

## 2008 MARCH OF DIMES PRIZE IN DEVELOPMENTAL BIOLOGY

### BIOGRAPHICAL SKETCH

**PHILIP A. BEACHY, PHD**  
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As a high school and college student, Philip A. Beachy, PhD, enjoyed science and thought of becoming a doctor. He studied the cello, performed with orchestras and chamber groups, and considered a career in music.

Music and science are similar, he said, in that both benefit from an analytical approach.

Today, Dr. Beachy, a professor at Stanford University School of Medicine in California, is a leading researcher in the field of molecular biology of development. He investigates how protein signals, such as those from the hedgehog gene, control not only the growth and organization of an embryo, but also the maintenance of healthy tissue in adults. Abnormalities in these signals are implicated not only in birth defects but also in cancer.

Dr. Beachy spent eight years of his early life in Puerto Rico, attending a Spanish-language school while learning to read and write English at home. When he was 9 years

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old, Dr. Beachy's family moved to Goshen, Indiana, where he finished his secondary education and entered Goshen College at the age of 16. He originally planned to attend medical school after graduation from college.

Then he returned with a friend to Puerto Rico as a volunteer working to paint the exterior of a hospital. The friends finished the job in half the expected time and ended up inside the hospital, scrubbing-in for surgeries and holding retractors. Although Dr. Beachy enjoyed his taste of clinical medicine, he says he learned it was not the best fit for him.

His decision to embark instead on a research career was inspired in part by reading several issues of *The New Yorker* magazine, which contained pre-publication excerpts of Horace Freeland Judson's 1979 book, "*The Eighth Day of Creation*," a monumental account of the birth of molecular biology. Following graduation from Goshen College, he spent a year doing research and taking additional chemistry courses at Indiana University.

After considering several graduate programs, Dr. Beachy enrolled at Stanford University in the Genetics Department. Fascinated by the lectures and research of Dr. David Hogness\* in biochemistry, however, he transferred to this department and earned his doctorate in biochemistry in 1986.

In his thesis research, Dr. Beachy helped analyze the structure and products of fruitfly (*Drosophila*) genes that, when mutated, lead to extra sets of wings or legs. He vividly remembers the thrill when he looked through the microscope and realized that proteins from these genes are expressed in the nuclei of cells in specific segments – and when he later realized that they bind to specific DNA sequences, indicating that these proteins control other genes.

Dr. Beachy worked at the Carnegie Institution's Department of Embryology in Baltimore for two years, and in 1988 accepted a faculty position at The Johns Hopkins University School of Medicine. In 2006, he returned to Stanford, where he continues to

study the roles of hedgehog gene proteins and other protein signals. He is interested in how the distribution of protein signals is regulated, how cells recognize and respond to different concentrations of signals, how these pathways evolved, and their normal and abnormal roles in tissue maintenance and cancer growth.

Dr. Beachy received the Outstanding Young Scientist Award from the Maryland Academy of Sciences in 1997, and the National Academy of Sciences Award in Molecular Biology in 1998. He was elected to the National Academy of Sciences in 2002, and became a fellow of the American Academy of Arts and Sciences in 2003.

Dr. Beachy is married to Dr. Katrin Ingrid Andreasson, a neurologist at Stanford who studies cell signaling pathways that affect nerve cell survival in neurodegenerative disease and stroke. They have two teenage sons, Christopher and Jasper, who are high school and middle school students in Palo Alto, California.

The March of Dimes Prize in Developmental Biology has been awarded annually since 1996 to investigators whose research has profoundly advanced the science that underlies the understanding of birth defects. The March of Dimes Foundation created the Prize as a tribute to Dr. Jonas Salk, who received Foundation support for his work to create a polio vaccine.

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\*Note: Co-recipient of the 1997 March of Dimes Prize