Courtesy of Gurdon Institute

Anne McLaren 1927–2007

Paul Burgoyne

Anne McLaren died in a car accident along with her former husband and lifelong friend Donald Michie while traveling from Cambridge to London on 7 July 2007. While she made major contributions to studies of mouse genetics and development, her immense strength was in distilling scientific information and communicating it to others, and she worked tirelessly to ensure that sound scientific reasoning informed public policy making.

After receiving her D.Phil. at Oxford in 1952, she worked together with Michie in London at University College and then at The Royal Veterinary College, where they became interested in the issue of nature versus nurture in determining phenotypic characteristics. Their work, together with that of their subsequent colleague John Biggers, undermined the prevalent assumption that the genetic uniformity of inbred mice led to phenotypic uniformity. Because inbred mice lack the buffering provided by heterozygosity, for some parameters they proved more variable than randomly bred mice; the least variable mice were the genetically uniform F_1 progeny from crosses between inbred strains in which heterozygosity is restored. Their demonstration that some of the variability of inbreds was due to the 'poor' uterine environment of inbred mothers was linked to their development of techniques for embryo transfer to surrogate mothers and, with John Biggers, preimplantation embryo culture (*Nature* **181**, 1147–1148; 1958 and *Nature* **182**, 877–878; 1958).

In 1959, Anne moved to Edinburgh to join the ARC Institute of Animal Genetics, headed by C.H. Waddington, where she remained until 1974. Early in this period, Anne foresaw the potential of the chimeric mouse model being developed by A.K. Tarkowski (with whom she received the Japan Prize in 2002) for studying the relative importance of 'nature versus nurture' at the cellular level and for identifying cell-autonomous gene functions. She subsequently published a seminal volume, *Mammalian Chimaeras* (Cambridge University Press, 1976). In 1974 Anne was asked to set up the MRC Mammalian Development Unit (MDU) at University College in London, which she directed until its closure in 1992. During this period, Anne remained actively involved in her own research, and with other members of the Unit she published key papers relating to her interests in germ cell development and sex determination. Her penetrating studies of sex-reversed XX *Sxr* mice—in particular, two seminal studies published in *Nature* (**300**, 446–448; 1982 and **312**, 552–525; 1984)—had a huge impact on the field of sex determination and Y-linked gene functions. Robin Lovell-Badge has acknowledged that Anne's work, together with her "firm encouragement" during his time at the MDU, contributed greatly to his eventual success in identifying and cloning the testis-determining gene *Sry*. After the closure of the MDU, Anne moved to the Gurdon Institute in Cambridge, where she continued to be active in research until her death.

Anne was quintessentially a mouse geneticist, but so much more as well. She touched the lives of so many, as is evident if you visit the Gurdon Institute website (http://www.gurdon.cam.ac.uk/anne-mclaren.html). Anne was of aristocratic stock (her father, Sir Henry McLaren, was 2nd Baron Aberconway), and, at the MDU, I was once astounded to see a letter addressed to "The Honorable Anne Laura Dorinthea McLaren." Anne eschewed titles, and almost anyone who has met her will invariably refer to her as Anne rather than Doctor, Professor or Dame (as she became in 1993). Anne also had her own highly developed sense of social justice and responsibility, to which her whole life is a testimony. She joined the Communist Party, and this led to her being denied a visa to the United States until around 1991—16 years after she had become a Fellow of the Royal Society! Anne was an inveterate traveler, heading off to meetings in all parts of the globe with only a small rucksack and a plastic bag of papers to read on the plane. During the cold war period, she made a number of visits to Eastern Europe and Russia; Mike Snow of the MDU recalls that on these occasions she also carried a small suitcase packed with items requested by her hosts behind the iron curtain. I remember one occasion when she went off in search of specific fly-fishing lures requested by the Russian cytogeneticist A.P. Dyban.

As to Anne's sense of social responsibility, it is impossible to do justice here to her efforts through teaching, writing, lecturing and serving on innumerable committees to promote the wider understanding of science, particularly among policy makers. Perhaps her major contribution in this regard was in the field of 'assisted reproduction'. From 1982, when she was a member of the Warnock committee considering the ethical and legal implications of *in vitro* fertilization, until February of this year, when she was a member of a working party set up by the Academy of Medical Sciences to consider research involving human and nonhuman embryo combinations, Anne worked indefatigably to explain the underlying science to ethicists and legislators. Baroness Mary Warnock has commented that Anne had "spellbinding powers of exposition and explanation."

I first met Anne as a Ph.D. student at the Institute of Animal Genetics, and in 1979 she invited me to join the staff of the MDU. Soon after my arrival, I suggested to Anne that improvements could be made in the way the mouse colony was managed. At this point I learned that Anne's response to criticism was to rapidly assess its merit, and, if this assessment was positive, to move quickly to decisive action. In this instance, I left five minutes later having been given the job of overseeing the running of the mouse colony, which I did for the next 13 years! I also came to appreciate that she did not allow her work commitments to compromise her dedication to the upbringing of her children. When I joined the MDU, in order to spend time with my young family, I worked an 8 a.m. to 5:30 p.m. day, but on one occasion, the demands of some mouse embryos required that I stay into the evening. On realizing I was still there, Anne chastised me, saying, "You should be at home with your family!"

In April of this year, I was fortunate to be present, together with many of Anne's friends and former colleagues, at a Symposium at the Gurdon Institute to mark Anne's 80th birthday; I will cherish these happy memories. Anne was a consummate scientist, but above all she was a wonderful human being. ■

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