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Boston dominates NIH grants to innovators

By Elizabeth Cooney, Globe Correspondent

Boston-area scientists made a strong showing in two government grant programs designed to spur innovative medical research in an era of tight federal funding.

Sixteen of 41 winners announced today by the **National Institutes of Health** are from Greater Boston. Half of this year's 12 recipients of the prestigious Pioneer Award work at Boston-area hospitals or universities, and 10 out of 29 New Innovator awards are going to investigators in Boston or Cambridge. Pioneer grant winners receive $2.5 million and New Innovators get $1.5 million, all over five years.

"I think it's a real testimony to the area," **Jeremy M. Berg** (left), director of the **National Institute of General Medical Sciences,** said in an interview today. "Boston is certainly known for having a large number of high-quality educational institutions, like Harvard and **MIT,** but also many others. These are very much individual-based awards, though, so it's really a reflection of the ability of these institutions to recruit outstanding people."

This is Boston's best showing in the Pioneer competition, now in its fourth year, and only California has come close to Massachusetts' success, accounting for six of the 13 Pioneer winners in 2005. In 2004, **Harvard** researchers took home two of nine grants. In 2005, one winner was from Massachusetts, and last year four out of 13 scientists, including one from **UMass-Amherst,** were from the state. This is the first year for the New Innovator grants.

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Elizabeth Cooney is a health reporter for the Worcester Telegram & Gazette.

OTHER CONTRIBUTORS

Boston Globe Health and Science staff:
Scott Allen
Alice Dembner
Carey Goldberg
Liz Kowalczyk
Stephen Smith
Colin Nickerson
Beth Daley
Karen Weintraub, Deputy Health and Science Editor, and Gideon Gil, Health and Science Editor.

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Berg runs the two grant programs under an NIH initiative intended to support bold and unconventional research that could have a big payoff but also has a higher than usual risk of failure and is therefore less likely to receive approval through the traditional grant process. While the Pioneer awards go to researchers at any point in their careers, the New Innovator awards are limited to scientists who are within 10 years of finishing their doctoral degrees or clinical training and who have not yet won NIH grants for their independent research.

Younger scientists have been waiting longer to get their first grants, from an average age of the mid-30s about 10 years ago to their 40s in recent years, a symptom of increased competition for government funding for science that has been declining in real dollars. The NIH budget doubled from 1998 to 2003 but has been flat since, making it more difficult to win new grants and maintain previous support.

The New Innovator competition drew 2,200 applications, Berg said, compared with 450 for the Pioneer awards.

"We expected there would be a strong response, but not this strong," he said. "I don't think anybody would argue that by funding 1.3 percent of the 2,200 applications we got that we're making much of a dent in the demand."

The demand demonstrates the need for a program that supports riskier work, Berg said.

"The motivation for the program was to find a good way to get outstanding young scientists funded earlier in their careers and to encourage people to really work on things they were most excited about rather than being conservative" and working on things that have a better chance of getting funded, he said.

Nir Hacohen of **Massachusetts General Hospital,** who will study how the immune system senses infectious agents and turns on a response specific to viruses, bacteria or fungi, said the Innovator award he won is what's needed for science to make advances.

"Clearly people are starving for this kind of award," the 40-year-old researcher said in an interview. The current system tends to reward investigators who have already proven their ideas, he said.

Konrad Hochedlinger, 31, of the **Harvard Stem Cell Institute** at MGH, said his Innovator award will help him quickly advance his work in the fast-moving field of stem cell research. He has created a new approach based on work by Japanese scientists to reprogram adult cells into embryonic stem cells.

"It's important that funds be available immediately to get this off the ground rather than waiting for the regular R01 grant," he said in an interview.

Lisa Feldman Barrett (left) of **Boston College,** who won a Pioneer grant, will study the neuroanatomy of emotions such

as anger and fear, pursuing a theory that doesn't fit conventional models. She said she understands how the traditional funding process works.

"It's a very risk-averse strategy, and if people have limited funds it's a good idea, but it can slow innovation and progress," she said in an interview.

Here is the complete list of Boston-area winners, with the NIH description of their research.

NIH Director's Pioneer Award:

Lisa Feldman Barrett, Boston College professor of psychology, who will study how the brain creates emotional experiences like anger and happiness.

Dr. Emery N. Brown, Massachusetts General Hospital professor of anesthesia and Massachusetts Institute of Technology professor of computational neuroscience and health sciences and technology, who will develop a systems neuroscience approach to study how anesthetic drugs act in the brain to create the state of general anesthesia.

James J. Collins, Boston University professor of biomedical engineering, who will develop systems biology and synthetic biology approaches to analyze the bacterial gene regulatory networks underlying cellular responses to antibiotics.

Takao K. Hensch, Children's Hospital Boston professor of neurology, who will explore the role of noncoding RNAs in brain development and as a potential treatment for brain disorders.

Dr. Frances E. Jensen, Children's Hospital Boston professor of neurology, who will examine how seizures in early life alter the developing brain and lead to cognitive disorders.

Gina Turrigiano, Brandeis University professor of biology, who will develop a very high-resolution microscope for probing the molecular structure of synapses.

NIH Director's New Innovator Award:

Ed Boyden, Massachusetts Institute of Technology assistant professor of biological engineering, who will invent and study new methods of controlling the neural circuits that malfunction in neurological and psychiatric disorders.

Dr. Sarah Fortune, Harvard School of Public Health assistant professor of immunology and infectious diseases, who will investigate the mechanisms by which tuberculosis escapes the immune system response.

Dr. Levi A. Garraway, Dana-Farber Cancer Institute assistant professor of medicine, who will use a novel genetic and chemical screening approach to identify

changes in malignant melanoma tumor cells that could be targets for new treatments.

Nir Hacohen, Massachusetts General Hospital assistant professor of medicine, who will use a new genetic approach to dissect immune system pathways that sense disease-causing agents.

Ekaterina Heldwein, Tufts University School of Medicine assistant professor of microbiology and molecular biology, who will use structural and biophysical approaches to discover, in atomic-level detail, how herpes viruses enter their host cells.

Konrad Hochedlinger, Harvard Stem Cell Institute assistant professor of medicine, who will study the reprogramming of adult mouse and human cells into embryonic cells by defined factors.

Alan Jasanoff, Massachusetts Institute of Technology N.C. Rasmussen Assistant Professor of Nuclear Science and Engineering, who will devise genetically controlled, noninvasive methods for measuring brain activity in animals.

Dr. Mark D. Johnson, Brigham and Women's Hospital assistant professor of neurosurgery, who will examine the role of decreased synthesis of microRNA in the development and aggressiveness of human cancer.

Alan Saghatelian, Harvard University assistant professor of chemistry and chemical biology, who will develop advanced analytical chemistry approaches to characterize biomedically important enzymes.

Mehmet Fatih Yanik, Massachusetts Institute of Technology assistant professor of electrical engineering and computer science, who will develop microchip technologies to perform extremely fast studies of gene function in small animals to rapidly identify genetic targets for new drugs.

Posted by Elizabeth Cooney at 04:21 PM

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