

Atoms for imaging: Latest trends in medical imaging from macro to micro

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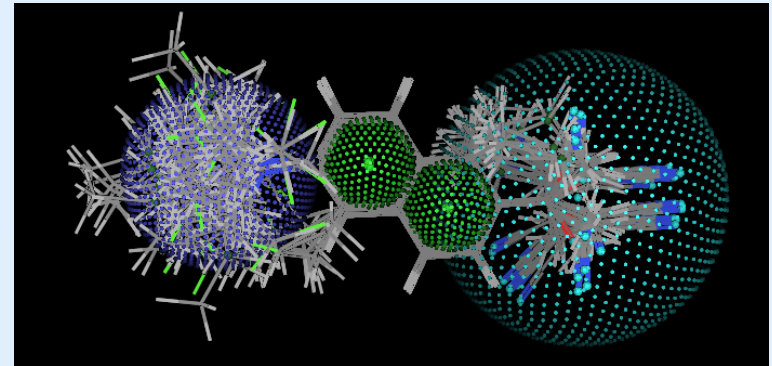
IAEA Scientific Forum

**Nuclear Techniques
in Human Health**

Prevention, Diagnosis, Treatment

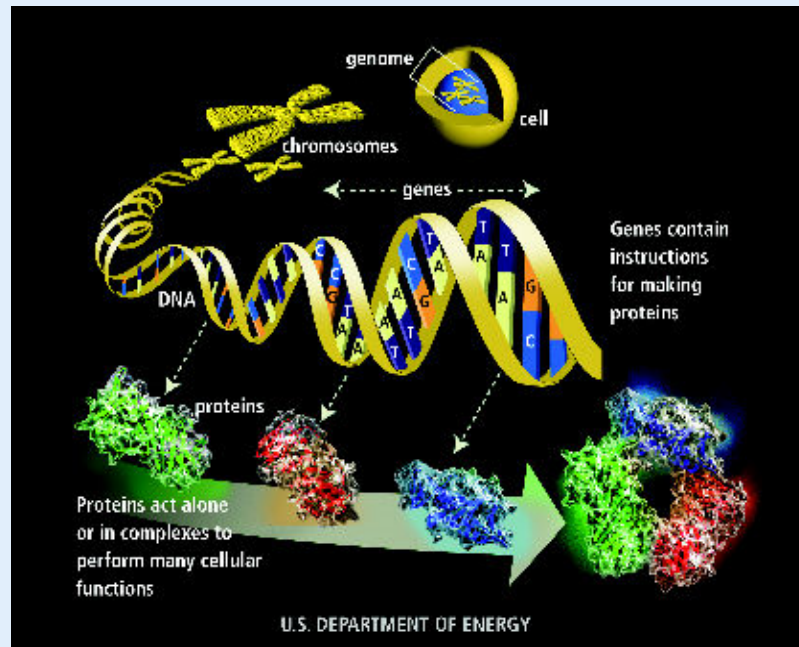
“Diseases are a biological processes and molecular imaging are biological imaging techniques that use molecular probes that are sensitive to and informative of these processes”

Michael Phelps - UCLA_
[Proc Natl Acad Sci U S A](#)
2000 Aug 1; 97(16): 9226–9233.

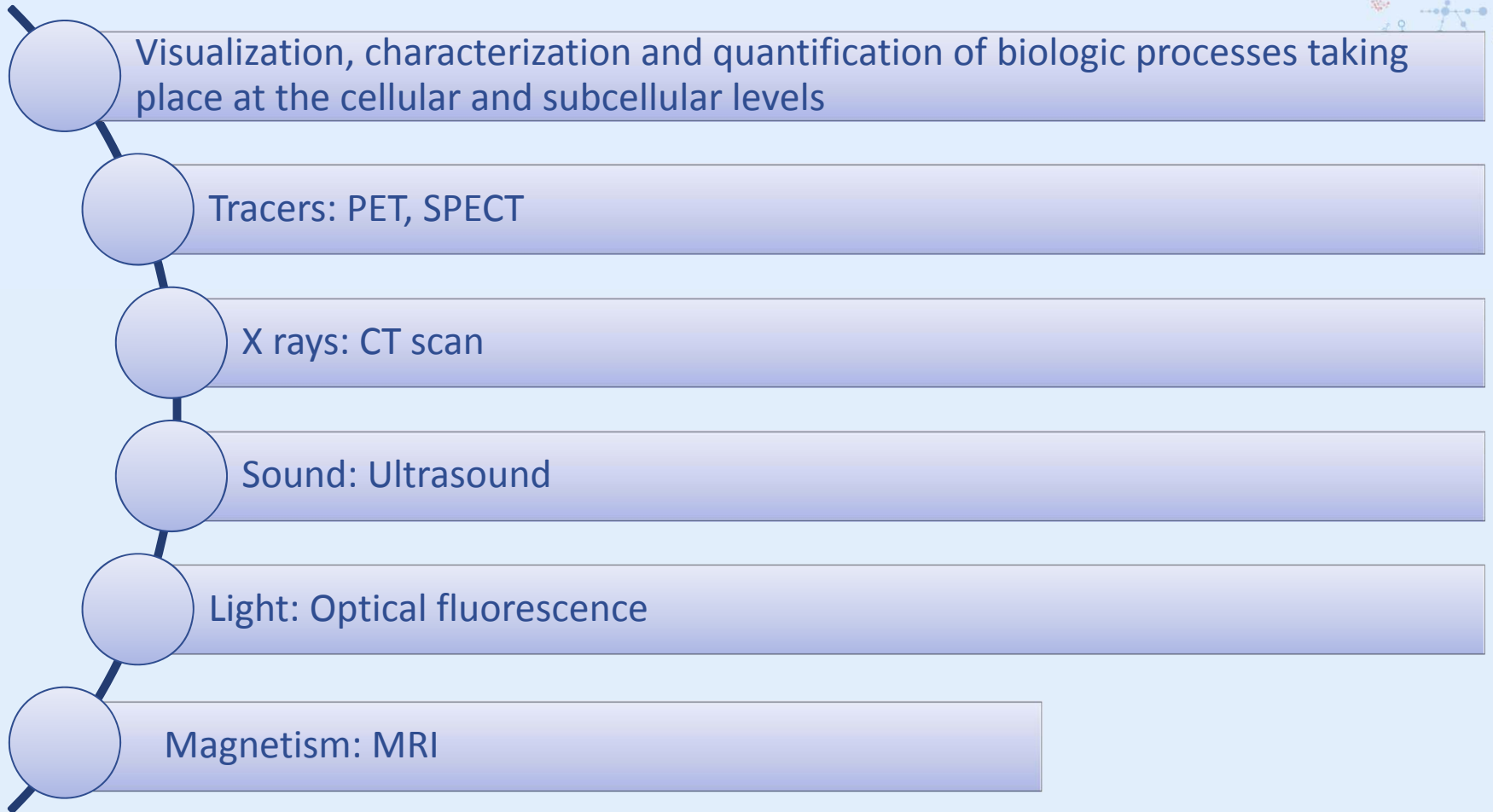


Major advances in medical research

- Human Genome Study
- Exponential growth of knowledge of pathological processes in the molecular level
- Advances in medical imaging technology



Molecular Imaging

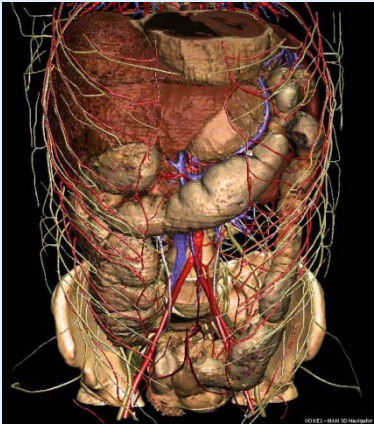


Why don't you want to scan my pet?



Medical Imaging

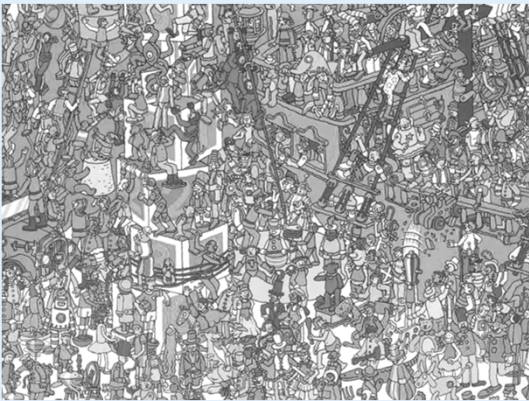
Anatomical



Molecular

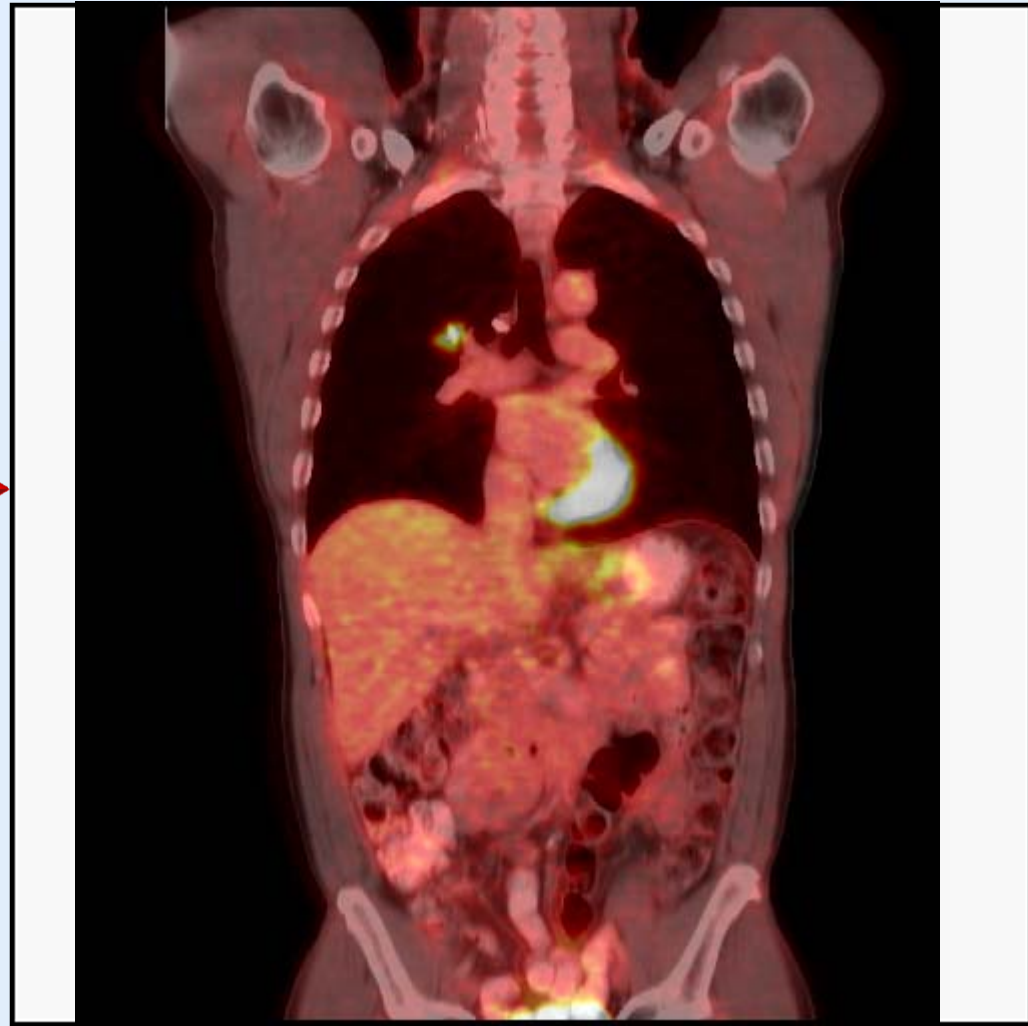
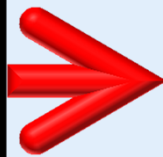
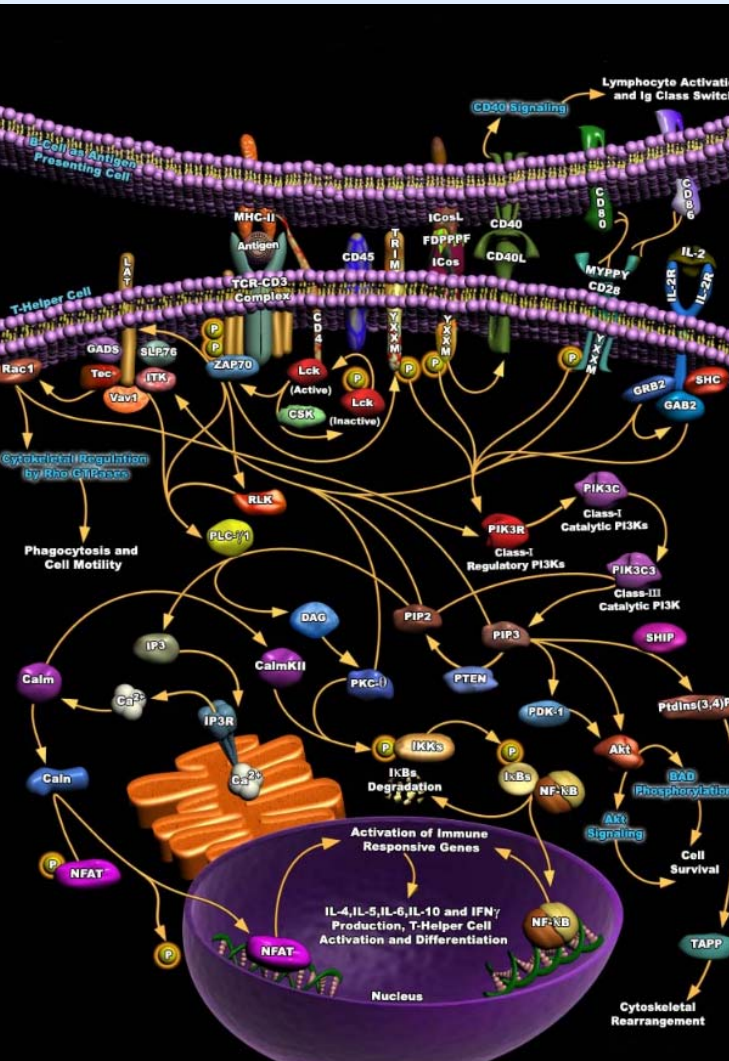


Hybrid imaging



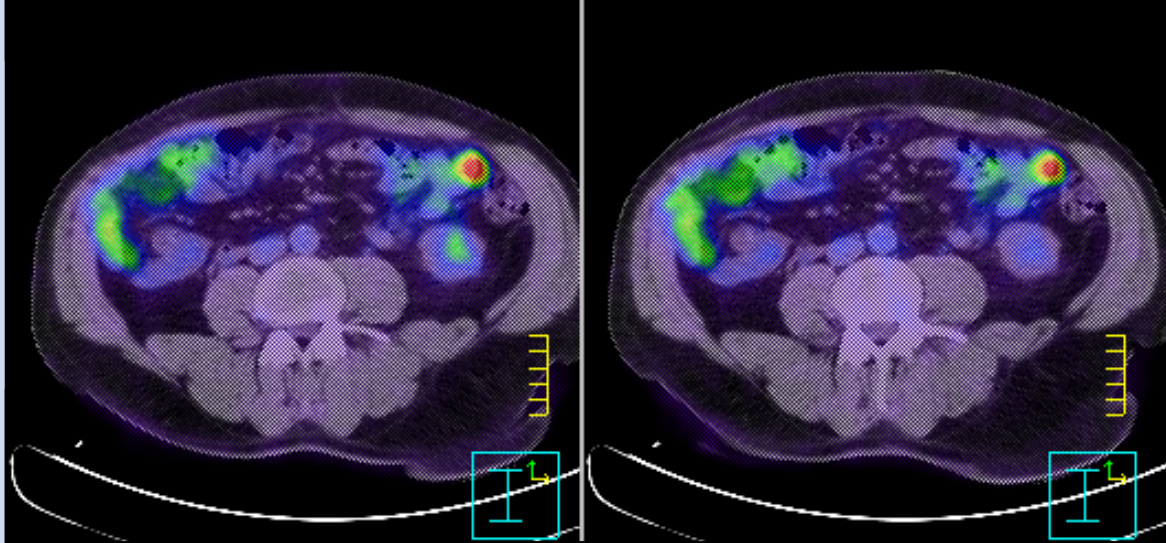
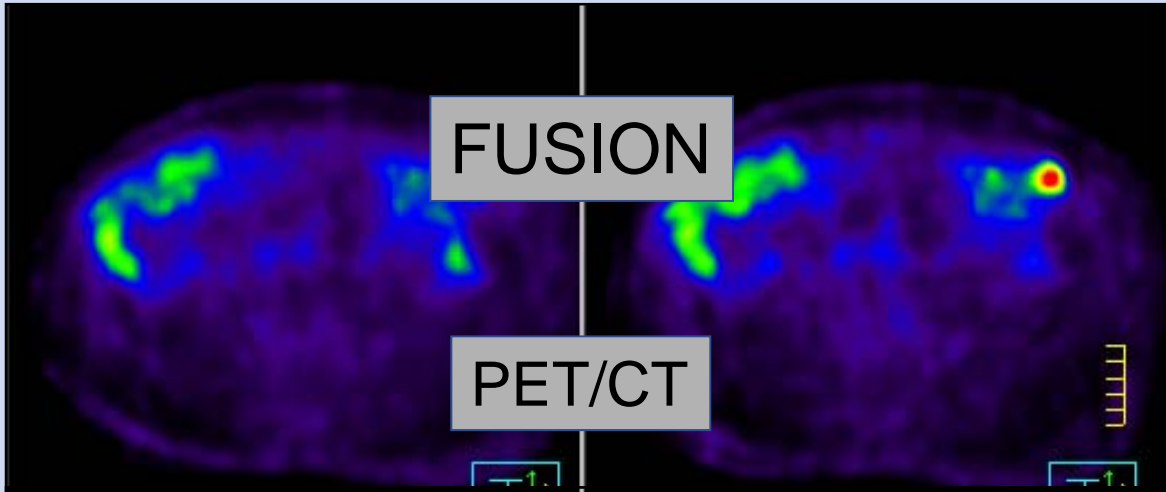
Structure without function is a corpse,
Function without structure is a ghost
(*Stephen Wainwright*)

Molecular Imaging

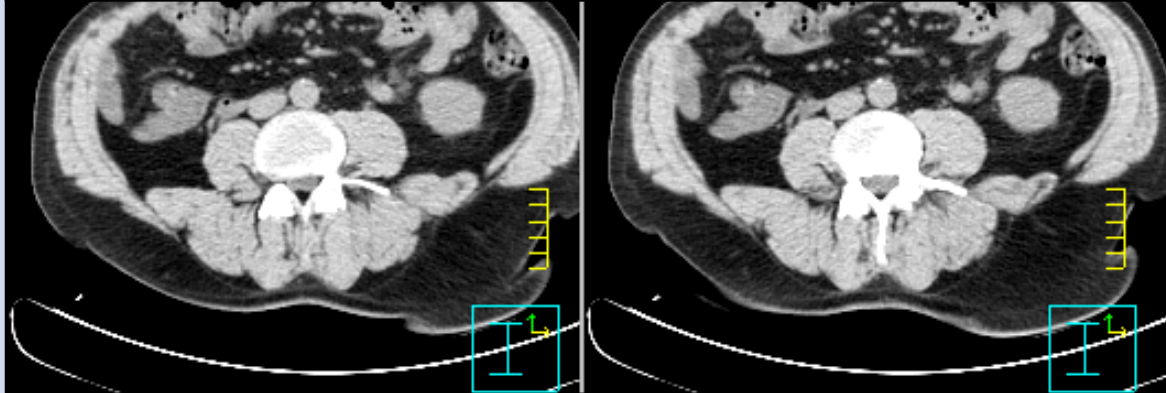


We shall know physiology when we are able to follow step by step a molecule of carbon or azote in the body, give its history, and describe its passage from its entrance to its exit (Claude Bernard)

PET

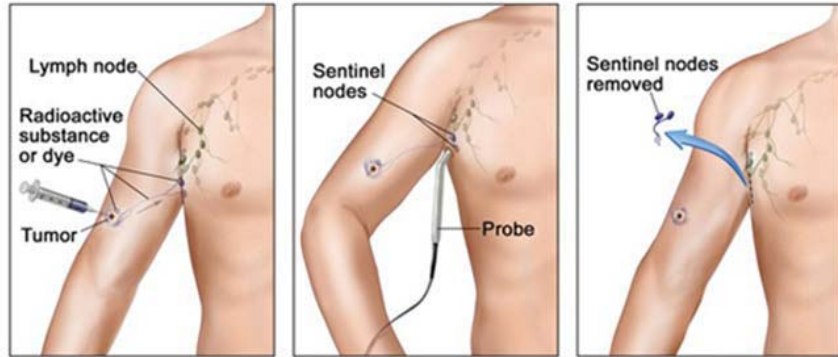


CT

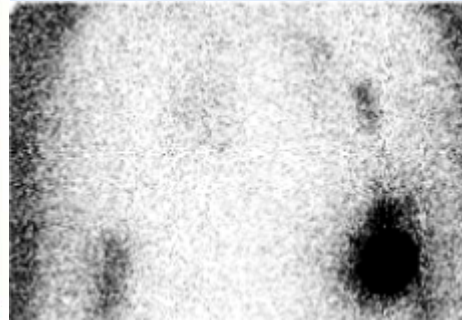


SPECT/CT

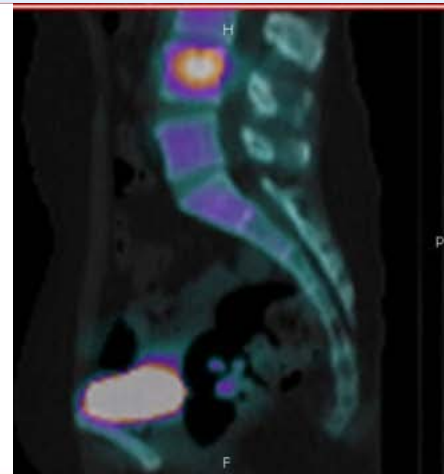
Sentinel Node Biopsy (melanoma/breast ca)



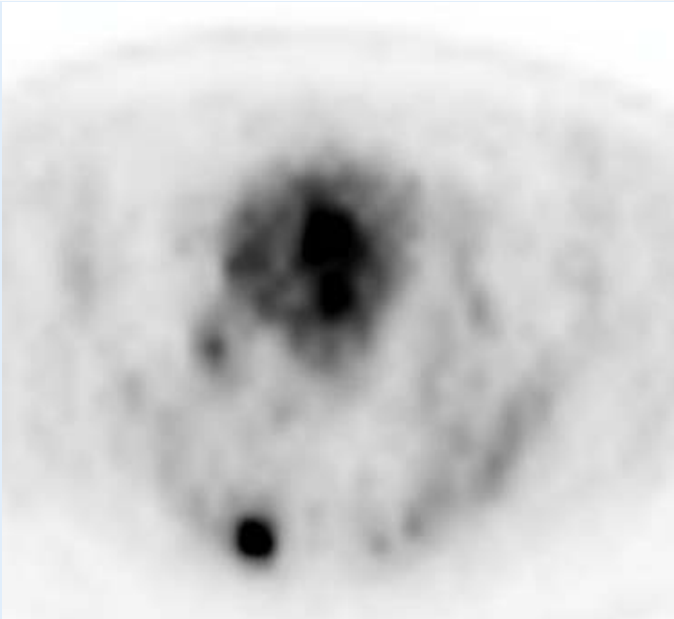
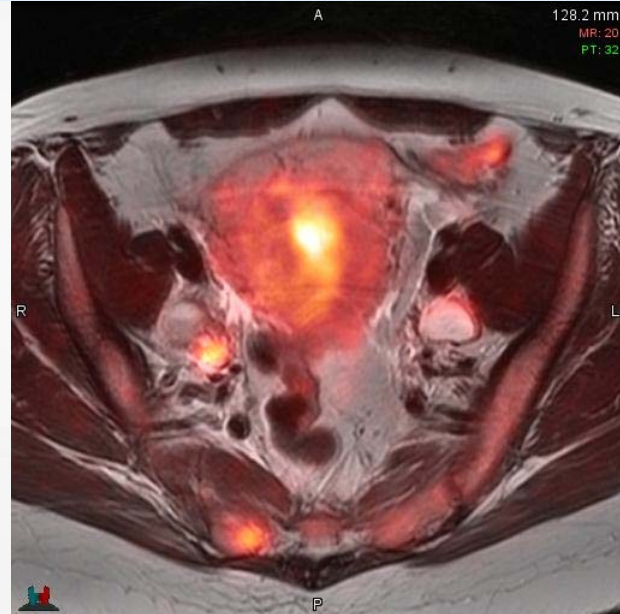
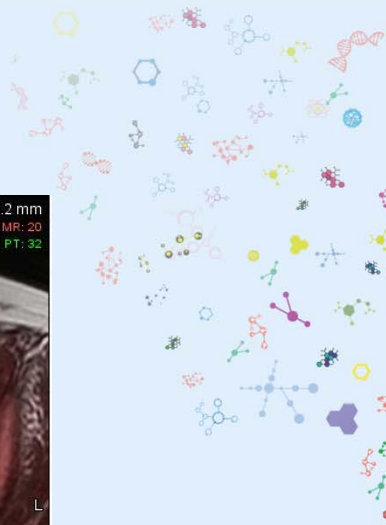
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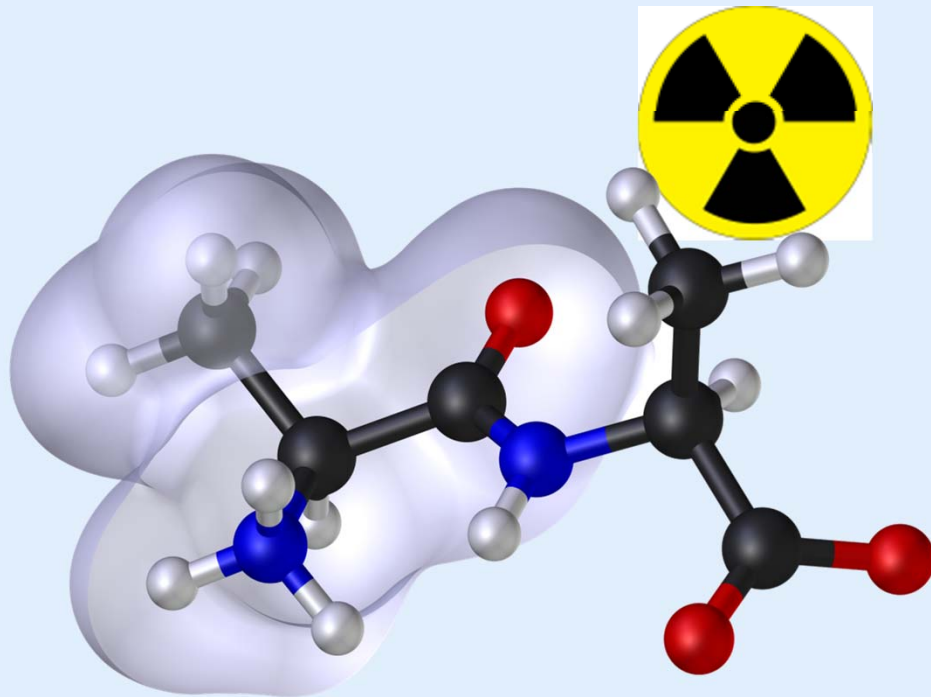
Prostate Ca



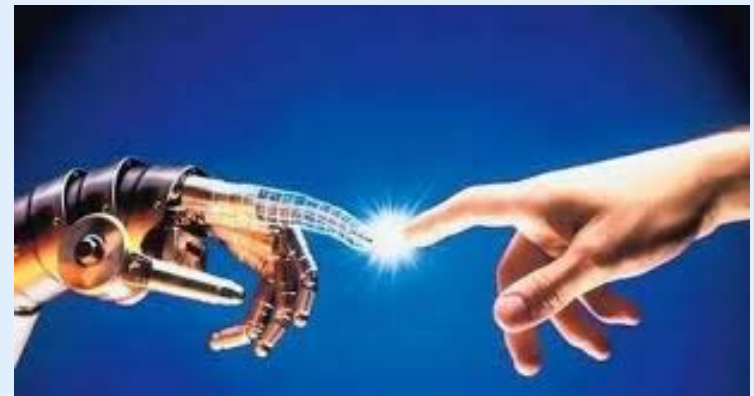
PET/MR



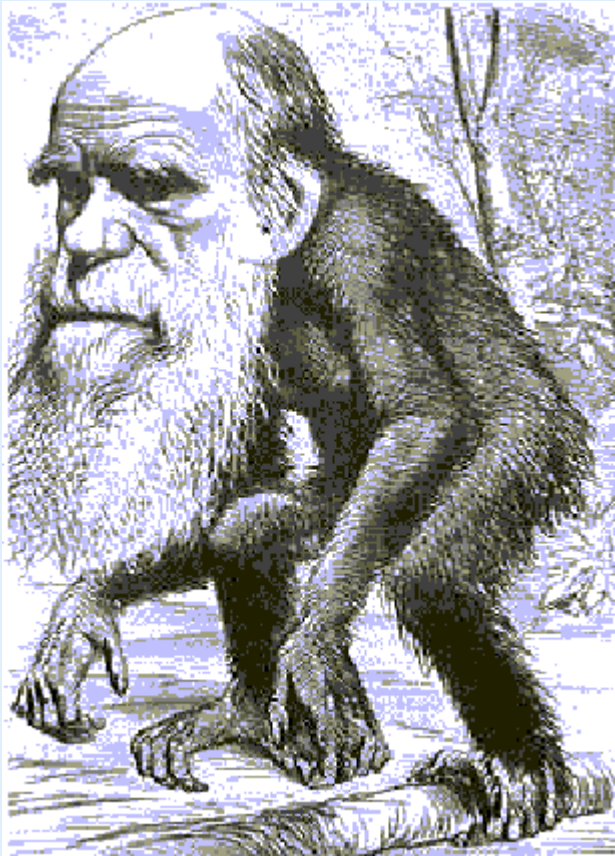
Advances in Molecular Imaging



New radiopharmaceuticals



New technologies



Form Follows Function



Thank You!