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A eulogy to the late Dr. Shiro Miwa

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On January 12, 2006, a revered scientist, Shiro Miwa, died. Dr. Miwa was an outstanding Japanese human geneticist and hematologist who discovered pyruvate kinase (PK) deficiency. This discovery in 1961 was a remarkable achievement, especially given the conception of hereditary hemolytic disorders. After the discovery of PK deficiency, Miwa became interested in genetic hemolytic anemias and especially in the pathogenesis of the short life-span of red blood cells and their energy metabolism. He also made rapid progress in studies of many other diseases, such as deficiencies of G6PD, phosphoglycerate kinase, aldolase, adenylate kinase, phosphofructokinase, glucosephosphate isomerase, pyrimidine 5'-nucleitidase, glutathione reductase, glutathione peroxidase and lactate dehydrogenase, and overproduction of adenosine deaminase, among others. Of the enzymopathies in the field of hemolytic anemia discovered in Japan, 80% were from Miwa's laboratory, an achievement unparalleled anywhere else in the world. Even prior to PK gene cloning, Miwa suggested that PK deficiency is caused by a structural gene mutation. In 1995, he and his associates found a mouse model of PK deficiency in which they identified a PK gene mutation. The achievements of Miwa's group shed light on cases in which patients had remained undiagnosed and had been unsuccessfully treated by such therapeutic approaches as splenectomy and blood transfusion. His work thus not only contributed to uncovering hereditary hemolytic anemias due to red-cell enzymopathies but also led to developments in the clarification of clinical entities and the pathogenesis of genetic red blood-cell diseases.



Shiro Miwa was born in 1927 in Tokyo and graduated from the University of Tokyo, Faculty of Medicine with an M.D. degree in 1951. He was trained first as a general practitioner in the Department of Internal Medicine of the University of Tokyo, and thereafter as a hematologist at UCLA, where he began his career in hematological genetics and established the basis of his lifework. After returning to Japan, he was appointed a director of the National Institute of Radiological Sciences in Chiba, and became professor of hematology (Third Department of Internal Medicine) at the Yamaguchi University School of Medicine in 1971. In 1979 he was appointed a professor at the Institute of Medical Sciences (IMS), University of Tokyo, where he served as director of the IMS Hospital until his retirement. He was the president of the Japanese Society of Hematology, and was a director or council member of many other societies in the field of clinical medicine. Dr. Miwa hosted the 31st Annual Meeting of the Japan Society of Human Genetics (JSHG) and served for 4 years, from 1991 to 1995, as the president of the JSHG. He was also

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appointed to be Chair of Council, International Society of Hematology, in 1996.

Dr. Miwa was awarded the Erwin von Berz Prize in 1971, the JSHG Prize in 1979, the Takeda Prize in 1981, and the Medical Prize by the Japan Medical Association in 1983. He also received the Medal with Purple Ribbon in 1990, the Japan Academy Award in 1997, and the

Order of the Sacred Treasure, Gold and Silver Star in 1999 from the government of Japan. Dr. Miwa was the author of *Atlas of Blood Cells* and compiled the textbook *Hematology*. He is survived by his wife, Tomoko, with whom he celebrated his golden wedding anniversary last year, and by his children and grandchildren, as well as by all members of the JSHG.