Anderson report (Pharmacy Activity Cost and Productivity Study on pharmacist activity) suggested that 68% of a community pharmacist time was spent on order fulfillment and recommended the industry seek ways to reduce the amount of time spent by pharmacists in prescription processing. As much as 60%-80% of a pharmacist's time could be freed to apply to patient care. Technology applications include computer physician order entry (CPOE), e-health records, automated fill stations, bar coding, and robotics. In addition to technology, employment of pharmacy technicians to assist in prescription processing is increasing.

Community Pharmacy in Transition

Applications of technology and technical support staff may permit the pharmacist to spend more time on patient-care activities. How the pharmacist will use the time and identify the appropriate parameters of patient care are issues currently being discussed by pharmacy organizations. This discussion has been fueled by recent legislation. The Medicare Prescription Drug Improvement and Modernization Act of 2003 requires the provision of Medication Therapy Management (MTM) services as part of the Medicare part D drug benefit effective January 2006. MTM services must be available to patients with multiple chronic conditions or multiple medications to ensure appropriate medication use and to reduce adverse drug events. The Center for Medicare and Medicaid Services (CMS) is allowing providers to propose the services to be provided. No generally accepted model providing these services in the community currently exists. Parameters of the services and measures to evaluate results including reimbursement and financial issues need to be quickly established.

Opportunities for the School of Pharmacy:

- Develop systems and practice models that:
 - create a healthcare team in the community
 - improve awareness of health concerns;
 - improve access to health care;
 - reduce medication errors and increase safety;
 - improve health outcomes;
 - empower patients to take responsibility for their daily care.
- Provide leadership in defining MTM.
- Develop educational programs for practicing pharmacists to enhance their ability to provide patient care and MTM.
- Enhance the current PharmD curriculum to improve graduates readiness to provide care and improve patient interactions.
- Develop systems and training mechanisms to enable pharmacists to take a major role in immunizations.
- Evaluate alternative service models that include pharmacy service extenders to improve efficiency and volume of patients served.

Institutional Pharmacy Developments

Pharmacists in institutional practice have become the driving force for evidence-based medication usage and medication safety. Drug use review (DUR) programs will increase with the emphasis on defining the evidence-based use of new drugs and counteracting the advertising and detailing efforts of the pharmaceutical companies. Pharmacists will be under pressure to hold drug budget increases to a minimum and to maintain the quality of clinical outcomes.

Growing evidence of the number of medical errors that occur throughout the U.S. healthcare system has prompted increased interest in using technology to improve safety. A significant concern of patients, healthcare organizations and clinicians is medication errors, that occur at a rate ranging from 19%-36% in hospitals; over half of these errors occur during medication administration. In the United States Pharmacopeia Convention's recently published report, almost 2% of all medication errors (approximately 4,000) reported in hospitals during 2003 resulted in significant harm to patients. Pharmacists in hospitals are uniquely positioned to implement and evaluate technology to improve safety. Examples of this technology include bar coding systems, automated dispensing devices, and computerized physician order entry.

Specifically, the Food and Drug Administration's voluntary recall of the COX-2 inhibitors seriously questions the rigor of post-marketing safety monitoring required by the FDA. To respond to these pressures, government and the public will demand more safety data than could ever be collected in clinical trials. Effective post-marketing safety data collection methods will be developed to meet this demand. It is likely that institutional pharmacists will be recruited to monitor side effects and adverse drug events as new drugs enter the market and their health systems. Automation of drug distribution and improved information systems will allow large integrated institutions such as UPMC to develop databases with large numbers of patients for newly approved drug products that will provide an important source for safety analyses.

The increasing complexity of drug therapy and number of drugs prescribed for patients have increased the incidence of adverse drug events and created a need for effective medication management for inpatients. Clinical pharmacists' review and management of medication therapy will be increasingly required for safe and effective therapy. Efficient staffing, combined with effective strategies for determining the level of intervention needed based on medication parameters and patient acuity, will be developed to meet this need.

The American Society of Health System Pharmacists has created a long-range plan called "ASHP 2015", patterned after Healthy People 2010. This plan is based on six strategic goals with 31 objectives to address the medication effectiveness and safety issues. The six goals of this plan are to increase the extent to which:

1. Pharmacists help individual hospital inpatients achieve the best use of medications.
2. Pharmacists help individual non-hospitalized patients achieve the best use of medications.
3. Pharmacists actively apply evidence-based methods to the improvement of medication therapy.
4. Pharmacy departments in health systems have a significant role in improving the safety of medication use.
5. Health systems apply technology effectively to improve the safety of medication use.
6. Pharmacy departments in health systems engage in public health initiatives on behalf of their communities.

Pharmacy organizations and regulatory agencies will continue a national effort to increase the number of health systems that engage in pharmacy services that meet these objectives.

Opportunities for the School of Pharmacy:

- Become the leader in evaluating drug therapies and generating evidence-based guidelines for effective and safe use of medications. More importantly, the School, in partnership with the Schools of Nursing and Medicine, can develop and evaluate how to implement guidelines in different clinical settings.
- Become one of the first hospital systems in the country to achieve the objectives of ASHP 2015.
- Develop systems of care that ensure all patients receive appropriate pharmacist interventions and patient education.
- Develop a post-marketing surveillance program to track safety of FDA-approved medications.

Strategic Outcomes

Educating the Next Generation of Practitioners and Scientists

By 2012, the School of Pharmacy will have become a leader in pharmacy education.

Adopted 2005



PHARMD PROGRAM

By 2012, the School of Pharmacy will have:

Excellence

1. Met or exceeded the standards for accreditation by ACPE, earning accreditation for the maximum interval of six years
Measure:
 - a. Years of accreditation granted
2. Consistently demonstrated the excellence of our students and their organizations by the awards and national recognitions they have received.
Measures:
 - a. national and regional awards to individual students (#)
 - b. student organization applications for regional and national awards (#)
 - c. regional and national awards to student organizations. (#)
 - d. graduates who pursue residency training (#)
 - e. graduates who pursue PhD or MS education (#)
 - f. NAPLEX pass rate (%)
 - g. MJPE pass rate (%)
3. Recruited and retained a diverse community of students.
Measures:
 - a. students admitted with degrees (%)
 - b. men admitted (%)
 - c. minorities admitted (%)



Innovation and Leadership

4. Developed a culture of innovation and scholarship in teaching and assessment.
Measures:
 - a. peer review publications (#)
 - b. textbooks and chapters (#)
 - c. presentations
 - d. faculty total producing scholarly work (#)
 - e. seeking grants (#)
 - f. faculty learners in training programs through Pitt or other organizations (#)
 - h. faculty teachers in training programs through Pitt or other organizations (#)

5. Developed credit-based opportunities for students to obtain international study experiences
Measures:
 - a. courses/rotations developed (#)
 - b. students/year (#)

6. Created curricular tracks/areas of concentration for specialization within the PharmD program.
Measures:
 - a. created the opportunity for curricular tracks (yes/no)
 - b. curricular tracks/areas of concentration (#)
 - c. students enrolled in tracks (#)
 - d. students who pursue additional training in AOC after graduation

7. Developed elective and required interprofessional education opportunities and courses within our curriculum.
Measures:
 - a. opportunities (elective, required) (#)
 - b. courses (#)
 - c. students who access interprofessional opportunities (#)

8. Been recognized as a leader in defining and providing innovative curricula that enhances pharmacy-provided patient care.
Measures:
 - a. pharmacy-patient care courses/modules developed/implemented (#)
 - b. number of courses, degree programs, or certificate programs developed (e.g. CTSI, other non-pharmacy-care)
 - c. schools who access the program(s) each year (#) (track each program developed)
 - d. people who access the program(s) per year (#)
 - e. joint degree programs developed (#)
 - f. MTM curriculum developed: (yes / no)
 - g. pharmacists utilizing curriculum as continuing education (#)

9. Explored and potentially developed an "out-of-Pittsburgh" curricular program
Measure:
 - a. opportunities explored (#)

GRADUATE PROGRAM



By 2012 the School of Pharmacy will have:

Excellence

10. Achieved recognition for the quality of the graduate students and graduate program.

Measures:

- a. PhD students in the program (#)
- b. competitive fellowships e.g. AFPE, NRSA, T32, F31 awarded (#)
- c. student awards and honors from external entities (#)
- d. peer-reviewed publications authored by graduate students (#)
- e. students who present at national or international meetings (#)
- f. PhD graduates per year (#)
- g. graduate students who take post-doctoral fellowships (#)
- h. graduate students who take academic, government and industry positions (#)
- i. publications about program (#)
- j. faculty as primary mentors (#)

11. Recruited and retained highly academically qualified graduate students.

Measures:

- a. U.S. citizens or permanent residents admitted (%)
- b. stipend as a % of NIH stipend as a standard (%)

12. Educated graduate students who are highly sought after.

Measures:

- a. graduate students who take positions in industry (#)
- b. graduate students who take positions in government (#)

13. Maintain the excellence of the Clinical Pharmaceutical Scientist Program as a national model for clinical and translational research in the pharmaceutical sciences.

Measures:

- a. faculty as primary mentors in the program (#)
- b. graduate students in the program (#)
- c. invited presentations by faculty about the program (#)
- d. graduates who enter academia (#)
- e. graduate students receiving national awards (#)
- f. graduate students receiving fellowships (#)
- g. presentations at national or international meetings (#)
- h. publications about the program (#)
- i. graduate student publications (#)

Innovation and Leadership

14. Partnered with the Clinical and Translational Science Institute to develop learning opportunities for our students.
Measures:
 - a. opportunities available (#)
 - b. participating students (#)
 - c. courses attended by graduate students (#)

 15. Developed MS program in pharmacy administrative sciences, including institutional and community practice administration.
Measures:
 - a. programs (#)
 - b. students (#)

 16. Advanced the graduate program in order to successfully compete for a PHS training grant.
Measures:
 - a. applications for a PHS training grant submitted (#)
-

RESIDENCY PROGRAM



By 2012 the School of Pharmacy will have:

Excellence

17. Participated in the creation of accredited residency program and training of residents.
Measures:
 - a. residency programs (#)
 - b. programs accredited that are eligible for accreditation (%)
 - c. partners for residency training (#)
 - d. residents total (#)

18. Achieved national recognition for the excellence of our residency programs.
Measures:
 - a. universities from which residents were recruited (#)
 - b. residents who present at a national/regional meeting (%)
 - c. residents who published their research in peer-reviewed journals (%)
 - d. first-year residents continuing to PGY-2 program (%)
 - e. residents who earn an MS MPH or PhD(#)
 - f. residents who take academic positions (%)

19. Trained residents who compete successfully for national grants and awards.
Measures:
a. # grants received by residents (#)

Innovation and Leadership

20. Defined the criteria for and established "Residencies of Excellence" in targeted areas of focus.
Measures:
a. develop criteria (yes / no)
b. residencies that meet the criteria for a "Residency of Excellence" (#)

21. Partnered in the development and implementation of a residency program model that emphasizes the commonality of community and ambulatory programs.
Measures:
a. community/ambulatory program developed/implemented (yes / no)
b. residents in community/ambulatory program

Advancing Human Health through Research

By 2012, the School of Pharmacy will become a research school of distinction.

Adopted 2005



By 2012 the School of Pharmacy will have:

Excellence

22. Enhanced our reputation of research excellence.
Measures:
a. ranking based on NIH funding (# rank)
b. scientific conferences hosted (# per year)
c. scientific organization program committees chaired by School faculty (#)
d. faculty with peer-reviewed funding (%)
e. peer reviewed publications (#)
f. faculty participation in program committees of scientific organizations (#)
23. Diversified our portfolio of research funding.
Measure:
a. non-NIH funding (%)
1. NSF
2. DOE
3. DOD
4. industry

24. Trained a cadre of PhD and postdoctoral PhD fellows who are highly sought after for careers in academia, industry, and the government.
Measures: postdoctoral fellows:
- a. in training annually (#)
 - b. who take academic positions (#)
 - c. who take positions in industry (#)
 - d. who take positions in government (#)

Innovation and Leadership

25. Competed successfully for a PHS training grant.
Measures:
- a. Funded faculty participating in the graduate program (#)
26. Competed successfully for a program project grant and center grants
Measures:
- a. applications submitted (#)
 - b. applications funded (#)
27. Established a program for research that focuses on pharmacy service models and health care outcomes to favorably improve patient care.
Measures:
- a. publications (#)
 - b. grants (#)
28. Developed research collaborations through the Clinical and Translational Science Institute at the University of Pittsburgh.
Measures:
- a. grants to School faculty/students funded through the CTSI (#)
 - b. programs funded (#)

Enhancing the Health of the Community through Partnerships

By 2012, the School of Pharmacy will have:

- **Become 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



By 2012 the School of Pharmacy will have:

Excellence

29. Engaged in significant corporate partnerships for the purpose of providing patient care.
Measures:
 - a. hospital partnerships e.g. UPMC Presby/Shadyside, Childrens, VA, St. Margaret, Magee (#)
 - b. faculty who have patient-care practices at UPMC (#)
 - c. faculty (total) who have patient-care practices (#)
 - d. non-institutional partners for MTM and direct patient care (#)
30. Maintained and enhanced our reputation of practice excellence through honors and recognitions of our programs and our faculty.
Measures:
 - a. faculty invited to make presentations at national and regional meetings (#)
 - b. faculty members invited to consult about patient-care programs (#)
 - c. national/regional program awards and recognitions (e.g. Cheers) (#)
 - d. UPMC Quality and other awards (#)
 - e. peer-reviewed publications about patient care, service models, and/or outcomes (#)
 - f. grants for pharmacy service models/patient outcomes (#)
 - g. learning visits/calls to our programs (#)
31. Developed evidence-based medication protocols and collaborative practice agreements that improve clinical outcomes, enhance patient safety, and reduce costs.
Measures:
 - a. protocols developed (#)
 - b. hospitals in which the protocols are implemented (#)
 - c. UPMC collaborative practice agreements (#)

32. Provided poison and medication information to the public and to health professionals through our Pittsburgh Poison Center and Drug Information Center.
Measures:
- calls answered by Poison Center (#)
 - calls answered by Drug Information Center (#)

Innovation and Leadership

33. Provided 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.
Measures:
- Immunizations administered (#)
 - Anticoagulation patients treated (INRs handled) # thousands (# thousands)
 - Medication use guidelines developed and approved (#)
 - Surgical Care Improvement quality measures (SCIP-1, SCIP-2, SCIP-3) (#, #, #)
 - Low-molecular weight heparin early discharges (#)
34. Created and implemented a pharmacy service model that integrates faculty and staff pharmacists in provision of care for UPMC patients.
Measures
- Yes / no
 - patient-care units served by the model (#)
 - units served by the model per hospital (%)
35. Participated in the care of underserved patients in local and global communities through the Grace Lamsam Pharmacy Program for Underserved Patients.
Measures:
- Lamsam Program patients and patient visits (# patients, # visits)
 - patients who receive MTM/direct patient care (%)
 - prescriptions provided (#)
 - locations served (#)
 - prevention and chronic disease programs (e.g. smoking cessation, immunizations) (#)
 - collaborative practice agreements in place (#)
 - grant and gift support (\$ thousands)
 - students who gain IPPE or APPE experiences through the Program (#)
 - students who volunteer at Program sites (#)
 - volunteer pharmacists (#)
36. Partnered to create a state-of-the-art combined Pittsburgh Poison Center and Drug Information Center.
Measures:
- Created combined Poison and Drug Information Center: (yes / no)
37. Partnered to provide remote care for patients through technology.
Measures:
- developed remote patient care program with a partner: (yes / no)
 - program implemented: (yes / no)

Enhancing Our Capabilities through Increased Efficiency and Effectiveness

By 2012, the School of Pharmacy will have:

- **increased effectiveness and efficiency and will have enhanced the professional growth of faculty and staff**

Renewed 2005



By 2012 the School of Pharmacy will have:

Excellence

38. Efficiently applied technology to optimize utilization of staff and faculty time and financial resources.

Measures:

- a. programs offered for training faculty and staff on expanded use of technology (#)
- b. faculty and staff trained (#)
- c. applications of commercial and self-built programs and databases (#)
(e.g. School-wide adoption of Outlook for scheduling meetings, room or equipment reservations, Coursecast for capturing video, PENS Software for experiential education, Admissions PharmCas/Pharmadmit, online view of applicant data for admissions committee, Department Manager, Task Stream, Blackboard, Turning Point)

39. Applied technology to effectively and efficiently deliver quality education to facilitate student learning.

Measures:

- a. software applications applied to teaching (#) (e.g. audience response, Pharmacal, Taskstream, Rotation assignment program)
- b. technological platforms (# courses in which they have been adopted)
- c. staff able to support adoption of technology within courses (#)

40. Improved efficiency and cost savings through initiatives identified and lead by the staff.

Measure:

- a. cost savings through bundling software and securing group licenses (\$)
- b. costs saved through channeled spending and related opportunities (\$)

41. Enhanced communication for internal stakeholders

Measures:

- a. Presence of a student portal: (yes / no)
- b. Presence of a faculty and staff portal: (yes / no)

42. Adopted a proven and effective technology platform that serves faculty, staff, students and others
Measures:
- a. calls to technology help desk (#)
 - b. satisfactory responses within 24 hours (%)
 - c. utilization of School's technology platform for support (# people)
 - d. Web page visits(#)

Innovation and Leadership

43. Enhanced faculty and staff knowledge of new technologies for teaching
Measures:
- a. teaching technologies available (ARS, video taping, course cast, etc.) (#)
 - b. training sessions offered (#)
44. Application of Lean and Toyota Productions System principles and practices, and value stream mapping for staff and some faculty processes.
Measures:
- a. application of principles: (yes / no)
 - b. work processes specified (total # of work specifications developed)
 - c. work specifications revised (#)
45. Consistently partnered with CSSD in testing the application of technology.
Measure:
- a. early adopter or beta-testing partnerships with CSSD (# times)



Securing an Adequate Resource Base

By 2012, we will have increased the resource base of the School of Pharmacy.

Renewed 2005

HUMAN RESOURCES

By 2012, the School of Pharmacy will have:

Excellence

Faculty

46. Recruited and retained faculty who are recognized for scholarly, educational, service and practice distinctions.

Measures:

- a. faculty (# full time, #part time)
- b. board certifications earned (# ever)
- c. elected fellows (# faculty ever, # fellowships)
- d. nominations of faculty for awards (#)
- e. research awards to faculty from external organizations (#)
- f. teaching/mentor awards to faculty from external organizations (#)
- g. patient care awards to faculty from external organizations (#)
- h. honors awards to faculty for outstanding service (#)
- i. distinguished alumnus designation, other awards from universities (# ever)
- j. faculty national or regional awards (# ever)
- k. faculty appointments to NIH study sections (#)
- l. editorial board appointments (#)
- m. faculty on non-industry advisory boards (#)
- n. faculty invited to give national/regional presentations (#)
- o. faculty who have received Chancellor's Distinguished award (# ever)
- p. recipients of other Pitt awards/recognitions (#)

47. Enhanced faculty participation in programs that support achievement of professional and academic potential.

Measures:

- a. ACES and other skill development programs sponsored by the School (#)
- b. Faculty participation in University programs (e.g., survival skills program, K award series) (#)
- c. faculty who participate in Office of Research, CTSI and other training modules/programs within (name time) of joining the faculty (%)
- d. faculty who participate in University Teaching Excellence programs (#)
- e. faculty who participate in development programs of professional and scientific organizations (#)

48. Faculty who are engaged as citizens in serving the profession of pharmacy and the academic community.

Measures:

- a. faculty on at least one School of Pharmacy committee (%)
- b. faculty who participate in faculty governance, e.g. faculty assembly or senate (#)
- c. faculty members on University committees in past five years (#)
- d. faculty serving on committees in other Schools or Institutes at the University (#)
- e. elected leaders in local, regional and national organizations
- f. local, regional, and national committee memberships (#)
- g. publications or scholarly article concerning practice or service (#)
- h. presentations of educational programs to academic, institutional, industry, government, and community groups (#)
- i. # of honors and awards received in recognition of outstanding service contributions
- j. % of faculty pharmacists who volunteer for the Lamsam Program #

Staff

49. Recruited and retained staff who contribute to the strategic goals of the School and to the culture of teamwork and collaboration.

Measures:

- a. administrative staff who attend biannual staff retreats (# and %)
- b. administrative staff who attend faculty/staff retreats (# and %)

50. Created and implemented individualized development plans for all staff members.

Measures:

- a. internal development programs offered (#)
- b. staff who have attended internal development programs (#)
- c. staff who have attended external development programs (#)

Alumni, Friends, and Other Constituencies



51. Delivered high-quality and timely print and digital publications to internal and external stakeholders

Measures:

- a. times stakeholders received communication from the School (#)
- b. distinct print or electronic pieces developed (#)
- c. on-time production of communication materials (%)
- d. event notifications submitted (#)
- e. press release placements (#)

52. Created a Web site that is easily navigated, features high-quality imaging and that provides up-to-date information.

Measure:

- a. # of times error message on Web site

53. Retained our place among the top schools on campus for alumni engagement.

Measure:

- a. alumni total (#)
- b. rank for alumni engagement
- c. alumni participating in School and University events (#)
- d. email addresses obtained (%)

54. Engaged and supported non-faculty preceptors who support our educational programs.

Measures:

- a. non-faculty preceptors for at least one student (#)
- b. rotations offered by non-faculty preceptors (#)
- c. preceptors who attend preceptor development programs (#)

FINANCIAL RESOURCES

By 2012, we will have:

55. Met the goals for the Capital Campaign.

Measure:

- a. total dollars raised toward the \$27 million Capital Campaign School goal (\$ total in millions)
- b. programs that develop new resource base/increase funding (#)

56. Increased the book value of the School of Pharmacy endowment from \$11 million to \$21 million.

Measure:

- a. Book value of the endowment

57. Increased total dollars and number of contributors through all sources of gifts.

Measures:

- a. total donors including organizations (#)
- b. annual giving (\$)
- c. total gifts and pledges (\$ million)

PHYSICAL RESOURCES



By 2012, we will have:

58. Renovated and refurbished existing space to meet programmatic needs

Measure:

- a. Sq ft renovated/refurbished (# SF)

59. Secured our place in the Master Plan for Oakland, assuring adequate space for the School's programs.

Measures:

- a. Total # assignable square feet of space allocated for School use
- b. Availability of state-of-the art research space in immediate proximity to Salk Hall

Progress At a Glance (PAGE)
School of Pharmacy: Version as of Sept 2012

/	Long-Range Plan did not exist or item not part of the Long-Range Plan
→	Introduced to the Long-Range Plan
-	Not addressed that year
☑	Completed, implemented, maintained and does not begin again next year
■	Intervention or change in plan needed
■	Satisfactory Progress

National leader in pharmacy education

LRP #	Measure	Target	FY02 - Strateg Plan 02	FY06 - Strateg Plan 06	FY08	FY09	FY10	FY11	FY12
PharmD Program									
Excellence									
1a	Years of ACPE accreditation granted	6	6	-	-	-	6	-	-
2a	National and regional awards to individual students (#)	15	3	3	19	30	2		25
2b	Student organizations applies for regional/national awards	12			10	15	15	14	17
2c	Regional/national awards to student organizations (#)	track	1	2	5	7	10	4	5
2d	Graduates who take residency position (#/%)	25%	16 (19%)	11	13	21	26 (24%)	22 (21%)	34 (31%)
2e	Graduates who pursue PhD or MS training	5%	2	2	2	1	3 (3%)	4 (4%)	2 (2%)
2f	NAPLEX pass rate 1st attempt (%)	>=95%	96.4%	90.1%	99.0%	N/A	98.0%	pending	98%
2g	MJPE pass rate (%)	>=95%		91.6%	96.6%	100.0%	98.0%	pending	100%
3a	Students admitted with degrees (%)	Track data	16%	11%	14.8%	18.5%	14.7%	17 (15.7%)	10 (9%)
3b	Men admitted to PharmD program (%)	Track data	31%	36%	38.9%	34.3%	52.3%	37 (34.2%)	43 (38%)
3c	Minorities admitted to PharmD program (%)	Track data	4%	5.50%	4.6%	1.9%	4.6%	8 (7.4%)	2 (2%)

Innovation and Leadership

LRP #	Measure	Target	FY02	FY06	FY08	FY09	FY10	FY11	FY12
4a	Peer Review Publications - teaching/assessment (#)	5	1	5	7	24	8	14	9
4b	Textbooks and book chapters	Track data	19	10	10		0	1	7
4c	Presentations re: innovation in teaching/assessment/education (#)	3	0	→	1		16	23	81
4d	Faculty producing teaching/assessment scholarly work (#)	10	14	→	13		19	12	17
4e	Faculty funded grants related to teaching/assessment (#)	4	0	→2	3	21	3	20	n/a
4f	Faculty learners in training programs (#)	1	-	→	3	3	1	1	1
4g	Faculty teachers in training programs (#)	Track data	0					1	0
5a	International rotations (#)	3	-	→	2	3	4	4	6
5b	Students participating in international rotations/year (#)	10	-	→	7	7	8	9	17
6a	Create opportunity for curricular tracks/areas of concentration	Yes	-	Yes	Yes	Yes	Yes	Yes	Yes
6b	Curricular tracks/areas of concentration (#)	4	-	→1	1	1	1	2	3
6c	Students enrolled in curricular tracks/areas of concentration (#)	30	-	→	→	→	6	12	25 (14 Res, 6 Bus Ad, 5 Glob Hlth)
6d	Students: pursue training in AOC area after graduation (%)	Track data	-	-	-	→	→	→	→
7a	Interprofessional education courses, experiences (#)	Track data	-	→	1	3	5	5	5

7b	Total students accessing IP experience (#)	Track data	-	→	2	113	115	129	227 (4 in APPE, 9 in Geriatrics, 106 in POP 4, 108 in P-3 capstones)
8a	Courses developed outside curriculum (#)	4	-	→	1	2	1		1
8b	Outside Curriculum Courses, degree & certificate programs including CTSA (#)	1	-	-	-	1	2	3	3
8c	Schools who have accessed these programs (#)	55	-	→	40	54	90	90	41
8d	Joint/combined degree/certificate programs (#)	2	-	→	1	1	1	1	1
8e	MTM curriculum developed (Yes or No)	Yes	-	→	Yes	Yes	Yes	Yes	Yes
9a	Out of Pittsburgh program opportunities explored (#)	Yes	-	→	Yes	Yes	Yes	Yes	Yes

Graduate Program

Excellence

LRP #	Measure	Target	FY02	FY06	FY08	FY09	FY10	FY11	FY12
10a	FT Students in the PhD program (#)	40	18	23	26	28	32	42	51
10b	Fellowships awarded (AFPE, T32) (#)	4	1	4	3	3	3	5	4
10c	Student awards, honors - external entities incl. travel(#)	6	3	2	5	5	16	8	11
10d	Peer-reviewed publications by graduate students (#/year)	15	7	16	21	14	16	19	26
10e	Students who presented at national/international meetings (#)	15		9	10	12	28	17	15
10f	PhD Graduates/year (#)	Track data	2	6	3	4	1	4	5
10g	Graduates who take post-doctoral fellowships (%)	75%	1	2	1	3	0	1	2
10h	Graduates who take academic positions (#)	Track data	0	2	1	0	0	0	0
10i	Publications about the program (#)	Track data	1	1	0	0	0	1	0
10j	Faculty as primary mentors (#)	Track data			14	17	14	18	19
11a	U.S. citizens or permanent residents in program (%)	Track data	30%	36%	35%	25%	47%	50%	45
11b	Stipend (% of NIH stipend)	>= NIH stipend	75%	R	R	R	R	R	R
12a	Graduate students who take positions in industry #	Track data	1	2	1	1	1	2	2
12b	Graduate students who take positions in government #	Track data	0	0	0	0	0	1	1
13a	Clin Sci Program: faculty as primary mentors (#)	8	5	3	3	5	6	7	10
13b	Clin Pharm Sci Pgm: students enrolled (#)	12	9	6	9	6	12	19	17
13c	Clin Pharm Sci Pgm: invited presentations about program (#)	Track data	0	0	2	0	1	0	0
13d	Clin Pharm Sci Pgm: graduates who enter academia (#)	Track data		1	0	0	0	0	0
13e	Clin PharmSci Pgm: students receiving national awards (#)	2		2	2	4	6	2	3
13f	Clin PharmSci students receiving fellowships incl NRSA, AFPE (#)	3		4	2	3	3	4	0
13g	Clin Pharm Sci: presentations national/int'l meetings (#)	6				11	15	11	10
13h	Clin Pharm Sci Pgm: publications about program (#)	Track data		1	0	0	0	1	0
13i	Clin Pharm Sci Pgm: Graduate student publications (#)	Track data					6	3	7

Innovation and Leadership

14a	Learning opportunities available through CTSI (#)	1			1	1	1	3	6
14b	Students who learn through CTSI partnership (#)	Track data			2	3	3	3	7
15a	MS programs (#)	2		→	2	1	2	2	2
15a	Students enrolled in MS program (#)	Track data		→	1	1	3	5	5
15a	MS programs in Pharmacy Administration (#)	2		→	1	2	2	1	1
15a	Students in Pharmacy Administration MS program(#)	6		→	6	6	7	5	5
16a	PHS training grant applications submitted INCL nsf (#)	Track data			0	1	1	2	3

Residency Program

Excellence

LRP #	Measure	Target	FY02	FY06	FY08	FY09	FY10	FY11	FY12
17a	Affiliations with residency programs (#)	Track data	9	8	12	16	14	16	17
17b	Accredited programs (% of eligible programs)	100%	100%	100%	100%	100	100	100	100%
17c	Residency program partners (#)	Track data	4	4	6		7	7	8
17d	Residents (total #)	Track data	12	13	22	31	31	33	39
18a	Universities from which residents were recruited (#)	Track data	na	7	14	15	12	18	22
18b	Residents who present at a nat'l/reg'l meeting (%)	100%		11 (85%)	21 (95%)	71.0%	100.0%	100.0%	100%
18c	Residents who publish residency projects within 3 years (%)	100%				19.40%	→	27	1 (2.5%)
18d	PGY-1 residents pursuing PGY-2 - incl management (%)	60%	3 (25%)	2 (50%)	8 (56%)	48.3%	60.0%	77.3%	13/22 (59%)
18e	Residents who earn MS, MPH, PhD (#)		0	0	2	2	3	2	4
18f	Residents who take academic positions # (%)	25%	3 (17%)	0	3 (21%)	2	2	2 (12.5)	3/16 (6.25%)
19a	Grants received by residents (#)	Track data			4	2	2	3	2

Innovation and Leadership

21a	Develop/implement community/ambulatory pgm	Yes	-	→			Yes	Yes	Yes
21b	Residents in community/ambulatory pgm (#)	track data	-	→	3	3	4	4	7

Research school of distinction

LRP #	Measure	Target	FY02	FY06	FY08	FY09	FY10	FY11	FY12
Excellence									
22a	Total NIH Funds (\$ millions)	8	7.27	8.15	8.51	7.23	14.31	9.91	6.956
22a	NIH Direct Costs (\$ millions)	6	5.27	5.27	5.83	5.83	9.08	7.23	4.967
22a	Ranking based on NIH funding (#)	10	6	9	9	15	22	23	Not Avail
22b	Scientific conferences hosted(# / year)	track data	0	0	0	3	0	0	0
22d	Faculty with peer-reviewed funding (%)	33%	37.5%	30%		26%	36%	30%	24 (34%)
22e	Peer-reviewed publications (research) (#)	130	118	137	129	132	135	132	143
23a	Funding other than NIH (%)	33%	32.40%	27.10%	19.40%	32.20%	8.30%	25.00%	28
24a	Postdoctoral fellows in training annually (#)	14	-	→	17		25	25	14
24b	Postdoctoral fellows who take academic positions (#)	track data	-	→		→	→	→	4
24c	Postdoctoral fellows who take positions in industry (#)	track data	-	→		→	→	→	2
24d	Postdoctoral fellows who take positions in government (#)	track data	-	→		→	→	→	0
Innovation and Leadership									
25a	Funded faculty participating in graduate program (#)	80%	5	→	9	14		11 of 13	12
26a	Program project grant applications submitted (#)	track data			0	1	0	0	0
26b	Program project grant applications funded (#)	track data	1		1	1	0	0	0
27a	Establish program for pharmacy services research (# publications)	track data				→	→	2	→
27b	Establish program for pharmacy services research (# grants)	track data				→	→	1	→
28a	Grants funded through the CTSI (#)	track data	-	-	1	0	1	0	0
28b	Programs (cores) funded through the CTSI (#)	1	-	-	0	1	0	0	0

Leader in standardizing pharmacy patient care in community, institutions, and during transitions of care.

LRP #	Measure	Target	FY02	FY06	FY08	FY09	FY10	FY11	FY12
Excellence									
29a	Institutional (individual hospital) partnerships w/faculty (#)	track data			5	6	6	7	8
29b	Faculty who have patient-care practices at UPMC (#)	track data				11	11	12	18
29c	Faculty (total) who have patient-care practices (#)	track data				26	26	27	22
29d	Non-institutional partners: MTM and direct patient care (#)	track data	-	1	1	2	2	2	3
30a	Faculty invited to present at national, regional meetings (#)	track data				40	64	39	13 faculty (25 total)
30c	Nat'l/reg'nal awards/recogn'tns: patient-care programs (#)	track data					21	10	8
30d	UPMC quality and other awards (#)	track data			4	5	5	8	2
30e	Peer-reviewed publication - pt care/svc models/outcomes(#)	track data					18	33	10
30f	Grants-pharm service model/MTM/direct care/outcome (#)	track data					8		n/a
31a	Evidence-based medication protocols developed #	track data				85	53	50	43
31b	Hospitals in which the protocols are implemented #	track data				15	15	16	17
31c	Collaborative practice agreements at UPMC (#)	track data						0	0
32a	Calls answered by Poison Center (# thousands)	track data		118	133.3	106.5	129	116	113
32b	Calls answered by DI Center (# thousands)	track data			3.7	7.26	6.3	5.9	5.7
Innovation and Leadership									
33a	Immunizations administered (#)	track data			602	1556	3004	3089	3491
33b	Anticoagulation patients (INRs handled) (# thousands)	track data			1.06 (28)	1.56(28.46)	3	22.779	
33c	Medication use guidelines developed & approved (#)	track data			32	29	39	39	
35a	Lamsam Program impact (# patients / # visits in thousands)	track data			6.0/18.0	1500/4100	1775/5000	1556/4667	2014/4960
35b	Patients who receive MTM/direct pt care (%)	track data				400 (27%)	425 (24%)	584	524
35c	Prescriptions provided (# thousands)	track data				6500	7300	7000	9000
35d	Locations served by the Lamsam Program (#)	track data				8	8	10	9
35e	Prevention and chronic disease programs (#)	track data				3	4	5	5
35f	Lamsam Program: collaborative practice agreements (#)	track data	-	-	→	1	2	2	2
35g	Grant and gift support for Lamsam Program (#)	track data			1	3	1	1	1

35h	Students in IPPE/APPE through Lamsam Program (#)	track data			161	148	194	217	169
35i	Students who volunteer at Lamsam Program sites (#)	track data				15	15	9	10
35j	Pharmacists who volunteer in Lamsam Program (#)	track data				12	17	14	14
36a	Combined Pittsburgh Poison Ctr and Drug Info Ctr (Y/N)	Yes	-	→	-	Yes	Yes	Yes	Yes
37a	Developed remote patient care model (Yes/No)	Yes				N	N	N	N
37b	Implemented remote patient-care model (Y/N)	Yes				N	N	N	N

Increased effectiveness and efficiency

LRP #	Measure	Target	FY02	FY06	FY08	FY09	FY10	FY 11	FY12
Excellence									
38a	Technology training programs offered for faculty/staff (#)				2	2	2	3	10
38b	Faculty and staff trained on technology (%)				87%	91%	92%		100%
38c	Commercial & self-built programs & databases applied (#)			1	2	2	2	2	
39a	Software applications applied to teaching (#)				3	4	5	5	3
39b	Technological platforms adopted (% courses)				100%	100%	100%	100%	100
39c	Staff able to support adoption of course technology (# staff)				6	9	11	12	
40a	Cost savings: bundling software & group licenses (\$)				11,480	12,122	12,486	12,800	
40b	Savings through channeled spending/other opportunities (\$)				239,000	pending	pending	265,000	pending
41a	Presence of a student portal (Y/N)	Yes			Yes	Yes	Yes	Yes	Yes
41b	Presence of a faculty and staff portal (Y/N)	Yes			Yes	Yes	Yes	Yes	Yes
42d	Web page visits (#)				195,446	198,033		225,979	475,620
Innovation and Leadership									
43a	Technologies available for teaching support (#)				5	6	7	7	8
43b	Technology in education: training sessions offered (#)				1	1	2	1	10
44a	Application TPS principles - staff & faculty processes (Y/N)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
44b	Work specifications developed (total #)				106	123	127	131	137
44c	Work processes revisited/revised (#)				50	42	7	11	21
45a	Early adopter or beta-testing partnerships with CSSD (#)				1	1	1	1	0

Securing an adequate resource base

LRP #	Measure	Target	FY02	FY06	FY08	FY09	FY10	FY 11	FY12
Faculty									
Excellence									
46a	Faculty: full time (part-time) # (#)	80	80		89 (#)	82 FT, 4 PT	78 FT, 4 PT	75FT/9 PT	71 FT/8PT
46b	Board certifications (# ever)	Track data	15		23	17	23	23	16
46c	Elected fellows (# fellowships)	15			15	15, #21	15	15	12
46e	Research awards to faculty from external organizations (#)	Track data		1	0	11	6	9	8
46f	Teaching/mentor award to faculty - external organization (#)	Track data		1	0	9	9	0	3
46g	Patient care awards to faculty - external organizations (#)	Track data			1	9	21	10	6
46h	Honors/awards to faculty for outstanding service (#)	Track data			1	20	9	1	0
46i	Distinguished alum/other awards from universities (# ever)	Track data			6	15, #20	20	20	22
46j	Faculty: national/regional awards (# awards ever)	Track data				54	56		74
46k	Faculty on NIH study sections (#)	Track data	7	7	7	28	12	12	9
46l	Editorial board appointments	Track data				30	20	17 (45)	24
46m	Faculty on non-industry advisory boards (#)	Track data	4	-	-	5	-	-	-
46n	Faculty invited by external entities to give presentations (#)	Track data	-	-	-	-	63	48	41 (155 total)
46o	Faculty recipients of Chancellor's Distinguished Award (# ever)	Track data			4	4	4	4	4
46p	Faculty recipients of other Pitt awards/distinctions (# ever)	Track data				16	16	16	20
47a	ACES and skill development programs sponsored (#/year)	6	-	-		6	4	4	2
47d	Faculty: attend University Teaching pgms (#)	Track data					6	4	10
47e	Faculty in training pgms of professional and scientific org (#)	Track data	-	-	⊗	9	0	1	1
48a	Faculty on at least one School of Pharmacy committee (%)	60%	-	-	⊗	79	72	56	46(65%)
48b	Faculty on University Committee (#)	Track data	-	-	⊗	17	23	30	29
48d	Other school/institute/center committee served by SOP faculty(#)	Track data	-	-	⊗	95	18	18	16
48e	Elected leaders-local, regional, national organizations (#)	Track data	-	-	⊗	19	20	16	22 total
48f	Local, regional, national committee memberships (#)	Track data	-	-	91	191	163	195	147
48g	Publications: practice or service (#)	Track data	-	-	-	-	18	16	10

48h	Educational presentations to academic, institutional, industry, government, and community groups (#)	Track data				181	115	187	129
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Staff

Excellence

LRP #	Measure	Target	FY02	FY06	FY08	FY09	FY10	FY 11	FY12
49a	Administrative staff: full time (part-time) # (#)	Track data					30	31	31
49b	Admin staff who attend staff retreats (%)	90%			-	90%	90%	N/A	-
49c	Staff who attend faculty/staff retreats (%)	30%			48%	57%	58%	71%	-
50a	Internal development programs: sessions offered (#)	1			1	1	1	1	3
50b	Staff who attend internal development programs (#)	25			18	23	26	27	26
50c	Staff who attended external development programs (#)	25			23	25	25	26	18

Alumni, Friends, and Others

LRP #	Measure	Target	FY02	FY06	FY08	FY09	FY10	FY 11	FY12
51a	Times stakeholders received communication from School (#)	Track data	-		6	20	14	11	13
51b	Distinct print or electronic pieces developed (#)	Track data			30	11	30	23	24
51c	On-time production of communication materials (%)	100%	-			100%	99%	99%	90%
51d	Event notifications (#)	Track data				120	140	132	135
51e	Media placements (#)	Track data	→	32	38	39	65	51	48
53a	Alumni Total (#)	Track data			4567	4567	4774	4887	5034
53b	Rank for alumni engagement (#)	1	-	1	1	1	2	3	2
53c	Alumni that participate in School and University events (#)	Track data	-		40.30%	38.10%	37.90%	36.14%	37.05%
53d	E-mail addresses obtained (%)	Track data	-		49.90%	49.40%	60.90%	69.00%	69.73%
54a	Preceptors for least one student in year (#)	Track data				23(P1); 58(P2); 102(P3); 312(P4)	23(P1); 58(P2); 102(P3); 312(P4)	46 (P1); 61 (P2); 101 (P3); 310 (P4)	72 (P1); 72 (P2); 106 (P3); 319 (P4)
54b	Rotations offered by non-faculty preceptors (#/percent of total)	Track data				100% (P1); 100% (P2); 87% (P3); 83% (P4)	100% (P1); 100% (P2); 87% (P3); 83% (P4)	93% (P1); 100% (P2); 84% (P3); 81% (P4)	83% (P1); 100% (P2); 89% (P3); 83% (P4)
54c	Preceptors attending preceptor development programs (#)	Track data	-	-		344	344	32	0

Financial Resources

Excellence

LRP #	Measure	Target	FY02	FY06	FY08	FY09	FY10	FY 11	FY12
55a	Dollars raised for capital campaign (\$ cumulative total)	\$27 million			\$17.540	\$18.810	\$20.074	\$22.200	22.731
55b	Programs developed that generate new revenue (#)		-		1		0	0	1
56a	Book value of endowment (\$ million)		\$5.937	\$11.00	\$11.800	\$13.841	\$14.524	\$15.204	15.462
57a	Total donors including organizations (#)		-	-	928	1013	882	910	789
57b	Annual giving amount (\$ thousands)						0.303	0.261	0.106
57c	Total gift and pledge contributions (\$ million)		\$0.67	\$2.140	\$2.044	\$1.391	\$1.077	\$2.625	0.739

Physical Resources

Excellence

LRP #	Measure	Target	FY02	FY06	FY08	FY09	FY10	FY 11	FY12
58a	Sq ft renovated/refurbished (#)	Track data	9627	3108	6008	1222	3029	2139	3011
59a	Assignable Sq Ft allocated for School use (#SF-thousands)	113.8	63.5	71.4	84.7	83.4	80.7	82.5	81.8
59b	Space assigned for laboratory research (# SF)	51.4	18353	23121	23121	23121	21523	22025	22030

School of Pharmacy Long-Range Plan 2018



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”

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.

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.

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 **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. (FY13)
 - 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 2014.
-

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 the 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 (FY13). 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 (FY13, 14).
-

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

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

By 2018, we will have:

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

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

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

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

By 2018, we will have:

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

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

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

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

By 2018, we will have:

- Partnered with UPMC and UPMC Health Plan and other entities to continually pilot, implement, evaluate, and disseminate pharmacist-based patient care programs.
Action:
 - Design, implement, and evaluate a telepharmacy or remote pharmacy program.
- Created pharmacy-centric community health zones that are scalable.
Actions:
 - Evaluate the Pharmacy Practice Act for legality of pharmacists providing pharmacy care when not associated with a dispensing pharmacy; pursue a pharmacy license if needed.
 - Establish a partnership with the Oak Hill Neighborhood Association in Pittsburgh with the goal of improving overall health and wellness.
- Addressed America's prescription drug abuse crisis and improve the safety of the public through policy, research, and patient care demonstration programs.
Actions:
 - Develop scalable prescription drug programs that partner physicians, dentists, pharmacists, and patients to address the use, misuse, abuse, and diversion of medications.
 - Engage in collaborative practices in chronic pain and palliative care.
- Created global partnerships that will advance pharmacy care to promote health, wellness, and the appropriate use of medications.
Actions:
 - Create Memoranda of Understanding with international partners—including schools of pharmacy and non-governmental organizations.
- Gained recognition from the public for pharmacists as health care providers who promote health, wellness, and the appropriate use of medications.
Actions:
 - Maximize collaborative practice opportunities ambulatory care and community settings, including dental practices.
 - Create programs and tools that can promote health and wellness.
 - Engage student pharmacists in an organized approach to address medication-based needs of patients.
 - Host an Invitational Conference on implementation of effective pharmacy care models.

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

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

By 2018, we will have:

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

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

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

By 2018, we will have:

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

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

By 2018, we will have:

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