Minnesota Partnership for Biotechnology and Medical Genomics
University of Minnesota
Mayo Clinic

newsletter

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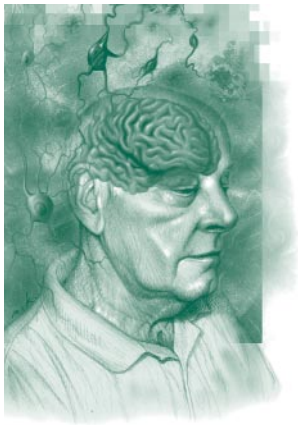
Research Developments

# Spotlight on Alzheimer's Study

*"Spotlight" is a new series in "Research Developments" that will focus on one of the four Partnership research projects. In this edition, we look at the Alzheimer's study: Proteomic Design of Peptide-Based Probes for the Molecular Imaging of Amyloid Plaques to Diagnose Alzheimer's Disease Using Contrast-Enhancement Magnetic Resonance at High Field Strength (9.4T), with researchers Michael Garwood, Ph.D., University of Minnesota, Joseph Poduslo, Ph.D., Mayo Clinic, Clifford Jack, M.D., Mayo Clinic.*



One of the cardinal pathologic features of Alzheimer's disease is the formation of senile, or amyloid, plaques in the brain. Until recently, these plaque were too small to see, so precise diagnosis of Alzheimer's disease can occur only at autopsy to find the plaques, or with the use of cognitive testing that is influenced by many other issues in the patient's life, often making it inaccurate. This is one of many reasons that the disease is so perplexing. However, the Partnership's Alzheimer's research team has recently been able to identify these plaques with a non-invasive imaging technique called magnetic resonance (MR) microimaging. The team looked at the amount of plaque in different regions of the brain in transgenic mice that are engineered to naturally develop Alzheimer's disease. Plaques the size of one five-hundredth of an inch must be seen before the technique can be used for diagnosis. They found amyloid plaques could be detected in the live transgenic mice that were at least 35 microns in diameter and that the size and number of the plaques on the MR microimaging do increase over time in certain regions of the brain. This technique could potentially be used to assess the plaques over time while using therapeutic interventions, giving scientists a mechanism to test potential drugs, leading to prevention and treatment of Alzheimer's disease. In essence, identifying the plaques early — before symptoms appear — could mean preventing the progression of the disease. This procedure has never been used before, so an invention-disclosure application on the technique has been filed, which is the first step toward a patent.

The diverse nature of the team from the two institutions and the state funding for the Partnership are important factors in the success of this project. Researchers from both institutions bring expertise from fields such as neuroscience, biochemistry, MR imaging, and Alzheimer's disease. Dr. Poduslo notes "discovering the plaques early, before the person is symptomatic, could allow the testing of therapeutics to prevent the disease. This technique has a lot of potential not just for Alzheimer's, but for many diseases in which identifying and measuring biomarkers would make a difference." While there is currently no proof that high-powered MRI (available in Minnesota only at the University) works in humans, our researchers are hopeful that it will.

About five percent of the population under age 65 has Alzheimer's disease. This number grows to 50 percent by age 95, statistics that rightly give researchers a sense of urgency. □

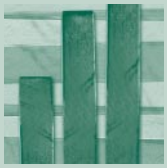
## *Did you know?*

*Dr. Elias Zerhouni, director of the National Institutes of Health, was this year's commencement speaker for the graduates of the Mayo Clinic College of Medicine. In his address, Dr. Zerhouni said that medicine and basic science are intertwined and will constantly change, noting that medicine has evolved to a patient-team relationship with scientists from different fields working together to serve the patient. Research is evolving rapidly, so physicians and researchers need to work together to bring discoveries directly to the patients — closing what he called a 'translational gap.'* ***Dr.Zerhouni highlighted the Minnesota Partnership for Biotechnology and Medical Genomics as the type of teamwork that needs to occur between research and medicine. He said "Their investment in this partnership is a good idea that will then lead to more investment in federal grants."***

*The Minnesota Partnership for Biotechnology and Medical Genomics is a Minnesota initiative leveraging the scientific leadership of the University of Minnesota and Mayo Clinic. This is the fifth newsletter to keep you informed on the progress of the Partnership and news in the field of biotechnology and medical genomics. For more information, visit our Web site at* ***www.MayoUMinnesotaPartnership.org****; call the Academic Health Center at the University of Minnesota at 612.624.5100 or Mayo Clinic at 507.284.9258.*

Economic Developments

# Studies Show Minnesota is Well-Positioned to Lead in Bioscience



According to a national study, biotech and bioscience companies should consider expanding or locating new facilities in smaller cities that have a relatively low cost of living and low business operating costs. The study looked at annual operating costs for biomedical businesses and found that smaller cities were most affordable. For example, San Jose, California was the most expensive site for operating a biomedical company at $11.3 million per year, with Sioux Falls, South Dakota the cheapest, at $8.5 million a year.

Among the factors studied were the cost of skilled labor, including workers with advanced degrees in life sciences; facility lease rates; utilities, and corporate travel. Housing was not included, but experts agree that housing is becoming a factor, particularly for employees. The study notes that big cities may be finding it difficult to retain talent because people can't afford the extraordinarily high housing prices. Corporations are looking to smaller markets because of low tax structures, low business costs, pro-growth policies and affordable home prices — all things ready and waiting in Minnesota.

A second study shows that bioscience investment in a cluster of Midwest states increased by 53% in the first quarter of 2005 to $144 million. Minnesota and Ohio led the way with $50 million and $42 million respectively in new dollars invested in companies. In the like period a year ago Midwest bioscience companies attracted $94 million in new capital.

Other states attracting funding during the reporting period include Kentucky, at $19 million; Missouri, with $11 million; Wisconsin, with $5 million; and the Western Pennsylvania region, which attracted $17 million during the reporting period. While the Midwest numbers were moderate in comparison with leading bioscience areas such as Massachusetts ($288 million), the 53% increase is meaningful, and shows the increasing interest in biosciences among the national venture community, especially in the Midwest.

Update on the Partnership

# Partnership Leaders Praise Bonding Agreement — Urge Support for Operational Funding

Hugh Smith, M.D., chair of the Mayo Clinic Board of Governors and Frank Cerra, Senior Vice President, Health Sciences at the University of Minnesota praised the Minnesota Legislature and Governor Pawlenty for passing and signing the bipartisan bonding bill that included $21.7 million for the medical genomics research addition to the Stabile Building in Rochester. The addition will house more researchers and provide greater opportunity for Mayo and the University to seek new treatments and technologies to fight diseases and improve health.

Funding for the Partnership's research in the Mayo Stabile addition and in research space at the University of Minnesota is included in budget bills in both the Minnesota House and Senate at the time of this publication. Testimony by Drs. Eric Wieben of Mayo Clinic and Mark Paller of the University, principal coordinators of the Partnership, was well received by the House and Senate economic development committees. The Partnership is optimistic that the Legislature and the Governor will appropriate $15 million to the Partnership during the special session. □

**Construction began this month to add Partnership research space atop the Stabile building in Rochester.**

The competition

***Wisconsin:*** The Institute of Discovery at the University of Wisconsin is a $375 million, 450,000-square- foot research center. It is part of a larger $750 million public-private initiative aimed at helping Wisconsin keep pace in the fast-moving fields of biotechnology and biomedicine. A state investment of $187.5 million will be needed for the project. $19 million is included in Wisconsin Governor Jim Doyle's approved budget to help build the first phase of the institute. The Institute for Discovery will be unique in the country because of the interdisciplinary nature of the research. To facilitate such collaboration, the new research institute is being built in a central location to house related disciplines such as genetics and biotechnology in close proximity to each other. □

## *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.***

***www.MayoUMinnesotaPartnership.org***