



Whitehead Institute  
for Biomedical Research  
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## Basic Facts About Whitehead Institute

### FOUNDING VISION

Whitehead Institute is a nonprofit, independent research and teaching institution with pioneering programs in cancer research, developmental biology, genetics and genomics. It was founded in 1982 through the generosity of Edwin C. “Jack” Whitehead, a businessman and philanthropist who sought to create a new type of research institution, one that would exist outside the boundaries of a traditional academic institution, and yet, through a teaching affiliation with Massachusetts Institute of Technology (MIT), offer all the intellectual, collegial and scientific benefits of a leading research university.

### WHITEHEAD TODAY

True to its founding vision, the Institute gives outstanding young investigators broad freedom to pursue new ideas, encourages novel collaborations among established investigators and accelerates the path of scientific discovery. Research at Whitehead is conducted by up to 22 principal investigators (Members and Fellows) and more than 200 visiting scientists, postdoctoral fellows, graduate students and undergraduate students from around the world. Whitehead is affiliated with the Massachusetts Institute of Technology in its teaching activities, but wholly responsible for its own research programs, governance and finance.

### LEADERSHIP

Whitehead Institute is guided by a distinguished Board of Directors, chaired by Charles D. Ellis, and by a Board of Advisory Scientists, composed of some of the world’s most eminent biologists. In December 2005, Whitehead Member David Page was named Director of Whitehead Institute.

### FACULTY

Whitehead has a world-renowned faculty consisting of 17 Members and one Affiliate Member. The faculty include the recipient of the 2011 National Medal of Science (Dr. Rudolf Jaenisch); 2010 National Medal of Science (Dr. Susan L. Lindquist); the recipient of the 1997 National Medal of Science (Dr. Robert A. Weinberg); eleven Members of the National Academy of Sciences (Drs. David Bartel, Gerald R. Fink, Jaenisch, Lindquist, Harvey F. Lodish, Terry L. Orr-Weaver, David C. Page, Hidde Ploegh, David Sabatini Weinberg and Richard Young); five Members of the Institute of Medicine (Drs. Fink, Jaenisch, Lindquist, Page and Weinberg); seven Fellows of the American Academy of Arts and Sciences (Drs. Fink, Jaenisch, Lindquist, Lodish, Page, Ploegh, and Weinberg); and five Howard Hughes Medical Institute investigators (Drs. Bartel, Lindquist, Page, Peter Reddien, and Sabatini).

### Selected Achievements in Biomedical Science

Isolated the first tumor suppressor gene, the retinoblastoma gene, and created the first genetically defined human cancer cells (Weinberg)

Provided definitive evidence for protein-only inheritance (Lindquist)

Isolated key genes involved in diabetes, hypertension, leukemia and obesity (Lodish)

Mapped and cloned the male-determining Y chromosome, revealing a unique self-repair mechanism (Page)

Developed a method for genetically engineering salt- and drought-tolerant plants (Fink)

Developed the first comprehensive cellular network describing how the yeast genome produces life (Young)

Identified more than 50 genes in frogs involved in the formation of nerve tissue, paving the way for new strategies to repair damaged nerve cells in humans (Sive)

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#### DIRECTOR

Dr. David C. Page

#### FOUNDING FACULTY AND MEMBERS

Dr. Gerald R. Fink  
Dr. Rudolf Jaenisch  
Dr. Harvey F. Lodish  
Dr. Robert A. Weinberg

#### MEMBERS

Dr. David Bartel  
Dr. Iain Cheeseman  
Dr. Mary Gehring  
Dr. Piyush Gupta  
Dr. Susan L. Lindquist  
Dr. Terry L. Orr-Weaver  
Dr. Hidde Ploegh

Dr. Peter W. Reddien  
Dr. David Sabatini  
Dr. Hazel L. Sive  
Dr. Jing-Ke Weng  
Dr. Richard A. Young

#### AFFILIATE MEMBER

Dr. David Gifford

#### BOARD OF ADVISORY SCIENTISTS

Dr. Bonnie Bassler  
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Dr. Richard P. Lifton  
Dr. Michael Stratton  
Dr. Alexander van Oudenaarden

All Whitehead faculty also are members of the Biology Department or other departments at MIT.

#### WHITEHEAD FELLOWS

One of the unique features of Whitehead Institute is the Whitehead Fellows Program. This program, designed to nurture future leaders in science, provides, at one time, five to seven exceptionally talented young scientists with the rare opportunity to set up an independent research program as an alternative to a traditional postdoctoral position.

#### GENOME RESEARCH

Whitehead researchers are making major progress in genome-wide studies of gene regulators and in understanding the Y chromosome. The Institute was an international leader in the Human Genome Project, the effort that identified the complete sequence of DNA letters that make up the instructions for a human being. With its Center for Genome Research as the core facility, Whitehead recently helped launch the Broad Institute, a unique collaboration among Whitehead, MIT and Harvard University and their affiliated teaching hospitals. The Broad Institute's mission is to speed development of medical applications of genome research.

#### TECHNOLOGY TRANSFER

The Institute serves as a major resource for the pharmaceutical and biotechnology industry with over 100 licensing agreements on technologies ranging from AIDS vaccine candidates to novel robotic technologies that have led to exciting new products and jobs at major corporations and at a variety of start-up companies.

#### PUBLIC PROGRAMS

One of Whitehead's core missions is to help the public understand both the potential of biomedicine and its implications. Programs include Whitehead's Partnership for Science Education, which consist of the Spring Lecture Series for High School Students, the Whitehead Seminar Series for High School Teachers and Whitehead's Job Shadowing Program for high school students. Additional outreach programs include specific symposiums/vists geared towards smaller target audiences.

#### BOARD OF ASSOCIATES

Members of the Whitehead Board of Associates serve as ambassadors for the Institute. They support the Institute's scientific mission through personal philanthropy and by sharing their leadership skills in science, business, finance, education, communication and other fields.

#### LOCATION

Whitehead Institute occupies Nine Cambridge Center, a seven-story building with state-of-the-art facilities for biomedical research.

#### Selected Achievements (continued)

Identified mechanisms by which prions propagate, work that is relevant for understanding conditions such as mad cow disease (Lindquist)

Developed the first transgenic mouse model of a severe human genetic disease, as well as the first mouse clone carrying an inserted gene (Jaenisch)

Created novel approaches to the development of cancer, HIV and tuberculosis vaccines (Young)

Discovered proteins in fruit flies that ensure proper partitioning of hereditary material, leading to new understanding of common genetic diseases (Orr-Weaver)

Discovered new ways to fight stubborn fungal diseases (Fink)

Found that microRNAs affect most human protein-coding genes (Bartel)

Reported a new mechanism by which dendritic cells sense the presence of antigens and instruct the immune response (Ploegh)

Created model of cancer stem cells in humans (Weinberg)

Demonstrated first therapeutic use of induced pluripotent cells in mice (Jaenisch)

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