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Allan C. Spradling

***** FOR IMMEDIATE RELEASE

SPRADLING RECEIVES \$500,000 GRUBER GENETICS PRIZE FOR NEW GENETIC TECHNIQUES, ADVANCING UNDERSTANDING OF STEM CELLS

New York, NY, JUNE 5, 2008 - Allan C. Spradling, PhD, of the Carnegie Institution and Howard Hughes Medical Institute (HHMI) in Baltimore, is the recipient of the 2008 Genetics Prize of the Peter and Patricia Gruber Foundation for his work on fruit fly genomics and for "fundamental discoveries about the earliest stages of reproduction."

For his contribution to developmental genetics, Spradling, director of Carnegie's Department of Embryology, will receive the Gruber Genetics Prize on July 13, 2008, at the International Congress of Genetics in Berlin. The prize consists of a gold medal and \$500,000.

"Allan Spradling is a stellar choice for the Gruber Genetics Prize. He is a brilliant and visionary scientist who has revolutionized developmental genetics and biology several times over," says Margaret Fuller, PhD, a leading stem cell geneticist at Stanford University.

"Allan is a true biologist. Whenever I talk with him I always learn something important about my own field that I had not previously considered. In addition to his own terrific research, Dr. Spradling has trained and mentored many excellent young scientists who are extending his impact in genetics and developmental biology even further," she adds.

Spradling and his colleague Gerald Rubin, who now directs HHMI's Janelia Farm research campus, carried out the first successful gene therapy in a many-celled organism, the fruit fly *Drosophila*. Spradling went on to show how to use engineered DNA segments to induce mutations, greatly accelerating the ability of researchers to determine the function of *Drosophila* genes and their human counterparts. Together, these advances inaugurated the modern era in which *Drosophila* serves as a versatile model organism for studying human development and disease.

Spradling subsequently used the *Drosophila* system to advance our understanding of stem cells. Working with the ovary, he identified the first stem cell "niches," and defined the molecular pathways that these specialized microenvironments use to regulate stem cell behavior. These findings help guide the study of stem cells and niches in human tissues, including their roles in cancer and aging. Understanding the "niche" may be crucial if stem cells are to fulfill their therapeutic promise and replace cells and tissues lost to injury or disease. More recently, Spradling and his colleagues discovered stem cells in the gut of the fruit fly, a finding that may lead to new insights into digestive diseases, intestinal cancers, and the infection strategies used by insect-borne parasites.

Spradling also advanced our knowledge of egg production in the ovary. He discovered how groups of germ cells work together to enable some of them to develop into functional eggs. In both flies and mice,

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cytoplasmic filaments are reorganized and organelles are transported from cell to cell as part of this process. The reason these events take place remains unproven, but Spradling believes they help remove damaged molecules and organelles from the future oocytes, and transfer them to partner cells that will undergo programmed cell death.

The Genetics Prize honors leading scientists for distinguished contributions in any realm of genetics research. The Foundation's other international prizes are in Cosmology, Neuroscience, Justice, and Women's Rights. Nominations for the 2009 prizes are now open and close on December 15, 2008.

A profile of Spradling, photos, background information and nomination details for 2009 are available online at www.gruberprizes.org. Media contact: Alyson O'Mahoney, (914) 241-0086 ext.13, aomahoney@robinleedyassociates.com.

Additional Information

The official citation reads: The Peter and Patricia Gruber Foundation proudly presents the 2008 Genetics Prize to Allan C. Spradling, Ph.D. a leader in developmental genetics and stem cell biology.

Allan C. Spradling played a pivotal role in creating a method to systematically delete from or add genes to the genome of the fruit fly *Drosophila melanogaster*. He thus helped create the foundation for functional genomic studies of *Drosophila*.

By studying the development and differentiation of *Drosophila* eggs, he made fundamental discoveries about the earliest stages of reproduction. He extended these insights from the fly to the mouse. Germ cells are the ultimate stem cells, and Spradling's discoveries of their intracellular reorganization and specific cellular microenvironment (the stem cell "niche") within the ovary have had enormous impact on the field of stem cell biology.

Laureates of the Gruber Genetics Prize:

- 2007: **Maynard V. Olson**, for his contributions to genome science
- 2006: **Elizabeth H. Blackburn**, for her studies of telomeres and telomerase, and her science advocacy
- 2005: **Robert H. Waterston**, for his pivotal role in the Human Genome Project
- 2004: **Mary-Claire King**, for three major findings in modern genetics: the similarity of the human and chimpanzee genomes; finding a gene that predisposes to breast cancer; and forensic genetics
- 2003: **David Botstein**, a driving force in modern genetics who established the ground rules for human genetic mapping
- 2002: **H. Robert Horvitz**, who defined genetic pathways responsible for programmed cell death
- 2001: **Rudolf Jaenisch**, who created the first transgenic mouse to study human disease





2008 Gruber Genetics Prize...3

The Genetics Selection Advisory Board, an international panel of experts, chose Allan Spradling as the recipient of the 2008 Prize. Its members are:

- Elizabeth H. Blackburn, University of California, San Francisco
- David Botstein, Lewis-Sigler Institute
- Uta Francke, Beckman Center for Molecular and Genetic Medicine
- H. Robert Horvitz, Massachusetts Institute of Technology
- Mary-Claire King, University of Washington
- Leena M. Peltonen-Palotie, Biomedicum
- Robert H. Waterston, University of Washington

The Gruber Prize Program honors contemporary individuals in the fields of Cosmology, Genetics, Neuroscience, Justice and Women's Rights, whose groundbreaking work provides new models that inspire and enable fundamental shifts in knowledge and culture. The Selection Advisory Boards choose individuals whose contributions in their respective fields advance our knowledge, potentially have a profound impact on our lives, and, in the case of the Justice and Women's Rights Prizes, demonstrate courage and commitment in the face of significant obstacles.

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The Peter and Patricia Gruber Foundation honors and encourages educational excellence, social justice and scientific achievements that better the human condition. For more information about Foundation guidelines and priorities, please visit www.gruberprizes.org.

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