

Update on the Partnership

## About the Partnership

### What is the Partnership?

Earlier this year, the University of Minnesota and Mayo Clinic announced an historic Partnership to bring the benefits of biotechnology and medical genomics to Minnesota. The Minnesota Partnership for Biotechnology and Medical Genomics will continue to expand and build upon Minnesota's national and international reputation for health care excellence, as well as maintain a sizable economic impact on our state.

This powerful research collaboration will achieve breakthroughs that improve lives through more precise diagnoses and effective medical therapies. Further, this Partnership will contribute to Minnesota's economy by creating quality jobs, expanding the tax base, stimulating dynamic new businesses and further elevating Minnesota's status as a worldwide destination for medical care.

### Why have the Partnership?

Minnesota has the potential to emerge as a world leader in the rapidly expanding field of biotechnology and medical genomics. On a scale similar to how the use of information technology has changed our economy and the lives of most people, advances in the field of biotechnology and medical genomics will rank as one of the most important breakthroughs in history.

Scientists from both the University and Mayo Clinic will identify areas of research better performed by faculty from both organizations and where research may have a greater likelihood of a breakthrough — areas of true synergy.

### Who's involved in the Partnership?

The University of Minnesota, Mayo Clinic and the State of Minnesota are working together to secure Minnesota's future in this important field. Governor Tim Pawlenty and the state legislature granted the Partnership

\$2 million in seed money this year. The University of Minnesota and Mayo Clinic also contributed \$1 million each toward the Partnership. When combined with the considerable investments Mayo Clinic and the University of Minnesota are already making in biosciences, this \$4 million allows the Partnership to leverage its many strengths and begin the collaborative work.

### Where will the Partnership be located?

The Partnership's research will take place at both the University of Minnesota and Mayo Clinic. The collaborative research that will be undertaken by teams made up of scientists, researchers, and clinicians from both institutions is the real embodiment of the Partnership. The Minnesota Partnership for Biotechnology and Medical Genomics is currently assessing ways to accommodate additional laboratory and other space needs on the Mayo Clinic campus in Rochester. We expect to seek state bonding assistance for Partnership research space. □

Economic Developments

## The Competition

Mayo Clinic and the University of Minnesota have already invested nearly half a billion dollars in biotechnology and medical genomics that provide a well-established foundation for Minnesota to emerge as a global leader. That's a foundation of strong commitments that few other states can match. Coupled with Governor Pawlenty's commitment to establishing Minnesota as a leader in biosciences, the Partnership is just one effort that will further the state's reputation in this cutting-edge scientific field.

However, the competition to capitalize on this emerging science is vigorous, and patents that lead to the economic benefits of discovery go to those who get there first. More than 40 states in the U.S. and many other countries around the world are moving quickly to develop biotechnology and genomics through the creation of

government supported research funds and tax incentives. Each newsletter will provide current competitive information on other state and institutional initiatives in biotechnology and genomics. Several other state initiatives are described on our Web site at [www.MayoUMinnesotaPartnership.org/stateinitiatives.html](http://www.MayoUMinnesotaPartnership.org/stateinitiatives.html)

Both the University of Minnesota and Mayo Clinic have made critical investments over the last several years that position Minnesota at a platform far above the investments made in other states. Combined, they have invested nearly half a billion dollars in the biosciences. However, other states — and countries around the world — will spend hundreds of millions of dollars to establish a foothold in the biosciences. And while the commitment and investments Mayo and the University have made in biotechnology and medical genomics provide a well-established foundation for

Minnesota to emerge as a global leader in this field, the competition to capitalize on this emerging science is vigorous.

**Ohio:** Ohio State University (OSU) is planning to build a state-of-the-art, 372,000 square-foot 10-story biomedical research center scheduled to open in 2006. OSU wants the center to stay competitive with other academic institutions in the quest for National Institutes of Health grants. The project is projected to generate \$3.7 billion and 17,000 new jobs in its first 10 years.

Commercialization of research findings is a major goal. The school expects the center to generate significant patent and licensing opportunities.

The focus of the center is basic science, especially pharmacogenomics and microbial pathogenesis, bioinformatics, diabetes, structural biology, and tissue engineering. The school also is looking to expand programs in neurological disorders, heart failure and heart imaging, targeted molecular therapies, and biodefense. OSU said it expects the center to attract top-caliber scientists, and is planning room for 122 faculty members and their teams.

**Florida:** The Scripps Research Institute in La Jolla, California is setting up in Florida with \$510 million from taxpayers. In California, the institute has spawned 40 spin-off companies and helped foster one of the nation's most dynamic biotech clusters.

Continued on back ...



*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 first quarterly 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](http://www.MayoUMinnesotaPartnership.org); call the Academic Health Center at the University of Minnesota at 612.624.5100 or Mayo Clinic at 507.284.9258.*

# The Nine Research Finalists

We were delighted to attract 34 competitive proposals that were given initial review by a joint committee of Mayo and University scientists and nine have been selected to develop full proposals before December 2003. These research proposals will be reviewed by a committee of distinguished scientists from outside institutions, and the awardees will be chosen and announced by February 2004, at which time the two-year projects will commence

*The finalists cover a wide spectrum of diseases and conditions, examining a variety of cancers — non-Hodgkin's lymphoma, multiple myeloma, breast cancer, prostate cancer and melanoma — heart disease, fibromyalgia and several other severe rheumatic diseases, obesity and Alzheimer's disease. The goals of the projects are to improve lives through medical innovation, novel treatments, new insights into the origins of disease, and improved methods of prevention and diagnosis.*

**Cancer research:**

Effective therapies are needed for B-cell cancers, such as non-Hodgkin's lymphoma and multiple myeloma. BAFF is a molecule important to cancer growth and plays a crucial role in B-cell development and survival. The goal of this project is further the development of molecules that can compete with BAFF receptors for binding. Successful completion of this project will translate BAFF signaling research to clinical research and, eventually, result in new drugs for treating B-cell cancers. It also will develop models that will have practical use in the design of individualized drugs.

**Heart disease research:**

Early stage atherosclerosis (hardening of the arteries) is characterized by endothelial dysfunction. The genetic predisposition of endothelial cells determines their response to risk factors that may lead to abnormalities and eventually to plaque formation and heart problems. This project focuses on the earliest stage of atherosclerosis and the primary role of endothelial cells at that stage. The research has the potential to enhance the understanding of genetic determinants of cardiovascular risk and to improve the diagnosis and treatment of heart conditions.

Researchers at Mayo Clinic and the University of Minnesota have already made important medical discoveries. Investigators are unlocking some of the body's secrets in the areas of genetic differences in drug reactions and the identification of disease specific genes. To see examples of how genomics is already making a difference, go to our Web site at: [www.MayoUMinnesotaPartnership.org](http://www.MayoUMinnesotaPartnership.org)

**Heart disease research:**

Research has recently implicated inflammation — such as that experienced in rheumatoid arthritis — as a basis of coronary heart disease. Examining genetic variation in inflammation genes and their relevance to the development of coronary heart disease and its underlying cause, atherosclerosis (hardening of the arteries), is the focus of this research project. Expanding genomics-based knowledge in the area of inflammation will help researchers form a foundation for the development of new coronary heart disease prevention and treatment strategies.

**Cancer research:**

Many anticancer drugs kill cancer by triggering a suicide process, apoptosis. Multiple ways exist for cancer cells to become resistant to these drugs, including inactivation of caspases (enzymes that participate in apoptosis). Caspase inactivation can be blocked by a regulator called Smac. This research project involves the design and synthesis of molecules that will mimic the action of Smac and can be turned into potential drugs. The long-term goal is the identification of drugs that can facilitate the successful treatment of breast cancer and other malignancies by overcoming cancer cell resistance to apoptosis.

**Cancer research:**

This project will use prostate specimens to identify genetic changes that could be used to develop biomarkers for early diagnoses and management of prostate cancer. The gene array data will be cross-indexed with specific genes and biomarkers. Specialized programs developed to predict secreted proteins will help identify biomarkers likely to be present in blood or urine. The project will develop research clinical trials to confirm the usefulness of these biomarkers in patients with prostate cancer.

**Alzheimer's disease research:**

Currently, there is no way to definitively diagnose Alzheimer's in living patients other than through a surgical brain biopsy. Similarly, the measures of Alzheimer's disease progression available are notoriously imprecise. The objective of this project is to design a molecular probe that will reveal amyloid plaques by magnetic resonance imaging (MRI) in the Alzheimer's mouse model. Such a probe could eventually be used for diagnosis and treatment of Alzheimer's patients to enable early detection and provide a direct measure of the effectiveness of Alzheimer's therapies being developed.

**Rheumatic diseases research:**

Gaining new insights into rheumatic diseases through genetic research is the aim of this project. The research will examine psoriatic arthritis, idiopathic inflammatory myositis, giant cell/temporal arteritis and fibromyalgia. The goals are to identify abnormal patterns of gene expression that could jump-start additional research into new ways to diagnosis fibromyalgia, and discover more about the development and origins of these severe rheumatic diseases.

**Cancer research:**

The goal of this project is to identify new protein targets and develop novel therapies that harness the body's immune system to destroy malignant melanoma. Minnesota researchers have already discovered a protein that promotes growth and invasion of melanoma. Part of this project will further analyze the full range of melanoma proteins to pinpoint which are most informative as markers of melanoma development and metastasis, and which may be the Achilles' heel for melanoma survival. The long-term aim is to bring improved treatment to melanoma patients and offer new directions to prevent the development of this disease.

**Obesity research:**

Certain individuals maintain a resistance to obesity that cannot be accounted for solely by decreased food intake or increased metabolic rate and exercise. Identifying the mechanism of this resistance may be key to preventing and treating obesity. This project will examine the role of non-exercise activity thermogenesis (NEAT) in resistance to weight gain, and the role of the brain in this process. The research aims to identify proteins in the brain involved in NEAT regulation. The goal is to advance the understanding of obesity by determining whether the brain regulates non-exercise activity and whether this activity can be controlled.

## Competition continued ...

Florida Governor J. Bush has asked the state legislators to approve an award of \$310 million to add to Palm Beach County's \$200 million share. Scripps is projected to create 6,500 high-paying jobs within 15 years, contributing \$1.6 billion to the economy. The \$310 million came from the federal economic stimulus plan signed into law for all 50 states by President Bush. The \$310 million will go toward creating the Scripps laboratories at a cost of about \$60 million. The rest is for research staff, which is expected to exceed 570 within six years. Palm Beach County will spend \$200 million to build a permanent site of about 360,000 square feet.

*Did you know? Boston, San Francisco, San Diego, Seattle and Raleigh-Durham, N.C. dominate the biotechnology industry. They were home to only a quarter of all new biotech firms in the 1980s but accounted for 56 percent of new firms in the '90s, according to a study by The Brookings Institute. The five metropolitan areas also account for 75 percent of the \$9.7 billion invested between 1995 and 2001. □*

## The Partnership Business Plan

The Partnership has developed a comprehensive business plan that includes two major phases. Phase one involves substantive research projects that will demonstrate the ability of the parties to achieve scientific objectives in a cooperative and efficient manner. Leveraging an initial investment from the state of \$2 million combined with funds from Mayo (\$1 million) and the University (\$1 million), from which a few initial collaborative research projects will be funded.

Phase Two of the Partnership will require the next round of state investment and will begin in 2005. To continue the work of this unique partnership, we will ask the state to invest \$70 million over 5 years, which will serve as the catalyst to obtain additional outside funding that will provide ongoing support for established research. In addition, the partnership will look to the state's bonding authority to assist the building of new research space.

To read the full Business Plan, visit [www.MayoUMinnesotaPartnership.org](http://www.MayoUMinnesotaPartnership.org) □

## 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.*