IVIS Imaging Systemを用いた光in vivoイメージングの最新技術のご紹介

## Cerenkov In-Vivo Luminescent Imaging

## Only IVIS has the sensitivity to optically detect positron-emitting radiotracers

An emerging technology in optical imaging is the ability to monitor radioisotopes using ultra-sensitive CCD imaging technology used in the IVIS platform. Optical photons are generated by radiotracers such as the common PET tracer <sup>18</sup>F-FDG.

Cerenkov luminescent imaging offers researchers an alternative tool to investigate *in-vivo* radioisotope distribution. Peer reviewed publications have shown that Cerenkov luminescent optical imaging can be used as an imaging modality comparable to PET or SPECT.

Drug studies have shown similar radioisotope uptake responses between test groups in both optical and PET.



 $300 \,\mu$ Ci FDG was imaged in an IVIS200 (1 min Exposure). The optical images showed different Degrees of light output that were consistent with the quantification from the PET scan.Robertson et,.al., Physics in Medicine and Biology 54 (2009)

## <u>Recent Publications Using the IVIS Platform for</u> <u>Cerenkov Luminescent Imaging:</u>

Robertson R, Germanos MS, Li C, Mitchell GS, Cherry SR, et al. (2009) Optical imaging of Cerenkov light generation from positron-emitting radiotracers. *Phys Med Biol*, 54: N355–365.

Hongguang Liu, Sanjiv S Ghambir, Zhen Cheng et al. (2010) Molecular Optical I maging with Radioactive Probes, *PLoS ONE*, Vol 5(3) e9470

Federico Boschi, Antonello E Spinelli et al. (2009) Combined optical and single photon emission imaging: preliminary results, *Phys. Med. Biol.*, 54: L57–L62

Antonello E Spinelli, Daniela D'Ambrosio et al. (2010) Cerenkov radiation allows in vivo optical imaging of positron emitting radiotracers, *Phys. Med. Biol.*, 55: 483–495

Robin S. Dothager, David Piwnica-Worms et al. (2010) Cerenkov Radiation Energy Transfer (CRET) I maging: A Novel Method for Optical I maging of PET I sotopes in Biological Systems, *PLoS ONE*, Vol 5(2) e13300