

RICHARD V. OSBORNE

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**Howard B. Newcombe**  
**1914-2005**



Dr. Howard B. Newcombe, an influential pioneer in radiation genetics and long-time researcher at the Chalk River Nuclear Laboratories, died at Deep River on February 14, 2005 in his 91<sup>st</sup> year.

Born in Kentville, Nova Scotia on September 19, 1914, Howard obtained degrees from Acadia University and the Imperial College of Tropical Agriculture, Trinidad, before completing his PhD in Genetics at McGill University in 1939. He spent a year as a Research Scholar in cytogenetics at the John Innes Horticultural Institution, in Surrey, England, followed by a short period with the British Ministry of Supply, before joining the war effort as a Radar Officer in the Royal Navy Volunteer Reserve. In 1946 he came back to North America as a Research Associate with the Department of Genetics of the Carnegie Institute, working at Cold Spring Harbor on Long Island. In 1947 he joined the Atomic Energy Project at Chalk River and was Head of Biology Branch from 1949 to 1970 and Head of Population Research Branch from 1970 until his retirement in 1979 from what was, by then, Atomic Energy of Canada Limited.

Howard's work on the genetic effects of radiation and on applying computers for medical record linkage led to international recognition. In 1949 he introduced what has become widely referred to as the Newcombe Fluctuation Test. His experiment, which involved the statistical analysis of the distribution of colonies of mutant cells, showed that mutations in bacteria arose randomly and spontaneously and were not an adaptive response to environmental conditions; a finding that contributed to the end of Lamarckian biology. In a 1957 paper on the biological hazards of <sup>90</sup>Sr, he suggested a non-threshold linear model for cancer induction by radiation, an extension of the view, by then generally held, that genetic mutations followed this model. Such a model became the basis, still in place, for recommendations by the International Commission on Radiological Protection. That same year he pointed to the implications for population health research that the application of computers to analyzing records could make. He went on to develop computer-based probabilistic linkage models for health records; essentially a way of bringing together two or more items of separately recorded data about a person. The approach has proved to be an extremely powerful tool for public health research including epidemiological studies of the effects of radiation. His work in genetics and in medical record-linkage made him well-known internationally; he collaborated in the early 1960s with Nobelist Hermann Muller at Indiana University and, throughout his career, he lectured extensively in North America and Europe on record-linkage techniques.

Recognition of his scientific achievements included election to Fellowship in the Royal Society of Canada in 1963; a 1967 Centennial Medal; the International Scientific Achievement Award in the Area of Medical Information Processing in 1974; and the Genetics Society of Canada Annual Award of Excellence in 1975. Honorary DSc degrees were awarded to him by McGill University in 1966 and by Acadia University in 1970.

Howard was the Secretary of the Genetics Society of America from 1956 to 1958 and was instrumental in starting the Genetics Society of Canada, serving as its President in 1965. He was President of the American Society of Human Genetics in 1965, a member of the Board of Directors of the Society for the Study of Social Biology from 1971 to 1974 and a member of the editorial boards of Radiation Botany, Mutation Research and Human Genetics Abstracts.

He was a member (and served two terms as Chairman) of the Committee on Radiation Effects of the International Commission on Radiation Protection from 1962 to 1972 and a member of the main commission of the ICRP from 1965 to 1977. He served on the Expert

Advisory Panel on Human Genetics of the World Health Organization and he was one of the earliest members of the Canadian delegation to the United Nations Scientific Committee on the Effects of Atomic Radiation.

Howard continued to write and advise after his retirement from Chalk River, maintaining a lively interest in radiation genetics and population health. Even in recent years, a chance encounter with him on his daily excursion to pick up the mail could lead to a stimulating exchange of ideas.

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*(Author's title given as of the time of writing)*