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World authority on cancer causes

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DONALD GRAHAM MacPHEE

SCIENTIST

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DONALD MacPhee, a world authority on the radiation and chemical causes of cancer, has died in the Austin Hospital after a battle with cancer. He was 67.

MacPhee's scientific career was devoted to understanding how chemicals cause changes in DNA, which can lead to mutations or cause cancer. His early research showed how bacterial systems can be used to determine whether common substances, such as hair dyes and industrial chemicals, might produce permanent genetic damage.

He was dedicated to drawing public attention to the potential risks of the increasing number of substances to which humans are exposed. At the same time he was scornful of the fanatics who make unsubstantiated claims of the dangers of radiation from power lines and mobile phones without proper scientific evidence.

In 1999, MacPhee's international reputation was confirmed when, following an international search, a selection committee from the US National Academy of Sciences recruited him as chief of the radiobiology department at the Radiation Effects Research Foundation in Hiroshima, Japan. His five-year term at the foundation revitalised the 28-person department before MacPhee and his wife, Valerie, returned to Australia in 2004.

MacPhee was born and educated in Scotland, and graduated from Edinburgh University in 1964 with honours in bacteriology, followed in 1967 with a doctorate in microbial genetics.

He then moved to the United States, to a postdoctoral research position at Stanford University, before coming to Melbourne in 1970 to join La Trobe University's genetics department.

MacPhee devoted his professional life and his considerable intellect to understanding how DNA damage arises, and how errors in some of the DNA repair processes lead to the establishment of permanent genetic changes that can lead to genetic diseases and cancer. This work underpinned the Ames test, in which bacterial systems are used to assess the capacity of chemicals to cause mutation or to be carcinogenic.

MacPhee was promoted to reader and associate professor in microbiology in 1983, and he soon became a nationally and internationally recognised expert in his field, with wide-ranging research projects.

One example is an investigation into the environmental health aspects of a Japan-Australian coal to oil conversion project.

He consulted extensively for a wide range of chemical, pharmaceutical and manufacturing companies, for the Department of Defence, for a number of House of Representatives and Senate committees, and for the Victorian Environment Protection Authority; he was principal scientific adviser to the EPA chairman from 1996 to 1999.

In the mid-1970s he founded the Australia New Zealand Environmental Mutagen Society (ANZEMS), and organised one national and two international conferences on the environmental effects of solar radiation. He also organised and presided over the 5th International Conference on Environmental Mutagens in Melbourne in 1993.

In 1999 it was decided to amalgamate the ANZEMS with the Australian Society for Clinical and Experimental Pathology to form the Mutagenesis and Experimental Pathology Society of Australasia.

MacPhee was president of the International Association of Environmental Mutagen Societies from 1993, and also served on the organising committees for international conferences in France and Japan.

In 1989, his health deteriorated because of a rare auto-immune disease, which he battled for the next two decades. Having narrowly survived several setbacks, he received a successful liver transplant in 1993. Despite other medical problems, the transplant gave him a second lease of life.

MacPhee's wide circle of friends ranged across many disciplines and a broad range of interests. He was a long-time member of Table 14, the lunchtime discussion group at La Trobe University, and led many robust discussions on medicine, sport, politics, science and world affairs. He was a member of Australian Skeptics and was particularly concerned with countering pseudo science and superstition, appearing in the media and on the web, especially on the effects of radiation.

Despite the enormous health challenges he faced in the latter half of his career, MacPhee was always optimistic, positive and determined. He published more than 100 scientific articles and papers - about 40 of these after the onset of his illness - and only a few weeks before his death he was still planning for the future.

MacPhee stood out as a leader, for his intelligence, warmth and humour, and above all else for his courage.

He shared with his family interests in music, cinema, Japan and rugby.

MacPhee is survived by his wife, Valerie, son, Murdoch, daughter, Cait, and grandchildren, Emily, Alyssa, Alexander and Iain.

This tribute was prepared by professors Paul Fisher, John McKenzie, and Greg O'Brien and Dr Bob Parsons.