

## In Memoriam Isamu Matsumoto



Isamu Matsumoto, a leader in biomedical mass spectrometry, died February 15, 2004 in Kanazawa, Japan at the age of 74.

Matsumoto was born on October 8, 1929 in Tsingtao, China, and raised in Toyama, Japan. He graduated from the Gifu College of Agriculture in 1949, and served as Research Associate at Toyama University (1951–1960). He moved to Kanazawa University to study molecular biology (1960–1961). From 1961 to 1964, he trained at St Louis University and Wayne State University, and then returned to Kyushu University (1964–1967) to complete his Ph.D. Matsumoto was appointed an Associate Professor in the Department of Medical Chemistry at Kurume University School of Medicine (1968), and there became the Director of the Research Institute of Gas Chromatography-Mass Spectrometry (GC/MS) (1972–1983). He completed his academic career as Professor of Biochemistry at the Institute of Human Genetics (1983–1989) and at the division of Human Genetics, Medical Research Institute (1989–1997), Kanazawa Medical University.

In the early 1970s at Kurume University, Matsumoto established the first Asian facility for the chemical

diagnosis of inborn errors of metabolism using GC/MS. This technology allowed early and rapid diagnoses of these disorders, important contributions to improved patient care and the field of human genetics. Inborn errors to be described by this laboratory include a first report of tyrosinemia type III, and the early recognition in Japan of beta-ketothiolase deficiency, propionic acidemia, multiple cytochrome deficiency, and many other organic acidemias. Most of the reports of organic aciduria in Japan before 1990 originated from the Matsumoto lab. These achievements were due in large part to Matsumoto's establishment of cutting-edge techniques for "metabolic profiling." Because of his interest in GC/MS, Matsumoto participated in annual ASMS and international mass spectrometry meetings regularly, contributed many innovative findings, and formed multiple international collaborations. Matsumoto's students presented at these meetings and became fellows at the Karolinska Institute, the University of Zurich, the University of Paris, the University of California, the University of Tennessee, and the National Institutes of Health.

From 1972 to 1985, Matsumoto published a Japanese newsletter "GC/MS News," providing information to scientists across Japan in the biomedical mass spectrom-

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etry community. His keen interest in the field of medical applications of mass spectrometry spurred him to found in 1976 the Japanese Society for Biomedical Mass Spectrometry (JSBMS). He served as the president of JSBMS from 1990 to 2000. Meetings hosted by JSBMS attracted research scientists from around the world. Matsumoto independently published the Proceedings of JSBMS for 23 years and more recently published these meetings in the *Journal of Chromatography*.

During his time at Kanazawa Medical University, Matsumoto recognized the significance of using the enzyme urease to characterize the urinary metabolome, an idea originally described by J. Shoemaker and W. Elliott. The simultaneous analysis of organic acids, amino acids, sugars, sugar alcohols, and nucleotide bases led to the development of a practical yet comprehensive diagnostic procedure. This procedure was simplified to allow diagnosis of high risk patients and the mass screening of newborns, begun in 1995. Kurume University and Kanazawa Medical University continue to use these procedures for mass screening of newborns by GC/MS.

Matsumoto was an editorial board member of the international journals *Biological Mass Spectrometry*

(1974–1993) and *Mass Spectrometry Reviews* (1982–1997). He was the first winner of the International Award in Mass Spectrometry and Biochemistry in Medicine in Alghero, Italy in 1975. In 1997, he was given the title of Professor Emeritus at Kanazawa Medical University. After his retirement from Kanazawa Medical University, he established the Matsumoto Institute of Life Science (MILS), and its sister organization, MILS International in 1998. Despite his failing health, he made great efforts, with the support of the Foreign Ministry of Japan, to introduce a gas chromatograph-mass spectrometer at Mahidol University in Thailand to support chemical diagnoses there.

Isamu Matsumoto will be remembered by his students and colleagues as an enthusiastic proponent and teacher of mass spectrometry and its use in biology and medicine, and as a gentleman who was wise, gentle and gracious in his manner.

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