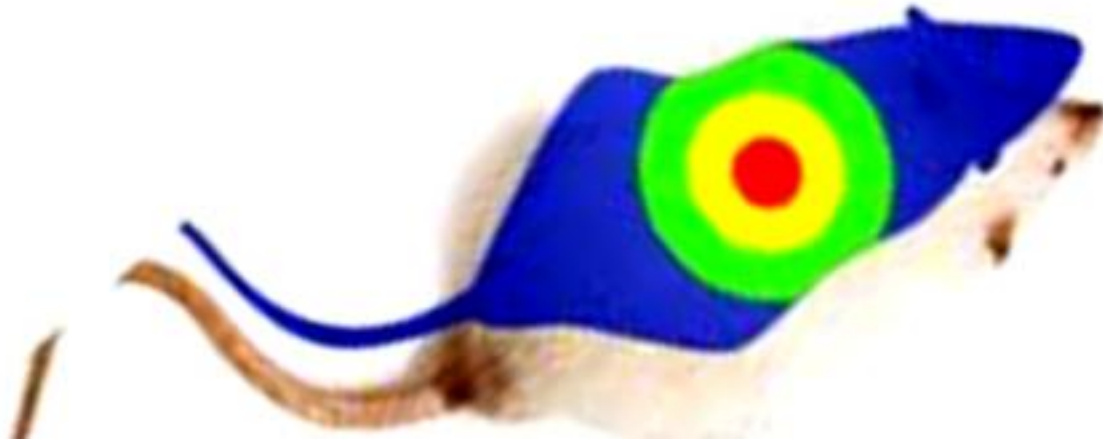


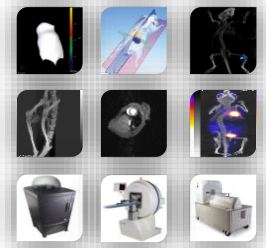
Preclinical *In Vivo* Imaging – PIVI

Seeing is believing!



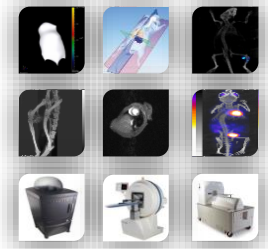
Saimir Luli
Saimir.luli@ncl.ac.uk

PIVI



- **Overview of PIVI**
- **Individual equipment and application**
- **Accessing the facility**

The objective of PIVI



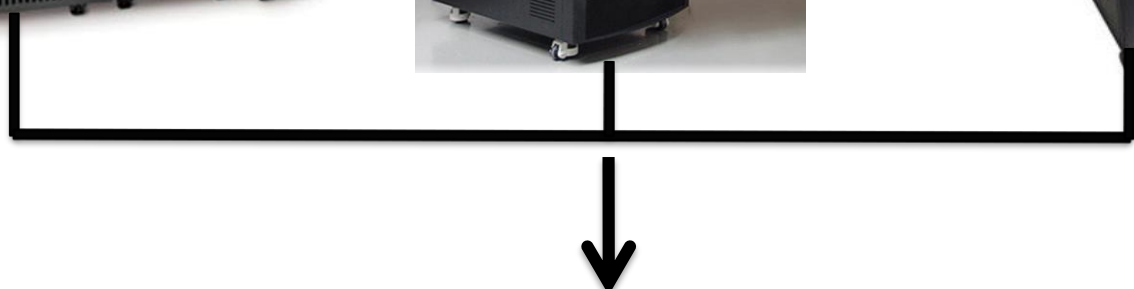
Magnetic Resonance Imaging (MRI)



Computerized tomography (CT)



Bioluminescence Fluorescence

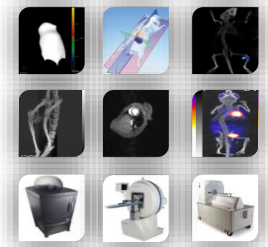


Physiological Monitoring

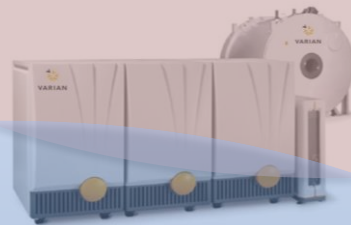
- ECG
- Respiration
- Temperature



Multidisciplinary research facility



PIVI



CIVI

Newcastle University > Centre for In Vivo Imaging

About Us

Our Research

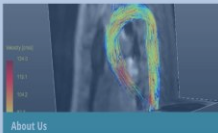
Facilities

Highlighted Projects

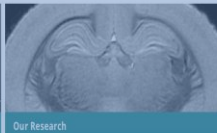
Work With Us

Study With Us

Staff



About Us



Our Research



Facilities



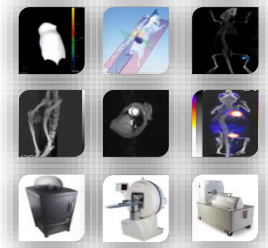
Work With Us

- Novel sequences
 - Imaging
 - Spectroscopy
- H&S

Comparative Biology Centre (CBC)

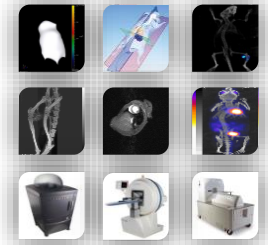
- Access to the animal house
- Animal welfare
- Access to the building

In vivo imaging System (IVIS)



- **Bioluminescent**
- **Fluorescence**
 - Epi-illumination
 - Trans-illumination
- **Spectral un-mixing**
- **3D diffuse tomographic, including**
 - **Fluorescent Imaging Tomography (FLIT)**
 - **Diffuse Luminescence Imaging Tomography (DLIT)**

Computerised Tomography



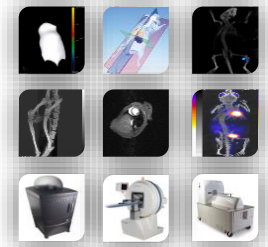
SkyScan 1176



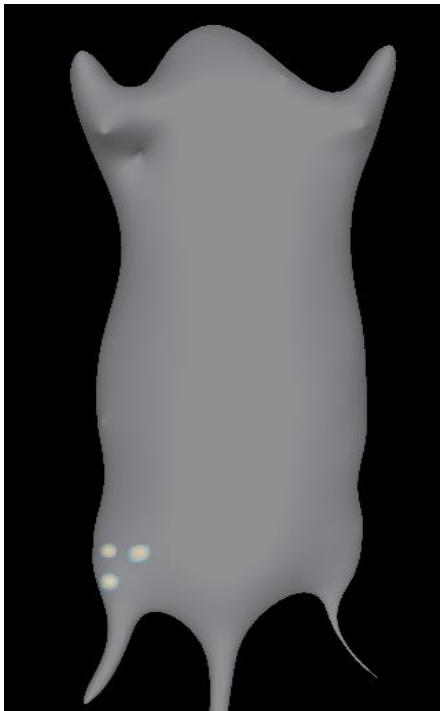
- Resolution: $\sim 9\mu\text{m}$ *in-vivo* 3D spatial resolution
- Camera: 11Mp X-ray camera
- Low dose radiation ($<10\text{m Gy}$): Allowing longitudinal imaging
- Scanning Space: 68mm diameter and 200mm length (imaging mice and rats)
- Physiological monitoring: Real time image, Respiration, ECG and temperature
- Animal bed: Carbon fiber animal bed for imaging rats mice
- IVIS compatible animal bed

http://bruker-microct.com/applications/all_examples.htm

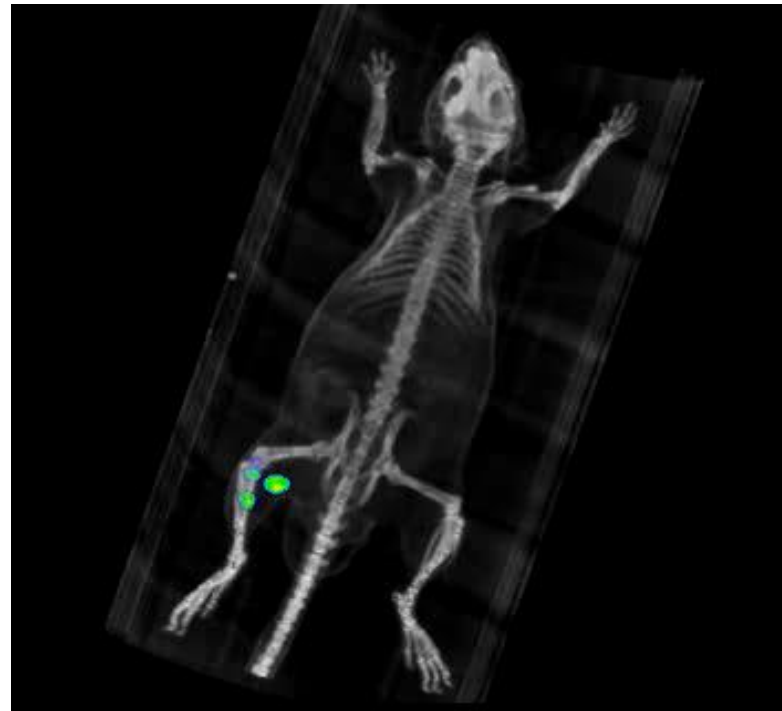
Multimodality: IVIS-CT



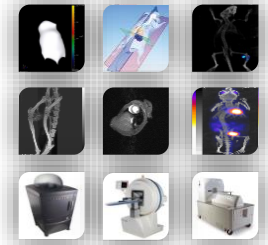
IVIS



IVIS - CT



7T-VARIAN MRI



7T VARIAN



Techniques/ Applications

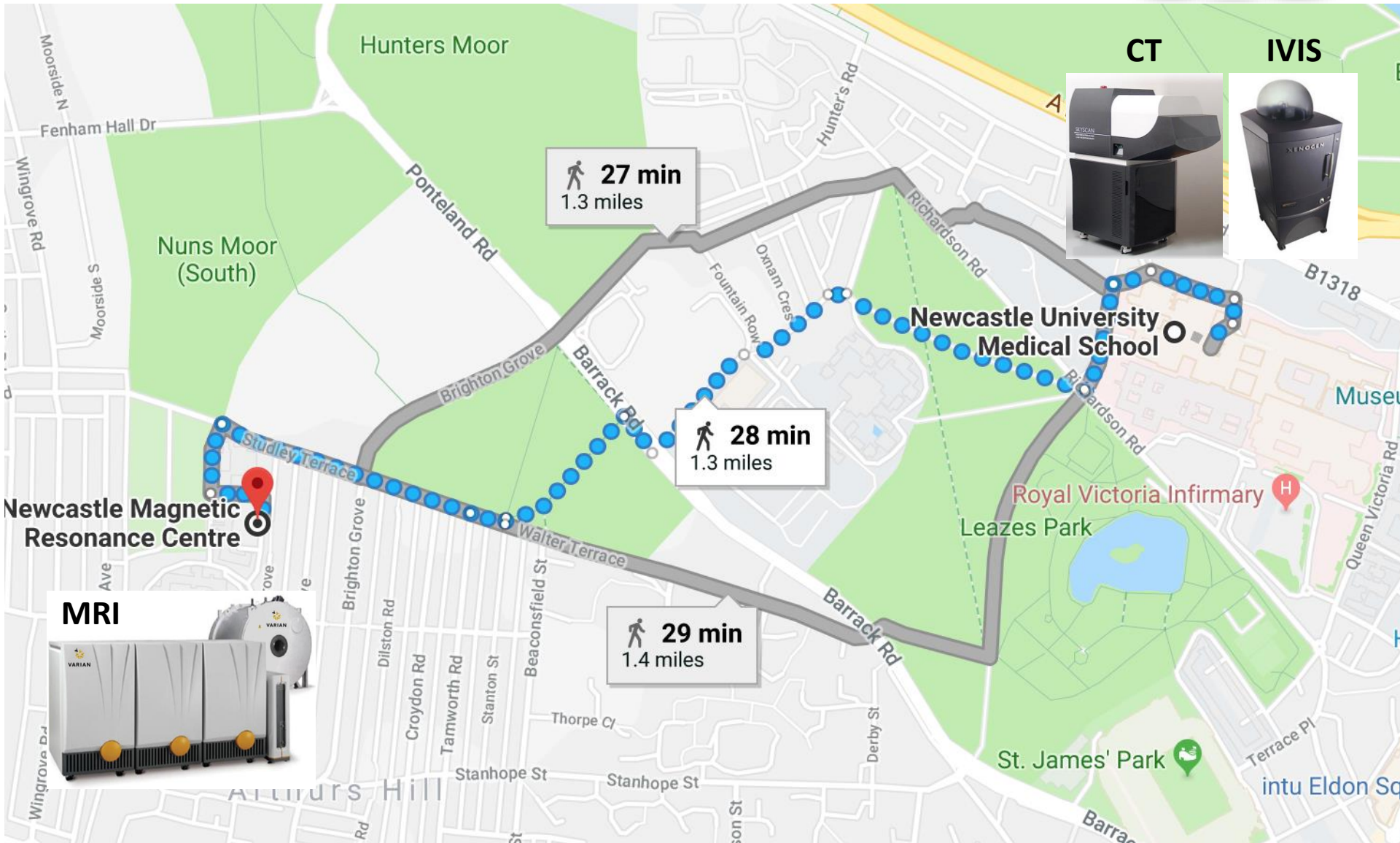
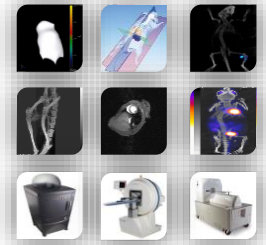
- dynamic contrast enhanced MRI (DCE-MRI)
- cardiac imaging
- magnetic resonance spectroscopy (MRS)
- diffusion and perfusion MRI
- functional magnetic resonance imaging (fMRI)
- MR angiography (MRA)
- anatomic imaging (T1/T2/Proton-Density weighted imaging)
- blood flow and blood oxygen measurements (BOLD EPI methods)

Coils / Probes

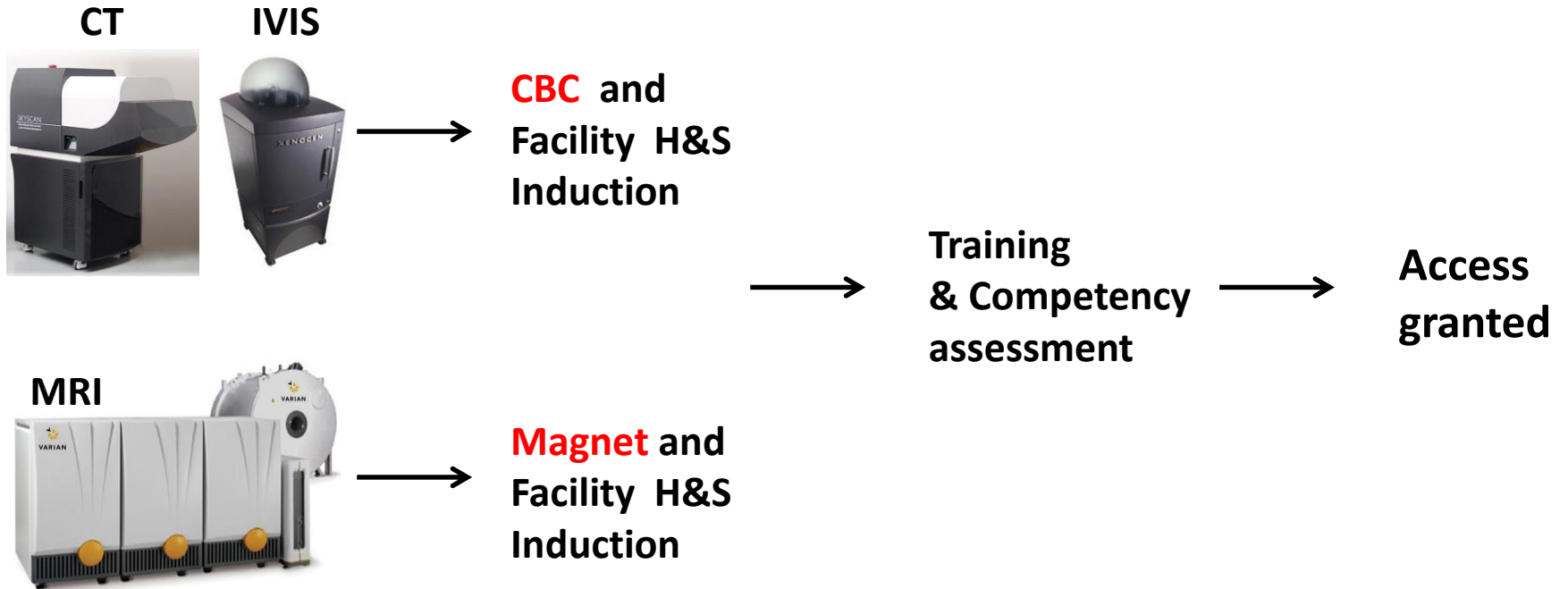
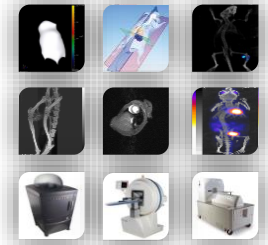
- 72mm, 39mm and 30mm i.d. quadrature birdcage coils for whole body imaging
- dedicated brain imaging coil
- ^{31}P surface coil
- ^{19}F surface coil
- ^{13}C surface coil



Where are we located?



Facility Access



Newcastle Preclinical In Vivo Imaging Facility

Newcastle University > Newcastle Preclinical In Vivo Imaging > Equipment

Equipment

Equipment

– Positron Emission Tomography

PIVI is equipped with small animal imaging modalities providing a range of services to internal researchers and external collaborators.

– Magnetic Resonance Imaging

Find out more about our equipment:

– In Vivo Imaging System

- [Positron Emission Tomography](#) (PET)
- [Magnetic resonance imaging](#) (MRI)
- [In Vivo Imaging System](#) (IVIS)

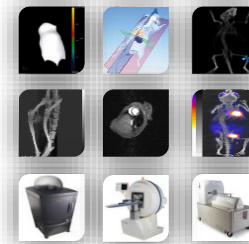
Services

Equipment availability and booking can be accessed using our [online booking calendar](#).

Staff

Contact

Get in touch!



Newcastle Preclinical In Vivo Imaging Facility

Newcastle University > Newcastle Preclinical In Vivo Imaging

Equipment

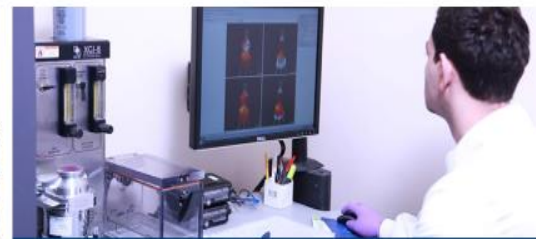
Services

Staff

Contact



Equipment



Services and Training

Newcastle Preclinical In Vivo Imaging (PIVI) is a multidisciplinary research centre providing equipment for Magnetic Resonance, Positron Emission Tomography and Fluorescence/Bioluminescence imaging.

The objective of PIVI is to provide expertise, training and cutting edge in vivo imaging modalities to conduct scientific research at molecular and cellular level. Research of this kind allows us to gain a better understanding of biological processes in comparative animal models.

Our team of experts provides a range of services and training from experimental design and data acquisition to data analysis. We offer these services internally, to other academic institutions and to industry.

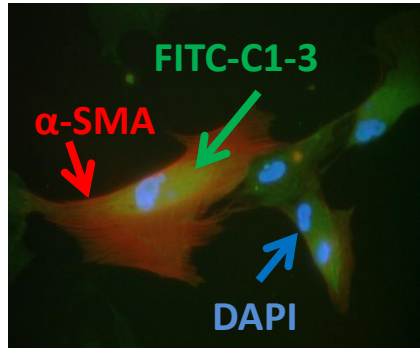
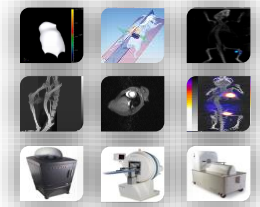
Email: preclinicalimaging@ncl.ac.uk

Telephone: 0191 208 6890

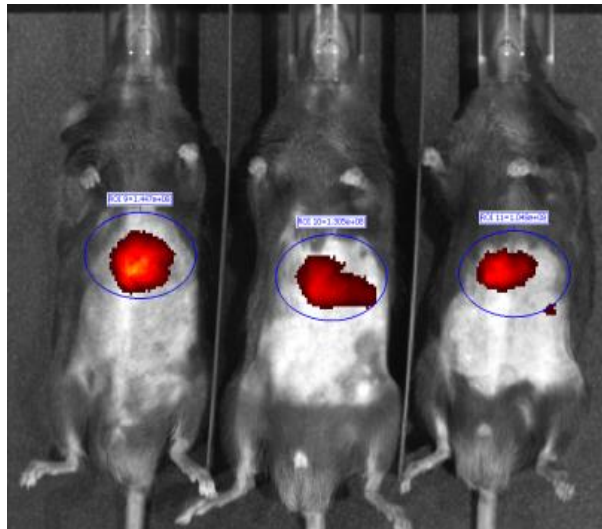
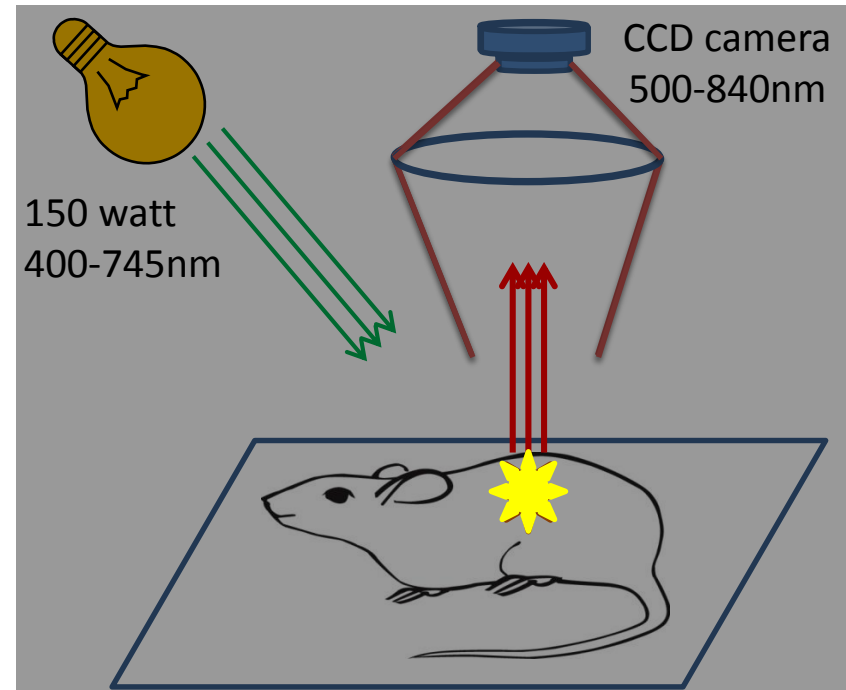
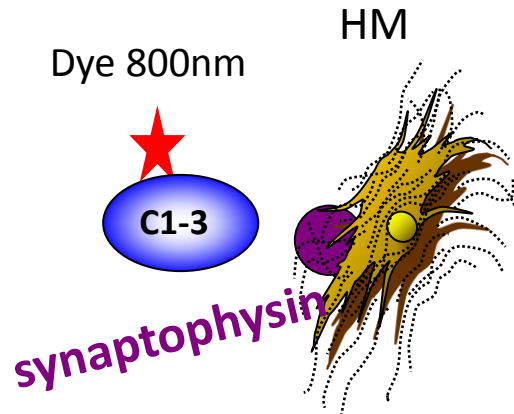
Website: <http://www.ncl.ac.uk/pivi/>

Thank you!

In vivo fluorescence imaging of HM



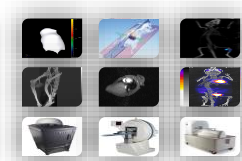
Douglass et al (2008), Hep Int



Key strengths

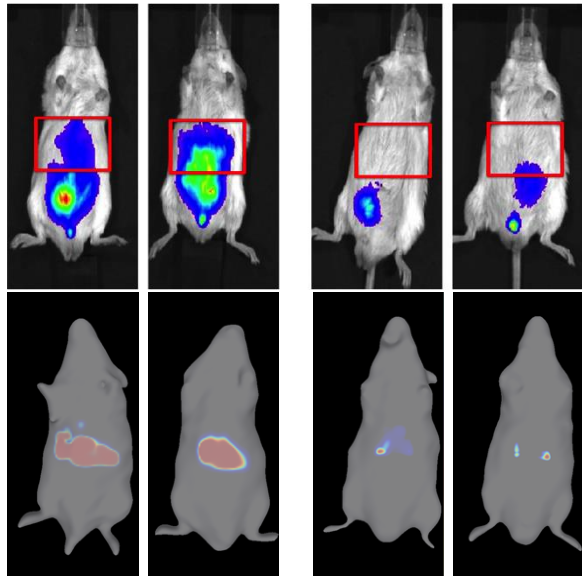
- *Relatively inexpensive*
- *User friendly*
- *Multiplexing capabilities*

IVIS successfully monitors HM



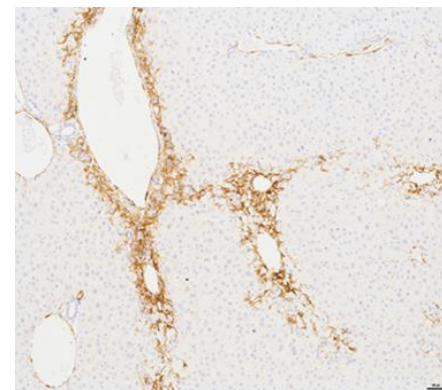
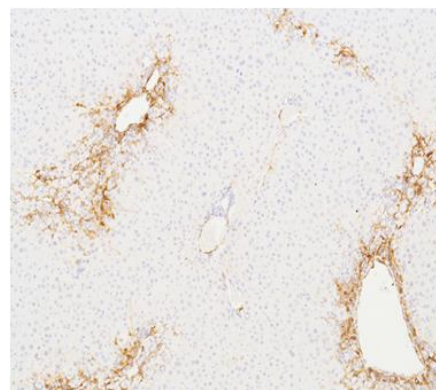
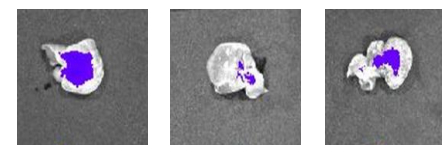
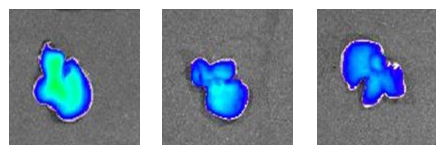
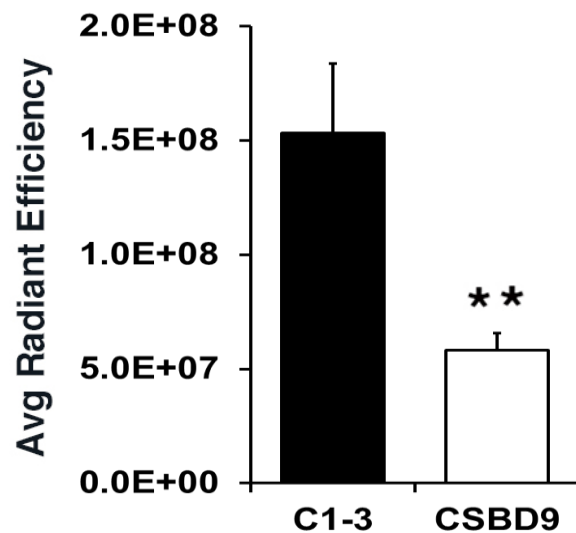
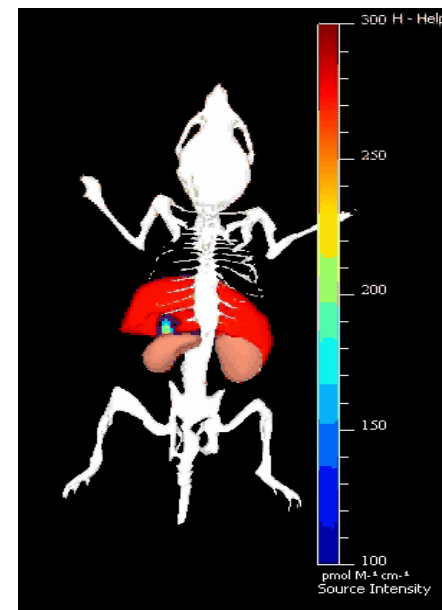
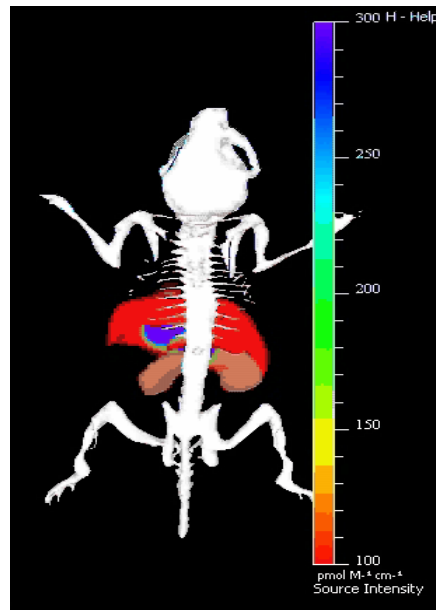
C1-3

CSBD9



C1-3

CSBD9





Computerised Tomography: Ewing Sarcoma

