ProxiScan™

A New Method for Detecting Prostate Cancer

ProxiScan™ Features

- Trans-rectal camera
- Based on solid-state CZT detectors
- Spatial resolution: ~1 mm
- High specificity to cancer
- Low weight: <2 kg
- Small size: 1" x 1" x 8"
- Low maintenance
- Low power consumption
- Portable & battery-powered
- Low cost: $20K to $40K

Funding

Principal sponsor for development of CZT detectors:

- U.S. Department of Energy's Office of Nonproliferation Research and Development

Design and engineering of the compact gamma camera:

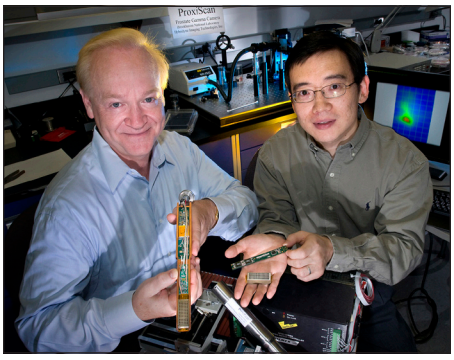
- Hybridyne Imaging Technologies, Inc.

Patents

- Inventors hold 16 patents on the technology
- Brookhaven Science Associates, the company that manages Brookhaven National Laboratory, has a patent pending on advanced CZT detectors.

ProxiScan™ consists of a prostate probe, an external surge box, and a computer.

One in six men in the U.S. will be diagnosed with prostate cancer during their lifetime, and one in 35 will die from it. Localizing cancer tissue in the prostate gland in detail at an early stage is important for successful diagnosis and early treatment of the potentially deadly disease.



Brookhaven Lab scientists Ralph James (left) and Yonggang Cui work on ProxiScan™.

ProxiScan™ is a compact gamma camera suited for high-resolution imaging of prostate cancer. It combines the best aspects of conventional nuclear imaging detectors while minimizing their weaknesses. Developed by Brookhaven National Laboratory and Hybridyne Imaging Technologies, Inc., ProxiScan™ won a 2009 R&D 100 Award, sponsored by *R&D Magazine* to recognize the top 100 technological achievements of the year.

Current Tests: Limitations

Screening for prostate cancer starts with a blood test, which often leads to false-positive detections. Ultrasound imaging techniques cannot easily distinguish between benign and cancerous tumors, and a follow-up biopsy cannot pinpoint cancer, particularly for small tumors. Other methods for confirming the diagnosis include conventional nuclear medical imaging techniques, such as positron emission spectroscopy and single photon emission tomography.

Current nuclear-medical imaging methods, however, have limitations. They produce lower-resolution images and are less efficient than ProxiScan™. Also, the detectors in current systems are too large to be used as a trans-rectal probe.

Using Advanced Detectors

In contrast, ProxiScan™, which is driven by cadmium zinc telluride (CZT) detectors, is small enough for a rectal prostate cancer diagnosis, after the patient is injected with a radiotracer. Using this new technology, the working distance between the imaging system and the prostate gland is minimized, yielding better images with a smaller amount of injected radioactive tracer, compared to conventional systems.

Although ProxiScan™ was designed to detect prostate cancer, it can be modified for imaging other cancers, such as cervical, uterine, colorectal and breast cancers. It can also be optimized for surgical use as a probe to guide the removal of cancerous tumors while minimizing damage to surrounding healthy tissues.

Commercial Advantages

Clinical testing of the device is next. When that stage is successfully completed and the technology is FDA-approved, ProxiScan™ will be ready for the marketplace. It is expected to be commercially attractive. Compared to existing technologies, ProxiScan™ offers higher resolution, better image quality, and lower costs.

For more information, see the following websites:
www.bnl.gov
www.hybridyneimagingtechnologies.com

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