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GENETICIST GERALD R. FINK RECEIVES THE $500,000 GRUBER GENETICS PRIZE FOR HIS FOUNDING ROLE IN THE DEVELOPMENT OF YEAST GENETICS

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Gerald R. Fink

June 30, 2010, New York, NY – **Gerald R. Fink, PhD**, a founder of modern yeast genetics and a leader in the use of model-organism genetics to study diverse biological problems, has received the 2010 Genetics Prize of The Peter and Patricia Gruber Foundation. His pioneering work with living yeast cells helped transform the field of molecular biology and ultimately led to the development of new antibiotics, vaccines, and other life-saving drugs.

Fink, 70, who is currently a professor of genetics at the Massachusetts Institute of Technology (MIT), is also being honored for teaching—and inspiring—a generation of geneticists. He was one of the first instructors of the Yeast Genetics Course at Cold Spring Harbor (called "a career-altering course" by many participants) and a founding member and then director for 11 years (1990-2001) of the Whitehead Institute for Biomedical Research in Cambridge, Mass.

He will receive the award November 4 in Washington, D. C., during the annual meeting of the American Society for Human Genetics, and will deliver a lecture at the conference titled "The Promise of Human Genetics."

"Dr. Fink's pioneering and continuing outstanding work throughout many years has made significant contributions to yeast genetics, and also set standards and promoted the field of genetics in much broader contexts as well," says Gruber and Nobel laureate Elizabeth Blackburn, PhD, the Morris Herzstein Professor of Biology and Physiology in the Department of Biochemistry and Biophysics at the University of California, San Francisco.

Leading the list of Fink's groundbreaking contributions to the field of yeast genetics was his 1977 development of yeast transformation—a method for introducing genetic material (DNA) from any organism (including humans) into living yeast cells so that the DNA can be studied for how it expresses itself and for how it passes on information to new generations of cells.

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"Once we figured that out, everything changed," says Fink. "Now, when you wanted to study a gene, you could just do it. You could manipulate the genetics of an organism at will, which made it much easier to figure things out about gene structure."

Today, yeast is used as a kind of biological factory to produce many medically important products, including insulin and vaccines. Fink's yeast transformation method also laid the groundwork for conducting similar genetic manipulations in more complex organisms, including mammals.

Among Fink's many other discoveries was the identification of the genetic mechanisms by which disease-causing fungi form probing filaments and switch from being benign to infectious. When that switch occurs in a type of yeast called *Candida albicans*, for example, the result can be such fungal illnesses as vaginal yeast infections, thrush, and the rare but life-threatening systemic candidal disease. Uncovering the genetic mechanisms behind the formation of the filaments has led to a better understanding of how *Candida* can overpower the immune system—clues that may lead to life-saving anti-fungal drugs.

In addition to his large body of work with yeast, Fink played a key role in developing the small flowering plant *Arabidopsis thaliana* (sometimes called mouse-ear cress) as a model organism for studying plant biology and genetics. Using this model, he developed a way of genetically engineering plants that are tolerant to salt and drought.

Fink, who received his PhD in genetics from Yale University, served for 15 years on the faculty of Cornell University before moving to MIT in 1982, where he continues to do research and teach. "Genetics is not a technology, but a way of thinking about biological problems in a structured way," he says. "It has its own language. I enjoy imparting that way of thinking, that language, to students—and seeing them slowly begin to look at the world around them in an entirely new way."

"Gerry Fink, more than anyone, deserves the credit for making yeast the premier model system for understanding the biology of eukaryotic cells," says David Botstein, director, Lewis-Sigler Institute at Princeton University and Gruber laureate. "He was a founder of this field, he taught generations of his peers and recruited them to the field, he provided the gene manipulation technology that drove the field into the modern era. He led by example with his generosity with strains, materials and ideas. He inspired an astonishingly productive and collaborative scientific community that is a joy to work in."

Additional Information

In addition to the cash award, the recipient will receive a gold medal and a citation that reads:

The Peter and Patricia Gruber Foundation proudly presents the 2010 Genetics Prize to Gerald R. Fink, Ph.D., a founder of modern yeast genetics and a leader in the use of model-organism genetics to study diverse biological problems.

Fink developed a system that allows insertions of laboratory-modified-DNA molecules into their natural locations in the yeast chromosomes. His breakthrough technique enabled the genetic dissection of basic cellular processes and the manufacture of drugs and vaccines in yeast, as well as inspiring similar approaches to the genetic manipulation of diverse organisms.

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Fink applied the "awesome power" of the new yeast genetics to discover how genomic information is transcribed, recombined, suppressed, transposed, and translated. In his own laboratory, he trained a legion of leading geneticists to apply yeast genetics to advance biomedical science, and inspired many more to do so through his teaching and writing.

Laureates of the Gruber Genetics Prize:

2009: Janet Davison Rowley, for her seminal discoveries in molecular oncology

2008: Allan C. Spradling, for his work on fly genomics

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

The Prize recipients are chosen by the Genetics Selection Advisory Board. Its members are:

Elizabeth H. Blackburn, University of California, San Francisco; **Martin Chalfie**, Columbia University; **Mary-Claire King**, University of Washington; **Maynard Olson**, Genome Center, University of Washington; **Janet Rowley**, University of Chicago; **Allan C. Spradling**, Carnegie Institution, Howard Hughes Medical Institute; **Robert H. Waterston**, University of Washington

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The Gruber International 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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For more information on the Gruber Prizes e-mail media@gruberprizes.org or contact Bernetia Akin of the Gruber Foundation at +1 (340) 775-4430 or by mail 140 W 57th St Suite 10C New York, NY 10019.

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