

## *Kyoto University PET Center Pursues Routine Clinical PET Studies*

# CARDIOLOGY MEETING IN JAPAN EXAMINES PET APPLICATIONS IN CORONARY ARTERY DISEASE

A recent meeting held in Kyoto, Japan, introduced a group of cardiologists from the United States and Japan to the use of positron emission tomography (PET) for heart studies. The symposium also gave a binational group of nuclear medicine physicians the opportunity to discuss the most recent advances in PET cardiology.

Structured also to bridge another gap between groups of scientists—language barrier—the US–Japan Cardiology Update attracted 150 attendees, including about 20 from the United States. About 50 participants were from the nuclear medicine field and 70 were cardiologists. Japanese technologists also attended the two-day PET meeting, held on June 9–10, 1986. [The first half of the meeting, covering percutaneous transluminal coronary angioplasty (PTCA), was

conducted in Tokyo on June 5–6.]

The PET portion of the meeting, directed by K. Lance Gould, MD, of the University of Texas, and Kanji Torizuka, MD, of Kyoto University, took place in Kyoto's Miyako Hotel, located on the eastern hillside of the urban area and offering Japanese tradition in concert with a modern international atmosphere.

### **Bridging the Language Barrier**

Although the official language of the meeting was English, great care was taken with Japanese participants who did not understand English very well. Every session was chaired by two moderators, an American and a Japanese. Each presentation was summarized in Japanese by either the Japanese chairman or the speaker. The discussions among the speakers, the chairmen, and the audience were

also summarized in Japanese by the chairmen. Questions and comments were accepted in Japanese and instantly translated into English by the chairmen. This format provided a solution to the language barrier and helped promote discussions in a bilingual environment.

Topics included: myocardial perfusion imaging with nitrogen-13 ammonia, oxygen-15 water, or rubidium-82; myocardial metabolism imaging; assessment of PTCA, aortocoronary bypass, and medications; and instrumentation problems, such as limitations of resolution, time-of-flight, and axial resolution.

The attendees agreed that PET offers a valuable means of assessing regional myocardial functions for diagnosis and treatment of coronary artery disease, and that its clinical use would spread if the equipment were available at lower costs.

The meeting was organized by the University of Texas Health Science Center at Houston, the Heart Institute of Japan at Tokyo Women's Medical College, and the Departments of Radiology and Nuclear Medicine at the Kyoto University School of Medicine.

### **Tour of Kyoto PET Center**

After the meeting, the participants visited the Kyoto University PET Center to see the cyclotron, hot laboratory, and PET scanner to understand how they are installed and managed. The Kyoto PET Center, directed by Yoshiharu Yonekura, MD, is part of the Department of Nuclear Medicine at the Kyoto University School of Medicine.

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*The nuclear medicine building, location of the Kyoto PET Center, at the Kyoto University School of Medicine. (Courtesy of Yoshiharu Yonekura, MD)*

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Established in 1981 through the endeavors of Prof. Torizuka, chairman of the Departments of Radiology and Nuclear Medicine, the facility has a baby cyclotron (“CYPRIS”) and autosynthesis systems (“CUPID”) manufactured by Sumitomo Heavy Industries.

Construction of the CYPRIS [CYclotron for Production of RadioISotopes] began in 1981, with delivery completed in February 1982. After obtaining approval from the Agency of Science and Technology in July 1982, the CYPRIS entered operation.

In August of that year, after an official inspection by the Radiation Safety Control Center and the Ministry of Health and Welfare, operation of the CYPRIS was approved and extensive preclinical tests were performed.

A PET brain scanner was introduced in 1982. Subsequently, a high-resolution, whole-body scanner (“Positologica III”) was developed by the Kyoto University group, and Hitachi Medical Corp. has been working since 1984 to develop it. A plan to construct a whole-body scanner with a higher spatial resolution is now in motion.

The Kyoto PET Center is also studying generator-produced positron emitters, such as gallium-68, copper-62, and manganese-152m.

Routine clinical studies are carried out by two or four physicians, a tech-

nician, a cyclotron operator, and a chemist, if necessary. Cerebral blood flow, oxygen metabolism, and glucose metabolism studies are performed using oxygen-15 gases, oxygen-15 water, and fluorine-18 fluorodeoxyglucose (FDG). Myocardial perfusion and metabolism are studied with nitrogen-13 ammonia, oxygen-15 water, and fluorine-18 FDG. Lung ventilation is imaged through inhalation of nitrogen-13 gas. In addition, the perfusion and metabolism of abdominal tumors are investigated with nitro-

gen-13 ammonia and fluorine-18 FDG.

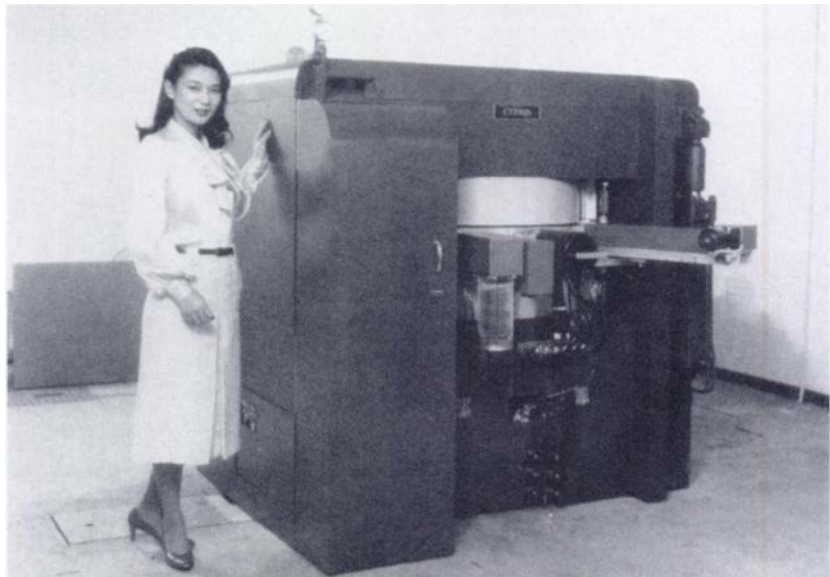
Three days a week are allotted for clinical studies; the other two days are reserved for basic studies and maintenance work. Investigators at the Kyoto PET Center have published nine English-language original scientific papers, including four in *The Journal of Nuclear Medicine* (1-4).

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## References

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***This Model 325 CYPRIS [CYclotron for Production of RadioISotopes] is the small medical cyclotron installed at the Kyoto PET Center in 1981. It is a “push button” system that utilizes a revolving target system with eight cylinders for the production of carbon-11, nitrogen-13, oxygen-15, and fluorine-18.***

*(Courtesy of the Kyoto University School of Medicine)*