MICHAEL J. BURKE & CONSTANCE NOZZOLILLO

David Siminovitch
1916-2001

David Siminovitch, prominent researcher on frost hardiness of plants, passed away on November 5, 2001 in Ottawa, Canada in his 86th year.

Dr. Siminovitch received his BSc, MSc and PhD degrees in his hometown of Montreal, Quebec, at McGill University, finishing the PhD under the prominent botanist G.W. Scarth in 1939. His early work, published between 1938 and 1941 with Dr. Scarth and collaborator and close friend, Jacob Levitt, formed part of the foundation of modem plant stress physiology.

Following the suggestion made by the Russian scientist N. A. Maximov in 1912, Siminovitch, Levitt and Scarth demonstrated that disruption of the plasma membrane was the primary cause of freezing injury in plants. Dr. Siminovitch showed that intracellular ice was universally lethal to the plant cell and that such freezing did not occur in hardy plants. He and Levitt showed how plasma membrane permeability increased during cold acclimation. More importantly, they showed that extracellular ice caused cell dehydration which also could lead to disruption of the plasma membrane and plant injury during thawing. This is now recognized as one of the key mechanisms of frost injury to cold-hardy plant cells. Siminovitch, Levitt and Scarth's early insights into the mechanism of freezing damage linked to plasma membrane disruption were remarkable for their time.

In 1940, Dr. Siminovitch moved to the University of Minnesota for two years on a Royal Society Fellowship, then returned to Montreal where he spent the remainder of the War years working on penicillin research. He earned a second PhD at the University of Minnesota in 1948 with D.R. Briggs as his advisor. There he initiated a series of studies of the biochemistry of trees, with particular emphasis on the plasma membrane during winter acclimation. This work continued long after he joined the Canadian Department of Agriculture (now Agriculture and Agri-Food Canada) in 1950 as a research scientist. Except for the equivalent to a sabbatical year at the University of Sheffield in 1970, the remainder of his career was spent in Ottawa at the Central Experimental Farm where he ultimately headed the winter hardiness section of the Chemistry and Biology Research Institute. His research focused on molecular changes in plants in response to cold acclimation. Among the major finds with Ian de la Roche and Jas Singh was a thorough characterization of plant biochemical processes during cold acclimation that were responsible for winter hardiness' in plants. Dr. Singh notes that Dr. Siminovitch was the first to use free protoplasts to characterize the freezing and thawing process, which helped lay the foundation of modem work characterizing the role of membranes in plant cold hardiness.

By the standards of today, Dr. Siminovitch's output of scientific publications was modest, about 50 papers in all. His preference was to immerse himself in a problem and not to publish until it was solved, no matter how many years it took. Nevertheless, even after his retirement at the age of 65, he continued to paint the fine details so important to the development of his chosen field of research. In the end, his work came at the right time and the impact was great. Among the many awards he received in recognition of his work are the Gold Medal of the Canadian Society of Plant Physiologists (CSPP) in 1972, elected as a Fellow of the Royal Society of Canada in 1973, and the Board of governor’s award from the Cryobiology society in 1987. In 1958, Dave was a founding member of the CSPP, its first Secretary-Treasurer, and was elected Vice-President in 1968.

All who knew Dave Siminovitch well were aware of his remarkable level of intensity, energy, and focus. He set the highest standards for himself and his contributions are significant, not only

at the theoretical, fundamental level, but also from the practical point of view. In his Gold Medal address at the joint American Society of Plant Physiologists/CSPP meeting in Calgary in 1973, Dr. Siminovitch described his work with J. W. Butler, of the Laurentian Concentrates Company, in developing protective foam that could be laid down over tender plants when overnight freezing temperatures were expected and thereby lengthen the growing season.

Dave Siminovitch sorely missed his wife, Helen, who had succumbed to cancer in 1986. He is missed, not only by his children, David, Jane and Michael, but also by his colleagues and friends.

Michael J. Burke
Professor and Associate Dean
Oregon State University

Constance Nozzolillo
Retired Professor
University of Ottawa

(Author's titles given as of the time of writing)