Wrist Positron Emission Tomography (PET) Scanner For Quantitative PET

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Technology

State of the Art

- PET is a powerful imaging tool for diagnosis and disease management.
- Currently most PET scans are for cancer evaluation.
- In today's clinical setting most PET analysis is qualitative or semi-quantitative.
- Quantitative PET can reveal biochemical changes occurring in the tumor within a day or two following treatment.
- Quantitative PET requires repeated arterial blood sampling, which is invasive, uncomfortable, and increases risk of infections.
- The limited use of quantitative PET in a clinical setting is because of the invasiveness of the blood sampling procedure

Market Need

A non-invasive technique that can produce a time-series of radioactivity data equivalent to that obtained by repeated, invasive, arterial blood sampling: essentially bringing quantitative PET to the bedside.

Product

The wrist PET scanner placed around the wrist of a patient undergoing PET scan provides accurate measures of the amount of radioactivity in the blood.

Figure 1: Depicts a 24 – single wrist PET detector ring. The ring has an inner diameter of 100.8 mm and an axial length of 18.3 mm.

Market

Product Applications

The use of the wrist PET scanner can help:

- Quickly determine therapy outcome
- Reduce time and cost involved in drug development
- Develop standard quantitative PET protocols for the entire pre-clinical to clinical development process.

Competitive Advantage

The wrist PET scanner:

- Provides practical non-invasive technique for quantitative PET
- Will work with future hybrid PET-MRI imaging modality
- Will work with the current and any future radiotracers

Beneficiaries

- Patients
  - Personalized treatment plans
  - New beneficial applications of PET
- Healthcare providers
  - Great tool for care and disease management decisions
- Scientific community
  - Aid drug discovery and development
- Healthcare payers
  - Increases cost-effectiveness of PET imaging

Product Details

Twenty four compact modular detector are used to build the wrist PET scanner.

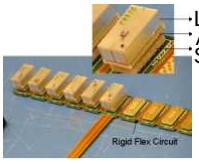

Figure 2: Each detector block is comprised of a 4 x 8 array of 2.2 x 2.2 x 15 mm^3 LSO crystals directly coupled to a non-magnetic 4 x 8 APD array.

Key Product Features

Provides very high resolution images

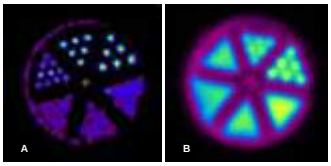

Figure 3: The mini deluxe phantom with wrist scanner (A) clearly resolves rods down to 3.2mm as opposed to the commercial Siemens HR+ scanner (B) where rods of diameter 4.8 mm are barely resolvable.

Practical for clinical use

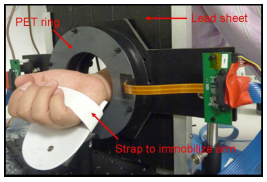

Figure 4: Positioning of the wrist in the field of view of wrist PET scanner

Provides clear images of the artery for data extraction.

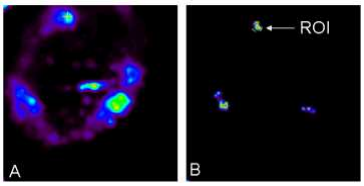

Figure 5: Human Wrist Images, A-Transaxial view, B - Region of Interest (ROI) drawn on the artery for extracting time activity curve

Provides time activity curve that is comparable with the arterial blood sampling.

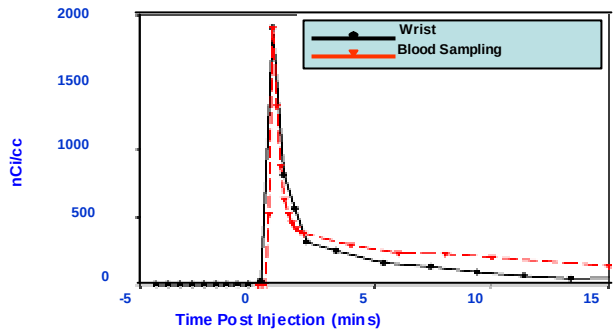

Figure 6: Time Activity Curve Obtained Using Wrist Scanner vs. Arterial Blood Samples

Commercial Readiness

Intellectual Property

The product is covered by three issued U.S. Patents Three issued patents: Compact Conscious Animal Positron Emission Tomography Scanner (US 7,126,126), Combined PET/MRI Scanner (US 7,286,867) and Positron Emission Tomography Wrist Detector (US 7,091,489).

Time Frame

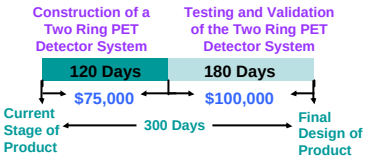

Figure 7: Time Frame for further product development

Contact Information for Licensing

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