

In Memoriam: Dr Charles Philippe Leblond, MD, PhD, 1910–2007

On April 10, 2007, Dr Charles Philippe Leblond passed away peacefully at his residence in Montreal surrounded by his family. Dr Leblond was the most prominent member of the Department of Anatomy and Cell Biology of McGill University.

He began his scientific career in France studying the distribution of vitamin C in various tissues of laboratory animals. He also learned to use newly discovered radioactive isotopes, in particular radioiodine, which he found concentrated in the thyroid gland. After a brief stay in Canada in 1941, he went back to France to return to the Department of Anatomy of McGill University in 1946. In collaboration with Dr Bélanger, he developed the technique of radioautography, which permits the exact localization of radioactive molecules in tissues and cells. Radioautography was extensively used by Dr Leblond in his laboratory at McGill and by researchers around the world to investigate and clarify a variety of biological processes. This procedure continues to be used today by molecular biologists to detect RNA molecules *in situ* and to study the localization of genes and DNA sequences.

Dr Leblond used radioautography to introduce radioactive precursors of DNA and thus to study the renewal and fate of cells of several basic tissues. He demonstrated for the first time that most cells and tissues in the adult body undergo continued renewal. Using mathematical models and modern methods of quantitation, Dr Leblond and his colleagues estimated with remarkable accuracy the turnover and mitotic rates of numerous cell types. He and his colleagues made fascinating discoveries that resulted in the introduction of “time dimension” to cells and tissues, opening the doors to the understanding of the cell cycle and to the identification of stem cells. In fact, Dr Leblond and his colleagues devised several methods for isotopic labeling of the nuclei of cells in the process of division. The labeled cells could then be identified for as long as they survived in the living tissues. Exploiting this approach, Dr Leblond and his colleagues made the first measurements of cell renewal in most tissues of the body. He found that the rate of renewal was remarkably high in



the epithelial lining of the stomach and intestine, where the cells completed their life cycle within a few days.

In collaboration with Dr Yves Clermont, he also studied the complex changes that occur in the Golgi apparatus and acrosomic system during the transformation of spermatids into spermatozoa in the rat, mouse, hamster, and guinea pig. These changes were used to divide the cycle of the seminiferous epithelium of the rat into 14 stages whose duration was later estimated to be 12 days for the whole cycle. This classification served as a classic model for the study of the cycle of the seminiferous epithelium in other mammalian species, including the human. The 2 original papers by Leblond and Clermont (Leblond CP, Clermont Y. Spermiogenesis of rat, mouse, hamster and guinea pig as revealed by the “periodic acid-fuchsin sulphurous acid technique.” *Am J Anat.* 1952;90:167–216; Leblond CP, Clermont Y. Definition of the stages of the cycle of the seminiferous

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epithelium of the rat. *Ann N Y Acad Sci.* 1952;55:548–573) constitute milestones in andrology, and perhaps they are the most frequently cited papers in the field of male reproduction.

During the mid 1960s, Dr Leblond and his colleagues achieved the refinement of radioautography and its application to electron microscopy to exploit the high resolution of this technique. Dr Leblond was able to analyze intracellular pathways followed by radiolabeled amino acids and carbohydrates. Again, he was one of the first to identify the role of different compartments and subcompartments of the cell involved in the biosynthesis and secretion of glycoproteins.

Throughout his illustrious career, Dr Leblond initiated numerous other projects involving immunocytochemistry both at the light and electron microscope levels, which led to elegant results and important discoveries. These contributions resulted in the publication of 430 scientific papers, many of them still frequently cited. In addition to his passion as a researcher, Dr Leblond served as the head of the Department of Anatomy of McGill University for more than 25 years. During that time he developed one of the best international research centers in cell biology, and he was the mentor of many prominent colleagues.

Throughout his long and distinguished career, Dr Leblond's contributions to modern medical science have been outstanding and recognized by numerous distinc-

tions and awards. Dr Leblond was a Fellow from the Royal Society of London, the Royal Society of Canada, and the American Academy of Arts and Sciences. He received honorary doctorates from Acadia University (1972), McGill University (1982), l'Université de Montréal (1985), York University (1986), and l'Université de Sherbrooke (1988). He was also an officer of the Order of Canada and Officier de L'Ordre National du Québec.

Dr Leblond was a distinguished colleague in every sense of the word. He was one of those individuals who could not pass unnoticed, becoming an emblematic icon for McGill University. Visitors and colleagues from around the globe always asked if he was still coming to the department and if they could pay a visit to him. Until recently, before his health started to decline, he was attending the departmental seminar series and often asked insightful questions. Dr Leblond was a person of genuine finesse and originality and a role model for many graduate students. Dr Leblond has touched the life of many colleagues, former students, and post-doctoral fellows and will be forever remembered with gratitude, admiration, and respect.

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