## 1206

A NEW ROI DEFINITION SYSTEM TO FACILITATE DRAWING AN IRREGULAR ROI. T. Watanabe, T. Momose, Y. Inoue, T. Ohtake, Y. Sasaki. University of Tokyo, Tokyo, Japan.

It is essential to define a region of interest (ROI) when analyzing medical images including SPECT and PET. In conventional ROI definition systems, the operator must draw an irregular ROI as a polygon. If the shape of the ROI is relatively complex, the polygon has many corners making the operation very time-consuming. We have developed a new ROI definition system which greatly reduce the steps to draw an irregular ROI. In our system the operator defines some points which are automatically connected by a smooth closed curve. By moving, adding or deleting the points, one can easily and finely adjust the shape of the ROI. To smoothly connect the defined points, we developed a new algorithm (simplified smooth-connecting algorithm) which uses trigonometric functions. We did not use a spline curve for this purpose because its algorithm is relatively complicated and it needs loop calculations. The formula of our algorithm is very simple and the calculation of the curve can be done on a real-time basis. The coordinates of the defined points are stored as real numbers, not integers, enabling various coordinate transformation to the ROI.

In conclusions, our new system for ROI definition is very useful for quantitative analysis of medical images.

## 1209

NEW TYPE DISPOSABLE SYRINGE TO REDUCE RADIATION EXPOSURE DOSE FOR THE HANDS AND FINGERS OF OPERATOR.
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We made the new type disposable syringe to reduce radiation exposure dose by radiopharmaceuticals. Conventional type syringe is made of plastic and don't protect radiation exposure.

When we used the conventional type syringe installed syringe shield made of lead, we could't reduce radiation exposure dose for the hands and fingers of operator by radiation through the conventional piston made of plastic.

The new type disposable syringe was made up of special piston made of outer thin wall test tube like sterilized plastic cover and inner removable lead cylinder to fit outer thin wall cover and protect radiation exposure by radiopharmaceuticals.

We will present about the effectiveness of radiation protection and how to use.

## 1211

ELECTRON MICROSCOPIC TECHNIQUE NEWLY DESIGNED TO VISUALIZE SUBCELLULAR THALLIUM AT THE ULTRASTRUCTURAL LEVEL. M.Fukumoto, A.Kurohara, N.Yoshimura, S.Yoshida, Kochi Medical School.Japan.

This study deals with the newly designed electron microscopic (EM) technique to directly visualize subcellular thallium (Tl+) distribution. The EM specimens were prepared by following our newly designing procedure, using matured rats myocardium.

(1)Intravenously inject Tl+ (10 mM/0.15M sucrose),15 min wait.(Control/0.15M sucrose was injected) (2) Transcardial perfusion fix,(Fixative-I includes EDTA). (3) Perfuse with Fixative-II includes 1mM Vanadium(Va). (4) Dissecting heart and immersion in Fix-I,for 60 min. (5) Rinse in 10 mM EDTA/0.1M cacodylate buffer pH 7.2 with 5% sucrose, for 120 min. (6) Treatment with 0.1% Lead acetate in pH 3.9 acetic acid. (7) Post-fix, alcohol dehydration and embedding were treated by using conventional method.

In our EM observations, Tl+ was widely presented in myocardial cell, and was clearly observed in mitochondria, myofibril and sarcoplasmic reticulum.Controls(sucrose injected) showed no evidence indicating Tl+ existence. Non-specific reaction of making false-positive in the control specimen was excluded in our technique. Our method is the first EM prescription for Tl-visualization in the literatures. We show supportive data using X-ray microanalyzer to confirm specific wave of Tl+ in our EM specimens.

## 1212

DEVELOPMENT OF A HIGH RESOLUTION BETA CAMERA. Seiichi Yamamoto ,*Ryuichi Ban , **Hideaki Hujita , ***Kenichi Kashikura , ***Chie Seki , **Iwao Kanno . Kobe City College of Technology , *Shimadzu Corporation, **Research Institute for Brain and Blood Vessels , Akita , ***Akita Laboratory JRDC , JAPAN.

We have developed and tested a high resolution beta camera for a direct measurement of positron distribution of brain surface of animals. The beta camera consists of thin CaF2(Eu) scintillator , tapered fiber optics plate (tapered fiber), position sensitive photomultiplier tube(PSPMT) . The tapered fiber is a key component of the camera. We have developed two types of beta cameras. One is 10mm diameter camera for imaging brain surface of rat . Other is 20mm diameter field of view camera for imaging that of cat . Spatial resolutions for Ga-68 beta were 0.5mmFWHM and 0.8mmFWHM for rat and cat respectively. We confirmed that developed beta cameras may overcome the limitation of the resolution of the PET camera.