James Crow

(1916–2012)

Population geneticist who studied mutation, selection and random drift.

Much about James Franklin Crow, who died on 4 January two weeks short of his 96th birthday, challenges our sense of scale. Over seven decades, he contributed to an astonishing array of topics in genetics, and the list of his students and postdocs reads like a who's who. One of them, the pioneering geneticist Motoo Kimura, wrote that getting Crow as his adviser after a period of uncertainty was such a joy it was like "meeting Buddha in Hell". Crow also played the viola for 45 years with the Madison Symphony Orchestra. He once performed with the great violin soloist Yehudi Menuhin.

Crow is primarily known for his work in theoretical population genetics. He developed a concept of genetic load — a measure of how fitness may be reduced by selection — and applied it widely, in particular to calculating how quickly natural selection would remove deleterious mutations from a population. With Kimura in 1965, he quantified how sex accelerates the accrual of beneficial mutations in an evolving population. He refined the concept of effective population size and provided simple connections between selection at the genetic level (genotype) and at the physically observed level (phenotype).

Crow's expertise drew him into the public-health sphere. He served on a National Academy of Sciences committee to assess genetic damage caused by radiation in victims of the atomic weapons dropped on Hiroshima and Nagasaki. And he advised the US government in the 1980s and 1990s on forensic DNA tests, leading to their widespread adoption in the courts.

Born in 1916, in Phoenixville, Pennsylvania, Crow grew up in Wichita, Kansas, where his father taught biology at Friends University. Crow took a bachelor's degree there and moved to the University of Texas at Austin for his PhD in genetics, which he earned in 1941. After several years at Dartmouth College in Hanover, New Hampshire, he moved to the University of Wisconsin-Madison in 1948, where he remained for the rest of his career.

He was interested in the pursuit of truth, and never advocated a particular opinion. This must be one reason why Crow and Kimura's 1970 textbook *An Introduction to Population Genetics Theory* has had a lasting role in the development of the field.

Most of Crow's experimental work was concerned with deleterious mutations, both *de novo* and segregating within populations. In addition, his lab made two landmark discoveries in *Drosophila* genetics: a locus called segregation distorter, which can manipulate Mendelian genetic segregation in meiosis, found by Yuichiro Hiraizumi and Larry Sandler; and P elements, which can cause high rates of mutation, found by William Engels (and independently by Margaret Kidwell, then at Brown University in Providence, Rhode Island). P elements are now widely used for genetic modification of fruitflies.

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CLEAR JUSTIFICATION

Characteristically, Crow declined to be a co-author of papers reporting these two discoveries: he did not feel that providing a good working environment and sage advice was sufficient to warrant it. It was often hard to convince Crow to put his name on a paper even when this was clearly justified.

Crow was very concerned about the negative impact on human health of mildly deleterious alleles that, due to advances in medicine, can accumulate almost unchecked by natural selection. Individually, these may do little — causing a slight increase in blood pressure, for instance. But cumulatively their effect could prove fatal. Unlike some other prominent geneticists, Crow was always careful to separate science and policy and never advocated simplistic approaches to dealing with this problem.

After his retirement in 1986, Crow largely devoted himself to writing about the early history of genetics and evolutionary biology. He was well placed, having had close long-term acquaintance with many pioneers — including Sewall Wright, Ronald Fisher, J. B. S. Haldane and Hermann Muller. His command of the subject and fondness for it, his benevolence and fairness, attention to detail and beautiful prose mean that Crow's publications remain required reading for anybody interested in this crucial phase.

Crow was famous for his kindness, which coexisted with the firmness of his views. There was no better person to point out a grave error in your work — making him always in demand and appreciated by his undergraduate students. My dentist in Madison once completely forgot about my filling, when he realized that I worked in Crow's laboratory. He still spoke of "Dr Crow" with awe some 25 years after taking one of Crow's courses during pre-medical training.

Those who knew Crow well will thoroughly miss his low-key benign humour, often directed towards himself. When asked about his religious views, he always cheerfully replied that the Bible is "important if true". Still, he cherished the ethics of his Quaker heritage. Crow also explained to an insistent advocate of a healthy lifestyle that exercise prolongs life only by as much time as one spends exercising, so he did not see a point in it. He always remained active — and died in his sleep.

To borrow Crow's phrase, originally about Wright: "They don't make them like that any longer". ■

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