

Groundbreaking Project Launched to Improve Brain Cancer Treatments and Outcomes

*New Atlas Project to Deepen Scientific Understanding of Malignant Brain Tumors;
Opens the Door for Improved Patient Care and Treatment Options*

SEATTLE, WASH. — October 22, 2009 — A major collaborative research project focused on mapping the gene activity in brain tumors was launched today. The goal of the project, known as the Ivy Glioblastoma Atlas Project (GAP), is to unlock the secrets behind one of the deadliest brain tumors known to humankind—glioblastoma multiforme (GBM), a cancer that affects more than 20,000 Americans annually and recently took the lives of U.S. Senator Ted Kennedy and columnist Robert Novak. The project is a partnership between the Ben and Catherine Ivy Foundation, the Allen Institute for Brain Science and the Swedish Neuroscience Institute's newly named Ben and Catherine Ivy Center for Advanced Brain Tumor Treatment.

The Ivy GAP will show which genes are active – or not functioning normally – within a GBM tumor at a level of detail not previously possible. This is important because the development of better therapies depends on understanding the key molecular changes that drive brain tumor behavior. The ultimate goal of the project is to improve disease management in GBM patients, as well as facilitate breakthroughs in drug development and treatment. Researchers expect that these breakthroughs could accelerate the effort to develop improved patient prognoses.

Research on the atlas project is slated for completion in 2013. The resulting atlas information will then be made available online for free use by the global medical and scientific communities.

Since GBM is a highly heterogeneous disease, meaning that brain cancer manifests itself differently in each person, it has been challenging for researchers to discover effective treatments. Each treatment plan needs to be highly personalized and the development of better patient therapies depends on an improved understanding of the differences in brain tumors. This detailed information from the Ivy GAP will allow doctors and researchers the ability to correlate tumor differences with treatment response in each patient.

“Supporting the Ivy Glioblastoma Atlas Project fulfills several important goals for our Foundation,” said Catherine Ivy, founder of the Ben and Catherine Ivy Foundation. “We hope this project will increase our understanding of brain tumors which, in turn, can lead to improved diagnostics and treatments. Information from the project will be made publically available to researchers throughout the world so they can use it freely in their own studies. This project honors the memory of my late husband and our dedication to doing everything we can to reduce the suffering of patients diagnosed with a brain tumor.”

Atlas to Shed New Light on Genetic Mutations of Brain Cancer Tumors

Previously published GBM gene data has contained information from whole tumor samples, but understanding what this information means is challenging because of the lack of knowledge about where abnormal gene activity takes place within the tumor. Results from the atlas project will provide insight into functional context and provide a better understanding of GBM tumor biology and heterogeneity. This, in turn, will help doctors better understand the unique features of a patient's tumor.

The atlas project will target 1,000 genes, which were selected for study by a panel of physician scientists and medical professionals led by Greg Foltz, M.D., co-director of the Ivy Center for Advanced Brain Tumor Treatment and a principal investigator on the atlas project. The committee includes experts in the field of neuro-oncology and genomics from leading academic centers and research institutes in the U.S. The final list will include candidate genes as well as known genes relevant to GBM biology.

"The atlas project will accelerate our discovery for new brain cancer treatments and allow scientists around the world to focus on the genes that really matter in glioblastoma," Dr. Foltz said. "Research from recent decades has led to the identification of thousands of abnormal genes in glioblastoma. This atlas project will allow us to prioritize which of those genes play important roles in the tumor behavior."

Creating the Ivy Glioblastoma Atlas Project

Tumor tissue samples will be collected at the Ivy Center for Advanced Brain Tumor Treatment for a complete genomic analysis and then sent to the Allen Institute for Brain Science for study of the target genes. There, the samples will be sliced into extremely thin strips, processed using *in situ* hybridization and digitally photographed. Each of the high-resolution photos will be reassembled in a computer model where researchers will plot the cells and genes into a 3-D map. In addition to the gene analysis, researchers will collect clinical information from the patients to compare the molecular findings with treatment outcomes throughout the study.

"Based on our experience with the launch of the Allen Mouse Brain Atlas in 2006, we anticipate widespread use of this free resource with the potential for immediate impact on patient outcomes," said Elaine Jones, chief operating officer at the Allen Institute. "The atlas will be integrated with The Institute's core project, the Allen Human Brain Atlas, allowing researchers the ability to rapidly identify GBM specific genes."

In addition to collecting initial samples from some 64 participating patients, the research team at the Ivy Center for Advanced Brain Tumor Treatment team will also be able to collect samples from recurrent tumors to compare them to each patient's original tumor. This will provide researchers with a rare opportunity to identify patterns of gene expression as the tumor progresses within an individual patient.

"For the Ivy Foundation, patients remain at the core of all the research we support," Ivy said. "To be meaningful, the ultimate goal of all research must be to impact on the clinical care of patients by improving diagnostics and treatment. We hope that the Ivy Glioblastoma Atlas Project will do just that."

About the Ben and Catherine Ivy Foundation

The Ivy Foundation is the nation's largest privately funded foundation with a mission of improving survival and quality of life for people diagnosed with a brain tumor. The Ivy Foundation's approach is to fund Patient Focused Research (PFR) in gliomas to improve diagnostics and treatments for patients. In its inception year, 2008, the Ivy Foundation supported \$10 million in research which embodied the concept of Patient-Focused Research. Patient-Focused Research (PFR) keeps the patient and relevant clinical issues at the center of every research project. More information about the Ivy Foundation can be found at www.ivyfoundation.org.

About the Ben and Catherine Ivy Center for Advanced Brain Tumor Treatment

Opened in 2008, the Ben and Catherine Ivy Center for Advanced Brain Tumor Treatment (Ivy Center) gives brain-tumor patients and their family's access to a unique multidisciplinary team of skilled neurosurgeons, oncologists, radiologists and a specialized nursing staff to deliver coordinated care and innovative treatments for both benign and malignant brain tumors. The Ivy Center's unique design places its world-class research facility directly adjacent to the out-patient clinic, providing patient instant access to promising new therapies discovered through gene-sequencing technologies. As part of the Swedish Neuroscience Institute located in Swedish Medical Center's Cherry Hill Campus, the Ivy Center is the first brain tumor-specific community-based facility of its kind in the Pacific Northwest and is providing new hope for patients with all stages of brain tumors, including brain cancer. To commemorate the Ivy Foundation's research award to the brain cancer community, the Swedish Neuroscience Institute changed the Center for Advanced Brain Tumor Treatment's name. It will now be known as the Ben and Catherine Ivy Center for Advanced Brain Tumor Treatment.

About the Allen Institute for Brain Science

Launched in 2003, the Seattle-based Allen Institute for Brain Science is an independent, 501(c)(3) non-profit medical research organization dedicated to advancing brain research. Started with \$100 million in seed money from philanthropist Paul G. Allen, the Institute takes on projects at the leading edge of science—far-reaching projects at the intersection of biology and technology. The resulting data create publicly available resources that fuel discovery for countless other researchers worldwide. Currently, the Institute is working on completing two core projects, the Allen Human Brain Atlas and the Allen Developing Mouse Brain Atlas. The Institute's data and tools are available on the Web free of charge at www.alleninstitute.org.

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