Introductory Speech for Patrick O. Brown*

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It is my honor to introduce the 2005 Curt Stern awardee, Patrick Brown, M.D., Ph.D. Established in 2001, the Curt Stern Award recognizes scientific excellence in the field of human genetics on the basis of research performed over the last 10 years. In particular, this award is given to a recipient not only as a mark of outstanding scientific achievement, but also to a researcher who has pioneered an area of research that has significantly advanced the field of human genetics. The revolutionary research of Dr. Brown in both the technological development and application of gene-based expression microarrays eminently qualifies him for this award.

Dr. Patrick Brown is a professor in the Department of Biochemistry at Stanford University School of Medicine and an Investigator of the Howard Hughes Medical Institute. He began his career in the field of chemistry, grad-uating with his B.A. (honors) from the University of Chicago in 1976. He then moved to the Department of Biochemistry, where he was awarded his Ph.D. on studies of DNA topoisomerases, under the mentorship of Nicholas Cozzarelli, Ph.D. After completing his M.D. and pediatric residency, he moved to the University of California–San Francisco, where he worked as a postdoctoral fellow in the laboratory of Drs. J. Michael Bishop and Harold E. Varmus. In 1988, he joined the faculty of the Department of Biochemistry, Stanford University School of Medicine, as an assistant professor and an investigator of the Howard Hughes Medical Institute.

In 1995, he was the lead investigator of two seminal publications[1,2] that ushered in the era of gene-expression–microarray analysis and revolutionized molecular biology. Although this initial work focused on detailing the transcriptional program of yeast and *Arabidopsis,* the utility of microarray technology to understand developmental, physiological, and pathological processes in humans became apparent. The development of cDNA microarrays to interrogate the expression differences of tens of thousands of genes simultaneously represents both a technological and a conceptual advance of our field. His work to systematically characterize variation in gene expression anticipated the next logical extension of the Human Genome Project.

Consequently, Dr. Brown and his collaborators have paved the way, demonstrating the utility of gene-expression microarrays for pinpointing transcriptional differences between normal and cancer tissues,[3–5] characterizing transcriptional differences due to stress or pharmacological agents,[6] and identifying genes that distinguish development pathways of normal tissues.[78–9] Due largely to the efforts of Dr. Brown, his students, and postdoctoral fellows, the use of gene-expression microarrays has become commonplace—a technology recognized as one of the "most powerful tools in modern biology."[10] Dr. Brown's dedication to the unconditional public release of data, publications, and protocols has played a pivotal role in making this technology accessible to countless labs around the world.

His work has had far-reaching implications and has changed the way we think about problems in human genetics, from a largely reductionist to a holistic perspective. In an interview in 2002, he was quoted as saying "the

studies that tend to really have lasting value tend to be the ones where the approach taken at the outset was systematic and the kind of data collected was broader than might have been dictated by a particular narrow question being asked."[11]

Dr. Brown's career and achievements have epitomized that philosophy.

In my opinion, the true mark of the most successful scientist occurs when their invention and their contributions become so commonly accepted that the time prior to their invention becomes quickly forgotten. Such a paradigm shift has occurred with respect to expression analysis and microarray technology in human genetics. Today, we recognize Dr. Pat Brown for his pioneering contributions to this revolution. On behalf of the American Society of Human Genetics and as a member of the Awards Committee, I am privileged to present the 2005 Curt Stern Award to Dr. Patrick O. Brown.

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