

Robert Hall Haynes, O.C., FRSC (1931-1998)

Past President



Robert Haynes became the 104th President of the Royal Society of Canada on June 15, 1995.

A fourth generation Canadian born in London, Ontario, on August 27, 1931, he received his primary and secondary education in Port Colborne and Brantford respectively. He graduated in mathematics and physics (1953), and biophysics (Ph.D. 1957), from the University of Western Ontario. He was Distinguished Research Professor of Biology at York University, Toronto.

In the mid-fifties Haynes joined a small, but historically significant, movement of physicists into biology that had begun, primarily in Germany and Britain, a few years before World War II. These migrant physicists were to play a seminal role, out of all proportion to their numbers, in the advent of molecular biology and genetic engineering, fields that continue to spawn amazing practical advances in medicine, biotechnology, and plant and animal breeding, as well as basic biological research.

Among molecular biologists and geneticists, Haynes is best known for his pioneering research on the ways in which cells are able to repair many types of damage that chronically afflict the genetic material (DNA) of all organisms. Were it not for the existence of these repair, or error correction, mechanisms, neither the genetic integrity of individuals, nor the evolutionary stability of species, could be maintained. During the past thirty years there has been a veritable explosion of research worldwide on DNA repair, and its relation to the occurrence of mutations, especially in human cells. This, in turn, has led to important breakthroughs in understanding cancer, certain genetic diseases, aging, speciation and sex, as well as the biological effects of exposure to radiation and mutagenic chemicals. (For a personal memoir describing these developments see his "My Road to Repair in Yeast: the importance of being ignorant", in *The Early Days of Yeast Genetics*, M. Hall & P. Linder, eds., Cold Spring Harbor Laboratory Press, New York, 1993, pp. 145-171).

For his work on DNA repair and mutagenesis, he received, among other honours, the Flavelle Medal of the Royal Society of Canada (1988).

Throughout his career he maintained an active interest in the physical as well as the biological sciences, and has written, from time to time, essays on various topics in the history, philosophy and socio-political aspects of science and new technologies. He also was an avid collector of antiquarian books in science and philosophy.

Upon completing his Ph.D. under the late Professor Alan C. Burton, FRSC, he worked as a postdoctoral fellow with Professor Joseph Rotblat in the Physics Department of St. Bartholomew's Hospital Medical College, University of London. In 1958 he became a member of the Department of Biophysics at the University of Chicago. It was there that he and his co-workers made some chance observations in radiation microbiology that led them to postulate the existence of DNA repair mechanisms.

In 1964 he was appointed Associate Professor of Biophysics in the University of California at Berkeley. There he continued his work on DNA repair, partly in collaboration with Professor Philip Hanawalt of Stanford University, and together they produced the first *Scientific American* reader on molecular biology (*The Molecular Basis of Life*, W.H. Freeman, San Francisco 1968). This and a succeeding volume sold widely and did much to promote interest in molecular biology among the rising generation of biologists.

In 1968 he returned to Canada to become professor and chairman of the new Biology Department at York University. Here he continued his work on DNA repair and mutagenesis, but also initiated further research in environmental mutagenesis and the genetic consequences of disturbances in DNA precursor biosynthesis. In 1974-75 he was a Visiting Fellow at Yale University. *In 1982 he was elected a Fellow of the Royal Society of Canada*, and in 1988 he became a Fellow of the Berlin Institute for Advanced Studies (*Wissenschaftskolleg zu Berlin*), where he was in residence for most of 1989.

He was strongly committed to the promotion of science education and research as critical factors in economic and social development, and in this connection travelled and lectured extensively in Asia and Latin America. In 1990 he was elected as a foreign member of the Third World Academy of Sciences and of the Pakistan Academy of Sciences in 1994.

He served the Canadian scientific community in many capacities, for example, as a member of the National Research Council of Canada, as a founding executive member of the Canadian Institute for Advanced Research, and as President of the Genetics Society of Canada. He was instrumental in bringing the sixteenth International Congress of Genetics to Toronto in 1988 and served as its president. This meeting attracted some 4000 scientists from seventy-four countries, the largest congress ever held in the ninety-five year history of genetics research.

He became an Officer of the Order of Canada in 1990, and in 1993 a *Festschrift* in his honour was published as a special issue of the leading international journal in his field, *Mutation Research*. In 1995 he received a D.Sc. *honoris causa* from the University of Manitoba.

Married to Professor Jane Banfield, a lawyer and political scientist also at York University, he had three sons and two grandchildren.

Dr. Haynes died in Toronto, Ontario on December 22, 1998.