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## Obituary

Professor Emeritus  
Dr. UEDA, Kunihiro (1940–2021)



Dr. Kunihiro Ueda, Professor Emeritus of Kyoto University, passed away on September 5, 2021, at the age of 81.

Dr. Ueda was born in Kyoto on 25th of May, 1940. He graduated from Kyoto University Faculty of Medicine in 1965 and finished an internship at Kyoto University Hospital in 1966. He studied medical chemistry at the Graduate School of Medicine, Kyoto University, under the supervision of Professor O. Hayaishi, and was granted a doctoral degree in 1973. In 1971, he was appointed as an instructor of the Institute for Chemical Research, Kyoto University. On leave from Kyoto University from 1974 to 1976, he studied molecular biology under Professor A. Komberg at Stanford University, USA. In 1981, he was promoted to a Lecturer of Medical Chemistry and, in 1985, an Associate Professor of Clinical Science and Laboratory Medicine, Kyoto University. In 1994, he was appointed as a full Professor of the Institute for Chemical Research, Kyoto University, and directed the Laboratory of Molecular Clinical Chemistry. He gave lectures at the Graduate School of Medicine and supervised the dissertation works of graduate students.

During his academic carrier, Dr. Ueda made a number of notable findings regarding the regulatory mechanisms of life. In particular, the discovery of “the third nucleic acid”, i.e. poly(ADP-ribose), with Dr. Y. Nishizuka in 1966 opened a new era of protein modification by coenzyme, NAD<sup>+</sup>, and led him to a life-long enthusiasm for research of this novel polymer. His years’ effort resulted in the discovery and characterization of three key enzymes, one synthetic and two degradative, in poly(ADP-ribose) metabolism, isolation of poly(ADP-ribosyl) histones from animal tissues, immunohistochemical demonstration of poly(ADP-ribose) in human cells, finding of roles of poly(ADP-ribose) in DNA repair, carcinogenesis and apoptosis, development of specific inhibitors of the synthetase, and discovery of the inhibitors’ protective effects against ischemic or oxidative lesions in the brain and heart. All these achievements

formed landmarks in the history of poly(ADP-ribose) research and made Dr. Ueda one of the leaders in this research field in the world.

After moving to a clinical laboratory, he also undertook investigation of molecular etiology of Alzheimer’s disease and improvement of gene diagnostic techniques. His early finding of an age-related change in expression of A $\beta$  amyloid precursors among patients was a pioneering work in understanding the pathogenesis of Alzheimer’s disease. He later disclosed a possible link between overactivation of poly(ADP-ribose) synthesis and neuronal degeneration in this disease. His efforts in developing methods for clinical gene testing resulted in commercialized products, Ampdirect™ for polymerase chain reaction and a transcription-reverse transcription-concerted reaction device.

For these distinguished contributions to science and biotechnology, he was awarded the Young Researcher Promotion Prize from the Japanese Biochemical Society, the Prize of the Japan Society of Vitaminology and Nutrition, and the Shibata Susumu Medal from the Clinical Pathology Promotion Foundation.

He served in the three Ministries’ Joint Committee for Ethics Guidelines for Human Genome/Gene Analysis Research. He chaired the Committee for Regulation of Human Genome/ Gene Analysis Research in Kyoto University. He served as members of Directors of many academic societies in Japan and has kept the presidency in the Society for Gene Diagnosis and Therapy since 2001. Internationally, he organized the First Japan-Italy Bilateral Seminar on ADP-riboses and Nitric Oxide (1997, Kyoto) and the Second IFCC-Roche Conference on Human Genomics (2000, Kyoto). He is an International Editor of the *Annals of Clinical Biochemistry* and the *Journal of Enzyme Inhibition and Medicinal Chemistry*.

His contribution to Kyoto University through both academic and administrative activities is gratefully acknowledged.