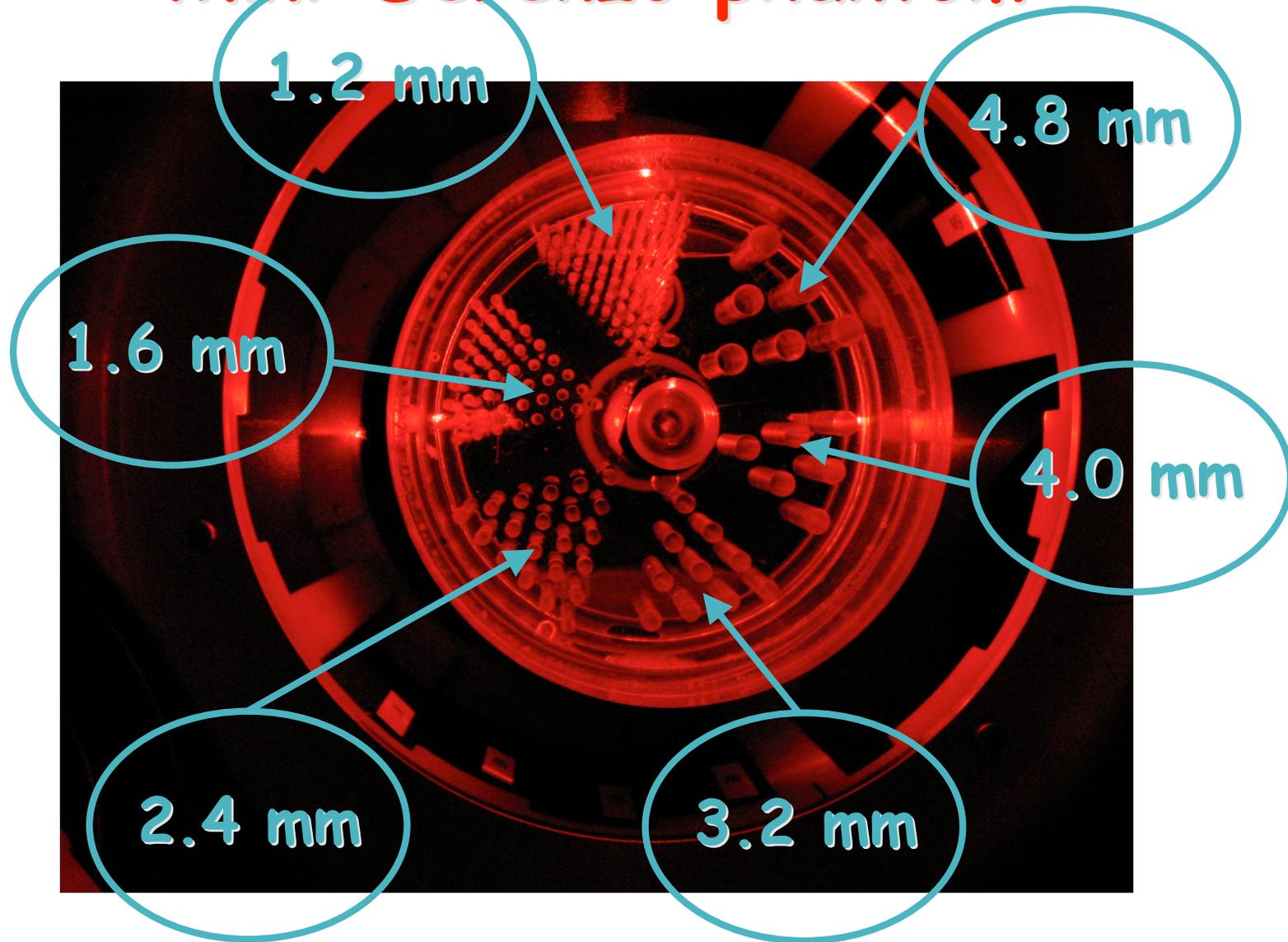


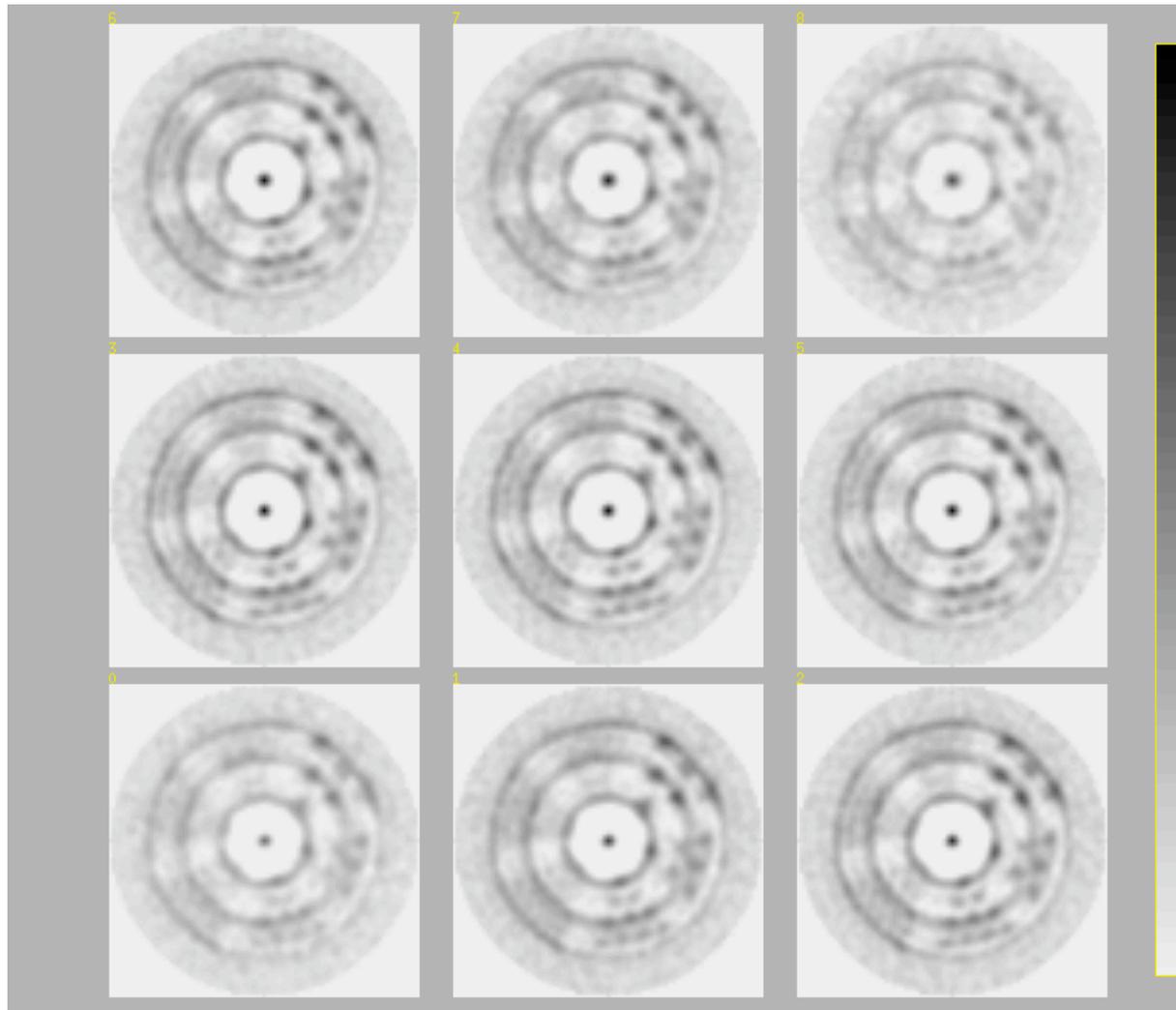




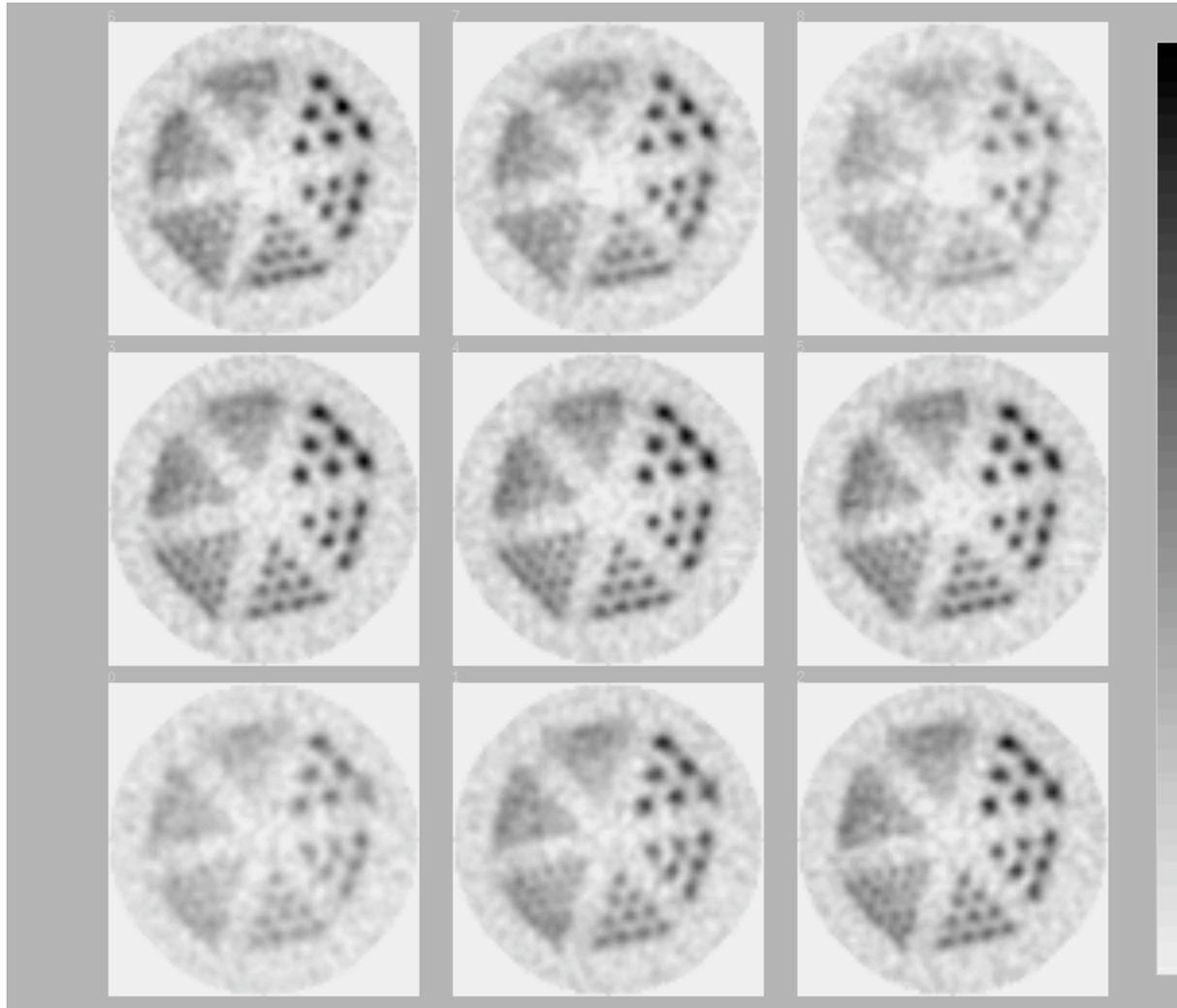
# Mini-Derenzo phantom



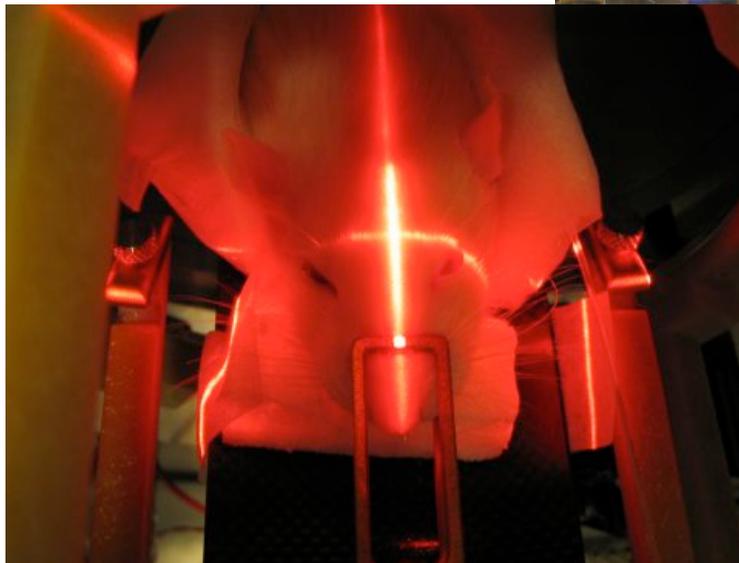
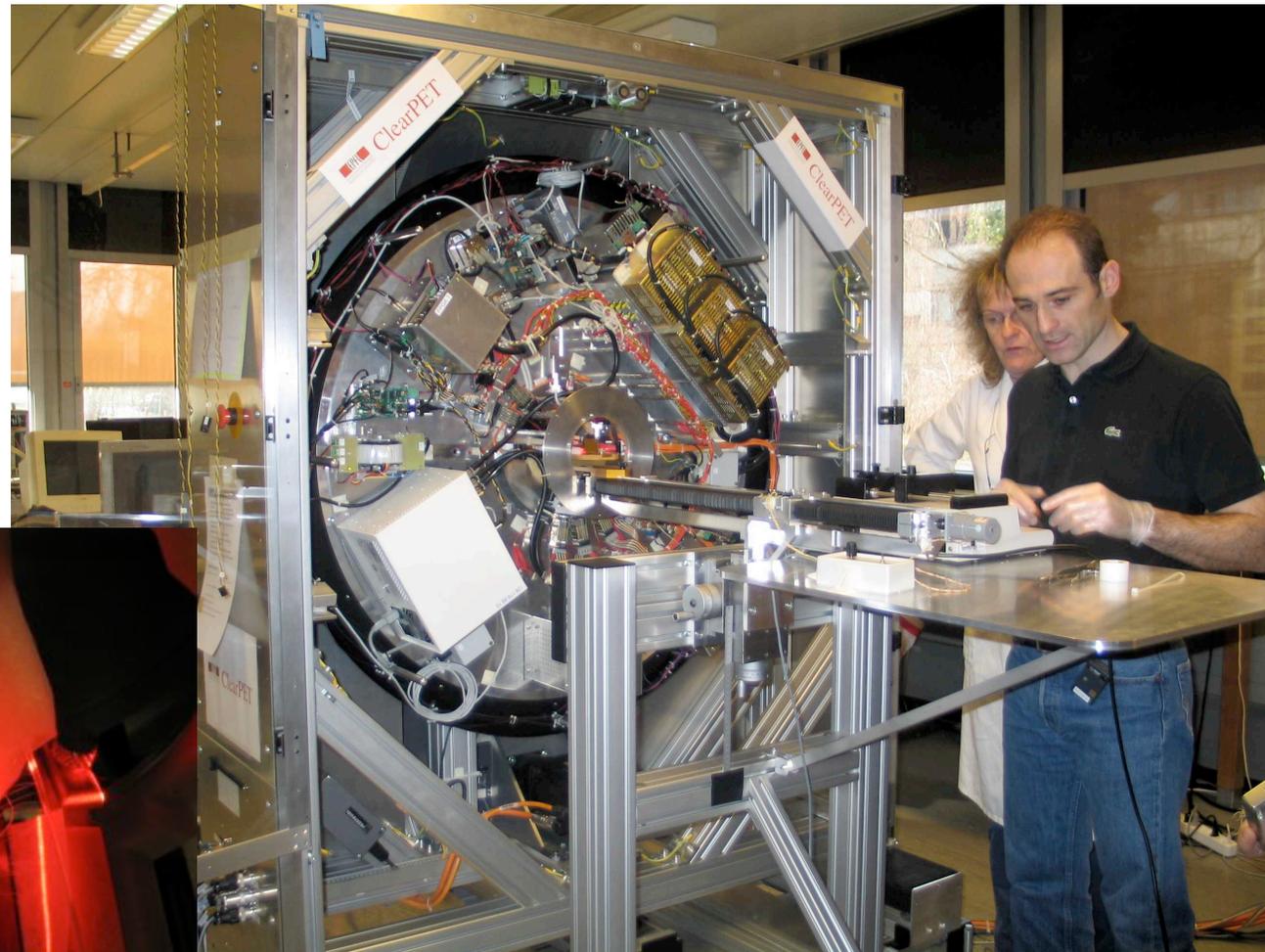
# Mini-Derenzo phantom sans normalisation



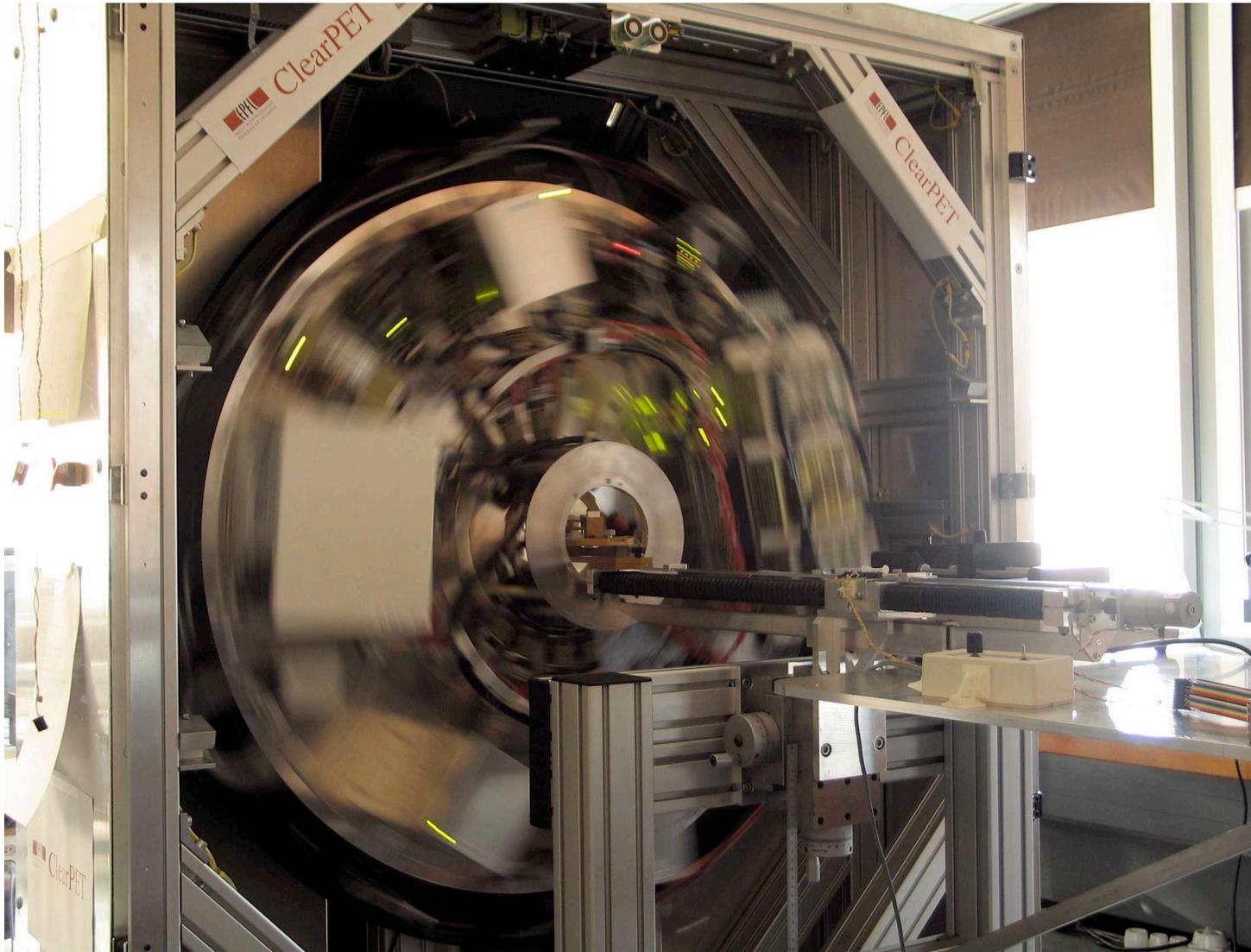
# Mini-Derenzo phantom avec normalisation



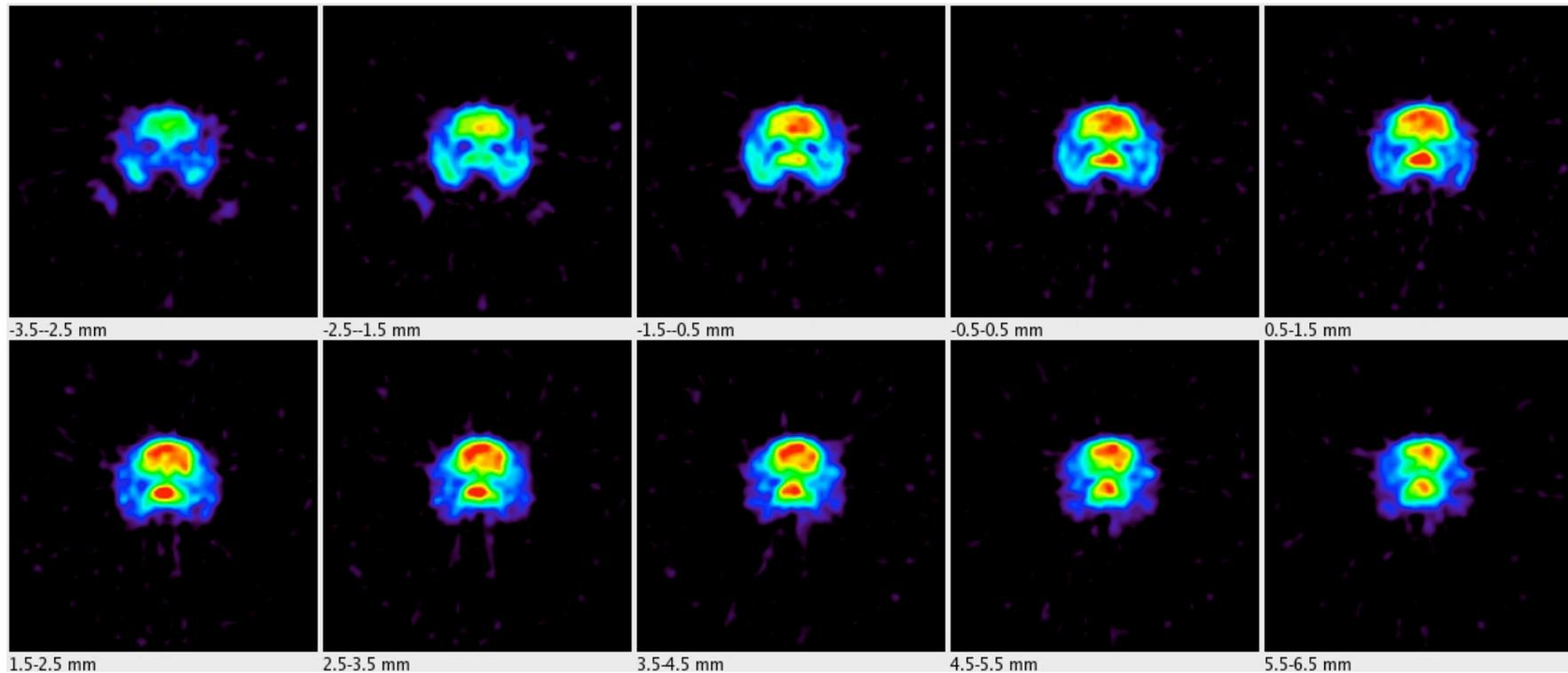
# First rat experiment on the ClearPET demonstrator



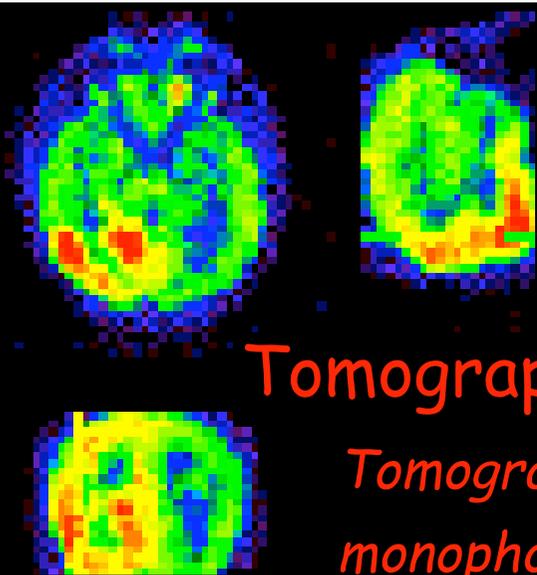
# First rat experiment on the ClearPET demonstrator



# [<sup>18</sup>F]FDG rat brain scan



- 240 g female rat
- 47.7 MBq [<sup>18</sup>F]FDG
- 45 min post injection scan
- 16 min scan duration



## Tomographie d'émission

*Tomographie par émission monophotonique (TEMP)*

*Tomographie par émission de positons (TEP)*

## Radiologie

*Radiographie à rayons X*

*Tomographie à rayons X (CT)*

*Tomodensitométrie (DXA)*



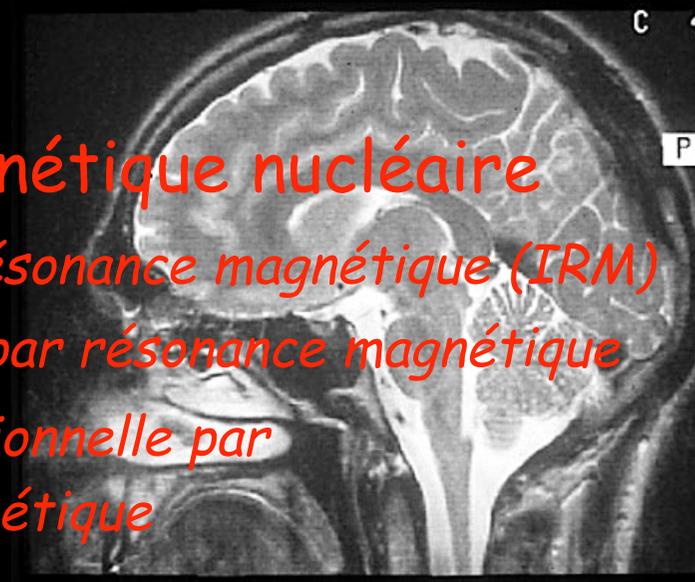
## Imagerie par ultrasons

## Résonance magnétique nucléaire

*Imagerie par résonance magnétique (IRM)*

*Spectroscopie par résonance magnétique*

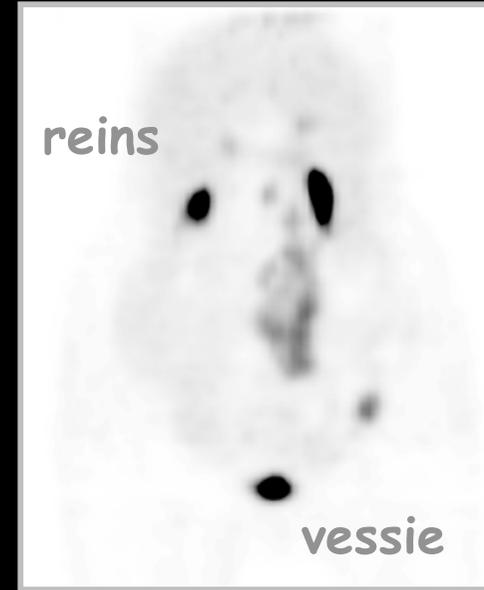
*Imagerie fonctionnelle par résonance magnétique*



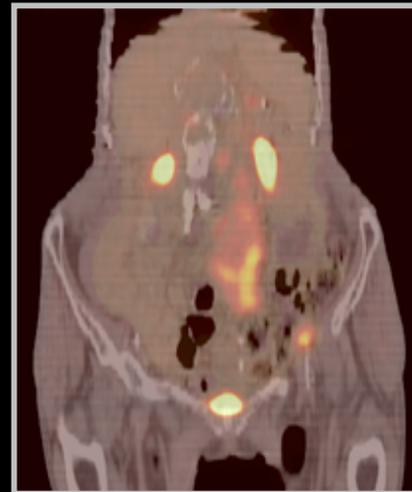
# Anatomie + Fonction



Anatomie (TDM)



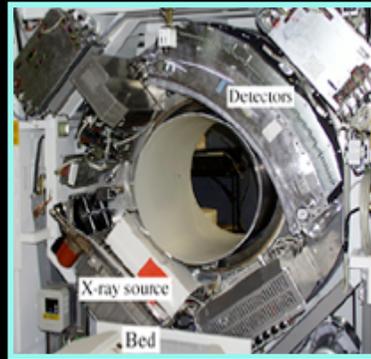
Fonction (TEP)



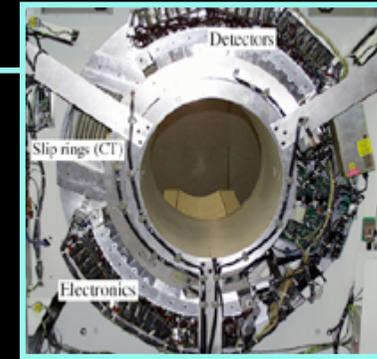
Fusion d'image

courtesy: D. Townsend, UPMC

# TEP/TDM prototype design

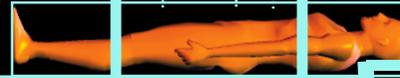


Somatom AR.SP



ECAT ART

caméra



console TDM

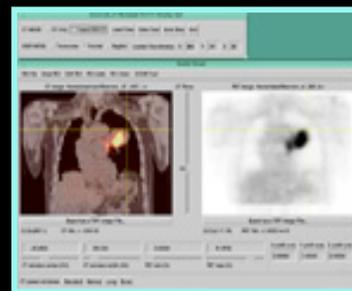


TDM

console TEP



TEP



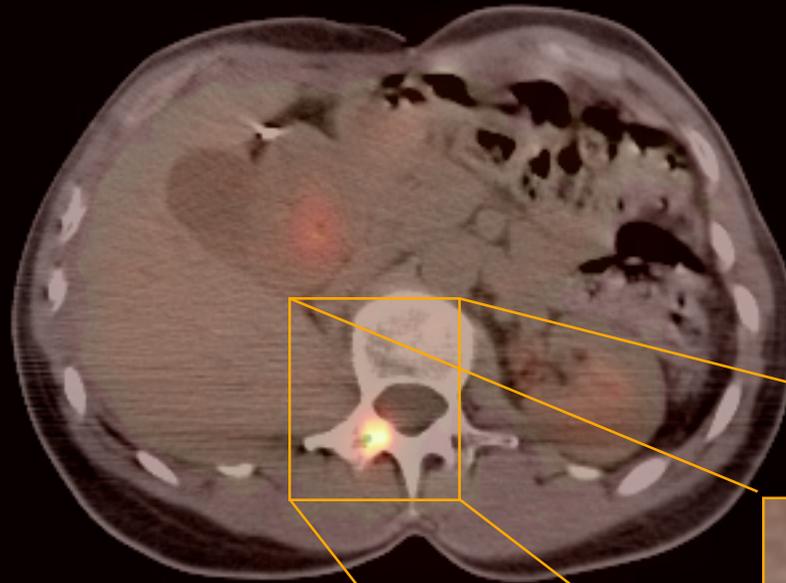
Fused image viewer

courtesy: D. Townsend, UPMC



CT: 160 mAs; 130 KV<sub>p</sub>; pitch 1.6; 5 mm slices

PET: 6.3 mCi FDG; 3 x 10 min; 3.4 mm slices



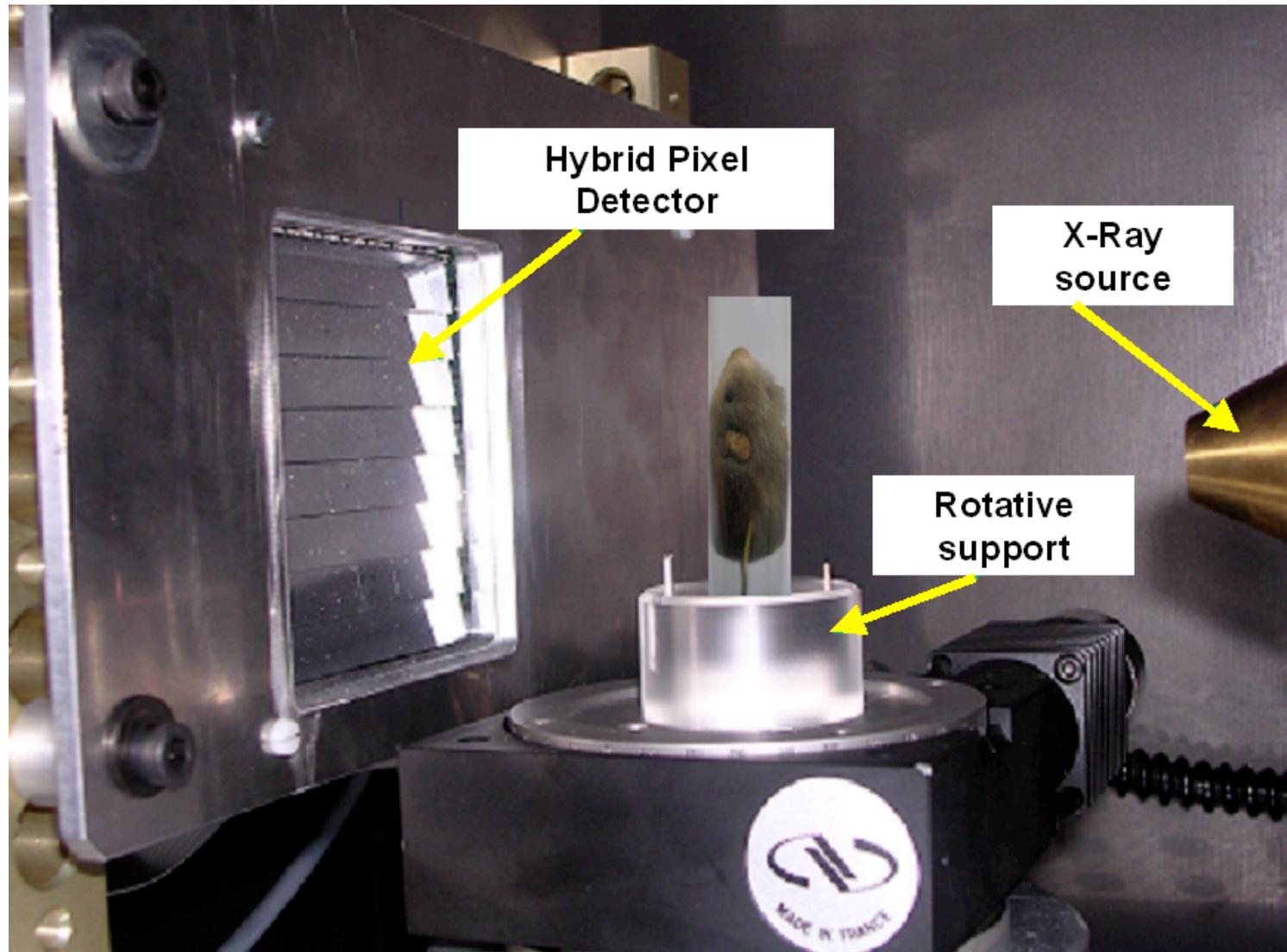
40 year-old woman  
with multiple  
endocrine syndrome  
(MEN-1) and history  
of malignant  
pheochromocytoma

MIBG scan one year ago showed right adrenal  
lesion; adrenal resected but no tumor found.  
PET suggested a lesion in the adrenal resection  
bed but PET/CT showed lesion located in spine.

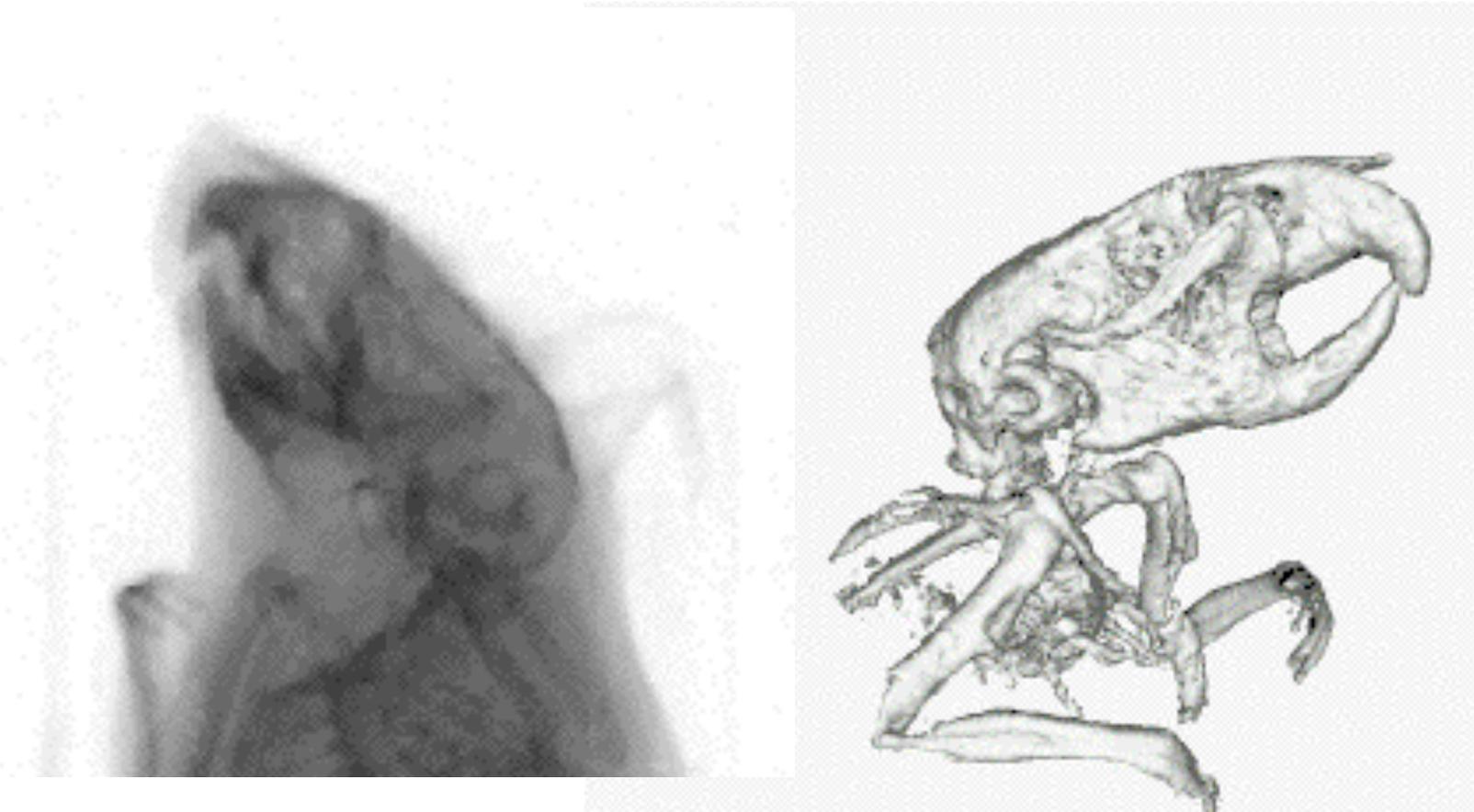
courtesy: D. Townsend, UPMC



# CPPM: micro-TDM à pixels hybrides PIXSCAN



# PIXSCAN: tomographie par faisceau conique



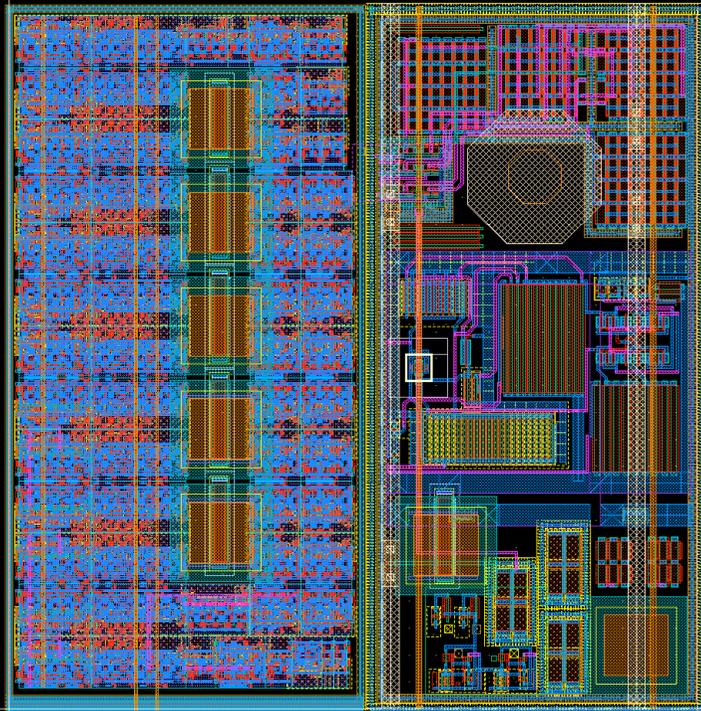
Projections coniques

Reconstitution surfacique

Les deux infinis - Agora des Sciences

# XPAD3

Fast readout logic



DAC's

Charge sensitive amplifier

Comparator

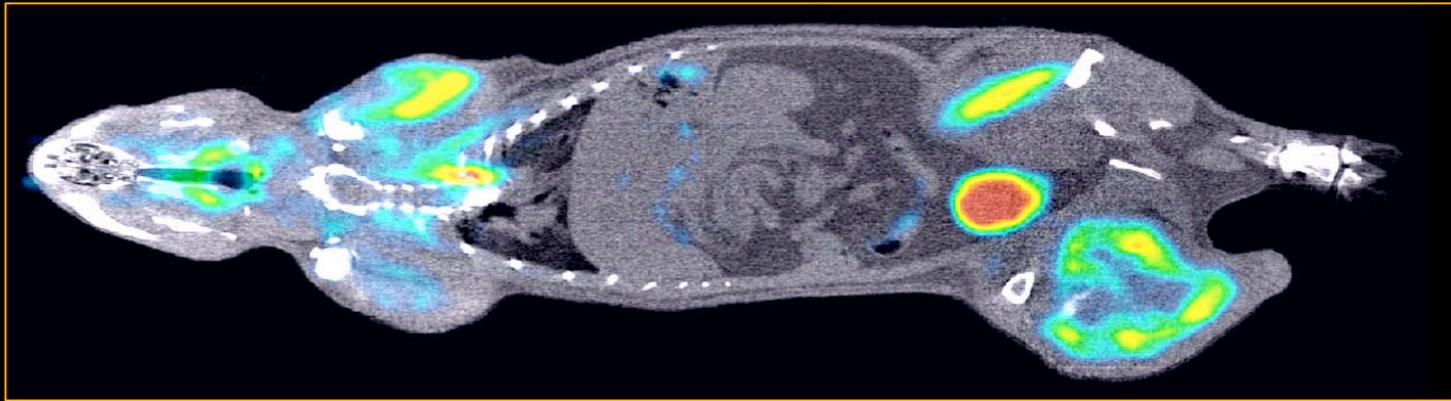
- Technology IBM 0,25  $\mu\text{m}$
- Pixels de 130  $\mu\text{m}$ , 120 x 80 pixels
- Double threshold
- Radiation hard
- 13-bit counter/pixel
- Continuous readout during DAQ
- Chip size: 1 x 1.7  $\text{cm}^2$

One cell layout



130  $\mu\text{m}$

# Tomographie X/gamma: Imagerie hybride simultanée



courtesy: Gamma Medica

## PIXSCAN

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