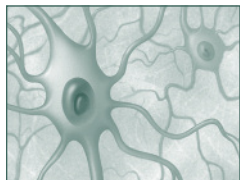


Partnership News



Partnership Helps Leverage \$7.9 Million NIH Grant to the University of Minnesota to Expand Neuroscience Imaging Research

The University of Minnesota is one of only four institutions in the country to receive a National Institutes of Health Blueprint Grant for Neuroscience Research. The grant was awarded recently to the Center for Magnetic Resonance Research (CMRR). The \$7.9 million award (approximately \$1.5 million each year for five years) will be used to open the CMRR's imaging technology to more neuroscience researchers across departments in the University — and to Mayo Clinic collaborators as well. CMRR's application received the highest score of the 40 institutions that applied for the grant.

The Partnership funded team researching Alzheimer's Disease used visualization tools in the CMRR to show, for the first time, Alzheimer's plaques in living animals. This work in developing functional brain imaging and imaging of Alzheimer's plaques are examples of first-time accomplishments that are credited to the unique high magnetic field MR research carried out in CMRR. Their research and collaboration were strong

contributing factors in this award and one of the things that made the application exceptionally strong.

Magnetic resonance images can be employed to study many areas important in brain research including brain function,

chemistry, and anatomy; however, most neuroscience researchers do not have the resources to purchase MR technology or to develop unique MR techniques beyond what may be provided with commercially available MR instruments. □

"In essence, this grant makes Minnesota a service center for neurological research. The grant requires that we work to advance all types of neurological research and provide others with the tools to better understand and move toward a treatment and cure for neurological disease. Furthermore, these tools will help advance the research such that the Partnership, the University and Mayo Clinic are more competitive for additional research dollars from the NIH."

— **Michael Garwood, Ph.D., University of Minnesota**

"This grant is a result of the work and dedication of many scientists. It gives us even more opportunities to share information and interact with the larger neuroscience community."

— **Joseph Poduslo, Ph.D., Mayo Clinic**

This kind of collaboration has great potential — not just for Alzheimer's, but for many diseases in which multiple researchers looking at diseases from different angles can make a difference."

— **Clifford Jack, M.D., Mayo Clinic**

Stabile Building Opening is Just Around the Corner



The Partnership's new research facility, a three-story addition to the Vincent A. Stabile Building on the Mayo Clinic campus will formally open in January, providing laboratory space with state-of-the-art equipment for the Partnership teams.

In 2005, the Partnership and Mayo Clinic joined efforts for the addition to the Stabile Building for research laboratories. Bioinformatics is the first area to move in, occupying the 11th floor; floor 12 will house the Advanced Genomics Technology Center; and proteomics research labs will be on floor 13. There is additional support space for research on the top partial floor.

The addition will provide collaborative laboratory space for Partnership research teams, meeting and discussion facilities, the latest in display and conferencing technology, as well as offices and support facilities.

The construction was funded in part by a \$21.7 million bond issue approved by the Legislature. The facility will be dedicated on January 26. □

2007 Bioscience Conference

Early next year, the Partnership will host a forum on advancing bioscience in Minnesota. The goal of the half-day session is to raise awareness of Minnesota's potential in the biosciences and brainstorm on the next steps for a Minnesota's biosciences strategy. Members of the Minnesota House, Minnesota Senate and administration officials will be invited to attend.

The next Partnership Newsletter will include a full report on the event. □

Your Support Matters

If you are intrigued by what you've read about the Minnesota Partnership for Biotechnology and Medical Genomics and would like to learn more or show your support, visit our Web site. If you or someone you know has benefited from medical advancements in biotechnology or medical genomics, please share your story with us.

Spotlight on Research

Rapid Diagnosis and Treatment of Tuberculosis: Medical Genomics Applied to an Ancient Disease Using Real-time PCR for the Diagnosis and Direct Drug Susceptibility Testing of Tuberculosis

Nancy L. Wengenack, Ph.D., Mayo Clinic
Dean Tsukayama, M.D., University of Minnesota

Tuberculosis (TB) is an infectious disease that impacts the entire world. One-third of the world's population — more than two billion people — are infected with TB, making it the second leading infectious cause of death. Minnesota's diverse population includes immigrants from endemic areas and puts the state in a particularly vulnerable position for this disease. TB spreads through the air like the common cold, making it exceptionally contagious. It can lie dormant in an infected person for years, but when the immune system is weakened, the chances of becoming sick with TB increase. While TB does not have the high profile of HIV, it poses great risk to the world, and to Minnesotans.

Diagnosing TB is difficult. The two current diagnostic techniques for both require a sputum sample which can be difficult to obtain and carries a high risk of infection to health care workers, and both can provide false negatives. If diagnosed accurately, TB is treatable, but current therapies require a long course of treatment — up to two years. Further, with the continued emergence of drug resistance, the treatment may fail.

Drs. Wengenack and Tsukayama recognized this serious shortfall in our public health system, and developed a rapid and specific test that detects TB in less than one day from a stool specimen. The test also provides direct information regarding potential resistance to isoniazid, one of the primary TB treatment drugs. Determining resistance using this real time test will allow physicians to quickly choose effective therapies and also prevent development of drug resistance.



Samples will be collected from patients being evaluated for TB at Mayo Clinic and at the Hennepin County Medical Center (HCMC) Health Assessment and Promotion Clinic (HAP). HAP diagnoses and treats TB patients and conducts screening tests for

“The high-risk patients we see in the HAP Clinic are an ideal population for this study. Their compelling situation makes the potential of this work all the more meaningful and important in changing their lives and the lives of millions.”

— **Dean Tsukayama, M.D., University of Minnesota**

“Our ability to rapidly detect TB in stool samples with a state-of-the-art molecular test fills a currently unmet need for the diagnosis of TB. Using a stool sample has multiple advantages — it's non-invasive, potentially more accurate, and easier for children and staff, carries little risk for infection and gives rapid results.”

— **Nancy L. Wengenack, Ph.D., Mayo Clinic**

high-risk individuals and refugees. More than 100 cases of TB are diagnosed in Hennepin County every year.

The samples will be analyzed at Mayo's Clinical Microbiology Laboratory, an internationally renowned reference and development lab with six subspecialty labs where cutting-edge diagnostic tests for infectious disease agents are developed.

The team offers a unique mix of expertise in infectious disease. Lead researchers Wengenack and Tsukayama bring together the best of two complementary worlds: hands-on clinical care in the HAP clinic and intense analysis in the Mayo Clinic labs.

Progress of the Partnership Teams

The Partnership research teams have had many significant accomplishments:

- They have published 44 peer reviewed papers and 34 public abstracts
- They have made 42 scientific presentations
- 18 total grants applications have been submitted, and five grants have been funded

- They have filed for three patents.

This fall, the Partnership requested research proposals and infrastructure proposals for the third round of research projects. Total research awards are for approximately \$5 million and total awards for investments in research infrastructure (equipment or facilities) are for approximately \$3 million. The awards will be announced in February, 2007.

Prostate Cancer Project Moving Toward Commercialization of Findings

Earlier this year, the Minnesota Partnership awarded follow-on commercialization funding to the 2005 Partnership team that is studying prostate cancer. The additional funding is supporting marker validation and assay development in prostate cancer.

In the first step toward commercialization, the Partnership 2005 prostate cancer research team has filed two patents stemming from their research. Their project is entitled “Coordinated Multi Program Utilization of Microarray Data to Generate and Validate Biomarkers for Improved Care of Patients with Prostate Cancer.” The team is developing a panel of new biomarkers — chemical and genetic tracers — that will lead to specialized prostate cancer tests that can be performed on blood samples or biopsy tissues. The researchers isolate specific,

malignant cells from tissue samples of men who had prostate cancer. Then messenger RNA is extracted from thousands of cells specific to prostate cancer, and possible biomarkers in the samples are identified. The patents relate to patient-specific tests to detect prostate cancer and determine the stage of the disease, allowing for precise prognosis and a targeted course of treatment.

The team has received a large project as part of a Mayo NIH SPORE (Specialized Programs of Research Excellence). A SPORE grant is a highly prestigious grant from the National Institutes of Health supporting interdisciplinary teams of investigators.

Prostate cancer is the second leading cause of cancer death in men, with an estimated 234,000 new cases and 27,000 deaths to occur in 2006. □

Milken Institution Report: Mind to Market

Research and innovation are increasingly shifting away from the corporate lab back to where they began: the university campus. So shows a report published by the Milken Institute that analyzes and assesses the strengths and vulnerabilities of university technology transfer in biotechnology. The report concludes that research activity has a high rate of return, and that among U.S., Canadian and European universities, the U.S. leads in invention, disclosures, patents filed and granted, licenses executed and license income, while European universities lead in start-ups established. The report, which is over 300 pages long, is available at:

<http://www.milkeninstitute.org/publications/publications.taf?function=detail&ID=576&cat=ResRep> □