

ADVANCING AMERICA *through* TECHNOLOGY TRANSFER

BROOKHAVEN NATIONAL LABORATORY

REVOLUTIONIZING BRAIN IMAGING
and CANCER DIAGNOSIS WORLDWIDE

RADIOTRACER ^{18}F FDG

IMPROVING LIVES *with* EARLY
DETECTION *and* DIAGNOSIS
of DISEASES

BROOKHAVEN
NATIONAL LABORATORY

U.S. DEPARTMENT OF
ENERGY

Office of
TECHNOLOGY TRANSITIONS

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How can a radiotracer save your life?

In 1976, a multidisciplinary team of scientists at Brookhaven National Laboratory (BNL), working with partners from the University of Pennsylvania and the National Institutes of Health, revolutionized cancer diagnosis and management as well as brain research with the synthesis of Radiotracer ^{18}F FDG. Used in Positron Emission Tomography (PET) scanning, ^{18}F FDG is a diagnostic beacon that spotlights metabolic activity in the body. The discovery opened an unprecedented exploratory window on a wide range of diseases, conditions, and treatments. Most notably, ^{18}F FDG's ability to spot cancer cells' notoriously high glucose demand long before anatomical changes are detected has positioned the radiotracer as the global benchmark for early cancer diagnosis and in monitoring how patients respond to treatment. Use of the ^{18}F FDG radiotracer results in less invasive treatments, better health outcomes, and improved quality of life for patients and their families.

BNL at a Glance

Brookhaven National Lab opened its doors in 1947 on the former site of the U.S. military's Camp Upton with an initial mission centered on the peaceful exploration of the atom. Today, Brookhaven is a global powerhouse of scientific discovery and boasts multidisciplinary scientists and facilities that advance fundamental research in nuclear and particle physics to gain a deeper understanding of matter, energy, space, and time; apply photon sciences and nanomaterials research to energy challenges of critical importance to the Nation; and perform cross-disciplinary research on computation, sustainable energy, national security, and Earth's ecosystems.

U.S. Department of Energy Laboratories

The 17 U.S. Department of Energy (DOE) National Laboratories comprise a preeminent federal research system that executes long-term government scientific and technological missions, often with complex security, safety, project management, or other operational challenges. The National Laboratory system produces the scientific research needed to develop national energy policy and solutions allowing DOE to be one of the largest supporters of technology transfer in the federal government.

Technology Transitions

The mission of the Office of Technology Transitions (OTT) is to expand the commercial impact of the DOE's research and development portfolio to advance the economic, energy, and national security interests of the Nation. The office develops the Department's policy and vision for expanding the commercial impact of its research investments, and streamlines information and access to DOE's National Labs and sites to foster partnerships that will move innovations from the labs into the marketplace.

www.energy.gov/technologytransitions

^{18}F FDG is the world's most widely used radiotracer for neuroimaging, and cancer diagnosis and treatment tracking

Industry

More than 1.5 million ^{18}F FDG PET scans are performed annually.

Application

^{18}F FDG supports the research, diagnosis, and evaluation of treatments associated with cancer, mental health disorders, epilepsy, coronary artery disease, and neuro-degenerative diseases such as Alzheimer's.

Collaboration

BNL, National Institutes of Health, and University of Pennsylvania comprise the team that first synthesized and used ^{18}F FDG.

Contact Us

The scientific discovery highlighted on this poster is just one of DOE's many successes advancing America.

Learn more about available resources and partnering opportunities with the National Labs by visiting:

www.energy.gov/technologytransitions

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