

EXPLORER

UC Davis Health, Department of Radiology

Simon Cherry, PhD
Ramsey Badawi, PhD
Denise Caudle, MSHSA
Jennifer Kellogg, MHA

Background

The EXPLORER Total Body Scanner was designed to be the world's highest sensitivity positron emission tomography (PET) scanner.

PET is an extremely safe medical imaging technique that can map the location or track the movement of tiny amounts of radioactively-tagged compounds (radiotracers) after they are introduced into the body.

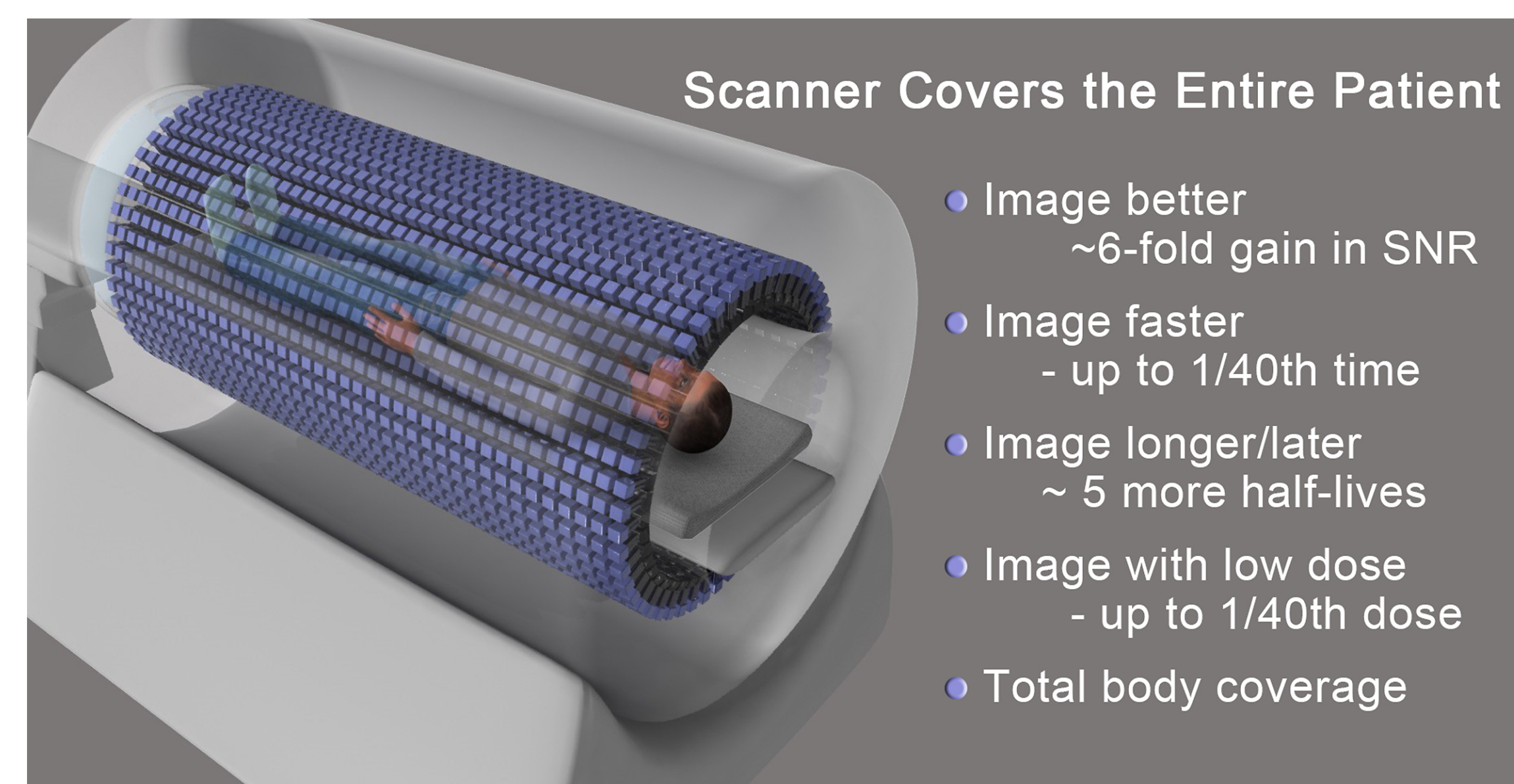
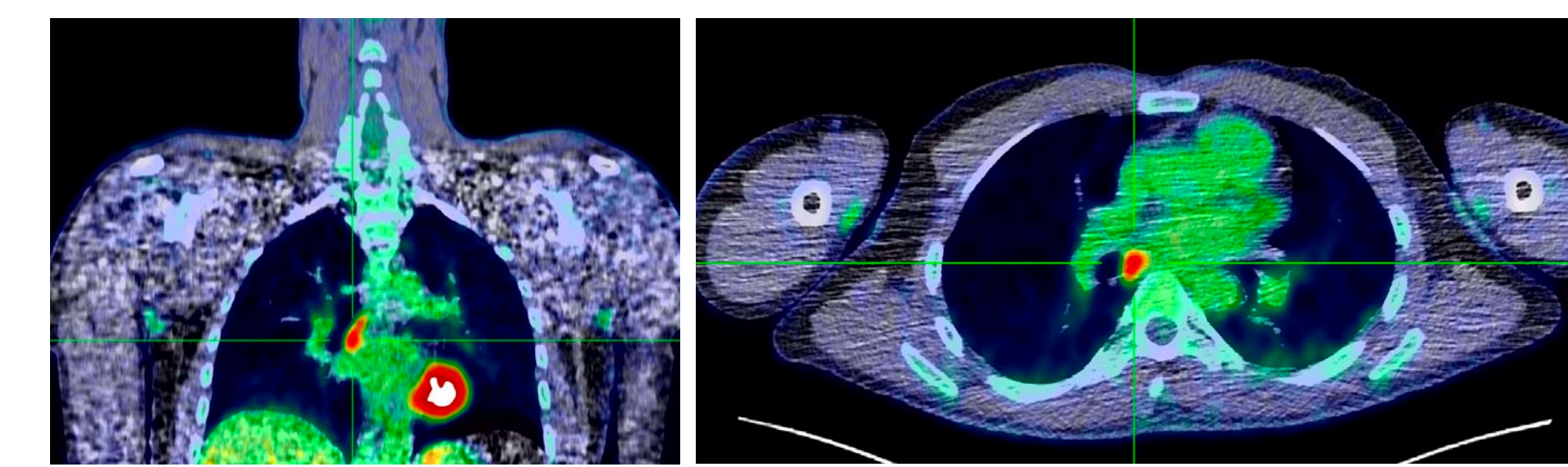
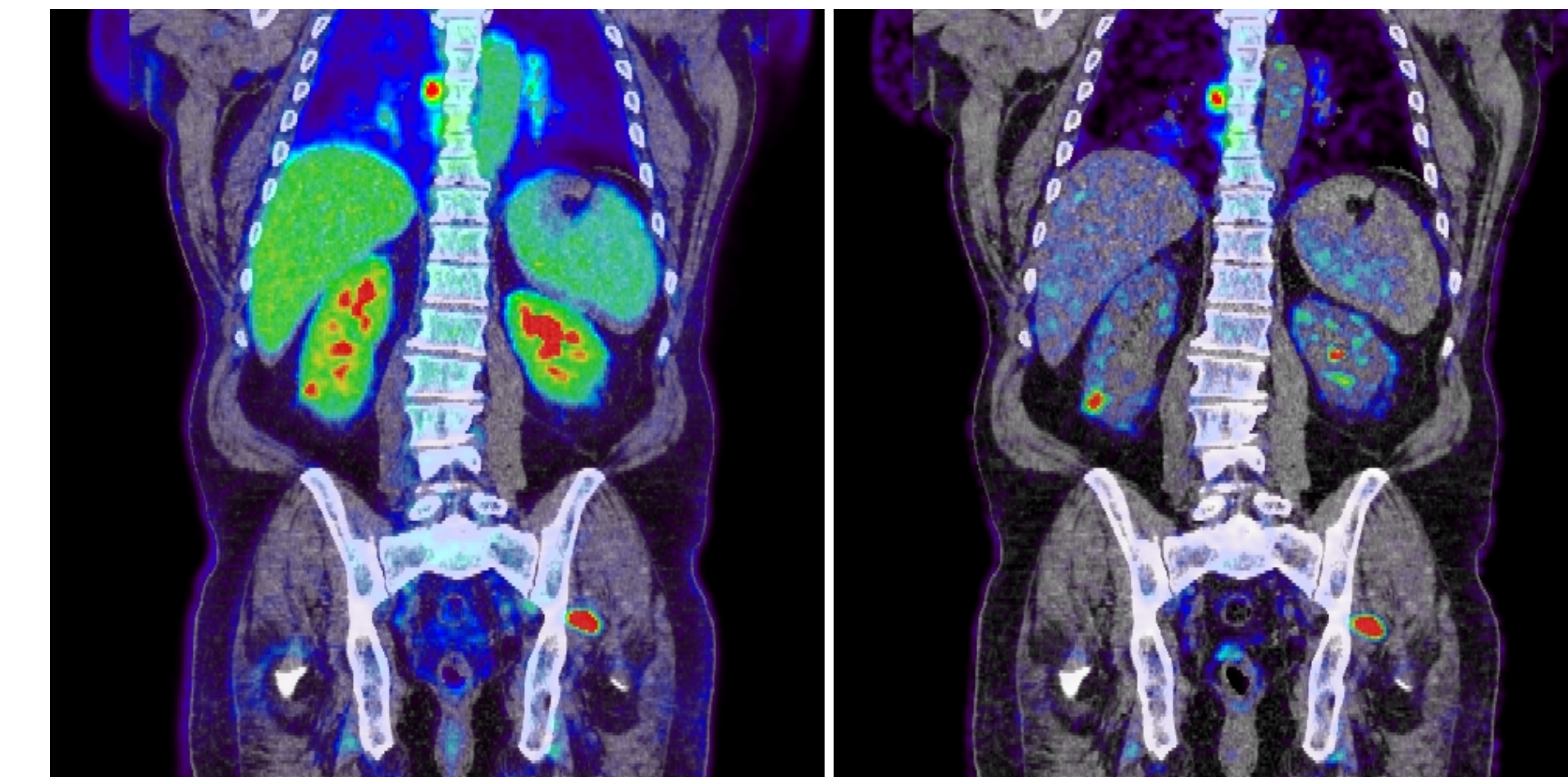
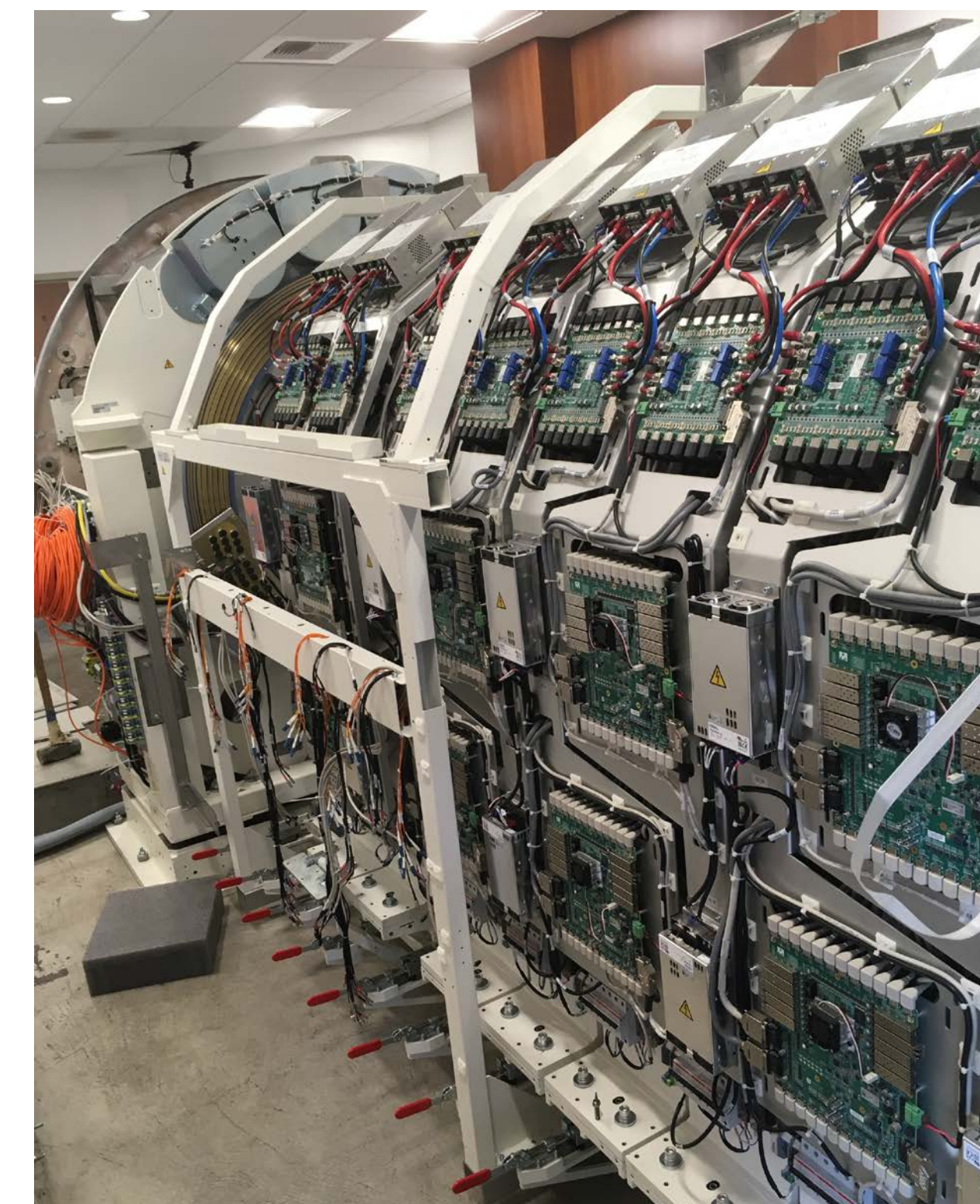
Our new EXPLORER Total Body Scanner acquires PET images of the body, from head to toe, all at the same time. It is the first and only Total Body PET scanner approved by the FDA in the United States.

The EXPLORER scanner has an effective sensitivity for total-body imaging that is 40-fold higher than current commercial scanners and is expected to open up completely new ways in which PET can be used in biomedical research and ultimately in clinical practice.

Quality and Safety

A broad range of total-body imaging applications exists for EXPLORER:

- The quality of the images is much better, allowing physicians to see smaller tumors and other diseases earlier.
- The scanner can be set up to run much faster than conventional PET scanners, which can make it easier and more comfortable for patients. This is particularly good for young children or patients with joint pain.
- The scanner can alternatively be set up to use much less radiation, which is helpful for children, or for research in which the same person needs to be scanned many times.
- The entire body can be imaged at the same time, which means it can track changes in a drug's distribution throughout the entire body, enabling an understanding of how a drug concentrates in organs and tissue over time.



Impact

The scanner has broad applications for cancer diagnosis, as well as for studies of blood flow, inflammation, immunological and metabolic disorders and infections.

It will be useful for patients with brain diseases, heart conditions and diseases that involve multiple organs, as well as for children because of its speed and relative safety.

With the rising interest in immunotherapy, there is wide potential in using EXPLORER to image the distribution of antibodies labeled with Zirconium-89, an extremely challenging task for conventional scanners. By capturing the kinetics of radiotracer distribution for more common tracers like FDG, EXPLORER may be able to better assess therapy response following radiation, and because it can image all the organs of the body at the same time, it could be used to predict and assess morbidities arising from radiation or chemotherapy.

EXPLORER could also be used to predict dosimetry for internal radiotherapy (from radioactive spheres or from theranostic agents).

The scanner is FDA 510(k) cleared and is currently in clinical use at UC Davis for staging, re-staging and therapy response assessment.

Current Trials

- Study of glucose metabolism in healthy subjects
- Study of glucose metabolism in patients with different forms of arthritis
- Antibody imaging in patients with HIV
- Dynamic imaging of metabolism and perfusion in patients with kidney cancer
- Imaging of inflammation in the brain and body in patients who have recently had a myocardial infarction
- Imaging of yttrium-90 therapy in patients with liver cancer

Acknowledgements

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