

CVR Microscope Chooser

Part 1

Choose an application

Light microscopy

Support medium is **glass**.

Choose this route for **confocal imaging**.



Do you want to quickly check your cells for green, red or blue fluorescence or using phase contrast? (If so, refer to microscope chooser **part 2**)

OR

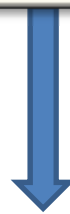
Would you like to do confocal imaging – high resolution, multi-fluorophore imaging with capability of collecting Z stacks and reconstructing cells in 3D? (Refer to microscope chooser **part 3**)

OR

Do you require access to a microscope with an incubator for study of live cells or do you want to do simultaneous acquisition of images stained with multiple fluorophores. (Refer to microscope chooser **part 4**)

Light microscopy

Support medium is **plastic**.



Do you want to quickly check your cells for green, red or blue fluorescence or using phase contrast? (If so, refer to microscope chooser **part 2**)

OR

Do you require access to a microscope with an incubator for study of live cells?

(Refer to microscope chooser **part 4**)

Electron microscopy

High resolution imaging and 3D particle reconstruction

OR

Correlative microscopy

Visualization of fluorescence in cells grown on EM grids

OR

Laser capture microscopy

Microdissection of tissue or cells

OR

Particle counting and sizing

Particle detection, counting and sizing with the Nanosight microscope



Refer to microscope chooser **part 5**

CVR Microscope Chooser

Part 2

You've chosen to do a quick light microscopy check of cells grown on **glass** or **plastic** using brightfield, phase contrast or fluorescence (green, red or blue).

To detect green, red or blue fluorescence or use phase contrast:

EVOS FL microscope in rm 416 of SMSB. Images saved to USB stick. Multiple fluorophore merged images possible.

Zeiss Axiovert 40CFL fitted with digital camera located in rm 416 of SMSB.

Nikon microscope, rm 313 SMSB (no camera and only green filter available).

Zeiss microscope with Perkin Elmer 'Trio' camera system (glass support only). Multiple fluorophore merged images possible - Contact is Andy Stevenson ext 5610

To use phase contrast only:

Equipment available is the same as for fluorescence – shown in the column to the left

OR

SPOT camera and software in tissue culture room 322 of SMSB.

Microscope Chooser

Part 3

You've chosen to do **confocal imaging** with cells grown on glass. The CVR has four confocal microscopes, the three most modern being shown here.

Zeiss LSM 510 meta

CVR's backup confocal microscope

Location: Rm 313 in SMSB

Summary of main features:

Full environmental control, enabling livecell time-lapse imaging

Fitted with 405,488 (458 and 514),543 and 633 lasers

Zeiss LSM 710 meta

Location: Rm 416 in SMSB

Summary of main features:

Zen 1 (black) software with software modules to allow colocalisation, create montages and generate HDR (High Dynamic Range) images (ie images with minimal saturation).

10x, 20x, 40x(oil), 63x (oil) and 100x (oil) objectives. Lasers emit at 405, 458, 488, 514, 561 and 633nm

Spectral detector can be used to unmix up to 10 fluorophores and is also ideal for FRET and FRAP.

Acquisition of Z stacks is quick and there's an option to export volumes as 3D movies.

Zeiss LSM 880 with Airyscan

Location: Rm 416 in SMSB. Summary of main features:

10x, 20x, 40x(oil), 63x (oil) and 100x (oil) objectives. Laser emissions at 405, 458, 488, 514, 561, 594 and 633nm. 2xPMT, 1xGaAsP, 1 x Airyscan detector.

Airyscan detector provides super-resolution images with 1.7x improvement in x,y and z axes.

GaAsP detector provides improved signal:noise in comparison to our other confocal microscopes.

Provision of environmental chamber allows system to be used for livecell time-lapse imaging.

Images acquired using any of our confocal microscopes can be deconvolved using Autoquant software in room 416 of the SMSB or on the Zen workstation. Imaris software in the same location can be used to reconstruct Z stack volumes, obtain volume statistics and make some very cool movies for presentations!

Microscope Chooser

Part 4

You require access to a microscope with an incubator for study of live cells (grown on glass or plastic) OR you've grown your cells on **plastic** and may want to do a check of multiple fluorophores or fluorophores other than those in the green, blue or red range of the spectrum.

Zeiss LSM 880 confocal microscope with Airyscan

Glass support only
Location: Rm 416 in SMSB.
Lasers emit at 405, 458, 488, 514, 561, 594 and 633nm.
2xPMT, 1xGaAsP (enhanced signal:noise), 1 x Airyscan detector (super-resolution)

Zeiss LSM 510 meta confocal microscope

Glass support only
Location: Rm 313 in SMSB
Fitted with 405,488,543 and 633 lasers
Laser emissions at 405, 458, 488, 514, 543, and 633nm.

Zeiss Cell Observer Live Cell Microscope

Glass or plastic medium
Location – Room 313 of SMSB

Summary of main features:

Fitted with 8 filters for fluorescence, which are:

Filter set 47HE: blue, exc 420-450, em 460-500 eg fluorophore = DAPI

Filter set 49: blue, exc 300-400, em 420-470 eg fluorophore =

Filter set 38HE: cyan, exc 450-490, em 500-550 eg fluorophore = CFP

Filter set 46HE: green, exc 485-510, em 520-550 eg fluorophore = FITC

Filter set 61HE (Colibri): green and far red, exc 460-490, em 500-550 and 615-675 eg fluorophore = FITC+mRFP

Filter set 14: red, exc 510-560, em LP590 eg fluorophore = mRFP

Filter set 63HE: red at higher end, exc 550-600, em 600-660 eg fluorophores = Alexa 568 or 594

Filter set 50: far red, exc 625-655, em 665-715 eg fluorophore = Alexa 647

(Full details of filters can be found at micro-shop.zeiss.com).

Incubator with co2 and temp control. Controlled through Zen pro software (very powerful). Z stack capabilities. Apotome for near-confocal quality images. Inbuilt deconvolution within software. Monochrome and colour cameras for fluorescence/brightfield/DIC/phase contrast. Time lapse image acquisition capabilities. Multiple focus options. Experiment manager allowing automation of multiple tasks. Fine temperature control for virus entry studies. 20x and 40x long working distance objective lenses. 10x, 20x, 40x(oil) and 63x(oil) short working distance objectives. LED and mercury light sources.

Microscope Chooser

Part 5

Choose an application

Correlative Microscopy: For growth of cells on EM grids, working towards cryo-electron microscopy. Fitted with filters for visualization of blue, green, cyan, and red fluorescence.

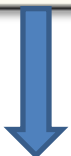


Correlative Microscope

Located in HWB rm 107

Contact:

D. Bhella ext 3685



JEOL 2200 Electron Microscope

Applications: cryo electron microscopy, tomography, single particle data collection

Located in SMSB rm 113

Contact:

D. Bhella ext 3685

Laser microdissection: For excision of single cells from cell monolayers or tissue sections. Fitted with filters for visualization of blue, green and red fluorescence.



Laser Microdissecting Microscope

Located in HWB 234

Contacts: C. Loney ext 6265 or

C. Leitch ext 4020/6257

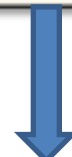
Detection, counting and sizing of particles, either untagged or fluorescing in the green channel.



Nanosight Microscope

Located in SMSB rm 313

Contacts: C. Loney ext 6265



Also consider

JEOL 1200 Electron Microscope

Applications: Negative staining, particle counts, sectioning

Located in HWB rm 107

Contact:

D. Bhella ext 3685 or

M.McElwee ext 4025