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Allen pays for study of brain's links to genes

\$100 million given for private Seattle research institute

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Microsoft co-founder Paul Allen has donated \$100 million to launch a private research organization in Seattle devoted to deciphering the links between our genes and our brain.

"I think there will be all sorts of surprises," said Dr. Thomas Insel, director of the National Institute of Mental Health at the National Institutes of Health in Bethesda, Md. "We're very excited about this project and hope to contribute to it as well."

Today, Allen is expected to formally announce the creation of the non-profit Allen Institute for Brain Science and its inaugural project, the "Allen Brain Atlas."

Contrary to the project title, it will be a mouse's brain that gets mapped rather than Allen's gray matter.

"Paul is very interested in understanding how the mind works," said Dr. Mark Boguski, scientific director of the Allen Brain Atlas. Boguski, with positions at both the University of Washington and the Fred Hutchinson Cancer Research Center, is an expert on the use of computers in biology.

"We're starting with the mouse because we share 99 percent of our genes with mice," said Boguski, who worked on the Human Genome Project.

The basic aim, he said, is to use the tools of biology, computers and neuroscience to locate active genes in the mammalian brain as a step closer to understanding how the mysterious organ functions.

Boguski said findings in the mouse brain should often translate directly to humans -- and offer new insights into human behavior, memory, cognition and mental disorders.

All the data from the new Allen brain institute will be made public and accessible to researchers on the Internet at no charge -- an approach modeled after the public genome project.

Of the estimated 30,000 genes in the human genome, scientists have evidence that as many as two-thirds play a critical role in brain development and function. Insel said it is estimated that at least 6,000 of these genes are only "expressed" (active) in the brain. Nearly all of the mouse's 27,000 genes are found as well in the human genome.

"This is a creative masterstroke by Paul Allen, who once again has thought up an unconventional but valuable output for his philanthropy," said Dr. Steven Pinker, a Harvard University professor and a key adviser to Allen for the initiative.

Pinker is a somewhat controversial psychologist and author who argues that most human behavior --

including love, intelligence or creativity -- can be fully explained according to evolutionary theory and genetic determinants.

He is on one side of the so-called "nature vs. nurture" debate in which experts argue whether genes or the environment (such as parenting) dictates what people think and do.

"It's like trying to figure out which contributes more to the area of a rectangle, the length or the width," said the NIH's Insel, who is working on a separate brain mapping project. "It's a combination of both."

Insel and his team at the NIH have been working on a gene map of the mouse brain since 1999 and hope to soon publish the location of several hundred genes. Allen's project, Insel noted, is on a much larger scale aiming to identify 10,000 genes a year.

To understand how the brain works, he said, scientists hope to get a better handle on the influence of the environmental factors once they have a deeper knowledge of the genetics. To prolong his analogy, it's like nailing down the length before trying to establish the width.

But what about the important "mind-brain" question? Is the sum total of the physical brain -- with its genes, neurons and chemical neurotransmitters -- all that makes up the mind?

"Uh, I don't go there," Insel said. For now, he said, it's hard enough just trying to figure out the functions of the brain, let alone the metaphysics.

The Allen Brain Atlas aims to build a three-dimensional, Web-accessible map of the mouse brain identifying which genes are active in which portions of the brain.

Building upon the work of many others who have built topographic and functional atlases of the brains of many other animals, including humans, the idea is to create a public resource to stimulate rapid progress in neuroscience.

"By making the atlas data accessible in the public domain, and collaborating with scientific experts around the world, we believe this is an historic opportunity to unite the genome and the brain," Allen said in a statement.

Boguski said the idea for the institute germinated two years when Allen brought together a number of experts in Seattle to brainstorm about brain science. The concept of combining the power of computers with the new information of the human genome to create a gene map of the brain fascinated Allen, he said.

"We didn't want to be just a funding agency," Boguski said. Allen wanted to create a synergistic new research center that would serve as a physical focal point for a collaborative effort he hopes will rapidly go global.

He's already got the attention of some big guns in science. Another adviser to Allen is Dr. James Watson, co-discoverer of the structure of DNA.

Other top names in brain research have signed on to the advisory board for the Allen initiative, including: UCLA neurologist and anatomical brain mapper Dr. Arthur Toga; Dr. Gregor Eichele, neurologist and director of the prestigious Max Planck Institute in Germany; Dr. Marc Tessier-Lavigne, now at Genentech Inc., and a pioneer in the study of nerve cell development and communication; and

Caltech's David Anderson, who uses DNA probes to study the molecular basis of fear.

Allen said in the statement that the \$100 million is seed money to launch the research institute, based for now in 30,000 square feet of leased laboratory space on North 34th Street in Fremont.

A spokesperson said the institute will be recruiting more researchers and may move to South Lake Union at some point, but Allen didn't want to wait for new construction before starting the project.

For more information about the new Allen Institute of Brain Science and the Allen Brain Atlas, see www.brainatlas.org (after 9 a.m. Tuesday) .

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