

Bioengineering Professor Trey Ideker Named Top 35 Young Scientist by MIT's Technology Review Magazine

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Trey Ideker, an assistant professor of bioengineering at UCSD's Jacobs School of Engineering, has been named one of the nation's top 35 innovators under age 35 by MIT's *Technology Review* magazine. The magazine recognized Ideker, 33, and other chemists, biologists, software engineers, and chip designers for gravitating to "the most interesting and difficult scientific and engineering problems at hand, and arrive at solutions no one had imagined. They take on big issues."

The annual recognition, which in the past had named 100 young scientists, is intended by the magazine's editors to identify outstanding inventors, discoverers, and entrepreneurs whose "achievements will shape the world we live in for decades to come." The recognition also highlights what's hot in emerging technology. A panel of 19 leading scientists selected this year's top 35 innovators.

Ideker has focused his research at the intersection of biology and computer science. He published a paper as a graduate student that helped define the discipline of systems biology. "His research goals today reflect those of the entire field: to integrate the myriad data that researchers can collect about a cell into coherent computer models," said an article published today on *Technology Review's* Web site. "As an assistant professor of bioengineering, Ideker is not only improving these models but employing them in biological discovery. For instance, he is looking for protein networks uniquely present in pathogenic organisms; these could make good drug targets. He hopes that, ultimately, systems-derived models will let researchers simulate how potential drugs will affect the body--long before the compounds are tested in humans."

Ideker received a Ph.D. in molecular biotechnology in 2001 at the University of Washington, and for the next two years was a Pfizer Fellow of Computational Biology at the Whitehead Institute for Biomedical Research in Cambridge, MA. He became an assistant professor of bioengineering at the Jacobs School in 2003.

In February 2005, a team of researchers in Israel, German, and the United States led by Ideker reported in the *Proceedings of the National Academy of Sciences* the first ever comparison of the protein interactions in baker's yeast, a worm, and the fruit fly. The analysis revealed that the protein "wiring" diagrams in one species are often conserved in all three. The discovery supports the idea that more selective pharmaceuticals could be designed to tweak the wiring plan of human cells to more effectively treat diseases while also generating fewer side-effects.

In the May 2005 issue of *Nature Biotechnology*, a team at UCSD led by Ideker reported a new technique that enabled them to identify the "circuitry" of yeast and predict new functions for 343 yeast proteins based on their positions in the wiring diagram. The technique made use of data from automated experiments that identified "synthetic lethal" mutations in yeast in which single mutations were harmless, but various combinations of two otherwise harmless mutations generate yeast cells that fail to grow. Such pairs of mutations are thought to mimic the underlying basis for many human diseases in which combinations of mutated genes, rather than mutations of single genes, are at fault.

The 2005 TR35 list: Parham Aarabi, University of Toronto Vladimir Aksyuk, Lucent Technologies' Bell Labs Regina Barzilay, MIT Helen Blackwell, University of Wisconsin Thijn Brummelkamp, Whitehead Institute for Biomedical Research Martha Bulyk, Harvard Medical School Stewart Butterfield, Flickr (Yahoo!) George Candea, Stanford University Bryan Cantrill, Sun Microsystems Andy Carvin, Digital Divide Network Narasimha Chari, Tropos Networks Jia Chen, IBM Watson Research Center Bram Cohen, BitTorrent Dennis Crowley, Dodgeball Matthew DeLisa, Cornell University Kevin Eggan, Harvard University Anita Goel, Nanobiosym Saul Griffith, Squid Labs Paul Hergenrother, University of Illinois Katrine Hilmen, ABB Corporate Research Tracey Ho, Caltech Trey Ideker, UCSD Hang Lu, Georgia Institute of Technology Samuel Madden, MIT Yael Maguire, ThingMagic Melissa Mahoney, University of Colorado at Boulder Rajit Manohar, Cornell University David Pennock, Yahoo! Research Labs Matthew Rabinowitz, Rosum Adam Rasheed, GE Global Research Daniel Riskin, UCLA Medical Center Shiladitya Sengupta, MIT Francesco Stellacci, MIT Adam Stubblefield, Johns Hopkins University Haitao Zheng, UCSB

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