

Oak Ridge National Laboratory, Tennessee

In 1946, **BER** originated in Oak Ridge when the research site made a vast selection of radionuclides available for nuclear medicine research. The laboratory also formed a network of universities to study the clinical potential of radiotracers. Today, scientists here continue to study the future potential of new radiopharmaceuticals.

This group has developed a variety of radiopharmaceuticals for both diagnostic and therapeutic applications. One example is a generator to produce rhenium-188, a therapeutic radionuclide used to provide economical **cancer** treatment in developing countries. Another potential use of rhenium-188 is to prolong the beneficial effects of balloon angioplasty, a procedure that opens up narrowed arteries of the heart in patients with **coronary artery disease**. Patients often need repeated angioplasties because the coronary arteries gradually become relogged.

These images show cross sections of swine arteries after angioplasty. One artery (top), treated with a rhenium-188, liquid-filled balloon, remained wide open 30 days after the angioplasty. The untreated artery (bottom) became relogged within that same time period.

Using a fatty acid as the carrier molecule, Oak Ridge scientists have also developed a radiopharmaceutical (iodine-123 BMIPP) that shows how much heart muscle remains alive after a heart attack. These scans help doctors decide whether those portions of the heart muscle can recover after bypass surgery or angioplasty.

Coronary Artery Disease

