Cell Death and Differentiation (2001) 8, 111–112

www.nature.com/cdd

Obituary

Lois K Miller

Lois Miller, Professor of Genetics and Entomology at the University of Georgia (Athens), was a recognized pioneer in the fields of baculovirology and apoptosis. With Lois at the helm, her students and postdocs discovered novel suppressors of apoptosis, made critical contributions to the use of baculoviruses as efficient vectors for foreign gene expression, and genetically engineered some of the first baculoviruses for use as pesticides in the control of insects. Much of Lois' ground breaking research had a major impact in multiple scientific fields, including programmed cell death, molecular virology, biotechnology, and insect pest management.

After losing a long and courageous battle with melanoma, Lois passed away on November 9, 1999 at the age of 54. Lois was a native of Lebanon, Pennsylvania. Her scientific career started at Upsala College where she earned a BS in Chemistry. Subsequently, Lois became a Wisconsin Badger and received her PhD in Biochemistry (1971) from the University of Wisconsin-Madison under the supervision of Robert D Wells. At U.W.-Madison, Lois was a graduate student side-by-side with her husband Karl Espelie who also received his PhD in Biochemistry. Having won several postdoctoral fellowships, Lois worked in molecular virology first at the California Institute of Technology and next at the Imperial Cancer Research Fund in London, England. She was subsequently recruited as an Assistant Professor by the Department of Bacteriology & Biochemistry at the University of Idaho (Moscow, Idaho). She quickly moved up the ranks and became a Full Professor in 1986. That same year, Lois was recruited away from the Rocky mountains to the hills of Georgia where she moved with Karl, their only daughter Erin, and the whole Miller lab to join the Departments of Entomology and Genetics at the University of Georgia where she became a Distinguished Research Professor. During her career, Lois received numerous research awards, including the Lamar Dodd Award for Outstanding Research from the University of Georgia, a National Institutes of Health Merit Award, and the Chiron Biotechnology Research Award from the American Society of Microbiology. In 1997, she was elected to the National Academy of Sciences. She authored more than 150 scientific papers and reviews and served on numerous journal editorial boards for more than 20 years. In addition, she edited several books on the baculoviruses and other insect viruses. She was a lead author of one of the most widely read 'how to' manuals on the baculovirus expression vector system.

In the field of programmed cell death, the Miller group made the key discovery that the baculoviruses are potent inducers of apoptosis and that they encode novel anti-apoptotic proteins. These cell death regulators include the inhibitors of apoptosis (IAPs) and the caspase inhibitor P35. Both classes of apoptotic suppressors are widely studied by laboratories throughout the world. P35 was discovered first by characterizing a baculovirus *p35*-deletion mutant which caused unrestricted apoptosis of cultured insect cells during infection. This virus mutant, appropriately designated the 'annihilator', was subsequently used in complementation assays to identify the baculovirus IAPs. Distinguished by their highly conserved zinc-binding motifs called BIRs (baculovirus IAP repeats), the viral IAPs were the first discovered members of the larger IAP gene family of insects and mammals. The Miller group was the first to demonstrate that IAPs bind to multiple pro-apoptotic proteins, including Reaper, Hid, and Doom from insects. It was therefore suggested that the IAPs function as central sensors and regulators of apoptotic signals, a hypothesis which is still under investigation. Lois' studies clearly showed that much could be learned about critical mechanisms regulating apoptosis in diverse organisms by clever and elegant studies of the insect viruses.

Lois Miller's most important legacies include the young scientists, both students and postdocs, who she trained and mentored in the ways of insect virology. Many of us now have our own students and staff, but still continued to seek her advice and counsel. She was able to challenge her students by insisting that we always focus on the science and its significance. This type of pointed encouragement is clearly evident in Lois' own words

which were communicated at a recent conference on programmed cell death to explain her absence due to her illness. 'Cancer is a formidable foe and has prevented me from attending the meeting this year. May my absence be a reminder that unregulated cells have very real and often unpleasant consequences. I hope that the meeting is a highly productive one and that cooperation prevails in order to unravel the mechanisms of apoptosis and find solutions to intractable problems such as cancer. My best wishes to you all.'

Paul D Friesen
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