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MLS 314
MEDICAL PHYSICS

RADIOACTIVE TRACERS
These are chemical compounds in which one or more atoms have been replaced by a radioisotope or radionuclide. They are generally short-lived isotopes linked to chemical compounds which permit specific physiological processes to be scrutinised.
They can also be defined as synthetic chemical compounds which consist of an endogenous or exogenous carrier molecule that partakes in human metabolism and in which one or more atoms have been replaced by a radioisotope through which its naturally decay allows for imaging of the compound.

APPLICATION OF RADIOACTIVE TRACER IN MEDICINE
It is applied in Positron Emission Tomography which is a technique that uses radioactive substances to visualize and measure metabolic processes in the body.
A radioactive tracer is injected into the body, which gets trapped within the tissues of interest, The unstable nucleus of radio-ligand emits some protons, which combine with other neighbouring electrons to produce gamma rays in the opposite direction at 180 degrees to each other . These gamma rays are detected by the ring of the detector placed within the circular shaped body of the scanner.
The energy and location of these gamma rays are recorded and used by the computer program to reconstruct three dimensional imaged of the tracer concentration within the body.