The Penn State Milton S. Hershey Medical Center and Penn State College of Medicine Research and Graduate Studies Mission is to promote, foster, and sustain the highest quality research, training, and career development within the Medical Center. To fulfill this purpose, the Research Mission leaders:

- Support basic, clinical, and population-based research endeavors of the Medical Center through initiation, coordination, analysis, and evaluation;
- Initiate and sustain training and career development of students, staff, and faculty;
- Assist in the transfer of scientific and technological discoveries of the faculty to the commercial sector for public and economic benefit;
- Assure employees, students, patients, and visitors, as well as the community around us, of a safe environment through compliance with government regulations and good safety practices;
- Provide a program of humane animal care and use that meets or exceeds the highest national standards;
- Educate the public about the value of the research enterprise; and
- Promote the Medical Center regionally, nationally, and internationally.

In carrying out these responsibilities, the Research Mission leaders demonstrate a strong commitment to exceptional service and the highest professional and ethical standards to assure the integrity of the research effort. Through our search for ways to prevent, diagnose and treat disease, we are confident we will touch the lives of all those we serve.
This first-ever “Report to Research Stakeholders” is meant to highlight selected research accomplishments from the past year and to communicate goals and strategies for our future. Penn State Milton S. Hershey Medical Center and Penn State College of Medicine have recently placed renewed emphasis on the discovery, validation and transfer of new knowledge. Since July 2000, basic and clinical research funding has grown by 52 percent, from $54.5 million in 2000, to $70.1 million in 2001, to more than $83 million in fiscal year 2001-02.

While impressive, our successes thus far only mark the beginning. With the current growth in funding, we rank 64th out of 125 medical schools nationwide in extramural research funding. I’m confident that with a focused and determined approach, we can and will join the top third of all funded research centers in the nation within the next decade. My “72 in 7” plan lays out a goal for a $72 million increase in National Institutes of Health dollars in seven years for Penn State, and a $72 million increase in total dollars in seven years for the College of Medicine.

We can achieve this through closer collaboration with our colleagues at University Park, our friends and partners in the private sector and government. The Life Sciences Greenhouse of Central Pennsylvania and the tobacco settlement funds add a new dimension that is already opening new doors and expanding the possibilities for medical breakthroughs.

Our collective success is explained by the strong commitment of our physicians and scientists to expand the pool of scientific knowledge, find innovative therapies for diagnosing, treating and preventing disease, and inspire future physicians and researchers. Ultimately, these efforts allow us to touch the lives of people everywhere through improved health, quality healthcare, and higher quality of life.

As we celebrate our success, we reflect on a year filled with tragedy, sorrow and loss. The events of September 11, 2001, changed us all. Our response: Develop programs that will provide us with opportunities to conduct biodefense research and play a key role in our country’s bioterrorism preparedness.

Opportunity for research growth is upon us. We must take full advantage of our resources with the ultimate goal of making life better for the people we serve. When we succeed, our patients win.

Jay Moskowitz, Ph.D.
Associate Vice President for Health Sciences Research, Penn State University
Vice Dean for Research
Penn State College of Medicine

Message from the Vice Dean for Research

Opportunity for research growth is upon us. We must take full advantage of our resources with the ultimate goal of making life better for the people we serve. When we succeed, our patients win.
We're trying to understand the biological reasons why vision is impaired,” Gardner said. “Then we'll use those findings to do preclinical testing of drugs. We intend to get those preclinical tests translated into clinical trials quickly to ensure that patients reap the benefits of the research as soon as possible.”

Investigators at Penn State College of Medicine already have shown that the normal functions of all cell types in the eye – nerve, vascular, macroglial, and microglial cells – are disturbed by diabetes. The alterations in the cells occur along the same time line as the changes in the retina. Retinal changes may include blood vessel leakage and nerve cell death.

The center will make it possible for an integrated, multidisciplinary approach to gain an understanding of the complex metabolic and cellular alterations caused by diabetes and to define possible targets for medical interventions.

The researchers who are part of the center are experts in metabolism, signal transduction, gene expression, vascular biology, neurobiology, transgenic animal models, neuroimmunology and clinical ophthalmology.

“What we’ve tried to do is bring together virtuosos in their respective scientific fields and work together in a new way,” Gardner said. “This center gives us a chance to join forces and make significant treatment improvements for a condition that affects millions.”

Primary Research Team

Thomas W. Gardner, M.D., M.S., center director
Leonard S. Jefferson, Ph.D., center co-director
David A. Antonetti, Ph.D., center associate director
Samer W. Al-Murrani, Ph.D.
Alistair J. Barber, Ph.D.
Arnisban Basu, Ph.D.
Sarah K. Bronson, Ph.D.
Mark Kester, Ph.D.
Scot R. Kimball, Ph.D.
J. Kyle Kraday, Ph.D.
Seigey G. Krenkle, M.D., Ph.D.
Allen R. Kurzelson, M.A.
Kathryn F. LaNoue, Ph.D.
Steven W. Levison, Ph.D.
Kimberly A. Neely, M.D., Ph.D.
David A. Quillen, M.D.
Lakshman Sandracesugaram, Ph.D.
Ian A. Simpson, Ph.D.
Yuping Xu, Ph.D.
Joanna Floros, Ph.D., professor of cellular and molecular physiology, provides a model for collaboration between basic scientists and clinicians. Her work with clinicians and a prestigious $2.7 million National Institutes of Health MERIT award allow Floros to investigate genetic variants in families and how the variants may contribute to respiratory distress syndrome and other chronic lung diseases in babies.

One arm of the study is heavily dependent on clinical collaboration. So, Floros works with Neal Thomas, M.D., assistant professor of pediatrics, Division of Critical Care Medicine, to identify people who may provide genetic material for her studies.

“Neal has come on board full of energy and is already part of my study to recruit patients with respiratory distress syndrome and chronic lung disease and their parents and get clinical information for us for the study,” said Floros, who is also Thomas’ faculty mentor. “I love working with clinicians because that’s where my heart is, at the interface of clinical and basic research,” Floros said. “When I see a young investigator like Neal with that enthusiasm, it energizes me.”

When he came to the Medical Center in June 1998, Thomas became involved in small clinical projects at first.

“I was a whole animal pharmacology/physiology researcher during my fellowship but when I came to Hershey, I was looking to answer research questions that had the possibility of having immediate impact on my patients,” Thomas said.

In addition to his research, Thomas is also part of the National Institutes of Health-sponsored K30 program that is designed to increase the number of physicians pursuing careers in clinical research. This will allow him to earn his Master of Science in Health Evaluation Sciences.

Floros also works with Colin MacNeill, M.D., assistant professor of obstetrics and gynecology, and James Kendig, M.D., professor of pediatrics, Division of Newborn Medicine.

Floros recognizes a great deal of support right now at the institution for collaboration between basic and clinical scientists.

“One of the real advantages of being a clinical department chair in a medical center such as this one is that you can support the research interests of physician investigators that are closely aligned with outstanding scientists in the basic sciences,” said Craig Hillemeier, M.D., professor and chair of pediatrics, and medical director of Penn State Children’s Hospital. “The ability to support the work of Dr. Thomas and Dr. Floros is an exciting opportunity for the Children’s Hospital.”

“I’m always trying to support research because, as a nurse, I know it will advance medicine. This idea was reinforced when my son, Kevin, who was born prematurely, benefited from research on surfactant that was done years ago. We hope that, years from now, our involvement in Dr. Floros’ trial might help someone else.”

–Terri Thomas, wife of Neal Thomas, M.D.
About $3.4 million of National Institutes of Health matching grants are funding the expansion and renovation of two Penn State Milton S. Hershey Medical Center facilities – the General Clinical Research Center and the Animal Research Facility.

Nearly $1.4 million is funding the expansion of the GCRC, a facility that provides staffing, space and other specialized support services for NIH-funded researchers to conduct clinical investigations. The 3,000 square foot GCRC will more than double in size after construction and will include the addition of six procedure rooms, equipment for exercise physiology studies, a bone density scanner and special facilities for pediatric patients.

“This physical expansion as well as the addition of new equipment will allow us to support the boom in genetic research at the College of Medicine. C. Max Lang, D.V.M., chair, Department of Comparative Medicine, said that in the last two years, he’s seen a 40 percent increase in the need for genetically engineered research mice for investigations. "The genetically engineered mice are better animal models for research and give our scientists the ability to speed up their investigations," Lang said.

The Animal Research Facility expansion also provides facilities for new research faculty added through the Medical Center’s recruitment efforts. Both expansions are signs that the commitment to research is strong and still growing.

Construction at the GCRC began in September and should be completed by January 2003. Whereas the GCRC construction is just starting, the 10,000 square foot expansion of the Animal Research Facility recently was completed.

The $2 million project added 15 animal rooms that were necessary to support the boom in genetic research at the College of Medicine. C. Max Lang, D.V.M., chair, Department of Comparative Medicine, said that in the last two years, he’s seen a 40 percent increase in the need for genetically engineered research mice for investigations. "The genetically engineered mice are better animal models for research and give our scientists the ability to speed up their investigations," Lang said.

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Diane Triboutot, M.D., associate professor of dermatology, was awarded a $1.3 million NIH grant to study what controls oil production in the skin and how it can lead to acne. This was the first NIH RO1, or independent investigator grant, awarded to Triboutot and to Dermatology, which became the College’s newest department July 1, 2002. She also was honored with the 2002 Society for Investigative Dermatology’s Goldfarb Acne Research Award, which is meant to encourage new research in acne.

The Penn State Cancer Institute was allotted $600,000 of tobacco settlement money for its role in the Pennsylvania Cancer Alliance, a group of 10 institutions that will collaborate closely to form a bioinformatics consortium. The project will create infrastructure that will enable researchers to investigate the clinical usefulness of molecular biomarkers for cancer to assess patient prognosis, predict patient response to therapy and/or predict the course of disease.

Cynthia J. Reighard, M.S.N., R.N., was awarded first place at the 21st Annual Congress of the National Orthopedic Nurses Association for her poster presentation of a study analyzing pain and satisfaction of pain care in postoperative pediatric orthopaedic patients. The study evaluated pain in two groups – children ages six to nine and ages 10 to 18 – who had either hip, spine or lower extremity/foot surgery. The study used the Penn State Children’s Hospital Pain Care Report Card and showed that age does not appear to influence satisfaction with pain care.

A discovery by graduate student Gang Peng, Ph.D., under the direction of James Hopper Ph.D., professor of biochemistry and molecular biology, led to a Proceedings of the National Academy of Sciences publication that corrected a theory widely accepted by scientists about how certain genes are regulated by a so-called gene switch. The discovery reveals that a protein previously thought to be in the nucleus of the cell actually resides in the cytoplasm, the part of the cell that surrounds and interacts with the nucleus.

The findings offer a new set of parameters for understanding gene switches as scientists search for the reasons why faulty gene switches cause illness.

The Pennsylvania Department of Health awarded the College $5.8 million from the tobacco settlement. Henry J. Donahue, Ph.D., associate professor of orthopedics and rehabilitation, and Alan Snyder, Ph.D., professor of surgery, were awarded $456,000 of the tobacco settlement funds to develop a Center for Biomedical Devices and Tissue Engineering. Clinical scientists, basic scientists and material scientists and engineers at both the Medical Center campus and at University Park will collaborate with the ultimate goal of engineering structural tissues in vitro for medical applications. Other efforts will include medical device development such as surfaces for tissue contact and new sensors.
Provide a program of humane animal care and use that meets or exceeds the highest national standards.

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Connecting ideas with opportunity to touch lives.
The Innominate News held May 7-9 honored the scholarly Mel Billingsley, Ph.D. Walter E. Pae, Jr., M.D. The College's J Stanley Smith, M.D. Robert H. Bonneau, Ph.D. The first-ever Alexandros Vgontzas, M.D. 205 graduate students were enrolled in the The Penn State Clinical Research Training. The Virginia Imadojemu, M.D. C. Channa Reddy, Ph.D. The first annual The Graduate Student Research Forum March 8, 2002. More than 70 students participated in the poster and oral presentations and lively conversation promoted collaboration and innovation among researchers. 205 graduate students were enrolled in the 2001-02 academic year working with faculty mentors to hone their skills, publish their work, and earn their degrees. Zack Hoffer, a graduate student working with faculty mentor Kevin Alloway, Ph.D., associate professor of neuroscience and anatomy, published a study on how sensory and motor information is integrated in the basal ganglia in the October 2001 issue of Journal of Comparative Neurology. Kevin Alloway, Ph.D., graduated its second class of physician-scientists in the 2002-03 academic year working with faculty mentors. Robert H. Bonneau, Ph.D., assistant professor of microbiology and immunology, was awarded The Hinkle Society 2002 Junior Investigator Award. The award honors a young investigator who has great potential for continued success in research. Virginia Imadojemu, M.D., assistant professor of medicine, was awarded the Technology All Star Award in the 2002 Women of Color Health, Science and Technology Awards Conference. The award honors women of color who have influenced the health community and advance opportunities for other women of color. J Stanley Smith, M.D., director of the Clinical Trials Office and professor of surgery, is conducting three clinical trials testing the effectiveness of cryoablation therapy — a minimally invasive alternative to open therapy — for the treatment of breast tumors. The Medical Center is one of 12 sites — and only one in Pennsylvania — involved in the trial. The fistever Data and Dine was held Jan. 10, 2002. Organized by the Postdoctoral Scholars and Fellows Steering Committee and sponsored by the Office of Faculty and Administrative Affairs, the semi-social event was meant to facilitate the sharing of advances in biomedical research, stimulate collaboration, promote collegiality and provide a network for opportunities for peer support.

The Innominate News, a research newsletter edited by Gaylen Bradley, Ph.D., and Kevin Gleeson, M.D., published its first issue April 2002. The monthly newsletter, formerly known as the RCR (Responsible Conduct of Research) Newsletter, includes information on grant awards and funding opportunities, Institutional Review Board and Human Subjects Protection news and updates, and numerous features and news items of interest to the Penn State Hershey research community. C. Channa Reddy, Ph.D., distinguished professor and head of veterinary science at Penn State University Park, was appointed interim director of the Life Sciences Consortium. Reddy replaces Nina V. Fedoroff, Ph.D., Williamman professor of life sciences and Evan Pugh professor of biology, who stepped down to devote more time to research and teaching. The Penn State Clinical Research Training Programs under the leadership of Tom Lloyd, Ph.D., graduated its second class of physician-researchers. The National Institutes of Health-sponsored K30 program is designed to increase the number of physicians pursuing careers in clinical research. Six physicians — Lee Beckwith, Kevin Cockcroft, Tonya Croak, Suzi Levens, Abraham Matthew and Christopher Thompson — earned their Master of Science in Health Evaluation Sciences.

The Institutional Review Board (IRB) and its administrative arm, the Human Subjects Protection Office (HSPO), both under the leadership of Kevin Gleeson, M.D., underwent a comprehensive review by a Price Waterhouse Coopers consulting group in June 2002 and was found to be "robust and strong and operating in relative compliance with FDA and DHHS regulations." Mel Billingsley, Ph.D., professor of pharmacology, was named president and CEO of the Life Sciences Greenhouse of Central PA. He will maintain his appointment at the College of Medicine while providing leadership and vision for the Greenhouse’s three areas of focus in rational drug design and delivery, biomedical devices and biomaterials.

Alexandros Vgontzas, M.D., professor of psychiatry, garnered international attention from research presented at ENDO 2002, the 84th Annual Meeting of The Endocrine Society held June 19-22 in San Francisco. The study addressed how modest sleep deprivation can harm a person’s health and ability to function. Walter E. Poe, Jr., M.D., professor of surgery, and the team conducting the U.S. trials of the Arrow LionHeart™ were granted FDA approval to implant the left ventricular assist device in seven more patients. Since October 1999, the device was implanted in eight U.S. and 22 European patients. LionHeart™ was developed by Penn State researchers led by Gerson Rosenberg, Ph.D., Design News 2002 Engineer of the Year, Jane A. Fetter professor of surgery, professor of...
Robert Gabbay, M.D., Ph.D., associate professor of medicine, hosted a retreat for researchers from the Medical Center and University Park to share interests related to diabetes and to continue plans to establish a Penn State Comprehensive Diabetes Center. Jan Ulbrecht, M.B., associate professor of biobehavioral health and clinical medicine at Penn State, University Park, who along with Gabbay, Tom Gardner, M.D., and Leonard S. Jefferson, Ph.D., is heading up efforts to establish the center, was awarded a grant through the tobacco settlement that will provide the infrastructure for collaborative clinical research between the two campuses.

A combined $1.6 million from the National Institutes of Health, the tobacco settlement, and the College of Medicine allowed the Section of Research Resources (Bruce Stanley, Ph.D., director of scientific programs) to add services for researchers including a Microarray Core facility, an improved Proteomics Core Facility, and a new capillary DNA sequencer, peptide sequencer, confocal microscope and high speed flow cytometer.

The MBA/PhD program under the leadership of Mel Billingsley, Ph.D., celebrated two graduates in 2002 – Tim Alefantis and Rebecca Hillary. Since the program’s inception in 1998, nine students have completed the program which is designed to seamlessly combine elements of the MBA program – team-building, strategic management and financing – with those of the PhD program – rigorous science, analytical thinking, technical writing and critical analysis skills.

Chester A. Ray, Ph.D., associate professor of medicine and cellular and molecular physiology, was awarded a grant from the National Space Biomedical Research Institute, an organization that seeks solutions to health concerns facing astronauts on long missions. Ray investigates how activation of the vestibular system – the inner ear – contributes to blood pressure regulation. This research addresses the problem of orthostatic intolerance (inability to maintain blood pressure when standing) associated with space flight.

Robert Gabbay, M.D., Ph.D., associate professor of medicine, hosted a retreat for researchers from the Medical Center and University Park to share interests related to diabetes and to continue plans to establish a Penn State Comprehensive Diabetes Center. Jan Ulbrecht, M.B., associate professor of biobehavioral health and clinical medicine at Penn State, University Park, who along with Gabbay, Tom Gardner, M.D., and Leonard S. Jefferson, Ph.D., is heading up efforts to establish the center, was awarded a grant through the tobacco settlement that will provide the infrastructure for collaborative clinical research between the two campuses.

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Performance at a Glance

Penn State Milton S. Hershey Medical Center
Total Sponsored Funding*

Penn State Milton S. Hershey Medical Center
Sponsored Funding Trend

Penn State Milton S. Hershey Medical Center
Total Sponsored Funding*

Total Funding by Sponsor*

Number of Awards by Sponsor*
Who can help me try to get more funding for my research?

The Office of Research Affairs’ mission is to provide leadership for sponsored programs at the Medical Center and College of Medicine. Under the leadership of Ernest Johnson, Ph.D., ORA provides advice and assistance to investigators, identifies and promotes new funding opportunities, develops budgets, reviews proposals, ensures compliance, negotiates awards and more. In addition, the ORA hosts grant writing workshops to help new investigators become effective fund seekers. For more information, call the ORA at (717) 531-8495.

Is there funding available at the institution so that I can get my research started?

Several competitive, internal grant programs are offered annually at the Medical Center. In general, they are intended to support short-term feasibility studies that will allow the investigator to acquire the preliminary data needed to apply for external funding. The Office of Research Affairs coordinates several programs including the Dean’s Feasibility Grants, Clinical Research Center Grants, Cancer Institute Research Grants, Four Diamonds Research Grants, Children’s Miracle Network Telethon grants and Life Sciences Consortium Grants.

How do I get a patent on new intellectual property, procedures, or devices that I might create?

The Medical Center has an Office of Technology Development led by Alan Snyder, Ph.D., that works with researchers and the Intellectual Property Office at University Park to report inventions, patent and market them, negotiate license agreements, and assist investigators with confidentiality and material transfer agreements. The OTD also helps inventors move their work from the laboratory to the commercial realm, and serves as a point of contact for industry partners interested in developing early-stage research and technologies. Inventors should begin to think about invention disclosure early in their discovery process. The OTD can be reached at (717) 531-8496.

What’s the reason for the recent growth in our research?

Since July 2000, basic and clinical research funding has grown by 52 percent from $54.5 million to more than $83 million in fiscal year 2001-02. This success is explained in part by the institution’s commitment to support and promote research. However, a larger part is due to the strong commitment of physicians and scientists to expand the pool of scientific knowledge, find innovative therapies for diagnosing, treating and preventing disease, and inspire future physicians and researchers. Ultimately, these efforts mean prevention of more diseases, better care for patients, and higher quality of life.

Answers to your questions

I'm a clinician. How can I get involved in research? How do I get involved in multidisciplinary research?

Several resources are available for clinicians and other caregivers who want to become investigators and for researchers who want to work with multidisciplinary collaborators. Established in 2002, the Medical Center’s Clinical Trials Office led by J. Stanley Smith, M.D., coordinates research funded by the biotechnology and pharmaceutical industries. In addition, Jay Moskowitz, Ph.D., vice dean for research, and Ernest Johnson, Ph.D., director of the Office of Research Affairs, will make suggestions about collaborators and can facilitate introductions. Clinicians can also speak with their department chairs or approach an individual investigator who they may be interested in working with. One resource for those interested in pediatric research is a booklet compiled by the Penn State Children’s Hospital Research Day Committee that lists the research interests and abstracts of nearly 50 researchers at the College of Medicine.

Research Mission Leaders. Seated (left to right): Ernest Johnson, Judy Bond, Jay Moskowitz, Gaylen Bradley; Standing (left to right): Alan Snyder, Kevin Gleeson, Bruce Stanley, Lawrence Brown, Chester A. Ray; Absent: J Stanley Smith, Max Lang, Diane Thiboutot
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