

## **Big Ideas**

Securing transformational gifts to endow initiatives that transcend traditional academic boundaries and promote interdisciplinary, collaborative activity is an important goal of *For the Future: The Campaign for Penn State Students*. These include areas of particular strength at Penn State, as well as some unexplored areas of inquiry in which we feel we are poised to make a difference. We have selected the following ten centers, institutes, and programs (some still in development) to be presented as key enterprises—our Big Ideas. We feel that these initiatives represent the high caliber of research and teaching taking place at Penn State, as well as the University's capacity for addressing some of our greatest national and international challenges.

### **Energy and the Environment**

The Penn State Institutes of Energy and the Environment (PSIEE) is the central coordinating structure for energy and environmental research at The Pennsylvania State University. Affiliated with ten colleges and a host of institutes and centers throughout the University, the PSIEE is the articulation of President Spanier's vision to make Penn State a preeminent university for leadership in advances in energy and environmental research.

The PSIEE encompasses researchers from forty-one departments within the colleges of Engineering, Earth and Mineral Sciences, Agricultural Sciences, Health and Human Development, the Liberal Arts, the Eberly College of Science, Capital College, the Dickinson School of Law, and the College of Medicine, among others. Research centers are focused on a range of initiatives encompassing everything from hydrogen and bio-electricity production to clean coal, bio-based jet fuels, and solar power. In addition, the PSIEE is committed to studying the ethical dimensions of energy and the environment and includes researchers at the intersection of the technological and social sciences.

Problems of energy and the environment are among the most critical facing every aspect of life on this planet. In pursuit of the newest frontiers of energy and environmental research, the PSIEE encourages cooperation across disciplines and the participation of local, federal, and international stakeholders. Penn State aims to increase the visibility and stature of its programs, consolidate existing research efforts, and expand capacity through the hiring of new researchers.

### **Materials**

The Penn State Materials Research Institute (MRI) is the gateway to world-class materials science and engineering at the University. It coordinates, supports, and sponsors advances in the applications of materials for communications, computers, energy, manufacturing, medicine, and transportation.

MRI includes more than 200 faculty members, 800 graduate students, and 200 post doctoral researchers in the colleges of Agricultural Sciences, Earth and Mineral Sciences, Engineering, Medicine, and Science who have made Penn State a top-ranked university in materials research funding nationally. MRI helps support equipment purchases, research, seed grants, and faculty co-funding. MRI research teams

encompass traditional fields like ceramic science as well as new fields such as nanotechnology, and its products comprise a wide range of offerings from biomaterials to sensor technology to metamaterials.

MRI's mission is to create an environment that cuts across traditional academic R&D boundaries, enables discovery and scientific exploration through creative cross-fertilization, and benefits science, industry, and society. Through its creation of interdisciplinary groups and centers, MRI is dedicated to addressing the complex problems our country faces in health, the environment, energy, and national security.

### **Children, Youth, and Families**

The Children, Youth, and Families Consortium (CYFC) will promote research and teaching with an emphasis on outreach and community collaboration to address critical social issues facing our society. Its initiatives will run the gamut from the development of strategies to enable families to prevent substance abuse among the young to early childhood interventions in school readiness to studies of the role of poverty in influencing family dynamics.

The colleges of Health and Human Development, Education, Agricultural Sciences, and the Liberal Arts, as well as the Dickinson School of Law all contribute research toward the prevention and solution of such problems as violence, teen pregnancy, malnutrition, illiteracy, and family dynamics, in concert with Penn State's community based outreach programs such as Cooperative Extension and The Milton S. Hershey Medical Center.

CYFC will encourage and develop faculty expertise and promote interdisciplinary collaboration so as to maintain and expand Penn State's position of national and international leadership in addressing critical social issues and serving community needs.

### **Institute on Aging**

The Institute on Aging will coordinate the research efforts of the College of Health and Human Development, the Social Science Research Institute (SSRI), the College of Liberal Arts, The Dickinson School of Law, and The Milton S. Hershey Medical Center.

The Institute will encompass a broad program of aging research, including the development of new environments for aging individuals. Specific research will be conducted through academic departments such as psychology, sociology, biobehavioral health, human development and family studies, nursing, communication sciences and disorders, health policy and administration, kinesiology, and nutritional science. It will also serve as the collaborative home for research on aging drawing on the departments of neurology, orthopaedics, ophthalmology, psychiatry, neurosurgery, and dermatology, as well as the Gerontology Center and the Heart and Vascular Institute.

The Institute will capitalize on the expertise of Penn State's laboratory scientists, social scientists, and its artists and architects to address critical issues facing our aging population. It will stimulate communication among scholars of different disciplines and foster applied research that improves the quality of life and promotes the welfare of adults of all ages.

## **Center for Infectious Disease Dynamics**

From proteins to pandemics, the Center for Infectious Disease Dynamics (CIDD) is comprised of scientists from a range of complementary disciplines conducting innovative infectious disease research.

CIDD is a virtual center coordinating the collaborative work of researchers from the College of Agriculture, the Eberly College of Science, the Huck Institutes of the Life Sciences, and the Penn State Institutes of Energy and the Environment (PSIEE). It integrates genetic, immunological, ecological, and other studies to understand how disease processes work and how they inter-relate from the sub-cellular to the meta-population level on a range of time scales. Researchers concentrate on host-pathogen interactions; infectious disease dynamics; and viral, bacterial, and parasitic pathogenesis. They conduct basic disease work at the molecular and epidemiological levels and applied research with plants, animals, and people.

The interdisciplinary approach, combined with the diversity of expertise in CIDD, ensures the productive study of the development of disease agents within hosts to the prediction of their spread through populations in time and space. Its findings will continue to have an immense impact on our understanding of human health, agriculture, conservation, bio- and agro-terrorism, and epidemic control.

## **Children's Hospital**

Penn State's Children's Hospital at The Milton S. Hershey Medical Center is the only children's hospital in central Pennsylvania and the region's only pediatric trauma center. It treats more than 125,000 patients each year. Design and programming are currently underway for a new state-of-the-art, free-standing facility that will include a pediatric cancer pavilion as well as patient rooms and amenities designed to increase comfort and privacy for young patients and their families. The facility will both increase the number of pediatric inpatient beds and enhance efforts to recruit world-class pediatric specialists and researchers to Hershey.

The Children's Hospital is a leader in several specialties including neonatal care, pediatric oncology, pediatric cardiology, pediatric surgery, and pediatric trauma. The Pediatric Intensive Care Unit (PICU) recently received the highest rating for its care in medical, surgical, and trauma patients by the Pediatric Intensive Care Unit Evaluations, ranking the PICU among the top in the country. The Children's Hospital also ranks in the top 10 percent of children's hospitals nationwide in inpatient patient satisfaction.

In addition to its commitment to educating health-care professionals, the Children's Hospital has enhanced the quality of life in Pennsylvania through health education, patient care, community activities, and applications of research. Its services extend from the prevention of illness and maintenance of health through primary medical care to the highly sophisticated patient care expected at one of the nation's premier academic medical centers.

## **Center for the Performing Arts**

With a mission to engage and enrich the University and the surrounding communities through inspiring cultural experiences, what would become Penn State's Center for the Performing Arts was established nearly 50 years ago.

The Center for the Performing Arts is part of the College of Arts and Architecture at Penn State, but it has partnered with such entities as the Rock Ethics Institute, the Institute for Arts and Humanities, the Palmer Museum of Art, and the Department of Integrative Arts. It has featured performances by such musical luminaries as Mstislav Rostropovich, Arthur Rubinstein, Itzhak Perlman, Beverly Sills, and Dave Brubeck. Dance performances by Martha Graham and Paul Taylor have been featured as has the spoken words of Robert Frost, e.e. cummings, and Dr. Martin Luther King, Jr. It has featured large performances by the Vienna Boys Choir and the Pittsburgh Symphony as well as well as unconventional musicals and folk and jazz festivals.

Through its performances and Speaker's Series in the Schwab Auditorium and the Eisenhower Auditorium, the Center for the Performing Arts is one of Pennsylvania's major cultural resources and continues to receive national and international recognition as a major commissioner of new works.

## **The Institute for Arts and the Humanities**

With wide-ranging, inclusive programming, the Institute for Arts and the Humanities is a leader on issues of multidisciplinary relevance and importance in the arts and humanities.

The Institute stimulates and supports innovative, interdisciplinary work across the College of the Liberal Arts and the College of Arts and Architecture, including individual and group performances as well as lectures, symposia, and exhibitions. Established in 1966 and one of the first of its kind in the nation, the Institute was designed to be a center for advanced studies in the arts and humanities. Its initiatives include "Moments of Change" in collaboration with the Africana Research Center. In addition, a generous National Endowment for the Humanities Challenge Grant has made possible the Medal for Distinguished Contributions to the Arts and Humanities and two outreach programs: "The Summer Seminars for High School Teachers" and "Public Humanities Scholars."

The Institute heightens the visibility of the arts and humanities at Penn State on both the national and international scene and recognizes the importance of public outreach by serving the needs and interests of local and regional communities in central Pennsylvania through programs of civic and educational outreach.

## **School of International Affairs**

The School of International Affairs was established on July 1, 2007, and will begin enrolling students in the fall of 2008. It will emphasize the practical applications of knowledge for solving complex social problems and the importance of high ethical standards.

The School is a collaborative effort between Penn State's Dickinson School of Law and scholars from the colleges of Agricultural Sciences, the Liberal Arts, Earth and Mineral Sciences, Communications, Education, and Information Sciences and Technology, as well as the Smeal College of Business. The School offers a highly interdisciplinary professional master's degree in international affairs with concentrations in diplomacy and international relations; international economics; multi-sector and quantitative analysis; development and civil society; nonprofit organizations; and major transnational policy challenges.

The School highlights the importance of a global perspective for Penn State students and recognizes the value of international experiences in areas from health to education to business. It is part of a host of new international initiatives at Penn State, including expanded curricular and study-abroad opportunities for Penn State students, the increased presence of international students and scholars at the University, and enhanced collaborations between Penn State and key universities in other countries.

### **President's Leadership Academy**

The President's Leadership Academy is designed to nourish a cadre of selected Penn State undergraduates with significant potential for future leadership. The Academy seeks to educate students to understand issues broadly, to appreciate the complexity and variability of world matters, decisions, and life's circumstances. The Academy will promote and cultivate values that are critical to the full development of Penn State's undergraduates, including civility, philanthropy, respect for diversity, and student engagement. It represents an investment in both the classroom and the out-of-classroom experience.

The Academy will provide integrated coursework, host leadership seminars, sponsor field trips, and promote civic engagement through volunteerism and community participation.

The Academy's collaborative education will prepare students to impact society through leadership training and problem solving. A key feature of this initiative is the direct involvement of the President who will personally oversee and meet with Academy students.