

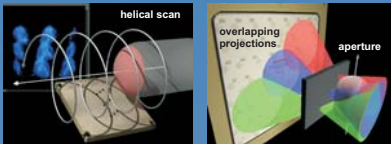
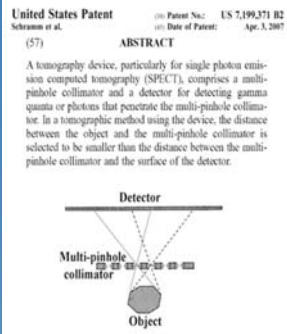
The NanoSPECT/CT: A High-Performance SPECT/CT for Small-Animal Research

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1 Multiplexing Multipinhole SPECT

- ⇒ patent protected technology
- ⇒ proprietary image reconstruction
- ⇒ helical scanning (SPECT + CT) for optimum image quality



2 High-Performance SPECT/CT

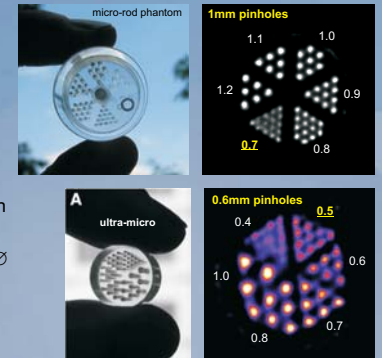
- ⇒ flexible due to exchangeable multi-pinhole apertures
- ⇒ state-of-the-art animal CT
- ⇒ dedicated small-animal holder with built-in gas anesthesia



3 High Resolution

- ⇒ tungsten apertures for high-contrast collimation
- ⇒ high-precision gantry for fast and accurate acquisition
- ⇒ state-of-the-art reconstruction for optimum image quality
- ⇒ resolution ~ 75% of pinhole Ø

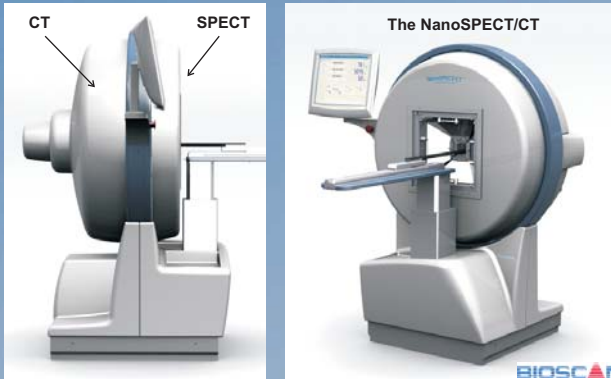
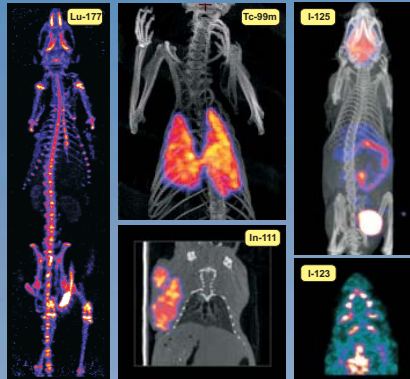
resolution < 0.5 mm



8 Energy range

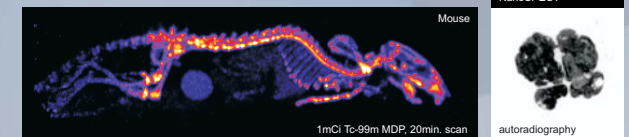
- ⇒ hundreds of animal studies
- ⇒ varying tracers and isotopes
- ⇒ proven image quality for a wide range of isotopes
- ⇒ multi-isotope imaging
- ⇒ useful energy range:

25 - 250 keV



4 Helical SPECT imaging

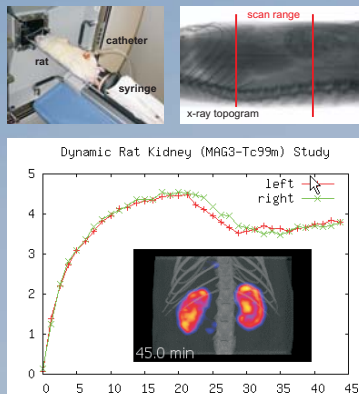
- ⇒ helical scanning guarantees homogeneous sampling and unmatched image quality
- ⇒ allows for focused and whole-body imaging
- ⇒ scan range selection via X-ray topogram
- ⇒ constant resolution throughout entire FOV



7 Dynamic imaging

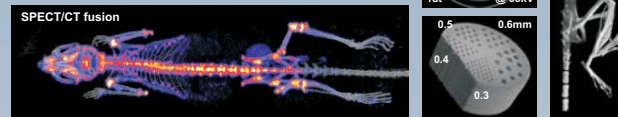
- ⇒ multi-pinhole collimators provide superior sensitivity
- ⇒ allows for fast imaging at low activity levels
- ⇒ dynamic imaging in animals
- ⇒ time resolution:

< 1 min.



6 Dual-modality imaging

- ⇒ CT for anatomical information
- ⇒ CT resolution ~50 micron
- ⇒ SPECT and CT share same axis of rotation (same gantry)
- ⇒ image fusion straight forward and very accurate



5 Absolute quantification

- ⇒ quantification tested in phantoms and animals
- ⇒ system calibration accounts for attenuation
- ⇒ quantification error < 5%

phantom [uCi/ml]	Nano SPECT	error [%]
37.2	37.4	0.5
30.4	30.9	1.6
22.7	22.4	1.3
19.9	19.1	4.0
14.7	15.2	3.4
10.8	10.3	4.6
10.6	10.4	1.9
3.12	3.03	2.9

