

The Centre for Microscopy and Imaging at NUI Galway Ireland

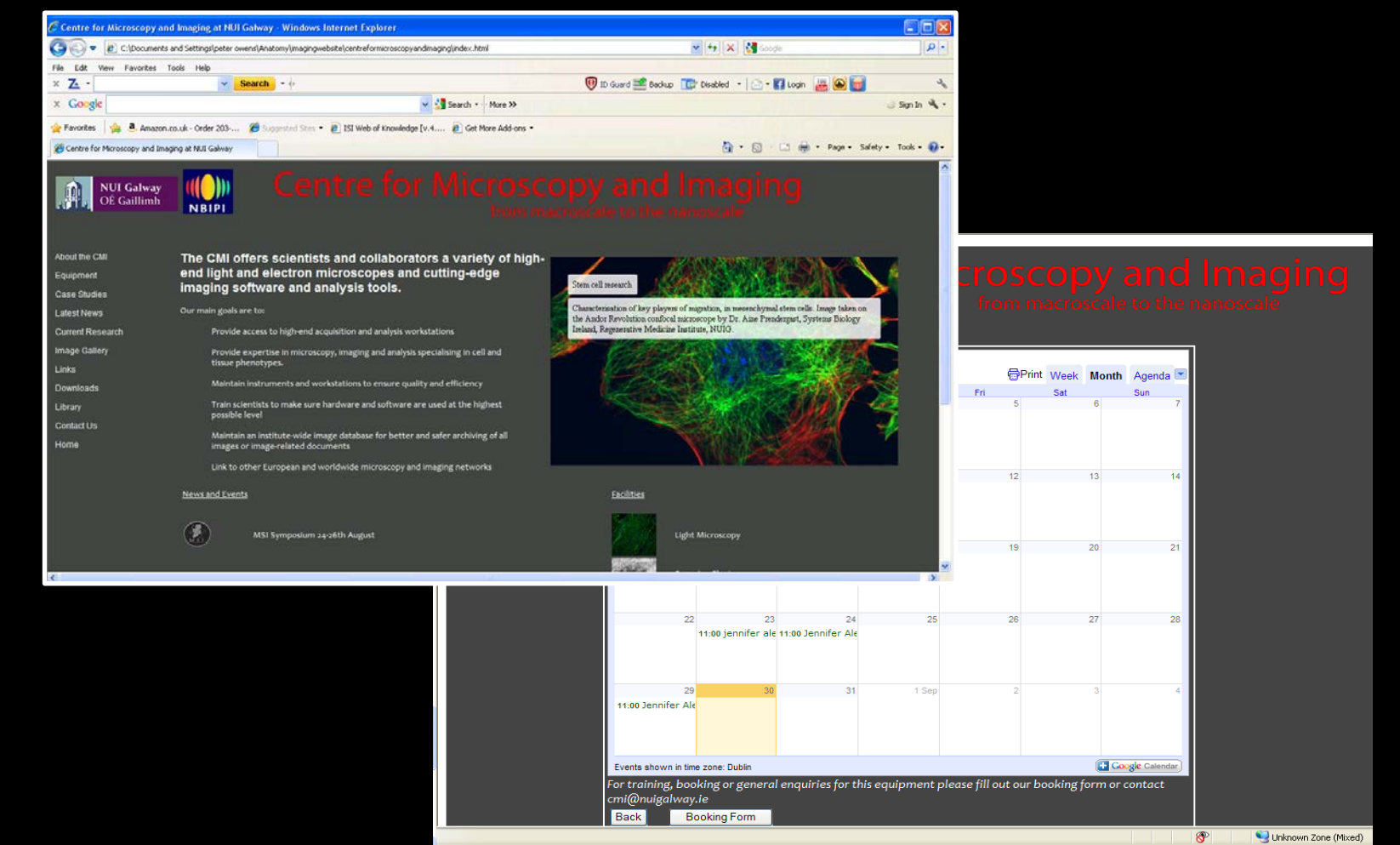


The **CMI** offers scientists and collaborators access to a variety of high-end light and electron microscopes and cutting-edge imaging software and analysis tools.

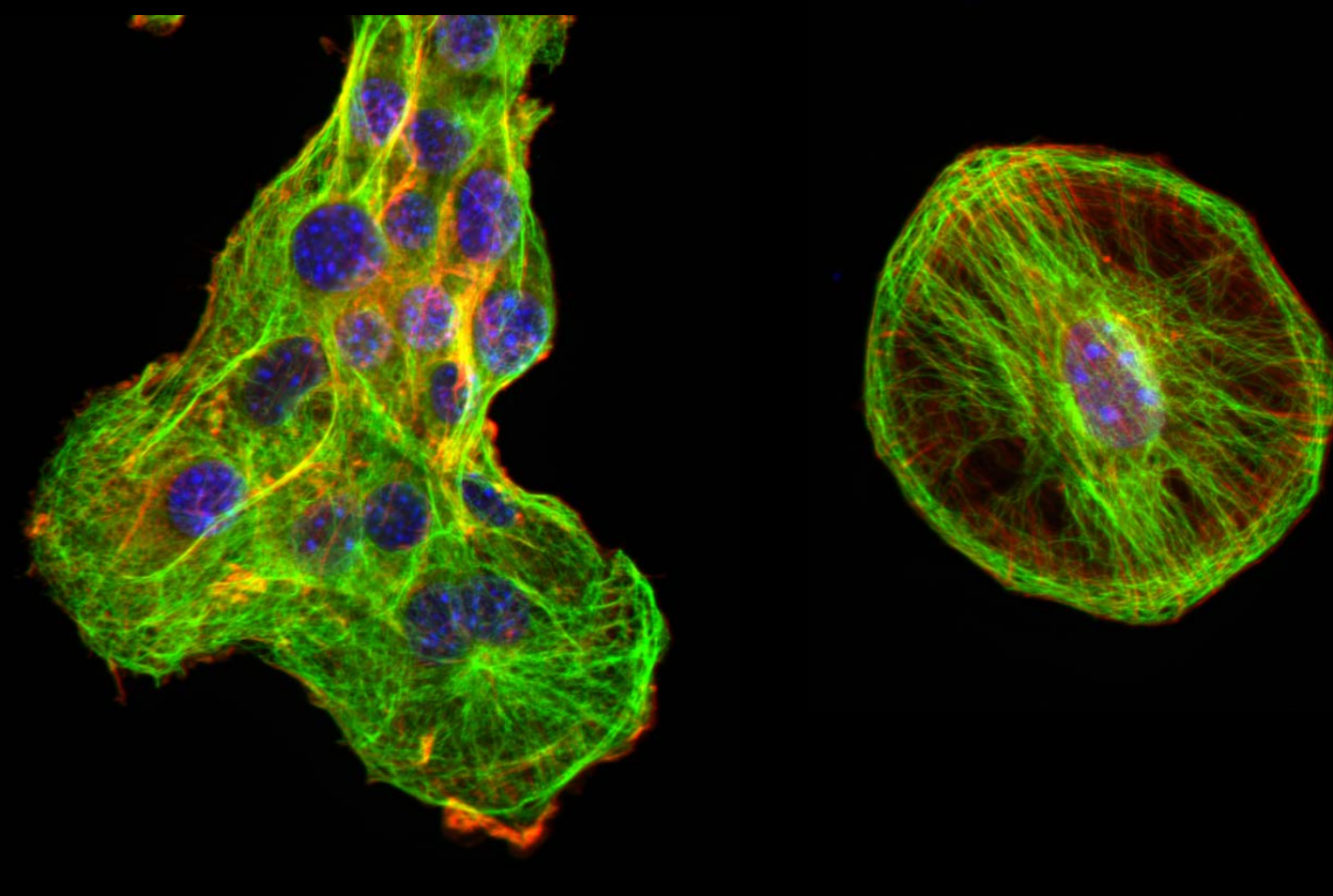
Our main goals are to:

- Provide a national access node for high-end acquisition and analysis workstations.
- Provide expertise in microscopy, imaging and analysis specialising in cell and tissue phenotypes.
- Maintain instruments and workstations to ensure quality and efficiency.
- Train scientists to make sure hardware and software are used at the highest possible level.
- Maintain an institute-wide image database for better and safer archiving of all images or image-related documents.
- Link to other European and worldwide microscopy and imaging networks

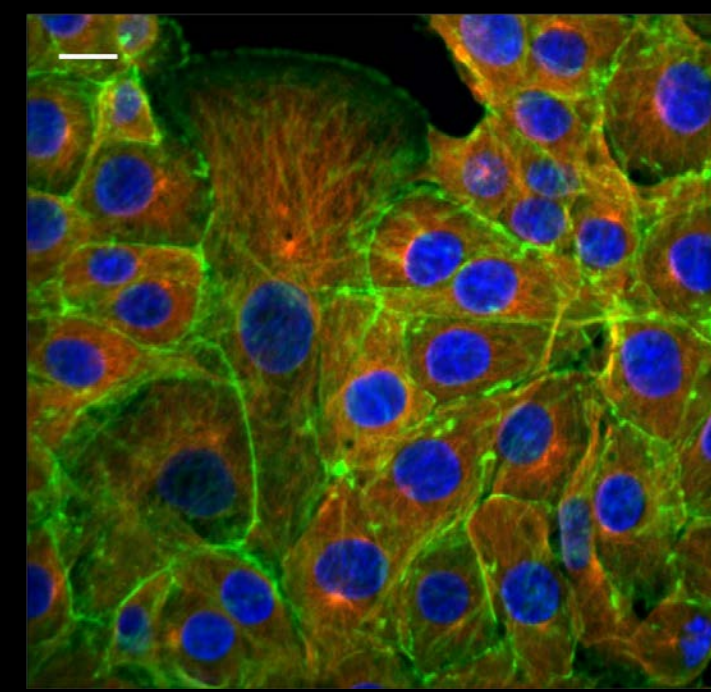
www.imaging.nuigalway.ie



Andor Revolution Spinning disk confocal



Blue: DAPI (nucleus)
Green: Dylight 488 (alpha tubulin)
Red: Rhodamine phalloidin

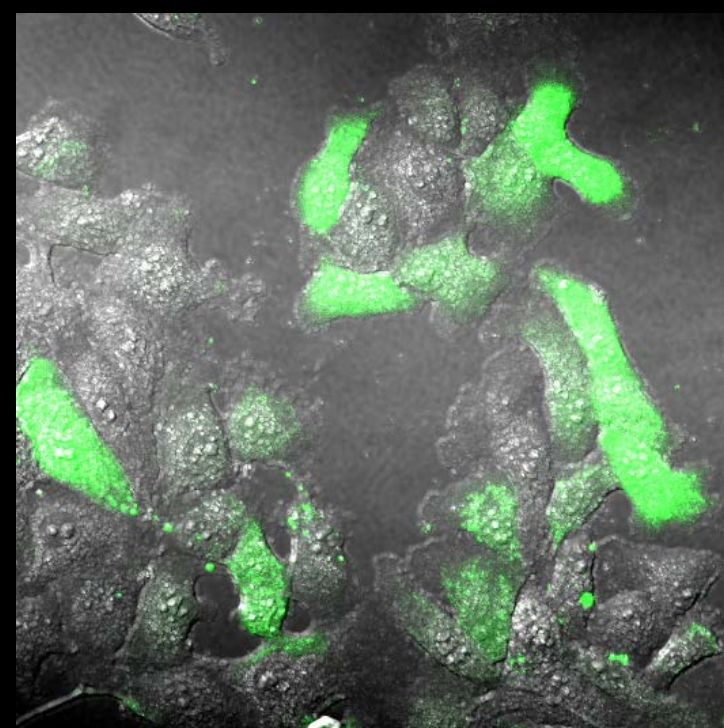
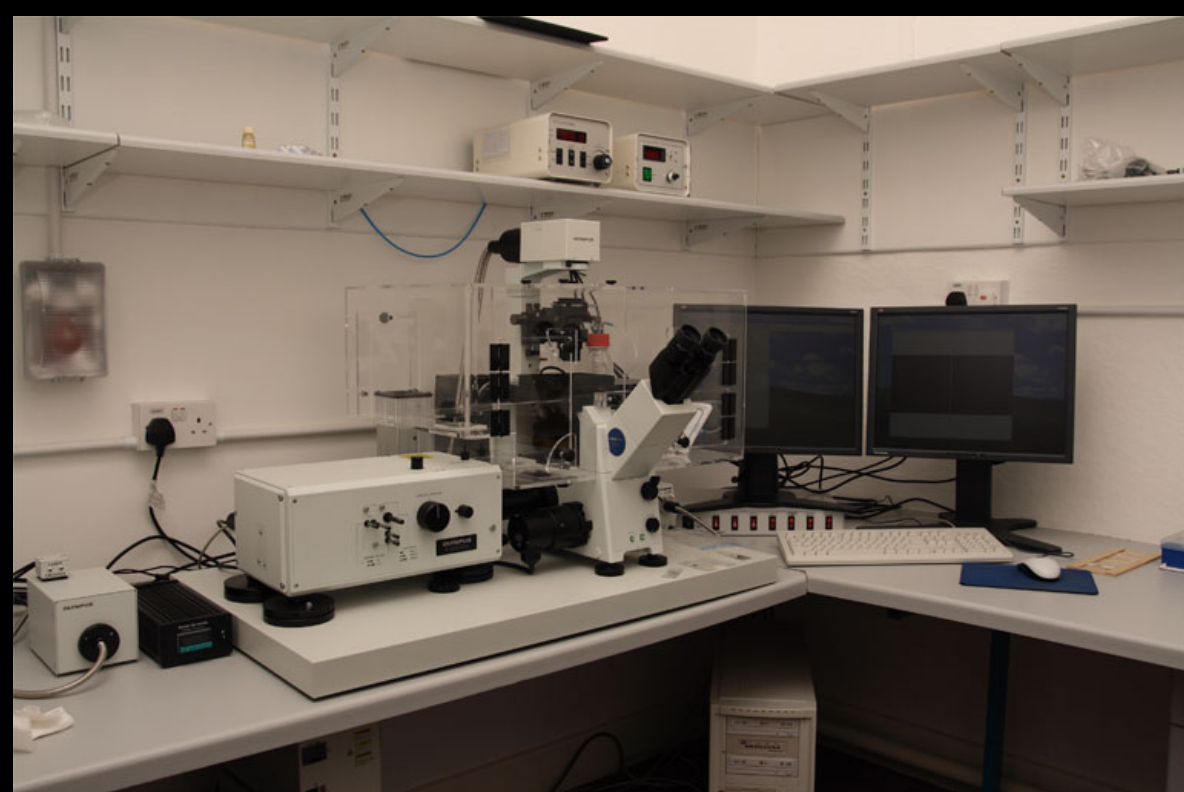


Cytoskeleton study:
Confocal Image of KLE endometrial epithelial cells – TRITC microtubules, FITC actin microfilaments, hoechst nuclei – 40x objective – Scale bar 10µm

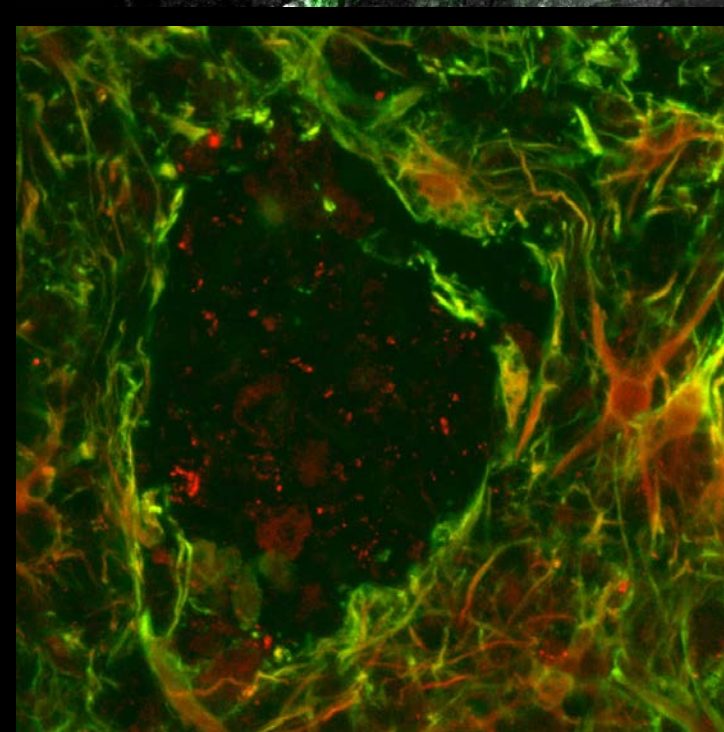
Experiments

Characterisation of migration in MSCs
Collagen Particle uptake by MSC – orthobiology
Studies on chronic lymphocytic leukaemia (visualisation of phospho-Mcm2 / Cdc7 expression
Characterisation of epithelial and smooth muscle tissue from female reproductive tract.
Studies on MSC under hypoxic conditions (stroke research)

Fluoview 300 LSCM



Calcium Ion signalling:
Differential interference contrast (DIC) image with fluorescence overlay of KLE endometrial epithelial cells post oestrogenic stimulation – Fluo3AM calcium dye (Green).

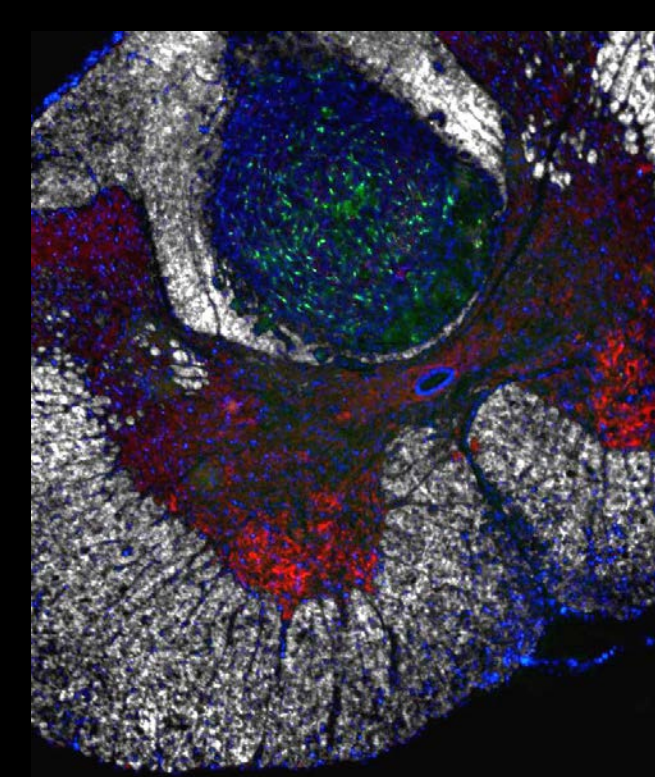
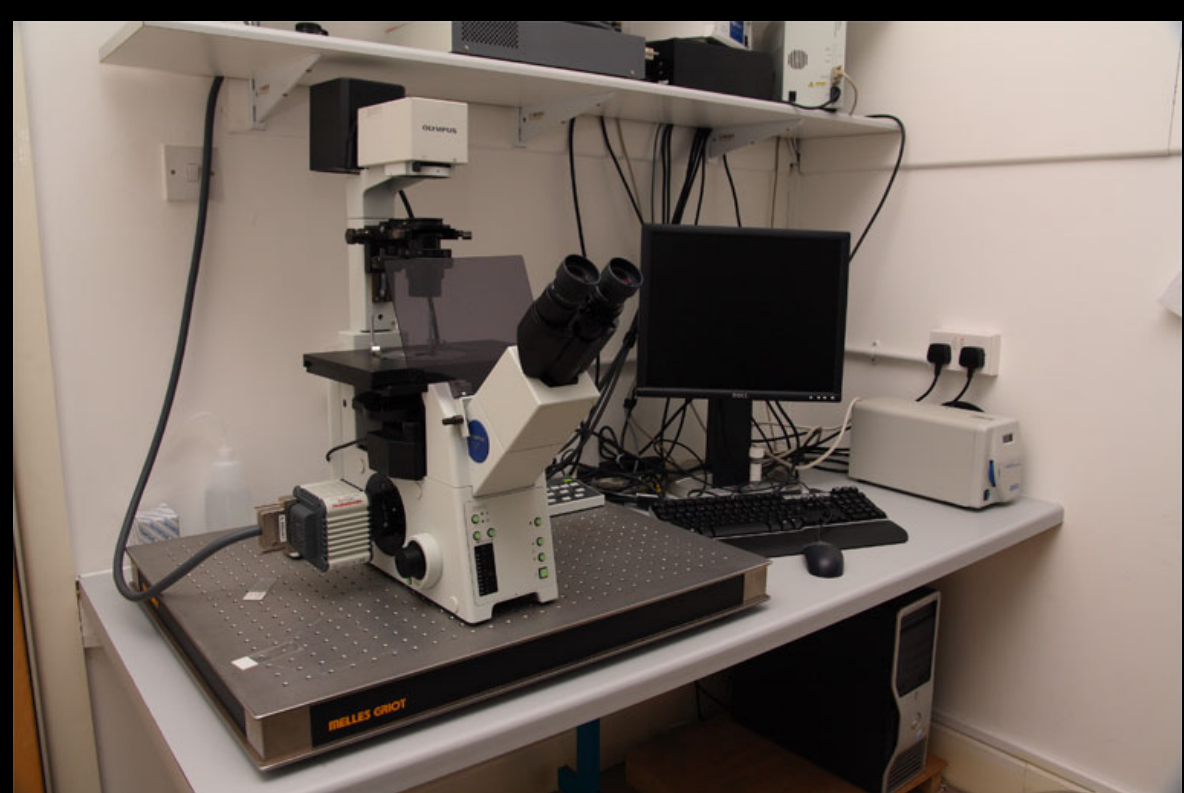


Transverse section of an injured rat spinal cord.
Red = GFAP immunostained astrocytes
Green = vimentin immunostained reactive astrocytes.
Cut on a cryostat at 20 micron thickness

Experiments

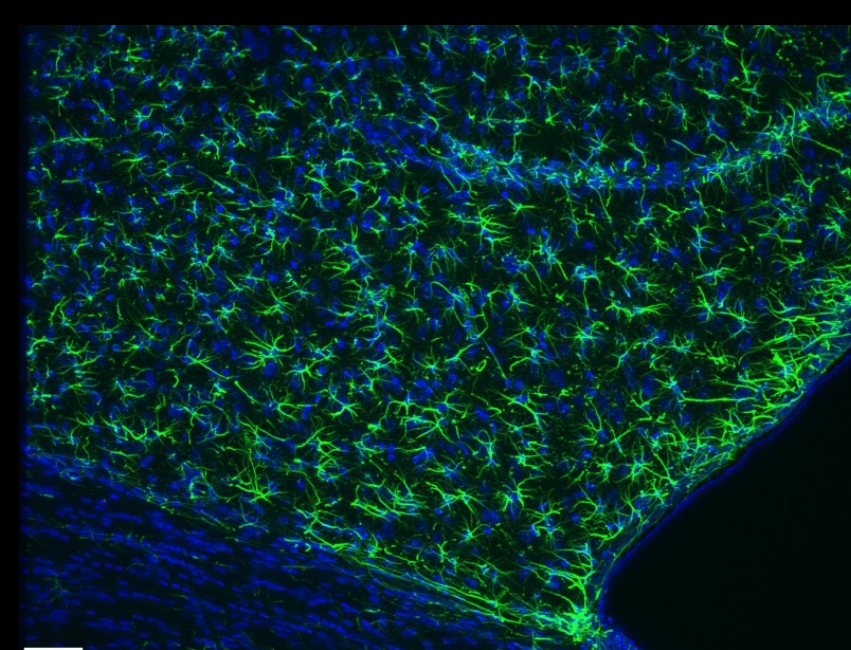
Live cell ion imaging
Spinal cord tissue – immunofluorescence studies
Imaging bispecific antibody/peptide constructs to MSCs

Optigrid SLI



Transverse section of a rat spinal cord with a dorsal lesion.
Blue = DAPI stained nuclei
Red = NeuN immunostained neurons
Green = CD11b immunostained microglia/macrophages.

Transmitted light shows outline of spinal cord section



Horizontal section of a Parkinsonian rat brain.
Blue = DAPI stained nuclei,
Green = GFAP immunostained astrocyte cells.

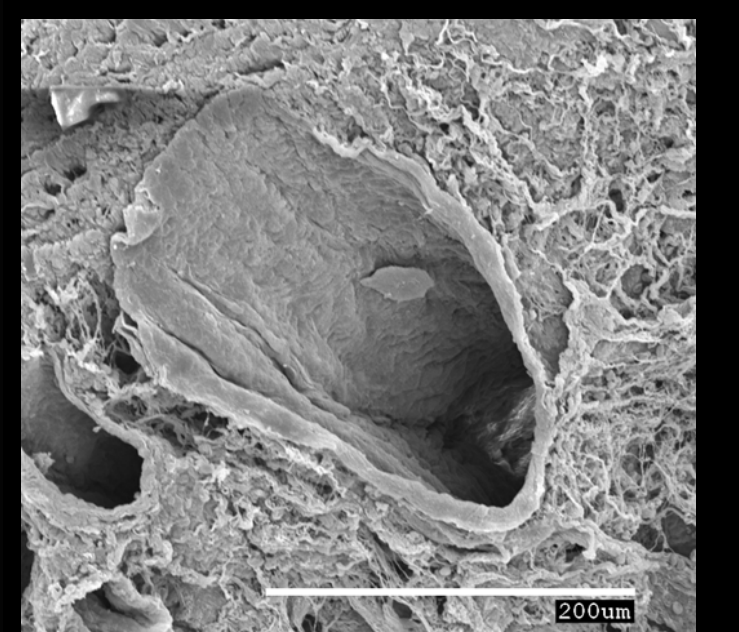
Experiments

Biomaterials
Mini-tumours efficacy of TRAIL variants in cell apoptosis.
Immunofluorescence –spinal cord

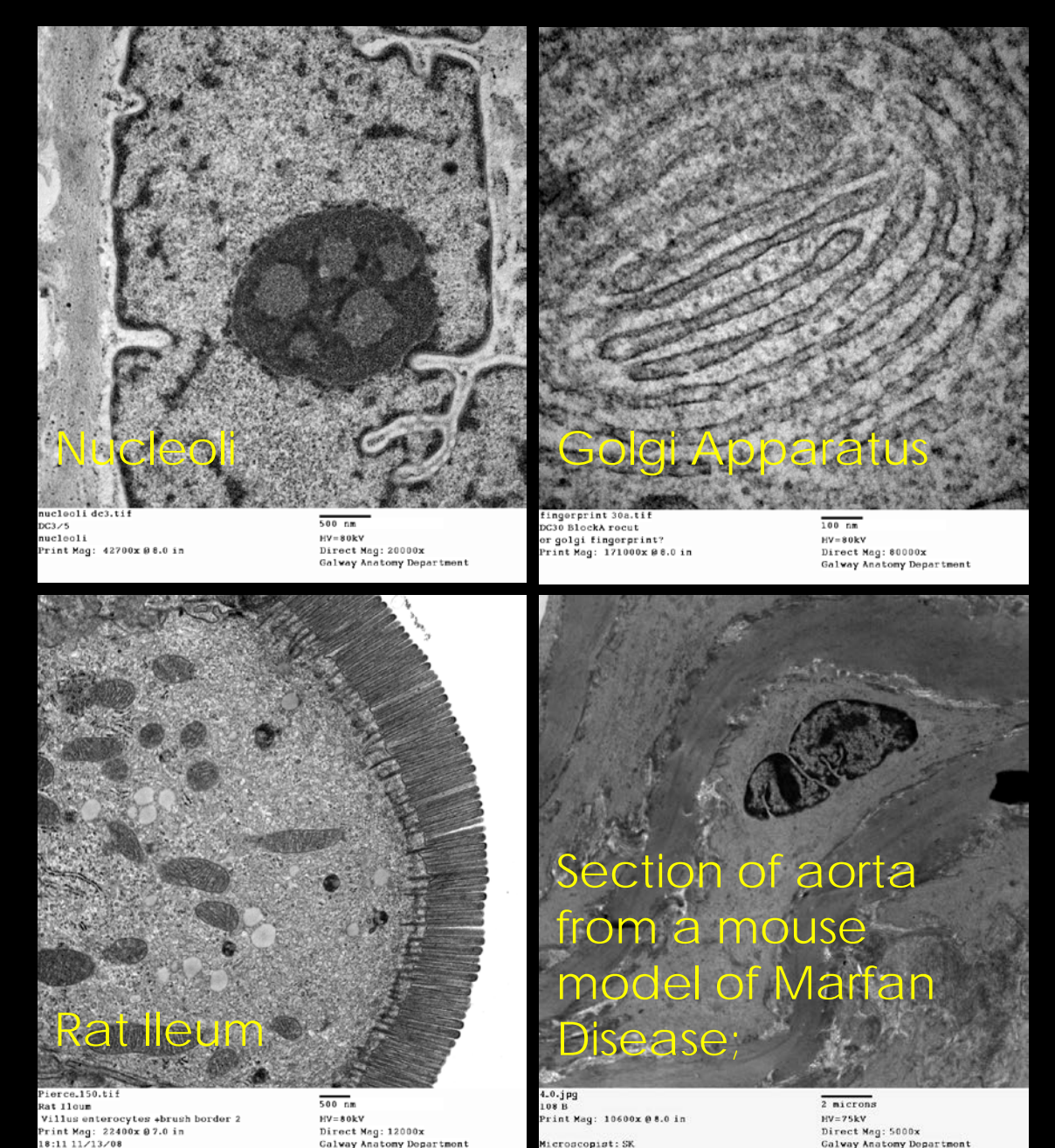
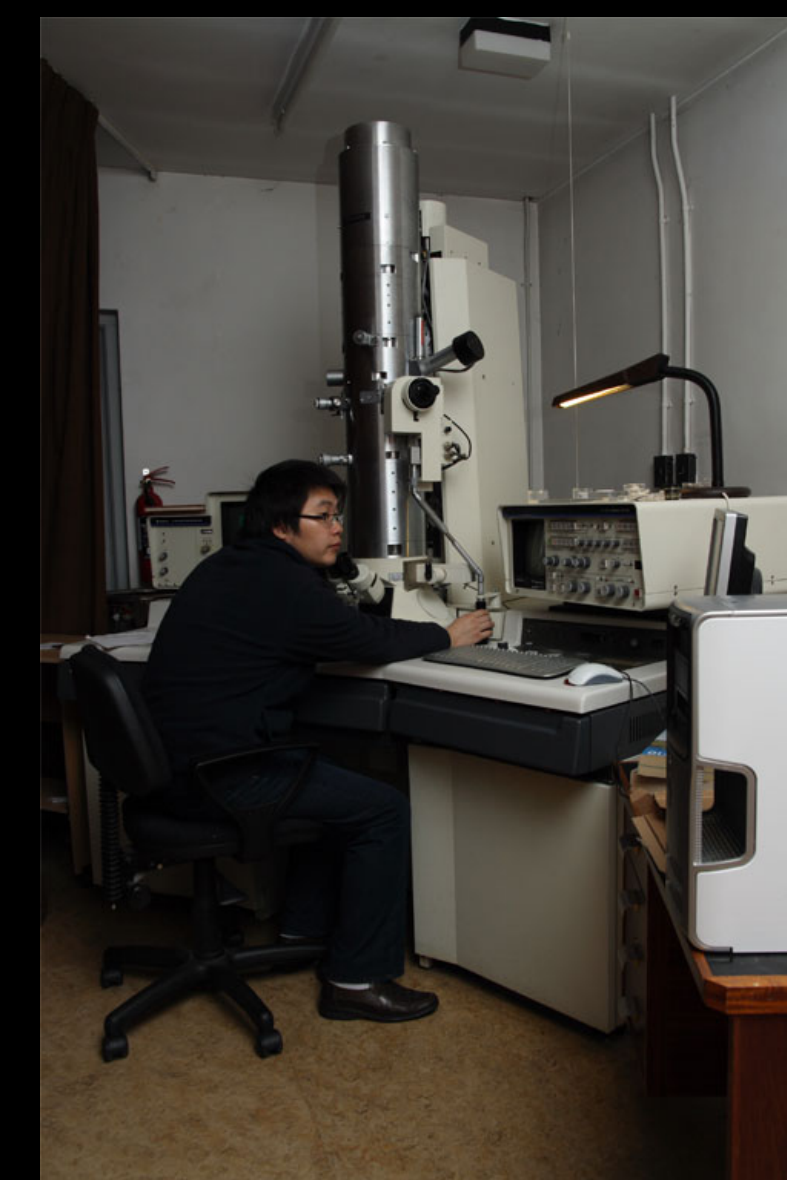
Hitachi SEM and TEM systems



SEM: Centipede claw



SEM: Blood vessel surrounded by cross sectioned uterine SMC human endometrium



Experiments

High res, high mag structural characterisation
Preparation techniques include low temperature EM and immuno EM.
Tracking of nucleotide excision repair using TEM.
Biomaterial studies – collagen scaffolds.

Outlook and Vision

We wish to extend the capabilities of the centre , adding new equipment (deltavision photodynamic system, multiphoton (and other non-linear techniques) microscopy, time resolved microscopy, super-resolution systems) , incorporating new research groups from NUIG and beyond. We also offer formalised training workshops in microscopy and imaging that will be used as part of undergraduate and postgraduate courses.

CMI staff

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