

University of Pittsburgh

Research Development Report

Reporting Period:

July 1, 2009 - June 30, 2010

Commercial Development of Research

The Office of Technology Management (OTM), along with its affiliate Office of Enterprise Development (OED), serves as the hub of all innovation commercialization activities at the University of Pittsburgh. Together the OTM and OED facilitate the development of products and processes from University technology for the benefit of the University, its faculty and staff, and the community. At the same time, OTM fosters long-term relationships with industry in sponsored research, innovation development, technology licensing, and the formation of start-up companies.

To manage the University's fast-growing commercialization activities, OTM employs intellectual property protection experts, specialized licensing managers, business development and technology marketing professionals, education and outreach teams, and reporting and compliance personnel.

OTM services to Pitt innovators include:

- Assistance with preparing and submitting invention disclosure forms for commercial consideration
- Facilitation of the protection of intellectual property at the University via patents and copyrights
- Strategic planning for the successful transfer of innovations to the marketplace
- Negotiation of licenses and options for Pitt innovations to commercial interests
- Management of post-licensing reporting, revenue collection, and royalty distribution
- Educational opportunities in technology commercialization and "academic entrepreneurship"
- Unique opportunities for targeted interaction between Pitt innovators and industry, investors, and the community
- Facilitated brainstorming to assist Pitt innovators in developing marketable commercial applications
- Annual recognition for faculty, staff, and students who participate in the commercialization process

Pitt's total research expenditures (both direct and indirect costs) were approximately \$654 million in fiscal year 2009 (FY09; the latest year for which data are available). According to preliminary calculations for FY10, research activity generated 225 invention disclosures, which are evaluated by OTM in conjunction with the University Technology Transfer Committee for technical merit, patentability, and market potential. During FY10, OTM executed 80 technology licenses and options to industry, including three Pitt-originated start-up companies (including 24

deals in which other universities shared in ownership of the technologies and led in the facilitation of the licenses). In FY10, the United States Patent and Trademark Office issued 33 patents to the University of Pittsburgh. Since 2001, the University and its innovators have been issued 296 patents. OTM actively develops commercialization strategies for these and other Pitt-developed technologies.

The Association of University Technology Managers (AUTM), in its 2008 survey of U.S. universities (the latest survey data available), ranked the University of Pittsburgh 18th in sponsored research expenditures, with \$641.6 million in total funding. AUTM also ranked Pitt 19th in number of invention disclosures, with 244 disclosures that year. In addition, the University completed 58 technology licenses and options, placing it in a tie for 26th in the AUTM ranking. The number of issued patents totaled 36 in FY08, placing the University 23rd in ranking.

OTM and the University depend on the dedication of the University's multidisciplinary community of researchers to succeed in commercializing innovations for the benefit of humankind. Therefore, OTM's ongoing challenges are to: (1) engage more faculty, staff, and student innovators in the commercialization process and (2) improve the commercial merits of the innovations that are submitted via invention disclosures to OTM for commercial consideration.

Among the key initiatives created to reach those goals is OTM's Pitt Innovator Initiative, which continues to support the office's core mission by building and nurturing a growing community of "Pitt Innovators." Pitt Innovators represent those who have submitted invention disclosures and, therefore, are participating in the innovation commercialization process at Pitt. Several of OTM's ongoing outreach and education programs continue to encourage more Pitt faculty, staff, and students to become Pitt Innovators, thus engaging in the innovation development and commercialization process, and to recognize those who do. As a result of such efforts, invention disclosures rose from 165 in FY06 to 246 in FY07—an almost 50% increase—and remained at that level, with 244 disclosures in 2008. In 2009, 254 invention disclosures were submitted for consideration; and in 2010, due to a more judicious approach to disclosing new inventions, Pitt Innovators submitted 225 disclosures.

In FY11, OTM/OED will continue to improve the commercial potential of the innovations in the commercialization process and enhance their business development efforts. In FY10, OTM/OED worked closely with a diverse group of academic disciplines, as well as with a number of student interns, to develop the business cases for more Pitt innovations. OTM/OED hosted a number of networking and innovation showcase receptions, including "speed-dating" sessions between Pitt faculty and industry representatives, and hosted yet another meeting of their new Commercialization Advisory Committee, whose members represent entrepreneurs, investors, and economic development professionals, among others. All will continue to be refined and implemented in FY11. In addition, OTM/OED will continue to develop a comprehensive mentoring program that will bring together research faculty and outside entrepreneurs and other business-focused professionals to further develop technology cases with start-up company potential.

To celebrate the accomplishments of Pitt Innovators, OTM and the Office of the Provost continue to host an annual Celebration of Innovation. Invitations to the event are limited to those who filed invention disclosures during the previous fiscal year, those whose innovations were licensed to industry or start-ups in the past year, senior administrators from across campus, and the local economic development community. Those whose innovations were licensed are awarded Pitt Innovator Awards for their achievement. The fifth annual event on September 30, 2009, drew more than 150 attendees; and more than 60 faculty, staff, and student innovators received awards. The sixth annual event is being planned for October 2010.

Research Licensing Agreements

The University of Pittsburgh has developed the following standard licensing agreements for use in the licensing of research results related to medical devices, drugs, and other research discoveries:

- Biomaterials license agreement
- Inter-institutional agreement
- License agreement—exclusive
- License agreement—non-exclusive patented
- Option Agreement

Training Students and Health Professionals

The School of Medicine's Summer Premedical Academic Enrichment Program-Level I (SPAEP-D) is a seven-week program designed to be a preliminary education program for 12 minority and/or disadvantaged students who are graduating high school seniors or college freshmen or sophomores. The program reinforces science coursework, broadens competency in written and oral communication skills, and introduces health disparities issues. Participants for this institutionally funded program are selected from a national pool. However, preference is given to students from the University of Pittsburgh, Pittsburgh residents, and students from historically black colleges and universities (HBCUs).

The institutionally funded Summer Premedical Academic Enrichment and Research Program (SPAERP) Level II curriculum places six to eight underrepresented or disadvantaged upper level college students in laboratories for seven weeks to participate in research mentored by School of Medicine faculty. Each Friday afternoon, the students are engaged in medical school application skills seminars taught by the Office of Admissions, as well as study skills strategy sessions. They attend Medical College Admissions Test (MCAT) preparation workshops two evenings per week. Program participants spend one or two afternoons shadowing clinicians and attending weekly brown bag lunch seminars given by School of Medicine faculty, residents, fellows, and community physicians. They also participate in mentoring and networking activities held in conjunction with other summer programs. Each student has a "mock interview" with a School of Medicine faculty member and receives feedback on his/her performance. The program's capstone experience is a presentation of the student's research with mentors and peers in attendance.

The University of Pittsburgh Cancer Institute (UPCI) has established a formal education and training partnership with Hampton University, a minority training institution in Virginia. The long-term goal of this partnership is to develop a model for increasing the number of minority scientists involved in cancer research. Now in its sixth and final year, this partnership has augmented the undergraduate curriculum at Hampton by establishing a cancer-oriented teaching laboratory, two new undergraduate courses related to cancer, and a two-year enrichment track for select students who undertake research projects at the University of Pittsburgh School of Medicine. All classes are jointly developed and taught by UPCI and Hampton faculty members. Six Hampton faculty members have augmented their knowledge of cancer as a result of the partnership, and several research collaborations between UPCI and Hampton faculty members are consequently being initiated. During SFY 2009, programs and benefits arising from this partnership continued to accrue. Of the 18 Hampton summer undergraduates who participated in laboratory training at Pitt, 16 are accepted or have matriculated into graduate or professional schools. In 2009 one of these students applied to and was offered acceptance into Pitt's School of Medicine. This student, who had continued post-baccalaureate training at the University of Pittsburgh Cancer Institute, published three manuscripts, including a first author manuscript in *Leukemia*, a highly prestigious international journal. Two additional students undertook epidemiology-related research at Pitt during the summers of 2009 and 2010. Those students had taken a new course on environmental oncology and epidemiology that was initiated and taught to Hampton undergraduates by Pitt and Hampton faculty. Beyond the student level, a Hampton professor and a Pitt professor have had a formal collaboration to examine possible mechanisms through which pesticides could be carcinogenic. The career trajectories of the students who have been reached through this partnership (most going to graduate or professional school, two-thirds continuing basic or clinical research) attests to the far-reaching and longitudinal benefits of this initiative.

The Center for Public Health Practice (CPHP) was established in 1995 with an appropriation from the Commonwealth of Pennsylvania. CPHP's vision is a sustainable and resilient public health system in Pennsylvania. Its mission is to be a catalyst for engaged scholarship in public health through applied research, practice-based teaching, and professional service. Numerous activities interface with all departments at the Graduate School of Public Health (GSPH), the Dean's Office, and the Multidisciplinary Master of Public Health (MMPH) program, utilizing and sharing expertise throughout the school. CPHP's goals are to:

- Develop innovative resources and practical solutions for public health problems at the local, state, and national levels
- Provide education and training for students, practitioners, and leaders in public health and other professions
- Create partnerships for mutual learning between academic institutions and public health agencies
- Apply principles of quality assurance and quality improvement to continuously improve performance in scholarship, professionalism, and management

CPHP houses several subsidiaries, including the Pennsylvania & Ohio Public Health Training Center, the University of Pittsburgh Center for Public Health Preparedness, and the Public Health Adaptive Systems Studies.

Pennsylvania & Ohio Public Health Training Center (POPHTC) is one of 14 public health training centers across the United States funded by the Health Resources and Services Administration (HRSA). POPHTC, now in its 10th program year, is a partnership with GSPH, Ohio State University's College of Public Health, and the public health workforce in both states. Its aim is to strengthen the competencies and improve the performance of public health workers through dynamic, innovative, and effective training and educational opportunities. POPHTC offered 37 different training titles during the most recent reporting period, nine of which were web-based. Of the 821 public health workers reached, 10% (83) participated via web-based training, and 90% (738) participated via live training. These example training titles show the variety of programs offered:

- *Empowering Conversations in a Changing World – 1st Annual Leadership Management Institute*
- *Excellence in Reporting Science: A Writing Workshop for Public Health Professionals*
- *Grant Writing: Real, Relevant, Right NOW!*
- *Project Planning: The Solutions Map Model*

The University of Pittsburgh Center for Public Health Preparedness (UPCPHP) is one of 27 federally-funded preparedness centers at accredited schools of public health. UPCPHP links academic and practical expertise to state and local health agency needs and trains public health, law enforcement, school, and medical personnel as well as public health students to respond to bioterrorism, infectious disease outbreaks, and other public health threats and emergencies. Several programs that provide preparedness training reside under the UPCPHP umbrella:

- The School Preparedness Program is a partnership of the UPCPHP, the Pennsylvania Department of Health (PADOH), and the National Association of School Nurses (NASN). In recognition of its work with school nurses, the center received the “Friend of School Nursing” Award at the Pennsylvania Association of School Nurses and Practitioners Annual Education Conference in Pittsburgh. During the current reporting period, the School Preparedness Program developed an innovative and unique four-part curriculum in response to these needs.
- This year the Pennsylvania Preparedness Leadership Institute collaborated with PA DOH to offer six sessions of *Crisis Leadership* at the 2010 PADOH Regional Public Health Institutes. In this course, participants examined the competencies of leaders in contrast to those of managers, with a focus on the significance leadership plays in one’s ability to prepare for and respond to threats.
- The Rural Preparedness Training Program provides a unique opportunity for non-traditional secondary responders to meet face-to-face and train with their community’s first responders on issues of public health importance. The training *What All Rural Responders Must Know about Public Health Emergencies* was presented to a total of 353 participants in 19 sessions, reaching participants from 21 rural Pennsylvania counties. A partnership with PADOH allowed the rural program to develop an online training module for the PA Prepared Learning Management System to teach strategies for training rural professionals and volunteers and methods of integrating them into existing emergency management frameworks.
- The Public Health Preparedness Law Program serves as a resource for preparedness law information to individuals with responsibility for public health preparedness and response. The highlights of program activities during 2010 include: the development of resources to train judges in public health law and science that will be delivered to the judiciary in five

states in a two-day seminar format during the late summer and fall of 2010; the delivery of emergency preparedness law lectures in several courses across the University community; and the delivery of an on-line two-credit Emergency Preparedness Law and Ethics Course.

- The Graduate Certificate Program in Public Health Preparedness and Disaster Response, co-sponsored by the GSPH Departments of Behavioral and Community Health Sciences and Environmental and Occupational Health, offered four required and three elective academic preparedness courses in 2009–10, reaching 62 students.
- In 2009, UPCPHP presented its second Summer Institute, which reached 16 students in three courses.
- UPCPHP supported students through paid internships and fellowships, the Student Public Health Epidemic Response Effort (SPHERE), and the University of Pittsburgh School of Medicine Public Health Area of Concentration (AOC). SPHERE, founded by GSPH graduate students, provides essential assistance to local and state agencies and enables public health students interested in epidemic response, community preparedness, and hands-on experience to participate in outbreak or disaster response activities and community health events and promotions. This year SPHERE established a working partnership with the Allegheny County Health Department and PADOH, assisting with a wide variety of projects, including:
 - H1N1 vaccination clinics
 - Multi-county measles outbreaks
 - Region 13 exercises and drills
 - Methicillin-resistant *Staphylococcus aureus* detection and prevention
- In fall 2009, through collaboration with the UPCPHP, the University of Pittsburgh School of Medicine created a Public Health Area of Concentration. The AOC is designed to supplement and complement the required medical curriculum and offers medical students an opportunity to pursue in-depth experiences in public health research and practice. As a part of this collaboration, the Center offers *Introduction to the Real World of Public Health: A Mini-Course* and a month-long Public Health Field Practicum.

Public Health Adaptive Systems Studies (PHASYS) is one of nine Preparedness and Emergency Response Research Centers funded through a five-year grant from the Centers for Disease Control and Prevention. A central assumption within PHASYS is that the public health system (PHS) must *adapt* from its routine functioning in order to be effective in an emergency. The research focus takes two parallel approaches to understanding this adaptive response: (1) to develop criteria and generate indicators to measure the effectiveness and efficiency of preparedness planning and emergency response within PHS and (2) to conduct agent-based systems modeling. The resulting research evidence will have applications for both evidence-based preparedness planning and information-based emergency response decision making. Though only two years into the study, PHASYS:

- Has used data from various public health departments to develop a draft tool to measure local PHS emergency response burden
- Developed draft adaptive system indicators to study PHS response
- Works closely with a National Advisory Group to ensure the national application of research findings

- Has conducted six focus groups with representatives of local PHSs across the country to identify the legal and ethical issues affecting local PHSs' ability to build emergency preparedness capacity within vulnerable populations they serve
- Has completed data collection and coding of all statutes directing emergency preparedness and response activities in three states, including Pennsylvania (legal network and other statistical analysis of these data is currently underway)
- Has developed two agent-based models of preparedness and response, currently in refinement (one local, one national)
- Has designed and developed an electronic decision-support dashboard, currently in the prototype stage, for hospitals to monitor and display the status of multiple interdependent engineering systems
- Is studying dynamic relationships among the hospital, public health, and emergency medical services in 13 local counties and, having already extensively studied Allegheny County, is moving on to others

The elimination of racial and ethnic disparities in disease prevalence and access to health care is one of the core missions of the University's interdisciplinary Center for Minority Health (CMH), a campus-wide initiative based in GSPH and an NIH-designated Research Center of Excellence in Minority Health and Health Disparities. CMH addresses health disparities in seven priority areas: infant mortality, cancer, diabetes, cardiovascular disease, HIV/AIDS, immunization, and mental health. While CMH focuses on the core academic values of teaching, research, and service, its teaching highlights include, but are not limited to, the following for this reporting period:

- July 2010 concluded CMH's third round of collaborations with the Kellogg Health Disparities Scholars Program as a postdoctoral training site. Both Besangie Sellars, PhD, (University of Michigan, developmental psychology) and Jamie Chatman, PhD, (Rice University, statistics) completed their fellowships at this time. This two-year fellowship provides research training and career development for young scholars committed to understanding and applying a multidisciplinary approach to studying the determinants of health inequalities and inequities. Both trainees concluded their research, with Dr. Chatman examining factors associated with depression among single black mothers and Dr. Sellars studying aging and manhood in older African American men. Supriya Kumar, PhD, (Carnegie Mellon University, biological sciences) will complete a one-year appointment at the end of August 2010. Her research during this year has focused on the reasons behind racial/ethnic disparities in disease as well as the determinants of vaccine acceptance and other primary preventive behaviors during the 2009 H1N1 pandemic. Dara Mendez, PhD, (University of North Carolina, Chapel Hill, maternal and child health) began her second year at CMH as a Kellogg postdoctoral scholar.
- Pitt's Minority Health and Health Disparities Graduate Certificate Program will enter its fifth year in fall 2010 and continues to develop and mature, with the appointment of a new program director and two new adjunct faculty appointed through the Department of Behavioral and Community Health Sciences. The 15-credit program is co-sponsored by CMH and GSPH's Department of Behavioral and Community Health Sciences. The program's goal is to provide an interdisciplinary vehicle for students to pursue and strengthen individual career interests relevant to minority health and health disparities research. The

program continues to receive increased interest and will undergo some revisions and expanded marketing to attract more students beyond GSPH.

- Annual funding through the Office of the Provost (Commonwealth Development Fund) to CMH supports the center's Commonwealth Health Disparity Scholars Program. For this academic year, \$54,000 was awarded to GSPH students. These funds may be used for partial tuition or other school-related expenses like books or computers.

Commercial Research Development Training

During this reporting period, the Office of Technology Management (OTM) engaged in a series of activities to provide training opportunities to faculty, staff, postdoctoral fellows, and graduate students related to the commercialization of research. These activities included the following:

- In fall 2009, OTM and the Office of the Provost once again hosted a seven-week course, "Academic Entrepreneurship: The Business of Innovation Commercialization" for faculty and their research students. The course focuses on the early stages of commercial innovation development and teaches participants how to transform their ideas and research into commercially viable business opportunities and, this year, attracted 32 faculty, staff, and students. The course had been revamped in FY08 to include a more hands-on component that allowed participants to work on developing business-opportunity cases for their own technologies throughout the course. Many of those attendees now are working with OTM to commercialize their innovations.
- The Office of Enterprise Development (OED), in February 2010, hosted its own 10-week commercialization course, called "From Benchtop to Bedside: What Every Scientist Needs to Know." The course, which attracted 32 faculty, staff, and student participants, focuses on the innovation development/commercialization process, but with particular emphasis on life sciences-related technologies, regulatory issues, and topics such as business models based on insurance reimbursement. This course also had been revised/refined to include two additional short courses on the patenting process and government regulatory processes. The short courses followed the main course in spring 2009; both were well attended.
- OTM/OED conducted at least 10 introductory presentations in departments across campus, as well as to student classes, reaching an estimated 250-plus faculty, staff, and students in FY10. All such outreach efforts are designed to generate a new awareness of Pitt's commercialization endeavors and to encourage greater collaboration both internally and externally. Every presentation attendee received additional commercialization education materials developed by OTM/OED.
- OTM/OED have entered discussions with Pitt's law school, engineering school, and business school regarding the development of a full-fledged certificate or master's degree program focusing on innovation-driven entrepreneurship. Discussions will continue through 2011.
- In 2008, OTM created a new Technology Commercialization Fellows program for students interested in the commercialization process. As part of the program, students—mainly from Pitt's business programs (with some science background)—join the OTM/OED staffs on a part-time basis and provide market research, competitive analysis, and industry contact development services for both offices. The fellowship program has continued into FY10.
- One OTM staff member maintains board of director ties with the MIT Enterprise Forum of Pittsburgh, a regional entrepreneurial education and networking organization that emphasizes technology-based entrepreneurship. As part of OTM's affiliation, which also includes

sponsorship, staff members proactively encourage faculty, staff, and students to attend those forums for both the educational and entrepreneurial networking benefits. Another OTM staff member serves on the board of the Indus Entrepreneurs (TiE) organization, which promotes entrepreneurship.

- OTM/OED distributed more than 1,000 “Commercialization Coaching Cards” to Pitt Innovators in FY10. The cards provide tips on how to effectively convey innovation ideas to potential outside partners, including research collaborators, investors, and entrepreneurs.
- In October 2009, OTM hosted its fifth annual Celebration of Innovation before an audience of more than 150 innovators, as well as both University and external supporters. Plans are now underway for the fifth annual celebration, which will be held October 5, 2010.
- OED hosted six Limbach Lecture Series programs in FY10, featuring prominent local and national business/scientific figures and promoting entrepreneurship. More than 25 faculty members attended each lecture.

Outreach to Businesses Regarding Recent Research Developments

During this reporting period, the Office of Technology Management (OTM) and Office of Enterprise Development (OED) engaged in following outreach activities to promote Pitt technologies and to generate networking opportunities with regional businesses:

- Database marketing—OTM continued to post its portfolio of available innovations on searchable online databases, including TechFinder, which is accessible through the OTM Web site by industry, investors, and other outside parties. Included with each case listed are the title, non-confidential abstract, available patent link information, inventor Web site links, and technology licensing manager contact information. OTM also continues to participate in i-Bridge, a nonprofit, online marketing network that posts technologies from universities across the country. The network provides ongoing leads from interested industry representatives.
- I-Lab Innovation Brainstorming Workshops—OTM, with support from the Office of the Provost, developed and hosted two workshops in FY09 in an effort to explore potential new commercial applications for the innovations of Pitt Innovators. Participants included Pitt research faculty, business students, and technology-based economic development representatives from the region. The three-hour sessions were professionally facilitated and led to a number of new ideas
- Business development—OTM and OED continued to pursue the development of new long-term relationships with industry for the purposes of sponsored research, clinical trials, and innovation out-licensing. Targeted companies included Pfizer, Glaxo Smith Kline, Roche, Johnson & Johnson, PGx Therapeutics, Merck Sanofi-Aventis, Z-Cubed, Takeda, and Centocor. OTM/OED representatives met with some companies at their development offices, while others visited Pitt throughout FY09. As part of this effort, OTM/OED developed a new Partner with Pitt brochure to showcase Pitt’s research, including strengths, prominent centers/institutes, and exemplary innovators.
- Commercialization Advisory Committee—OED once again hosted a gathering of its Commercialization Advisory Committee to review and discuss potential start-up opportunities among Pitt innovations. The group is made up of business leaders and successful Pitt alumni.

- Entrepreneurial Speed-dating—OED began to test this concept in 2006, bringing together pre-screened faculty and industry representatives for many short, tightly structured meetings to explore potential common interests. In FY10, OED hosted two sessions.
- Technology conferences—OTM and OED representatives attended numerous conferences during this reporting period to meet with specific industry representatives and market specific innovations that are available for licensing. The effort led to a number of qualified leads, which are now being followed up. Among the conferences OTM/OED attended were the Association of University Technology Managers (AUTM) Annual Conference in Orlando, the BIO International Conference in Atlanta, the Licensing Executives Society conference in Chicago, and BIO Windover, a bio-partnering conference.
- Community involvement—OTM/OED have continued to reach out to the community and industry through the MIT Enterprise Forum of Pittsburgh, 3 Rivers Venture Fair, Entrepreneur’s Growth Conference, local Indus Entrepreneurs (TiE) events, OED’s Limbach Lecture Series, and quarterly BioBlast receptions; the BIO International Conference; annual AUTM conference; the Association for Corporate Growth-Pittsburgh; State Science and Technology Institute (SSTI); the Pittsburgh Technology Council’s Tech 50 Awards program; and several other technology-based industry conferences. OTM/OED sponsors many of those events and manages exhibit booth to share Pitt’s technology commercialization activities.
- Technology Showcase—OED worked with the Office of Academic Affairs, Health Sciences, to organize the 8th annual Technology Showcase reception as part of Pitt’s annual celebration of science and research, “Science2009.” This event provided industry and venture capitalists with the opportunity to view and explore the latest innovations coming out of Pitt, with a focus on commercialization. The event, which also included industry/community mentors for Pitt Innovators, proved instrumental once again in creating many critical relationships that have resulted in technologies being licensed to new and existing companies.
- Hosting visitors—On several occasions in FY10, the Pittsburgh Council for International Visitors included OTM as a target destination for international visitors interested in technology-based economic development. During this reporting period, OTM met with delegations from Germany and Chile, as well as economic development delegations from Baton Rouge, Louisiana and Maryland.
- Annual report—OTM, in September 2009, published its fourth annual report showcasing Pitt Innovators and their commercially viable innovations. OTM sent the report to nearly 1,000 companies, economic development agencies, investment firms, foundations, and others to promote commercialization and foster more interaction with industry. The report also was distributed to nearly 500 faculty, staff, and students at Pitt in FY10.
- Celebration of Innovation—OTM and the Office of the Provost hosted the fifth annual celebration in September 2009 to recognize the involvement of faculty, staff, and students in the commercialization process. Awards were given to those whose innovations were licensed in the last year. To build awareness of Pitt’s commercialization efforts, OTM invited dozens of local companies, investors, economic development representatives, and foundations to attend.
- New exhibit booth—OTM/OED developed a new exhibit booth in 2010, along with related materials, around the “Partner with Pitt” theme to better convey Pitt’s partnering message.

- New capability materials—OTM/OED began the development of “Partner with Pitt” documents that showcase a series of cross-disciplinary research strengths at Pitt, including medical imaging, neuroscience, inflammation, vaccine research, and energy, among others.
- New Pitt Innovator’s Guide to Technology Commercialization—This guide is aimed at motivating and educating Pitt Innovators about technology commercialization at Pitt. It is being distributed during faculty presentations and via OTM’s Web site.

Research Development Collaboration

The University’s principal partner in research development and commercialization is the University of Pittsburgh Medical Center (UPMC), which directly supports selected research and research infrastructure initiatives, as well as investing in promising intellectual property developed by Pitt faculty members. During a previous reporting period, UPMC and the University of Pittsburgh entered into an agreement with the Italian president, the president of the region of Sicily, and Italy’s National Research Council to operate a major new research center in Sicily. (This request complements the successful development by UPMC of a tertiary care hospital in Palermo, which specializes in organ transplantation and other complex procedures; the facility was funded by the Italian government and is managed by UPMC.) The \$400 million Biomedical Research and Biotechnology Center (BRBC) will house programs that build on Pitt’s strengths in computational and structural biology, vaccine development, drug discovery, molecular imaging, tissue engineering/regenerative medicine, and neuroscience. Italy will construct the 300,000-square-foot center in the province of Palermo. The facility is expected to open its doors by 2013.

During the current reporting period, the partnership has continued a fellowship program established two years ago. To date, 20 young Italian researchers are receiving research training and experience at the University of Pittsburgh in the fields of structural biology, computational biology, neurosciences, pharmaceutical research, vaccine development, tissue engineering/regenerative medicine, biomedical devices/development of nanotechnologies, molecular imaging, and related areas. The progress of these fellows, who will comprise the vanguard generation of investigators in the BRBC, is reviewed by the program’s scientific committee, which is headed by Arthur S. Levine, MD, Pitt senior vice chancellor for the health sciences and dean, School of Medicine.

The University of Pittsburgh also works closely with UPMC’s International and Commercial Services Division (ICSD), which invests in strategic partnerships, commercial ventures, and clinical operations, joining with industry innovators to form and support businesses focused on developing breakthrough technologies and delivering advanced patient care. A number of the technologies ICSD has advanced have emerged from intellectual property created by Pitt faculty members. For example, during a previous reporting period, the Office of Strategic Business Initiatives (SBI) created a new wholly owned subsidiary of UPMC, SimMedical, in collaboration with the University of Pittsburgh’s Peter M. Winter Institute for Simulation Education and Research (WISER). SimMedical provides expertise in the creation and management of integrated health-care simulation training programs, featuring curricula and a web-based simulation management system developed by leading health-care and simulation experts. Another innovation developed by University faculty/UPMC physicians is ImPACT, a user-friendly

Windows-based testing program designed for the diagnosis and management of sports-related concussions. ImPACT is currently the most widely used computerized concussion treatment program in the world and is used by athletes from the grade school to the professional level.

Through its National Institutes of Health-funded Clinical and Translational Science Institute (CTSI), Pitt is working with UPMC to bolster participation in clinical research trials by developing an institutional registry of potential clinical trial participants. The Research Participant Registry is a database of individuals who are willing to participate in clinical research at the University of Pittsburgh and/or UPMC plus an ongoing list of current studies being conducted by Pitt/UPMC. The goals of the voluntary registry are to provide community members and patients in the UPMC network opportunities to receive educational materials about clinical research and to get their permission to be contacted for study recruitment. Through the UPMC electronic health record, the registry matches patients who express interest in taking part in clinical studies with a list of current trials being conducted through the University and UPMC. The CTSI registry leverages not only UPMC's reach (more than 4.5 million outpatient visits and more than 180,000 inpatient admissions a year) but also its investment of more than \$500 million in an interoperable, long-term electronic health record system. The Research Participant Registry is also available to patients who do not receive their care at a UPMC site, although these sites cannot provide the same level of electronic matching as UPMC sites. As of 1 July 2010, the registry had achieved the milestone of enrolling more than 10,000 people.

The University of Pittsburgh and neighboring Carnegie Mellon University have collaborated for many years on the development of research, as well as licensable products from that research. For example, the fundamental value of DNA analysis for the advancement of science was evident long before the full sequencing of the human genome was completed in 2003. Today, so many studies require sophisticated, next-generation sequencing of multiple small RNA or DNA genomes that the University of Pittsburgh is working to streamline data-sharing capabilities through the Pittsburgh Supercomputing Center (PSC). Established by Pitt, Carnegie Mellon, and the Westinghouse Electric Company in 1986, PSC houses some of the most powerful cyberinfrastructure currently available for high-performance computing, communications, data handling, and data storage. At Pitt, next-generation sequencing enables microbiome-based investigations, as well as those involving infectious diseases, congenital heart defects, cancer, and others that require bioinformatics support. Other Pitt-Carnegie Mellon collaborations include the Center for the Neural Basis of Cognition, the PhD program in computational biology, the Molecular Biophysics and Structural Biology Graduate Program, and the National Science Foundation-funded Quality of Life Technology Center, among others.

The RAND-University of Pittsburgh Health Institute (RUPHI) is a formal collaboration between RAND Health, a division of the RAND Corporation, and the University of Pittsburgh Schools of the Health Sciences. RUPHI's primary goal is to build a collaborative, interdisciplinary health services research enterprise focused on addressing important local and national health care problems. The collaboration encompasses shared activities in research, education, and training, with a particular focus on creating and broadening synergies in women's health, behavioral health, type 2 (bedside to practice) translational research, health and health care disparities, patient safety, and global health.

RUPHI staff currently include 92 faculty from the University of Pittsburgh and 38 health researchers and staff from the RAND Pittsburgh office, including one junior faculty member with a joint appointment at the University of Pittsburgh and RAND. To date, RAND and University of Pittsburgh investigators have conducted 39 collaborative research projects, supported by over \$110,000,000 in external funding.

Beginning in fall 2006, RUPHI instituted a pilot grant program designed to forge productive working relationships among junior and senior investigators at both RAND and the University of Pittsburgh that would lead to more substantial externally funded RUPHI grant applications. To date, RUPHI and its co-sponsors have issued nine pilot grant awards at \$25,000 each in three areas of research: translating research into practice (with Pitt's Clinical and Translational Science Institute), women's health (with Magee-Womens Research Institute), and mental health (with Western Psychiatric Institute and Clinic). Representative projects include these:

- Feasibility of a Telehealth Kiosk Intervention for Community-Dwelling Older Adults
- Latina Postpartum Depression: Defining Terms and Treatment
- Investigating Associations between Media Use, Depression, and Anxiety using Ecological Momentary Assessment