





Dear Friends,

I sincerely thank you for your part in making our School of Pharmacy the outstanding school that it is. Together, we share a commitment to excellence, innovation, and leadership. Many words can be used to describe our groundbreaking research, superb education, and innovative patient care—one very simple way is to say that we are “Making Medicines Work for People.”

With sincere appreciation,

A handwritten signature in black ink that reads "Patricia Kroboth". The signature is written in a cursive, flowing style.

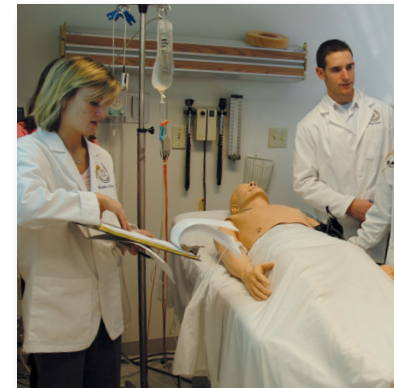
Patricia Dowley Kroboth, Dean
University of Pittsburgh
School of Pharmacy



Preparing students for lifelong learning and growth is fundamental to the educational mission of the School of Pharmacy. We are recognized leaders in promoting PharmD development beginning in the first year of the PharmD program and continuing throughout a professional career. School of Pharmacy faculty design and deliver educational programs that facilitate student development of skills necessary to provide patient-centered care in complicated and chaotic health care environments. We provide ways for practicing pharmacists to continue to enhance these skills as they meet ever-changing needs of patients, providers, and payers.



School of Pharmacy faculty members are changing the way people learn in the classroom. Our faculty members trained at the University of Edinburgh in Scotland to learn the most progressive techniques in problem-based learning (PBL). They have created small-group, PBL experiences for students to enhance their skills in solving medication therapy problems. Working with faculty facilitators, students are able to develop and refine patient data analysis and problem-solving skills in preparation for subsequent interactions with actual patients. PBL strategies have been merged with the power of technology making it possible for students to engage in frequent and varied computer-based applications of their newly developed skills.



Sophisticated robotics and computer simulation provide students powerful patient experiences designed by our faculty. They get to see and hear patient physical responses to their management of medications without any danger to actual patients. Our faculty members continue to explore ways to optimize the impact of these technologies on deep student learning and preparation for patient-centered care.

Making Medicines Work for People Through Training the Next Generation

Training the Next Generation



Faculty members are changing the way people learn. Collaborating with health professionals in the community, they create experiences that prepare students to work as part of a team to improve patient care. Through our community partnerships, we are able to provide:

- a unique community pharmacy residency focused on the implementation of medication therapy management services and direct patient care;
- joint patient-care experiences for medical and pharmacy residents in the community, with the goal of developing collaboration, appreciation for communication, and interprofessional respect to enhance patient care;
- opportunities and venues for early-stage students to learn from more senior students.



We continue to increase the number of exemplary learning opportunities for our students. The School's presence within the UPMC's Falk Pharmacy has been expanded. Professional experience rotations are now available for students in this rich learning environment where pharmacists and pharmacy students work closely with on-site physicians, have access to patient medical records and laboratory data, and function in a physical environment conducive to private patient education sessions and medication therapy management services.



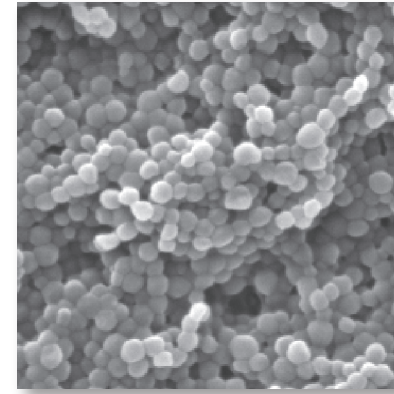
Our students experience global health issues at international rotation sites developed by the School faculty members. In Honduras, students learn to make a difference by working with volunteer physicians in providing care to underserved populations. A rotation in Italy permits selected students to learn alongside specialists in organ transplantation at UPMC Palermo.



School of Pharmacy faculty advanced the state of Internet-based education by designing, creating, and delivering DM Educate™, a comprehensive online course for the management of patients with diabetes (www.dmeducate.com). This course currently brings national experts in pharmacy, nursing, medicine, behavioral psychology, nutrition, and exercise physiology to classrooms at 75 colleges and schools of pharmacy. Beyond the classroom, health professionals may complete the DM Educate™ course as part of their continuing professional development and receive continuing education credit (www.pharmacy-pitt.edu/dmeducate). We hope to reach more than 10,000 practitioners and to significantly improve diabetes care. We capitalize on our technology expertise to develop new courses for local and national distribution on emerging sciences and prevalent diseases and conditions.

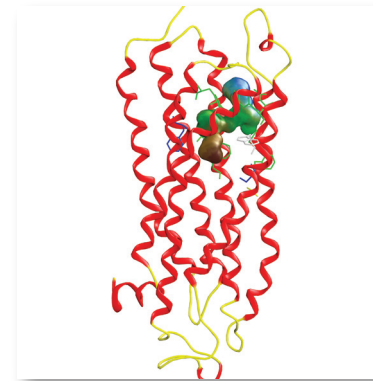


School of Pharmacy faculty members are involved in many aspects of drug discovery and drug development and are key members of the newly established Drug Discovery Institute (DDI) of the University of Pittsburgh where faculty identify new cellular targets for drugs through studies that determine the functions of specific proteins in biological pathways in normal and diseased cells. Faculty of the DDI also design and synthesize new molecules to affect specific cell targets and cellular pathways; develop new approaches to deliver drugs to target specific tissues in the body; and elucidate the fate of drugs in humans and how patients' genetic backgrounds impact outcome of therapy. Faculty also lead the Proteomics Core for the University of Pittsburgh that provides state-of-the-art tools to determine how exposure to drugs affects protein levels.



It is extremely difficult to prevent the transmission of HIV and other sexually transmitted diseases. We are addressing this problem of sexually transmitted infection by developing unique drug delivery systems for women. These delivery systems include specialized vaginal topical treatments that can create barriers to infection from HIV and other sexually transmitted diseases.

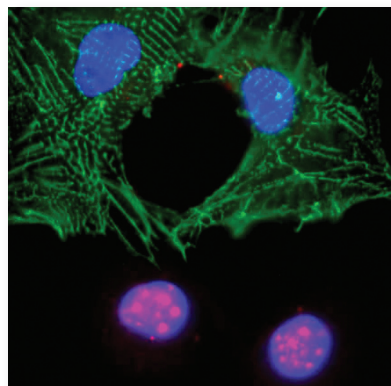
Nanoparticles containing active drugs currently being explored as a microbicide candidate for use in HIV prevention.



Complex computer analyses are used in the *in silico* screening of potential drugs for optimal interaction with the targeted active site. Data for these analyses come from the latest X-ray crystallography, nuclear magnetic resonance, and mass spectrometry methods employed by our expert faculty.

Cannabinoid CB2 receptor and the predicted binding pocket reported in a recent publication.

Making Medicines Work for People Through Cutting-Edge Research



Drugs are evaluated in a wide variety of biological systems, including cultures of specific cell types and genetically manipulated mice. The specific impact of changes in protein levels and signaling pathways may be studied in mice that have been genetically modified either to lack the ability to express specific proteins (null mice) or to express human genes that have been inserted into their genome (transgenic mice). These techniques allow testing of the effectiveness of interventions and potential mechanisms of disease pathology.

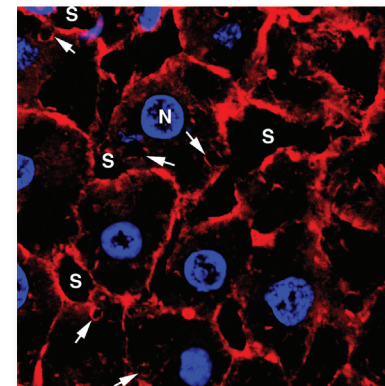
Proliferation assay of mouse knockout cardiomyocytes lacking ATE1-dependent ubiquitin proteolytic system.



Age, gender, race, body composition, concomitant medications, genetic make-up (genotype/phenotype) and severity of disease are among the many factors that modify an individual's response to drug therapy. Faculty members are studying these factors in clinical trials and in analyses of medical databases.

Pitt is among the few universities in the world that can effectively use hierarchical Bayesian computer modeling of clinical data to determine the significance of these complex factors on predicting clinical outcomes in patients.

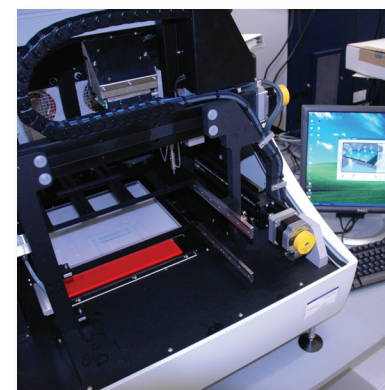
Brain sections with and without chemical inhibition of a potent vascular activator, 20-HETE, showing reduced damage to the brain after stroke with inhibitor.



Cutting-Edge Research

Gene therapy for the treatment of human disease has great promise but represents a technically significant challenge. Ensuring stability of genetic material, delivery to appropriate tissue(s), and insertion into genomic DNA are complex problems. Several faculty members work on new methods and delivery systems to get DNA to the target tissue in the appropriate amount and at the right time so that gene therapy may become a reality.

Confocal micrograph showing liver structure of a mouse after hydrodynamic gene delivery.



Brilliant combinatorial chemistry schemes and efficient synthetic chemistry processes developed by our faculty are providing large numbers of compounds with high potential as drug candidates that interfere with specific molecular targets. These molecules will be screened to determine their biological activity as drug candidates.

Instrument used to visualize and analyze the expression of proteins in biological samples.



The School of Pharmacy is committed to helping patients manage their medications safely and effectively. We improve access to medications and quality pharmaceutical care through the Grace Lamsam Pharmacy Program for the underserved. We are recognized nationally for developing effective medication therapy management in the community through our partnership with Rite Aid Rite Care Centers.

In partnership with UPMC, faculty and pharmacy staff have won two national “Cheers” awards from the Institute for Safe Medication Practices for their efforts in preventing medication errors, and a national Circle of Excellence Award for Patient Safety related to ICU patient medications.



Volunteer pharmacists in the Grace Lamsam Pharmacy Program contribute expertise to reduce cost and assure safe and effective drug therapy to the underserved. Pharmacists work in an interdisciplinary model of care with a team of health care providers that includes physicians, nurses, and other allied-health professionals. The Grace Lamsam Pharmacy Program partners with the Health Care for the Homeless Project (HCHP), North Side Christian Health Center, and the RxCouncil of Western Pennsylvania, and collaborates with the Program for Health Care to Underserved Populations and Operation Safety Net to provide medication access to the underinsured and the uninsured.



Our faculty and staff in the Drug Use and Disease Management Program have ensured that elderly and pneumonia patients admitted to the hospital are given the opportunity to receive an influenza or pneumococcal polysaccharide vaccine to prevent future disease. The vaccination rate for these patients being discharged from UPMC Presbyterian exceeds 80 percent, and has more than tripled since the focused efforts of pharmacy and nursing to promote vaccination.

Making Medicines Work for People Through Patient-Centered Care



School of Pharmacy faculty serve as key members of the antibiotic management team at UPMC to dramatically improve patient therapy. For example, through restriction of fluoroquinolones to the appropriate indications, the susceptibility of *Pseudomonas aeruginosa* to ciprofloxacin increased from 50 percent to 70 percent in a three-year period. This increase in susceptibility is very rarely seen and is directly attributable to careful management of the drugs. They were also able to decrease the use of agents linked to a *C. difficile* outbreak by threefold and thus reduce the number of *C. difficile* infections to pre-outbreak numbers.



We are experts in patient safety. Faculty and staff at UPMC Presbyterian work together to design and implement drug therapy protocols for inpatients. Avoiding dangerous drugs in the elderly (for example, analgesics and anti-nausea agents with specific adverse event or drug interaction profiles) is a focus; compliance with avoiding these medications is over 90 percent for our hospital inpatients. We have changed the safety culture of Western Pennsylvania to be open about errors while improving the safety of dangerous therapy such as pain and blood-thinning medications.



Patient-Centered Care

We have remodeled the UPMC Falk Pharmacy with state-of-the-art robotics and technology to increase speed, efficiency, and safety of medication dispensing. We created a consultation space for patient care. Services are being developed to improve patient outcomes including medication therapy management and pharmacist-administered immunizations. Falk Pharmacy will serve as a test site for new ideas for improving patient care in the ambulatory/community setting.



The School is committed to a healthy community in Pittsburgh and throughout the Commonwealth. School of Pharmacy faculty led students in the creation of a public health outreach project, "Helping Hands for Healthy Hearts." Students and faculty presented educational programs and provided blood pressure screening in the minority community to help empower people to reduce their cardiovascular risks. More than 5,000 minority community members participated in these educational programs conducted in churches and other community centers.

