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Human Genome in a Box



Image Title: James Watson, "father" of DNA, helps Maryland teens explore multimedia human genome kit. - William Geiger

As scientists around the world celebrated the publication of the completed human genome in February, teenagers from Montgomery County, Maryland took a Human Genome Project multimedia kit for a trial run at the National Institutes of Health (NIH).

The free kit consists of an interactive CD-ROM, a 20-minute videotape, a poster and a booklet on genetics and the future of medicine. The National Human Genome Research Institute (NHGRI) developed the kit with support from HHMI, the American Society of Human Genetics, the Pharmaceutical Research and Manufacturers of America, the U.S. Department of Energy, and the journals *Nature* and *Science*. Teachers and the public can order it online.

Three 17-year-olds were among those who tried out the kits during a kickoff demonstration at the NIH. "This CD reminds me of Sesame Street," said Kevin Arnold as he watched a computer-animated chromosome scoot across his computer screen. Dawn Hill said the material "starts out easy but then you can go into a lot more depth." Amanda Dempster liked the links to original

scientific articles, saying she's been unable to read archival material online because she lacks subscriptions to scientific journals.

They and the other teen test pilots are doing research in NIH laboratories through a program supported by HHMI. While the students navigated the kit's animated timeline and discussed related ethical issues, several teachers who also came to the NIH event described the problems they face in preparing lessons about genetics and genomics. Their textbooks can't keep up with the pace of discovery, the teachers said. Often, the best they can do is photocopy articles from newspapers and magazines.

Sanford Herzon, who teaches science at Watkins Mill High School in Gaithersburg, Md., hopes the new genome kit will help fill this gap, although he wonders how to fit it into a crowded curriculum. "Time is a big issue, and we have so much to cover," he said. "I could see it used in microbiology labs and in Advanced Placement biology classes"

The kit's designers hope it will prove to be a valuable resource for teachers such as Herzon, enabling students at different levels to:

- Link directly to Web sites that provide timely information from scientists working on the human genome worldwide.
- Put genetic discoveries in historic context with a timeline that starts with the 1859 publication of Charles Darwin's

Origin of Species

and extends to the present.

- Access original research papers by scientists such as Nobel laureate James Watson, who in 1953 coauthored with Francis Crick the seminal journal article describing the double-helix structure of DNA.

Watson was a special guest at the kit demonstration, and he told the students that, "You're seeing the level of science you'll get when you're in college." He and NHGRI Director Francis Collins autographed kits after the demonstration.