THE FACULTY OF MEDICINE
Harvard University

# Marjorie B. Lees

*Photograph courtesy of Andrew Lees, PhD*

Marjorie Berman Lees, Professor (Emerita) of Biological Chemistry and Neurology at Harvard Medical School, was a beloved and internationally admired neurochemist, mentor and intellectual leader whose professional career spanned 60 years of remarkable scientific discovery and achievement. She was born in New York in 1923 and received a BA in Biology from Hunter College (1943), MS in Biology from the University of Chicago (1945), and PhD in Medical Sciences (Biochemistry) from Harvard University (Radcliffe College) (1951). She was supported at Radcliffe College with one of the first NIH sponsored predoctoral fellowships. Her studies at McLean Hospital with Professor Jordi Folch-Pi, the first Professor of Neurochemistry at the Harvard Medical School, led to the seminal discovery of the family of proteolipids, ubiquitous membrane constituents of plant and animal tissues and of myelin proteolipid protein (PLP), the most abundant protein in central nervous system (CNS) myelin. This early work provided the basis for the study of proteolipids and the recognition of their key roles in ion channels in many biological systems. The study, (Folch J, Lees M, Sloane-Stanley GH. A simple method for the isolation and purification of total lipides from animal tissues. *J Biol Chem*, 1957, 226:497-509) was recognized in the year 2000 as the most frequently cited study from the 1950s and continues to be cited after more than 65 years, indicating the enduring impact of her early scholarly work.

Marjorie continued to study myelin lipids and PLP for her entire career having developed major techniques for their analysis (Greer JM, Lees MB. Molecules in focus. Myelin proteolipid protein—the first 50 years. *Int J Biochem Cell Biol*, 2002;34:211–215). She spent a number of years as a Research Associate at Dartmouth Medical School (1962-1966), and then returned to Harvard Medical School, first to the Biological Laboratories at McLean Hospital and later at the Eunice Kennedy Shriver Center for Mental Retardation (from 1976 until her retirement). She was a Research Associate (1964-1969), Principial Research Associate (1966-1975), Senior Research

Associate (from 1975) in Biological Chemistry and a Member of the Faculty of Harvard Medical School (from 1971).

Marjorie's studies addressed the structure and function of myelin and its subdomains, its protein-lipid interactions and enzymatic components and activities, and its roles in the development and maintenance of neural function. She published numerous reviews and book chapters, and more than 100 original articles, twenty-three of which were in the *Journal of Neurochemistry* (from 1959 to 1991). She characterized the chemical properties of PLP, its biochemical modifications and its roles in ion transport functions, determined its complete amino acid sequence using the laborious Edman degradation method (at a time when there was no DNA cloning or sequencing), characterized the molecular biology of the PLP gene and demonstrated the contributions of autoimmune T cell and antibody responses to PLP in the animal model of multiple sclerosis (MS), experimental autoimmune encephalomyelitis (EAE).

Understanding how the genetics, structure, functions and immunology of myelin and PLP underlie the pathogenesis of animal and human diseases, particularly Pelizaeus-Merzbacher disease, (which is due to mutations in the PLP gene), and MS were among the ultimate goals of her life's work. These goals were inspired by her own life experiences of her sister Edith who had MS and the loss of her young daughter Constance who died of a congenital disease that would have led to mental retardation.

She had numerous committee and teaching roles at the Harvard Medical School and the EK Shriver Center. These included the development of courses on the biochemical and neurobiological aspects of mental retardation and neurochemistry tutorials for Harvard Neurology residents rotating at the Shriver Center. Her laboratory was funded by the NIH from 1962 to the end of her career. She was among the first recipients of the Jacob Javits Award (R37) from the National Institute of Neurological and Communicative Disorders and Stroke (NINCDS). This prestigious seven-year research grant is awarded to scientists for their superior competence and outstanding productivity. She served on major regional and national committees including the NIH Program Project Review Committee and as a member of the Advisory Council of the NINCDS. She was an active member of several scientific associations including the American Society of Biological Chemists, the Society for Neuroscience and the International Society for Neurochemistry. She participated in the founding of the American Society for Neurochemistry (incorporated in 1969), and served on its Council, as Treasurer and as President (1983-1985). She was a reviewer for a number of journals and in particular had a long commitment to the *Journal of Neurochemistry* of which she was the Editor-in-Chief from 1986 to 1989.

Beyond her pioneering and prolific academic achievements, Marjorie's impact and legacy derive from her active engagement with and inspiration of innumerable colleagues and students who

recall her curiosity, insight and enthusiasm not only for science but as a global citizen. She was positive about life, eager to learn from people from diverse cultural and ethnic backgrounds, and strongly committed to friendships. In presentations and informal conversations at national and international meetings, her knowledge and intellect were always evident. Indeed, some of the most forward ideas in neurochemistry resulted from conversations with Marjorie Lees.

Marjorie was a wonderful mentor and role model. She cared about her trainees and junior colleagues and always made time to hear about our problems and to provide guidance. She gave us unwavering support as we built our careers. Many of us fondly recall writing papers at her kitchen table where her insistence on accurate and precise language to communicate experimental results and concepts focused our understanding, and gave her the reputation as a wordsmith of scientific writing. She was also a great story-teller and had an extraordinary ability to balance science with discussions of a broad range of current events and attending to family. She had a slightly-impish sense of fun that was always hovering just under the surface and the ability to laugh at herself. Not incidentally, she could prepare tasty and healthful meals spontaneously for large or small groups. She continued to provide insight into our research projects well into her retirement and wanted to know where our research was going. As a champion of women scientists in particular, she analyzed and celebrated the roles and contributions of women in international neurochemistry societies (*Neurochem Res*, 2002;27(11):1259-67). The Special Issue of *Neurochemical Research* (1994) dedicated to Marjorie honored her contributions and reflected the ongoing accomplishments of her trainees. Marjorie Lees was a determined and remarkable force of nature who never worried about whether she could succeed. She believed in action with purpose. and she succeeded.

In addition to her scientific and professional life, Marjorie's family was always utmost in her thoughts and actions. She was the beloved wife of Dr. Sidney Lees for over 60 years. They were mutually supportive and shared a remarkable life focusing both on science and family. Many of their world travels together involved each pursuing his or her own professional activities and meeting with colleagues in the same vicinity. At those dinners at the kitchen table, Sid would ask Margie what new thing she had learned that day (she said he had been asking her that same question at their evening meal for years). His level of interest and engagement in the ensuing conversation, whether it was about science, acquaintances, family, or current events was clear. And of course, Margie had never just learned one new thing in a day.

Marjorie was the loving and proud mother of David, Andy and Eliot Lees and their spouses. Growing up, her sons recall there were always cloth bags - containing papers that she was editing, reviewing, writing or reading - that she brought with her wherever she went. She could bring order out of the chaos that comes with raising three sons; her lists methodically ordered their world. She had the ability to shift from being a devoted Jewish wife and mother to being a neurochemist, such as in a seamless transition from a detailed discussion of PLP to recipes

for brownies. She was also devoted to and had close relationships with each of her seven grandchildren. They were in her thoughts on her dying day.

Respectfully submitted,

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