23rd WIN-Global Annual Conference, Aug 24-28, Vienna Austria

Radioisotope Application *into* Nucelar Medicine (Medical Application)

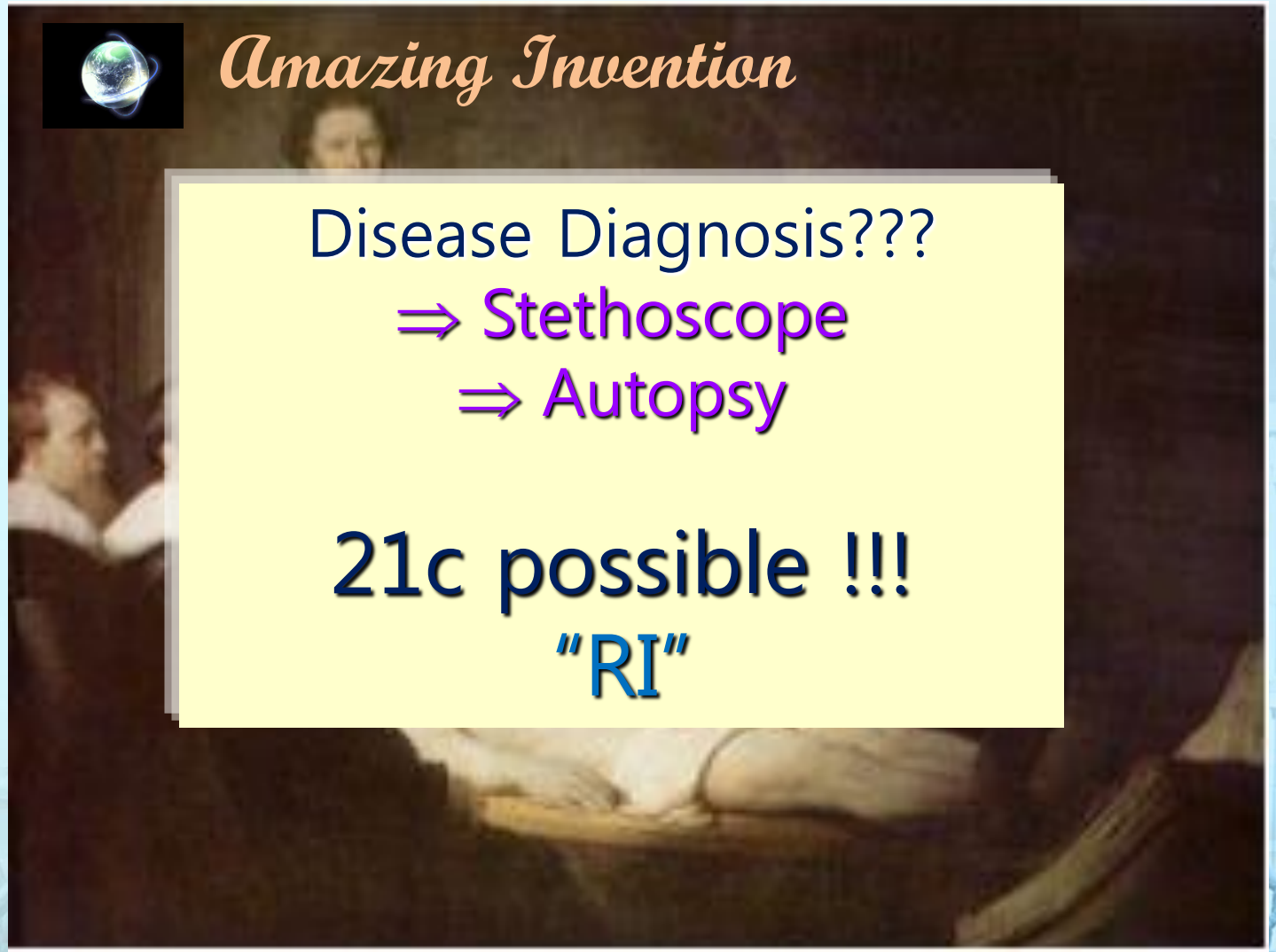
Sunju Choi

Korea Atomic Energy Research Institute

uNClear to Nuclear!*

New

*Hot issue in Nuclear Medicine, Dr. R. Baum in Bad Berka Germany



Amazing Invention

Disease Diagnosis???

⇒ Stethoscope

⇒ Autopsy

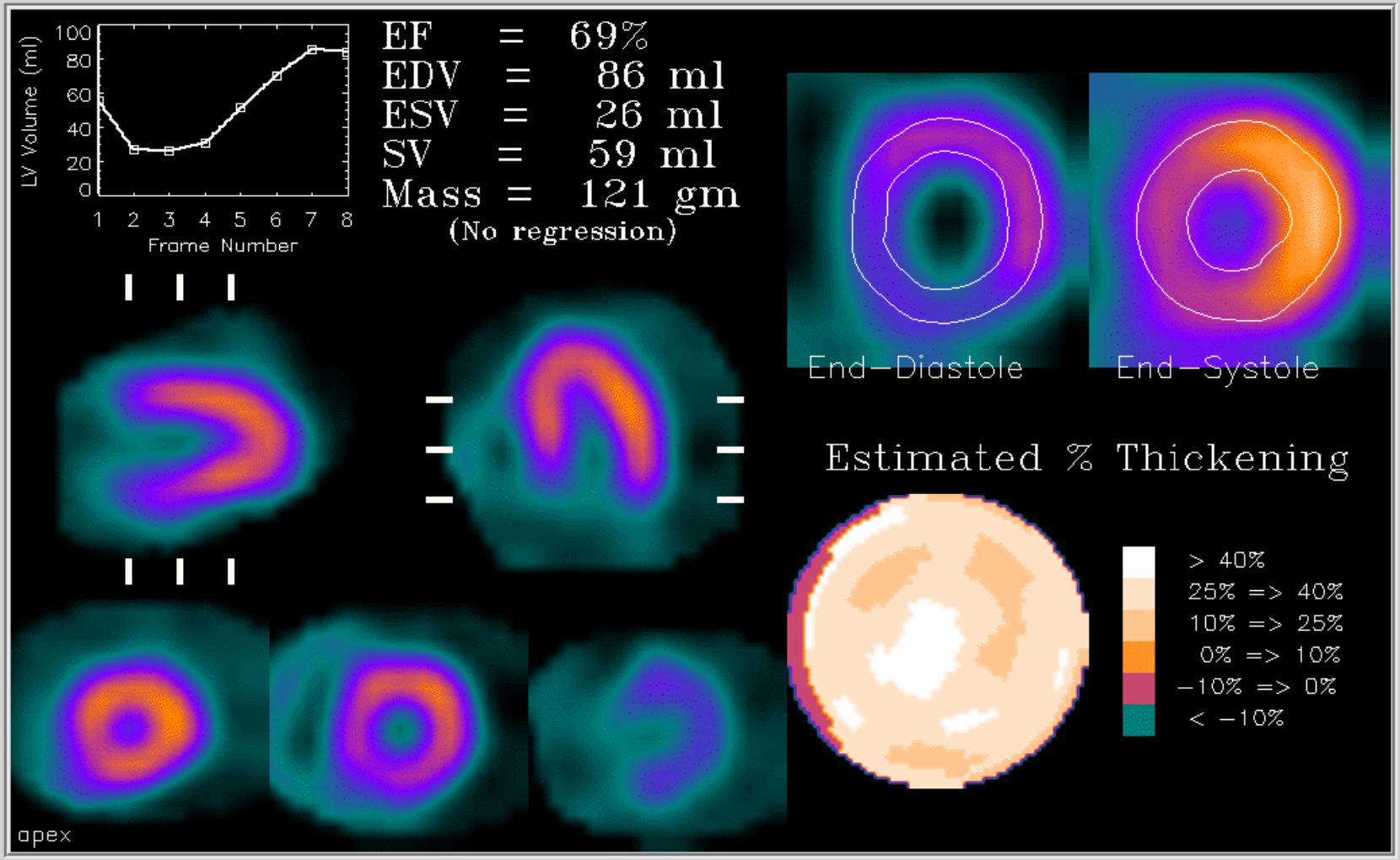
21c possible !!!

"RI"

Beneficial Effects of NM-3)

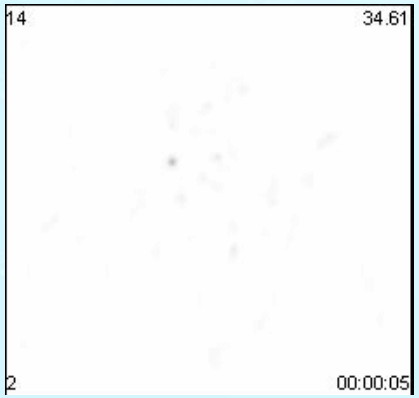
Gated M-SPECT

Heart Disorder Patients



Dynamic Imaging Protocol

^{13}N-Ammonia



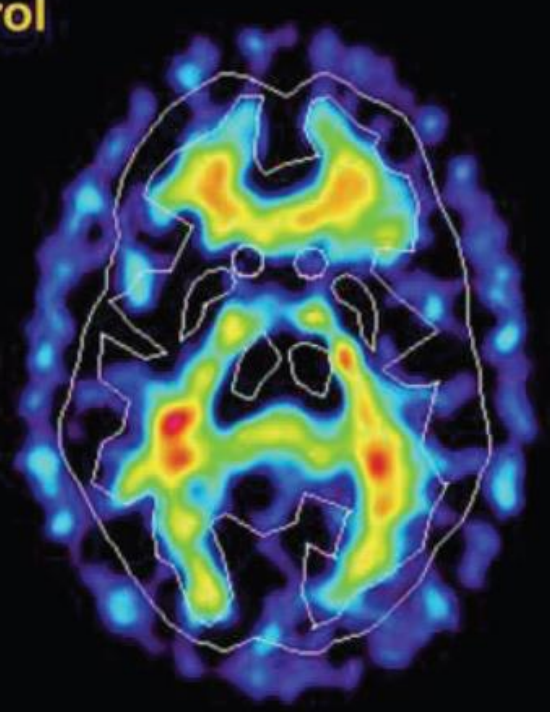
3 min

Alzheimer Disease Patients

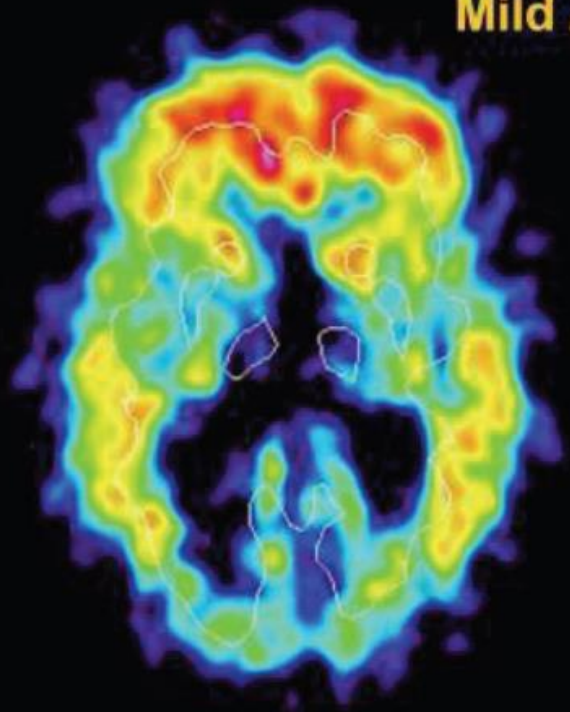
Control

-Very little labeling

-Absence of labeling in grey matter

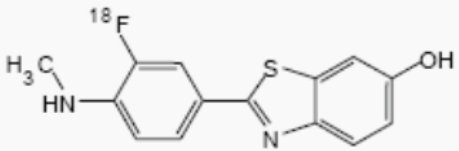


Mild AD Patient



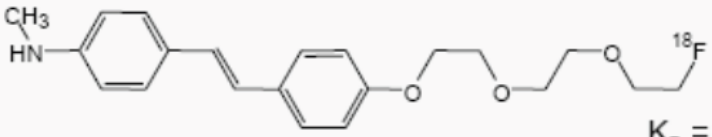
-Appearance in expected grey matter areas

-Absence in areas where there is no amyloid



K_D = 2.2 nM
AD brain

[18F]3'F-PIB / GE-067 / flutemetamol

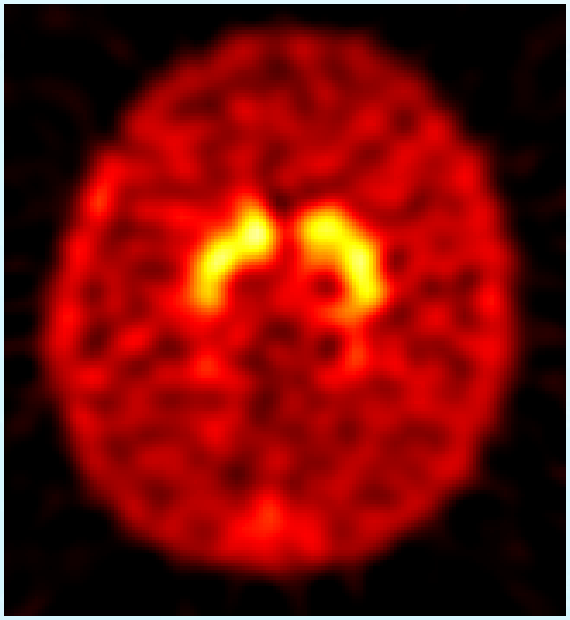


K_D = 6.7 nM
AD brain

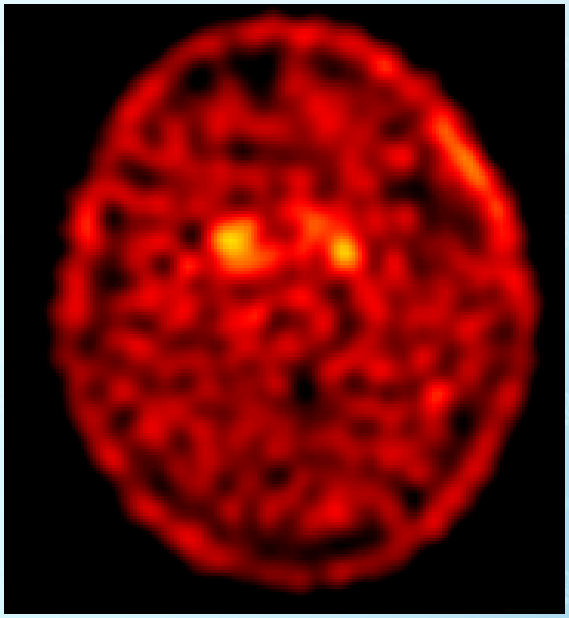
[18F]AV-1 / BAY94-9172

Parkinson's Diasease

Receptor Targeting "Technetium Essential"

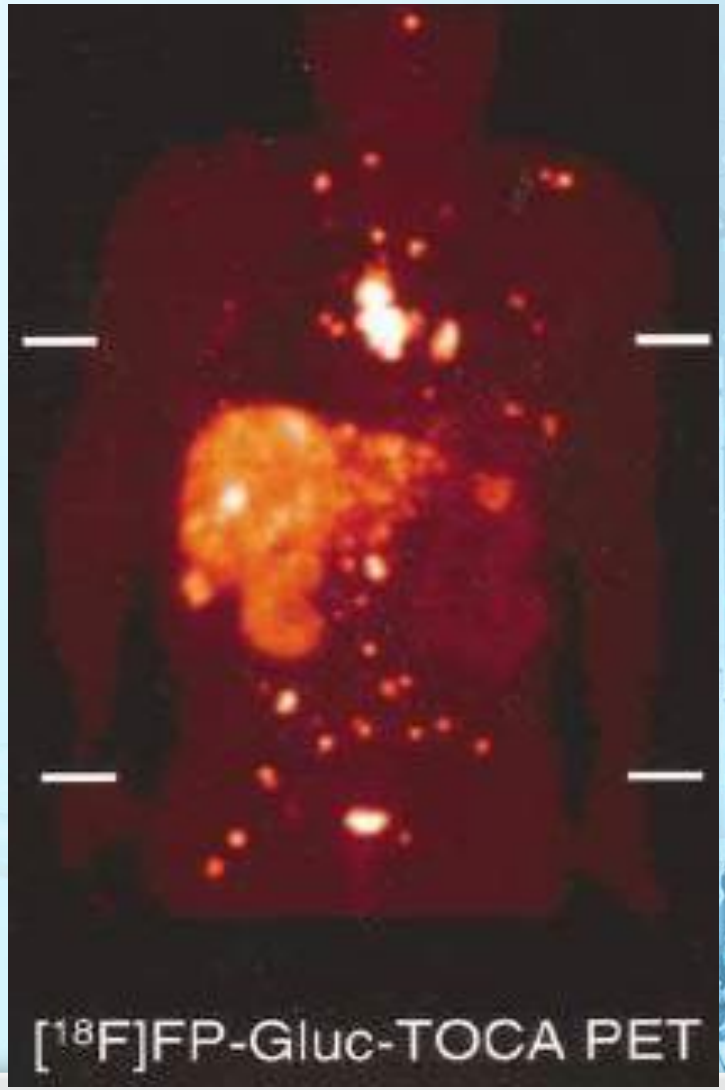


healthy subject



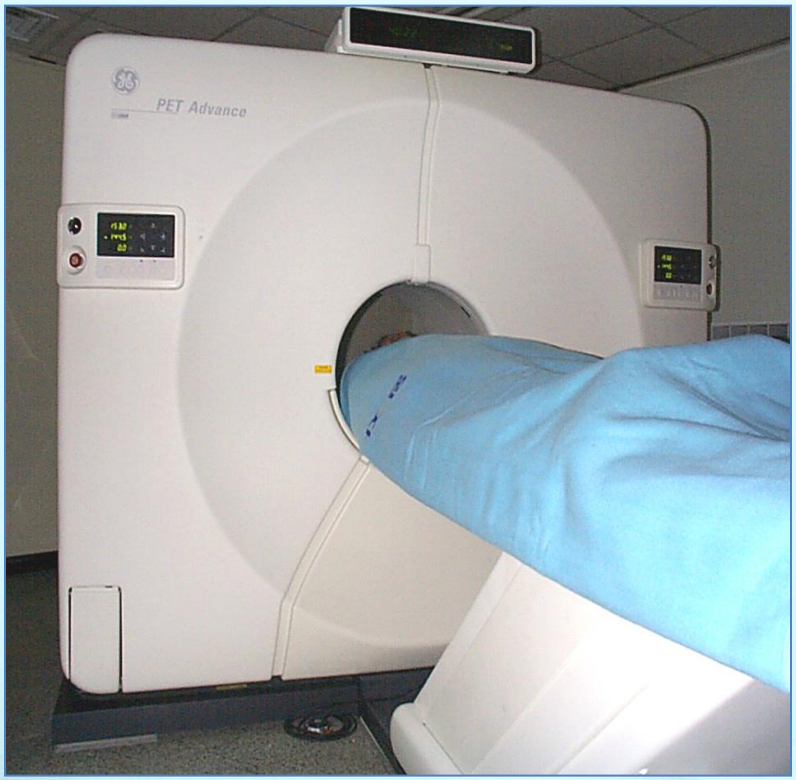
Parkinson's patient

Neuroendocrine Tumor Patient

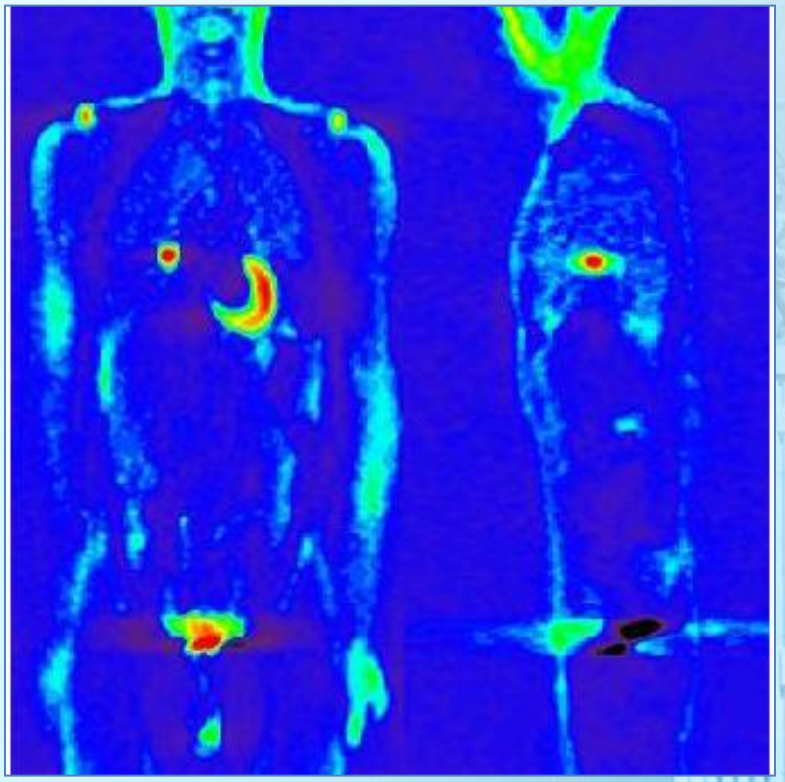


How?

PET

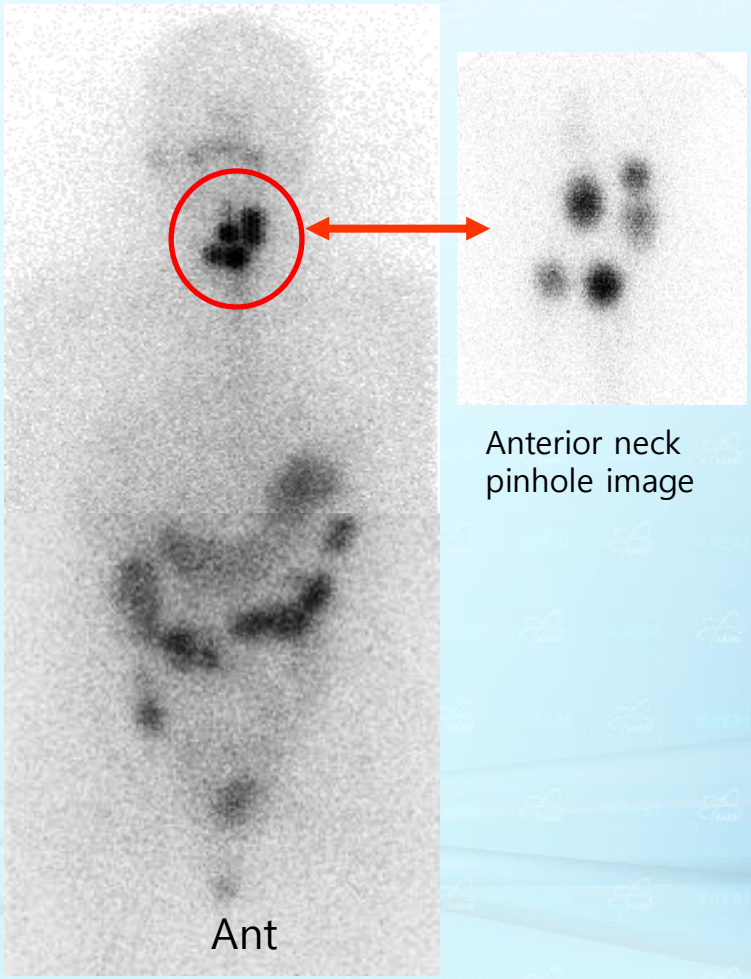


PET in Operation

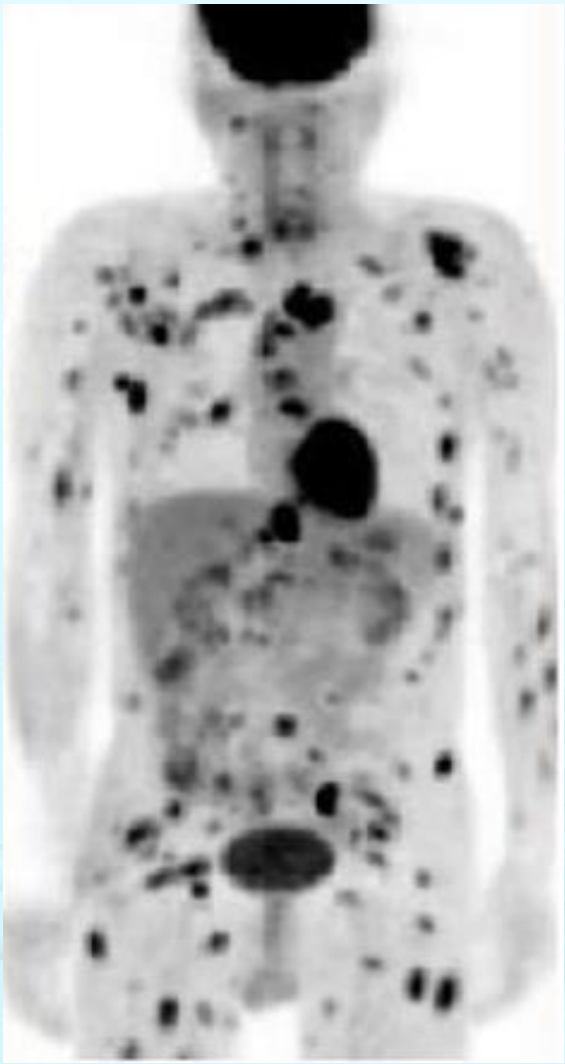


PET Image of a Patient With Lung Cancer

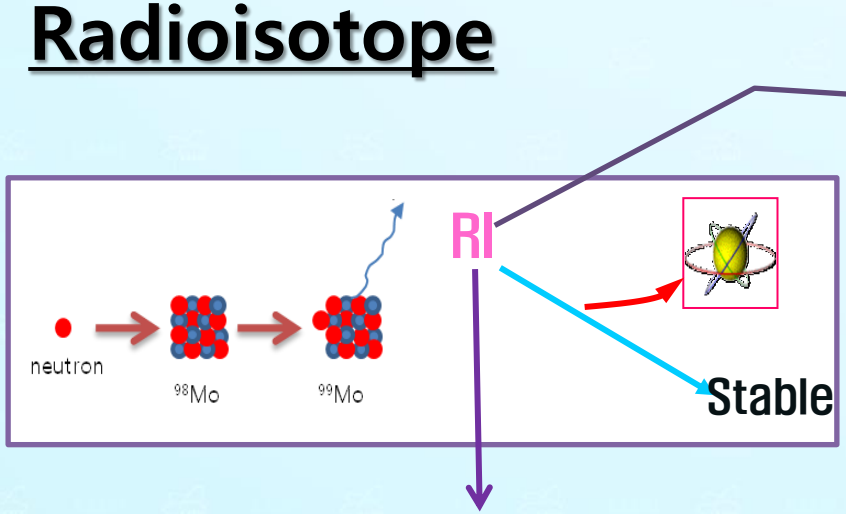
Thyroidal Cancer Patient

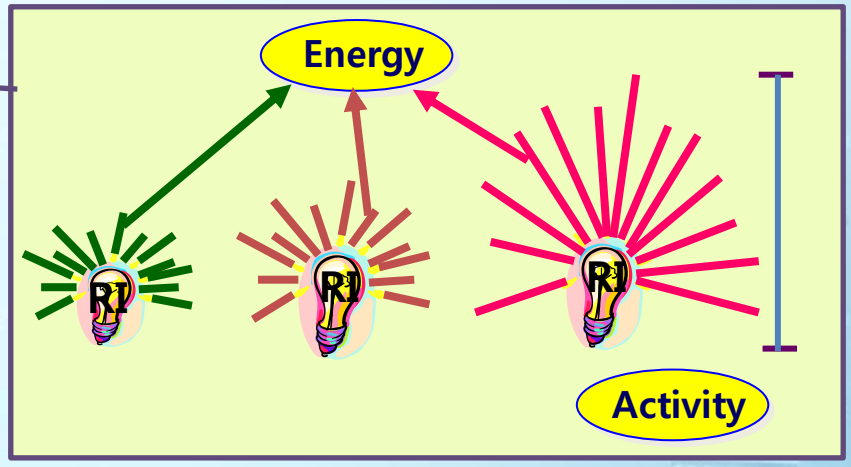


Bone Metastasis Patient



Radioisotope



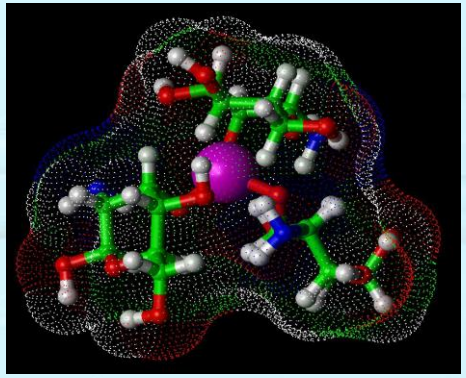


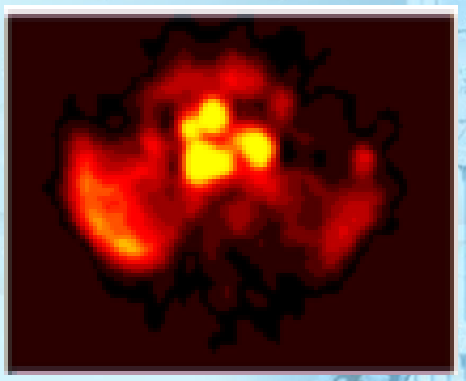
I-125	60.0d	auger	10nm
At-211	7.2h	alpha	65nm
Lu-177	6.7d	beta/gamma	0.7mm
Cu-67	2.58d	beta/gamma	0.7mm
I-131	8.04d	beta/gamma	0.9mm*
Sm-153	1.95d	beta/gamma	1.2mm
Re-186	3.8d	beta/gamma	1.8mm
P-32	14.3d	beta	2.9mm
Re-188	17h	beta/gamma	3.5mm
In-114m	50d	beta/gamma	3.6mm
Y-90	2.67	beta	3.9mm*

Research Scientists

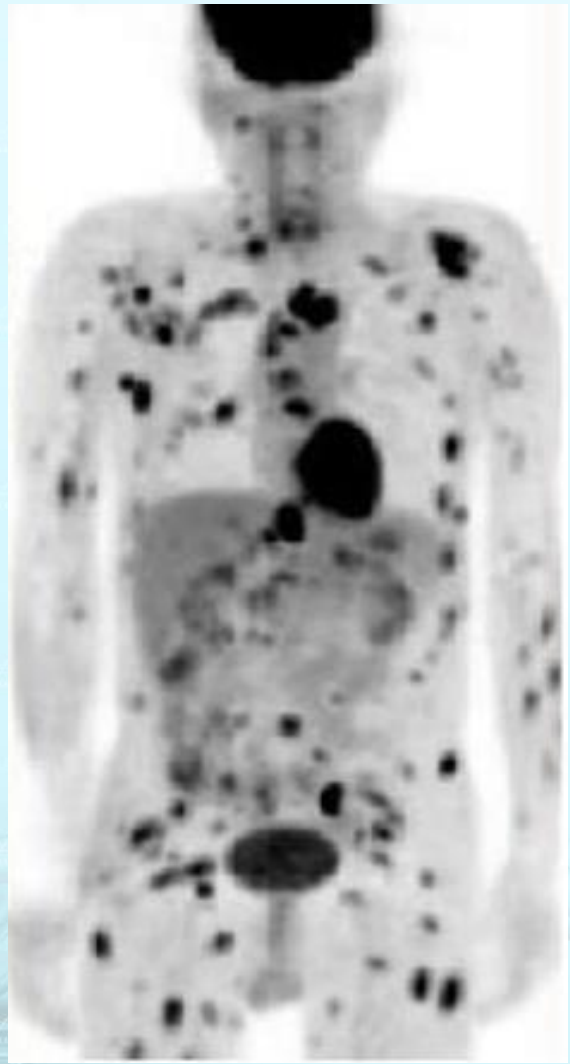
Looking for Disease Targeting Radiopharmaceuticals

Reactor RIs
: Tc-99m, Lu-177
Cyclotron Ris
: F-18





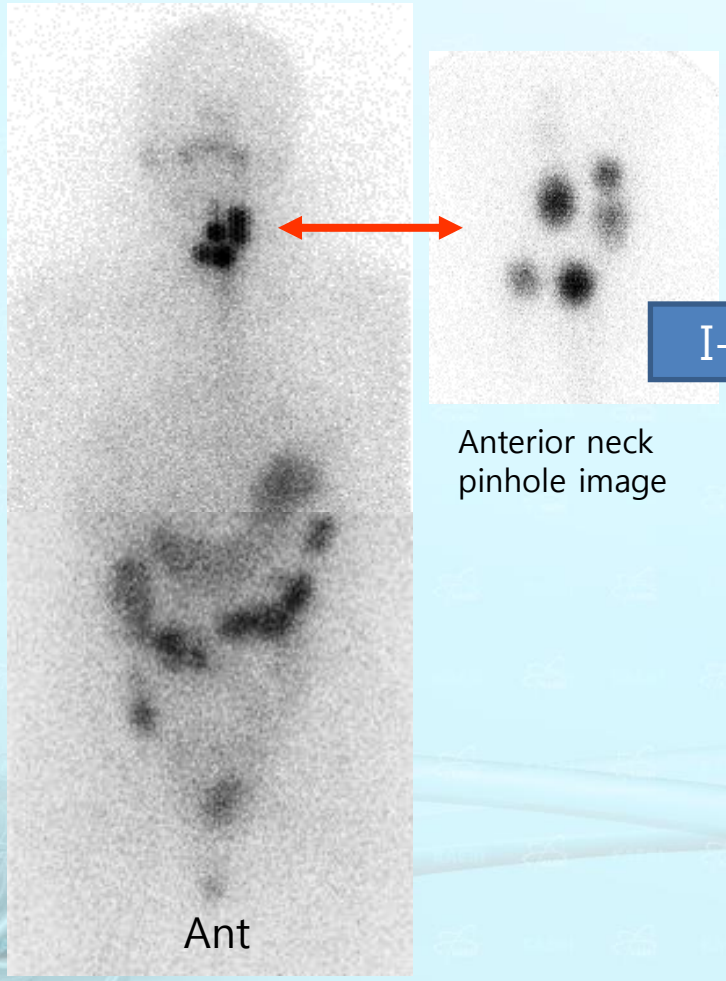
Bone Metastasis Therapy



Re-188

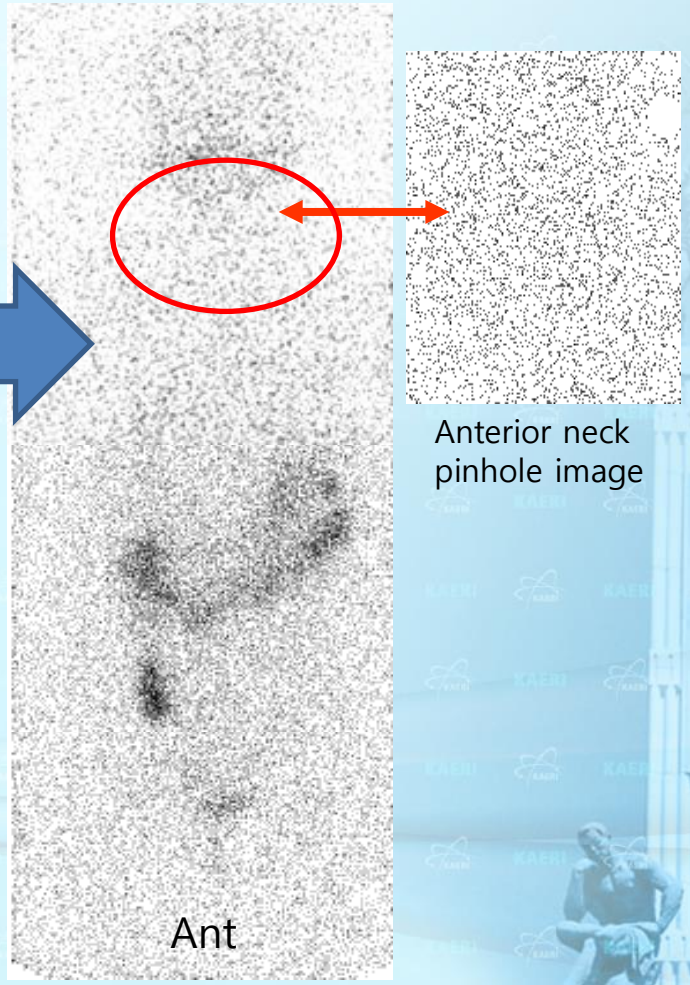
Thyroidal Cancer Therapy

53/F, Clinical stage III : 9.25 GBq I-131

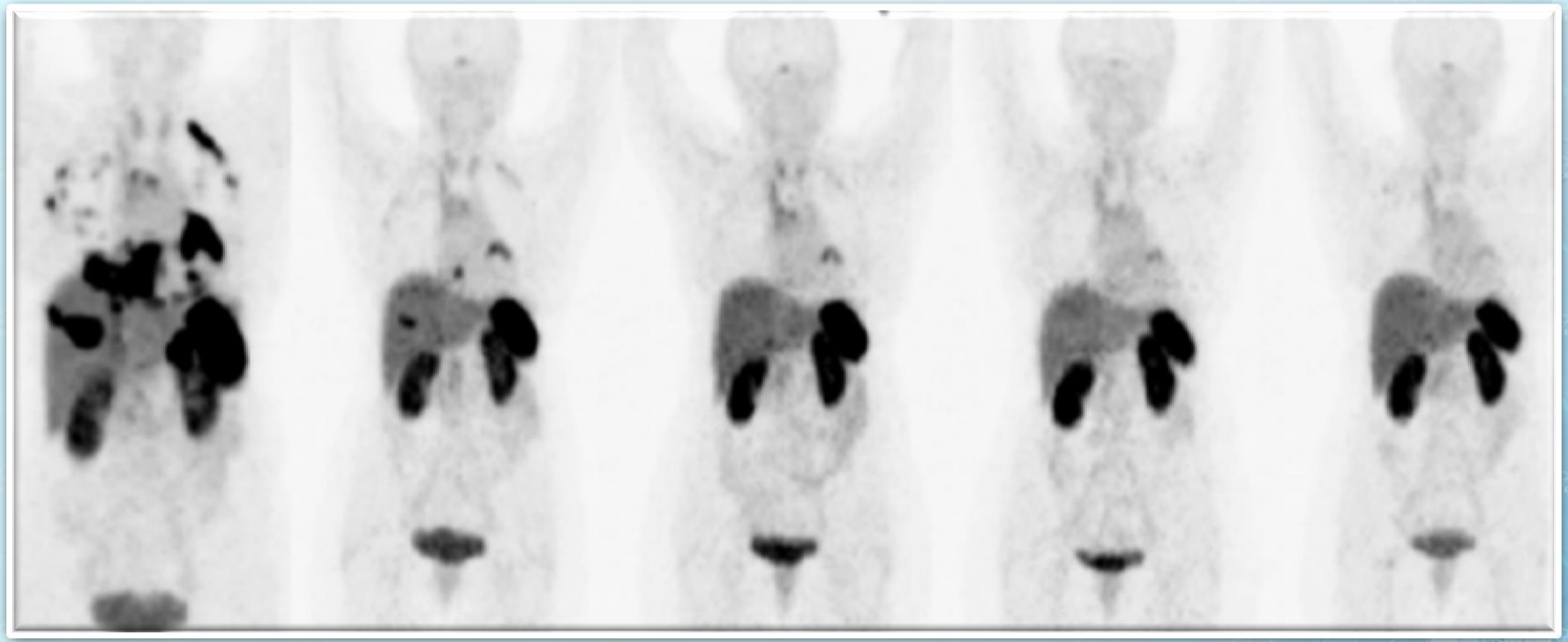


I-131

6 months F/U



Y-90-DOTATATE : Metastatic NET



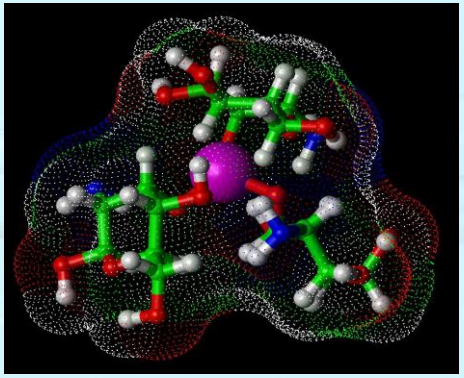
6 Months Treatment : Complete Remission

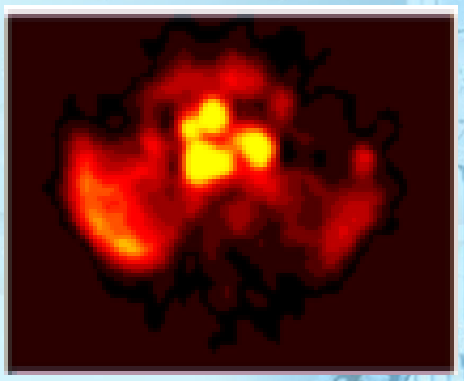
Research Scientists

How to make RI to  ?

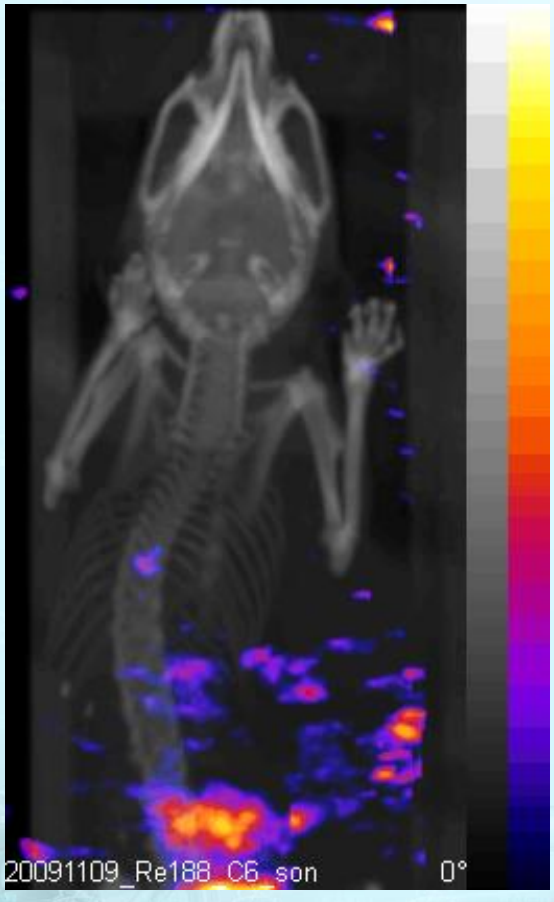
Disease Targeting Radiopharmaceuticals

Reactor RIs
: Tc-99m, Lu-177
Cyclotron Ris
: F-18

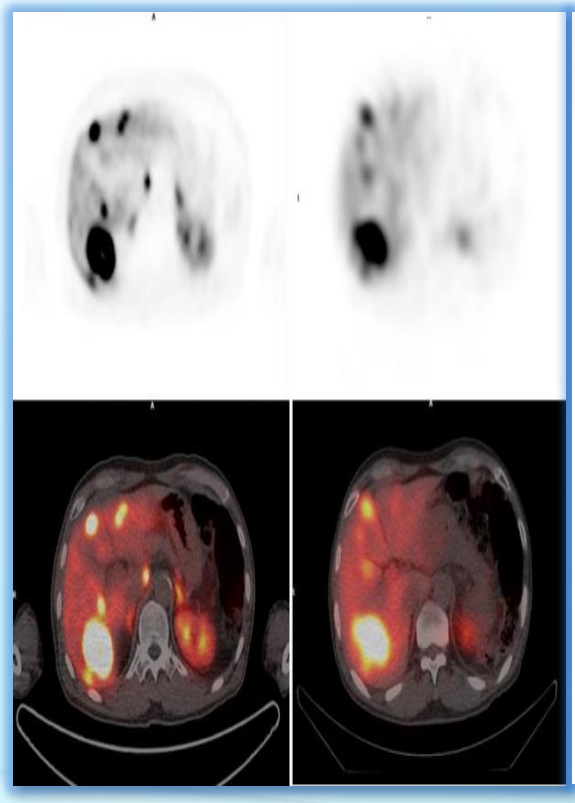


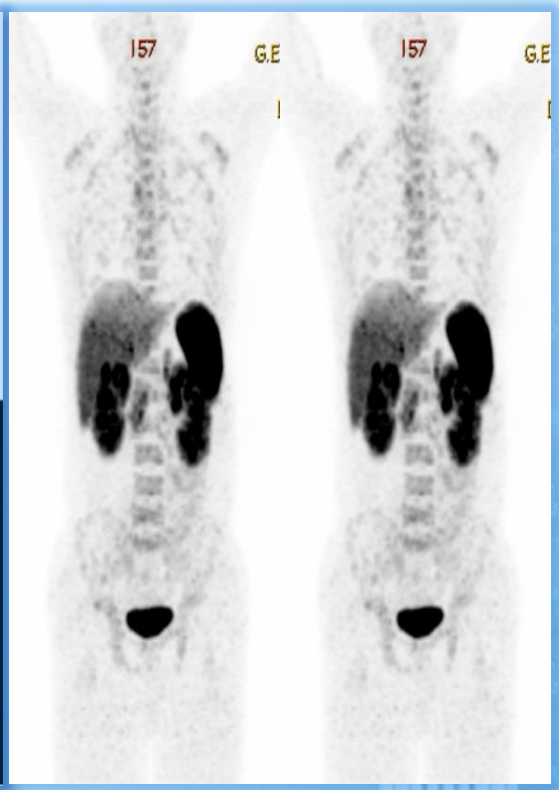


Preclinical Study vs. Clinical Studyc



Lab





Clinical Study

More to Come~