Broad Institute

The Eli and Edythe L. Broad Institute is a collaboration of the Massachusetts Institute of Technology, Harvard University and its affiliated hospitals, and the Whitehead Institute for Biomedical Research.

Between July 1, 2004 and June 30, 2005, the Broad Institute of MIT and Harvard engaged in new collaborative projects to study diseases such as type 2 diabetes and to sequence the genomes of parasites such as *Plasmodium falciparum*. The Broad also received funding and accolades that made new discoveries possible. Major findings appeared in prominent journals such as *Nature* and *Science* throughout the year. This report highlights some of these achievements.

Mission

The Broad Institute's scientific mission is to create tools for genomic medicine and make them broadly available to the scientific community, and to apply these tools to propel the understanding and treatment of disease.

Its organizational mission is to enable collaborative projects that cannot be accomplished solely within the traditional setting of individual laboratories, and to empower scientists through access to cutting-edge tools.

Accomplishments and Future Projects

In September, Broad researchers identified all of the controlling elements in the yeast genome, findings that helped launch a new phase of human genome research. The following month, the International Human Genome Sequencing Consortium, a group of research institutes that includes the Broad, published a scientific description of the finished human genome sequence.

In October, the Broad and Novartis announced the creation of a joint project to uncover the genetic basis of type 2 diabetes. In March, a consortium of 12 biomedical organizations including the Broad teamed up with the goal of creating a comprehensive library of gene inhibitors using a process known as RNA interference or RNAi. In June, funding from the National Institute of Allergy and Infectious Diseases enabled the Broad's Microbial Sequencing Center to begin sequencing the malaria parasite. The Broad also received funding to conduct large-scale analyses of genetic variants called single nucleotide polymorphisms or SNPs.

Major Publications

- Transcriptional regulatory code of a eukaryotic genome, *Nature* (September)
- The significant role of an increasing number of introns in eukaryotic evolution, *Public Library of Science* (December)
- Genomic structures control gene activation, *Cell* (January)
- Chimp and human genomes show genetic differences at recombination hotspots, *Science* (February)

- Evolution of new gene regulatory motifs, *Nature* (March)
- Novel drug combination overcomes drug-resistant myeloma cells, *Proceedings of the National Academy of Sciences* (June)
- Micro-RNAs open door for new genomic approach to cancer diagnosis, *Nature* (June)

Honors and Awards

- In September, Vamsi Mootha received a MacArthur Fellowship.
- In October, the Broad Institute received $14 million from the National Center for Research Resources for large-scale SNP analysis.
- The National Cancer Institute awarded a grant to core member Todd Golub and his group of investigators from the Broad Institute and Dana Farber Cancer Institute in October.
- In February, Broad Institute director Eric Lander received the 2004 AAAS Public Understanding of Science and Technology Award
- In May, four Broad-affiliated researchers were named to the National Academy of Sciences.

Eric S. Lander
Director
Professor of Biology

More information about the Broad Institute can be found at http://broad.mit.edu/.