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HHMI Names 20 New Million-Dollar Professors: Top Research Scientists Tapped for their Teaching Talent

Teaching often takes a back seat to research at leading American universities. Determined to change that fact, the Howard Hughes Medical Institute (HHMI) combed the country for leading research scientists who, through their teaching and mentoring, are striving to ignite the scientific spark in a new generation of students. Now 20 of the best will receive \$1 million each from HHMI to put their innovative ideas into action as HHMI professors at 18 research universities across the country.

The Institute does not tell the HHMI professors what to do or how to approach science education. Rather, HHMI provides them with the resources to turn their own considerable creativity loose in their undergraduate classrooms. Some will design programs to attract more women and minorities to science. Others will turn large introductory science courses or classes for non-science majors into engaging, hands-on learning experiences that challenge students to think like working scientists.

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"The scientists whom we have selected are true pioneers—not only in their research, but in their creative approaches and dedication to teaching," said Thomas R. Cech, HHMI president. "We are hopeful that their educational experiments will energize undergraduate science education throughout the nation."

The Institute awarded \$20 million to the first group of HHMI professors in 2002 to bring the excitement of scientific discovery to the undergraduate classroom.

The experiment worked so well that neurobiologist and HHMI professor Darcy Kelley convinced Columbia University to require every entering

freshman to take a course on hot topics in science. Through Utpal Bannerjee's HHMI program at the University of California, Los Angeles, 138 undergraduates were co-authors of a peer-reviewed article in a top scientific journal. At the University of Pittsburgh, HHMI professor Graham Hatfull's undergraduates mentored curious high school students as they unearthed and analyzed more than 30 never-before-seen bacteriophages from yards and barnyards. And Isiah Warner, an award-winning chemist and HHMI professor at Louisiana State University, developed a "mentoring ladder," a hierarchical model for integrating research, education, and peer mentoring, with a special emphasis on underrepresented minority students.

"The HHMI professors are as excited about teaching as they are about research, and it definitely rubs off on their students," said Peter Bruns, HHMI vice president for grants and special programs. "Undergraduates need a window into the excitement and fulfillment that scientists get from science. They need to discover that science is a way of learning and knowing, involving critical thinking, problem solving, and asking answerable questions. In this program we are supporting faculty to use research grade innovation to advance science education."

The Institute will give smaller renewal grants to eight of the original 20 professors to help them find ways to sustain the parts of their programs that worked best and to disseminate them to the broader community of teachers.

Last year, HHMI invited 100 research universities with outstanding track records in sending graduates to medical or graduate school to nominate up to two faculty members to compete for the HHMI professorships. A panel of distinguished research scientists and educators, including some HHMI professors selected in the last competition, reviewed 150 applications. They evaluated the potential impact of the proposals on undergraduate science education, as well as the quality of the applicants' research and educational accomplishments, and the potential for the proposed programs to serve as models elsewhere.

The new HHMI professors are accomplished researchers from diverse fields, including genetics, biochemistry, plant pathology, bioengineering, neuroscience, biophysics, and computational biology. Two are members of the National Academy of Sciences. Two have won Presidential Early Career Awards.

Some of the professors' plans include: Winston Anderson, a professor of biology at historically African-American Howard University in Washington, D.C., wants to give his undergraduates "a competitive edge" for entering biomedical science careers. He plans intensive mentoring and a summer exchange program that will take students to African countries such as Ghana, Ethiopia, Mali, or Nigeria to study tropical diseases and ethnopharmacology—the use of indigenous plants for medicinal purposes. Susan Wessler, a Regents professor of plant biology at the University of Georgia, intends to respond to the proponents of "intelligent design" by guiding her undergraduates through bioinformatic and genetic analyses of

transposable elements in plant genomes, so they can witness evolution in action. Transposable elements, the focus of Wessler's research, are pieces of DNA that make copies of themselves that are inserted throughout the genomes of plants and animals, at times promoting evolutionary change. Scott Strobel, a Yale University biophysicist and biochemist, will take undergraduates "bio-prospecting" for promising natural products in the world's rain forests. The students will then purify and analyze the compounds they collected and test them for potentially beneficial activity.

The new HHMI professors are: **Richard Amasino** University of Wisconsin, Madison **Winston Anderson** Howard University **Bonnie Bartel** Rice University **Victor Corces** The Johns Hopkins University **Catherine Drennan** Massachusetts Institute of Technology **Irving Epstein** Brandeis University **Louis Guillette, Jr.** University of Florida **Leslie Leinwand** University of Colorado at Boulder **Claudia Neuhauser** University of Minnesota, Twin Cities **Diane O'Dowd** University of California, Irvine **Baldomero Olivera** University of Utah **Pavel Pevzner** University of California, San Diego **Jasper Rine** University of California, Berkeley **Robert Sah** University of California, San Diego **Scott Strobel** Yale University **David Walt** Tufts University **Susan Wessler** University of Georgia **Jennifer West** Rice University **Huntington Willard** Duke University **Richard Zare** Stanford University

The following 2002 HHMI professors received renewal awards:

Utpal Banerjee University of California, Los Angeles **Sarah C.R. Elgin** Washington University in St. Louis **Jo Handelsman** University of Wisconsin-Madison **Graham Hatfull** University of Pittsburgh **Darcy Kelley** Columbia University **Richard Losick** Harvard University **Rebecca Richards-Kortum** Rice University **Isiah Warner** Louisiana State University and A&M College