

University of Pittsburgh
School of Pharmacy

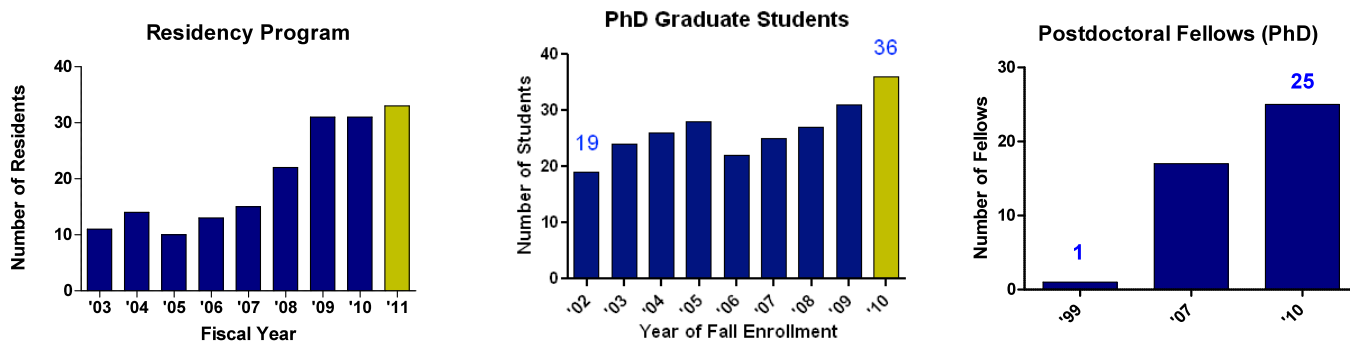
ANNUAL REPORT
2009–2010



Dear Friends,

The School of Pharmacy has been on a remarkable trajectory of achievement during the past several years and 2009–2010 (FY10) has been no exception. I share with you a few accomplishments that I consider particularly noteworthy.

- The School of Pharmacy has taken to heart two of the University of Pittsburgh’s goals: to increase the number of PhD graduates and to place Pitt graduates in faculty positions at the great universities of the world. The graph below shows that our PhD program has grown, contributing to the University’s number of PhD graduates. Like PhD students, postdoctoral fellows and residents are the most likely to take positions in academia. As the three figures show, each program has grown, contributing not only to the well-being of our School, but also to the well-being and reputation of the University of Pittsburgh.



- Achieving full accreditation is the basic building block of an excellent educational program, though not generally thought to be the hallmark of excellence. As a backdrop for my comments regarding accreditation, readers should realize that 2009 was no ordinary time in the world of accreditation given changes brought about by the United States Department of Education. In 2007, the Accreditation Council for Pharmacy Education (ACPE) adopted a new set of standards; in the two years after adoption of new standards, only 50 percent of schools were awarded full six years of accreditation. In the fall of 2009, the School of Pharmacy was evaluated by ACPE. Pitt not only received full accreditation, we received not a single “partially meets” the standard for any of the thirty standards. In addition, it is a source of exceptional pride that on the national standardized surveys of faculty, students, preceptors, and alumni, Pitt outperformed all American Association of Colleges of Pharmacy (AACP) schools and our peer schools. The blue bars in the graphs on the next page demonstrate responses to a few of the questions in the standardized survey and show that Pitt outranked peer schools and all AACP schools. The figures were a part of the Self-Study Report; the figure numbers refer to the chapters in the report where more detailed information can be found. <http://www.pharmacy.pitt.edu/about/pubs/default.html>

Figure 2-1. Percent of Faculty Agreeing with Statement

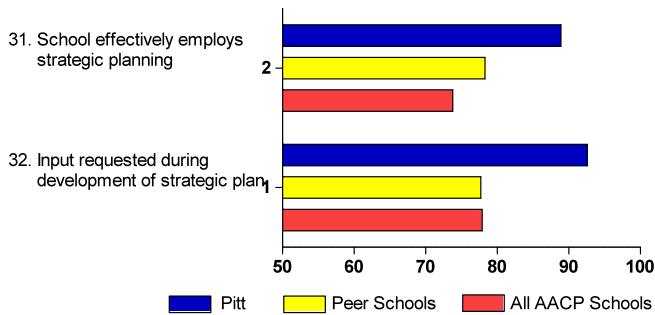
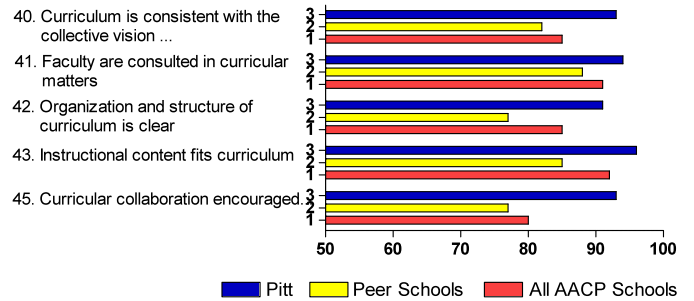
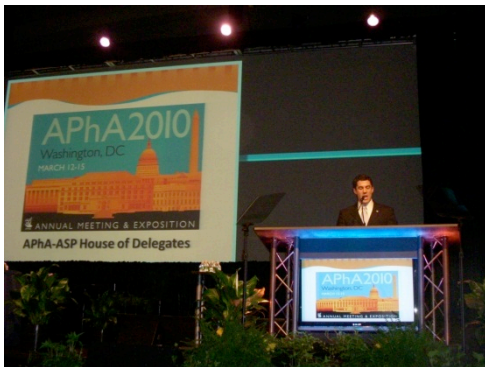


Figure 9-1. Percent of Faculty Surveyed Agreeing with Statements



- “The School of Pharmacy is committed to “... excellence, innovation, and leadership....” Students, faculty, and alumni alike have demonstrated leadership on a national scale during FY10.



Class of 2011 student Steven Zona (shown at left) was elected and inaugurated as national American Pharmacists Association Academy of Student Pharmacists (APhA–ASP) president at the annual meeting in Washington, D.C. Julie Lauffenburger, also Class of 2011, was elected national contact person co-chair, one of four national positions, of the International Pharmaceutical Student Federation. Dean Patricia Kroboth was elected to and served as chair of the AACP Council of Deans. Alumna Diane Ginsburg '84, was installed as American Society of Health-System Pharmacists president-elect at the annual meeting in December 2009.

- FY10 was remarkable in the life and history of the School of Pharmacy in many ways, not the least of which is that planning occurred for the first new major construction for the School of Pharmacy since its founding in 1878. The University of Pittsburgh is supporting the construction of a state-of-the-art research facility, Salk Pavilion, in the space behind Salk Hall. The new facility is critical for the retention of faculty members, whose research advances knowledge about drugs and diseases. It is hoped that the approximately 44,000 SF research facility, which is to be shared with the School of Dental Medicine, will also provide the School with the opportunity for additional faculty recruitment.



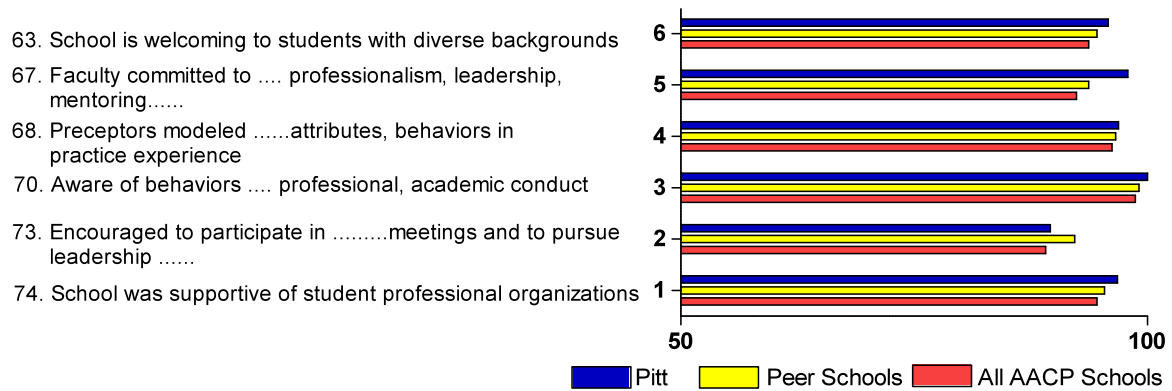
- The 28 faculty researchers of the School of Pharmacy currently have \$72.8 million in active research awards, with \$14.3 million specifically allocated to the FY10 academic year. The funding level at the time rankings were calculated based on NIH funding placed the school at #22. Yes, this is a fall from our previous position among the top ten research schools of pharmacy. However, our Pitt pharmacy faculty have successfully and diligently competed for funding; our change in ranking is largely due to the

significant investment at schools that have advanced in the form of new faculty and new research facilities.

There is a saying that “happy students make happy alumni.” Our School of Pharmacy has both, and we have the evidence to prove it.

- The graph below shows only a few of the questions asked of pharmacy students nationwide. The blue “Pitt” bars show favorable student impressions of our School of Pharmacy, not only to Pitt, but also in relationship to the responses of students at other schools.

Figure 23-1. Percent of Students Surveyed Agreeing with Statements

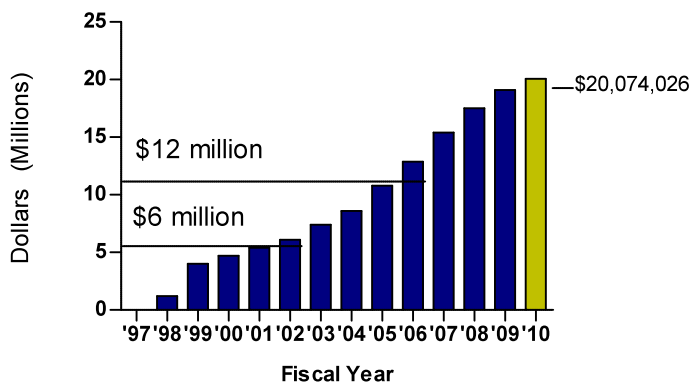


- In an unprecedented act of generosity, three elected officers of the Class of 2011 (shown at right) announced, at the RxTravaganza 2010 Gala, that their class had pledged \$50,000 toward the construction of the Commons. The Commons will join Salk Hall to Salk Pavilion and provide an artfully elegant space for reading and meeting. Their gift will benefit those students who will come after them, as the Commons will have a café that will serve coffee in a location near classrooms.

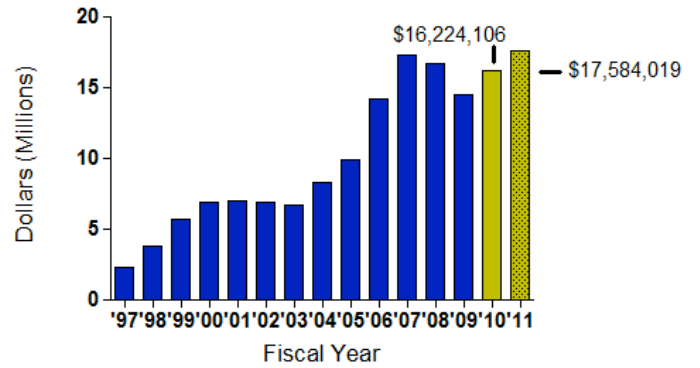


- Alumni of the School of Pharmacy have ranked #1 in alumni engagement among all schools of the University for two of the four years that the rankings have been in existence. Pharmacy closed out FY10 as #1 among the schools of the health sciences and #2 in the University. Giving is one of the indicators of engagement. Our alumni and friends are not only engaged, they are also generous as the data from progress on the Capital Campaign shows. The School of Pharmacy has a goal of \$27 million in the campaign that began in 1997 and that will extend through 2014. Also shown are data for the School of Pharmacy’s endowment.

**Capital Campaign
Total Gifts and Pledges**



School of Pharmacy Endowment - Market Value



FY10 was a great year that also built on previous successes; together, the accomplishments form an accumulated record of excellence. I hope that you enjoy the details of our achievements in the descriptions in this Annual Report 2009–2010.

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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Long-Range Strategic Plan 2006–2012	
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**Educating the
Next Generation of
Practitioners and Scientists**





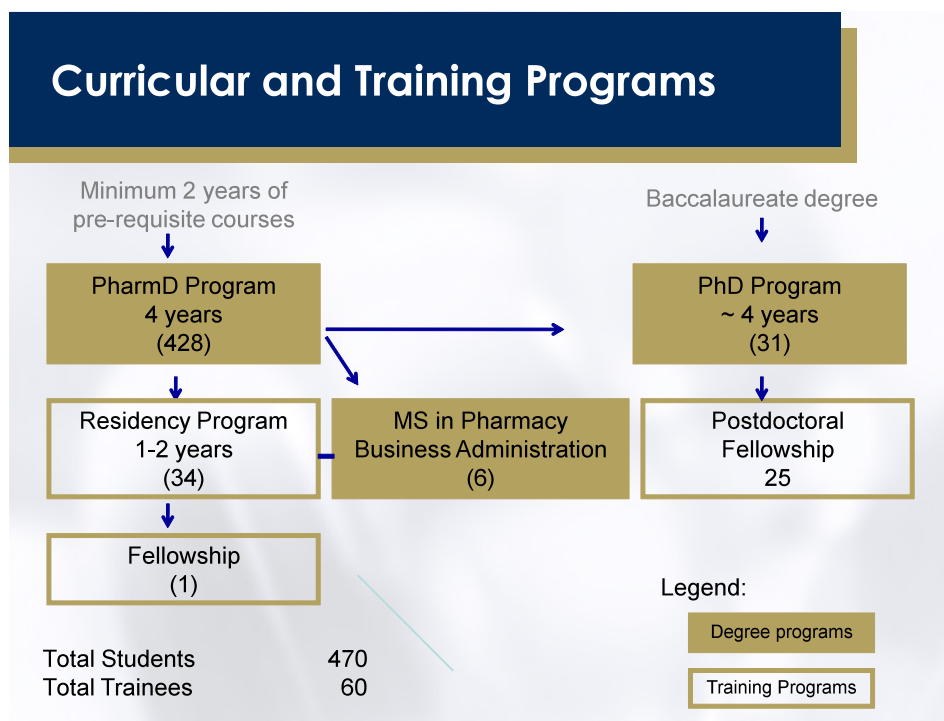
Educating the Next Generation of Practitioners and Scientists

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 became the overall objective for the PharmD, residency, and PhD programs for the School of Pharmacy, replacing the individual statements for each of the educational programs.



EDUCATING BY THE NUMBERS FOR FY10

PHARM D PROGRAM

- The School of Pharmacy received the maximum 6 years of accreditation from ACPE.
- **108** students were enrolled with average GPA of 3.67, and PCAT of 76%.

- **13.2** –The number of applicants per seat through open admission.
- **\$346,750** in scholarships awarded to **163** PharmD students.
- **2** students were elected president or chair of national student organizations.
- **5** student organizations won **10** national or regional awards.
- PharmD students presented **4** papers at international or national meetings.
- **294** pharmacists in **22** states and **4** countries provided **749** APPE rotations for **107** fourth professional year students.
- **107** students received PharmD degrees in 2010 graduating class.
 - **98%** passed both the North American Pharmacist Licensure Examination and the Multistate Pharmacy Jurisprudence Examination on the first attempt.
 - **98%** (106 of 108 students) graduated in four years.
- Faculty published **8** educational research papers published in peer-review journals.
- **216** students participated in new electronic portfolio implementation designed by faculty to meet the requirements for assessment based on the School’s curricular outcomes.
- The School hosted **2** student “practice receptions” with selected alumni, faculty, and friends of the School to prepare students for professional annual meetings.
- **8** students completed international advanced practice elective rotations.

RESIDENCY PROGRAM

- **7** partners with **9** types of residency programs.
- **23** PGY1 and **8** PGY2 residents participate in the program.
- **31** residents participating in our affiliated residency programs came from **16** schools of pharmacy in **9** states.
- **8** of our 13 PGY1 pharmacy practice residents have been accepted into PGY2 specialty residency programs.
- **4** of 5 non-management PGY2 residents accepted clinical positions at academic medical centers.
- **7** residents were enrolled in a two-year combined MPH (Graduate School of Public Health) – Management Residency or combined MS (School of Pharmacy) – Management Residency program.
- **3** management residents completed the combined program and accepted hospital pharmacy management positions.
- **26** of **31** residents presented their research results at national meetings.

- **11** 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.
- **2** residents accepted faculty positions at schools of pharmacy.
- **1** preceptor, Dr. Amy Seybert, received the ASHP Foundation 2009 Pharmacy Residency Excellence Preceptor Award.
- **1** management resident, Dr. Jeff Little, was appointed to American Society of Hospital Pharmacists New Practitioner Forum Executive Committee as vice-chair.
- **1** management resident, Dr. Garrett Eggers, was the pharmacy member of an interprofessional student team that won the National Clarion Interprofessional Case Competition.
- **23** Pharmacy Practice residents from **12** universities in **7** states recruited for FY 2011.
- **10** PGY2 Pharmacy Specialty Residents recruited for FY2011 including **5** who will complete the combined MS/Residency program in health system administration.

GRADUATE PROGRAM

- **31** PhD students were enrolled.
- **9** PhD students were admitted; **1** graduated after successful defense of his dissertation.
- **48% (15/31)** of the PhD students are U.S. citizens or permanent residents.
- **38% (12/31)** of the PhD students have pharmacy degrees.
- **5** PhD students received competitive fellowships.
- Gordon Conference invitation to a graduate student: **1!**
- **23** peer-reviewed manuscripts were published by graduate students.
- Graduate students gave **21** presentations at national scientific meetings.
- **1** national first-place award was granted—to the AAPS student chapter.
- **3** master of science students were admitted.

PHARMD PROGRAM: EDUCATING THE NEXT GENERATION OF PRACTITIONERS

As a recognized national leader in pharmacy education, we are building on our rich tradition of excellence in education to provide world-class learning opportunities for our students. We are empowering students to become practitioners with the necessary skills and knowledge to be leaders in patient-centered care and key members of 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 (ACPE) for the PharmD Program

- The School of Pharmacy was awarded full accreditation (six years) at ACPE Board meeting in January 2010. Notably under the new standards only about 50% of schools reviewed had achieved full accreditation up to the time of the Schools accreditation visit due to new accreditation standards.
- The School added an innovative practice to the accreditation preparation process by having two experienced external reviewers participate with the faculty in a mock site visit, which enhanced the faculty's understanding of the process and their readiness for the official ACPE team site visit.
- ACPE commended the School on its excellent presentation of the self-study.

Selected Publications

- Self-Study Report to the Accreditation Council for Pharmacy Education. http://www.pharmacy.pitt.edu/about/pubs/ACPE2009/ACPE_Report.pdf
- AACP Noteworthy practice relative to Standard #2. Access at <http://www.aacp.org/resources/education/peas/tools/ProductForms/ProductDetails.aspx?AspXPage=g%5FF6E99899460A4B8982F431B1CFDC507D:%2540ID%3D113>

Innovations in Student Learning

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

Simulated Patient Care Experiences

Students gain skills in patient interviewing, clinical reasoning, and therapeutic decision making through a variety of simulated patient care experiences. Actors trained as standardized patients provide students opportunities to practice patient care in a safe environment.

Selected Publications

- **Benedict N.** Branched-Outcome Decision Making, Virtual Patient Simulation and Problem Based Learning to Improve Student Learning. *American Journal of Pharmaceutical Education* 2010:74; Article 143.

Selected Invited Presentations

- American College of Clinical Pharmacy (ACCP) Annual Meeting. Anaheim, CA. "Using Standardized Patients to Develop Patient-Centered Skills." **Pater K.** October 10, 2009.

- International Meeting on Simulation in Healthcare. Phoenix, AZ. “Simulation in Pharmacy Education.” **Seybert A.** January 2010.
- Cardinal Health Retail Business Conference. Washington, DC. “Introduction to Simulation: Application in Community Pharmacy Practice.” **Seybert A.** July 2009.
- American Association of Colleges of Pharmacy Annual Meeting, Seattle, WA. “Student Satisfaction and Learning with PharmaCAL: a Branched-Outcome Decision Making, Virtual Patient Simulator.” **Benedict N.** July 2010.

Curricular Tracks: Areas of Concentration

Major Accomplishments

- The Pharmacy Business Administration Area of Concentration (AoC) was approved by the University.
- 6 students were selected to participate in the inaugural Pharmacy Business Administration AoC in the spring semester (4 P3 and 2 P4 students).
- A new elective course on Complex Adaptive Systems and Managing Change was created and approved by the curriculum committee. It will be offered in the fall semester 2010.

Student Practice Reception: Improving Communication and Networking Skills

The School hosted a reception at the University Club for P3 and P4 student pharmacists, alumni, faculty, residents, and graduate students. The purpose of the reception was to prepare the students for receptions and professional networking at the ASHP Midyear Clinical Meeting and other professional meetings.

Interprofessional Education

The School is a partner with the other schools of the health sciences in developing interprofessional training experiences for health professions students.

Selected Publications

- **Meyer, SM.** “Interprofessional Forum and Competition, University of Pittsburgh,” *J Allied Health*, 39:3/Pt. 2 Special Issue (2010).

Selected Invited Presentations

- American College of Clinical Pharmacy Spring Research Forum, Charlotte, NC. “Why Interprofessional Education is Important: Background and Significance,” **Meyer SM.** April 26, 2010.
- 2010 American Association of Colleges of Pharmacy Annual Meeting, Seattle, WA. “Implementing Interprofessional Education in the Classroom.” **Meyer SM.** July 13, 2010.

Implementation of e-Portfolio

The School has a long tradition of students using portfolios to demonstrate achievement. In the past few years, faculty members have experimented with implementation of commercially available e-portfolios which had proven to be expensive and not student friendly. In FY2010 a new approach was developed to implement an e-portfolio.

Selected Presentations

- AACP Annual Meeting. Seattle, WA. Seybert AL, Hill CL, Smith RB. "Creating an Open Source Pharmacy Student Portfolio for Use as Assessment and Professional Portfolios." July 2010.

Peer Reviewed

- **Hall DL, Corman SL, Drab SR, Meyer S, Smith RB.** Evaluation of instructor usage and satisfaction with a technology-based instructional resource in diabetes education. *American Journal Pharmacy Education.* 2009; 73(3) Article 45.
- Jasti H, Sheth HS, **Verrico MM**, Perera S, Bump GM, Simak D, Buranosky R, Handler SM. Assessing the patient safety culture of internal medicine housestaff in an academic teaching hospital. *Journal of Graduate Medical Education.* 2009; Sep 1(1):139-45.
- **Hall DL, Corman SL, Drab SR, Smith RB, Meyer SM.** Application of a Technology-Based Instructional Resource in Diabetes Education at Multiple Schools of Pharmacy: Evaluation of Student Learning and Satisfaction. *Currents in Pharmacy Teaching and Learning.* 2010; Volume 2, Issue 2.
- **Benedict N.** Branched-Outcome Decision Making, Virtual Patient Simulation and Problem Based Learning to Improve Student Learning. *Am J Pharm Ed.* 2010; 74: Article 143.
- **Donihi AC, Weber RJ,** Sirio CA, **Mark SM, Meyer SM.** An Advanced Pharmacy Practice Experience in Inpatient Medication Education. *Am J Pharm Ed.* 2009; 73:11.
- **Saenz, R, Skledar SJ,** Yourich BE, **Mark SM.** Educational Program for Pharmacists at a Multi-facility Academic Medical Center. *Am J Health-Syst Pharm* 2010; 67(16):1368-72.
- Snyder ME, **McGivney MS, Smith RB.** Establishing a community practice fellowship. *Am J Phar Ed* 2009; 73(7) Article 126.
- **Skledar SJ,** McKaveney T. A method for teaching continuous quality improvement to student pharmacists through a practical application project. *Currents in Pharmacy Teaching and Learning.* 2009; 1(2): 79-86.

Commentary

- Brazeau GA, **Meyer, SM,** Belsey MB, Edward M, Bilic S, Bullock J, DeLander GE, Fiese EF, Giroux SL, McNatty D, Nemire RE, Prescott WA, Traynor AP. Future Pharmacy Graduates for Traditional and Emerging Career Opportunities. *Am J Pharm Educ.* 2009; Volume 73: Article 157.

Position Statements

- Smith KM, Sorensen T, Connor KA, Dobesh PP, Hoehns JD, Marcus KB, Pass S, **Seybert AL**, Shapiro NL. Value of Conducting Pharmacy Residency Training – The Organizational Perspective (2008 Task Force on Residencies). Accessed at <http://www.aacp.com/docs/positions/whitePapers/ValuePhcyResFinalDraft.pdf>

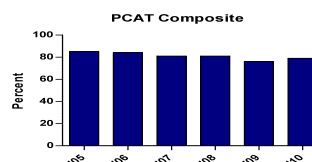
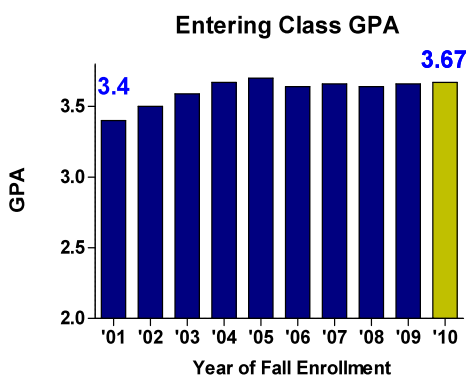
Successful Practice Descriptions

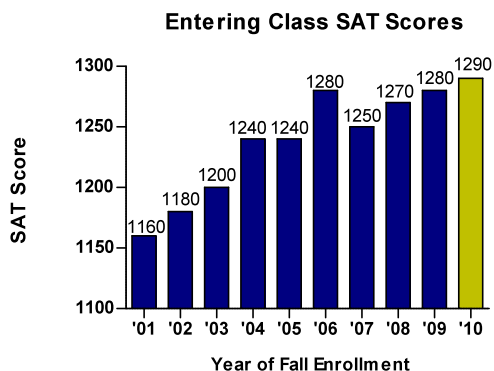
- **Mark SM**. Preparation for and Success in Academic Careers in Pharmacy – Area of Successful Practice: Student Leadership Development. Accessed at: <http://www.aacp.org/resources/education/Documents/Successful%20Practices%20in%20Student%20Leadership%20Final.pdf>
- **Mark SM, Johnson HJ**. Preparation for and Success in Academic Careers in Pharmacy – Area of Successful Practice: School Involvement in Conducting Residency Programs. Accessed at: <http://www.aacp.org/resources/education/Documents/Successful%20Practices%20in%20Residency%20Final.pdf>

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 creating leaders in pharmacy. Thirteen faculty and staff members participate in 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 108 students for the Class of 2014.





- Conditional admission Class of 2014
 - 54 students applied for PharmD program after sophomore year
 - 54 were interviewed
 - 51 were qualified and admitted to the program

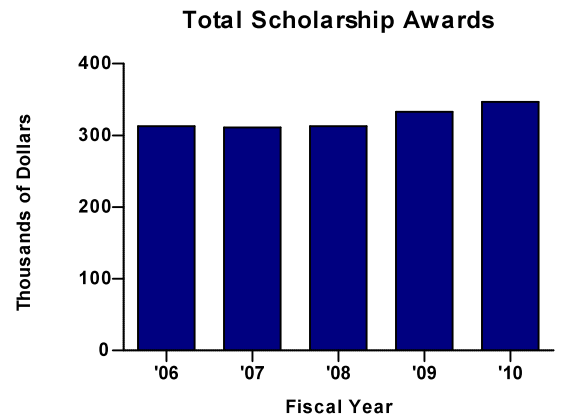
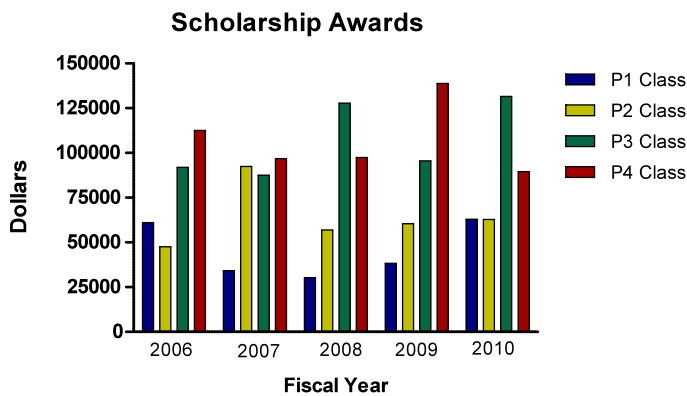
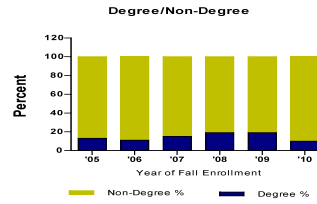
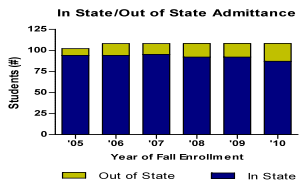
- Open Enrollment Class of 2014
 - 753 applied to the PharmD program
 - 126 were interviewed
 - 85 were offered admission
 - 57 accepted the offers.

- The entering Class of 2014
 - 51% are men—the first time since 1980 that more men than women comprise the class
 - 15% are out-of-state students
 - 18% have a college degree prior to entering the PharmD program
 - 5% were an underrepresented minority

First-Year Class Enrollments 2002-2010

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

*Total across Applications Pathway sums to the total students enrolled; for fall 2010 total is 108



Student National and Regional Awards and Recognition

- Steve Zona, P3 student, was elected APhA-ASP (American Pharmacist Association-Association Student Pharmacists) Student President at the APhA Annual meeting in March 2010.
- Julie Lauffenburger, P4 student served as APhA-ASP/IPSF National Contact Person Co-chair.
- Mascara GP (P3 student), Ruby CM, Perara S, Hanlon JT. Changes in pharmacologic pain management after admission in nursing home hospice patients. **American Geriatric Society Annual Meeting**; Orlando, FL; May 14, 2010.
- Kuriakose SS (P4 student), Gillis LM (P4 student), Shields RK, Potoski BA. Aspergillosis in a Patient with Chronic Obstructive Pulmonary Disease (COPD) on Fluticasone: A Case Report. **American Society of Health-System Pharmacy Midyear Clinical Meeting**, Las Vegas, Nevada; December 2009.
- Gillis LM (P4 student), Kuriakose SS (P4 student), Shields RK, Potoski BA. A case report of Vancomycin-Intermediate Staphylococcus aureus (VISA): A Review of Risk Factors and Considerations. **American Society of Health-System Pharmacy Midyear Clinical Meeting**, Las Vegas, Nevada; December 2009.

- Zona S (P3 student), Gardner E (P3 student), Hinds D (P3 student), Hill C, Smith RB. “Implications of Student Led Initiatives in Pharmacy”. **69th FIP World Congress of Pharmacy and Pharmaceutical Sciences**, Istanbul, Turkey September 2009.
- National Community Service Award trophy for Small Chapter Membership Student National Pharmacists Association (SNPhA).
SNPhA students planned and implemented a series of health assessments for the minority community.
- Rite Aid/Chauncey I. Cooper Chapter Excellence Award for best small chapter in the country, SNPhA.
Outstanding IPSF Activity Award, Association of Student Pharmacists (ASP)
IPSF Students created a course in medical Spanish and prepared other students to participate in Hispanic Health Fair and weekly Hispanic clinics.
- P&T Competition—2nd place, Association of Managed Care Pharmacists (AMCP)
Students prepared and presented a P&T review of an assigned drug and competed regionally to win the right to compete at the national AMCP meeting in San Diego, CA where they came in 2nd in the nation.
- PPA OTC Jeopardy Competition Champions, Pennsylvania Pharmacy Association (PPA)
Students competed with students from the other six schools of Pharmacy at the PPA meeting in a Jeopardy style quiz on OTC drugs. The Pitt team won the championship for the third time in four years.
- Two students participated in the AACP Faces of Change video project about courses or educational experiences that made a significant difference in their education. The students highlighted two courses:
 - Executive Board Room Series, course coordinator Gordon Vanscoy, PharmD
 - Simulation Based Critical Care, course coordinator Amy Seybert, PharmD

Experiential Learning Rotations

International Rotations

Students may complete APPE rotations at international sites as long as they are fulfilling an elective experience. This year

- 1 student successfully competed for and received a Global Health Scholarship from the Graduate School of Public Health to develop a drug formulary for a health clinic in Malawi, Africa.
- 3 students participated in experiential rotations at the UPMC facility in Palermo, Italy.
- 1 student helped develop a new student rotation at Beacon hospital in Dublin, Ireland in summer 2009.
- 3 students completed experiential rotations in Honduras.

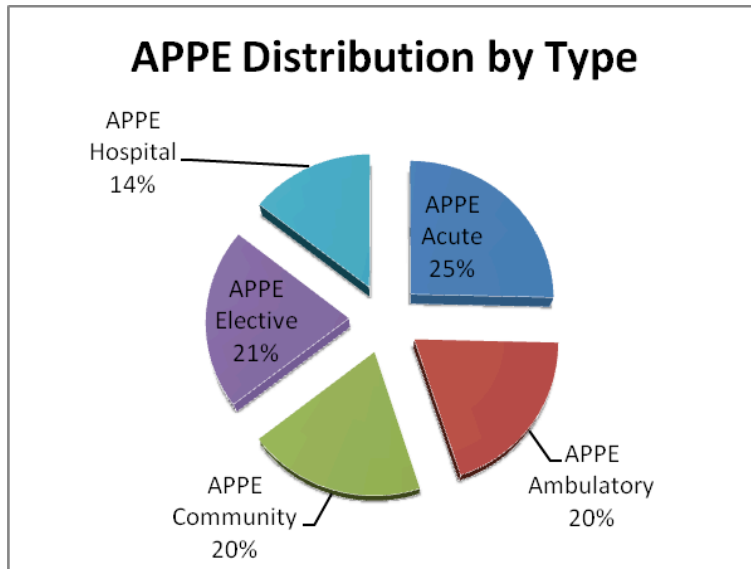
Introductory Pharmacy Practice Experience (IPPE) and Advanced Pharmacy Practice Experience (APPE) Rotations

IPPE Rotations

- 46 preceptors supervised 108 P1 students
- 74 preceptors supervised P2 students
- 93 preceptors supervised P3 students

APPE Rotations

294 preceptors supervised P4 students during 749 five-week rotations for 107 students.



Recognition and Awards: Student Organizations

Organization	Award Won
AMCP	P&T Competition, 2nd place
ASP	Outstanding IPSF Activity Award
Kappa Psi	Province 2 Chapter of the Year
Kappa Psi	Grand Regent Letter of Recognition - Dana Roman
Kappa Psi	Grand Regent Letter of Recognition - Ashley Toale
SNPhA	Outstanding Participation and Achievement in Region I
SNPhA	Outstanding dedication and service to NPhA for MTM poster
SNPhA	National Community Service Award trophy for Small Chapter Membership
PPA	OTC Jeopardy Champions

Recognition and Awards: Individual Students

Student	Award	Description
Andrew Clark (P2)	2010 Patient Safety Fellowship sponsored by the Jewish Healthcare foundation and Health Careers Futures	Summer program for students in health-related fields; prepares students to apply an interprofessional team approach to health care practice.
Amanda Johnson (P2)	UCB, The Epilepsy Company, Family Epilepsy Scholarship	Highly competitive scholarship to encourage academic and personal achievement not just to people with epilepsy but also to family members and caregivers who contribute to their successes.
Julie Lauffenburger (P4)	American Pharmacists Association–Academy of Student Pharmacists (APhA–ASP)/International Pharmaceutical Students' Federation (IPSF) national contact person co-chair	One of four national positions for IPSF in the nation; corresponds between the APhA–ASP staff and national Executive Committee, the international Executive Committee, and chapter liaisons.
Julie Lauffenburger (P4)	Selected for the Young Professional Commission of the Global Commission on Education of the Health Professionals for the 21 st Century	This group is an international, interdisciplinary young professional advisory group.
Julie Lauffenburger (P4)	Phi Lambda Sigma American Foundation for Pharmaceutical Education (AFPE) First Year Graduate Scholarship	Recognition, encouragement, and financial support to a distinguished member of Phi Lambda Sigma who has committed to pursue a PhD degree in pharmaceutical sciences.
Christina Martin (P4)	American Society of Health-System Pharmacists Student Leadership Award	Recognition for leadership attributes and accomplishments; ASHP offers up to twelve awards annually.
Katie Steward (P2)	Academy of Student Pharmacists Regional Delegate	Includes delegate seat in the APhA–ASP national organization.
Nicholas Wytiaz (P2)	Academy of Managed Care Pharmacy (AMCP) /Foundation for Managed Care Pharmacy/Pfizer Managed Care	Twelve students chosen nationally for a structured ten-week program, participating directly in activities of a managed

Student	Award	Description
	Pharmacy Summer Internship	care.pharmacy practice site and interacting with a medical outcomes specialist at AMCP.
Steven Zona (P3) Katlyn Cochran (P4)	National Association of Chain Drug Stores Foundation Scholarship	Awarded for exceptional achievements and desire to pursue a career in chain community pharmacy.
Steven Zona (P3)	APhA-ASP National President 2009-2010	National office; elected by colleagues.

Student Awards at Graduation

Award Title	Student Awardee
APhA Academy of Students of Pharmacy Senior Recognition Certificate	Julie Lauffenburger
Facts and Comparisons Award	Jennifer Melichar
John Herman Wurdack Award	Ryan Morgan
Lilly Achievement Award	Katherine Kingston
Merck Award	Julie Lauffenburger Carlie Smith Jeremy Stultz
Mylan Excellence in Pharmacy Award	Louise-Marie Gillis
Natural Medicines Comprehensive Database Recognition Award	Christina Martin
Pennsylvania Pharmacists Association Award	Karleen Melody
Robert W. Taylor Memorial Award	Ana Lungu
TEVA Pharmaceuticals Award	Dana Roman
U.S. Public Health Service-Excellence in Public Health Pharmacy Practice Award	Yardlee Kaufmann
University of Pittsburgh School of Pharmacy Patient Care Award	Safia Kuriakose
University of Pittsburgh School of Pharmacy Pharmacy Communications Award	Melanie Woytowish

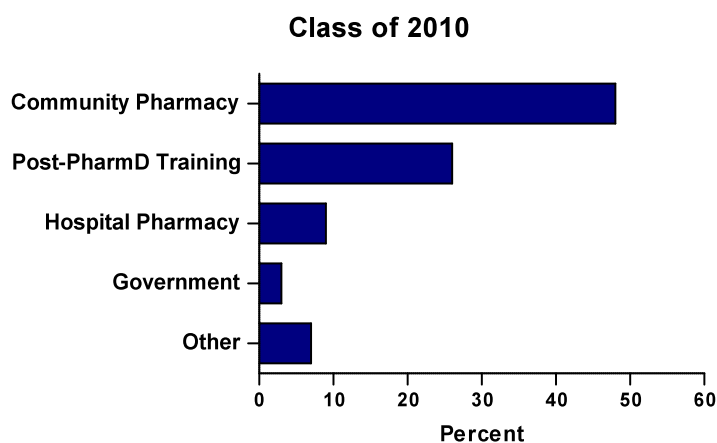
Graduating Class of 2010

107 students received their PharmD diplomas at the April Commencement Ceremony.

98% of students passed on the first attempt for both the North American Pharmacist Licensure Exam and the Multistate Pharmacy Jurisprudence Examination. School graduates have consistently exceeded state and national averages for scores and pass rates on these two examinations.

98% of students completed their degrees on time.

26% of the class of 2010 continued training in a post-PharmD residency, fellowship, PhD program, or MBA program. Others obtained employment in varied 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 (%)
2010	97/101	97.6	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** (%)
2010	179/185	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.

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 FY10

- 7 partners with 9 types of residency programs.
- 23 PGY1 and 8 PGY2 residents participate in the program.
- 31 residents participating in our affiliated residency programs came from 16 schools of pharmacy in 9 states.
- 8 of our 13 PGY1 pharmacy practice residents have been accepted into PGY2 specialty residency programs.
- 4 of 5 non-management PGY2 residents accepted clinical positions at academic medical centers.
- 7 residents were enrolled in a two-year combined MPH (Graduate School of Public Health) – Management Residency or combined MS (School of Pharmacy) – Management Residency program.
- 3 management residents completed the combined program and accepted hospital pharmacy management positions.

- **26 of 31** residents presented their research results at national meetings.
 - **17** – 29th Annual Eastern States Conference for Residents and Preceptors
 - **5** – 43rd Annual Society for Teachers of Family Medicine Meeting
 - **1** – Interscience Conference on Antimicrobial Agents and Chemotherapy
 - **2** – American Pharmacists Association Annual Meeting
 - **1** – American Society of Health System Pharmacists
- **11** 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.
- **2** residents accepted faculty positions at schools of pharmacy.
- **1** preceptor, Dr. Amy Seybert, received the ASHP Foundation 2009 Pharmacy Residency Excellence Preceptor Award.
- **1** management resident, Dr. Jeff Little, was appointed to American Society of Hospital Pharmacists New Practitioner Forum Executive Committee as vice-chair.
- **1** management resident, Dr. Garrett Eggers, was the pharmacy member of an interprofessional student team that won the National Clarion Interprofessional Case Competition.
- **23** Pharmacy Practice residents from **12** universities in **7** states recruited for FY 2011.
- **10** PGY2 Pharmacy Specialty Residents recruited for FY2011 including **5** who will complete the combined MS/Residency program in health system administration.

Residency Partners and Programs (#of Residents)

UPMC Presbyterian Shadyside
 Ambulatory Care (1)
 Community Practice* (1)
 Pharmacy Practice (4)
 Pharmacy Management (6)
 Infectious Diseases (1)
 Critical Care (2)

UPMC St. Margaret
 Family Medicine (1)
 Pharmacy Practice (4)

UPMC Mercy
 Pharmacy Practice (5)

UPMC Health Plan
 Managed Care (2)

CVS –Caremark Pittsburgh
 Managed Care (1)

Rite Aid Corp*
 Community Pharmacy (1)

Blackburn's Pharmacy*
 Community Pharmacy (1)

CVS-Caremark Woonsocket RI
 Community Pharmacy Management (1)

*School of Pharmacy is the accredited entity for these residencies

Innovations in Residency Training

Combined MS (School of Pharmacy)-Management Residency Program in Community Pharmacy

The School developed and implemented the first residency of this kind in the nation in collaboration with CVS Caremark. The resident spends one year in Pittsburgh with rotations at various community pharmacy service providers and then one year at the corporate partner headquarters with rotations through the corporate functions that support the pharmacy business.

TOP TIER – On-line research training for community pharmacy residents

Dr. Somma led the development of an on-line program for community practice residents from Temple University, Wilkes University, and the University of Pittsburgh to share in discussions about their research while learning how to conduct a research project. Online meetings were held weekly. The residents and preceptors met face-to-face at the Pennsylvania Pharmacy Association (PPA) Annual Meeting and the Alpha Annual Meeting to present their projects to each other and to others attending.

Residents 2009-2010

Last Name	First Name	Pitt Residency Program	Year	PharmD School	Future Plans
Elrod	Shara	Ambulatory Care	PGY2	University of Texas College of Pharmacy	Assistant Professor of Pharmacy Practice, Nova Southeastern University, Fort Lauderdale, FL
Conforti	Brandon C	Community Pharmacy	PGY1	Wilkes University	Will be completing Year 2 of the Community-based program associated with CVS Caremark
Lowry	Brooke	Community Pharmacy	PGY1	University of Pittsburgh	Professor of pharmacy at St. John Fisher College Wegmans School of Pharmacy, Rochester NY
Kozminski	Melinda Martin	Community Pharmacy-RiteAid	PGY1	University of Pittsburgh	Clinical Pharmacist at Gateway Health Plan, Pittsburgh, PA
McLaughlin	Shannon	Community Pharmacy-SOP	PGY1	University of Pittsburgh	Clinical Pharmacist with Sunshine Pharmacy, Naples, FL
Anthes	Ananth Malurkar	Critical Care Pharmacy	PGY2	Bernard J. Dunn School of Pharmacy, Shenandoah Univ	Unit Based Pharmacist at UPMC PUH SHY
Harinstein	Lisa M	Critical Care Pharmacy	PGY2	University of Michigan	Surgical ICU clinical specialist at Cleveland Clinic
Busby	Rachelle	Family Medicine Pharmacy	PGY2	University of Pittsburgh	Inpatient and outpatient clinical pharmacist specialist at the University of Chicago Medical Center
Dorobisz	Monica	Infectious Diseases	PGY2	Northeastern University	Infectious diseases pharmacy specialist at Kent Hospital in Warwick, RI
Bhavsar	Rameshwari	Managed Care Pharm	PGY1	University of the Sciences, Philadelphia College of Pharmacy	Plans to practice in a managed care environment
Holzworth	Ashley	Managed Care Pharm	PGY1	University of Pittsburgh	Clinical Pharmacy Specialist at Blue Cross Blue Shield of Western New York, Buffalo, NY
Sadtler	Andrea	Managed Care Pharmacy	PGY1	Butler University School of Pharmacy	Clinical Pharmacist for Clarian Health in Indianapolis
Davis	Stephen	Pharmacy Management	PGY2	Auburn University	Pharmacy Manager at Texas Children's Hospital Main Campus
Eggers	Garrett	Pharmacy Management	PGY1	University of Wisconsin	Will be completing Year 2 of the Pharmacy Management Residency at UPMC
Jenkins	Matthew	Pharmacy Management	PGY1	Auburn University	Will complete Year 2 of the Pharmacy Management Residency program
Little	Jeff	Pharmacy Management	PGY2	University of Kansas	Manager of Central Pharmacy at Children's Mercy Hospital in Kansas City, MO

Last Name	First Name	Pitt Residency Program	Year	PharmD School	Future Plans
Mulvanity	Meredith	Pharmacy Management	PGY2	University of Pittsburgh	Inpatient Operations Coordinator at the Arnold Palmer and Winnie Palmer Hospital, Orlando, FL
Steinhardt	Sarah	Pharmacy Management	PGY1	Purdue University	Will complete Year 2 of the Pharmacy Management Residency program
Agnew	Amanda	Pharmacy Residency	PGY1	Duquesne University	PGY2 Oncology Residency at UPMC
Armahizer	Michael	Pharmacy Residency	PGY1	Duquesne University	PGY2 Critical Care Residency at UPMC
Campbell	Allison	Pharmacy Residency	PGY1	Duquesne University	PGY2 Critical Care Residency at West Virginia University Hospital
Ciamacco	Cara	Pharmacy Residency	PGY1	Duquesne University	Infectious Diseases Pharmacy Residency, Barnes-Jewish Hospital, St. Louis, MO
Foley	John	Pharmacy Residency	PGY1	Temple University, Philadelphia	Hospital of the University of PA, Outpatient Anticoagulation Management
Forsberg	Elizabeth	Pharmacy Residency	PGY1	University of Pittsburgh	UPMC St Margaret, General/Medicaton Safety
Hedrick	Christina	Pharmacy Residency	PGY1	West Virginia University	Staff Pharmacist, Southwest Regional Medical Center in Waynesburg, PA.
Henry	Jessica	Pharmacy Residency	PGY1	Lecom	Plans to complete a PGY2 psychiatry and neurology specialty residency at the Cleveland VA
Johnson	David	Pharmacy Residency	PGY1	University of Michigan	PGY2 Transplant Pharmacy Residency at UPMC
Owens	Nick	Pharmacy Residency	PGY1	University of Pittsburgh	PGY2 Family Medicine Residency at UPMC St. Margaret
Prosenjak	Amanda	Pharmacy Residency	PGY1	Duquesne University	Chartwell
Pursglove	Marci	Pharmacy Residency	PGY1	West Virginia University	UPMC Mercy
Schultz	Erin	Pharmacy Residency	PGY1	University of Pittsburgh	PGY2 Ambulatory Care Residency at Health Alliance University Hospital in Cincinnati, OH

Residents Recruited for 2010–2011

Name	Prior Training	Residency Year	Residency
Nicole D'Antonio, PharmD	Duquesne University	PGY1	Pharmacy Resident - UPMC St Margaret
Christine Eisenhower, PharmD	U of Rhode Island	PGY1	Pharmacy Resident - UPMC St Margaret
Christine Fisher, PharmD	Temple University	PGY1	Pharmacy Resident - UPMC St Margaret
Giavanna Russo-Alvarez, PharmD	Duquesne University	PGY1	Pharmacy Resident - UPMC St Margaret
Yardlee Kauffman, PharmD	U of Pittsburgh	PGY1	Community Pharmacy Resident - School of Pharmacy with Falk Clinic
Ted Turner, PharmD	Univ of Southern Nevada	PGY1	Community Pharmacy Resident - School of Pharmacy with Forbes Pharmacy
Anthony DiCriscio, PharmD	U of Pittsburgh	PGY1	Community Pharmacy Resident - School of Pharmacy with Rite Aid
Scott Anderson, PharmD	U Illinois Chicago	PGY1	Health System Pharmacy Practice Administration Resident
Hany Edward, PharmD	Florida A&M	PGY1	Health System Pharmacy Practice Administration Resident
Jorge Garcia, PharmD	Nova Southeastern University	PGY1	Health System Pharmacy Practice Administration Resident
Leyner Martinez, PharmD	LECOM School of Pharmacy	PGY1	Health System Pharmacy Practice Administration Resident
Elaine Mebel, PharmD	U of Georgia	PGY1	Health System Pharmacy Practice Administration Resident
Lauren Goldberg, PharmD	Duquesne University	PGY1	Managed Care Pharmacy Resident - CVS Caremark
Matthew Felbinger, PharmD	U of Pittsburgh	PGY1	Pharmacy Resident - UPMC Presbyterian/Shadyside
Meredith Jernigan, PharmD	UNC	PGY1	Pharmacy Resident - UPMC Presbyterian/Shadyside
Gretchen Kipp, PharmD	U of Pittsburgh	PGY1	Pharmacy Resident - UPMC Presbyterian/Shadyside
Ibrahim Sales, PharmD	U of South Carolina	PGY1	Pharmacy Resident - UPMC Presbyterian/Shadyside
Johanna Bezjak, PharmD	Duquesne University	PGY1	Pharmacy Resident – UPMC Mercy
Elizabeth Ghebreselassie, PharmD	LECOM School of Pharmacy	PGY1	Pharmacy Resident – UPMC Mercy
Angelo Greco, PharmD	Duquesne University	PGY1	Pharmacy Resident – UPMC Mercy
Brian Lohr, PharmD	Duquesne University	PGY1	Pharmacy Resident – UPMC Mercy
Theodore Pikoulas, PharmD	Duquesne University	PGY1	Pharmacy Resident – UPMC Mercy
Sandeep Devabhakthuni, PharmD	PGY1 UPMC PUH	PGY2	Cardiology/Critical Care Pharmacy Resident
Brandon Conforti, PharmD	PGY1 UPMC PUH	PGY2	Community Pharmacy Practice Management Resident - School of Pharmacy in collaboration with CVS Caremark

Name	Prior Training	Residency Year	Residency
Michael Armahizer, PharmD	PGY1 UPMC PUH	PGY2	Critical Care Pharmacy Resident
Garrett Eggers, PharmD	PGY1 UPMC PUH	PGY2	Health System Pharmacy Practice Administration Resident
Matthew Jenkins, PharmD	PGY1 UPMC PUH	PGY2	Health System Pharmacy Practice Administration Resident
Sarah Steinhardt, PharmD	PGY1 UPMC PUH	PGY2	Health System Pharmacy Practice Administration Resident
Anthony Casapao, PharmD	PGY1 St Vincents Medical Center, FL	PGY2	Infectious Diseases Pharmacy Resident
Jennifer Kim, PharmD	PGY1 VCU	PGY2	Internal Medicine Pharmacy Resident
Amanda Agnew, PharmD	PGY1 UPMC Mercy	PGY2	Oncology Pharmacy Resident
David Johnson, PharmD	PGY1 UPMC PUH	PGY2	Solid Organ Transplant Pharmacy Resident
Nick Owens, PharmD	U of Pittsburgh	PGY2	UPMC St Margaret Family Medicine

Residents in the School of Pharmacy Masters Program in Pharmacy Administration

Resident	Year	School for PharmD
Garrett Eggers	PGY1	U of Wisconsin
Mathew Jenkins	PGY1	Auburn University
Sarah Steinhardt	PGY1	Purdue University
Steven Davis	PGY2	Auburn Univeristy
Meredith Mulvanity	PGY2	University of Pittsburgh

PROFESSIONAL DEVELOPMENT: EDUCATING THE NEXT GENERATION OF PRACTITIONERS

Pennsylvania Project

The Pennsylvania Project is an educational initiative led by Pitt in partnership with the Pennsylvania Coalition of Colleges and Schools of Pharmacy. Faculty from all seven schools of pharmacy have partnered together to develop pharmacist CE which includes Web-based instruction and a one-day live training course to assist pharmacists to develop or enhance pharmacist-led patient care practices in Pennsylvania.

Major Accomplishments

- Over **180** pharmacists have completed on-line training to date
- Over **65** pharmacists have completed both on-line and live training sessions
- **5** live training sessions have been conducted

Selected Presentations

- Pennsylvania Pharmacy Association (PPA), Lancaster, PA. Melissa McGiveny, PharmD. “PA Project: Medication Therapy Management Practice Development,” October 1, 2009.

Grants

- Meyer, S. High Mark Foundation. “The Pennsylvania Project Preparing Pharmacist for Patient Centered Care.” \$81,641. 2009-2010.

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 8,000 students and pharmacist have taken the course. For FY 2010 several modules were updated and new modules developed.

Major Accomplishments

- Updated Modules on insulin and medical nutrition therapy.
- Created new module on cultural competency and Latino patients in collaboration with faculty from the University of Puerto Rico, University of New Mexico, and University of the Sciences Philadelphia.
- Obtained American Association Diabetes Educators CE accreditation for all modules for pharmacists, nurses and dieticians.
- Established team to create motivational interviewing training and completed on-line video lectures.

Grants

- **Smith RB, Hill CL, Drab, S.** “DM Educate Enhancements – cultural competence,” Novo Nordisk. \$293,000. January 2009- December 2010.
- **Smith RB, Hill CL, Drab, S.** “DM Educate Enhancements – motivational interviewing,” Novo Nordisk. \$105,000. January 2010-December 2010.

Selected Publications

- **Hall DL, Corman CL, Drab SR, Meyer S, Smith RB.** Evaluation of instructor usage and satisfaction with a technology-based instructional resource in diabetes education. *American Journal Pharmacy Education* 2009: 73 (3) Article 45.
- **Hall, DL, Corman, SL, Drab SR, Smith RB, Meyer SM.** Application of a Technology-Based Instructional Resource in Diabetes Education at Multiple Schools of Pharmacy: Evaluation of Student Learning and Satisfaction. *Currents in Pharmacy Teaching and Learning* 2010 Volume 2; Issue 2.

PHD PROGRAM: EDUCATING THE NEXT GENERATION OF SCIENTISTS GRADUATE PROGRAM BY THE NUMBERS FOR FY10

- 31 PhD students were enrolled.
- 9 PhD students were admitted; 1 graduated after successful defense of his dissertation.
- 48% (15/31) of the PhD students are US citizens or permanent residents.
- 38% (12/31) PhD students have pharmacy degrees.
- 5 PhD students received competitive fellowships.
- Gordon Conference invitation to a graduate student 1!
- 23 peer-reviewed manuscripts were published by graduate students.
- Graduate students gave 21 presentations at national scientific meetings.
- 1 national first place award was granted—to the AAPS student chapter.
- 3 master of science students were admitted.

Pharmaceutical Sciences PhD Program Details

This program provides students with the foundation to become independent researchers as either basic scientists or clinical pharmaceutical sciences. The program has three tracks: Biochemical Pharmacology, Medicinal Chemistry, and Pharmaceutics. Members of each track may also participate in the Clinical Scientist Program a specialized program to prepare students for clinical and translational research.

Fall 2009 Admission Demographics

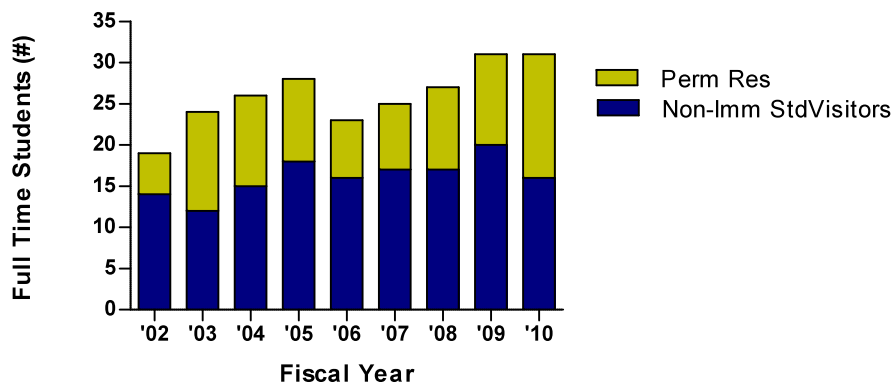
- 9 PhD students were selected from over 200 applicants for Fall 2009
 - 5 U.S. citizens – 1 with PharmD degree
 - 4 non-U.S. citizens – 1 with degree in pharmacy
- 3 MS students joined the program in January 2010

Fall 2010 Admission Demographics

- 9 PhD students were selected from over 250 applicants for Fall 2010
 - 2 U.S. citizens -1 with PharmD degree
 - 7 non-U.S. citizens – 6 with Pharmacy degrees
- 2 MS students were selected for Fall 2010

A total of 31 PhD students were enrolled in FY10 (the 2009-2010 academic year).

Full-Time Graduate Students



Full time students in FY10:

- 48% (15/31) PhD students were US Citizens/permanent residents
- 38% (12/31) PhD students had Pharmacy degrees.
- 6 students passed their comprehensive examination and achieved PhD candidate status.

Student Completing PhD Degree in 2009-2010

Shringi Sharma, PhD

Advisors: Raman Venkataramanan, PhD
Graduated: December, 2009 (Defense completed October 2009)
Dissertation Title: Pre-Clinical and Clinical Pharmacology of 17alpha-Hydroxyprogesterone caproate (17-OHPC): An Agent for the Prevention of Preterm Birth.
Current Position: Sr. Researcher, Abbott Laboratories, Chicago, IL.

National Award

The Pitt AAPS Graduate Student Chapter won the 2010 AAPS Pharmaceutical Sciences Awareness Student Video Contest for their video about the PhD program.

Graduate Students:

- Published 23 papers in peer-reviewed journals and 1 book chapter.
- Made 21 presentations at scientific meetings.

Graduate Students competed for and won:

- 5 travel awards
 - 3 students to attend AAPS Annual Meeting and Exhibition in Los Angeles CA.
 - 2 students for registration at the International Microbicides Conference in Pittsburgh, PA.
- 4 research or presentation awards
 - Shashi Sriram. Invited to the Gordon Research Conference on Proteolytic Enzymes & Their Inhibitors, May 2–7, 2010, Italy.
 - Mark Donnelly. Outstanding research award from American Association of Indian Pharmaceutical Scientists. AAPS Annual Meeting November 2009. Los Angeles, CA.
 - Mark Donnelly. Clinical Poster Award. SAFAR Center Symposium. June 2010. Pittsburgh, PA.
 - Yuyan Jin. Invited Presentation: Public Health Model For The Evaluation Of The Management Of Hypertension. Division of Clinical Pharmacology, School of Medicine, Indiana University, April 29th, 2010, Indianapolis, IN.
- 5 competitive fellowships
 - Rebecca Hammond received an NRSA Pre-doctoral Fellowship for her proposal “The Role of GPR30 in Mediating Estrogen Effects on Neurons and Cognitive Performance.” Mentor- Robert Gibbs, PhD.
 - Chibueze Ihunnah received support from a NIMH Research Supplement (R03MH077978) Mentor-Wen Xie, MD, PhD.
 - Jennifer Bonner PharmD received NIH T32 Pre-doctoral Fellowship Award in Clinical and Translational Research from the Clinical and Translational Science Institute. Mentor - Raman Venkataramanan, PhD.
 - Nisanne Ghonem PharmD received NIH T32 Pre-doctoral Fellowship Award in Clinical and Translational Research from the Clinical and Translational Science Institute. Mentor - Raman Venkataramanan, PhD.
 - Yuyan Jin won a Critical Path Research Fellowship from FDA, CDER 01/01/2009 – 12/31/ 2010 for her work on “Developing a Public Health Model for Optimal Use of Antihypertensive Therapy.” Mentor- Robert Bies, PhD.

The School of Pharmacy hosted the first off-site Graduate Student and Post-doc Retreat at Seven Springs Resort in June 2010. Graduate student awards were announced at the banquet.

- **Lindsay Ferguson, PharmD** – Randy and Renée Juhl Pharmacy Graduate Scholar Award
- **Jie Gao** – Norman R. and Priscilla A. Farnsworth Student Award
- **Kelong Han** – Graduate Student Teaching Award
- **Rebecca Hammond** –Pharmaceutical Sciences Graduate Student Excellence Award

Dr. Maggie Folan and a group of graduate students visited the pharmaceutical company Cephalon. The students were able to see first-hand the research facilities and programs. They were able to interact with Cephalon research scientists for information on research careers in industry.

Clinical Pharmaceutical Scientist Program

The Clinical Pharmaceutical Scientist Program is a specialized track of the graduate program that trains clinical researchers in the pharmaceutical sciences. Students gain the skills to be independent investigators who 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

- Contributed to the submission of a multi-institutional (U of North Carolina, U of Minnesota, U of Kentucky and Pitt) AHRQ grant proposal for support of an annual meeting on research and training in the clinical pharmaceutical sciences.
- Developed consensus and established the core competencies for PhD training in the Clinical Pharmaceutical Sciences. These core competencies for clinical research are the first ever published by a school of pharmacy and will serve as an important resource for the growing number of programs in this area of research.
- Created a combined Teaching Assistant(TA)-Clinical Scientist Associate (CSA) position where part of the support comes from a TA stipend and part from the health system for CSA clinical work.

Invited Presentations

- Society for Clinical and Translational Science/Association for Clinical Research Training. Washington, DC. **Sam Poloyac, PharmD, PhD.** “Lost in Translation? The Role of the Non-Medical Researcher.” April 6, 2010.
- American Association of Colleges of Pharmacy Annual Meeting Teachers Seminar, Seattle, WA. **Sam Poloyac, PharmD, PhD.** “*Interprofessional Science Education: Development and Implementation of a Course in Translational Research in the Health Sciences.*” July 2010.
- Clinical Scientists Summit at the American Association of Pharmaceutical Scientists Annual Meeting. Pasadena, CA. **Sam Poloyac, PharmD, PhD.** “*Core Competencies, Training, and Dissertation Requirements of Clinical Pharmaceutical Scientist Training Programs.*” November 2009.

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.

The first PharmD student, Diana Pinchevsky, committed to the program for the fall of 2008 and is mentored by **Dr. Tanya Fabian.**

Major Accomplishments

- Lindsay Ferguson PharmD candidate 2009 committed to the graduate program to work in **Dr. Lisa Rohan's** laboratory. She entered Graduate program full-time in fall 2009 after receiving her PharmD degree in April 2009.
- Dana Roman PharmD candidate 2010 committed to the program in spring semester 2010 and will join the program full-time. She will be the third student in the combined program.

2009–2010 Pharmaceutical Sciences Graduate Students

Name	Advisor	Track	Enrollment	PhD/MS
Akil, Ayman	Rohan	Pharmaceutics	Sep-07	PhD
Almehizia, Abdulrahman	Xie, Sean	MedChem	Sep-09	PhD
Bonner, Jennifer	Venkat	Pharmaceutics/CPS*	Sep-04	PhD
Chowdhury, Ananda	Xie, Sean	MedChem	Sep-08	PhD
Donnelly, Mark	Poloyac	Pharmaceutics/CPS	Sep-06	PhD
Ferguson, Lyndsay	Rohan, Lisa	Pharmaceutics/CPS	Sep-09	PhD
Gao, Jie	Wen Xie	Biochemical Pharmacology	Sep-06	PhD
Ghonem, Nisanne	Venkat	Pharmaceutics/CPS	Sep-05	PhD
Hammond, Rebecca	Gibbs	Biochemical Pharmacology	Sep-07	PhD
Huang, Yijun	Doemling	MedChem	Sep-08	PhD
Ihunnah, Chibueze	Xie, Wen	Biochemical Pharmacology	Sep-09	PhD
Jiang, Mengxi	Xie, Wen	Biochemical Pharmacology	Sep-09	PhD
Jin, YuYan	Bies	Pharmaceutics/CPS	Jan-06	PhD
Khoury, Kareem	Doemling	MedChem	Sep-08	PhD
Kim, Dong Eun	Kwon	Biochemical Pharmacology	Sep-07	PhD
Kim, Sung Tae	Kwon, Yong Tae	Biochemical Pharmacology	Sep-09	PhD
Kimbro, Tia	Rohan, Lisa	Pharmaceutics	Sep-09	PhD
Momper, Jeremiah	Venkat	Pharmaceutics/CPS	Sep-06	PhD
Parise, Robert	Venkat	Pharmaceutics/CPS	Sep-05	PhD
Pinchevsky, Diana	Fabian, Poloyac	Pharmaceutics/CPS	Jan-08	PhD
Pouland, Timothy	Billy Day	MedChem	Sep-09	PhD
Schreiter, Brielle	Xie, Sean	MedChem	Sep-09	PhD
Shaik, Sadik Basha Jafra	Poloyac	Pharmaceutics/CPS	Sep-07	PhD
Sharma, Shringi	Venkat	Pharmaceutics/CPS	Sep-05	PhD
Shawaqfeh, Mohammad	Venkat	Pharmaceutics/CPS	Sep-07	PhD
Sriram, Shashikanth	Kwon	Biochemical Pharmacology	Jan-07	PhD
Whetstone, Ryan	Gold	MedChem	Sep-07	PhD
Zhai, ZuWei	Tarter, Ridenour	Pharmaceutics/CPS	Sep-08	PhD
Zhang, Yifei	Li, Song	Pharmaceutics	Sep-09	PhD
Zhou, Jiangquan	Poloyac	Pharmaceutics/CPS	Sep-06	PhD
Zhou, Tian	Liu, Dexi	Pharmaceutics	Sep-08	PhD
Alghazwani, Yahia Salim	Venkat	Pharmaceutics	Jan-10	MS
Alshabi, Ali Mohamed	Liu, Dexi	Pharmaceutics	Jan-10	MS
Ghazwani, Mohammed	Li, Song	Pharmaceutics	Jan-10	MS

*CPS – Clinical Pharmaceutical Scientist Program

**Students Selected for Pharmaceutical Sciences Graduate Program
Beginning in Fall 2010**

Name	Advisor	Track	PhD/MS
Roman, Dana	Empey, Kerry	CPS*	PhD
Zhang, Peng	Li, Song	Pharmaceutics	PhD
AlSaggar, Mohammad	Liu, Dexi	Pharmaceutics	PhD
AlShogram, Osama	Nolin, Tom	CPS	PhD
Anderson, Kacey	Poloyac, Sam	CPS	PhD
Gong, Tiantian	Rohan, Lisa	Pharmaceutics	PhD
Chen, Weiqing (Emily)	Wen, Xie	Pharmaceutics	PhD
Wang, Xun	Wipf, Peter	MedChem	PhD
Wang, Zhuzhu	Wipf, Peter	MedChem	PhD
Lu, Jianqin	Li, Song	Pharmaceutics	MS
Hu, Minlu	Rohan, Lisa	Pharmaceutics	MS

*Clinical Pharmaceutical Scientist Program and Pharmaceutics Track

Graduate Student Publications

1. Miller TM, Crago E, **Donnelly MK**, Roman DM, Sherwood P, Horowitz M, Poloyac SM. Rapid, simultaneous quantitation of mono and dioxygenated metabolites of arachidonic acid in human CSF. *Journal of Chromatography B* (2009) 877: 3991-4000.
2. **J. Gao**, J. He, Y. Zhai, T. Wada and W. Xie (2009). "The constitutive androstane receptor is an anti-obesity nuclear receptor that improves insulin sensitivity." *J Biol Chem* 284(38): 25984-92.
3. Wada, T., **J. Gao** and W. Xie (2009). "PXR and CAR in energy metabolism." *Trends Endocrinol Metab* 20(6): 273-9.
4. Liu, M. J., Y. Takahashi, T. Wada, J. He, **J. Gao**, Y. Tian, S. Li and W. Xie (2009). "The aldo-keto reductase Akr1b7 gene is a common transcriptional target of xenobiotic receptors pregnane X receptor and constitutive androstane receptor." *Mol Pharmacol* 76(3): 604-11.
5. **Hammond, R.**, Mauk, R., Ninaci, D., Nelson, D., and Gibbs, RB., 2009. Chronic treatment with estrogen receptor agonists restores acquisition of a spatial learning task in young ovariectomized rats. *Hormones and Behavior* 56(3) 309-314.
6. **Hammond, R.**, Nelson, D., Gibbs, RB. 2010. GPR30 co-localizes with cholinergic neurons in the basal forebrain and enhances potassium-stimulated acetylcholine release in the hippocampus. *Psychoneuroendocrinology*. Accepted for publication.
7. Wang K, Nguyen K, **Huang Y**, Doemling A. Cyanoacetamide Multicomponent Reaction (I): Parallel Synthesis of Cyanoacetamides. *Journal of Combinatorial Chemistry* 2009, 11, 920-927.
8. **Huang Y**, Doemling A. The Gewald Multicomponent Reaction. *Molecular Diversity* 2010, in press.

9. **Huang Y**, Wolf S, Bista M, Meireles L, Camacho C, Holak T A, Doemling A. New 1,4-Thienodiazepine-2,5-diones via MCR (I): Synthesis, Virtual Space and p53-Mdm2 Activity. *Chemical Biology & Drug Design* 2010, 76, 116-129.
10. **Huang Y**, Doemling A. New 1,4-Thienodiazepine-2,5-diones via MCR (II): Scaffold Hopping from Gewald and Ugi-Deprotection-Cyclization (UDC) Approach. *Chemical Biology & Drug Design* 2010, 76, 130-141.
11. Czarna A, Beck B, Srivastava S, Popowicz GM, Wolf S, **Huang Y**, Bista M, Holak TA, Doemling A. Robust Generation of Lead Compounds for Protein-Protein Interactions by Computational and MCR Chemistry: p53-Hdm2 Antagonists. *Angew. Chem. Int. Ed.* 2010, in press.
12. Doemling A, **Huang Y**. Piperazine Scaffolds via Isocyanide-based Multicomponent Reactions. *Synthesis* 2010, in press.
13. An JY, Kim E, Jiang Y, Zakrzewska A, **Kim DE.**, Lee MJ, Jung IM, Zhang Y, Kwon YT. UBR2 mediates transcriptional silencing during spermatogenesis via histone ubiquitination. *Proc. Natl. Acad. Sci. USA* (doi: 10.1073/pnas.0910267107).
14. **Kim ST**, Son HJ, Choi JH, Ji IJ, and Hwang O. Vertical grid test and modified horizontal grid test are sensitive methods for evaluating motor dysfunctions in the MPTP mouse model of Parkinson's disease. *Brain Res.* 2010 Jan 8;1306:176-83.
15. **Kim ST**, Kim EM, Choi JH, Son HJ, Ji IJ, Joh TH, Chung SJ, Hwang O. Matrix metalloproteinase-3 contributes to vulnerability of the nigral dopaminergic neurons. *Neurochem Int.* 2010 Jan;56(1):161-7.
16. Cho Y, Son HJ, Kim EM, Choi JH, **Kim ST**, Ji IJ, Choi DH, Joh TH, Kim YS, Hwang O. Doxycycline is neuroprotective against nigral dopaminergic degeneration by a dual mechanism involving MMP-3. *Neurotox Res.* 2009 Nov;16(4):361-71.
17. **Momper JD**, Venkataramanan R, Nolin TD. Nonrenal Drug Clearance In CKD: Searching For The Path Less Traveled. *Adv Chronic Kidney Dis.* 2010 May 27. [Epub ahead of print]
18. **Momper JD**, Zhang S, Randhawa PS, Shapiro R, Schonder KS, Venkataramanan R. Determination of cidofovir in human plasma after low dose drug administration using high performance liquid chromatography-tandem mass spectrometry. *J Pharm Biomed Anal.* 2010 June 26. [Epub ahead of print]
19. **Parise RA**, Christner SM, Shah DS, Egorin MJ, Zhou W, Beumer JH, "High-Performance Liquid Chromatography-Mass Spectrometry Assay for Quantitation of the Tyrosine Kinase Inhibitor, Nilotinib, in Human Plasma and Serum." *J Chromatogr B Analyt Technol Biomed Life Sci.* 2009 Jul 1;877(20-21):1894-900.
20. Holleran JL, **Parise RA**, Yellow-Duke AE, Egorin MJ, Eiseman JL, Covey JM, Beumer JH. "Liquid chromatography-tandem mass spectrometric assay for the quantitation in human plasma of the novel indenoisoquinoline topoisomerase I inhibitors, NSC 743400 and NSC 725776." *J Pharm Biomed Anal.* 2010 Sep 5;52(5):714-20.

21. Beumer JH, Eiseman JL, Gilbert JA, Holleran JL, Yellow-Duke AE, Clausen DM, D'Argenio DZ, Ames MM, Hershberger PA, **Parise RA**, Bai L, Covey JM, Egorin MJ. "Plasma pharmacokinetics and oral bioavailability of the 3,4,5,6-tetrahydrouridine (THU) prodrug, triacetyl-THU (taTHU), in mice." *Cancer Chemother Pharmacol*. 2010 May 5. [Epub ahead of print] PMID: 20443002.
22. **Zhang Y**, Wang J, Bian D, Zhang X, Zhang Q. Targeted delivery of RGD-modified liposomes encapsulating both combretastatin A-4 and doxorubicin for tumor therapy: In vitro and in vivo studies. *European Journal of Pharmaceutics and Biopharmaceutics*, 74 (2010) 467–473.
23. **Zhou JQ**, Hostler D, Tortorici MA, Bies RR, Callaway CW, Rittenberger J, Poloyac SM. Mild hypothermia alters the pharmacokinetics of midazolam (MDZ) in normal healthy subjects *Drug Metab Dispos*, 2010; 38; 5: 781-788 PubMed PMID: 17069428.

Abstracts

1. **Kim DE**, Lee MJ, Dorn GW, and Kwon YT. Abstract 2283: Role of Posttranslational Arginylation in Cardiovascular Development and G-Protein Signaling. *Circulation*. 120:S616.

Book Chapters

1. **Huang Y, Khoury, K**, Doemling A. The Piperazine Space in Isocyanide-based MCR Chemistry. Topics in Heterocyclic Chemistry (**Book Chapter**), Vol. 23: Synthesis of Heterocycles via Multicomponent Reactions I. Orru R, Ruijter E (Eds.); Springer: New York, 2010; pp 85-127.

Graduate Student Presentations at Scientific Meetings

1. Microbicides 2010: Building Bridges in HIV prevention. Pittsburgh, PA. **Akil Ayman**. "Development Quick Dissolve Films for Vaginal Delivery of Combination Microbicides." April 2010.
2. XI International Small Bowel Transplant Symposium, Bologna, Italy. **Jennifer Bonner**. Intestinal cytochrome P450 3A and transporter expression and function after small bowel and modified multivisceral transplantation. Sept 10, 2009.
3. XI International Small Bowel Transplant Symposium, Bologna, Italy **Jennifer Bonner**. Case report of a modified multivisceral transplant patient unable to sustain therapeutic immunosuppressive levels after oral administration. Sept 10, 2009.
4. American Association Pharmaceutical Scientists Annual Meeting. Los Angeles, CA. **Mark Donnelly**. CYP4F2 polymorphic variants are linked to 20-HETE CSF levels and neuropsychological outcomes in aSAH Patients. November 2009.
5. 2010 Biannual International Microbicides Conference. Pittsburgh, Pennsylvania. **Lindsay Ferguson**. UC781 Polymeric Thin Films – Optimization and Stability Assessment. May 22-25, 2010.
6. 2010 Biannual International Microbicides Conference. Pittsburgh, Pennsylvania. **Lindsay Ferguson**. Vaginal Delivery of UC781 in Woman's Condom Capsules. May 22-25, 2010.

7. 2010 Keystone Nuclear Receptors conference. Keystone, Colorado. **Jie Gao.** "CAR is an anti-obesity nuclear receptor that improves insulin sensitivity." Mar 21-26, 2010.
8. 2009 Jensen symposium on Nuclear Receptors. Cincinnati, Ohio. **Jie Gao.** "CAR is an anti-obesity nuclear receptor that improves insulin sensitivity." Oct 14-16, 2009.
9. American Transplant Congress, San Diego **Nisanne Ghonem.** Treprostinil Ameliorates Ischemia-Reperfusion Injury Associated with Orthotopic Liver Transplantation. May 2010.
10. EASL Monothematic Conference on Signaling in the Liver, Amsterdam, The Netherlands. **Nisanne Ghonem.** Treprostinil preserves energy metabolism and ameliorates ischemia-reperfusion injury after liver transplantation. February 2010.
11. Thomas E. Starzl Transplantation Institute Scientific Retreat. Pittsburgh, PA. **Nisanne Ghonem.** Treprostinil, a Prostacyclin Analogue, Ameliorates Ischemia-reperfusion injury after rat orthotopic liver Transplantation. October 2009.
12. Society of Behavioral Neuroendocrinology, East Lansing, MI. **Rebecca Hammond.** "GPR30 co-localizes with basal forebrain cholinergic neurons and enhances spatial learning." June 2009.
13. American Conference on Pharmacometrics. Mashantucket, CT. **Yuyan Jin.** "Public Health Model For The Evaluation Of The Management Of Hypertension – A Proposal." October 2009.
14. Science 2009. University of Pittsburgh. **Kareem Khoury.** "Synthesis of Protein-Protein Interaction Focusing Small Molecule Libraries Via Multicomponent Reactions." October 2009.
15. American Heart Association. Scientific Session, Orlando, Florida. **Dong Eun Kim.** "Role of Posttranslational Arginylation in Cardiovascular Development and G-Protein Signaling." 2009.
16. American Association for Cancer Research. Washington DC. **Robert Parise.** Plasma pharmacokinetics and oral bioavailability of the 3,4,5,6-tetrahydrouridine (THU) prodrug triacetyl-THU (taTHU) in mice. April 17, 2010.
17. American Association for Cancer Research. Washington DC. **Robert Parise.** Plasma Pharmacokinetics of Benzaldehyde Dimethane Sulfonate (NSC281612, DMS612, BEN) and its Metabolites, in Mice. April 17, 2010.
18. American Association for Cancer Research. Washington DC. **Robert Parise.** Cytotoxicity, pharmacokinetics and metabolism of 10074-G5, a novel small-molecule inhibitor of c-Myc. April 17, 2010.
19. American Association for Cancer Research. Washington DC. **Robert Parise.** In Vitro Cytotoxicity, and Pharmacokinetics, Tissue Distribution, and Metabolism of Protein Kinase D Inhibitors kb-NB142-70 and kb-NB184-43 in Mice Bearing Human Cancer Xenografts. April 17, 2010.
20. American Association Pharmaceutical Scientists Annual Meeting, Los Angeles, CA. **Joselyn Zhou.** "A four-drug low dose strategy for in vivo assessment of major drug metabolism enzymes in rats via UPLC/MS/MS." November 2009.

21. The 13th Annual Meeting of the American Society of Gene and Cell Therapy. Washington, DC.
Tian Zhou. “Liver fibrosis reduces the effectiveness of hydrodynamic gene delivery.” May 2010.

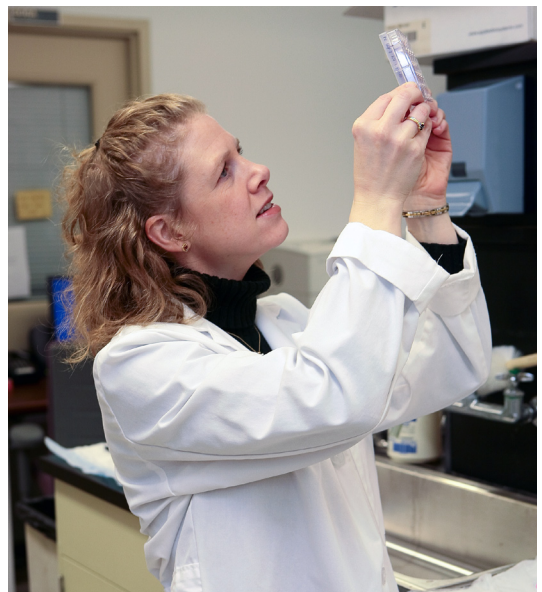
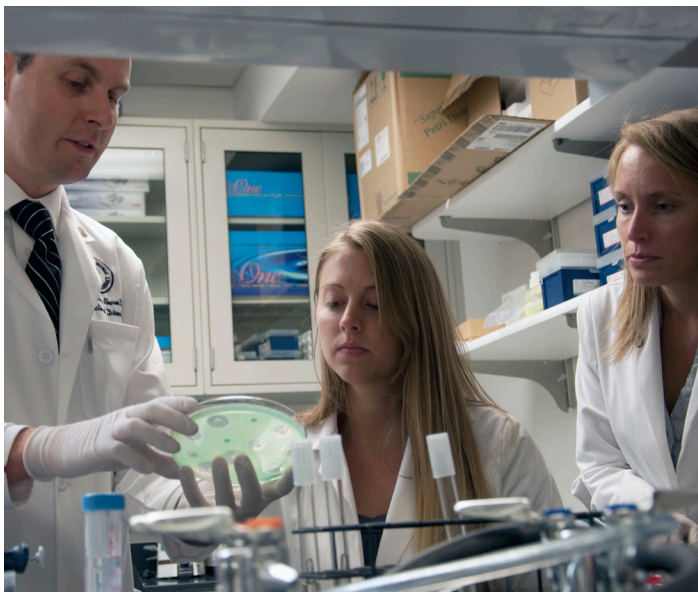
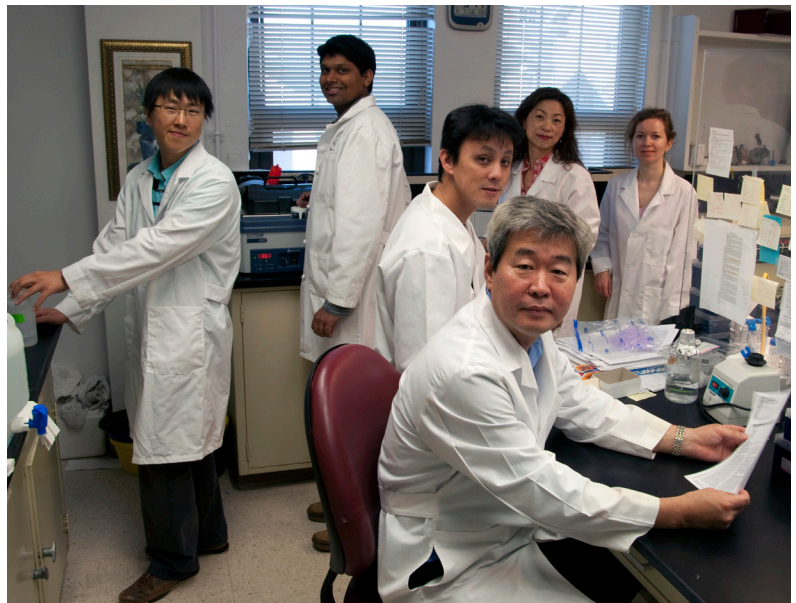
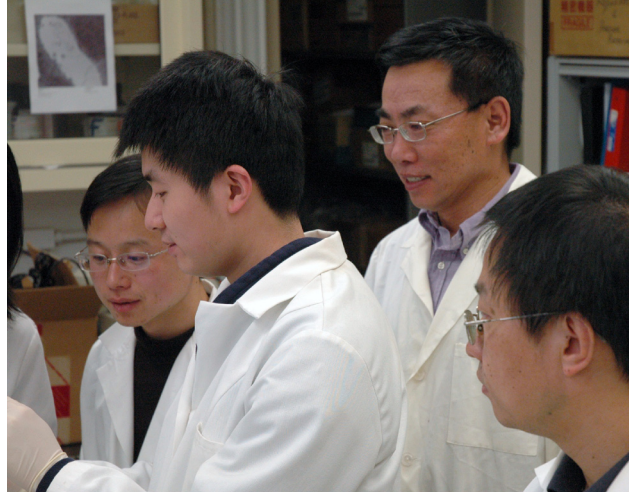
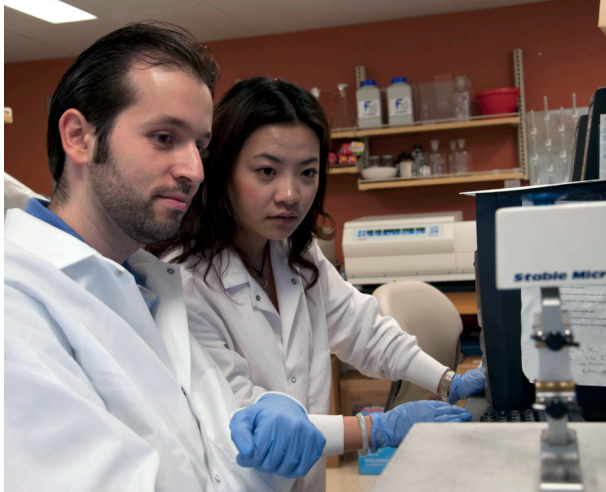
Postdoctoral Fellows

School of Pharmacy Postdoctoral Associates FY 2010

Name	Degree	Degree/University	Field	Country
An, Jee-Young	PhD	University of Pittsburgh	Pharmacy	Korea
Bonamassa, Barbara	PhD	University of Bologna	Pharmacology and Toxicology	Italy
Cao, Haiping	PhD	Chinese Academy of Sciences	Organic Chemistry	China
Cheng, Qiuqiong	PhD	Texas Tech University	Environmental Toxicology	USA
Ganguly, Manjori	PhD	University of Nebraska Medical Center	Pharmaceutical Sciences	USA
Gao, Mingming	PhD	China Pharmaceutical University	Microbial and Biochemical Pharmacy	China
Hai, Li	PhD	Sichuan University	Pharmacy	China
He, Jinhan	PhD	Peking University	Physiology and Pathophysiology	China
Inaba, Yuka	PhD	Tokyo Medical and Dental University	Biomedical Science	Japan
Jin, Lihua	PhD	Xiamen University	Biochemistry & Molecular Biology	China
Kanefuji, Tsutsumu	MD	Niigata University-Medical Degree	Medicine	Japan
Kim, EunA	PhD	Sungkyunkwan University	Molecular Genetics	Korea
Korotchenko, Vasily	PhD	Moscow State University	Organic Chemistry	Russia
Kuruba, Ramalinga	PhD	Indian Institute of Chemical Technology	Lipid Science	India
Rong, Hui	MD	Changzhi Medical College-Medical Degree	Pathology and Pathophysiology	China
Shi, Xiongjie	PhD	Chinese Academy of Sciences	Hydrobiology	China
Srinivasan, Ajay	PhD	University of Pune	Biotechnology	India
Wang, Kan	PhD	University of Pittsburgh	Chemistry	USA
Wang, Wei	PhD	Wuhan University	Chemistry	China
Zhang, Wei	PhD	Fudan University	Pharmaceutics	China

**Advancing Human Health
Through Research**





Advancing Human Health Through Research

The overall goal of the School of Pharmacy’s research programs is to advance human health through a diversified research portfolio that ranges from the molecular to the care of patients. 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 2006–2012:

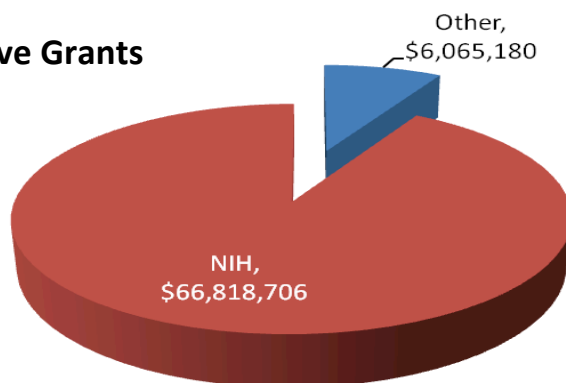
By 2012, the School of Pharmacy will:

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

RESEARCH BY THE NUMBERS FOR FY10

- 28 faculty members were principal investigators.
- 17 received new grant awards in FY10.
- 113 – the number of active research projects.
- \$72,837,292, total in active grant support.
- \$54,461,030 in grant direct costs.
- 91.7% – the percentage of NIH grant funding in the School of Pharmacy Portfolio.

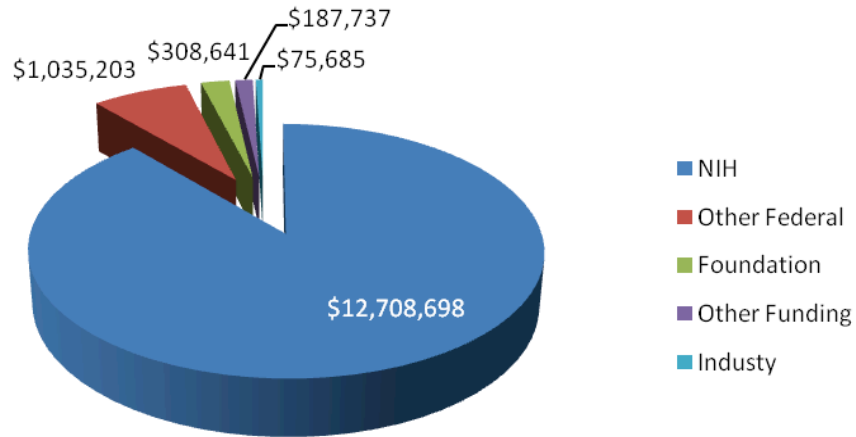
\$72,837,292 in Total Active Grants



In FY 2010, these funded projects generated:

- \$14,315,964 in total costs (see graph below for funding source)

Total Annual Costs FY 2010



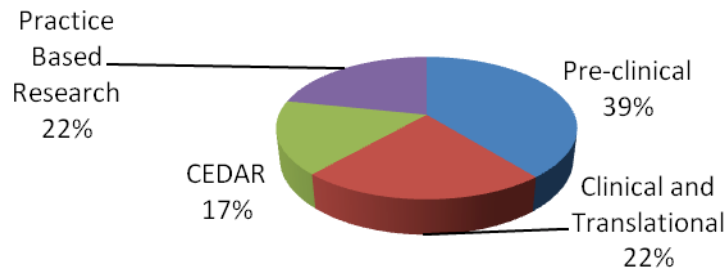
Our faculty members were recognized for their accomplishments and their expertise in ways outside of their grant awards.

- **20** faculty members served on scientific journal editorial boards.
- **12** faculty members served on NIH grant review committees.
- **63** – the number of invited research presentations by faculty.
 - **15** presentations at **13** universities in **10** states
 - **11** presentations at **9** universities in **4** countries
 - **16** presentations at **15** international scientific meetings in **9** countries
 - **21** presentations at **20** scientific meetings in **13** states

Faculty research resulted in:

135 publications in
106 peer-reviewed scientific journals

Peer-reviewed Research Publications by Type



RESEARCH FUNDING

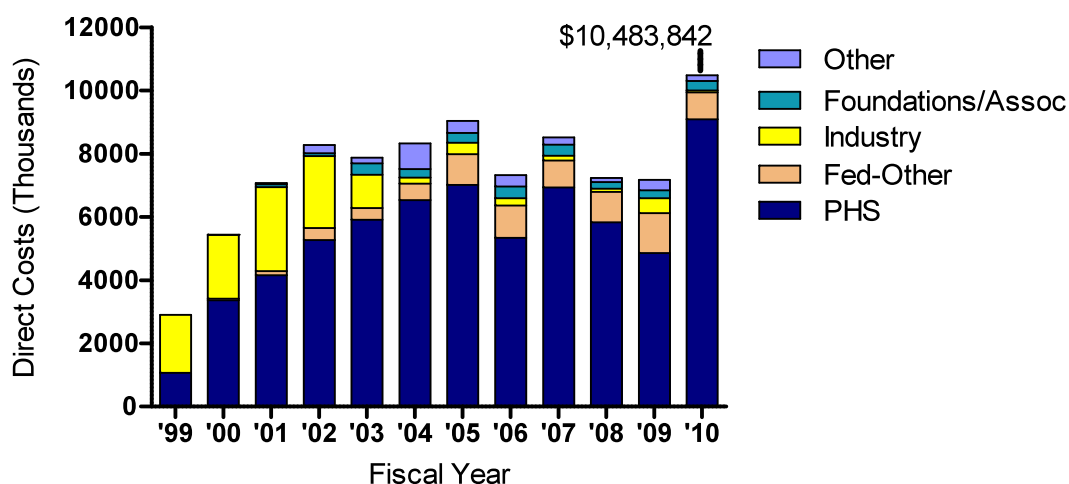
Research in the School of Pharmacy is focused on medication discovery, development, and delivery and drug use in improving human health.

The 28 faculty members of School of Pharmacy who have significant commitments to research have been innovative and productive, with active grants totaling \$72,883,886.

Annual Grant Costs by Source

The annual costs for FY10 were \$14.3 million with **\$10.48 million in direct costs** (shown in graph below) and \$3.82 million in indirect costs. The graph and tables below provide the detail regarding FY10 sources of funding for direct costs.

Direct Costs: Research Funding



Direct Costs for Research by Funding Category

Source	FY04	FY05	FY06	FY07	FY08	FY09	FY10
PHS	\$6,534,485	\$7,013,478	\$5,338,778	\$6,934,873	\$5,829,075	\$4,856,912	\$9,083,208
Federal-Oth	519,572	974,624	1,024,805	846,586	961,814	1,264,891	856,030
Industry	190,418	359,881	232,777	156,419	99,363	468,401	60,226
Found/Assoc	272,805	313,274	369,428	351,468	209,084	255,048	296,641
Other	811,652	380,527	355,421	222,110	134,181	327,396	187,737
TOTAL	\$8,328,932	\$9,041,784	\$7,321,209	\$8,511,456	\$7,233,517	\$7,172,648	\$10,483,842

RESEARCH DETAILS

FY10 PHS Funding

Investigator	Agency	Agency #	Title	Direct \$	Indirect \$	Total
B. Day	NIH	P01 CA078039	Bioinformation and Cell-Based Assay Core - Core B	33,040	16,024	49,064
B. Day	NIH	R01 CA090787	Mechanisms and Prevention of Etoposide-Induced Leukemia	14,909	7,231	22,140
B. Day	NIH	R01 CA129127	The Role of PKD3 in Prostate Carcinogenesis	2,899	1,493	4,392
B. Day	NIH	R01 NS037459	Cyclooxygenase 2 and Ischemic Neuronal Injury	16,859	8,682	25,541
B. Day	NIH	R01 CA120792	Chemical Approaches for the Discovery of New Cancer Therapeutic Targets	7,766	3,767	11,533
A. Doemling	NIH	R21 GM087617	Anchor: A PDB-wide and Web-Based Discovery Resource of Small Molecular Weight Protein Interaction (Ant)agonists	175,000	83,595	258,595
A. Doemling	NIH	U19 AI068021A	MDM2 and MDM4 Directed Radiation Mitigators	14,132	7,278	21,410
A. Doemling	NIH	U19 AI068021A	Improvement Strategies of BEF55, BEB65, BEB59, or BEB75 by Chemical Synthesis	33,670	16,330	50,000
R. Feske	NIH	R01 DA020130	Drug Abuse and Risky Sex in Borderline Personality	165,892	80,458	246,350
R. Gibbs	NIH	U54 HD008610	Physiology and Pathophysiology of the Primate Gonad	6,153	2,984	9,137
R. Gibbs	NIH	R01 HD013254	Molecular and Structural Bases of Hypothalamic Puberty	6,367	3,089	9,456
R. Gibbs	NIH	R21 AG031794	Restoration of Estradiol Effects on Learning by Cholinergic Enhancement	102,500	52,788	155,288
R. Gibbs	NIH	R01 NS06005	Environmental Enrichment and Cholinergic Mechanisms After TBI	14,343	7,387	21,730
R. Hammond	NIH	F31 AG034035	The Role of GRP30 in Mediating Estrogen Effects on Neurons and Cognitive Performance	29,325	-	29,325
L. Kirisci	NIH	K02 DA017822	Quantifying and Tracking Risk for Substance Use Disorder	125,460	9,972	135,432
Y. Kwon	NIH	R01 HL083365	Role of Ubiquitin in Cardiovascular System	242,750	107,809	350,559
S. Li	NIH	R21 CA018415	Nanosized Delivery System for Site-Specific Drug Release	100,000	48,500	148,500
S. Li	NIH	R01 HL091828	Non Viral Gene Therapy for Lung Injury	250,000	128,750	378,750
S. Li	NIH	R01 HL094488	Irradiation Damage and Protection of Pulmonary Endothelium Oxidative Lipidomics	15,157	7,806	22,963

Investigator	Agency	Agency #	Title	Direct \$	Indirect \$	Total
S. Li	NIH	U19 AI068021	Mitochondrial Targeting Against Radiation Damage	15,000	7,275	22,275
Y. Li	NIH	R21 DK081757	Mechanistic Studies of Ligand-Regulated Nuclear Receptor RXR Activity	125,000	64,375	189,375
D. Liu	NIH	R01 EB007357	Image-Guided Hydrodynamic Gene Delivery	275,017	141,364	416,381
D. Liu	NIH	R01 HL098295	Computer-Assisted Hydrodynamic Gene Delivery for Hemophilia Gene Therapy	301,363	147,477	448,840
D. Liu	NIH	R01 EB007357-S1	Image-Guided Hydrodynamic Gene Delivery	320,719	165,170	485,889
S. Poloyac	NIH	R01 GM07031	Implications of Hypothermia on Hepatic Drug Metabolism	167,952	81,456	249,408
S. Poloyac	NIH	R21 HD058846	COX2-Derived Cyclopentenone Prostaglandins Exacerbate Hypoxic Ischemic Brain Injury by Inhibiting Protein Disulfide Isomerase and Worsening Endoplasmic Reticulum Stress	2,664	1,372	4,036
S. Poloyac	NIH	R01 NR004339	Determining Genetic and Biomarker Predictors of DCI and Long term Outcomes after a SAH	174,670	83,901	258,571
S. Poloyac	NIH	R01 NS069247	Overcoming Membrane Transporters to Improve CNS Drug Therapy	23,588	12,148	35,736
S. Poloyac	NIH	UL1 RR024153	University of Pittsburgh Clinical and Translational Science Institute	11,756	3,801	15,557
L. Rohan	NIH	U19AI077289	Development of Long Lasting Acceptable Microbicides: Novel Delivery, Activity, and Pharmacodynamics	\$16,642	\$9,736	\$26,378
L. Rohan	NIH	U19 AI065430	CV-N-Secreting Lactobacilli and Retrocyclin Microbicides - Formulation Core B	61,255	35,834	\$97,089
L. Rohan	NIH	U19 AI082639	Alternative Formulations of Tenofovir and UC781	\$1,940,782	\$445,501	\$2,386,283
L. Rohan	NIH	U19 AI060614	Compartment Specific Topical Microbicides	\$508,832	\$226,729	\$735,561
L. Rohan	NIH	U01 AI068633	Microbicide Trials Network	\$102,576	\$57,778	\$160,354
L. Rohan	NIH	R33AI079801	Microbicide Properties of RT inhibitor Combinations	\$120,000	\$67,840	\$187,840
L. Rohan	NIH	U19 AI082623	RT Inhibitor CSIC and Entry Inhibitor Retrocyclin RC101 as Microbicides	153,239	46,599	\$199,838
L. Rohan	NIH	R01AI076169	Antiviral Lectins as Microbicides	\$134,204	\$65,346	\$199,550
L. Rohan	NIH	U19 AI082637	Combination HIV Antiretroviral Rectal Microbicide Program	\$219,453	\$107,621	\$327,074

Investigator	Agency	Agency #	Title	Direct \$	Indirect \$	Total
L. Rohan	NIH	R21 AI088586	Development of a Novel Nanoparticle Pyrimidinedione Vaginal Polymeric Film as an Anti-HIV Microbicide	\$67,473	\$28,458	\$95,931
A. Seybert	NIH	R01 LM010019	Using Medical Records Repositories to Improve the Alert System Design	11,797	6,075	17,872
R. Tarter	NIH	R01 NR009878	Adherence and Health Outcomes after Liver Transplantation	11,256	5,459	16,715
R. Tarter	NIH	P50 DA005605	Drug Abuse Vulnerability: Mechanisms and Manifestations	1,593,965	600,508	2,194,473
M. Vanyukov	NIH	K02 DA018701	Phenogenetics of Liability to Substance Use Disorders	129,429	10,354	139,783
R. Venkat	NIH	U10 HD047905	Pregnancy and Drug Metabolizing Enzymes and Transporters	77,034	36,053	113,087
R. Venkat	NIH	U01 CA121947	AIDS Malignancy Clinical Trials Consortium - Supplement	67,977	35,008	102,985
R. Venkat	NIH	U01 AT003566	Phase I/II Trials of Silymarin for Chronic Liver Diseases Data Coordinating Center	4,010	1,945	5,955
R. Venkat	NIH	U10 HD047905	Impact of Pregnancy on Drug Absorption, Disposition and End Organ Response	52,520	27,048	79,568
W. Xie	NIH	R01 ES014626	Regulation of Sulfotransferases by LXR and Its Implication in Pathophysiology	218,295	85,618	303,913
W. Xie	NIH	R01 DK076962	The Hepatoprotective Role of the Orphan Nuclear Receptor LXR	294,633	151,736	446,369
W. Xie	NIH	R01 DK083952	A Novel Role of the Aryl Hydrocarbon Receptor in Hepatic Steatosis	250,000	128,750	378,750
W. Xie	NIH	R01 ES014626 S1	Regulation of Sulfotransferases by LXR and its Implication in Pathophysiology	20,931	7,790	28,721
X. Xie	NIH	P50 GM067082	New Concepts, Methodologies and Scaffolds for Diversity-Oriented Organic Synthesis	52,954	27,272	80,226
X. Xie	NIH	R01 DA 025612	Structure and Function of CB2 Ligand and G-protein Recognition Pockets	200,000	108,150	308,150
TOTAL				\$9,083,208	\$3,625,490	\$12,708,698

FY10 Other Federal Funding

Investigator	Agency	Title	Direct \$	Indirect \$	Total
B. Day	Dept of Defense	Molecular and Functional Characterization of the Lupus Platelet	\$17,100	\$8,807	\$25,907
R. Gibbs	National Science Foundation	Role of GPR30 in Estrogen-Mediated Effects on Cholinergic Function and Cognition	73,735	37,974	111,709
D. Huryn	SAIC-Frederick	Chemical Diversity Center (Task Order 1)	36,308	18,698	55,006
D. Huryn	SAIC-Frederick	Chemical Diversity Center (Task Order 2)	1,000	0.0	1,000
Y. Jin	US Dept of Energy	A Public Health Model for Optimal Use of Antihypertensive Therapy	60,204	0.0	60,204
Y. Li	PA State University	Functional Analysis of Nuclear Receptor Variants	44,000	22,660	66,660
Y. Li	Van Andel Institute	Structural and Functional Studies of the Nuclear Receptor PPAR γ	50,000	24,250	74,250
S. Poloyac	UNCCH	Cytochrome P450 Derived Eicosanoids and Inflammation	13,066	6,729	19,795
J. Pringle	SAMSHA	The Pennsylvania Medical Residency Training Program (MR- SBIRT)	363,590	11,410	375,000
J. Pringle	Allegheny County	Strategic Prevention Framework State Incentive Grant (SPF-SIG)	155,370	31,130	186,500
L. Rohan	Univ of Louisville	Antiviral Lectins as Microbicides	31,657	12,665	44,322
R. Venkataraman	Dept of Defense	Development of an Inhaled Dry Powder Delivery System for Administration of Atropine	10,000	4,850	14,850
TOTAL			\$856,030	\$179,173	\$1,035,203

FY10 Industry Funding

Investigator	Agency	Title	Direct \$	Indirect \$	Total
B. Potoski	Cubist Pharmaceutical	Daptomycin CSF Penetration	\$9,908	\$2,477	\$12,385
J. Pringle	Healing Our Village	A Patient Clinical Team Collaboration Model of Diabetes Self Management	\$50,318	\$12,982	\$63,300
TOTAL			\$60,226	\$15,459	\$75,685

FY10 Foundation and Association Funding

Investigator	Agency	Title	Direct \$	Indirect \$	Total
J. He	AHA	Regulation of CD36 by the Aryl Hydrocarbon Receptor (AhR) and its Implication in Fatty Liver Disease	\$43,000	\$0.0	\$43,000
M. Kozminski	PPA Edu. Fdn.	Pharmacist Integration into the Medical Home: A Qualitative Analysis Capturing the Early Thoughts and Feelings of Practitioners, Staff, Pharmacists and Patients	1,000	0.0	1,000
Y. Li	AHA	Mechanism and Specificity of Ligand Bind and Coactivator Assembly by PPARgamma	70,000	7,000	77,000
S. McLaughlin	PPA Edu. Fdn.	Identification of Patients' Medication-Related Needs: Development of a Patient Care Practice	1,000	0.0	1,000
S. Meyer	Highmark Fdn.	The Pennsylvania Project Preparing Pharmacists for Patient-Centered Care	81,641	0.0	81,641
R. Smith	Novo Nordisk	DM Educate Comprehensive Diabetes Management - 2nd edition	100,000	5,000	105,000
TOTAL			\$296,641	\$12,000	\$308,641

FY10 Other Funding

Investigator	Agency	Title	Direct \$	Indirect \$	Total
R. Gibbs	CRDF	Effects of a Selective GPR30 Agonist Cholinergic Function in the Brain	\$15,589	\$0.0	\$15,589
X. Xie	CRDF	Medicinal Chemistry Studies Based on the Discovered CB2 Lead	16,000	0.0	16,000
F. Vitale	Purdue	Smoking Cessation Program	156,148	0.0	156,148
TOTAL			\$187,737	\$0.0	\$187,737

RESEARCH RECOGNITION OF FACULTY

Faculty members received various forms of recognition for their accomplishments and their expertise during FY10.

- 20 faculty members served on scientific journal editorial boards.
- 12 faculty members served on NIH grant review committees.
- 51 – the number of invited research presentations by faculty.
 - presentations at 13 universities in 10 states
 - 21 Presentations at 20 scientific meetings in 13 states
 - 10 presentations at 9 universities in 4 countries
 - 13 presentations at 11 international scientific meetings in 9 countries

Members of Editorial Boards

Faculty Member	Number	Editorial Board
Jan H. Beumer, PharmD, PhD	3	2008-present-The Open Chemical and Biomedical Methods Jrnl 2010-present-Journal of Chromatography and Separation Techniques 2009-present-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 Journal of Environmental Protection Science
Alexander Doemling, PhD	2	
Barry Gold, PhD	2	Editorial Advisory Board of Burger's Medicinal Chemistry and Drug Discovery Editorial Advisory Board of Future Medicinal Chemistry
Sandra L. Kane-Gill, PharmD, MS, FCCM	2	2009-10 Critical Care Medicine
Levent Kirisci, PhD	1	Bipolar Disorder: International Journal of Psychiatry and Neurosciences
Edward P. Krenzelok, PharmD	1	Lexi-Comp Clinical Toxicology
Song Li, MD, PhD	2	
Dexi Liu, PhD	4	Gene Therapy (Member) Molecular Therapy (Member) Pharmaceutical Research (Member) AAPS Journal (Associate Editor)
Scott M. Mark, PharmD, MS, MEd, MPH, MBA, FACHE, FASHP, FABC	1	Co-Editor for Director's Forum in Hospital Pharmacy
Susan M. Meyer, PhD	1	Journal of Research in Interprofessional Education
Ty A. Ridenour, PhD	1	Current Drug Abuse Reviews
Lisa C. Rohan, PhD	1	
Amy L. Seybert, PharmD	1	American Journal of Pharmacy Education
Ralph E. Tarter, PhD	8	Directions in Substance Abuse Counseling (Advisory Board) Journal of Developmental and Physical Disabilities (1987 -) American Journal on Addictions (1991 -) Journal of Child and Adolescent Substance Abuse (Book review editor) (1994 -) Drug and Alcohol Dependence (1994 -) Experimental and Clinical Psychopharmacology (1994 -) Clinical Psychology Review (1995 -) Prevention Science (1999 -)
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
Regis R. Vollmer, PhD	1	Editor, Clinical and Experimental Hypertension
Wen Xie, MD, PhD	5	2005-present Current Drug Metabolism 2005-present World Journal of Gastroenterology 2006-present Drug Metabolism Letters 2008-present Drug Metabolism Reviews 2010-2012 Molecular Endocrinology

Faculty Participation in NIH Review Committees and Panels

Faculty Member	No. of Panels
Alexander Doemling, PhD	2
Barry Gold, PhD	1
Levent Kirisci, PhD	2
Yong Tae Kwon, PhD	1
Song Li, MD, PhD	2
Dexi Liu, PhD	4
Ada C. Mezzich, PhD	1
Ty A. Ridenour, PhD	1
Lisa C. Rohan, PhD	1
Michael M. Vanyukov, PhD	6
Raman Venkataramanan, PhD	3
Wen Xie, MD, PhD	3
Xiang-Qun (Sean) Xie, PhD	3

Invited Research Presentations

1. American Society of Clinical Oncology. Chicago, IL. **Jan Beumer, PhD**. Drug-drug and food-drug interactions relevant to oral chemotherapy agents. June 7, 2010.
2. Hematology Oncology Pharmacy Association (HOPA). New Orleans, LA. **Jan Beumer, PhD**. Debate on Pharmacokinetic-Guided Dosing of Chemotherapy for Colorectal Cancer Symposium. March 27, 2010.
3. PITTCON Conference. Orlando, FL. **Jan Beumer, PhD**. Old and new uses of LC-MS in anticancer drug development. March 2, 2010.
4. Dept. Medicinal Chemistry, School of Pharmacy, The Ohio State University. Columbus, OH. **Billy Day, PhD**. Discovery, Design and Development of New Microtubule Stabilizers. October 5, 2009.
5. Center for Neurodegenerative Disease Research, School of Medicine, University of Pennsylvania. Philadelphia, PA. **Billy Day, PhD**. Discovery, Design and Development of New Microtubule Stabilizers. September 23, 2009.
6. Dept. Pharmaceutical Chemistry, School of Pharmacy, University of Kansas. Lawrence, KS. **Billy Day, PhD**. Discovery, Design and Development of New Microtubule Stabilizers. September 15, 2009.
7. University of Arizona. Tucson. **Alexander Doemling, PhD**. MDM2 Inhibitor Research. December 3, 2009.
8. NIH Sponsored Workshop titled: Window of Opportunity of Estrogen Therapy for Neuroprotection. Stanford University, Palo Alto, CA. **Robert Gibbs, PhD**. Cholinergic Basis of the Critical Period Hypothesis. January 15, 2010.
9. Frontiers in Nucleic Acid Chemistry, Southeast Regional American Chemical. San Juan, PR. **Barry Gold, PhD**. Electrostatics of DNA. October 16, 2009.
10. Department of Chemistry, University of Virginia. Charlottesville, VA. **Barry Gold, PhD**. DNA Damage and Repair. July 17, 2009.
11. World Health Organization-International Network of Person Centered Medicine. Geneva, Switzerland. **Levent Kirisci, PhD**. Development of International Network of Person-Centered Medicine Informational Base and Clearinghouse. May 1, 2010.

12. Research Society on Alcoholism. San Antonio, TX. **Levent Kirisci, PhD**. Differential impact of persistent depression vs. persistent anxiety on alcohol use outcomes in patients with alcoholism and co morbid major depression. June 26, 2010.
13. International Society for Biomedical Research on Alcoholism. Paris, FR. **Levent Kirisci, PhD**. Pharmacotherapy of alcoholism with comorbid major depression: predictors of alcohol outcomes. September 13, 2010.
14. Society for Prevention Research. Denver, CO. **Levent Kirisci, PhD**. Cells to Society: Measurement, Etiology, and Prevention Potential of Child and Adolescent Family Transmissible Risk of Substance Use Disorders. June 2, 2010.
15. Society for Prevention Research. Denver, CO. **Levent Kirisci, PhD**. Phenogenetics of Liability to Addiction. June 2, 2010.
16. Society for Prevention Research. Denver, CO. **Levent Kirisci, PhD**. How well does the Transmissible Liability Index Perform in the General Population and Young Adults with Substance Use Disorders? June 2, 2010.
17. Gwangjoo Institute of Science and Technology. Gwangjoo, Korea. **Yong Tae Kwon, PhD**. Regulated proteolysis by the Protein N-terminus. April 22, 2010.
18. Hallym University School of Medicine. Choon Chun, Korea. **Yong Tae Kwon, PhD**. Regulated proteolysis in cardiovascular development and signaling. May 4, 2010.
19. Seoul National University. Seoul, Korea. **Yong Tae Kwon, PhD**. The ubiquitin-dependent N-end rule pathway and its regulation. May 26, 2010.
20. Seoul National University, School of Pharmacy. Seoul, Korea. **Yong Tae Kwon, PhD**. Regulated proteolysis by the protein N-terminus: its role in cardiovascular signaling and chromatin dynamics. May 6, 2010.
21. Seoul National University, School of Medicine. Seoul, Korea. **Yong Tae Kwon, PhD**. Regulated proteolysis by the protein N-terminus: its role in chromatin dynamics and gene expression regulation. June 17, 2010.
22. Penn State University. University Park, PA. **Yong Li, PhD**. Structure and Function of Nuclear Receptors. September 16, 2009.
23. Boehringer Ingelheim Pharmaceuticals. Ridgefield, CT. **Yong Li, PhD**. A Structural View on the Actions of Orphan Nuclear Receptors. May 14, 2010.
24. Department of Thoracic and Cardiovascular Surgery, M.D. Anderson Cancer Center. Houston, TX. **Song Li, PhD**. Targeted delivery of nucleic acids-based therapeutics. July 6, 2009.
25. The 18th Shizuoka Drug Delivery System (DDS) Symposium. Shizuoka, Japan. **Dexi Liu, PhD**. Ten Years' Hydrodynamic Gene Delivery: How close are we from clinical use? September 12, 2009.
26. Society for Clinical and Translational Science/Association for Clinical Research Training. Washington DC. **Samuel Poloyac PharmD, PhD**. Lost in Translation? The Role of the Non-Medical Researcher. April 6, 2010.
27. American College of Clinical Pharmacy. Anaheim, CA. **Samuel Poloyac, PhD**. Hypothermia: Clinical Applications and PK/PD Implications. October 20, 2009.
28. Society for Prevention Research. Denver, CO. **Maureen Reynolds, PhD**. Quantifying transmissible risk for cannabis use disorder from childhood to adulthood. June 3, 2010.
29. Society for Prevention Research. Denver, CO. **Maureen Reynolds, PhD**. Phenogenetics of liability to addiction. June 3, 2010.
30. Society for Prevention Research. Denver, CO. **Ty Ridenour, PhD**. Engineering Control Theory Applied: On Prevention Science Terms. June 1, 2010.
31. Microbicides 2010. Pittsburgh, PA. **Lisa Rohan, PhD**. Moderator: Session 11: Thinking Outside the Box-Novel Drugs/Approaches for HIV Prevention. May 22, 2010.
32. Microbicides 2010. Pittsburgh, PA. **Lisa Rohan, PhD**. Moderator: Session 21: Formulation Science. May 22, 2010.

33. Trends in Microbicide Formulations Workshop. Washington, DC. **Lisa Rohan, PhD**. Solid dosage Units (Films). January 25, 2010.
34. United States–Russia Workshop on HIV Prevention Science, 3rd Eastern Europe and Central Asia AIDS Conference (EECAAC 2009) sponsored by the U.S. National Institutes of Health (NIH) and the Russian Federal Service for Surveillance on Consumer Rights Protection and Human Well-Being . Moscow, Russia. **Lisa Rohan, PhD**. Drug Formulation and Deployment. October 28, 2009.
35. United States Pharmacopeia, Annual Meeting of the Dietary Supplements:Botanicals Committee of Experts. Rockville, MD. **Paul Schiff, PhD**. A Review of the Accomplishments of the Dietary Supplements:Botanicals Committee of Experts (2005-2010). November 17, 2009.
36. OPRU-NICHD Summer Institute. St. Michaels, Maryland. **Raman Venkataramanan, PhD**. Analytical methods for evaluation of parent drug and metabolites for Pharmacokinetic studies. July 15, 2010.
37. Novartis Inc. Hyderabad, India. **Raman Venkataramanan, PhD**. Immunosuppressive Drug Use in Special Patient Population-Concepts from Bench to Bed. February 3, 2010.
38. BIOASIA. Hyderabad, India. **Raman Venkataramanan, PhD**. Application and use of population pharmacokinetics–small molecules and biologics. February 4, 2010.
39. OPRU-NICHD. Bethesda, Maryland. **Raman Venkataramanan, PhD**. Basic Science Research Protocols. May 3, 2010.
40. IATDMCT. Montreal, Canada. **Raman Venkataramanan, PhD**. Pediatric (liver and small bowel) and adult small transplant patients-Pharmacokinetics of immunosuppressive drugs. October 3, 2009.
41. American College of Clinical Pharmacology. San Antonio, Texas. **Raman Venkataramanan, PhD**. My Mentoring Pathway. September 14, 2010.
42. Asia-Pacific ISSX. Tainan, Taiwan. **Wen Xie, MD, PhD**. Drug-Herb Interactions: Mechanism and Clinical Significance. April 23, 2011.
43. Canadian Society of Pharmaceutical Sciences. Vancouver, British Columbia. **Wen Xie, MD, PhD**. Genetic and Environmental Regulation of Drug Metabolizing Enzymes and Transporters by Nuclear Receptors. June 2, 2010.
44. Microsomes and Drug Oxidations (MDO) Meeting. Beijing China. **Wen Xie, MD, PhD**. Xenobiotic Receptors In Drug-Herb Interactions And Beyond. May 16, 2010.
45. Nanjing International Symposium on Pharmacogenomics and the Regulation of Drug Metabolism Enzymes and Genes. Nanjing, China. **Wen Xie, MD, PhD**. Nuclear Receptor-Mediated Regulation of Sulfotransferases. May 12, 2010.
46. Keystone Symposium on Nuclear Receptors: Development, Physiology and Disease. Keystone Resort in Keystone, Colorado. **Wen Xie, MD, PhD**. Unexpected Hepatotoxicity and Inflammatory Gene Activation In FXR Transgenic Mice. March 21, 2010.
47. Society of Toxicology . Salt Lake City, Utah. **Wen Xie, MD, PhD**. Activation Of FXR In Transgenic Mice Induced Hepatotoxicity And Inflammation. March 7, 2010.
48. North American ISSX Meeting. Baltimore, MD. **Wen Xie, MD, PhD**. Nuclear Receptor In The Crossroad Of Drug Metabolism And Energy Metabolism. October 18, 2010.
49. International Cannabinoid Research Society Meeting. **Xiangqun Xie, PhD**. Discovery of New CB2 Ligands with Novel Chemical Scaffolds. June 16, 2010.
50. International Medicinal Chemistry Symposium 2010. Chair and Speaker: Virtual Screening and Combinatorial Chemistry Session. Beijing, China. **Xiangqun Xie, PhD**. 3D Pharmacophore Database Searches of CB2 Ligands with Therapeutic Potential. May 17, 2010.
51. 18th Annual International Conference on Intelligent Systems for Molecular Biology. Boston, MA, USA. **Xiangqun Xie, PhD**. Novel Ligand Classification Algorithm and Application on Modeling Functionality for 5HT1A GPCR Ligands. July 13, 2010.

School of Pharmacy Publications in Peer-Reviewed Journals

Preclinical Research Publications

Emert-Sedlak L, Kodama, T, Lerner, EC, Dai W, Foster C, **Day BW**, Lazo JS, Smithgall, TE. Chemical library screens targeting an HIV-1 accessory factor/host cell kinase complex identify novel anti-retroviral compounds. *ACS Chemical Biology*. 2009; 4(11):939-47.

Hicks SD, Salcido DD, Logue ES, Suffoletto BP, **Empey PE**, **Poloyac SM**, Miller D, Callaway CW, Menegazzi JJ. Lipid emulsion combined with epinephrine and vasopressin does not improve survival in a swine model of bupivacaine-induced cardiac arrest. *Anesthesiology*. 2009; 111:138-46.

Czarna A, Beck B, Srivastava S, Popowicz GM, Wolf S, Holak T, **Dömling A**. Robust Generation of Lead Compounds for Protein-Protein Interactions by Computational and MCR Chemistry: p53/Hdm2 Antagonists. *Angewandte Chemie*. 2010; 49:5342-56.

You Z, Gao H, Gao J, Shin PH, **Day BW**, Wang Y. A functionalizable polyester with free hydroxyl groups and tunable physiochemical and biological properties. *Biomaterials*. 2010 Apr; 31(12):3129-38.

Meireles L, **Dömling A**, Camacho CJ. ANCHOR database: A PDB-wide screening tool of protein-protein interactions for small molecule intervention. *BMC Bioinformatics*. 2010; 38 (Web Server issue):W407-W411; doi:10.1093/nar/gkq502.

Popowicz GM, Czarna A, Srivastava S, Wang K, Wang W, **Dömling A**, Holak TA. Structures of Low Molecular Weight Inhibitors Bound to MDMX and MDM2 Reveal New Approaches for p53-MDMX/MDM2 Antagonist Drug Discovery Cell Cycle. 2010; 9:1104-11.

Song JJ, Szczepanski M, Bartlett D, **Kwon YT**, Alcalá MA, and Lee YJ. c-Cbl-mediated degradation of TRAIL receptors is responsible for the development of the early phase of TRAIL resistance. *Cell Signaling* 2010; 22(3):553-63.

Vogt A, McPherson PA, Shen X, Balachandran R, Zhu G, Raccor BS, Nelson SG, Tsang, M, **Day BW**. High-content analysis of cancer cell-specific apoptosis and inhibition of in vivo angiogenesis by synthetic (-)-pironetin and analogs. *Chemical Biology & Drug Design*. 2009 Oct; 74(4):358-68.

Huang Y, Wolf S, Meireles L, Camacho CJ, Holak T, **Dömling A**. ,4-Thienodiazepine-2,5-diones via MCR (I): Synthesis, Virtual Space and p53-Mdm2 Activity. *Chemical Biology & Drug Design*. 2010; 76: 116-29.

Wang K, **Dömling A**. Design of a versatile multicomponent reaction leading to 2-amino-5-ketoaryl pyrroles. *Chemical Biology & Drug Design*. 2010; 75:227-83.

Sidjabat HE, Silveira FP, **Potoski BA**, Abu-Elmagd KM, Adams-Haduch JM, Paterson DL, Doi Y. Interspecies Spread of KPC-Type Carbapenemase Gene in a Single Patient. *Clinical Infectious Diseases*. 2009 Dec 1; 49(11):1736-8.

Tentori L, Muzi A, Dorio AS, Scarsella M, Leonetti C, Shah GM, Xu W, Camaioni E, **Gold B**, Pellicciari R, Dantzer F, Zhang J, Graziani G. Pharmacological inhibition of poly(ADP-ribose) polymerase (PARP) activity in PARP-1 silenced tumor cells increases chemosensitivity to temozolomide and to a N3-adenine selective methylating agent. *Curr Cancer Drug Targets*. 2010 Jun; 10(4):368-83.

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- Cao H, Liu H, **Dömling A**. Efficient MCR Synthesis of the Schistosomiasis Drug Praziquantel. *European Journal of Chemistry*. 2010; PMID 20845417.
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Monti P, Traverso I, Casolari L, Menichini P, Inga A, Ottaggio L, Russo D, Iyer P, **Gold B**, Fronza G. Mutagenicity of N3-methyladenine: a multi-translesion polymerase affair. *Mutat Res*. 2010 Jan 5; 683(1-2):50-6.

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CEDAR Clinical Behavioral Research

Ridenour T, **Tarter R**, **Reynolds M**, **Mezzich A**, **Kirisci L**, **Vanyukov M**. Neurobehavior disinhibitors, parental substance use disorder and development of cannabis use disorder in boys. *Drug and Alcohol Dependence*. 2009; 102:71-7.

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Ridenour TA, Stormshak EA. Introduction and Rationale for Individualized Substance Abuse Prevention from an Ontogenetic Perspective. *American Journal of Drug and Alcohol Abuse*. 2009; 35(4):206-8.

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Fishbein D, **Tarter R.** Infusing neuroscience into the study and prevention of drug misuse and co-occurring aggressive behavior. *Substance Use and Misuse*. 2009; 44:1205-35.

Vanyukov MM, Kirisci L, Moss L, **Tarter RE, Reynolds MD,** Maher BS, **Kirillova GP, Ridenour TA,** Clark DB. Erratum: Measurement of the Risk for Substance Use Disorders: Phenotypic and Genetic Analysis of an Index of Common Liability in the following paginated issue of Behavior Genetics. *Behavior Genetics*. 2009 May; 39(3):233-44.

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RESEARCH OVERVIEW

Center for Pharmacogenetics Research

Faculty

Wen Xie, MD, PhD, Associate Professor
Yong TaeKwon, PhD, Associate Professor
Song Li, PhD, Associate Professor
Yong Li, PhD, Assistant Professor
Takifumi Tasiki, PhD, Research Assistant Professor
Tara Wada, PhD, Instructor

Graduate Students

Gao, Jie
Ihunnah, Chibueze
Jiang, Mengxi
Kim, Sung Tae
Kim, Dong Eun
Sriram, Shashikanth
Yifei Zhang
Mohammed Ghazwani

Postdoctoral Fellows

Jee-Young An, PhD
Marina Karikozova, PhD
Euna Kim, PhD
Ramaling Karuba, PhD
Dariusz Martynowski, PhD
Lihua Jin, PhD
Xiaowu Li, PhD
Zhongliang Zheng, PhD
Quiqiong Cheng, PhD
Tara Wada, PhD

Major Accomplishments

- Dr. Kwon found that UBR2 can mediate genome-wide transcriptional silencing via its E3 activity for ubiquitination of histone H2A (An et al., PNAS, 2010).
- Established the molecular principles of N-end rule recognition (Sriram et al., NSMB, 2010).
- Song Li was appointed to serve on NIH Developmental Therapeutics Study Section for a term of July 2010 to June 2013.
- Song Li received NIH funding (09/01/2010-08/31/2015, DC: \$70,949/year) to develop novel formulations for in vivo delivery of radiation mitigators that are developed in NIAID Center for Countermeasures Against Radiation at University of Pittsburgh. Dr. Li is directing the Smart Drug Delivery Core in this Center.
- Wen Xie received a 5-year (05/01/10 – 03/31/15) \$1,636,202 NIH R01 grant titled “A Novel Role of the Aryl Hydrocarbon Receptor in Hepatic Steatosis.” The goal of this project is to study the role of the aryl hydrocarbon receptor (AhR) in fatty liver disease.
- Wen Xie was invited by the journal of *Advanced Drug Delivery Reviews* to guest-edit a Theme Issue on “Development of novel therapeutic strategies by regulating the nuclear hormone receptors.”

Selected Publications

- The molecular principles of N-end rule recognition. Sriram SM, **Kwon YT.** (2010) *Nat. Struct. Mol. Biol.* 17:1164-1165.
- UBR2 mediates transcriptional silencing during spermatogenesis via histone ubiquitination. An

JY, Kim E, Jiang Y, Zakrzewska A, Kim DE, Lee MJ, Mook-Jung I, Zhang Y, **Kwon YT**. (2010) *Proc. Natl. Acad. Sci. USA*. 107:1912-1917.

- Coordinated regulation of dimethylarginine dimethylaminohydrolase-1 and cationic amino acid transporter-1 by farnesoid X receptor in mouse liver and kidney and its implication in the control of blood levels of asymmetric dimethylarginine. Li J, Wilson A., **Gao X**, Kuruba R, Liu YH, **Poloyac S**, Pitt B, **Xie W**, **Li S**. *Journal of Pharmacology and Experimental Therapeutics*. 331: 234-243, 2009.
- Structural and functional insights into nuclear receptor signaling. Jin L, **Li Y**. *Adv Drug Deliv Rev*. 2010 Aug 17. [Epub ahead of print]
- Structural basis for hydroxycholesterols as natural ligands of orphan nuclear receptor RORgamma. Jin L, Martynowski D, Zheng S, Wada T, Xie W, **Li Y**. 2010. *Mol Endocrinol*. 2010; 24:923-9.
- A novel role for the dioxin receptor in fatty acid metabolism and hepatic steatosis. Lee JH, Wada T, Febbraio M, He J, Matsubara T, Lee MJ, Gonzalez FJ, **Xie W**. *Gastroenterology*. 139: 653-63 (2010).
- The constitutive androstane receptor is an anti-obesity nuclear receptor that improves insulin sensitivity. Gao J, He J, Zhai Y, Wada T, **Xie W**. *J Biol Chem*. 284: 25984-25992 (2009).

Selected Invited Research Presentations

- World Class University (WCU) Distinguished Lecture Series. Seoul National University. Seoul, Korea. ‘*Regulated proteolysis by the protein N-terminus*’ **Yong Tae Kwon**. May 26, 2010.
- Structural Research at Boehringer Ingelheim Pharmaceuticals, Ridgefield, CT. “*A Structural View on the Actions of Orphan Nuclear Receptors: Crystal Clear*.” **Yong Li**. May 14, 2010.
- Keystone Symposium on Nuclear Receptors: Development, Physiology and Disease, Keystone, Colorado. “*Unexpected Hepatotoxicity And Inflammatory Gene Activation In FXR Transgenic Mice*,” **Wen Xie**, Mar 21, 2010.
- 2010 Microsomes and Drug Oxidations (MDO) Meeting, Beijing, China. “*Xenobiotic Receptors In Drug-Herb Interactions And Beyond*” **Wen Xie**. May 16-20, 2010.

Drug Discovery Institute

Drug Discovery Institute is an interdisciplinary institute that has faculty, students and post-doctoral fellows from the School of Pharmacy, School of Medicine, and the Department of Chemistry in the School of Arts and Sciences.

Pharmacy Faculty

Barry I. Gold, PhD, Professor

Alexander S. Doemling, PhD, Associate Professor

Billy W. Day, PhD, Professor

Xiangqun Xie, PhD, Professor

Pharmacy Graduate Students

Abdulrahman Almehezia

Pharmacy Postdoctoral Fellows

Haiping Cao, PhD

Amanda Chowdhury
Yijun Huang
Kareem Khoury
Timothy Poland
Brielle Schreiter
Ryan Whetstone

Manjori Ganguly, PhD
Vasily Korotchenko, PhD
Ajay Srinivasan, PhD
Kan Wang, PhD
LiRong Wang, PhD
Wei Wang, PhD

Selected Publications

- Czarna A, Beck B, Srivastava S, Popowicz GM, Wolf S, Holak T, **Dömling A**. Robust Generation of Lead Compounds for Protein-Protein Interactions by Computational and MCR Chemistry: p53/Hdm2 Antagonists. *Angewandte Chemie* 2010: 49, 5342-5356.
- Ganguly M, Wang RW, Marky LA, **Gold B**. Introduction of cationic charge into DNA near the major groove edge of a guanine x cytosine base pair: characterization of oligodeoxynucleotides substituted with 7-aminomethyl-7-deaza-2'-deoxyguanosine. *J Am Chem Soc.* 2009: Sept 2;131(34):12068-9.
- Kangani CO, **Day BW**. A novel and direct synthesis of 1,3,4-oxadiazoles or oxazolines from carboxylic acids using cyanuric chloride/indium. *Tetrahedron Letters.* 2009: 50(38): 5332-5.
- Zhang L, Xiao Q, Ma C, **Xie X**, Floreancig PE. Construction of a Bicyclic beta-Benzoyloxy and beta-Hydroxy Amide Library through a Multicomponent Cyclization Reaction. *Journal of Combinatorial Chemistry.* 2009: 11(4); 640-644.

Selected Invited Presentations

- University of Kansas, Topeka, KS. **Billy Day PhD**. "Discovery, Design and Development of New Microtubule Stabilizers" September 9, 2009.
- 18th Annual International Conference on Intelligent Systems for Molecular Biology. Boston, MA. **Xiang-Qun (Sean) Xie, PhD**. "Novel Ligand Classification Algorithm and Application on Modeling Functionality for 5HT1A GPCR Ligands." July 2010.
- University of Groningen, Groningen, The Netherlands. **Alexander Doemling, PhD**, "Potent and selective mdm2 antagonists using ANCHOR.QUERY." June 14, 2010.

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

Research program with goal of developing new drug delivery systems to prevent the spread of HIV.

Faculty

Lisa Rohan, PhD, Associate Professor

Graduate Students

Ayman Akil
Lindsay Ferguson
Tiantian Gong
Minlu Hu
Tia Kimbro

Postdoctoral Fellows

Hrushikesh Agashe, PhD
Rama Mallipeddi, PhD
Wei Zhang, PhD

Major Accomplishments

- Developed the first rectal specific microbicide platforms which were evaluated in humans for safety, distribution, and toxicity.
- Created a rectal specific microbicide product for HIV prevention containing the antiviral tenofovir which will be the first rectal specific microbicide to be evaluated in the clinic.
- Awarded an \$11.8 million grant by NIAID at NIH for the development of a combination film HIV prevention product. Within the scope of the grant we will be conducting the first clinical trials with vaginal microbicide films in the field.
- Organized and hosted the International Microbicides Meeting in Pittsburgh attended by over 1000 scientists from around the world.

Selected Publications

- Garg S, Goldman D, Krumme M, **Rohan LC**, Smoot S, Friend D. Advances in development, scale up and manufacturing of microbicide gels, films, and tablets. *Antiviral Research*. Volume 88 Supplement 1 (December 2010) S19-S29.
- In vitro and Ex vivo Testing of Tenofovir shows it is Effective as an HIV-1 Microbicide. **Rohan LC**, Moncla BJ, Kunjara RP, Cost M, Huang Y, Gai F, Billotto N, Lyman JD, Pryke K, Graebing P, Hopkins N, Rooney J, Friend D, Dezzutti CS. *PLoS ONE*. Volume 5, Issue 2 (February 2010), e9310.
- Targeted Delivery of PSC-RANTES for HIV-1 Prevention using Biodegradable Nanoparticles. Ham, AS, Cost M, Graebing P, Patton DL, Lederman M, **Rohan LC**. *Pharmaceutical Research*. Volume 26, Issue3 (2009), 502.
- Nanoparticle Based Vaginal Drug Delivery systems for HIV Prevention. Mallipeddi R, **Rohan LC**. *Expert Opinion in Drug Delivery*. 2010 Jan;7(1):37-48.

Selected Invited Presentations

- Workshop on Optimization of Preclinical Methods for Improved Prioritization and Advancement of Lead Microbicide Candidates. Held by the National Institute of Allergy and Infectious Diseases (NIAID), Division of AIDS (DAIDS). Rockville, Maryland. December 7-8, 2010. **Rohan LC**. Ex Vivo and Explant based evaluation of microbicides for pharmacokinetics and pharmacodynamics.
- **Ferguson L**, Cohen J, Schubert J, Gong T, Dezzutti C, Friend D, Rohan LC. Vaginal Delivery of UC781 in Women's Condom Capsules. Microbicides 2010, Pittsburgh, PA, May 22-25, 2010.
- **Akil A**, Dezzutti C, Moncla B, Parniak M, Graebing P, Cost M, Dumanli I, Rohan LC. Quick Dissolve Films as Drug Delivery Systems for Combination Microbicides. Microbicides 2010, Pittsburgh, PA, May 22-25, 2010.
- Trends in Microbicide Formulations Workshop. Washington DC, January 25-26, 2010 **Rohan LC**. Solid Dosage Units (Films).
- United States–Russia Workshop on HIV Prevention Science, Moscow, Russian Federation, October 28-30, 2009, 3rd Eastern Europe and Central Asia AIDS Conference (EECAAC 2009) sponsored by the U.S. National Institutes of Health (NIH) and the Russian Federal Service for

Surveillance on Consumer Rights Protection and Human Well-Being (Rospotrebnadzor), **Rohan LC**. Drug Formulation and Deployment.

Center for Education and Drug Abuse Research

The year 2010 marked the 20th anniversary of the Center for Education and Drug Abuse Research (CEDAR). We have enrolled 775 families from the Pittsburgh metropolitan area in a longitudinal study of substance abuse. These families are in varying stages of follow-up.

Faculty

Ralph E. Tarter, PhD, Professor and Center Director
Ulrike Feske, PhD, Research Assistant Professor
Galina P. Kirillova, PhD, Research Assistant Professor
Levent Kirisci, PhD, Professor
Ada C. Messich, PhD, Associate Professor
Maureen D. Reynolds, PhD, Research Assistant Professor
Ty A. Ridenhour, PhD, Research Associate Professor
Michael Vanyukov, PhD, Professor

Graduate Student

ZuWei Zhai

Major Accomplishments

- Dr. Levent Kirisci was awarded a renewal of his K02 NIH Career Development Award.
- Michelle Horner, DO, received a new K12 under Ralph Tarter's mentorship.

Selected Publications

- **Kirisci L, Mezzich A, Ridenour T, Reynolds M, Tarter R, Vanyukov M.** Prediction of cannabis use disorder between boyhood and young adulthood clarifying the phenotype and environment. (2009). *The American Journal on Addictions*, 18, 36-47.
- **Sloboda Z, Glantz M, Tarter, R.** Revisiting the concept of risk and protective factors to understanding the etiology and development of drug abuse. Implications for Prevention. *Substance Use and Misuse*. (In press.)
- **Conway KP, Levy J, Vanyukov M., Chandler R, Rutter J, Swan GE, Neale, M.** Measuring addiction propensity and severity: the need for a new instrument. (2010). *Drug and Alcohol Dependence*, 111, 4-12.

Selected Invited Presentations

- 18th Annual Meeting of the Society for Prevention Research, Denver, CO. **Ridenour, T.** "Neighborhood risks help explain the association between heritable risk and substance abuse." June 1-4, 2010.
- 18th Annual Meeting of the Society for Prevention Research, Denver, CO, **Vanyukov, M.** "Cells to Society: Measurement, Etiology and Prevention Potential of Child and Adolescent Family Transmissible Risk of Substance Use Disorders Phenogenetics of Liability to Addiction." June 1-4, 2010.

Center for Clinical Pharmaceutical Sciences

Faculty

Samuel M. Poloyac, PharmD, PhD, Associate Professor and Center Director
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
Ryan Shields, PharmD, Instructor and Research Fellow
Susan J. Skledar, MPH, Associate Professor
Raman Venkataramanan, PhD, Professor

Graduate Students

Yaula Alghazwani
Jennifer Bonner, PharmD
Mark Donnelly
Nisanne Ghonem, PharmD
Yuyan Jin
Jeremiah Momper, PharmD
Robert Parise
Diana Pinchevsky, PharmD
Sadik Basha Jafra Shaik
Shringi Sharma
Mohammad Shawaqfeh, PharmD
Jiangquan Zhou

Major Accomplishments

- **Kerry Empey** and **Philip Empey** were each awarded NIH KL2 Career Development Awards as part of the Clinical Research Scholars Program in the Clinical and Translational Science Institute at the University of Pittsburgh.
- **Samuel M. Poloyac** received a renewal of an R01 as a multiple PI submission with Paula Sherwood from the School of Nursing. The \$3,460,967 grant funded through 2014 by the National Institute of Nursing Research and the National Institute of Neurological Disorders and Stroke will support the project titled “Determining the Genetic and Biomarker Predictors of DCI and Long Term Outcomes after subarachnoid hemorrhage.”
- Poster “Treprostinil ameliorates ischemia-reperfusion injury after rat orthotopic liver transplant” from **Raman Venkataramanan’s** laboratory was awarded *Poster of Distinction* at the American Transplant Congress in May 2010.
- An IND submitted by **Raman Venkataramanan** was approved by the FDA. He also received a \$128,000 grant for Treprostinil clinical trial to evaluate use in ischemia-reperfusion injury.

Selected Publications

- Pharmacologic advances in the treatment and prevention of respiratory syncytial virus. **Empey KM**, Peebles RS Jr, Kolls JK. *Clin Infect Dis*. 2010 May 1;50(9):1258-67.

- ESRD impairs nonrenal clearance of fexofenadine but not midazolam. **Nolin TD**, Frye RF, Le P, Sadr H, Naud J, Leblond FA, Pichette V, Himmelfarb J. *J Am Soc Nephrol*. 2009;20(10):2269-2276.
- Mild hypothermia decreases the metabolism of midazolam in normal healthy subjects. Hostler D, Zhou JQ, Tortorici MA, Bies RR, Rittenberger JC, **Empey PE**, Kochanek PM, Callaway CW and Poloyac SM. *Drug Metab Dispos*. 2010; 38(5): 781-8.
- **Empey PE**. Genetic predisposition to adverse drug reactions in the intensive care unit. *Crit Care Med*. 2010 Jun;38(6 Suppl):S106-16.
- **Johnson HJ**, Han K, Capitano B, Blisard D, Husain S, Linden PK, Marcos A, Kwak EJ, **Potoski B**, Paterson DL, Romkes M, **Venkataramanan R**. Voriconazole pharmacokinetics in liver transplant recipients. *Antimicrob Agents Chemother*. 2010 Feb;54(2):852-9. Epub 2009 Nov 23.
- **Sharma S**, Ellis EC, Dorko K, Zhang S, Mattison DR, Caritis SN, **Venkataramanan R**, Strom SC. Metabolism of 17alpha-hydroxyprogesterone caproate, an agent for preventing preterm birth, by fetal hepatocytes. *Drug Metab Dispos*. 2010 May;38(5):723-7. Epub 2010 Jan 22.

Selected Invited Presentations

- International Kidney Disease: Improving Global Outcomes (KDIGO) Controversies Conference. **Thomas Nolin**. "Drug Prescribing in Kidney Disease: Initiative for Improved Dosing."
- The Society of Critical Care Medicine Clinical Focus on Hypothermia. Pasadena, CA. **Samuel Poloyac**. "Keeping it Cool. How to Implement Hypothermia in Your Clinical Practice." April 22, 2010.
- BIOASIA, Hyderabad, India. **Raman Venkataramanan**. "Application and use of population pharmacokinetics small molecules and biologics." February 4, 2010.
- International Therapeutic Drug Monitoring and Clinical Toxicology Meeting, Montreal, Canada. **Raman Venkataramanan**. "Pediatric (liver and small bowel) and adult small transplant patients- Pharmacokinetics of immunosuppressive drugs." October 3, 2009.

Gibbs Laboratory

Faculty

Robert B. Gibbs, PhD, Professor

Graduate Student

Rebecca Hammond

Major Accomplishments

- Made significant progress in demonstrating that GPR30 (a novel estrogen receptor) is an important regulator of basal forebrain cholinergic neurons.
- Generated more evidence that cholinesterase inhibitors which are used to treat Alzheimer's disease can enhance beneficial effects of estrogen therapy on cognitive performance in aged rats, and in rats with selective cholinergic lesions.

Selected Publications

- Hammond R., Nelson D, **Gibbs RB.** (2010) GPR30 co-localizes with cholinergic neurons in the basal forebrain and enhances potassium-stimulated acetylcholine release in the hippocampus. *Psychoneuroendocrinology*, in press, DOI: 10.1016/j.psyceuen.2010.07.007.
- **Gibbs, RB.** (2010) Estrogen therapy and cognition: A review of the cholinergic hypothesis, *Endocrine Reviews* 31(2): 224-253. PMID: 2852210.

Selected Invited Presentations

- Grand Rounds, Department of Psychiatry, University of Vermont, **Robert Gibbs.** “Mechanisms That Underlie Estrogen Effects on Cholinergic Function and Cognitive Performance.” Burlington, VT; May 21, 2010.

Liu Laboratory

Faculty

Dexi Liu, PhD, Professor

Graduate Students

Tian Zhaou

Ali Mohamed Alshabi

Postdoctoral Fellows

Li Hai, PhD

Kenya Kamimura, PhD

Jianfeng Li, PhD

Yongjie Ma, PhD

Major Accomplishment

- Performed the first hydrodynamic gene delivery experiment on nonhuman primates (baboons) and demonstrated that our computer controlled, imaging guided procedure for gene delivery is safe and effective. This represents a significant milestone and brings us one step closer to clinic use of hydrodynamic gene delivery developed in my laboratory 10 years ago for human gene therapy.

Selected Publication

- Kenya Kamimura, Guisheng Zhang and **Dexi Liu** (2010) Image-guided, Intravascular Hydrodynamic Gene Delivery to Skeletal Muscle in Pigs. *Mol. Ther.* 18:93-100.

Selected Invited Presentation

- The 18th Shizuoka DDS Symposium. Shizuoka, Japan. **Dexi Liu.** Ten Years’ Hydrodynamic Gene Delivery: How Close Are We from Clinical Use? Sep. 12, 2009.

**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 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.**

PATIENT CARE BY THE NUMBERS FOR FY10

- **1!** The number of Career Achievement Awards received.
 - In October 2010, Edward P. Krenzelok received the award from the North American Congress of Clinical Toxicology.

In FY10, School of Pharmacy faculty members:

- Led the implementation of more than **5,000** intravenous intelligent infusion (“smart”) pump devices across **19** UPMC facilities, preventing > **300** potential intravenous infusion-related adverse events per month.
- Participated as health care team members at **5** UPMC hospitals.
- Led the program that administered > **3,500** seasonal influenza and H1N1 vaccines during influenza season.
- Provided care to more than **1200** underserved and underinsured patients through the Grace Lamsam Pharmacy Program for the Underserved.
- Gave **64** invited presentations on patient care or professional training.
- Presented **43** training sessions to UPMC pharmacists, nurses, physicians and medical residents.
- Published **18** peer-reviewed papers and **17** commentaries on patient care.
- Developed **53** protocols and e-record sets to improve medication outcomes for UPMC patients.
- Won **6** awards in the UPMC Quality Fair.

- Established a geriatrics fellowship, which is the second fellowship of its kind in the country.
- Directed the WPIC Transitional Care pharmacists who engaged in discharge planning for over 1,000 patients and facilitated access to medications for those patients.

PROGRAMS FOR COMMUNITY-DWELLING PATIENTS

Faculty

Sharon E. Connor, PharmD, Assistant Professor
 Scott R. Drab, PharmD, Assistant Professor
 Deanne L. Hall, PharmD, Assistant Professor
 Lauren J. Jonkman, PharmD, Assistant Professor
 Melissa S. McGivney, PharmD, Associate Professor
 Karen S. Pater, PharmD, Associate Professor
 Janice L. Pringle, PhD, Research Associate Professor

Residents

Shara Elrod, PharmD, PGY2 Ambulatory Care Specialty Resident
 Shannon McLaughlin, PharmD, PGY1 Community Practice Resident
 Mindy Kozminski, PharmD, PGY1 Community Practice Resident
 Brooke Lowry, PharmD, PGY1 Community Practice Resident

Major Accomplishments

In FY10, School of Pharmacy faculty members:

- Provided clinical experiences for 193 PharmD students through the underserved clinics where they contributed to medication therapy management for 1200 patients. **Jonkman LJ, Connor SE.**
- Provided rotations for 20 students, who contributed to 875 diabetes patient visits. **Drab S.**
- Created an AACP video highlighting success stories in the safety-net setting related to interprofessional care in the management of diabetes. American Association of Colleges of Pharmacy. **Connor SE, Jonkman LJ.**

AACP Website:

<http://www.aacp.org/meetingsandevents/othermeetings/diabetes/Pages/PresentationsandHandouts.aspx>

Specific Video Link:

<http://www.youtube.com/user/AACPVideo?feature=mhum#p/u/1/OTqJxneLRtQ>

- Developed a new rotation for P4 students at the Salvation Army Harbor Light Center. Students gain experience and understanding of the medication-related needs of patients currently in recovery. Six students took this rotation in its first year 2009–2010. **Jonkman LJ, Connor SE.**
- Developed a new pharmacist-managed clinical service at the Birmingham Free Clinic for patients with diabetes, hypertension, or dyslipidemia. Pharmacists, working through a physician-approved protocol, have improved adherence and disease-state markers by working with patients on a routine and scheduled basis. **Jonkman LJ, Connor SE.**

- Partnered with UPMC Health Plan (Hackett, Manolis, Peele) and UPMC St. Margaret (Klatt, Merenstein) to initiate the SCRIPT Project (Successful Collaborative Relationships in Patient Care), which evaluates the impact of pharmacists in family physician practices operating as medical homes. **McGivney MS.**
- Hosted the HRSA Collaborative (Patient Safety and Clinical Pharmacy Services) Regional Meeting, "Enhancing Diabetes Care through an Interprofessional Approach to Performance Improvement." University of Pittsburgh School of Pharmacy, Pittsburgh, PA. May 13, 2010. **Connor SE, Jonkman LJ.**
- Initiated Phase 2 of the Pennsylvania Project: Providing MTM Training throughout PA. Three of seven planned training sessions were conducted in FY10. **McGivney MS, Hall DL, Meyer SM.**
- Worked collaboratively with PPA to initiate the development of the Pennsylvania Pharmaceutical Care Network. **McGivney MS.**
- Oversaw the "Pharmacist-Provided Vaccine Program" whereby pharmacy faculty, staff, and residents with administrative help from PharmD students administered a total of 3004 seasonal influenza vaccines and 532 H1N1 influenza vaccines. **Hall DL.**

Reimbursement for vaccinations resulted in an estimated that \$26,400 in revenue generated for Falk Pharmacy. **Hall DL.**

- Continued the Pharmacy Quality Alliance Grant to implement a pharmacy innovation within 118 Rite Aid pharmacies in Pennsylvania with the purpose of increasing the frequency and effectiveness of patient/pharmacist interaction. **Pringle JL, Smith RB.**

The primary outcome is improvement of medication adherence. If successful, this innovation could be one major step towards changing the provision of community pharmacy services and reimbursement for care.

- Continued the federally-funded state-wide medical resident training grant entitled SMaRT (Screening Brief Intervention and Referral to Treatment (SBIRT) Medical Education and Residency Training). SMaRT is providing innovative blended curricula to an estimated 750 residents over a five-year period and is intended to impart knowledge and develop clinical skills in SBIRT practices. **Pringle JL.**

Early evaluation results indicate positive changes in medical resident attitudes and perceptions about working with persons with alcohol (and other substance use) issues in clinical practice.

- Demonstrated that Medication Therapy Management (MTM) pharmacists who provide patient-directed and outcome-informed methods to foster therapeutic alliance between themselves and their patients can improve medication adherence. **Pringle JL, Smith RB.**

The project was completed in partnership with Kerr Drug, a regional chain headquartered in North Carolina.

Selected Community Practice Publications

- Garcia G, Snyder M, Harriman S, **Smith RB, Somma McGivney M**. Generating Demand for Pharmacist-Provided Medication Therapy Management: Identifying Patient Preferred Marketing Strategies. *J Am Pharm Assoc* 2009; 49:611-616.
- **Harriman McGrath S**, Snyder M, Garcia G, **Pringle JL, Smith RB, Somma McGivney M**. Physician Perceptions of Pharmacist-Provided Medication Therapy Management (MTM): A Qualitative Analysis. *J Am Pharm Assoc* 2010; 50:67-71.
- **Drab SR**. Liraglutide: A New Option for the Treatment of Type 2 Diabetes Mellitus. *Pharmacotherapy* 2009; 29(12 Pt 2):23S-24S.
- **Pringle J, Weber R**, Sirio C, **Kirisci L**, Rice K. A Region-Wide Approach to Determining Patient Safety Culture. *American Journal of Medical Quality*, 2009; 24(5), 364-384.
- **Drab SR**. Incretin-Based Therapies for Type 2 Diabetes Mellitus: Current Status and Future Prospects. *Pharmacotherapy*, 2010; 30(6):609-624.
- Snyder ME, Rice KR, Primack BA, **Somma McGivney M, Pringle JL, Smith RB**. "Exploring Successful Community Pharmacist-Physician Collaborative Working Relationships Using Mixed Methods" *J Soc Admin Pharm*. 2010:1-17.

Selected Invited Presentations

- AACP Enhancing Diabetes Care through an Interprofessional Approach to Performance Improvement Regional Meeting. Pittsburgh, PA. **Connor SE, Jonkman LJ**. June 2010.
- APhA Self-Care Institute. Washington, DC. **Pater KS**. Team-Based Learning Approach to Self-Care. Educational Best Practices Round Table Discussion. June 19, 2010.
- AACP Interim Meeting, Washington, DC. **McGivney MS**. "Pharmacist Integration into the Medical Home: Pittsburgh Partnership." February 2010.
- ACCP Annual Meeting. Anaheim, CA. **Pater KS**. "Using Standardized Patients to Develop Patient-Centered Skills." October 19, 2009.
- National Community Pharmacists Association Annual Meeting. New Orleans, LA. **Drab SR**. "Pharmacology of GLP-1 Agonists: Describing the Therapeutic Potential to Patients." October 18, 2009.
- NMA Annual Conference. Cincinnati, OH. **Pater KS**. "Using Standardized Patients to Improve Students' Self-Care Assessment and Counseling Skills." September 2009.
- AACP Annual Meeting. Boston, MA. **Pater KS**. "Caring for the Underserved: Opportunities for Community-Campus Partnerships within HRSA's Clinical Pharmacy Collaborative." July 21, 2009.
- SMaRT (SBIRT* Medical and Residency Training) Grantee Meeting. Bethesda, MD. Implementation Lessons Learned: Experience of the Pennsylvania SMaRT Training Grant. **Pringle JL**. November 2009. (*Screening and Brief Intervention and Referral to Treatment)

- American Hospital Association. Webinar. Facilitating Patient Safety Cultural Change: A Region-Wide Approach. **Pringle JL**. November 2009.

Community Practice Grants Awarded in FY10

- **Connor SE, Jonkman LJ**. Creating a video highlighting success stories in the safety-net setting related to Interprofessional Care in the Management of Diabetes. American Association of Colleges of Pharmacy. June 2010. \$5000.
- **Kozminski ME**, Busby R, Merenstein J, Klatt PM, **McGivney MS**. “Pharmacist Integration into the Medical Home: A Qualitative Analysis. Pennsylvania Pharmacists Association Foundation. \$1000. February 2010.
- **McLaughlin SM**, Blackburn T, **McGivney MS**. “Identification of Patient Medication-related Needs in a Community: Qualitative Analysis.” Pennsylvania Pharmacists Association Foundation. \$1000. February 2010.
- **Connor SE, Jonkman LJ**. Improving Screening and Care of Patients with Asthma and COPD. Snee-Reinhardt Foundation. Fall 2009. \$25,000.
- **Pringle JL**. Phase II Pennsylvania Demonstration Project. Funded through Pharmacy Quality Alliance, Inc. \$52,000/year.
- **Pringle JL**. SMaRT (SBIRT Medical and Residency Training) Project (*Screening and Brief Intervention and Referral to Treatment). Funded through the Substance Abuse and Mental Health Services Administration (SAMHSA). \$375,000/year.
- **Pringle JL**. Strategic Prevention Framework State Incentive Grant (SPF SIG). Funded through the Substance Abuse and Mental Health Services Administration (SAMHSA) \$187,500/year.

HOSPITAL-BASED PROGRAMS

UPMC Pharmacy Transplant Group

Faculty

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

PhD Students

Jennifer Bonner PharmD, PhD Candidate
 Nisanne Ghonem, PharmD, PhD Candidate
 Kelong Han, PhD Candidate
 Jeremiah Momper, PhD Candidate
 Mohammed Shawfequah, PharmD

Major Accomplishments

In FY10, School of Pharmacy faculty members:

- Served on *The International Society of Heart and Lung Transplantation* task force co-authoring the “Guidelines for the Care of Heart Transplant recipients.” *Jour Heart Lung Transplantation* 2010 29(8) 914-956. **Shullo M.**
- Established the cross-departmental “Transplant Research Group.” The group brings together faculty, UPMC pharmacists, graduate students, pharmacy residents, and PharmD students with the goal of the creating an atmosphere for scholarly exchange of information and knowledge and develop collaborative interaction between the group members in the field of transplantation. **Johnson H, Schonder K, Shullo M, and Venkataramanan R.**

Selected Publications

- **Johnson HJ**, Han K, Capitano B, Blisard D, Husain S, Linden PK, Marcos A, Kwak EJ, **Potoski B**, Paterson DL, Romkes M, **Venkataramanan R.** Voriconazole Pharmacokinetics in Liver Transplant Recipients. *Antimicrob Agents Chemother* 2010;54:852-859.
- **Schonder KS, Weber RJ**, Mazariegos G. Adverse effects of immunosuppression in pediatric solid organ transplantation. *Pediatric Drugs* 2010;12(1):35-49. PMID: 20034340.
- Teuteberg JJ, **Shullo MA**, Zomak R, Toyoda Y, McNamara D, Bermudez C, Kormos R , McCurry K. Alemtuzumab Induction Prior to Cardiac Transplantation with Lower Intensity Maintenance Immunosuppression: One-Year Outcomes. *American Journal of Transplantation* 2010; 10: 382–388.
- **Shullo MA, Schonder KS**, Teuteberg JJ. Elevated Tacrolimus levels associated with intravenous azithromycin and ceftriaxone. *Transplant Proceedings* 2010; 42(5) 1870-1872.

Selected Invited Presentations

- Ascoli Piceno, Italy. Societa Italiana Di Pharmacia Ospedaliera El Servizi Farmaceutici Delle Aziende Sanitarie- SIFO Congress Nazionale. **Michael Shullo, PharmD.** “Clinical Pharmacy Practice within a Heart Transplant Program at an Academic Medical Center.” Oct 2009
- Hyderabad, India. Novartis. **Raman Venkataramanan, PhD.** “Immunosuppressive Drug Use in Special Patient Populations-Concepts from Bench to Bed.” February 2010.
- Montreal, Canada. IATDMCT, **Raman Venkataramanan, PhD.** “Pediatric (liver and small bowel) and adult small transplant patients- Pharmacokinetics of immunosuppressive drugs.” 10/03/2009.

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

Ananth Anthes, PharmD PGY2 Critical Care Resident

Lisa M. Harinstein, PharmD PGY2 Critical Care Resident

Major Accomplishments

- Reduced medication administration errors in the Cardiac Intensive Care Unit by 25% using human patient simulation. **Seybert AL, Kane-Gill SL, Smithburger PL.**
- Developed nursing and physicians critical care pharmacotherapy education in 6 intensive care units. **Seybert AL, Benedict NJ, Falcione BA, Smithburger PL.**
- Worked with ACCP to develop the Value of Conducting Pharmacy Residency Training—The Organizational Perspective, a guidance document. **Seybert AL.**
(http://www.accp.com/docs/positions/whitePapers/Pharm3012e_ACCP-ResTraining.pdf)
- Developed the first pharmacy lead multidisciplinary simulation program for the Society of Critical Care Medicine. **Kane-Gill SL, Seybert AL.**

Selected Critical Care Publications

- Chuang PC, Conley YP, **Poloyac SM**, Okonkwo DO, Ren D, Sherwood PR, Hravnak M, Alexander S. Neuroglobin Genetic Polymorphisms and Their Relationship to Functional Outcomes Following Traumatic Brain Injury. *Journal of Neurotrauma*. 2010 Jun; 27(6): 999-1006.
- Dasta JF, **Kane-Gill SL**, Pencina M, Shehabi, Y, Bokesch P, Riker R. A cost-minimization analysis of dexmedetomidine compared to midazolam for long-term sedation in the intensive care unit. *Crit Care Med* 2010; 38(2): 497-503.
- **Empey PE.** Genetic predisposition to adverse drug reactions in the intensive care unit. *Crit Care Med*. 2010 Jun;38(6 Suppl):S106-16. PMID: 20502164.
- **Smithburger PL, Kane-Gill SL, Seybert AL.** Significance of Drug-Drug Interactions in Cardiac and Cardiothoracic Intensive Care Units. *Drug Safety* 2010;33(10):879-88.
- **Kane-Gill SL**, Bellamy CJ, **Verrico MM**, Handler SM, **Weber RJ.** Evaluating the positive predictive values of antidote signals to detect potential adverse drug reactions (ADRs) in the medical intensive care unit (ICU). *Pharmacoepidemiology and Drug Safety* 2009; 18(12): 1185-91.
- **Kane-Gill SL**, Kowiatek JG, **Weber RJ.** A comparison of voluntarily reported medication errors in intensive care and general care units. *Qual Saf Health Care* 2010; 19:55-59.
- **Smithburger PL, Kane-Gill SL**, Nester B, **Seybert AL.** Recent Advancements and Opinion of the Treatment of Hypertensive Emergencies. *Critical Care Nursing* 2010; 30:24-30.
- **Smithburger PL, Seybert AL**, Armahizer MJ, **Kane-Gill SL.** QT prolongation in the intensive care unit: commonly used medications and the impact of drug-drug interactions. *Expert Opinion in Drug Safety* 2010;9:699-712.

- **Kane-Gill SL**, Jacobi J, Rothschild JR. Adverse drug events in the ICU: risk factors, impact and role of team care. *Crit Care Med* 2010 38 supplement: s83-89.
- Stockwell D and **Kane-Gill SL**. Developing a patient safety surveillance system to prevent adverse drug events in the ICU. *Crit Care Med* 2010; 38; (suppl):s117-25.

Selected Presentations

- Anaheim, CA. American College of Clinical Pharmacy. **Poloyac SM**. “Hypothermia: Clinical Applications and PK/PD Implications.” October 2009.
- Miami, FL. Society for Critical Care Medicine. **Kane-Gill SL, Benedict NJ, Seybert AL, Smithburger PL, and Falcione BA**. “Significance of Drug-Drug Interactions in Cardiac Intensive Care Units.” January 2010.
- Santa Barbara, CA. Joint Symposium of the National and International Neurotrauma Societies. **Empey PE**. “A possible role for membrane transporters in drug bioavailability after traumatic brain injury.” September 2009.
- Miami, FL. Society for Critical Care Medicine. **Kane-Gill SL, Seybert AL**. “Using Simulation to Improve Patient Safety.” January, 2010.

UPMC Infectious Diseases and Antibiotic Management Service (AMS)

Faculty

Brian A. Potoski, PharmD, Assistant Professor and Associate Director AMS
 Ryan Shields, PharmD, Instructor and Research Fellow

Resident

Monica Dorobisz, PharmD, PGY2 Infectious Diseases Resident

Selected Publications

- Sidjabat HE, Silveira FP, **Potoski BA**, Abu-Elmagd KM, Adams-Haduch JM, Paterson DL, Doi Y. Interspecies Spread of KPC-Type Carbapenemase Gene in a Single Patient. *Clin Infectious Dis* 2009 Dec 1; 49(11):1736-8.
- **Shields RK**, Martello JL, **Potoski BA**. Is Vancomycin ototoxicity a significant risk? *Antimicrob Agents Chemother* 2009;53:4572.
- Pogue JM, **Potoski BA**, Kaye KA. Aminoglycoside use in intensive care units and aminoglycoside toxicity. *Antimicrob Agents and Chemother* 2010;54(6): 2750.
- **Johnson HJ**, Han K, Capitano B, Blisard D, Husain S, Linden PK, Marcos A, Kwak EJ, **Potoski B**, Paterson DL, Romkes M, **Venkataramanan R**. Voriconazole Pharmacokinetics in Liver Transplant Recipients. *Antimicrob Agents Chemother* 2010;54:852-859.

Selected Presentations

- San Francisco, CA. Interscience Conference on Antimicrobial Agents and Chemotherapy. **Brian Potoski, PharmD.** “Emergence of pan-drug resistant *Acinetobacter* infections as a major cause of death among solid organ transplant recipients.” September, 2009.
- San Francisco, CA. Interscience Conference on Antimicrobial Agents and Chemotherapy. **Brian Potoski, PharmD.** “Colistin + Carbapenem combination resulted in improved clinical outcome in pan-drug resistant (PDR) *Acinetobacter baumannii* (Ab) Infections in Transplant Recipients”. September, 2009.

Drug Use and Disease State Management (DUDSM)

School of Pharmacy faculty members lead DUDSM, a program that develops evidence-based guidelines to promote safe and effective use of medications for patients at UPMC. DUDSM faculty and hospital-based pharmacists design the implementation tools needed to incorporate the guidelines into daily practice. Pharmacists at UPMC, including the clinical faculty, unit-based clinical pharmacists, operations 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, FASHP, Associate Professor and Director
Colleen M. Culley, PharmD, BCPS, Associate Professor
Shelby L. Corman, PharmD, BCPS, Assistant Professor
Tara L. Pummer, PharmD, Assistant Professor

PhD Students

Jeremiah Momper, PharmD
Nisanne Ghonem, PharmD
Mohammad Shawaqfeh, PharmD
Lindsay Ferguson, PharmD

Major Accomplishments

In FY10, School of Pharmacy faculty members:

- Led the successful implementation of intravenous intelligent infusion (“smart”) pump devices and safety technology across 19 UPMC facilities, including inpatient acute care, neonatal care, pediatrics, and outpatient oncology. **Skledar SJ, Niccolai CS.**
 - The project includes 5,000 pump devices across the UPMC enterprise.
 - Faculty and pharmacists designed and now maintain medication safety alerts, alarms, and advisories that are now preventing over 300 potential intravenous infusion-related adverse events at the UPMC per month.
- Successfully transitioned the former manual screening process for inpatient immunizations for the elderly and pneumonia patient population to an electronic health record (eRecord) discern rule for UPMC Presbyterian inpatients, and for patients across UPMC. **Skledar SJ, Culley CM.**
- Collaborated with e-Record team nurses, physicians, and IT specialists to ensure a smooth and safe transition to electronic care. **Skledar SJ, Culley CM.**
- Exceeded 90% vaccination rate for UPMC Presbyterian inpatients at risk for pneumococcal disease and influenza (exceeds Healthy People 2010 national goal). **Skledar SJ, Culley CM.**

- Developed 53 evidence-based protocols, guidelines, and eRecord care sets through interdisciplinary work and P&T Committee/DUDSM Program formulary development process. Reduced adverse events related to anticoagulation management. **Skledar SJ, Culley CM, Corman SL, Pummer TL, other faculty.**
- Pharmacists across the UPMC hospitals are documenting over 10,000 interventions in medication management per year. **Clinical faculty**, UPMC pharmacists.

Selected Publications

- **Culley CM**, Guttendorf S, Coldren M, **Skledar SJ**, Gross P, Spiro RL, Triulzi D, Ragni MV. Coagulation factor VIIa (recombinant) in nonhemophilic patients requiring neurosurgery. *Am J Health-Syst Pharm* 2009; 66: 1554-9.
- **Skledar SJ, Saenz R**, Yourich B, **Mark S**. Educational program for pharmacists at a multi-facility academic medical center. *Am J Health-Syst Pharm* 2010 Aug 15; 67: 1368-72.
- **Corman SL, Mohammad RA**. Eltrombopag: a novel oral thrombopoietin receptor agonist. *Ann Pharmacother*. 2010;44(6):1072-9
- Eberts MW, **Skledar SJ, Mark SM**. Understanding the Food and Drug Administration Risk Evaluation and Mitigation Strategies (REMS). *Hospital Pharmacy* 2010 July; 45 (7): 576-580.

Selected Invited Presentations

- Irving, Texas. Metroplex Society of Health-System Pharmacists. **Susan Skledar, MPH**. "Using Clinical Information Systems to Implement Patient Safety and Formulary Guidelines: the UPMC Pharmacy Story," November 2009.
- San Diego, CA. Health Connect Partners Spring Hospital Pharmacy Conference Agenda 2010. Sponsored by Cardinal Health. **Susan Skledar, MPH**. "P&T Committee Best Practice Tips and Strategies," April 2010.

Health System Awards to Pharmacy Through the DUDSM Program

Quality and safety projects aimed at improving healthcare and processes for healthcare delivery were recently showcased at the annual UPMC Quality Fair. The Fair was held on October 21-22 (Shadyside campus) and October 26-27 (Presbyterian campus). This year's theme was "Working in Concert." Pharmacy was well represented among the 77 project entries. Below are a few examples of award-winning pharmacy entries.

- "The Smart Pump: Ongoing Medication Safety Improvements at UPMC" Pharmacy and Nursing Team: Nicolai C, **Skledar S**, Costello S, George B, Mininni N, Miller M, Leake T, Schilling D, Guttendorf S.
 - 1st place, *Sustained Achievement in Quality*
 - 1st place, *President's Award for Quality Improvement*
- "Reducing the Severity and the Incidence of IV Amiodarone Extravasations and Phlebitis" Pharmacy and Nursing Team: Coffey C, Kanai N, Hass L, Janov C, DiNella J, **Culley C, Verrico P**, Kamath S, Bayless A.
 - 2nd place, *Safety*

- “What is the Key to Successful Follow-Up Care of Family Medicine Patients after Discharge?” Shadyside FHC—Multidisciplinary Team: Branham R, Sullivan S, *Vink J*, Aller J, O’Donnell A, Greco M, Coutinho B, Southwick F, Bruce C, Hennen J, Lehman G.
 - 2nd place, *Satisfaction Category*
- “Low-dose Ketamine for Analgesia: Improving Pain Management While Ensuring Process Safety” (Pharmacy, Nursing, and 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.
 - 3rd place, *Collaboration Award in Quality*
- “On-Line Charge Pharmacist Shift Report” (Pharmacy entry). L’Atrelli AI, **Kowiatek J**, Rutter P, Kamath S, Sewell Y, Steinhardt S, McGuigan S.
 - 3rd place, *Sustained Achievement in Quality*

Geriatrics (Benedum and Shadyside Senior Center) 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, Associate Professor

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

Pharmacy Fellows

Zachary A. Marcum, PharmD, Pharmacy Geriatrics Fellow.

Major Accomplishments

- Expanded pharmacist-provided patient care from Benedum to Shadyside Senior Card. **Ruby CM**.
- Created the second pharmacy geriatrics fellowship in the country. **Ruby CM, Hanlon JT**.

Selected Publications

- **Ruby CM, Hanlon JT**, Boudreau RM, Newman, Simonsick AB, Shorr RI, Baur DC, Resnick, DM. “The Effect of Medication Use on Urinary Incontinence in Community-Dwelling Elderly Women” *Jour Am Geriatric Soc* 58:1715–1720, 2010.

Selected Presentations

- Orlando, FL. American Geriatric Society Annual Meeting. Mascara GP, **Ruby CM**, Perara S, **Hanlon JT**. “Changes in pharmacologic pain management after admission in nursing home hospice patients.” May 14, 2010.

UPMC – Western Psychiatric Institute and Clinic

Faculty

Tanya J. Fabian, PharmD, PhD, BCPP

Graduate Students

Diane Pinchevsky, PharmD

Major Accomplishments

During FY10:

- WPIC Transitional Care pharmacists engaged in discharge planning for over 1,000 patients and facilitated access to medications for those patients. **Fabian TJ.**
 - The program provided over 3,162 discharge prescriptions and has provided medication counseling for over 525 patients since 2009.
 - This patient-centered program has reduced WPIC readmission rates and increased rates of attending first outpatient appointment.
- Partnered with the RAND Corporation, to translate health promotion research into practice by investigating the impact of a hospital-wide smoking ban on prescribing trends for nicotine replacement. **Fabian TJ.**
- Gained approval for a collaborative practice pharmacist direct-patient care agreement for pharmacists to offer effective treatments for nicotine dependence both during the hospitalization and upon discharge. **Fabian TJ.**

Invited Presentations

- Pittsburgh, PA. National Alliance for Mental Illness Meeting. **Fabian TJ.** “New Advances in the Treatment of Mental Illness: Focus on Schizophrenia and Bipolar Disorder.” May 26, 2010.
- Pittsburgh, PA. Family Medicine Refresher Course. **Fabian TJ.** “Nicotine and Narcotic Addiction Treatment.” June 12, 2010.

Selected Other Presentations

- Anaheim, CA. American College of Clinical Pharmacy Meeting. “Risk of Venous Thromboembolism (VTE) in Clozapine-Treated Patients.” **Lauffenburger J, Fabian TJ, Chengappa K, Coley KC.** October 2009.
- Las Vegas, NV. American Society of Health System Pharmacists Midyear Clinical Meeting. “Bridging Psychiatric Care from Inpatient to Outpatient: A Concept Map. **Felbinger MJ, Lauffenburger JC, Montgomery JL, Sakely KL, Fabian TJ.** December 2009.
- Las Vegas, NV. American Society of Health System Pharmacists Midyear Clinical Meeting. “Prospective assessment of medication fall risk in elderly psychiatric inpatients.” Fielding KL, Gutowski M, **Fabian TJ.** December 2009.
- Boca Raton, FL. New Clinical Drug Evaluation Unit (NCDEU). 2010 National Institute of Mental Health meeting. “Effect of Adjunctive Aripiprazole on Domains of Functioning in Patients with Major Depressive Disorder: A Pooled Analysis of Three Clinical Trials.” Cain ZJ, **Fabian TJ, Rollin LM, Forbes RA, Berman RM, Baker RA.** June 2010.

OTHER PROGRAMS

Center for Pharmacoinformatics and Outcomes Research

Faculty

Kim C. Coley, PharmD

Sandy L. Kane-Gill, PharmD

Major Accomplishments

- Inducted as a Fellow into the American College of Clinical Pharmacy. **Kane-Gill SL.**
- Received grant funding for the project, “Collaborating and Advancing Relationships: Pharmacist Advocates in Care Transitions (CARE PACT)” from the Jewish Healthcare Foundation totaling \$93,000. **Coley KC.**
- Served as the chair for the 2009 ACCP Annual Meeting Programming Committee. **Coley KC.**

Selected Research Publications

- **Kane-Gill SL**, Van Den Bos J, Handler SM. A comparison of adverse drug reactions in ambulatory care and hospital settings using a large database. *Ann Pharmacother* 2010;44:1054-1060.
- Ford DG, **Seybert AL**, **Smithburger PL**, Kobulinsky L, Samosky J, **Kane-Gill SL**. Impact of simulation-based learning on medication error rates in critically ill patients. *Intens Care Med* 2010;36:1526-1531.
- Lavsa S, **Fabian T**, **Corman SC**, **Coley KC**. Assessment of fall risk in psychiatric inpatients: A case-control study. *Am J Health-Syst Pharm* 2010;67:1274-80.
- Diehl JL, Daw JR, **Coley KC**, Rayburg R. Medical utilization associated with palivizumab compliance in a commercial and managed Medicaid health plan. *J Managed Care Pharm* 2010;16(1):23-31.

Selected Invited Research Presentations

- 44th ASHP Midyear Clinical Meeting in Las Vegas, NV Dec 2009. **Sandra Kane-Gill, PharmD.** “IV sedation in the ICU- applying pharmacoeconomic principles.”
- 39th SCCM Critical Care Congress. Miami, FL. 2009. **Sandra Kane-Gill, PharmD.** “Establishing Effective Systems to Prevent Adverse Drug Events.”
- ASHP Midyear Clinical Meeting. Las Vegas, NV. December 2009. **Kim Coley, PharmD.** *Developing a Rigorous MUE Program: Applying Principles of Descriptive Research.*

Pittsburgh Poison and Drug Information Center of UPMC

Faculty

Edward P Krenzelok, PharmD

Tara L. Pummer, PharmD

Major Accomplishments

- Maintained stable funding for the Poison and Drug Information Center. **Krenzelok EP.**
- Developed a drug information newsletter that is distributed electronically. **Pummer TL, Krenzelok EP.**
- Distributed nearly 500,000 pieces of poison prevention and poison center awareness material. **Pummer TL, Krenzelok EP.**

Publications

- **Krenzelok EP.** Aspects of *Datura* Poisoning and Treatment. Clin Toxicol 2010;48:104-110.
- Martello JL, **Pummer TL, Krenzelok EP.** Cost Minimization Analysis Comparing Enteral *N*-acetylcysteine to intravenous acetylcysteine in the management of acute acetaminophen toxicity. Clin Toxicol 2010;48:79-83.
- **Krenzelok EP.** Commentary: The FDA Acetaminophen Advisory Committee Meeting-What is the Future of Acetaminophen in the United States? The Perspective of a Committee Member. Clin Toxicol 2009;47:784-789.
- Wisniewski CS, **Pummer TL, Krenzelok EP.** The Implementation of an Electronic Document Management System at a Drug Information Center. J Pharm Technol 2010;26:66-70.

Invited Lectures

- Career Achievement Lecture. North American Congress of Clinical Toxicology. Denver, CO. "Friends and Foes in the Plant World." **Krenzelok EP** October 2010.
- 11th International Congress of Clinical Pharmacology, Therapeutics and Toxicology, Oradea, Romania. "The Clinical Toxicology of *Datura stramonium* (Jimsonweed): A Common Substance of Abuse." **Krenzelok EP** June 2010.
- American Pain Foundation: Seeking Solutions: Advancing the Understanding for the Safe Use of Acetaminophen Conference. Bethesda, MD. "Acetaminophen Exposures: U.S. Poison Center Experience." **Krenzelok EP.** November 10, 2010.

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.**

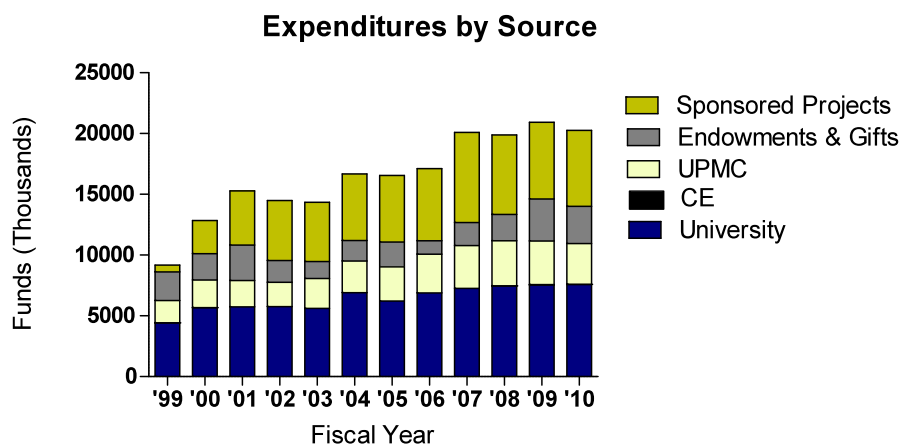
RESOURCES BY THE NUMBERS FOR FY10

- **\$20.27 million:** The total School of Pharmacy expenditures in FY10 from all sources.
 - **\$16.22 million:** The market value of the School's endowment at the end of FY10.
 - **\$20.07 million:** The Capital Campaign total at the end of FY10.
 - Gifts in FY10 totaled **\$1,057,399**, of which **58%** was contributed by alumni and friends. Of the total FY10 gifts, **\$303,887** was from annual gifts.
 - The School of Pharmacy has been allocated and/or leases a total of **80,742 SF** of space in **9** locations in Oakland and the South Side. Space allocation has decreased by 5% (**-3,981 SF**) since FY08.
 - In FY10, the School of Pharmacy had **78** full-time faculty members who received:
 - **9** national recognitions/awards for educational accomplishments
 - **6** recognitions/awards for research
 - **21** recognitions/awards for practice
 - **9** national recognitions/awards for service
- Of our 78 faculty members,
- **15 (19.2%)** have been elected to fellowship in one or more organization
 - **23 (29.5%)** are board certified
 - **33 (42.5%)** are either board certified or fellows, or both!
- Number of staff: **61: 33** are administrative staff and **28** are research staff.
 - Number of living alumni: **4,774**
 - The School of Pharmacy's alumni ranked:
 - **#1** in life memberships in the Pitt Alumni Association
 - **#2** among all University schools and programs in alumni engagement
 - **37.87 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 '99 through '10.



The graph demonstrates the overall growth of financial resources, particularly since 2000. The total expenditures for FY10 were \$20,270,057 with sponsored projects accounting for 30.9% of the expenses. Together, the University (37.4%), sponsored project awards (30.9%), and UPMC (16.5%) accounted for over 84.8% of the School's funding.

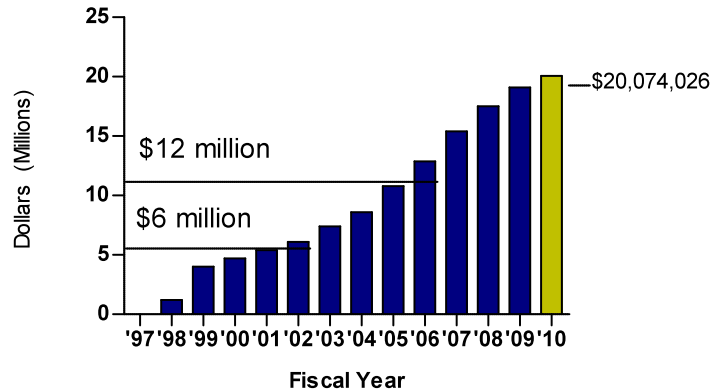
Institutional Advancement

The value of the School of Pharmacy is recognized in many ways, including philanthropic support. Fundraising totals for FY05 through FY10 accounted for more than 59% of the total gifts and pledges during the past 14 years.

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 \$20,074,026 in gifts and pledges for the School's portion of the Capital Campaign. Of this amount, a total of \$17,374,402 has been received and \$3,130,275 is due in pledges and planned gifts.

Capital Campaign Total Gifts and Pledges



Securing endowed funds to provide scholarship and professorship support are primary goals for the School of Pharmacy’s Capital Campaign.

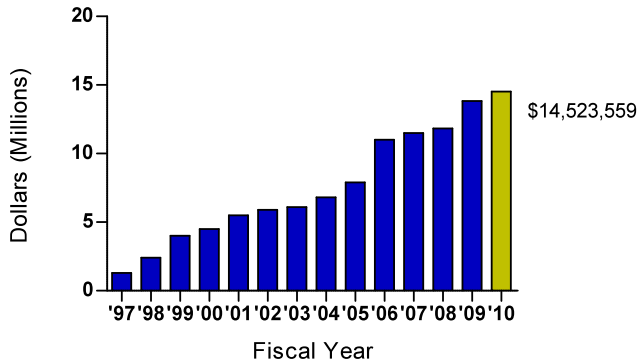
School of Pharmacy Capital Campaign by Gift Designation Gifts and Pledges* July 1, 1997 – June 30, 2010

Designation	Amount
Endowed Scholarships and Awards	\$5,294,710
Endowed Professorships (2)	3,000,000
Renovation: Seminar, Student Lounge, Labs	433,404
Programs and Research	5,968,574
Other	5,184,766
Total	\$20,074,026

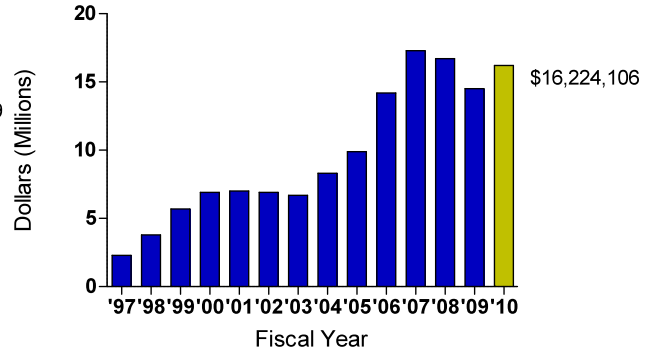
*Includes Voluntary Support (gifts) received during FY10

The book value of the School of Pharmacy endowment has continued to grow through gifts as shown in the graph on the next page. It is not surprising that the market value of the endowment fell with the economic downturn of the nation. As the economy has begun to recover, so has the market value of the endowment as shown in the graph at the right. Notably, some of the increase is also due to the increase in book value through new gifts.

School of Pharmacy Endowment - Book Value



School of Pharmacy Endowment - Market Value



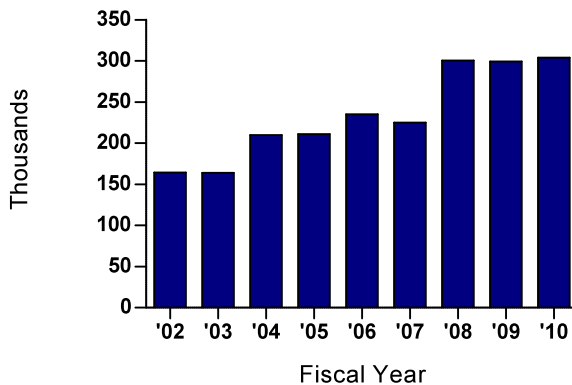
In FY10, the School of Pharmacy received charitable gifts, pledges, and grants totaling \$1,077,399 from a total of 882 individuals, foundations, corporations and other organizations. There was actually a doubling of the amount contributed by alumni, non-alumni friends, and local businesses compared to last year.

FY10 Giving to the School of Pharmacy by Source

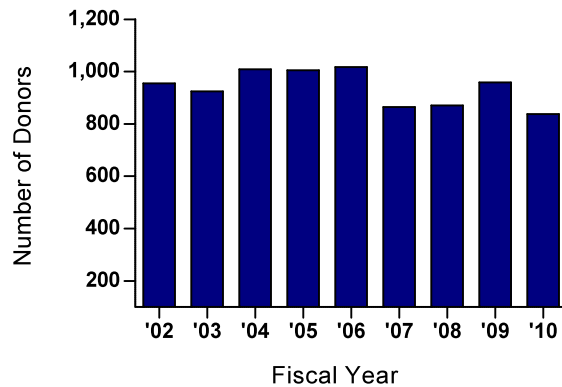
	Alumni	Foundations	Corporations	Organizations	Friends
Amount	\$473,976	\$113,413	\$215,370	\$112,232	\$142,408
Percentage	45%	11%	20%	10%	13%

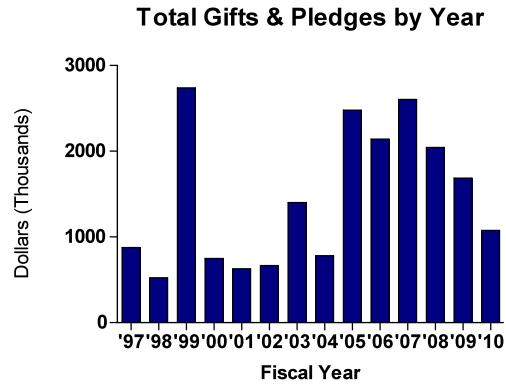
The total dollar amount in gifts and pledges decreased—a change due largely to cuts in corporate and foundation support. As shown in the graphs below, the annual gift amount was \$303,887, a number that is higher than any since FY02. Giving by alumni and friends is as high as it has ever been despite the decreased number of annual donors.

Annual Gift Amount



Annual Donors





PHYSICAL FACILITIES

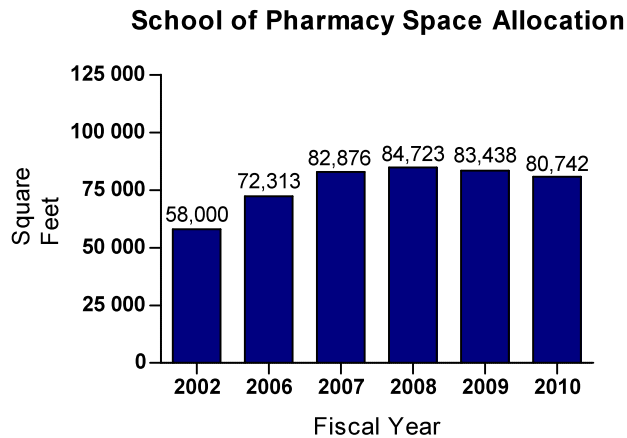
By 2012, we will have:

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

At the close of FY10, the School of Pharmacy occupied a total of 80,742 SF, including:

- 46,989 SF in Salk Hall
- 3,764 SF in BSTIII
- 2,704 SF in UPMC Montefiore
- 6,995 SF in UPMC Presbyterian
- 1,091 SF in Falk Clinic
- 1,110 SF (leased) on Craig Street
- 13,590 SF (leased) in Birmingham Towers
- 3,557 SF in Victoria Street offices
- 942 SF in Presby South Tower

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



FY10 was remarkable in the life and history of the School of Pharmacy in many ways, not the least of which is that planning occurred for the first new major construction for the School of Pharmacy since its founding in 1878. The University of Pittsburgh is supporting the construction of a state-of-the-art research facility, Salk Pavilion, in the space behind Salk Hall. The new facility is critical for the retention of faculty members, whose research advances knowledge on both drugs and diseases. It is hoped that the approximately 44,000 SF research facility, which is to be shared with the School of Dental Medicine, will also provide the School with the opportunity for faculty recruitment.

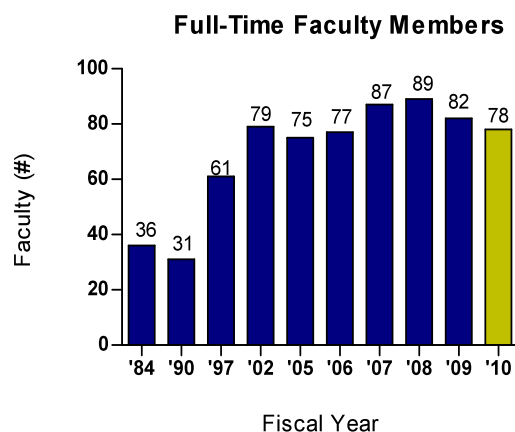
FY10 was exciting also for the approval to plan for construction of the Commons, a structure that will join Salk Hall and Salk Pavilion. The School of Pharmacy committed to financial support of the construction of the Commons, making philanthropic support even more critical.

THE RESOURCE OF PEOPLE

The School of Pharmacy formally recognizes that the people of the School are its most valuable resource, and therefore, include our people in this section.

Faculty

There are 78 full-time and four 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 growth in the number of faculty in increments since 1984 is shown in the graph. The past year saw the departure of Robert J. Weber, PharmD, MS.



Faculty Rank by Department of Primary Appointment

Faculty Rank	Pharmaceutical Sciences	Pharmacy and Therapeutics	Total for School of Pharmacy
Professor	18	3	21
Associate Professor	8	8	16
Assistant Professor	3	24	27
Clinical Research Professor	0	0	0
Instructor	1	4	5
Research Assistant Professor	7	0	7
Research Associate Professor	1	1	2
All Faculty	38	40	78

Fellowships in Organizations and Board Certification

Election to fellowship and board certification are two characteristics of faculty members who have distinguished themselves. Of the 78 faculty members, 15 (19.2 %) have been elected to fellowship in one or more organization, 23 (29.5 %) are board certified, and 33 (42.3 %) 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.

FY10: Faculty Elected to Fellowship in Professional or Scientific Organizations

Name	Fellowship	Department
Kim Coley	FCCP American College of Clinical Pharmacy	Pharmacy and Therapeutics
Judith Gavaler	FACN American College of Nutrition	Pharmaceutical Sciences
Randy Juhl	FAPhA American Pharmacists Association	Pharmaceutical Sciences
Sandra Kane-Gill	FCCM Society of Critical Care Medicine	Pharmacy and Therapeutics
	FCCP American College of Clinical Pharmacy	
Joanne Kowiatek	FSHP American Society of Hospital Pharmacists	Pharmacy and Therapeutics (Adjunct)
Edward Krenzelok	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	
Scott Mark	FASHP American Society of Health-System Pharmacists	Pharmacy and Therapeutics
	FACHE American College of Healthcare Executives	
	FABC American Board Company	
Melissa Somma McGivney	FCCP American College of Clinical Pharmacy	Pharmacy and Therapeutics
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	
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	
Robert Weber	FASHP American Society of Health-System Pharmacists	Pharmacy and Therapeutics
Raman Venkataramanan	FACCP American College of Clinical Pharmacology	Pharmaceutical Sciences
	FAAPS American Association of Pharmaceutical Scientists	

FY10: Faculty Board Certifications

Name	Certification		Department
Janet Amico	ABIM	Internal Medicine	Pharmaceutical Sciences
Sherie 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	
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
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
Scott Mark	CHE	Certified Healthcare Executive	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
Dennis Swanson	BCNP	Nuclear Pharmacy	Pharmacy and Therapeutics
Ralph Tarter	ABPP	Clinical Psychology	Pharmaceutical Sciences
Lauren Trilli	BCPS	Pharmacotherapy	Pharmacy and Therapeutics
Robert J. Weber	BCPS	Pharmacotherapy	Pharmacy and Therapeutics

Faculty Honors, Recognition, and Professional Affiliations

Faculty of the School of Pharmacy have received honors and recognitions for their efforts in education (E), research (R), practice (P), and service (S) as indicated in the table below.

Faculty Member	Recognition/Affiliation	Type*
Neal Benedict	Team Member on Award to Gary Tabas (School of Medicine) for one of eight teaching proposals funded by 2010 University Innovation in Education Awards	E
Philip Empey	Clinical Research Scholar, University of Pittsburgh Clinical and Translational Science Institute	R
Deanne Hall	Certificate of Excellence, One of top ten 2010 Kappa Psi Fraternity Grand Council Deputies; Among first graduates of ACCP Academy Certificate Program: Leadership and Management Program	S
	Among first graduates of ACCP Academy Certificate Program: Leadership and Management Program	P
Lauren Jonkman	Board Certification as a Pharmacotherapy Specialist (BCPS)	P
Sandra Kane-Gill	Critical Care Medicine Editorial Board	R
	Society of Critical Care Medicine Program Committee for Congress 2012	P
Joanne Kowiatek (adjunct)	ASHP Fellow	P
	Panel Member, FDA Public Workshop on Naming, Labeling, and Packaging Practices to Minimize Medication Errors	P
	Speaker, Joint Commission Resources Webinar: Preparing a Medication Safety Specialist for Success	P
Edward Krenzelo	American Academy of Clinical Toxicology Career Lifetime Achievement Award	R
Patricia Kroboth	AACP Board of Directors Past Chair, Council of Deans	S
Dexi Liu	Nagai Foundation Tokyo Distinguished Lectureship 2009	R
Scott Mark	AACP Finance Committee	S
Melissa Somma McGivney	ACCP Fellow	P
Susan Meyer	AACP SIG Cabinet	S
	Association for Prevention Teaching and Research Board of Directors	S
	Interprofessional Collaborative Practice and Education Panel	E
	Invited Speaker: ACCP Spring Practice and Research Forum	E
Samuel Poloyac	Co-chair: Society of Critical Care Medicine Clinical Focus on Hypothermia: Keeping It Cool—How to Implement Hypothermia in Your Clinical Practice	P
Brian Potoski	School's Faculty Preceptor of the Year Award	E
	Commissioned as a Lieutenant in U.S. Navy Reserves and Serves in Navy's Medical Services	S
James Pschirer	Participant, First pharmaceutical collection event sponsored by Southwestern Pa. Household Hazardous Waste Task Force	P
Christine Ruby Scelsi	Invited Speaker, Annual Meeting of American Society of Consultant Pharmacists	P
	Invited Speaker, American Geriatrics Society Meeting	P
	Invited Reviewer, Pharmacotherapy Self-Assessment Program, 7 th Edition	P

Faculty Member	Recognition/Affiliation	Type*
Kristine Schonder	AACP Council of Faculties Faculty Affairs Cmte.	S
	ACCP Educational Affairs Cmte.	S
	Co-author of Paper: "Adverse Effects of Immunosuppression in Pediatric Solid Organ Transplantation"	P
	Team member on Award to Hoda Kaldas (School of Medicine) "Virtual Patients to Teach Electrolyte Disorders: An Innovative Approach to Integrate Physiology and Pathophysiology During the Clinical Rotations"	E
	School's Stanford I. Cohen Teacher of the Year	E
	Among first graduates of ACCP Academy Certificate Program: Teaching and Learning Certification Program	E
Amy Seybert	American Society of Health-System Pharmacists Foundation 2009 Pharmacy Residency Excellence Preceptor Award	E
	Among first Graduates of ACCP Academy Certificate Program: Teaching and Learning Certification Program	P
Michael Shullo	Task Force for International Society of Heart and Lung Transplant	P
	Presenter, "Clinical Pharmacy Practice within a Heart Transplant Program at an Academic Medical Center" Societa Italiana Di Farmacia Ospedaliera, XXX National Congress, Italy	P
Susan Skledar	Member, UPMC Interdisciplinary Team for Excellence in Patient Safety Selected as One of 10 Regional Finalists for 2009 Fine Award	P
	Presenter, Health Connect Partners Hospital Pharmacy Conference "P&T Committee Best Practice Tips and Strategies" Education Session	P
Randall Smith	School's APhA-ASP 2009 Faculty Member of the Year	E
Raman Venkataramanan	AAPS Member-at-Large (Executive Committee)	S
	Invited International Speaker: <ul style="list-style-type: none"> • BIOASIA 2010, Hyderabad, India • Novartis India 	R
Robert Weber	Board Certification as a Pharmacotherapy Specialist (BCPS)	P
	Critical Care Medicine Editorial Board	P
	2010 Recipient of Jack L. Beal Post-baccalaureate Alumni Award, Ohio State University College of Pharmacy	P
Xiang-Qun (Sean) Xie	Member of International Assessment Panel for Fudan University College of Pharmacy, Shanghai, China	R

*Type indicates E (Education), R (Research), P (Practice), S (Service).

Alumni and Alumni Engagement

In the four 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. The term “engagement” includes contributions to the University and participation in events, University support functions, percentage of email addresses available, and online participation.

In FY10:

- 37.87 percent of the 4,774 School of Pharmacy living alumni were engaged with the School of Pharmacy and/or University in some way.
- School of Pharmacy alumni ranked:
 - first in life and in regular memberships in the Pitt Alumni Association
 - second in participation in School and University programs
- Iny Marks (PharmD '00) received the Ivan and Mary Novick Award for Young Alumni Leadership from the University of Pittsburgh Alumni Association. Only one award is presented each year to any alumnus of the University.
- Alumni demonstrated their commitment to the University and the School in many ways, including participation in events sponsored by the School and/or the Alumni Society:
 - Alumni Day speaker, Anthony N. Civello (BS '67), gave a presentation to pharmacy students.
 - Pharmacy alumni celebrated Homecoming 2009 at the Cathedral of Learning with the event hosted by the University of Pittsburgh.
- The School of Pharmacy hosted two receptions at national professional and scientific meetings:
 - American Society of Health-System Pharmacists Midyear Clinical Meeting, honoring Diane Ginsburg (BS '84) and ASHP President-Elect, December 7, 2009, Las Vegas, NV.
 - American Pharmacists Association, Pennsylvania Pharmacy Reception (jointly hosted by the Pennsylvania Schools of Pharmacy), March 13, 2010, Washington, DC.
- The School of Pharmacy also hosted:
 - The Eighteenth Annual Career Roundtables, March 3, 2010, Salk Hall. Thirty-one alumni participated in this student event. Alums from 19 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 School of Pharmacy Golf Invitational, May 14, 2010, Quicksilver Golf Course. Ninety-three golfers participated, and the event raised \$13,265 for the Alumni Scholarship Fund. In the past seven years, more than \$123,000 has been raised for student scholarships.
 - *Rxtravaganza Gala 2010...with a twist*, an annual celebration for alumni and friends, June 12, 2010, Westin Convention Center Hotel in Pittsburgh. More than 200 alumni and friends enjoyed the Saturday evening dinner and dancing extravaganza.
- The School's Alumni Society recognized two alumni as Distinguished Alumni:
 - Robert Abraham, PhD '81, who is also a Chancellor Nordenberg Legacy Laureate, holds the position of senior vice president and chief scientific officer, Center for Integrative Biology and Biotherapeutics, Pfizer Biopharmaceuticals.
 - Larry Merlo, BS '78, a Chancellor Nordenberg Legacy Laureate, has held numerous administrative positions at CVS. In May 2010, CVS Caremark announced that Larry Merlo will succeed Thomas M. Ryan as chairman and CEO of CVS Caremark.

Legacy Laureate indicates that the accomplishments of the alumnus are readily recognized by individuals outside their original field of study.

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 FY10:

- Sixty-one staff members served in the following roles:
 - administrative staff (33)
 - research staff (28)
- All 33 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.

The Staff Leadership Team develops and hosts an internal professional development program annually. Staff members are encouraged to enroll in an external program of their choice to enhance their professional development.

- Staff members in the School of Pharmacy have transitioned several work processes from paper to electronic methods. Processes such as travel and business expense reporting, staff time records, purchasing, admission applications and grant submissions are processed electronically to improve efficiency and effectiveness within the School.

Communications

The responsibility of the Communications Team at the School of Pharmacy is to inform, update, promote, and report to our 5,800 stakeholders and recipients of the School of Pharmacy's communications.

Communications of the School of Pharmacy include:

- Printed communications
- Web site
- Facebook Fan page

The School's constituents include alumni, faculty, staff, students and their parents, donors, and potential donors. Print pieces are developed consistent with the School's "brand" developed in 2003 as well as with the University of Pittsburgh branding.

During FY10, the School of Pharmacy Communications Team:

- Developed and coordinated the production and delivery of 21 print pieces with a distribution internally within the University of Pittsburgh and School of Pharmacy and externally to our constituent base of 5,800.
- Developed, produced, and distributed fundraising materials alumni and friend engagement and resulting in contributions through:
 - Golf Invitational with support to scholarship in the amount of: \$13,000
 - RxTravaganza 2010 with support for Commons in the amount of: \$40,000
 - The Phonathon with support for scholarships in the amount of postcard: \$12,000
- Continued the transition of appropriate print pieces for electronic distribution.
- RxTravaganza 2010 invitations were delivered via e-mail to constituents, saving print and postage costs to the School.
- Maintained and coordinated the secure online registration for RxTravaganza 2010 with 24 percent of the guests using the Web registration.

School of Pharmacy
Long-Range Plan 2006–2012



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.

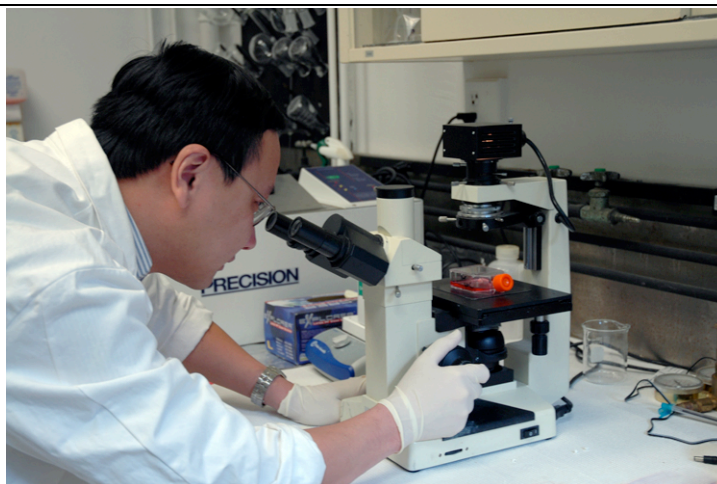
Measures:

- 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:

- a. calls answered by Poison Center (#)
- b. 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:

- a. Immunizations administered (#)
- b. Anticoagulation patients treated (INRs handled) # thousands (# thousands)
- c. Medication use guidelines developed and approved (#)
- d. Surgical Care Improvement quality measures (SCIP-1, SCIP-2, SCIP-3) (#, #, #)
- e. 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:

- a. Yes / no
- b. patient-care units served by the model (#)
- c. 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:

- a. Lamsam Program patients and patient visits (# patients, # visits)
- b. patients who receive MTM/direct patient care (%)
- c. prescriptions provided (#)
- d. locations served (#)
- e. prevention and chronic disease programs (e.g. smoking cessation, immunizations) (#)
- f. collaborative practice agreements in place (#)
- g. grant and gift support (\$ thousands)
- h. students who gain IPPE or APPE experiences through the Program (#)
- i. students who volunteer at Program sites (#)
- j. volunteer pharmacists (#)

36. Partnered to create a state-of-the-art combined Pittsburgh Poison Center and Drug Information Center.

Measures:

- a. Created combined Poison and Drug Information Center: (yes / no)

37. Partnered to provide remote care for patients through technology.

Measures:

- a. developed remote patient care program with a partner: (yes / no)
- b. 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 6 (December 2010)

/	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	FY06	FY07	FY08	FY09	FY10	Status indicator
PharmD Program									
Excellence									
1a	Years of ACPE accreditation granted	6	6	-	-	-	-	6	
2a	National and regional awards to individual students (#)	15	3	3	6	19	30	2	
2b	Student organizations applies for regional/national awards	12				10	15	15	
2c	Regional/national awards to student organizations (#)	track	1	2	2	5	7	10	
2d	Graduates who take residency position (#/%)	25%	16 (19%)	11	22 (22%)	13	21	26 (24%)	
2e	Graduates who pursue PhD or MS training	5%	2	2	1	2	1	3 (3%)	
2f	NAPLEX pass rate 1st attempt (%)	>=95%	96.4%	90.1%	96.7%	99.0%	N/A	98.0%	
2g	MJPE pass rate (%)	>=95%		91.6%	95.2%	96.6%	100.0%	98.0%	
3a	Students admitted with degrees (%)	Track data	16%	11%	15%	14.8%	18.5%	14.7%	
3b	Men admitted to PharmD program (%)	Track data	31%	36%	39%	38.9%	34.3%	52.3%	
3c	Minorities admitted to PharmD program (%)	Track data	4%	5.50%	5%	4.6%	1.9%	4.6%	

LRP #	Measure	Target	FY02	FY06	FY07	FY08	FY09	FY10	Status indicator
Innovation and Leadership									
4a	Peer Review Publications - teaching/assessment (#)	5	1	5	5	7	24	8	
4b	Textbooks and book chapters	Track data	19	10	2	10		0	
4c	Presentations re: innovation in teaching/assessment (#)	3	0	→	3	1		16	
4d	Faculty producing teaching/assessment scholarly work (#)	10	14	→	13	13		19	
4e	Faculty funded grants related to teaching/assessment (#)	4	0	→2	0	3	21	3	
4f	Faculty learners in training programs (#)	1	-	→	1	3	3	1	
4g	Faculty teachers in training programs (#)	Track data	0					19	
5a	International rotations (#)	3	-	→	1	2	3	4	
5b	Students participating in international rotations/year (#)	10	-	→	4	7	7	8	
6a	Create opportunity for curricular tracks/areas of concentration	R	-	R	-	R	R	R	
6b	Curricular tracks/areas of concentration (#)	4	-	→1	1	1	1	1	
6c	Students enrolled in curricular tracks/areas of concentration (#)	30	-	→	→	→	→	6	
6d	Students: pursue training in AOC area after graduation (%)	Track data	-	-	-	-	→	→	
7a	Interprofessional education courses, experiences (#)	Track data	-	→	-	1	3	5	
7b	Total students accessing IP experience (#)	Track data	-	→	-	2	113	115	
8a	Courses developed outside curriculum (#)	4	-	→		1	2	1	
8b	Outside Curriculum Courses, degree & certificate programs including CTSA (#)	1	-	-	-	-	1	2	
8c	Schools who have accessed these programs (#)	55	-	→	76	40	54	90	
8d	Joint/combined degree/certificate programs (#)	2	-	→	1	1	1	1	
8e	MTM curriculum developed (Yes or No)	R	-	→	R	R	R	R	
9a	Out of Pittsburgh program opportunities explored (#)	R	-	→	R	R	R	R	

Graduate Program

Excellence

LRP #	Measure	Target	FY02	FY06	FY07	FY08	FY09	FY10	Status indicator
10a	FT Students in the PhD program (#)	40	18	23	25	26	28	32	
10b	Fellowships awarded (AFPE, T32) (#)	4	1	4	4	3	3	3	
10c	Student awards, honors - external entities incl. travel(#)	6	3	2	3	5	5	16	
10d	Peer-reviewed publications by graduate students (#/year)	15	7	16	20	21	14	16	
10e	Students who presented at national/international meetings (#)	15		9	10	10	12	28	
10f	PhD Graduates/year (#)	Track data	2	6	4	3	4	1	
10g	Graduates who take post-doctoral fellowships (%)	75%	1	2	2	1	3	0	
10h	Graduates who take academic positions (#)	Track data	0	2	0	1	0	0	
10i	Publications about the program (#)	Track data	1	1	0	0	0	0	
10j	Faculty as primary mentors (#)	Track data				14	17	14	
11a	U.S. citizens or permanent residents in program (%)	Track data	30%	36%	38.50%	35%	25%	47%	
11b	Stipend (% of NIH stipend)	>= NIH stipend	75%	R	R	R	R	R	
12a	Graduate students who take positions in industry #	Track data	1	2	2	1	1	1	
12b	Graduate students who take positions in government #	Track data	0	0	0	0	0	0	
13a	Clin Sci Program: faculty as primary mentors (#)	8	5	3	3	3	5	6	
13b	Clin Pharm Sci Pgm: students enrolled (#)	12	9	6	7	9	6	12	
13c	Clin Pharm Sci Pgm: invited presentations about program (#)	Track data	0	0	0	2	0	1	
13d	Clin Pharm Sci Pgm: graduates who enter academia (#)	Track data		1	0	0	0	0	
13e	Clin PharmSci Pgm: students receiving national awards (#)	2		2	2	2	4	6	
13f	Clin PharmSci students receiving fellowships incl NRSA, AFPE (#)	3		4	5	2	3	3	
13g	Clin Pharm Sci: presentations national/int'l meetings (#)	6					11	15	
13h	Clin Pharm Sci Pgm: publications about program (#)	Track data		1	1	0	0	0	
13i	Clin Pharm Sci Pgm: Graduate student publications (#)	Track data						6	

Innovation and Leadership

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

Residency Program

Excellence

LRP #	Measure	Target	FY02	FY06	FY07	FY08	FY09	FY10	Status indicator
17a	Affiliations with residency programs (#)	Track data	9	8	10	12	16	14	
17b	Accredited programs (% of eligible programs)	100%	100%	100%	100%	100%	100	100	
17c	Residency program partners (#)	Track data	4	4	4	6		7	
17d	Residents (total #)	Track data	12	13	15	22	31	31	
18a	Universities from which residents were recruited (#)	Track data	na	7	10	14	15	12	
18b	Residents who present at a nat'l/reg'l meeting (%)	100%		11 (85%)	14 (93%)	21 (95%)	71.0%	100.0%	
18c	Residents who publish residency projects within 3 years (%)	100%					19.40%	→	
18d	PGY-1 residents pursuing PGY-2 - incl management (%)	60%	3 (25%)	2 (50%)	4 (57%)	8 (56%)	48.3%	60.0%	
18e	Residents who earn MS, MPH, PhD (#)		0	0	0	2	2	3	
18f	Residents who take academic positions # (%)	25%	3 (17%)	0	2 (13%)	3 (21%)	2	2	
19a	Grants received by residents (#)	Track data			1	4	2	2	

Innovation and Leadership

21a	Develop/implement community/ambulatory pgm	<input checked="" type="checkbox"/>	-	→				<input checked="" type="checkbox"/>	
21b	Residents in community/ambulatory pgm (#)	track data	-	→				4	

Research school of distinction

LRP #	Measure	Target	FY02	FY06	FY07	FY08	FY09	FY10	Status indicator
Excellence									
22a	Total NIH Funds (\$ millions)	8	7.27	8.15	7.32	8.51	7.23	66.8	
22a	NIH Direct Costs (\$ millions)	6	5.27	5.27	5.34	5.83	5.83	9.08	
22a	Ranking based on NIH funding (#)	10	6	9	10	9	15	22	
22b	Scientific conferences hosted(# / year)	track data	0	0	0	0	3	0	
22d	Faculty with peer-reviewed funding (%)	33%	37.5%	30%			26%	36%	
22e	Peer-reviewed publications (research) (#)	130	118	137	147	129	132	135	
23a	Funding other than NIH (%)	33%	32.40%	27.10%	18.50%	19.40%	32.20%	8.30%	
24a	Postdoctoral fellows in training annually (#)	14	-	→		17		25	
24b	Postdoctoral fellows who take academic positions (#)	track data	-	→			→	→	
24c	Postdoctoral fellows who take positions in industry (#)	track data	-	→			→	→	
24d	Postdoctoral fellows who take positions in government (#)	track data	-	→			→	→	
Innovation and Leadership									
25a	Funded faculty participating in graduate program (#)	80%	5	→	8	9	14	10	
26a	Program project grant applications submitted (#)	track data			0	0	1	0	
26b	Program project grant applications funded (#)	track data	1		0	1	1	0	
27a	Establish program for pharmacy services research (# publications)	track data					→	→	
27b	Establish program for pharmacy services research (# grants)	track data					→	→	
28a	Grants funded through the CTSI (#)	track data	-	-	1	1	0	1	
28b	Programs (cores) funded through the CTSI (#)	1	-	-	→	0	1	0	

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

LRP #	Measure	Target	FY02	FY06	FY07	FY08	FY09	FY10	Status indicator
Excellence									
29a	Institutional (individual hospital) partnerships w/faculty (#)	track data			5	5	6	6	
29b	Faculty who have patient-care practices at UPMC (#)	track data					11	11	
29c	Faculty (total) who have patient-care practices (#)	track data					26	26	
29d	Non-institutional partners: MTM and direct patient care (#)	track data	-	1	1	1	2	2	
30a	Faculty invited to present at national, regional meetings (#)	track data					40	64	
30c	Nat'l/reg'nal awards/recogn'tns: patient-care programs (#)	track data						21	
30d	UPMC quality and other awards (#)	track data			6	4	5	5	
30e	Peer-reviewed publication - pt care/svc models/outcomes(#)	track data						18	
30f	Grants-pharm service model/MTM/direct care/outcome (#)	track data						8	
31a	Evidence-based medication protocols developed #	track data			33		85	53	
31b	Hospitals in which the protocols are implemented #	track data					15	15	
31c	Collaborative practice agreements at UPMC (#)	track data							
32a	Calls answered by Poison Center (# thousands)	track data		118	133	133.3	106.5	129	
32b	Calls answered by DI Center (# thousands)	track data			1.42	3.7	7.26	6.3	
Innovation and Leadership									
33a	Immunizations administered (#)	track data				602	1556	3004	
33b	Anticoagulation patients (INRs handled) (# thousands)	track data				1.06 (28)	1.56(28.46)	3	
33c	Medication use guidelines developed & approved (#)	track data				32	29	39	
33d	Surg Care Improvement quality measures 1, 2, 3 (#)	90			88-93-61	#1-95%;#2-99%;#3-90%	#1-98%;#2-98%;#3-96%	#1-98%;#2-98%;#3-97%	
33e	Low Molec Wt Early Discharges (#)	track data				141	188	103	
35a	Lamsam Program impact (# patients / # visits in thousands)	track data				6.0/18.0	1500/4100	1775/5000	
35b	Patients who receive MTM/direct pt care (%)	track data					400 (27%)	425 (24%)	
35c	Prescriptions provided (# thousands)	track data					6500	7300	
35d	Locations served by the Lamsam Program (#)	track data					8	8	
35e	Prevention and chronic disease programs (#)	track data					3	4	
35f	Lamsam Program: collaborative practice agreements (#)	track data	-	-	-	→	1	2	
35g	Grant and gift support for Lamsam Program (#)	track data				1	3	1	
35h	Students in IPPE/APPE through Lamsam Program (#)	track data				161	148	194	
35i	Students who volunteer at Lamsam Program sites (#)	track data					15	15	
35j	Pharmacists who volunteer in Lamsam Program (#)	track data					12	17	
36a	Combined Pittsburgh Poison Ctr and Drug Info Ctr (Y/N)	<input checked="" type="checkbox"/>	-	→	<input checked="" type="checkbox"/>	-	Y	Y	
37a	Developed remote patient care model (Yes/No)	<input checked="" type="checkbox"/>					N	N	
37b	Implemented remote patient-care model (Y/N)	<input checked="" type="checkbox"/>					N	N	

Increased effectiveness and efficiency

LRP #	Measure	Target	FY02	FY06	FY07	FY08	FY09	FY10	Status indicator
Excellence									
38a	Technology training programs offered for faculty/staff (#)					2	2	2	
38b	Faculty and staff trained on technology (%)					87%	91%	92%	
38c	Commercial& self-built programs & databases applied (#)			1		2	2	2	
39a	Software applications applied to teaching (#)					3	4	5	
39b	Technological platforms adopted (% courses)					100%	100%	100%	
39c	Staff able to support adoption of course technology (# staff)				3	6	9	11	
40a	Cost savings: bundling software & group licenses (\$)					11,480	12,122	12,486	
40b	Savings through channeled spending/other opportunities (\$)					239,000	pending	pending	
41a	Presence of a student portal (Y/N)	☑		◆	☑	☑	☑	☑	
41b	Presence of a faculty and staff portal (Y/N)	☑				Ⓜ	☑	☑	
42d	Web page visits (#)					195,446	198,033		
Innovation and Leadership									
43a	Technologies available for teaching support (#)					5	6	7	
43b	Technology in education: training sessions offered (#)					1	1	2	
44a	Application TPS principles - staff & faculty processes (Y/N)	☑	◆	☑		R	R	R	
44b	Work specifications developed (total #)					106	123	127	
44c	Work processes revisited/revised (#)					50	42	7	
45a	Early adopter or beta-testing partnerships with CSSD (#)					1	1	1	

Securing an adequate resource base

LRP #	Measure	Target	FY02	FY06	FY07	FY08	FY09	FY10	Status indicator
Faculty									
Excellence									
46a	Faculty: full time (part-time) # (#)	80	80			89 (#)	82 FT, 4 PT	78 FT, 4 PT	
46b	Board certifications (# ever)	Track data	15			23	17	23	
46c	Elected fellows (# ever, # fellowships)	15				15	15, #21	15	
46e	Research awards to faculty from external organizations (#)	Track data		1	0	0	11	6	
46f	Teaching/mentor award to faculty - external organization (#)	Track data		1	1	0	9	9	
46g	Patient care awards to faculty - external organizations (#)	Track data			2	1	9	21	
46h	Honors/awards to faculty for outstanding service (#)	Track data			3	1	20	9	
46i	Distinguished alum/other awards from universities (# ever)	Track data				6	15, #20	20	
46j	Faculty: national/regional awards (# awards ever)	Track data					54	56	
46k	Faculty on NIH study sections (#)	Track data	7	7	9	7	28	12	
46l	Editorial board appointments	Track data					30	20	
46m	Faculty on non-industry advisory boards (#)	Track data	4	-	-	-	5	-	
46n	Faculty invited by external entities to give presentations (#)	Track data	-	-	-	-	-	63	
46o	Faculty recipients of Chancellor's Distinguished Award (# ever)	Track data				4	4	4	
46p	Faculty recipients of other Pitt awards/distinctions (# ever)	Track data					16	16	
47a	ACES and skill development programs sponsored (#/year)	6	-	-	Ⓜ		6	4	
47d	Faculty: attend University Teaching Excellence pgms (#)	Track data						6	
47e	Faculty in training pgms of professional and scientific org (#)	Track data	-	-	-	Ⓜ	9	0	
48a	Faculty on at least one School of Pharmacy committee (%)	60%	-	-	-	Ⓜ	79	72	
48b	Faculty on University Committee (#)	Track data	-	-	-	Ⓜ	17	23	
48d	Other school/institute/center committee served by SOP faculty(#)	Track data	-	-	-	Ⓜ	95	18	
48e	Elected leaders-local, regional, national organizations (#)	Track data	-	-	-	Ⓜ	19	20	
48f	Local, regional, national committee memberships (#)	Track data	-	-	Ⓜ	91	191	163	
48g	Publications: practice or service (#)	Track data	-	-	-	-	-	18	
48h	Educational presentations to academic, institutional, industry, government, and community groups (#)	Track data					181	115	

Staff

Excellence

LRP #	Measure	Target	FY02	FY06	FY07	FY08	FY09	FY10	Status indicator
49a	Administrative staff: full time (part-time) # (#)							30	
49b	Admin staff who attend staff retreats (%)	90%				-	90%	90%	
49c	Staff who attend faculty/staff retreats (%)	30%				48%	57%	58%	
50a	Internal development programs: sessions offered (#)	1				1	1	1	
50b	Staff who attend internal development programs (#)	25				18	23	26	
50c	Staff who attended external development programs (#)	25				23	25	25	

Alumni, Friends, and Others

LRP #	Measure	Target	FY02	FY06	FY07	FY08	FY09	FY10	Status indicator
51a	Times stakeholders received communication from School (#)		-		9	6	20	14	
51b	Distinct print or electronic pieces developed (#)				25	30	11	30	
51c	On-time production of communication materials (%)	100%	-				100%	99%	
51d	Event notifications (#)						120	140	
51e	Media placements (#)		→	32	75	38	39	65	
53a	Alumni Total (#)	Track data				4567	4567	4774	
53b	Rank for alumni engagement (#)	1	-	1	2	1	1	2	
53c	Alumni that participate in School and University events (#)		-		36.54%	40.30%	38.10%	37.90%	
53d	E-mail addresses obtained (%)		-			49.90%	49.40%	60.90%	
54a	Preceptors for least one student in year (#)						23(P1); 58(P2); 102(P3); 312(P4)	23(P1); 58(P2); 102(P3); 312(P4)	
54b	Rotations offered by non-faculty preceptors (#/percent of total)						100% (P1); 100% (P2); 87% (P3); 83% (P4)	100% (P1); 100% (P2); 87% (P3); 83% (P4)	
54c	Preceptors attending preceptor development programs (#)		-	-			344	344	

Financial Resources

Excellence

LRP #	Measure	Target	FY02	FY06	FY07	FY08	FY09	FY10	Status indicator
55a	Dollars raised for capital campaign (\$ cumulative total)	\$27 million			\$15.410	\$17.540	\$18.810	\$20.074	
55b	Programs developed that generate new revenue (#)		-			1		0	
56a	Book value of endowment (\$ million)		\$5.937	\$11.00	\$11.500	\$11.800	\$13.841	\$14.524	
57a	Total donors including organizations (#)		-	-	→	928	1013	882	
57b	Annual giving amount (\$ thousands)							0.303	
57c	Total gift and pledge contributions (\$ million)		\$0.67	\$2.140	\$2.603	\$2.044	\$1.391	\$1.077	

Physical Resources

Excellence

LRP #	Measure	Target	FY02	FY06	FY07	FY08	FY09	FY10	Status indicator
58a	Sq ft renovated/refurbished (#)	Track data	9627	3108	6637	6008	1222	3029	
59a	Assignable Sq Ft allocated for School use (#SF-thousands)	113.8	63.5	71.4	82.9	84.7	83.4	80.7	
59b	Space assigned for laboratory research (# SF)	51.4	18353	23121	23121	23121	23121	21523	