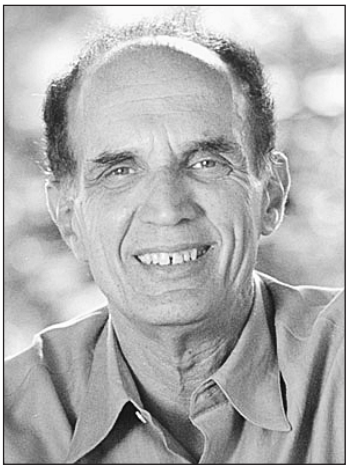
Efron Receives National Medal of Science



Bradley Efron

On May 29, 2007, President George W. Bush announced the recipients of the 2005 National Medal of Science. Among the eight medalists is BRADLEY EFRON, the Max H. Stein Professor and Professor of Statistics and of Health Research and Policy at Stanford University. Efron was cited "for his contributions to theoretical and applied statistics, especially the bootstrap sampling technique; for his extraordinary geometric insight into nonlinear statistical problems; and for applications in medicine, physics and astronomy."

The *Notices* asked Carl Morris of Harvard University to describe briefly Efron's work. Morris responded: "Brad Efron is renowned as a quintessential, theoretical, mathematical, interdisciplinary, and applied statistician. His foreseeing the onset of cheap and fast computation inspired his most famous breakthrough in 1979, the 'bootstrap', which marks the onset of the computer-intensive age in statistics. The bootstrap, further developed in his 1982 and 1993 books, allows data analysts to assess the long-run performances of their statistical procedures, each in the context of the observed data set, by recalculating the statistical procedure on thousands of randomly chosen 'bootstrap samples'.

"While Efron's celebrated work on linear and curved exponential families and on statistical information principally has drawn from mathematical statistics, many of his pioneering ideas have stemmed from his regular interactions with real scientific data. These especially include theoretical advances for micro-array, survival, clinical trial, and drug compliance data in biostatistics, and for red-shift measurements in astrophysics. He even has used baseball data and counts on Shakespeare's vocabulary for inspiration and for context when explaining theoretical advances and to understand new models for empirical Bayes and Stein estimation, and for estimating the number of an unseen species."

Born in St. Paul, Minnesota, in 1938, Efron earned his doctorate in statistics from Stanford in 1964 and joined the Stanford faculty in 1965. He received a MacArthur Fellowship in 1983. His other honors include the Wilks Medal, the Parzen Prize, and the Rao Prize, as well as membership in the U.S. National Academy of Sciences and the American Academy of Arts and Sciences. Efron has served as president of both the American Statistical Association and the Institute of Mathematical Statistics. In January 2007 he delivered the lecture "Baseball, Shakespeare, and Modern Statistical Theory" at the Joint Mathematics Meetings in New Orleans.

The National Medal of Science is the country's highest distinction for contributions to scientific research. According to a news release from the Office of Science and Technology Policy, "The National Medal of Science honors individuals for pioneering scientific research in a range of fields, including physical, biological, mathematical, social, behavioral, and engineering sciences, that enhances our understanding of the world and leads to innovations and technologies that give the United States its global economic edge." The National Science Foundation administers the award, which was established by Congress in 1959.

Other mathematical scientists receiving the National Medal of Science in the past decade are: Louis Nirenberg (1995); Richard Karp and Stephen J. Smale (1996); S.-T. Yau (1997); Cathleen S. Morawetz (1998); Felix E. Browder, Ronald Coifman, and Leo Kadanoff (1999); John G. Thompson and Karen K. Uhlenbeck (2000); Calyampudi R. Rao and Elias M. Stein (2001); James G. Glimm and Edward Witten (2002); Carl de Boor and Duncan Luce (2003); and Dennis Sullivan (2004).

—Allyn Jackson