HISTORY

The School of Medicine began as the Western Pennsylvania Medical College and graduated its first class of physicians in 1887. In the 1890s, the medical college became affiliated with the Western University of Pennsylvania, which originated as the Pittsburgh Academy in 1787, making it one of the nation’s oldest academic institutions. Western University of Pennsylvania was renamed the University of Pittsburgh in 1908.

OVERVIEW

The goal of the University of Pittsburgh School of Medicine is to educate physicians who are science-based, skilled, and compassionate clinicians prepared to meet the challenges of practicing medicine in the 21st century and to conduct cutting-edge biomedical research that is focused on bettering the human condition and advancing the fundamental understanding of medical science.

In the only truly objective metric by which the overall stature of research-focused institutions can be assessed in a nationally competitive context, the University of Pittsburgh moved into the top 10 list of recipients of National Institutes of Health funding in 1997 and has maintained its position, steadily climbing within this enviable echelon. In fiscal year 2008, the most recent year for which we have final data, the University, driven by the medical school, ranked fifth among universities in NIH funding and fifth in the number of individual NIH grants received.

Medical schools are periodically subject to full accreditation review by the Liaison Committee on Medical Education (LCME), the accrediting authority for MD degree programs in the United States and Canada. The process of meeting and maintaining accreditation requires a medical school to comply with a long list of rigorous national standards. After its most recent review here, the LCME survey team reported it had found numerous areas of strength and not a single area of weakness, which essentially meant the School of Medicine had achieved a perfect “score.”

Pitt medical students consistently perform well on the United States Medical Licensing Examination (USMLE), which consists of a basic sciences test at the end of their second year (Step 1) and tests for clinical knowledge and clinical skills during their fourth year (Step 2CK and Step 2CS). Our students regularly score above the national mean on these tests and almost always have a higher pass rate than the corresponding national average.

Each year, the National Resident Matching Program consistently pairs Pitt’s fourth-year medical students with some of the nation’s top residency programs in virtually all specialty areas. In 2010, 70 percent of our graduates matched to residencies in one of the country’s most prestigious (and, therefore, most coveted and competitive) academic medical centers, including Johns Hopkins Hospital; Brigham and Women’s Hospital; UCLA Medical Center; University of California, San Francisco Medical Center; University of Washington Affiliated Hospitals; Massachusetts General Hospital; the Hospital of the University of Pennsylvania; Barnes-Jewish Hospital; University of Chicago Medical Center; and UPMC.

THE SCHOOL OF MEDICINE has 599 MD students: 276 women (46 percent) and 323 men (54 percent). Of these students, 185 (31 percent) are Pennsylvania residents. The School of Medicine fosters an academic environment that encourages and supports a richness of diversity among students of various racial, ethnic, and cultural backgrounds. Approximately 17 percent of the students at the School of Medicine are from groups that are underrepresented within the medical profession.

FOR MORE INFORMATION ABOUT DIVERSITY PROGRAMS: www.medadmissions.pitt.edu/diversity-program

In addition, for 2010–11, the medical school has 308 registrants in PhD programs (including the students in the Medical Scientist Training Program), plus 61 students in MS programs and 44 students in certificate programs. Not included in these numbers are students in cross-campus graduate programs who are registered through other schools.

As of August 1, 2010, the School of Medicine had 2,115 regular faculty members plus 2,098 volunteer faculty. Sixty-seven faculty members from throughout the school are current members of the Academy of Master Educators, which was developed to recognize and reward excellence in medical education.

For 2010, the medical school received 5,287 applications for admission and interviewed 1,001 prospective students for the first-year class of 148 members.

FOR ADMISSIONS INFORMATION: www.medadmissions.pitt.edu/index.php

The School of Medicine includes the following 30 departments:
- Anesthesiology
- Biomedical Informatics
- Cardiothoracic Surgery
- Cell Biology and Physiology
- Computational and Systems Biology
- Critical Care Medicine
- Dermatology
- Developmental Biology
- Emergency Medicine
- Family Medicine
- Immunology
- Medicine
- Microbiology and Molecular Genetics
- Neurobiology
- Neurological Surgery
- Neurology
- Obstetrics, Gynecology, and Reproductive Sciences
- Ophthalmology
- Orthopaedic Surgery
- Otolaryngology
- Pathology
- Pediatrics
- Pharmacology and Chemical Biology
- Physical Medicine and Rehabilitation
- Psychiatry
- Radiation Oncology
- Radiology
- Structural Biology
- Surgery
- Urology

The newest of these departments — Cardiothoracic Surgery — reflects the School of Medicine’s position at the leading edge of medical education and clinical practice, as well as the recent and rapid evolution of cardiothoracic surgery as an independent discipline. Similar departments are still novel in American medical schools, and the same can be said of our departments of Computational and Systems Biology, Critical Care Medicine, Developmental Biology, and Structural Biology.

FOR MORE INFORMATION: www.medschool.pitt.edu/departments_divisions/index.asp

Scholarly Project
At the University of Pittsburgh, all medical students engage in a scholarly project. This program has been incorporated longitudinally throughout the curriculum as an indispensable component of medical education and has been broadly defined to provide a wide range of opportunities (including traditional laboratory-based or clinical research experiences as well as less obvious choices) to appeal to individual students’ interests and aspirations. The intent is to expose students to the mechanics of scientific investigation; teach them how to develop a hypothesis and how to collect, analyze, and interpret data to support it; encourage them to pursue research opportunities; and help them understand the structure of thought underlying the practice of medicine. Among the program’s distinctive elements are thorough preparatory course work designed to foster the skills that students need to successfully conduct scholarly work, an emphasis on developing strong faculty mentors to ensure the program’s ongoing success, and creative use of electronic technology to promote learning and mentorship. Many students initiate their scholarly project by participating in a summer research program, while others might take a year off to pursue an intensive research program at Pitt or elsewhere. Some students find the experience so rewarding that they consider careers as physician-scientists. The goal in every case, however, is to enhance their ability to think independently, critically, and creatively and, thereby, become better equipped to practice medicine in the 21st century.

The Class of 2010 was the third class to complete the four-year scholarly project experience. Their endeavors resulted in 38 fellowships, grants, or other national awards; 28 School of Medicine awards;
Problem-Based Learning

In the early 1990s, Pitt was among the first medical schools to adopt a teaching method known as problem-based learning, or PBL, which engages small, faculty-mentored groups of first- and second-year students in clinical diagnostic exercises built from actual cases of graduated difficulty. PBL builds collaborative problem-solving skills and teaches students how to “mine” vast information resources and apply them to specific clinical cases. In PBL sessions, faculty members serve as facilitators rather than traditional instructors. Pertinent facts are presented in such a way that students must continuously analyze and re-evaluate them, seek supporting evidence, and focus their thinking to reach a differential diagnosis. This mode of instruction is an important component of our curriculum and catalyzes the development of cognitive skills in our students.

Simulation Training

All Pitt medical students engage in comprehensive learning activities using whole-body simulators; about two-thirds of them opt for additional elective time with these sophisticated training tools, which provide the opportunity for students to develop resuscitation, defibrillation, auscultation, airway management, and other clinical skills. Task-specific models are used to develop proficiency in vascular access and suturing procedures, among others, and the proper techniques for conducting breast, pelvic, and prostate exams. Pitt’s Peter M. Winter Institute for Simulation Education and Research (WISER) is considered one of the world’s leading academic medical simulation training centers, featuring highly sophisticated and lifelike computer-based simulation technology designed to enable students to learn, practice, and perfect clinical procedures before performing them on actual patients.

Integrated Life Science Program

The fourth-year Integrated Life Science (ILS) Program includes a choice of courses that revisit some aspect of basic science after students have had several years of clinical experience. Because of the level of sophistication that students have developed by this stage in their medical education, they can better understand the relevance of basic science to clinical problems. Each student is required to complete one of the following ILS courses: Neoplasia and Neoplastic Disease; Neurosurgery and Head and Neck Dissection; Clinical Pharmacology; Surgery Integrated Life Sciences; Infectious Disease in Obstetrics, Gynecology, and Reproductive Medicine; Molecular Medicine; or Science of Resuscitation.

Standardized Patients

Throughout their medical education, students encounter standardized patients — actors and actresses who are specially trained to present realistic and consistent behavior, symptoms, and medical histories in simulated doctor-patient interactions. These sessions are designed to help students develop their clinical skills and learn how to deal with unusual or unexpected circumstances in a safe and constructive environment. Students find that these experiences reinforce lessons they have learned through other components of the curriculum and, in a realistic way, make them relevant. The standardized patients themselves can contribute to the learning process by emerging from their role to offer feedback on the encounter and an assessment of the student’s performance.

Evidence-Based Medicine

An important skill set for physicians today is being able to interpret and evaluate new findings reported in the medical literature and to apply these advances to real-life circumstances. For instance, the ability to understand and rapidly evaluate conflicting reports on a new or even a commonly used drug is increasingly important in daily patient care. Evidence-based medicine — an ongoing focus of our curriculum — teaches students how to critically evaluate the medical literature and to use medical databases to make patient care decisions based on best-known practice.

FOR MORE INFORMATION: www.wiser.pitt.edu
Teaching Methods

Lectures are only one of the teaching methods used at the School of Medicine. In fact, in their first two years, students spend only about one-third of their time in lectures. Another third is spent in small-group sessions; the rest is devoted to a mix of activities, including self-directed learning, computer-based study, community visits, and clinical experiences, among others.

Recognized Approach

In 2008, the University of Pittsburgh School of Medicine received the American Medical Student Association’s Paul R. Wright Award for Excellence in Medical Education for its emphasis on revitalizing professionalism in medical education.

TECHNOLOGY DEVELOPMENTS

The School of Medicine is always upgrading its use of technology to optimize learning methods available to students and to remain at the forefront of medical education. In addition to the implementation of wireless Internet service on campus in recent years, here’s a summary of current features:

- All 35 small-group classrooms are equipped with computers and LCD projectors that make it practical for the full group to be engaged in computer-enhanced learning activities.
- Lecture rooms regularly used by medical students feature multimedia presentation systems that enable use of both traditional teaching materials and the presentation of live images (e.g., a rash on a patient’s leg) to an entire class at one time.
- The medical school is expanding the use of Web-based applications of teaching materials. The curriculum Web site contains pertinent images for the study of body organs, self-test questions, prescreened links to useful Web sites, and other value-added content for courses. For example, in the Cellular and Pathological Basis of Disease course, student instruction is augmented by two programs. One is a “mentored” instructional and self-testing program; the other is a “virtual microscopy” application that combines and compares histological images of normal and abnormal tissue to strengthen student appreciation of the structural consequences of intracellular disease processes.
- For all first- and second-year courses, syllabi, slides, and lecture materials are posted on the curriculum Web site. In addition, the school is continually exploring the use of innovative approaches for delivering curricular materials in ways that will suit students’ individual learning styles. In a student-coordinated initiative, all basic science and organ system lectures are recorded and posted for podcasting and webcasting.
- “The Zone” is a one-stop, password-protected Web portal initiated by medical students and developed by them with administration support as a convenient way to access e-mail, schedules, student affairs and financial aid information, commonly used applications, and other electronic materials.

FOR MORE INFORMATION: http://zone.medschool.pitt.edu/Pages/default.aspx

The School of Medicine’s Laboratory for Educational Technology (LET) serves as an incubator for new ideas and a means of fast-tracking the development of novel approaches to the use of technology applications in support of medical student learning.

- Use of an electronic audience response system to elicit real-time answers from students to interactive questions via a handheld keypad has become a popular way to engage them in presentations or lectures.

CURRICULAR INNOVATIONS

Following are some of the School of Medicine’s most recent curricular innovations:

- Because of the rapidity with which science and medicine are evolving and because of the intrinsically dynamic nature of a medical school curriculum, basic science courses have been reorganized to place greater emphasis on cell biology, molecular biology, structural biology, and genomics and to re-examine and update the integration of basic science material with organ system pathophysiology.
- The time period in which students must complete their required 12 months of clinical clerkships has been expanded to approximately a year and a half, starting at the end of their second year, thereby giving them more choices and flexibility in scheduling research or electives relevant to their career paths. By starting their clerkships earlier, students also gain more time to experience various medical specialties before making postgraduate career decisions and applying for residency programs.

- Material already in the curriculum on bioterrorism is being expanded and focused on the theme of public health preparedness. Included are such topics as disaster preparedness; biological, chemical, and radiological terrorism; vaccines; drug-resistant organisms; infectious disease outbreaks; and related safety issues. Rather than being covered in a single course, these topics are being addressed longitudinally, where appropriate, in existing courses.

- A series of innovative mini-electives, especially designed for first- and second-year students, has been developed to enrich their medical education and enable them to explore areas of personal interest beyond the scope of the core curriculum. Course offerings include Advanced Pediatric Interviewing, Concepts in Human Motion, Medicine and Literature, Natural History of Medicine (presented in collaboration with the Carnegie Museum of Natural History), Nutrition and Medicine — Traditional and Complementary Aspects, Pandemic Preparedness and Response, Behind the Veil of “CSI”: The Real World of Forensic Medicine, Medical Spanish, Vascular Surgery, Art and Medicine (in collaboration with the Carnegie Museum of Art and the Andy Warhol Museum), Emerging Infectious Diseases, and Global Climate Change. Additional course topics are being developed.

FOR MORE INFORMATION ABOUT THE SCHOOL OF MEDICINE CURRICULUM: www.omed.pitt.edu
Global Health

Students interested in global health can participate in a variety of clinical and research opportunities through summer placement, fourth-year electives, or the Area of Concentration in global health. Some of the countries in which students have been involved are Malawi, Kenya, Honduras, Brazil, India, Ireland, China, Uganda, Zambia, Tanzania, and Italy. UPMC maintains hospitals in Palermo and Dublin; students can rotate at both. In recent years, four Pitt medical students have been chosen to participate in the International Clinical Research Scholars Program sponsored by the National Institutes of Health’s Fogarty International Center. On a broader scale, Pitt’s new Center for Global Health is coordinating University-wide efforts to establish international partnerships and collaborative initiatives in global health research, education, service, and policy to effectively address health issues affecting populations around the world.

For more information: www.omed.pitt.edu/curriculum/areas-of-concentration.php

Medical Scientist Training Program

The Medical Scientist Training Program (MSTP) provides medical students who wish to pursue a career in biomedical research the opportunity to undertake doctoral work at either the University of Pittsburgh or Carnegie Mellon University in one of the participating programs in basic science, engineering, or public health and complete both degrees in an average of seven years. Students begin with the first two years of medical school and then move into their PhD work; once that is completed, they finish their medical training. The program provides them with full tuition and a stipend each year.

Currently, 92 students are enrolled in the MSTP, which is funded by a grant from the National Institutes of Health with support from the Office of the Dean. At any time, about half of the students are engaged in the MD segment of the program, while the others are involved in their PhD studies. If they did not enroll from the start, students can apply for transfer into the MSTP during their second year of medical school, but the tuition and stipend benefits are not retroactive.

For more information about MSTP: www.icre.pitt.edu/cstp-m/index.aspx

Doris Duke Clinical Research Fellowship

Medical students may apply in their third year for a Doris Duke Clinical Research Fellowship, a one-year program leading to a certificate in clinical research. Doris Duke Fellows receive a generous stipend, tuition benefits, and funds for research and travel. Up to seven students are accepted each year. Competitive applicants have an established relationship with a clinical research mentor, a compelling research proposal, and an expressed interest and aptitude for a career in clinical research.

For more information about the Doris Duke Clinical Research Fellowship: www.icre.pitt.edu/ddcrf/index.html

Clinical Scientist Training Program

The Clinical Scientist Training Program (CSTP) is a five-year, dual MD/MS program for medical students interested in careers in clinical and translational research. In addition to medical school, CSTP students conduct mentored clinical research, participate in weekly longitudinal seminars, and complete clinical research coursework. The mentored research and additional clinical research coursework are concentrated during the summer months prior to years one and two, during research electives, and during a research year between the third and fourth years of medical school. Students apply to the CSTP after they have been invited to interview at the School of Medicine. Up to five students matriculate each year, and there are currently 24 students in the program. CSTP students receive a scholarship of $25,000 a year toward medical school tuition for four years, full tuition for the MS, and a stipend during the research year.

For more information about CSTP: www.icre.pitt.edu/cstp-m/index.aspx

Physician Scientist Training Program

The Physician Scientist Training Program (PSTP) is a five-year program for exceptionally talented students who, in addition to the regular curriculum, undertake two summers and a dedicated year of laboratory-based research training as well as enrichment courses to prepare them for careers in academic medicine. Those who are selected for the program receive full tuition for the four years of medical school plus a stipend during the two research
The PSTP currently has 22 students. Medical students can also apply as internal candidates for the PSTP in their second year. If they transfer into the PSTP as internal candidates, full tuition coverage would apply to only the last two years of medical school.

FOR MORE INFORMATION: www.pstp.pitt.edu

Other Research Opportunities

Upon completing their first year of medical studies, 68 percent of the students in the Class of 2012 engaged in various summer research programs. In addition, some medical students take a year off at some point to earn a master’s degree in public health, biomedical ethics, or a related field; others participate in a yearlong program of specialized study or research available through prestigious national fellowship programs such as the Doris Duke Clinical Research Fellowship Program, the Clinical Research Training Program offered by the National Institutes of Health (NIH), the Howard Hughes Medical Institute (HHMI) Medical Fellows Program, and the HHMI-NIH Research Scholars (Cloister) Program.

STUDENT ADVISORY SYSTEM

Providing a comprehensive, effective, and individualized student advisory system is one of our highest priorities. Every first-year student is assigned to an advisory dean, who serves as an advocate, information resource, sounding board, and mentor for all four years about academics, extracurricular programs, career options, clerkship and elective scheduling, residency choices, and other issues. Because of the intensity of the first-year transition, freshmen are also paired in small groups with several second-year mentors and a clinical faculty advisor in a program known as FAST — Faculty and Students Together. In addition, as students advance through medical school, they typically establish their own connections with scholarly project mentors, physicians involved in particular areas of interest, residency application advisors, and various other faculty members.

GRADUATE STUDIES

In addition to the MD degree, the School of Medicine offers academic degrees through the following graduate programs:

Interdisciplinary Biomedical Graduate Program (PhD)

This program features a core curriculum combined with research and dissertation work in one of these areas: molecular genetics and developmental biology, cell biology and molecular physiology, cellular and molecular pathology, immunology, molecular pharmacology, or molecular virology and microbiology.

Center for Neuroscience Graduate Training Program (PhD)

Laboratory research in theory and practice is a major focus of this cross-campus program, which aims to develop general competence in neuroscience as well as expertise in one or more areas of specialization.

Biomedical Informatics Training Program (PhD, MS, or certificate)

Applying modern information technology to health care, education, and biomedical research is the focus of this program, which offers general or specialized courses of study.

Joint Program in Computational Biology (PhD)

This program, offered by the University of Pittsburgh and Carnegie Mellon University, is designed to develop expertise in the use of computational methods to identify and solve complex biological problems.

Molecular Biophysics and Structural Biology Graduate Program (PhD)

This interdisciplinary program trains students in the use of a broad range of cutting-edge technologies to study the function of biological macromolecules in physical terms and covers a diversity of research topics in molecular biophysics and structural biology.

Program in Integrative Molecular Biology (PhD)

The intent of this cross-campus program is to provide intensive training for students prepared to enter with a focused and developed interest in the structure and function of molecules that compose complex cellular pathways and systems. Focal areas of research include genomics, proteomics, and gene function as well as cellular and developmental dynamics.

FOR MORE INFORMATION ABOUT GRADUATE STUDIES: www.somgrad.pitt.edu

The following degrees and certificates are offered through Pitt’s Institute for Clinical Research Education (ICRE):

Clinical and Translational Science (PhD or certificate)

The PhD in clinical and translational science is a rigorous, multidisciplinary program designed to train an elite group of scientists to conduct the highest quality clinical and translational research. A certificate is available to health sciences students already enrolled in doctoral programs who acquire additional training in clinical and translational science.

Clinical Research (MS or certificate)

These programs are available for postdoctoral fellows and faculty who have a clinical degree but seek additional formal training in clinical research methodology. The curriculum focuses on the skills necessary to develop into a successful, extramurally funded clinical investigator.

Medical Education (MS or certificate)

These offerings, which are designed for clinicians who seek formal training and experience in the teaching of medical students and residents, are among a select few programs in the country in medical education for medical educators.

FOR MORE INFORMATION ABOUT ICRE DEGREE PROGRAMS: www.icre.pitt.edu/degrees/degrees.html
Notable ranking shifts, such as Pitt has experienced in recent years, are rare because the competition for NIH dollars is fierce. Nevertheless, the University as a whole and the School of Medicine have both more than doubled their NIH support since 1998. As a result of its success, Pitt has invested significantly in new research infrastructure in disciplines like developmental, cellular, structural, and computational biology and in faculty recruitment.

The University of Pittsburgh spent over $737 million for research of all kinds in fiscal year 2010; more than 80 percent of this amount was for research in the health sciences. University research spending from all sources grew 13 percent over the fiscal year 2009 level.
Within the School of Medicine, areas of research emphasis and strength include drug discovery and design; vaccine development; comparative effectiveness research; organ transplantation/immunology; stem cell biology and tissue engineering; medical device development; vascular biology; cancer research and therapy; cardiology and cardiovascular biology; bioinformatics and computational biology; psychiatry, neurobiology, systems neuroscience, and neurological surgery; structural biology; developmental biology; and clinical research/clinical trials.

The School of Medicine is continuing to expand its research facilities. A pivotal recent addition is the 10-story, 335,000-square-foot Biomedical Science Tower 3, which houses the Center for Vaccine Research; the Drug Discovery Institute; the structural biology and computational biology programs, which are among the most advanced in the country; the Pittsburgh Institute for Neurodegenerative Diseases; and 10,000 tanks for zebrafish, one of the most popular model systems for developmental research.

In addition, 161,000 square feet of research space in the new Bridgeside Point II building near campus is expected to be fully occupied this year; the new, 218,000-square-foot John G. Rangos Sr. Research Center at Children’s Hospital of Pittsburgh of UPMC opened in late 2008; and Magee-Womens Research Institute doubled its research space with a new facility in 2007.

University projects in the planning or implementation stages include a biomedical research facility near UPMC Shadyside; the renovation of 44,000 square feet in the Thomas E. Starzl Biomedical Science Tower to accommodate the Vascular Medicine Institute and the Division of Pulmonary, Allergy, and Critical Care Medicine; a biomedical research and biotechnology center near Palermo, Italy, which is being funded, in part, by the Italian government and jointly overseen by the School of Medicine and UPMC; and additions to Salk Hall and to the Graduate School of Public Health.

Overall, the six schools of the health sciences currently occupy approximately 4.2 million gross square feet of research, academic, and administrative space in various buildings.

The Pittsburgh Life Sciences Greenhouse, a public/private partnership established in 2001 by the Commonwealth of Pennsylvania, University of Pittsburgh, Carnegie Mellon University, UPMC, and the region’s foundation community, focuses on supporting start-up biosciences companies engaged in the following ventures: medical devices, therapeutics, diagnostics/screening, biotechnology, and health information technology.

In 2001, Intel Corporation founded a university research lab in Pittsburgh to foster collaboration with the thriving academic research community here. This innovative model of industry-university research was pioneered by Intel to enhance and accelerate long-term research. The model stresses openness and collaboration, with researchers flowing freely between Intel and the universities, conducting joint research projects. The Pittsburgh lab’s projects include computer-assisted medicine, brain activity decoding, and the application of novel software to disease diagnosis using radiologic images.

In 2000, the RAND Corporation founded a Pittsburgh branch, through which it developed the RAND–University of Pittsburgh Health Institute, a collaborative venture between RAND Health, Pitt’s schools of the health sciences, and Magee-Womens Research Institute. The emphasis is on shared activities in research, education, and training, with particular focal areas being research in women’s health, mental health, patient safety, health disparities, and translation of research into evidence-based health care.

Since 1996, the year Pitt’s Office of Technology Management was founded, 78 companies were formed that were dependent upon the licensing of technology developed at the University of Pittsburgh; a majority of them were in the life sciences.

For more information about research: www.oorphs.pitt.edu www.clinicalresearch.pitt.edu www.pitt.edu/~offres

Academic Career Development

One of the special resources available to medical and graduate students in the School of Medicine is the Office of Academic Career Development (OACD), Health Sciences. OACD offers a range of innovative career development services to help students acquire the professional skill sets needed to successfully advance their academic careers. Professional development programs and services also are available through OACD for post-doctoral fellows, residents and clinical fellows, and faculty members at all levels.

For more information: www.oacd.health.pitt.edu
Following are some of the medical school's notable achievements since 1950:

**1950** Philip S. Hench, MD, a 1920 graduate of the School of Medicine, and two other scientists win the Nobel Prize in Physiology or Medicine for discoveries relating to the hormones of the adrenal cortex.

**1952** A killed-virus polio vaccine is developed by Jonas Salk, MD, and a team of researchers. The introduction of the vaccine to the public in 1955, after nationwide clinical trials demonstrated that it was safe and effective, led to a rapid and dramatic drop in the incidence of this previously unrepeventable disease.

**1958** Peter Safar, MD, refines cardiopulmonary resuscitation (CPR) and extends it to cardiopulmonary-cerebral resuscitation, which he assembled as a sequence of basic, advanced, and prolonged life support.

**1961** Klaus Hofmann, PhD, leads a team that develops a synthetic form of adrenocorticotropic hormone (ACTH) that performs all of the biological functions of the naturally occurring hormone.

**1962** Niels K. Jerne, MD, undertakes landmark research on antigen-antibody interactions. Two articles produced during his time at the School of Medicine were among those later cited by the Nobel Committee as providing the basis for his prize-winning work.

**1963** The Magovern-Cromie sutureless heart valve developed by George J. Magovern, MD, and others enhances the speed and efficiency of heart valve replacement surgery and improves the survival rate of patients.

**1964** Panayotis G. Katsoyannis, PhD, performs the first chemical synthesis of a polypeptide hormone, insulin, and combines it with biologically active material, providing the means to explore and validate previous assumptions about the active amino acids in the insulin molecule.

**1964** Julius S. Youngner, ScD, sheds new light on the cause of immune and inflammatory responses by discovering that nonviral agents as well as viral ones can trigger interferon induction.

**1967** David Gitlin, MD, elucidates key elements of the biosynthesis of alpha-fetoprotein, which becomes a critical indicator of potentially life-threatening birth defects in developing fetuses.

**1972** Youngner and others discover that certain viruses have mechanisms that can actually inhibit the action of interferons.

**1980** Investigators isolate and cultivate *Legionella micdadei* (Pittsburgh pneumonia agent) from human lung tissue. A team led by A. William Pasculle, ScD, goes on to delineate the microbiology, epidemiology, clinical syndrome, and environmental ecology of this organism, which is the second-leading cause of legionella-based pneumonia.

**1984** Thomas E. Starzl, MD, PhD, performs the world's first double transplant operation (simultaneous heart and liver) on a 6½-year-old girl from Texas.

**1985** Bernard Fisher, MD, and team are the first to recognize the systemic pattern of breast cancer development, leading to the conclusion that lumpectomy combined with radiation therapy is as effective as mastectomy in treating breast cancer. Fisher's group went on to show the effectiveness of chemotherapy and hormonal therapy (tamoxifen) in preventing recurrence.

**1991** Following his earlier work in establishing the clinical utility of the immunosuppressants cyclosporine and tacrolimus (FK506), Starzl explores the theory of chimerism as a means of boosting transplant organ tolerance and reducing dependence on immunosuppressive drugs by proving that cells from donor organs intermingle with a transplant patient's own tissues.

**1992** A team led by Geoffrey D. Block, MD, produces the first sustained, proliferative growth of normal liver cells in the laboratory, laying the groundwork for development of artificial liver devices, possible treatments for acute liver failure, and gene therapy strategies.

**1996** Investigators led by John W. Mellors, MD, discover that plasma HIV load plays the critical role in determining the prognosis of AIDS patients.

**1998** Studies led by Fisher demonstrate that the drug tamoxifen can substantially reduce the risk of breast cancer in high-risk women who have not yet developed the disease.

**2000** Researchers led by Bora E. Baysal, MD, PhD, and Bernard Devlin, PhD, discover that a mitochondrial gene mutation is the cause of hereditary paraganglioma. This study is the first to link the structure of mitochondrial DNA to tumor development.

**2004** In collaboration with colleagues in Sweden, researchers complete the first human study of a radioactive dye called Pittsburgh Compound B (PiB) developed by William E. Klunk, MD, PhD, and Chester A. Mathis, PhD, to detect, using PET scanning, the beta-amyloid deposits that are believed to signal Alzheimer's disease. Subsequent research correlates detection results in living patients with their later autopsy results to confirm the effectiveness of PiB in signaling the presence of beta-amyloid deposits.

**2005** Amin Kassam, MD, Carl Snyderman, MD, and Ricardo Carrau, MD, pioneer endoscopic transnasal brain surgery, a revolutionary technique that uses the nose and nasal sinuses to gain access to hard-to-reach brain and spinal cord tumors previously considered to be inoperable.
[2006] A multi-institutional research team led by Yifan Dai, MD, PhD, reports the development of transgenic pigs engineered to produce heart-healthy omega-3 fatty acids, providing vast new opportunities to study their influence on cardiovascular function and the risk of heart disease.

[2007] Gary A. Silverman, MD, PhD, and Cliff J. Luke, PhD, overturn the long-held view of necrosis as a chaotic, irreversible process by showing it to be part of a regulated response to stress by SRP-6, a powerful protein known as a serpin that they believe might be harnessed to either target or spare cells as a way to better manage cancer, heart disease, stroke, or neurological conditions.

[2008] Researchers led by Yuan Chang, MD, and Patrick S. Moore, MD, MPH, the husband-and-wife team who previously identified the Kaposi’s sarcoma-associated herpesvirus, use novel sequencing technology to identify a previously unknown polyomavirus that is strongly linked with a rare but deadly skin cancer called Merkel cell carcinoma.

[2008] Andrew B. Schwartz, PhD, demonstrates how brain-machine interface technology involving a monkey that uses brain signals and a robotic arm to feed itself could advance the development of prostheses for people with paralyzing spinal cord injuries and neurological conditions.

[2009] Using zebrafish as a model system, Michael Tsang, PhD, and collaborators pinpoint an enzyme inhibitor that enables them to increase the number of cardiac progenitor cells and thereby influence the size of the developing heart — a finding with broad implications for elucidating the role of the fibroblast growth factor pathway in heart development as well as in wound healing and treating other conditions.

[2008] Massimo M. Trucco, MD, and Nick Giannoukakis, PhD, report that a novel vaccine with a microsphere molecule delivery system can prevent and even reverse the onset of type 1 diabetes in animal models.

[2009] Using zebrafish as a model system, Michael Tsang, PhD, and collaborators pinpoint an enzyme inhibitor that enables them to increase the number of cardiac progenitor cells and thereby influence the size of the developing heart — a finding with broad implications for elucidating the role of the fibroblast growth factor pathway in heart development as well as in wound healing and treating other conditions.

[2010] Edward Prochownik, MD, PhD, discovers a means of arresting cancer stem cells derived from breast cancer cell lines. Notoriously difficult to study in the lab because they quickly differentiate into conventional cancer cells, cancer stem cells seem to be immune to conventional cancer therapy. The creation of stable lines of cancer stem cells is enabling sustained research into how to destroy them.

UPMC (UNIVERSITY OF PITTSBURGH MEDICAL CENTER)

Through its affiliation with UPMC, the School of Medicine offers students opportunities for clinical training, educational experiences, and research in virtually any medical specialty. Although legally separate and distinct entities, the School of Medicine and UPMC share mutual interdependence and a synergy that is reflected in a common commitment to excellence in education, research, and clinical care.

As of August 1, 2010, the UPMC Medical Education Program had 1,076 medical residents and 310 clinical fellows in programs approved by the Accreditation Council for Graduate Medical Education plus 69 clinical fellows in other programs.

As an integrated global health enterprise and one of the nation’s leading academic health care systems, with more than $8 billion in revenues for fiscal year 2010, UPMC has approximately 50,000 employees; nearly 5,000 affiliated physicians, including more than 2,700 employed by the health system; 20 tertiary care, specialty, and community hospitals serving 29 counties throughout western Pennsylvania; as well as specialized outpatient facilities, cancer centers, rehabilitation facilities, retirement and long-term care facilities, imaging services, doctors’ offices, and a health insurance plan covering 1.46 million members.

For the 11th time in recent years, UPMC appears on the U.S. News & World Report Honor Roll of America’s Best Hospitals for 2010. Out of more than 4,800 eligible hospitals nationwide, only 14 made the list, UPMC among them. In addition, UPMC is recognized for excellence in 15 of the 16 medical specialties included in the magazine’s survey, seven of which were ranked in the top ten. UPMC is the region’s only medical center to be ranked in any category. The specialties for which UPMC is recognized include:
UPMC's clinical programs have earned international recognition, drawing patients from around the world. In addition, the medical center is now transporting its expertise to other countries, including Italy (where it manages the Mediterranean Institute for Transplantation and Advanced Specialized Therapies in Palermo) as well as ventures in Ireland, Japan, the United Kingdom, and Cyprus.

With a long and distinguished record of pioneering and perfecting organ transplantation, UPMC dominates the field not only in terms of clinical expertise for the number and types of procedures performed but also in terms of research, development of new therapies, and training of transplant surgeons and physicians.

In recognition of its leadership in utilizing information technology to improve clinical outcomes and efficiency, UPMC has ranked among the nation's 100 Most Wired hospitals and health systems by Hospitals & Health Networks magazine since the inception of the distinction 12 years ago.

FOR MORE INFORMATION ABOUT UPMC:
www.upmc.com
CITY OF PITTSBURGH

The city of Pittsburgh is home to three rivers (the Allegheny and Monongahela converge here to form the Ohio), an estimated 720 bridges, nine colleges and universities, eight Fortune 500 companies, and the remnants of Fort Duquesne, which was built in the 1750s and later renamed Fort Pitt.

While approximately 311,000 people call the city of Pittsburgh home, the population of the 10-county region is approximately 2.6 million. The city is vibrant, safe, and affordable; it features the amenities of a large city with small-town civility. (In fact, the British magazine The Economist has given Pittsburgh the jolly good rating of most livable city in the United States.)

Pittsburgh has a variety of museums, three of which — the Carnegie Museum of Art, Carnegie Museum of Natural History, and Carnegie Science Center — bear the name of 19th-century industrialist Andrew Carnegie, who made his fortune in steel here. The city also has the Senator John Heinz Pittsburgh Regional History Center; the Mattress Factory, one of America’s leading museums for site-specific installation art; the Pittsburgh Children’s Museum; and the Andy Warhol Museum, one of the most comprehensive single-artist museums in the world.

If it’s culture one craves, the choices include the Pittsburgh Ballet Theatre, Pittsburgh Opera, Pittsburgh Symphony Orchestra, and Pittsburgh Civic Light Opera (musical theater), all of which perform in the Pittsburgh Cultural District. The Manchester Craftsmen’s Guild, a multidisciplinary, minority-directed arts and learning center (and home of a leading series of jazz concerts), is another of the city’s notable features. The city’s newest gem is the August Wilson Center for African American Culture, a venue for dance, music, art, theater, and other cultural, educational, and artistic events.

Stage presentations in Pittsburgh can be found at the Pittsburgh Public Theater, which makes its home in the O’Reilly Theater; the City Theatre; Pitt’s Kuntu Repertory Theatre, celebrated for its productions of works by African American playwrights; the Quantum Theatre, which is known for presenting site-specific productions in uncommon settings; the Pittsburgh Irish and Classical Theatre; and the Prime Stage Theatre, which focuses on young audiences.

Other amenities the city offers include the National Aviary; Phipps Conservatory and Botanical Gardens; Kennywood, one of the country’s grand old amusement parks; the Duquesne Incline and the Monongahela Incline; the Pittsburgh Zoo and PPG Aquarium; annual festivals celebrating jazz, art, and folk culture; the Pittsburgh Vintage Grand Prix; a mix of small galleries, including the Pittsburgh Glass Center and the Society for Contemporary Craft; and much more.

The Mothman Prophecies, Wonder Boys, Inspector Gadget, Hoffa, Lorenzo’s Oil, Silence of the Lambs, Flashdance, and Smart People are among dozens of motion picture productions filmed in the Pittsburgh area in recent years.

For sports enthusiasts, Pittsburgh’s three major professional teams — the 2009 Super Bowl champion Pittsburgh Steelers; 2009 Stanley Cup champion Pittsburgh Penguins; and the Pittsburgh Pirates, a franchise with a proud and successful past and a future of perennial hope and promise — provide plenty of reasons to cheer, or jeer, depending on the year. In addition, the University is home to a full range of varsity men’s and women’s sports teams, the Pitt Panthers, which typically offer some of the finest performances in college athletics.

Prominent people from Pittsburgh and nearby communities include musicians Stephen Collins Foster (honored by Pitt’s Stephen Foster Memorial, which houses the world’s largest collection of Foster materials), George Benson, Henry Mancini, Billy Eckstine, Oscar Levant, and Earl Wild; authors Gertrude Stein, Rachel Carson, August Wilson, Robinson Jeffers (who studied at Pitt), and David McCullough; entertainers Gene Kelly (a Pitt graduate), Fred Rogers (who graduated in child development here), Shirley Jones, Michael Keaton, Jeff Goldblum, Dennis Miller, Perry Como, Sharon Stone, Bobby Vinton, and Christina Aguilera; and sports legends Joe Montana, Arnold Palmer, Joe Namath, and Pitt graduates Tony Dorsett, Dan Marino, and Mike Ditka. Pulitzer Prize-winning author Michael Chabon and famed conductor Lorin Maazel weren’t born here, but they graduated from Pitt, as did Bebe Moore Campbell, a celebrated novelist who served on the University’s Board of Trustees until her death in 2006. Likewise, the city embraces some of its sports heroes, including Mario
From the East End to the West and the North Side to the South, Pittsburgh is home to 88 neighborhoods, many of them tacked onto hillsides or tucked into valleys and embracing distinct ethnic and cultural flavor plus traces of Old World attitudes and culture.

The city’s most famous neighborhood of all, Mister Rogers’ Neighborhood, the children’s television show that was broadcast from here for 33 years, reflected in its own simple and charming way a nice place to be, which is, perhaps, the best way to describe Pittsburgh.

FOR MORE INFORMATION ABOUT PITTSBURGH:
www.coolpgh.pitt.edu/ www.pittsburgh.net