

February 22, 2008

The Honorable Richard G. Lugar
United States Senate
306 Senate Hart Office Building
Washington, DC 20510

Dear Senator Lugar:

As Congress begins the Fiscal Year 2009 Appropriations process, Purdue University respectfully submits for your consideration the following projects.

Midwest Center for Bioenergy Grasses

The Midwest Center for Bioenergy Grasses will apply genetics, genomics, and systems biology, augmented by novel cellular and biochemical technologies, to provide a national resource of research and education for the improvement of crops used in biofuels production. Center research will lead to suitable feedstocks that do not impact food production and can be produced in an agriculturally sustainable and cost-effective fashion. Purdue will be a hub for strong partnerships with Midwest bioenergy researchers in academia, the USDA-ARS, and corporate and agricultural entities, and the Midwest Center for Bioenergy Grasses will serve as a strong regional interdisciplinary education and training center for young scientists.

Integrated Economic, Environmental & Technical Analysis of Sustainable Biomass Energy Systems

This research will determine how Indiana and the Midwest can contribute to the national goal of generating 25% of our energy from renewable sources by 2025 and will examine how biomass production and conversion would affect the economy and environment of the region. Purdue will study the economic and environmental consequences of feasible alternative energy sources and determine the most sustainable and profitable strategy to provide renewable energy from biomass. The results will help determine which actions and policies should be implemented to encourage economic agents to achieve the goals in an environmentally sustainable way.

Traumatic Brain Injury

This project will establish a national priority research program to address traumatic brain injury (TBI). The program will coordinate activity among engineering, science, and veterinary medicine programs at Purdue and neuroscience imaging and research at the IU School of Medicine, tightly integrating the physics/engineering of impact/blast events with a clinical understanding of how cellular damage affects the neurological response. We will: 1) design systems to better prevent TBI; 2) develop improved imaging methods for the more accurate diagnosis of TBI; 3) develop new molecular and pharmacological approaches to mitigate and treat TBI; and 4) discover and develop the most effective methods for TBI rehabilitation. While the primary focus of this research will be to address the needs of the military, there is considerable dual use potential for the treatment of neuro-trauma from automobile and sports injuries. The ultimate goal is for Indiana to become the nation's premier center for research, development and treatment of neuro-trauma, which will have a very significant economic impact for the state of Indiana.

Rapid and Accurate Pathogen Identification/Detection Program (RAPID)

The Department of Defense is intent on developing methods to rapidly detect and identify pathogens. Purdue's proposed program unites interdisciplinary strengths within the University to develop a compact and inexpensive instrument that will rapidly identify extremely low levels of pathogenic bacteria, viruses, and fungi in air, water, soil, food, and body fluids. The instrument that Purdue has designed will distinguish pathogenic strains of related (e.g. bird and human influenza viruses) as well as unrelated pathogens (e.g. Listeria, Pseudomonas, black plague, anthrax). Ultimately, Purdue envisions that the instrument will be placed in air supply ducts of public and government buildings, in water storage and treatment facilities, at food packaging plants, in doctor's offices, in airline cabins, on battle fields, at ports of entry, and on military bases.

Hardwood Scanning Center

Our mission is to increase the global competitiveness of the United States hardwood industry and conserve the hardwood resource through increased conversion efficiency. The sustainability of the hardwood industry depends on further improvements in efficiency, primarily in terms of the volume of higher grades of lumber produced from a given volume of logs, referred to as lumber-grade yield. The next technology needed to improve lumber-grade yield is log scanning. This would help sawyers "see" the defects inside a log and more efficiently convert logs into lumber based on knowing where the defects are located. Over the past year, we have been able to fulfill several of the project's objectives. CT scanning equipment along with log handling and scanning infrastructure developed by the Hardwood Scanning Center was installed at a commercial sawmill in Indiana. Researchers scanned and processed 65 hardwood logs - the largest study of its kind ever conducted - to determine the feasibility of the overall approach; the approach was demonstrated to interested industry, government, academic stakeholders at a very successful public demonstration event. Furthermore, a company capable of designing and constructing an X-ray CT scanner and log handling equipment were identified.

Purdue Hydrogen Technologies Program

Purdue proposes to advance and commercialize three exciting discoveries by leading researchers at the University. These discoveries have the potential to help enable the use of hydrogen as a significant future energy resource. This research will provide many benefits and further the attainment of a sustainable and growing energy and hydrogen economy in Indiana.

Coals Transformation Laboratory

With more than 80% of its annual \$7 billion energy budget dedicated to fueling aircraft, the Air Force has set a target of reducing aviation fuel use by 10% over the next six years and is seeking to identify alternative sources of domestic fuel. The production of transportation fuel from coal, oil shale, and biomass sources has the potential to meet this need; however, there are considerable technical, environmental, and economic issues that remain to be worked out. The Purdue Coal Transformation Laboratory will develop and optimize novel coal gasification technology and liquid fuel production process to reduce the environmental footprint of using coal and simultaneously increase the domestic transportation fuel available for military applications.

On behalf of President France Córdova, I thank you for your support of the students, faculty, and staff at Purdue University. We look forward to working with you to translate the technological advances made on our campuses into economic drivers for the State of Indiana.

Sincerely,



Victor Lechtenberg
Interim Provost
Purdue University