Life Sciences
DISCOVERY FUND

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Media contact:
Dianne Needham
Communications Manager
needham@lsdfa.org
206 732 6776

Life Sciences Discovery Fund Awards Health Research Project Grants

Seattle – (August 5, 2008) – Six Washington State-based life sciences organizations and their partners will receive health research project grants totaling $5 million, the Life Sciences Discovery Fund announced today. The newly-funded health research endeavors will concentrate on prostate cancer imaging, safer in-home environments for older and disabled adults, recovery from brain damage, soft tissue calcification, pain localization and diagnostic smart cards (See Backgrounder Information).

The Life Sciences Discovery Fund awardees are: Clifford Berkman, Washington State University; Diane Cook, Washington State University; Eberhard Fetz, University of Washington; Cecilia Giachelli, University of Washington; Pierre Mourad, University of Washington; and Patrick Stayton, University of Washington.

"The six new Life Sciences Discovery Fund grant awardees have assembled projects that encourage public-private enterprise and demonstrate their organization's agility in organizing such collaborative teams. Collectively, they are addressing a wide spectrum of innovative research opportunities—from inventive neurochip applications to novel health care delivery solutions—that hold strong health and economic prospects for Washington State," said Executive Director Lee Huntsman.

The grantees were selected by the Life Sciences Discovery Fund Board of Trustees from among 86 proposals that were evaluated by national experts convened by the American Association for the Advancement of Science. In a highly competitive process the proposals were weighted on their scientific merits and their abilities to utilize this funding to provide statewide economic returns, to build a competitive life sciences industry and to advance the health care for Washingtonians.

Overall, grant applicants are responding positively and creatively to the Life Sciences Discovery Fund's focus on health care and economic development, according to Board Chair Lura Powell. "Potential grantees are refining their proposals in the context of the Fund's overall purpose and thinking much more about how to bring benefits to Washington through translation and commercialization," she said.

Funding for these grant projects comes from Washington's allocation of bonus payments under the Master Tobacco Settlement, revenues arising from multi-state litigation with tobacco product manufacturers. This group of awardees is the second to be funded through the tobacco settlement mechanism.

The Life Sciences Discovery Fund, a Washington State agency established in May 2005, makes grant investments in innovative life sciences research to benefit Washington and its citizens.

Backgrounder Information

Innovative Research Projects to Improve Health and Health Care Life Sciences Discovery Fund 08-01 Project Proposals

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Clifford Berkman, Washington State University, $679,964

Project title: *Chemoaffinity Agents for the Detection of Prostate Cancer*

Project focus: To demonstrate a new approach to imaging prostate tumors.

Early prostate cancer and tumor metastasis detection are critical, but accurate and reliable imaging techniques for diagnosis remain a challenge. The researchers will image prostate tumors in animal models using radioactively-labeled inhibitors of prostate-specific membrane antigen (PSMA), a marker of prostate cancer. Their objective is to build a foundation for the development and commercialization of a new diagnostic tool for prostate cancer based on single-photon emission-computerized tomography. Prostate cancer is the most common cancer in men, with incidence rates in Washington ranking 15 percent above the national average. This project could lead to better outcomes for patients in the state through earlier diagnosis and improved targeted treatment therapies.

Diane Cook, Washington State University, $790,906

Project title: *Smart Home-Based Health Platform for Functional Monitoring and Intervention*

Project focus: To create a "smart environment" that enables older adults or individuals experiencing cognitive or physical limitations to function independently and remain in their own home setting.

By 2040, nearly one quarter of the U.S. population will be 65 years of age or older and many will require some type of monitored living arrangement. A "smart environment" is one that is equipped with low-cost sensors that yield alerts and reminders for the elderly and disabled to ensure they are adequately caring for themselves. In a specifically-built "smart home" environment, the research team will use specialized sensors to monitor whether activities of daily living (ADLs) are being adequately performed and whether ADL monitoring provides a basis for effective interventions using reminders and automated assistance. In 2005 Washington State had several hundred thousand individuals being cared for in nursing homes at a cost of about $94 million per day, not including assisted care or veterans facilities. If one percent of the state's population is kept at home for two additional years, the result will save Washingtonians approximately $9.4 million a day and $3.4 billion a year.

Eberhard Fetz, University of Washington, $1,068,985

Project title: *Brain-Computer Interfaces for Functional Recovery from Brain Injury*

Project focus: To increase functional recovery in damaged areas of the brain using implantable electrical stimulators.

Recovery from brain damage due to a stroke, traumatic brain injury or epilepsy presents a struggle for thousands of patients in Washington State and millions of people throughout the world. Electrical stimulation of the brain, which promotes long-term changes in nerve activity, could potentially be a new treatment for advancing recovery in individuals suffering from brain impairment. The investigators will use implantable electric stimulators to more effectively and continuously stimulate the brain's outer region or cortex. The team will develop and test minimally invasive techniques meant to enhance the clinical application of the implantable electric stimulators. Parallel studies will be conducted in animal models and human subjects using a neurochip to develop more effective delivery of therapeutic brain stimulation. The potential for translation and use in clinical settings could have a wide-ranging impact for Washingtonians with neurological disorders and those recovering from, or managing, chronic brain-deterioration disease.

Co-Applicant Organization: Washington State University

Cecilia Giachelli, University of Washington, $1,469,606

Project title: *Engineering Monocytes to Treat Ectopic Calcification*

Project focus: To develop technologies for local human cell therapies that can inhibit and regress tissue calcification.

Ectopic calcification, or calcification of soft tissues, occurs in a variety of diseases and injuries and is especially harmful to the mechanical functions of joints, valves, blood vessels and muscles. There is currently no treatment for this condition. The investigators will seek to control ectopic calcification by halting mineral deposition and encouraging mineral re-

absorption. The research team will use gene and protein delivery techniques to promote anti-calcification molecule release at sites of ectopic calcification. This project seeks to prolong the life of bioprosthetic devices like heart valves that are prone to early calcification and failure, and to provide a therapy to deter secondary calcification that can develop in certain conditions such as injury and burns. A treatment to prevent ectopic calcification would have substantial health, quality of life, productivity and economic benefits for the many Washingtonians afflicted by this problem. The local human cell therapy technologies being developed by this research team will also increase Washington State's competitiveness in the area of cell therapy.

Pierre Mourad, University of Washington, $224,958

Project title: *Transcutaneous Acoustic Palpation (TAP) for Localizing Painful Pathology*

Project focus: To demonstrate the use of intense-focused ultrasound in identifying the source of deep pain.

Pain, acute or chronic, is a hallmark of many diseases and disorders. In a number of maladies, localizing the source or origin of the pain is difficult, if not impossible. Pain that cannot be localized is very difficult to diagnose and treat. The investigators have developed a means to non-invasively localize painful tissues—especially the deep tissue beyond a health care practitioner's touch. The method uses intense-focused ultrasound to generate increased sensations deep within tissues that help to localize the source of pain. Using a transcutaneous acoustic palpation (TAP) device, the researchers will test pain localization in controlled experiments. The TAP device aims at improving the diagnosis of painful conditions, leading to more rapid delivery of therapies and improving patient outcomes. With better pain diagnosis, TAP could potentially reduce the billions of dollars spent annually in the U.S. for managing pain and its related economic consequences.

Patrick Stayton, University of Washington, $972,232

Project title: *Self-Powered Smart Cards for Diagnostic Screening*

Project focus: To develop a rapid, low-cost, self-powered, easy-to-use device to detect infectious agents in blood.

Outcomes of this project could help transition diagnostic testing away from centralized labs to satellite labs, to the physician's office and finally to at-home testing. The investigators intend to develop a family of rapid, low-cost, self-powered, easy-to-use devices that could reliably enable initial infectious disease diagnoses at a variety of point-of-care sites. These disposable devices will combine "smart" nanomaterial-based reagents with non-instrumented lab card formats. The research team's objective is to develop a prototype that can detect different infectious agents from a finger-stick of whole blood using a disposable plastic lab card. A "smart" card device such as this could provide a more economical means to diagnostic services for disadvantaged populations in Washington State and across the

nation.

Co-Applicant Organization: Program for Appropriate Technology in Health (PATH)

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2324 Eastlake Avenue East, Suite 501, Seattle, WA 98102
PH: 206.732.6777 FAX: 206.732.6778
www.lsdfa.org