

# OBITUARY



## James F. Crow 1916–2012

Bruce Weir

The field of population genetics lost an elder statesman on 4 January 2012 when James F. (Jim) Crow died just short of his 96th birthday. Jim was a major contributor to the literature of genetics, with nearly 250 publications and an impressive *h*-index of 40. His largest contributions were to *Drosophila* genetics, to studies on the role of mutation in human health and evolution, and to the broader fields of theoretical population and quantitative genetics. He was also a major voice representing the genetics field and was often called upon to bring clarity and reason to the contentious issues of the day.

Jim Crow studied biology and chemistry as an undergraduate at Friends University in Wichita, Kansas, and then zoology for his Ph.D. at the University of Texas at Austin. His doctoral research was with J.T. Patterson and was concerned with premating genetic isolating mechanisms in *Drosophila mulleri*. A substantial part of Jim's training in Austin was in mathematics, from which he gained the tools he displayed in his later work in population genetics. Jim spent the Second World War years teaching essentially the entire biology and biomedicine curricula as well as statistics at Dartmouth College. In 1948, he moved to the University of Wisconsin–Madison for the remainder of his career. At Madison, he served terms as chair of the Department of Medical Genetics and of the Laboratory of Genetics and was acting dean of the medical school for 2 years. Although he retired in 1968, he remained scientifically active, and in 2012 he published a commentary on the mutation involved in multiple endocrine neoplasia. In 2010, against his advice, the J.F. Crow Institute for the Study of Evolution was named in his honor.

Jim's early *Drosophila* research made use of salivary gland analysis to look at chromosomal rearrangements. He then collaborated with several notable *Drosophila* geneticists, including Rayla Greenberg Temin, Yuichiro Hiraizumi, Dan Hartl and Terumi Mukai, on a range of studies in natural fly populations. His work addressed the effects of mutation, natural selection and mating patterns on genetic variation and population composition. A recurring theme was the role of mutation in evolution in flies, and this work paralleled his work on human mutation.

Jim was a member of the Committees on Biological Effects of Atomic Radiation (BEAR) supported by the US National Academy of Sciences after the Second World War. In his 2006 interview with *BioEssays*, he recounted his role in getting H.J. Muller, who wanted to use genetic load theory to estimate the impact of radiation on human mutation rates, and Sewall Wright, who thought that approach was oversimplified, to agree on a report from the Committees. The discussions between Crow and Muller, also involving Newton Morton, led to their highly cited 1956 paper in the *Proceedings of the National Academy of Sciences*. Crow wrote extensively about human mutation rates, with an emphasis on methods for estimating rates and on assessing the impact of mutation on human health. His elegant 1963 *Genetics* paper on genetic load, written with Takeo Maruyama and Motoo Kimura, may be regarded as one of a series of precursors to Kimura's theory of neutral evolution.

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Crow made many contributions to theoretical population genetics, including work on natural selection, effective population size and the measurement of inbreeding and genetic drift. By far, his most-cited work was on the number of alleles that can be maintained in finite populations, which was coauthored by Kimura and published in 1964 in *Genetics*. Crow's mentoring of Kimura had a major impact on the field of population genetics, and Kimura made clear his appreciation. Jim had both the understanding of population genetics to put Kimura's theories in context and the understanding of mathematics to appreciate Kimura's novel contributions and to help bring them to print. Newton Morton, another Crow mentee, had first introduced Kimura's writing to Jim.

Crow and Kimura's authoritative 1970 text *An Introduction to Population Genetics Theory* was just one of Jim's books. Crow influenced several generations of geneticists with successive editions of *Crow's Notes*, eventually published as a textbook in 1986. Earlier, he had published *Genetic Notes: An Introduction to Genetics*. Jim's written influence on genetics was enhanced by his contributions to the Perspectives section of the journal *Genetics* from 1987 until 2008. Although Jim and his coeditor Bill Dove solicited articles from others, they wrote many of the Anecdotal, Historical and Critical Commentaries on Genetics. Crow's broad understanding and erudition shine through in the series. The quality of his writing serves to reinforce his reputation as an outstanding teacher: he taught General Genetics at Wisconsin in a course regarded by many students as the best in their college experience.

Crow provided a voice of reason at several points during his career. In a 1969 paper in the *Harvard Educational Review*, he responded to Arthur Jensen's discussion on IQ, and later he chaired the National Research Council committee that issued a report in 1996 on forensic DNA profiling. The report remains the basis of current forensic practice around the world, and it came at a time of considerable debate over population genetics issues involved in assigning numerical strength to evidence of matching DNA profiles.

In 1992, Jim was willing to be co-opted by several population geneticists to raise concerns about the perceived lack of appreciation of the field by the US National Institutes of Health (NIH) review panels: he published open letters in *Genetics* and *The American Journal of Human Genetics* calling for help in addressing these concerns. As past president of both the Genetics Society of America and the American Society for Human Genetics, his support carried considerable weight.

Crow's scientific publications and breadth of contributions to his field secured him election to the National Academy of Sciences, the Institute of Medicine, the American Philosophical Society, the American Academy of Arts & Sciences and the World Academy of Art & Science. He was a foreign member of the Royal Society of London and an honorary fellow of the Japan Academy. He was a fellow of the Wisconsin Academy of Sciences, Arts & Letters.

Jim Crow was a natural storyteller. I was startled a few years ago when I heard a student chide him for talking about the past rather than the future of population genetics. Crow disarmed the student by remarking that he then had more past than future. Sadly, he was correct, and we are all the poorer for his passing. ■