



Indiana University Department of Biology

Spring 2013 Sonneborn Lecture

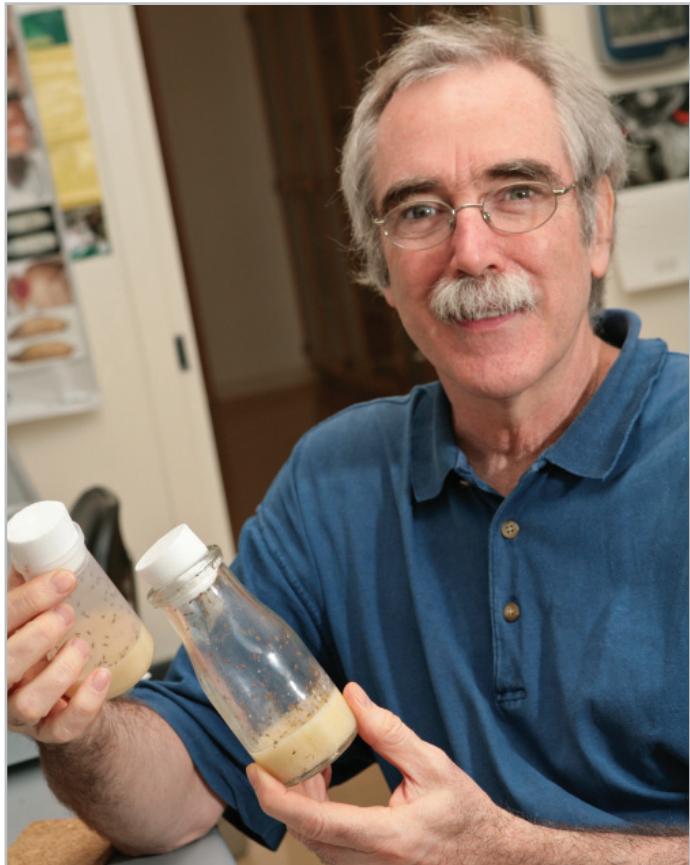


Photo courtesy of Princeton University, Office of Communications

Eric F. Wieschaus

Investigator, Howard Hughes Medical Institute
Squibb Professor of Molecular Biology
Princeton University
Nobel Prize Recipient, 1995

“Cellular Mechanics and Cell Shape Change during *Drosophila* Gastrulation”

April 16, 2013

4:00 p.m.

Myers Hall 130

After the lecture there will be a reception outside of Myers Hall 130.

Hoosier native Eric Wieschaus is known for his groundbreaking work with the fruit fly, *Drosophila melanogaster*. Wieschaus received the Nobel Prize in Physiology or Medicine with Christiane Nüsslein-Volhard and Edward B. Lewis for their discoveries concerning the genetic control of early embryonic development. These developmental biologists were able to identify and classify a small number of genes that are of key importance in determining the body plan and the formation of body segments.

Wieschaus and Nüsslein-Volhard established that genes controlling development could be systematically identified, that the number of genes involved was limited, and that they could be classified into specific functional groups. This encouraged a number of other scientists to look for developmental genes in other species, and in a relatively short time it was possible to show that similar or identical genes also existed in higher organisms and in man.

Three years after their research was published, in 1980 in the journal *Nature*, researchers Matthew Scott and Amy Weiner, working in the Indiana University Bloomington laboratory of Distinguished Professor of Biology Thomas Kaufman, identified the homeobox in fruit flies, a DNA-binding gene sequence that encodes proteins, which tell cells what kinds of structures to make in various segments of a developing embryo. Shortly after that discovery homeobox genes were quickly found in the genomes of mice and humans.

“Eric and his colleague Janni Nüsslein-Volhard bravely embarked on a screen for mutations in *Drosophila* that affected embryonic patterning,” Kaufman said. “It is fair to say that the ground breaking results of their screen were paradigm shifting in the way we think about the genetic regulation of developmental processes. Moreover, the impressive number of novel and previously unknown genes they identified created an entire new wave of investigation and seeded the careers of numerous young investigators. They did the seminal work that changed a field and they were richly deserving of this recognition.”

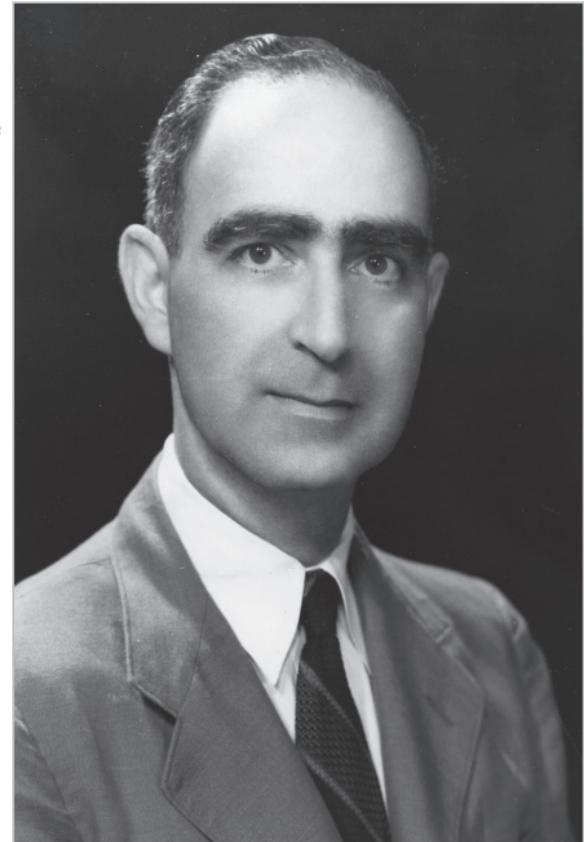
Wieschaus graduated magna cum laude from the University of Notre Dame in 1969. He earned his Ph.D. from Yale University in 1974, and was awarded the John Spangler Nicholas Prize for outstanding doctoral work in experimental zoology. Wieschaus did postdoctoral training with Rolf Nothöfer at the University of Zurich. He joined the Princeton faculty in 1981 and was appointed Squibb Professor of Molecular Biology in 1993.

Wieschaus is a member of the National Academy of Sciences, a fellow of the American Academy of Arts and Sciences, a member of the American Philosophical Society, an associate member of the European Molecular Biology Organization, and a foreign member of the Max Planck Society. He is the recipient of the Genetics Society of America Medal, the Mendel Medal from the Genetics Society (UK), and was inducted into the National Institute of Child Health and Human Development’s Hall of Honor.

History of the Sonneborn Lectures

To honor his contributions to science and his outstanding career, Tracy Sonneborn's friends and colleagues initiated the Sonneborn Lectureship. This is the 31st lecture in the series.

Aside from a few years at Johns Hopkins University, where he received the Ph.D. degree, Tracy Sonneborn spent his entire career at Indiana University. His devotion to the study of Paramecium established him as the world leader in biology and genetics of Protozoa; indeed it is no exaggeration to say that he founded the modern era of study in these areas. One of his major contributions was in demonstrating that preexisting structures in cells can repeatedly determine the patterns of new structures through many generations. Although recognized as an important exception to Mendelian inheritance and a critical element in prion diseases, the mechanism of structural inheritance in biology is not yet understood. "Whatever the final outcome of studies of these phenomena, he must take his place among the most brilliant and devoted experimentalists in the history of biology and a true giant, like no other, in the field of protozoan research," John Preer, <http://newton.nap.edu/html/biomems/tsonneborn.html>. With precision, thoroughness, and infectious enthusiasm, Tracy Sonneborn also contributed unstintingly to teaching at Indiana University. In spite of the many attempts to entice him away, he remained loyal to IU, finding here the environment he thought was best.



Tracy L. Sonneborn, 1905 – 1981

Courtesy of the IU Archives

Note: For more information on Dr. Sonneborn, read John Preer's essay and his 2006 commentary in *Genetics* 172:1373–1377.

Support for this lecture has been provided by the Sonneborn Lecture Fund and the Indiana University Bloomington College of Arts and Sciences' Department of Biology.

Previous Sonneborn Lectures

1981	Charles Yanofsky	1997	Randy W. Schekman
1982	Donald D. Brown	1998	James Forney, Eric Meyer, Meng-Chao Yao, and John Preer
1983	Philip Leder	1999	John Kilmartin
1984	Gerald R. Fink	2000	Elliot Meyerowitz
1985	David S. Hogness	2001	David Prescott
1986	Mark Ptashne	2002	Philip Hanawalt
1987	David Botstein	2003	Sharon Long
1988	Franklin Stahl	2005	Cynthia Kenyon
1989	Ira Herskowitz	2006	J. Richard McIntosh
1990	Thomas R. Cech	2007	David Baulcombe
1991	Elizabeth H. Blackburn	2009	Terry L. Orr-Weaver
1992	Melvin I. Simon	2010	Tian Xu
1993	Christiane Nüsslein-Volhard	2011	C. David Allis
1994	Christine Guthrie	2011	Joseph G. Gall
1995	Gerald M. Rubin		
1996	Lucy Shapiro		