

SimPET

Innovative, compact, and fully MRI-compatible advanced PET system



SimPET

BRIGHTONIX
I M A G I N G

 **aspect**imaging

Simple and simultaneous PET/MRI solution for 1-T to 9.4-T

An advanced silicon photomultiplier (SiPM) based PET insert for truly simultaneous PET/MR imaging with a compact design and low power consumption, and excellent PET detector stability

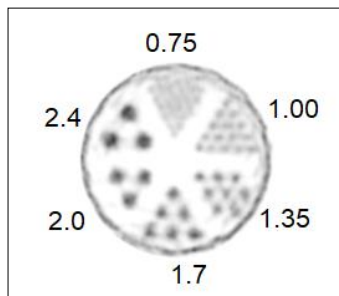


SimPET

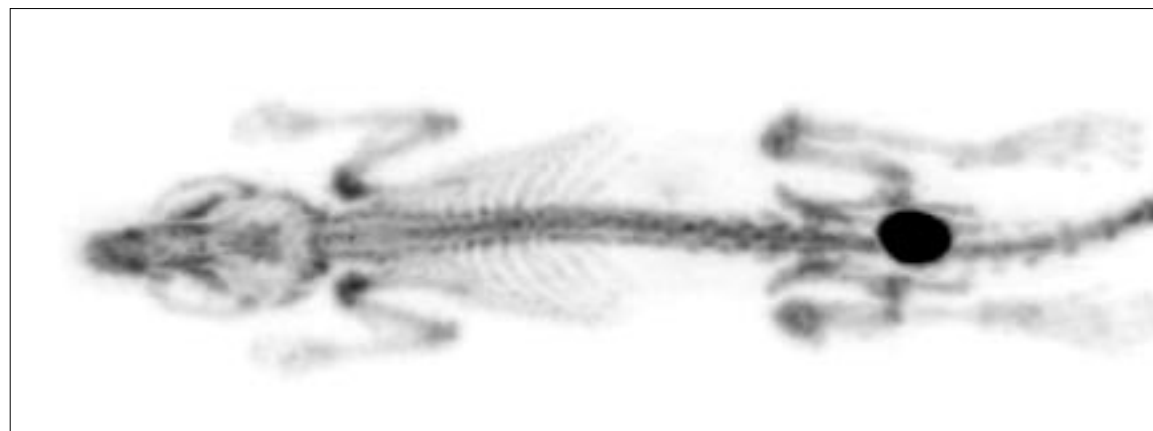
BRIGHTONIX
IMAGING



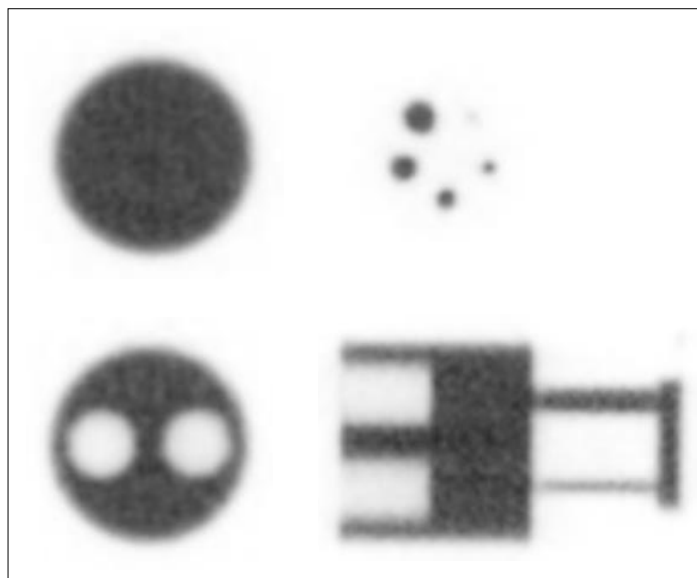
Superb spatial resolution & sensitivity optimized for small-animal imaging



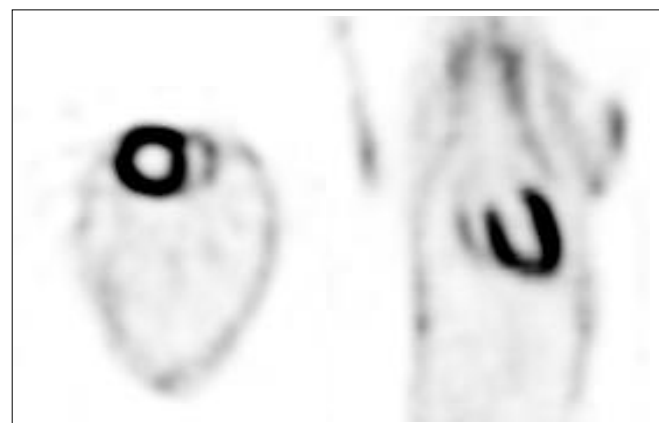
Hot rod phantom
filled with $[^{18}\text{F}]$ FDG



Mouse bone PET
using $[^{18}\text{F}]$ NaF

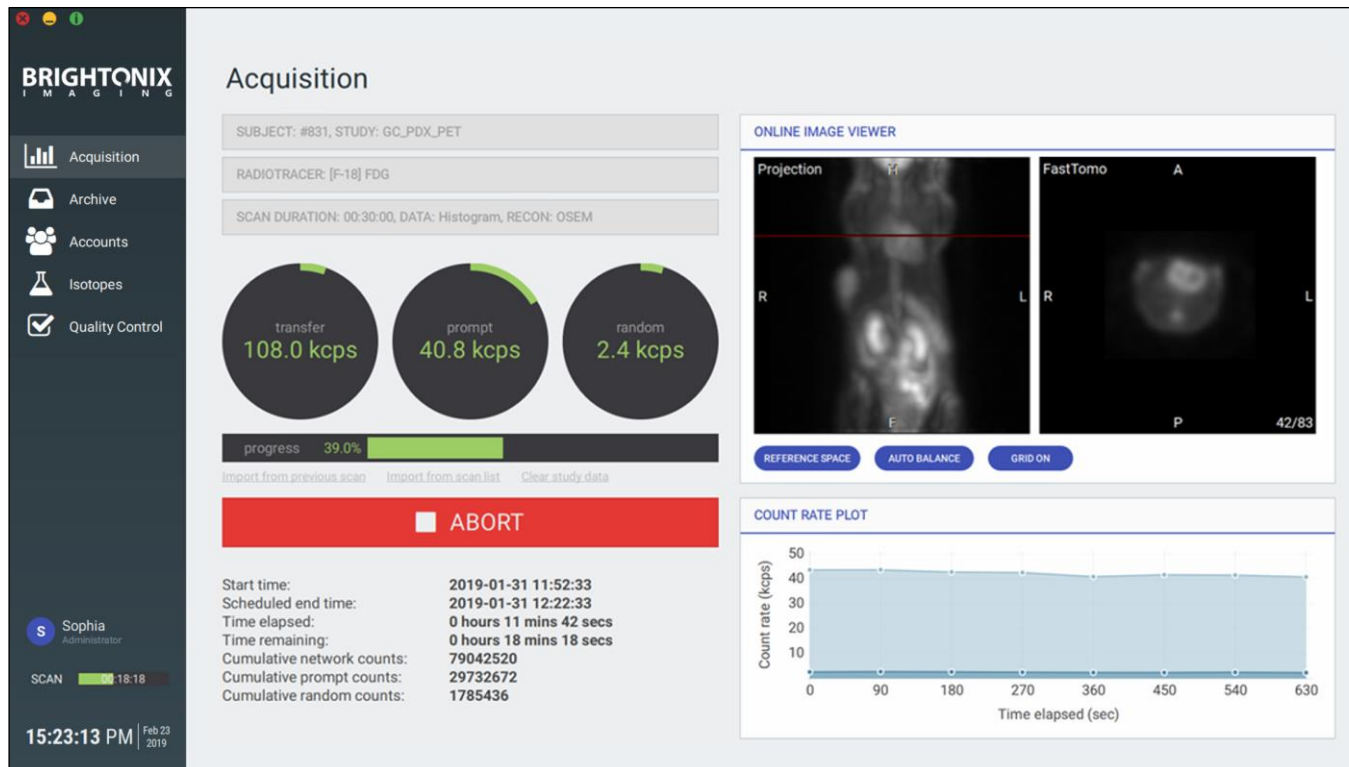


NEMA IQ Phantom
filled with $[^{18}\text{F}]$ FDG
100 μCi , 20 min



Mouse myocardial PET
using $[^{18}\text{F}]$ FDG

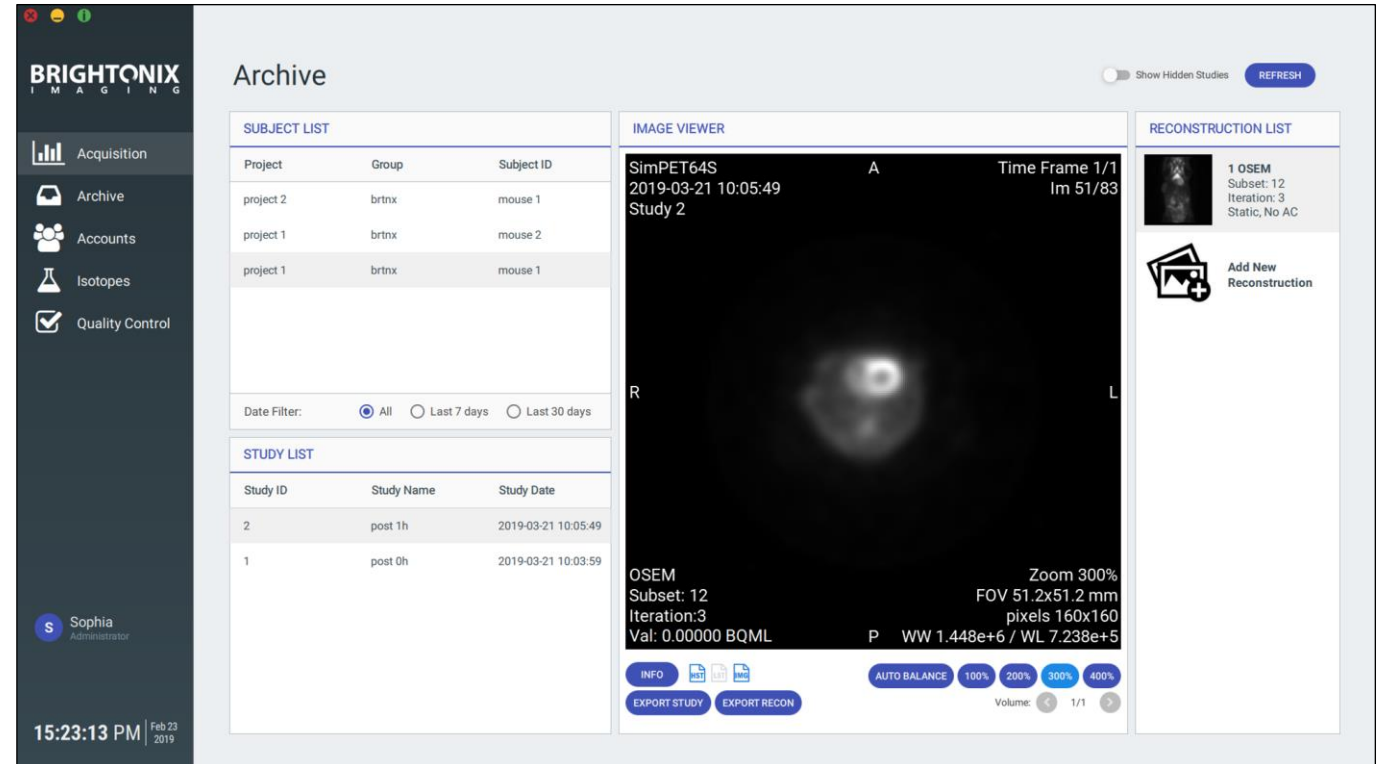
Simple Workflows and Intuitive Graphical User Interface



- ✓ Real-time count rate monitoring
- ✓ Real-time FastTomo reconstruction
- ✓ Flexible list-mode data acquisition

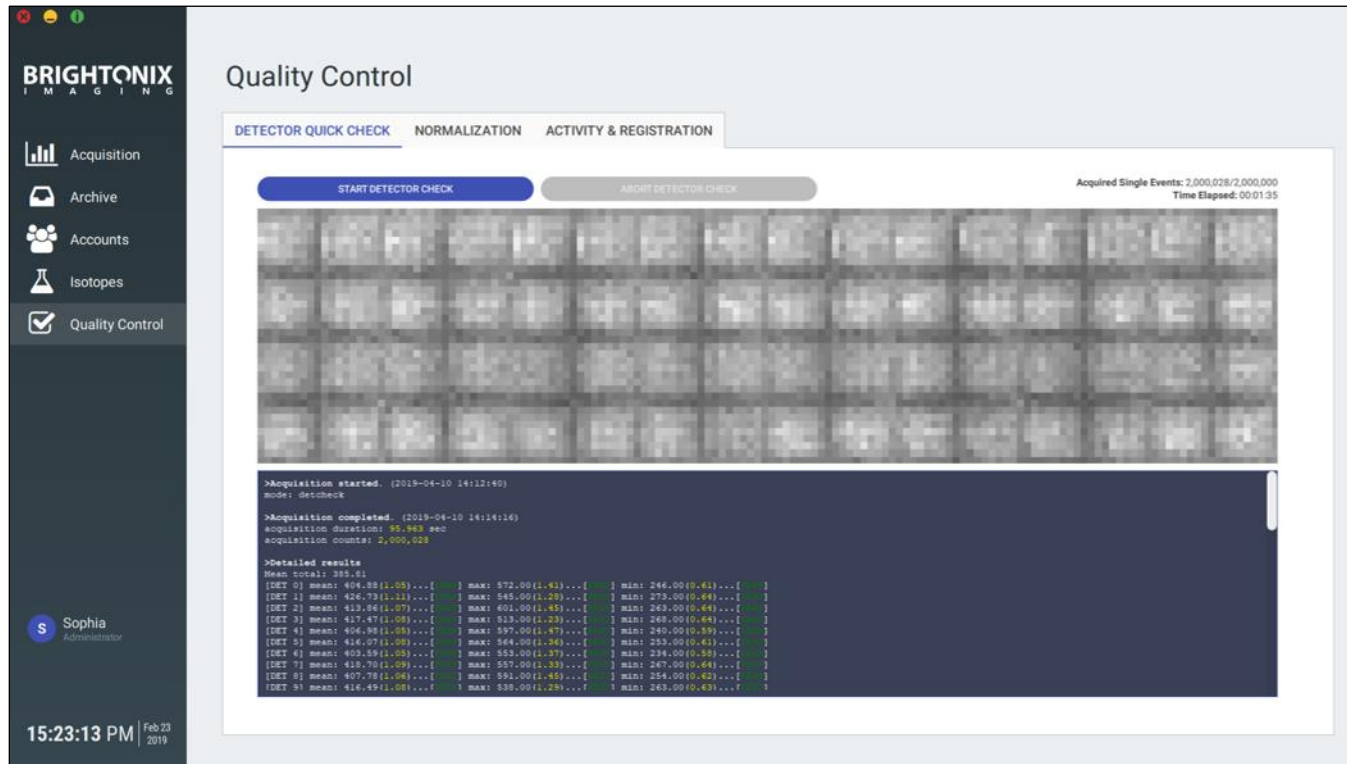
Simple Workflows and Intuitive Graphical User Interface

- ✓ *In-line image reconstruction*
- ✓ *Post reconstruction with MRI-based AC*
- ✓ *Bq/ml or SUV quantification*



The screenshot displays the BRIGHTONIX IMAGING software interface. On the left is a dark sidebar with navigation icons for Acquisition, Archive, Accounts, Isotopes, and Quality Control. The main area is titled 'Archive' and contains two tables: 'SUBJECT LIST' and 'STUDY LIST'. The 'SUBJECT LIST' table has columns for Project, Group, and Subject ID. The 'STUDY LIST' table has columns for Study ID, Study Name, and Study Date. Below these tables is a 'Date Filter' section with radio buttons for 'All', 'Last 7 days', and 'Last 30 days'. To the right of the 'SUBJECT LIST' table is the 'IMAGE VIEWER' panel, which shows a PET scan image with a central bright spot. The 'IMAGE VIEWER' panel includes text such as 'SimPET64S', '2019-03-21 10:05:49', 'Study 2', 'Time Frame 1/1', 'Im 51/83', 'R', 'L', 'OSEM', 'Subset: 12', 'Iteration: 3', 'Val: 0.00000 BQML', 'P WW 1.448e+6 / WL 7.238e+5', 'Zoom 300%', 'FOV 51.2x51.2 mm', 'pixels 160x160', and 'Volume: 1/1'. To the right of the 'IMAGE VIEWER' panel is the 'RECONSTRUCTION LIST' panel, which shows a small thumbnail of the reconstructed image and text: '1 OSEM', 'Subset: 12', 'Iteration: 3', 'Static, No AC', and 'Add New Reconstruction'. At the bottom left of the interface, there is a user profile for 'Sophia Administrator' and a timestamp '15:23:13 PM Feb 23 2019'.

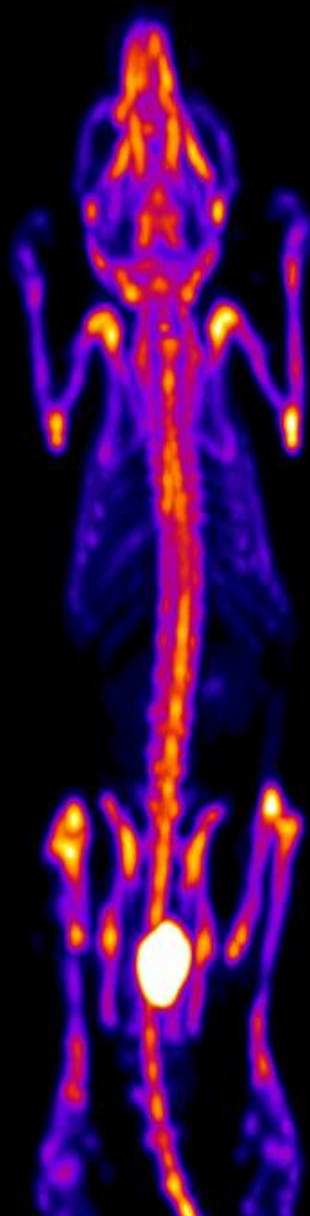
Simple Workflows and Intuitive Graphical User Interface



- ✓ *Easy quality control and calibration*
- ✓ *PET/MR geometric calibration*
- ✓ *Count rate/activity cross-calibration*

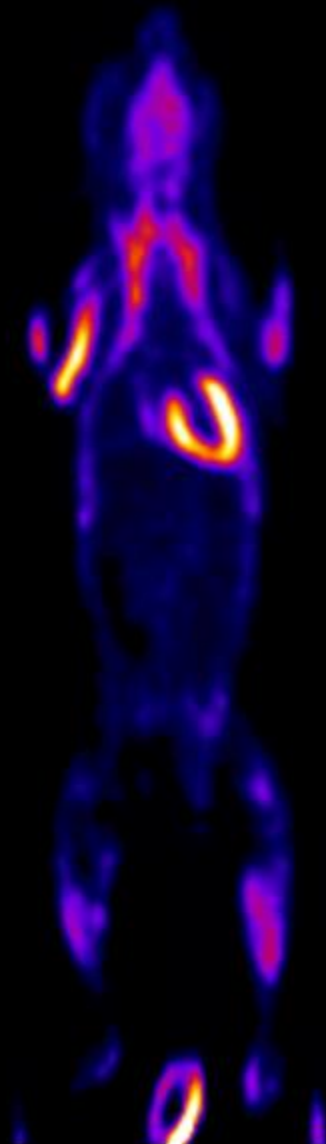
Mouse bone PET

16.3 g BALB/c mouse,
270 μCi [^{18}F]NaF was injected,
30 min uptake time



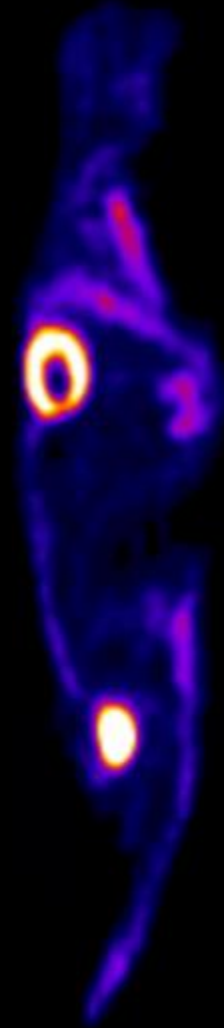
Mouse glucose metabolism

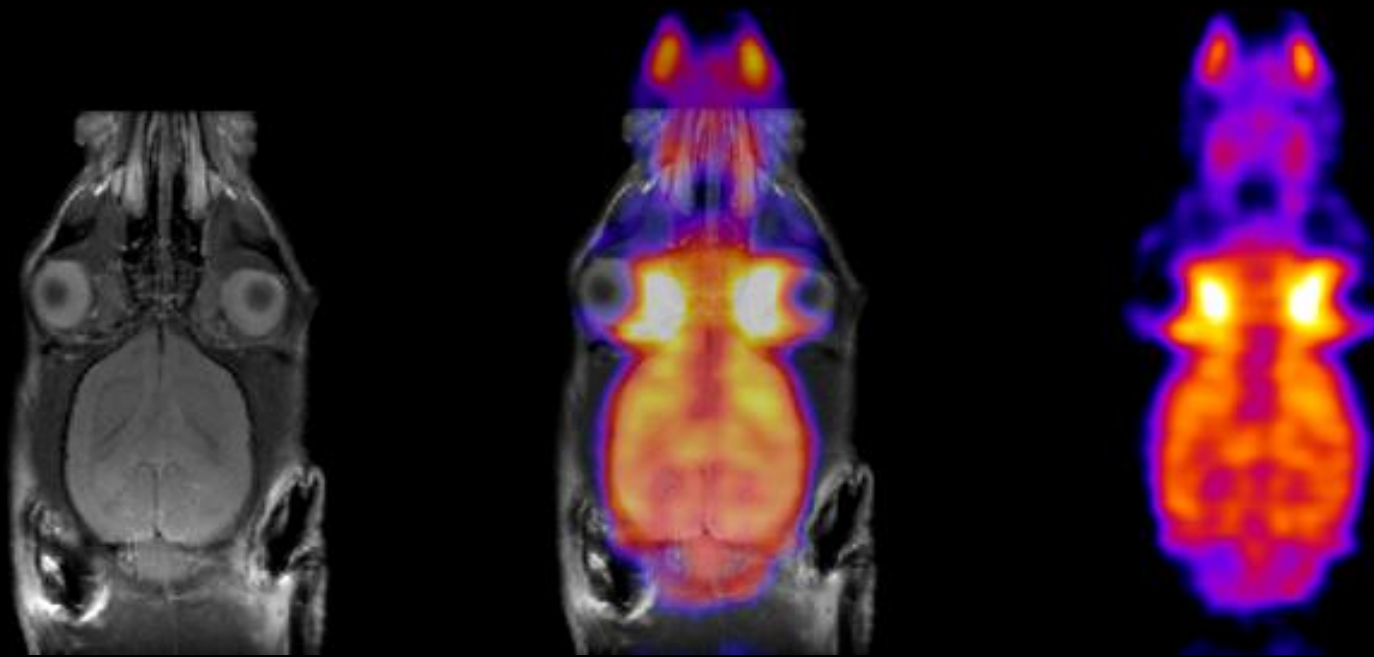
16.2 g BALB/c mouse,
160 μCi [^{18}F]FDG was injected,
30 min uptake time



Mouse glucose metabolism

16.2 g BALB/c mouse,
160 μCi [^{18}F]FDG was injected,
30 min uptake time



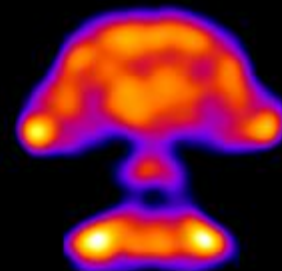
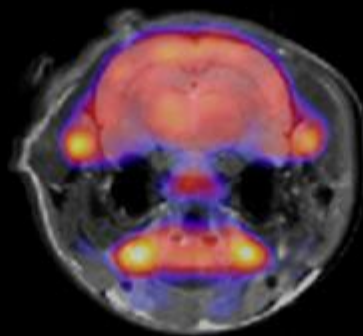
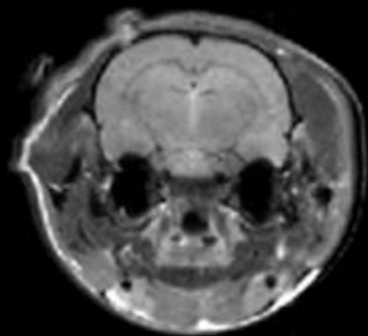


Rat brain PET/MRI

158.2 g SD rat,

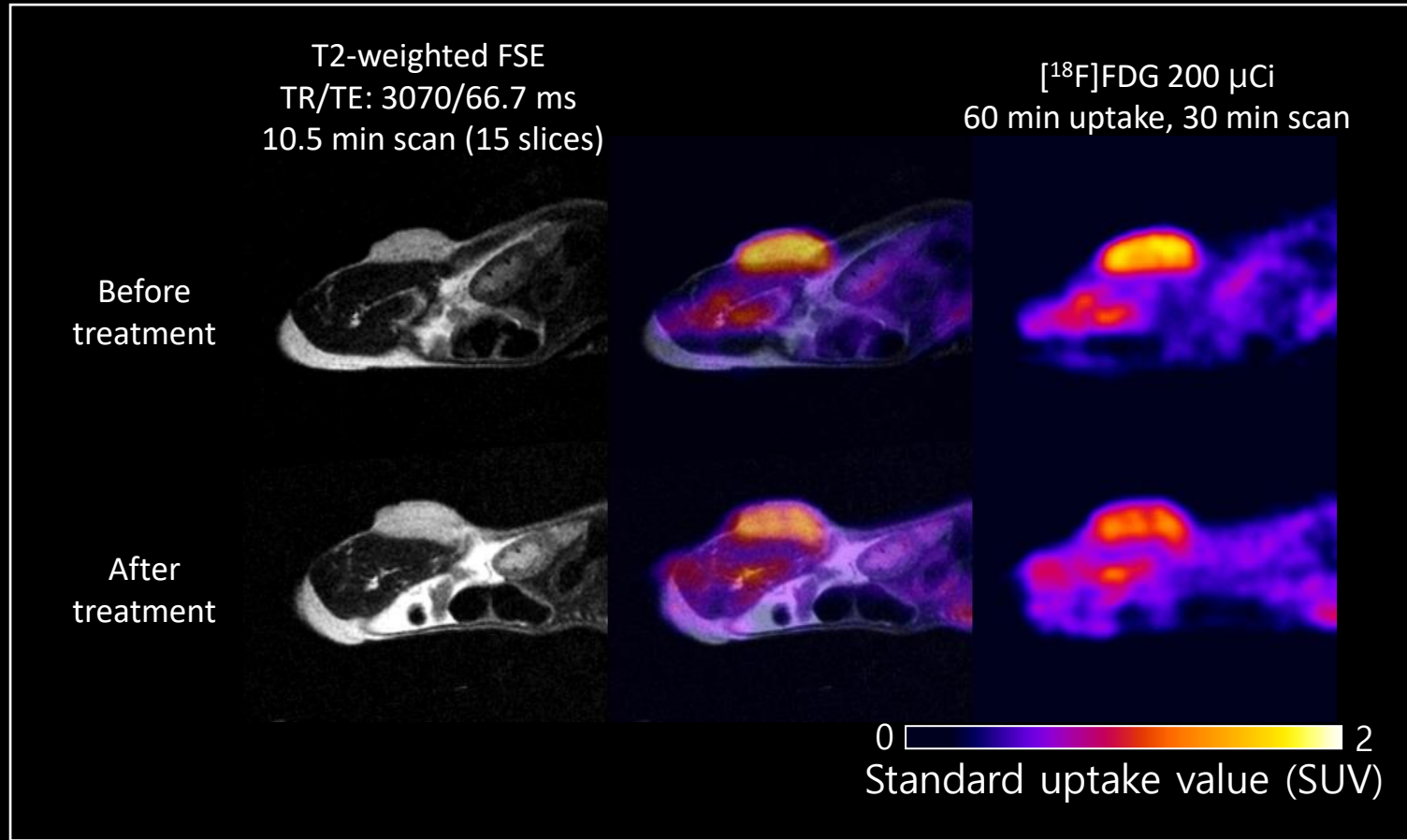
1.35 mCi [^{18}F]FDG was injected,

90 min uptake time



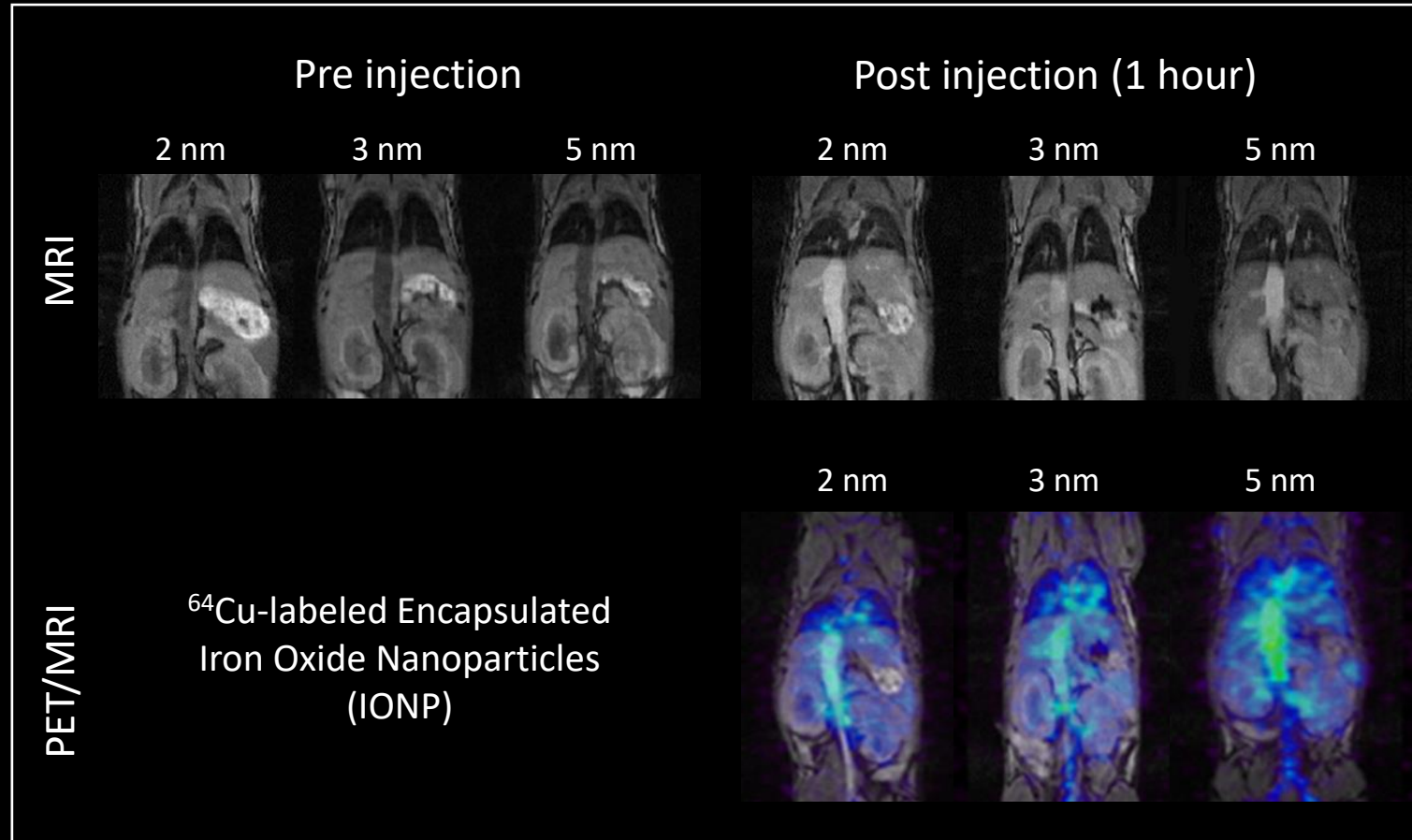
Rat brain PET/MRI

158.2 g SD rat,
1.35 mCi [^{18}F]FDG was injected,
90 min uptake time



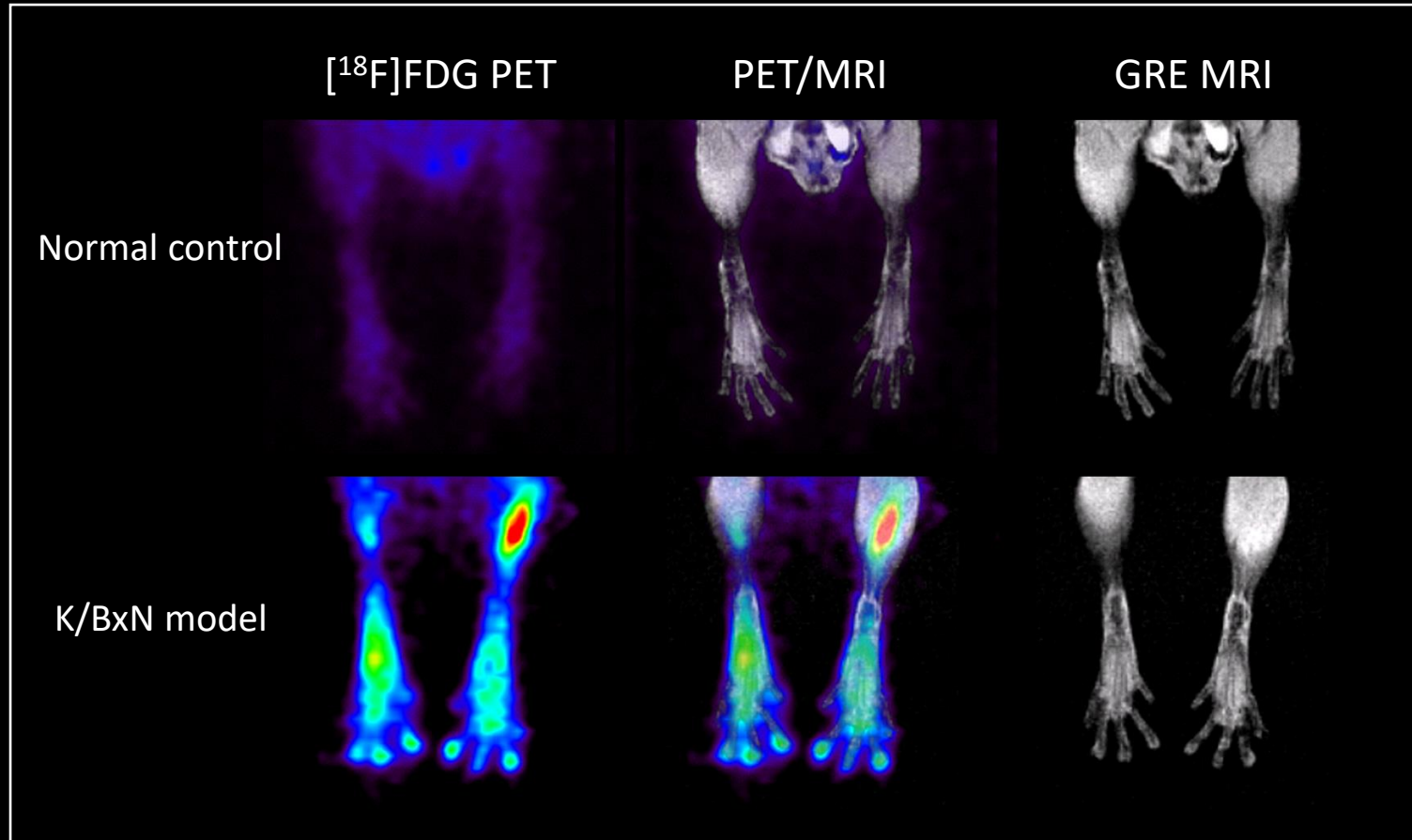
Oncologic PET/MRI with SUV (standard uptake value) quantification

$[^{18}\text{F}]\text{FDG}$ PET and T2 FSE MRI scans conducted to investigate the effects of tumor-associated macrophages on tumor hypoxia and aerobic glycolysis
(*Cancer Research*, 2019)



Multi-modal PET/MRI probes with different core sizes

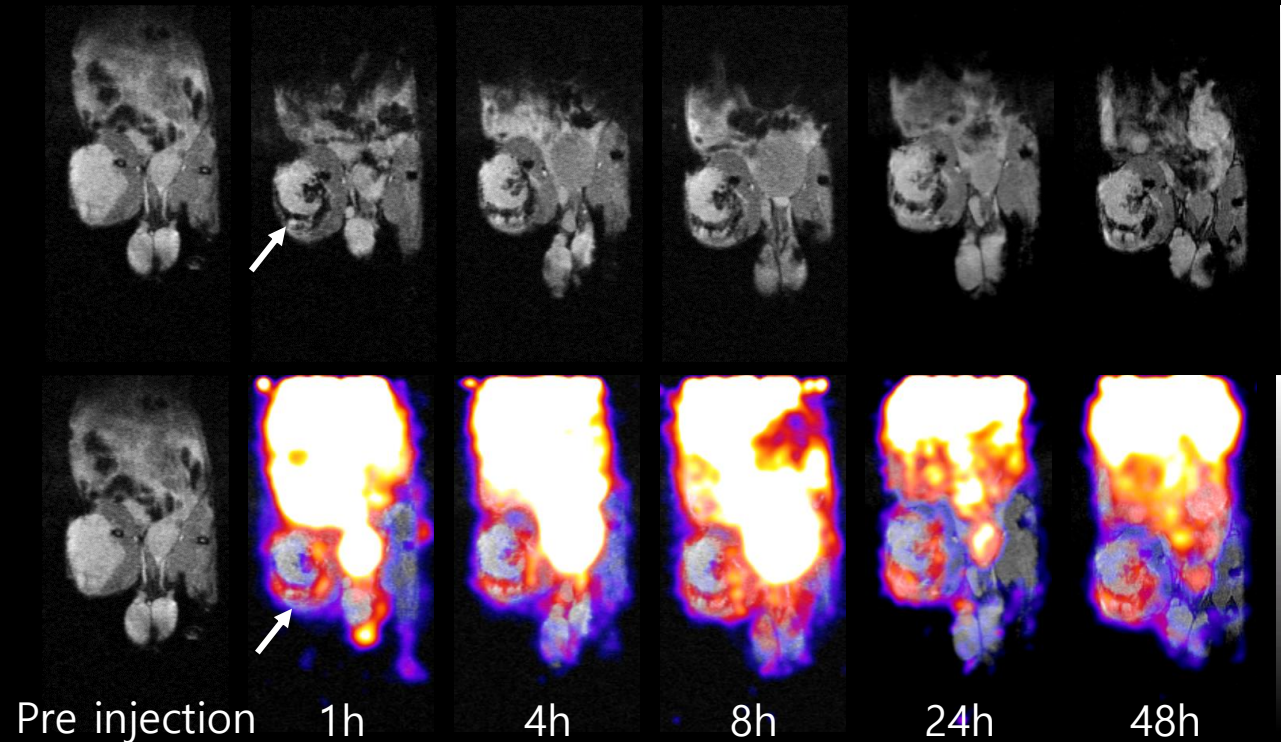
Simultaneous PET/MRI enables the highly accurate assessment of spatiotemporal distribution of radio-labeled IONPs with different core sizes
(Courtesy of Prof. YS Lee in Seoul National Univ.)



High spatial-resolution PET/MR imaging in the mouse arthritis model

Simultaneously acquired and perfectly matched $[^{18}\text{F}]\text{FDG}$ PET (300 μCi , 60-min uptake) and 3D GRE MR (TR = 25 ms, TE = 3 ms) images in K/BxN arthritis model mouse

^{64}Cu -IONPs-folate (150 μCi) PET/MRI in a KB tumor model mouse



Synergetic combination of high sensitivity PET and fine resolution MRI

High sensitivity of SimPET and fine spatial-resolution of Aspect M7 MRI enable investigations into enhanced tumor targeting with newly developed IONP-based dual modal imaging probe.

Aspect Compact MRI Systems



M2

60 mm x 90 mm



M3

50 mm x 130 mm



M7

90 mm x 220 mm



M12

180 mm x 260 mm

SimPET for Various MRI Machines

BRIGHTONIX
I M A G I N G

Parameter	SimPET-S	SimPET-X	SimPET-L	SimPET-XL
Crystal material	LSO			
Crystal dimension (mm ³)	1.2×1.2×10			
Insert inner diameter (cm)	6.0		7.6	
Insert outer diameter (cm)	9.9		11.2	
Axial FOV (cm)	5.5	11	5.5	11

* Product Specifications are subject to change without notice.



SimPET with Bruker BioSpec 70/20
@ National Cancer Center, Korea



SimPET with Aspect M7
@ UC Davis, USA



SimPET-XL with Bruker
BioSpec 94/30 @ KIRAM, Korea