Giuseppe Attardi, MD (1923-2008)

Giuseppe Attardi was neither a neurologist nor a practicing physician, though he obtained his medical degree from the University of Padua in 1947. However, his pioneering work in mitochondrial biology had a tremendous effect on our understanding of human mitochondrial diseases. Therefore, his death, which abruptly interrupted a long but still vibrant research career, is as much a loss for biology in general as it is for neurology. Dr Attardi's monumental contributions to our knowledge of the “other genome,” mitochondrial DNA (mtDNA), include the discovery of mitochondrial RNA (which accounts for only 0.5% of the total cellular RNA [a very important needle in a very big haystack]), the characterization of mitochondrial ribosomes, the definition of mtDNA transcription, the punctuation role of mitochondrial transfer RNA in the processing of the polycistronic precursor RNA, and the identification of all 13 proteins encoded by mtDNA. More directly, when the first pathogenic mutations in human mtDNA were described in 1988, Dr Attardi understood that obtaining an animal model of mtDNA-related diseases was going to be a formidable if not insurmountable task, and he, together with a then graduate student Michael P. King, perfected an ingenious in vitro model that allowed one to repopulate permanent human cell lines emptied of their mtDNA (rho^- cells) with mitochondria from patients harboring mtDNA mutations. This system has been widely used and has provided important information on the pathogenic nature, threshold, and (to a lesser extent) mechanism of different mtDNA mutations.

Although Dr Attardi was best known for his seminal contributions to the mitochondrial field, this interest occupied only the latter part of his 60-year academic career. In 1955, when still an assistant professor in Padua, he followed the example of an earlier alumnus of the same university, William Harvey, when he described in an article in Nature the “portal heart . . . that marvelous of physiological hydrodynamics that is . . . the portal vein of rodents.”1 In 1952, his interest in the emerging role of RNA in cell function took him to the laboratory of Torbjörn Caspersson at the Karolinska Institute in Stockholm, where he spent 3 years. After 2 years at his alma mater, the University of Padua, Giuseppe went through a period of intense traveling, first as a Fulbright Fellow with Melvin Cohn at the Department of Microbiology at Washington University in St Louis and then with Renato Dulbecco at the Department of Biology at the California Institute of Technology, which was to become his permanent home. Before he settled at Caltech in 1963, however, he did postdoctoral work with François Gros and François Jacob at the Pasteur Institute in Paris and with Boris Ephrussi in Gif-sur-Yvette. These were years of intense productivity for him in different fields, including immunology, virology, and the characterization of bacterial messenger RNA.

At Caltech, Dr Attardi was the Grace C. Steele Professor of Molecular Biology in the Division of Biology, where his laboratory attracted a large number of outstanding researchers, both basic and clinical, including some neurologists. The respect and love that Dr Attardi inspired as a caring mentor was manifest at a Symposium on Mitochondrial DNA in Health, Disease, and Aging organized in his honor in 2003 by the University of North Carolina at Chapel Hill. Dr Attardi was elected to the National Academy of Sciences in 1984 and to the European Molecular Biology Organization in 1998. His many honors include the Antonio Feltrinelli International Prize for Medicine from the Accademia Nazionale dei Lincei, Rome, the Gairdner Foundation International Prize, the Passano Foundation Award, and the Doctorate Honoris Causa from the University of Zaragoza in Spain. He is survived by Anne Chomyn, his companion in life and science, his daughter Laura, a cancer biologist at Stanford University, and his son Luigi, a writer in Rome. To them we offer our deepest condolences.

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