

Connie J. Eaves (1944–2024)

By Nagarajan Kannan & Aniruddha J. Deshpande

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Connie Eaves, a formidable figure and a global authority on haematopoietic, mammary and cancer stem cells, passed away peacefully on 7 March 2024 at the age of 79, leaving behind her husband, Allen Eaves (Order of Canada), along with 4 children and 11 grandchildren, and an incredible scientific legacy. Born Constance Halperin on 22 May 1944 in Ottawa, Connie grew up in Kingston, Ontario, Canada. Her critical and logical thinking was heavily influenced by her father, the acclaimed mathematician and social activist Israel Halperin (Order of Canada).

Connie was initially interested in medicine but decided to pursue science and attended Queen's University in Kingston, Canada. She received her bachelors degree in biology and chemistry in 1964 and her masters degree in biology in 1966, in which she studied oncogenic viruses. She completed her PhD in immunology at the University of Manchester, UK, working under the guidance of Laszlo Lajtha, a leader in the field of haematology at Christie Hospital & Holt Radium Institute, before she permanently returned to Canada. In her doctoral research, Connie discovered that antigen-insensitive stem cells in the bone marrow proliferate and differentiate upon immunization, giving rise to distinct antibody-forming progeny, heralding the discovery of B cells and T cells.

Connie had the fortune of receiving post-doctoral training in medical biophysics (1970–1973) under the supervision of James Till and his collaborator Ernest McCulloch at Ontario Cancer Institute in Toronto, Canada. Till and McCulloch jointly discovered haematopoietic stem cells, paving the way for contemporary stem cell research. During this time, Connie's lifelong dedication to systematically unravelling haematopoietic cell states began, initially focusing on defining erythropoietic progenitor cells, detected by their ability to form erythropoietin-dependent colonies *in vitro*.

Connie relocated to Vancouver in 1973, where she became the second research scientist ever hired by the BC Cancer Institute. Over her remarkable 50-year tenure, she co-founded the Terry Fox Laboratory with her husband Allen Eaves in 1981, honouring the legendary Canadian athlete and cancer



research activist Terry Fox whom she met in her lab after his historic marathon-of-hope run. Connie was a prolific writer with a publication record of over 500 peer-reviewed papers in stem cell and cancer research. Additionally, she mentored over 100 trainees, with a particular focus on supporting the development of women in these fields. As former president of the National Cancer Institute of Canada, Connie had a pivotal role in prioritizing breast cancer research in Canada and advocating for increased representation of women in science, technology, engineering and mathematics (STEM) fields.

Connie spearheaded several seminal studies on stem cells and their specific application to understanding tissue development, homeostasis and mechanisms of oncogenic transformation in human haematopoietic cells. She is credited for laying the foundations for our understanding of haematopoietic stem cell heterogeneity¹ and clonal haematopoiesis of indeterminate potential (CHIP)², a fast-emerging field with broad implications for age-related health.

Connie's research in the early 2000s, identifying bipotent cells, shifted our perspective on mammary gland biology, paving the way for purifying mammary stem cells^{3,4} and heralding discoveries of many other tissue-resident stem cells using her approach. Her research has contributed to global interest in tracing stem and progenitor origins of breast cancer, as well as in exploring preventive measures targeting defective mammary progenitors.

Connie's career exemplifies her steadfast pursuit of scientific excellence, earning her a multitude of prestigious awards. These include the Robert L. Noble Prize for Excellence in Cancer Research in 2003, the American Society of Hematology Henry M. Stratton Medal for Lifetime Achievement in 2009, and recognition as a Status of Women Canada Pioneer by the Government of Canada in 2016. In 2019, she was inducted into the Canadian Medical Hall of Fame, received the Gairdner Wightman Award, was appointed to the Order of Canada, and was elected to the Royal Society (London). In 2022, she was honoured with the Till & McCulloch Lifetime Achievement Award by the Stem Cell Network and was inducted into the US National Academy of Medicine.

Her colleagues remember Connie as an outstanding scientist and mentor, an enduring inspiration for women in science and a true pioneer with enormous zest for both science and life. She was truly one of a kind and is dearly missed.

Nagarajan Kannan ¹ & Aniruddha J. Deshpande ² ✉

¹Department of Laboratory Medicine and Pathology, Mayo Clinic, Rochester, MN, USA.

²Cancer Genome and Epigenetics Program, Sanford Burnham Prebys Medical Discovery Institute, La Jolla, CA, USA.

✉ e-mail: kannan.nagarajan@mayo.edu; adeshpande@sbpdiscovery.org

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Competing interests

The authors declare no competing interests.