

Department of Biology

The Department of Biology has 67 active faculty members; 15 are located in the Whitehead Institute, 13 are located in the Center for Cancer Research, 6 are joint appointees with the Department of Brain and Cognitive Sciences, 2 are joint with Chemistry, 2 are joint with Biological Engineering, and 1 is joint with the Department of Civil and Environmental Engineering. Three faculty members also hold appointments in Biological Engineering. Including active emeritus faculty, the department includes 4 Nobel laureates, 26 members of the National Academy of Sciences, and 9 investigators of the Howard Hughes Medical Institute. The department has a stellar international reputation in research and teaching and has been a leading contributor to the development and application of molecular and cellular biology.

Educational Activities

In AY2004, a total of 325 undergraduates registered in Biology during the fall 2003 and/or spring 2004 terms. Twenty-one of these students left biology for another major during the year. Forty-eight students declared biology as a major during the academic year. The bachelor of science in biology degree was awarded to 102 students from September 2003 through June 2004: 78 in the Course 7 Program and 24 in the 7-A Program. Seventy-two freshmen declared biology as their major for fall 2004.

Student Awards

Anne Kloimweider, a senior in Biology from Dayton, Ohio, received the Priscilla King Gray Award for Public Service, given to an undergraduate exceptionally committed to public service at MIT and its surrounding communities.

Dang Vu, a junior in Biology from Jamaica Plain, Massachusetts, received a List Foundation Fellowship in the Arts for his work "The Poison Clan Suite: A Celebration of Mutant Culture."

Martin Kurtev, a senior in Biology from Chicago, Illinois, received the Hans-Lukas Teuber Award for outstanding academics in brain and cognitive sciences.

Melanie Cornejo, a junior in Biology from Lima, Peru, and Sidharth Puram, a junior in Biology from Edina, Minnesota, received honorable mention for outstanding work in a particular course in brain and cognitive sciences; Sidharth also received the Biomedical Engineering Society/Johnson and Johnson Excellence Award for outstanding research in biomedical engineering, as well as a Randolph G. Wei undergraduate research fellowship.

Max Cohen, a junior in Biology and Physics from Seattle, Washington, and Woon Teck Yap, a junior in Biology from Singapore, also received the Biomedical Engineering Society/Johnson and Johnson Excellence Award for outstanding research in biomedical engineering.

Peter Miller, a junior in Biology and Chemical Engineering from Atlanta, Georgia, received a Barry Goldwater Scholarship for students who plan to pursue careers in mathematics, the natural sciences, or an engineering discipline that contributes to the technological advances of the United States.

Sudha Amarnath, a senior in Biology and Chemical Engineering from Lansing, Michigan, received the Robert T. Haslam Cup in Chemical Engineering.

Sonali Rudra, a senior in Biology and Chemical Engineering from Sugar Land, Texas, received the Roger de Friez Hunneman Prize in Chemical Engineering.

Peng Wu, a senior in Biology from Ames, Iowa, received the Merck Index Award for outstanding scholarship in chemistry.

Jennifer Lee, a senior in Biology from Moraga, California, received the Chemistry Research Award.

Dawn Wendell, a senior in Biology and Earth, Atmospheric, and Planetary Sciences from Farmington, Connecticut, received the John C. and Elizabeth J. Chato Award for outstanding performance in bioengineering.

Sinae Vogel, a junior in Biology from Radcliff, Kentucky, received an Austin Kelly III/Richard Douglas Traveling Fellowship given to juniors for travel that supports study in the humanities or arts for her tropical disease research in Puerto Escondido, Mexico.

Ilona Karmel Writing Prizes were awarded to a number of Biology students. Eun J. Lee, a senior in Biology from Houston, Texas, received the Boit Manuscript Prize for a work of fiction (honorable mention), and also an S. Klein Prize for scientific and technical writing (2nd prize). Christine Casas, a senior in Biology from San Antonio, Texas, received a Dewitt Wallace Prize for scientific writing for the public (1st prize). Jolene Singh, a junior in Biology from New York, received a Dewitt Wallace Prize for scientific writing for the public (honorable mention). Theresa Shyr, a junior in Biology from Lafayette, Louisiana, received a Robert A. Boit writing prize for an essay (3rd prize). Melissa Latigo, a junior in Biology from Addis Ababa, Ethiopia, received a Robert A. Boit writing prize for a short story (3rd prize). Cem Albayrak, a junior in Biology from Istanbul, received a Writing and Humanistic Prize for engineering writing (1st prize). Stephen Lee, a junior in Biology from Pittsburgh, received a Writing and Humanistic Prize for engineering writing (honorable mention).

Biology Department Awards

Two seniors, Cynthia Lien from Armonk, New York, and Michael Wongchaowart from Chagrin Falls, Ohio, received the John L. Asinari Award for outstanding research in life sciences.

Peng Wu, a senior from Ames, Iowa, received the Whitehead Prize for a student who has shown outstanding promise for a career in biological research.

Melanie Cornejo, a junior from Lima, Peru, received the Merck Award for outstanding research and academic performance in biophysical or bioinformatics sciences.

Bob Yin, a senior from Staten Island, New York, received the Gene M. Brown Award for a senior who has both an outstanding academic record and has made important contributions to the biology teaching program.

The following 23 biology majors were chosen for Phi Beta Kappa: Sudha R. Amarnath, Lansing, Michigan; Joshua Paul Aronson, Centereach, New York; Jason Michael Baron, Sarasota, Florida; Philip Johannes Butler, Lubbock, Texas; Jennifer Tenye Chang, Houston, Texas; Jonathan Dale Choi, Tulsa, Oklahoma; Neelesh Lalji Chudasama, Watchung, New Jersey; Arushi Manekha deFonseka, Wilmington, Delaware; Anne Marie Elizabeth Faust, Derby, New York; Michael Ganz, Amherst, Massachusetts; Daniel Steven Herman, Yorktown Heights, New York; Mindy Ju, Charlottesville, Virginia; Teresa Sora Kim, West Hartford, Connecticut; Martin Vasilev Kurtev, Chicago, Illinois; Nadya Mawjee, Markham, Canada; Sonali Rudra, Sugar Land, Texas; Ashleigh Lynn Sanders, Fairfax, Virginia; Leah M. Scharf, Sharon, Massachusetts; Irene Seungwan Sonu, McLean, Virginia; Michael Boonlieng Wongchaowart, Chagrin Falls, Ohio; Peng Wu, Ames, Iowa; Joseph Lih-Kang Yeh, Ellicott City, Maryland; and Bob Yin, Staten Island, New York.

Degrees

From July 1, 2003, to June 30, 2004, the department awarded a total of 22 PhD degrees and 2 SM degrees in biology. Nine degrees were awarded in the Joint Program in Biological Oceanography with the Woods Hole Oceanographic Institute (WHOI). The maximum number of PhD candidates registered in the Biology Department in AY2004 was 216, with another 34 in the Joint Program with WHOI. The incoming class for fall 2004 will be 41 students in the Biology doctoral program, with an additional 8 students in the Joint Program in Biological Oceanography with WHOI.

Research

The research activities of the department cover most areas of modern biology, including biochemistry, genetics, microbiology, cancer biology, cell and developmental biology, immunology, neurobiology, virology, and structural biology. The research achievements over the last year are too numerous to be discussed here, and only a few are listed.

Among the many notable research accomplishments is the work from the Sharp, Bartel, and Burge labs on the fundamental mechanisms of RNA-mediated gene interference. The resulting discoveries have given us deep insight into how RNA can function in the process of gene regulation and have provided a set of important experimental and computational tools to use for the analysis of gene function in higher organisms.

Also of note is the work from Lenny Guarente's lab on the cellular function of the histone deacetylase SIR2. This gene, which has been linked to aging in a number of experimental organisms, was recently found to have a part in regulating lipid storage and metabolism, providing a clue to the longstanding puzzle of why calorie restriction generally extends the life span of mammals.

Terry Orr Weaver's lab has identified new proteins regulating gene replication and segregation during development.

Luk Van Parijs's lab has developed a way to exploit RNA interference to silence genes in a wide variety of mammalian cells, including embryonic cells.

Michael Yaffe and his lab created a screen for proteins this past year that is revolutionary in the area of proteomics, helping scientists to discover a new domain in polo kinases, one of the most critical kinases that control cell proliferation.

Personnel

After years of dedicated service to the department's administration, Bob Sauer stepped down as department head.

Angelika Amon was promoted to tenure this year. David Bartel, Jianzhu Chen, Jackie Lees, Hazel Sive, and Peter Sorger were promoted to full professor. Chris Burge, Troy Littleton, and Luk Van Parijs were promoted to associate professor without tenure. Leona Samson of Biological Engineering and Carlos Lois of Brain and Cognitive Sciences accepted joint appointments in the department.

We are pleased to report that Thomas Schwartz has accepted a position as an assistant professor in the department. He is a structural biologist/biochemist who studies the mechanisms of intracellular protein transport into and out of the nucleus and endoplasmic reticulum.

Faculty Awards

It is a pleasure to report the following honors and awards to Biology faculty during the past year.

- Tania A. Baker was elected to the American Academy of Arts and Sciences.
- Chris Burge was named Whitehead career development associate professor of biology.
- Leonard Guarente was elected to the American Academy of Arts and Sciences.
- Nancy Hopkins was awarded the Gordon Y. Billard Award for "special service" to MIT, the University of California San Francisco Medal, and the Radcliffe Institute Graduate Medal. She was also elected to the National Academy of Sciences.

–H. Robert Horvitz was elected to the American Philosophical Society and Institute of Medicine (US National Academy of Sciences) as a member, 2003. He became an honorary member of the Physiological Society, London, UK. He received an honorary MD from the University of Rome, Tor Vergata, 2004.

–Amy Keating was awarded the Surdna Foundation Scholar Award, the Outstanding UROP Mentor Award, and the Robert A. Swanson career development professorship in the life sciences.

–Eric Lander was awarded the Research America Award for sustained leadership at the national level, the Lila Gruber Cancer Award, and the American Scientist of the Year Award, R&D. He was elected to the American Academy of Dermatology. He was named Josiah Willard Gibbs Prize Lecturer by the American Mathematical Society.

–Harvey Lodish was elected to the Nominating Committee for the National Academy of Sciences. He is currently president of the American Society for Cell Biology and serves on the Executive Committee of the Kenyon College Board of Trustees. He joined the Advisory Board of the Life Sciences Institute, University of Michigan, as well as the Scientific Advisory Board of Children’s Hospital, Boston.

–Terry Orr-Weaver was elected chair of the Scientific Advisory Committee of the Damon Runyon Cancer Research Foundation and elected vice president and president-elect of the Genetics Society of America.

–David Sabatini was awarded the Rita Allen Fellowship, the Charles Ross Scholar Award, and was selected the Pew Scholar in the Biomedical Sciences.

–Graham Walker was elected to the American Academy of Arts and Sciences. He was also elected to the editorial board of the *Advancement of Arts and Sciences Magazine*.

Chris A. Kaiser
Department Head
Professor of Biology

More information about the Biology Department can be found on the web at <http://mit.edu/biology/www/>.