Introduction to the Bioimaging Centre

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Light Microscopy

Wide Field Microscopes

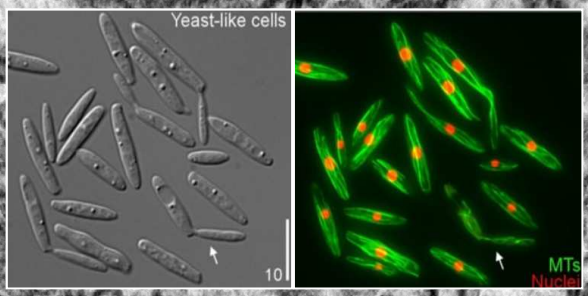
Zeiss Axiophot
Olympus IX81

Main Features

Mercury arc lamp
10-100x objectives
Filter sets: DAPI/blue/yellow/green/red GFP/RFP Dual cube
Cool snap HQ2 CCD b&w camera
TIRF System
488nm 561nm 50mW solid state lasers
405nm 100mW Blue diode
Inverted microscope
Resolution 200nm
D-VisiFRAP Realtime Scanner

Applications

Detection of faint signals
Use of 2 different colour probes at once
100ms frame rate
Time laps imaging
Single molecule assays in TIRF
3D Reconstruction
FRAP / Photo activation



Confocal Laser Scanning Microscopes

Leica TCS SP8
Zeiss LSM 510
Nikon A1

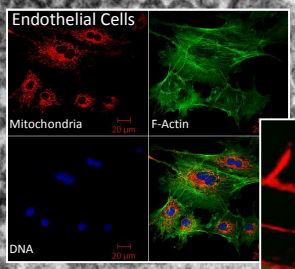
Main Features

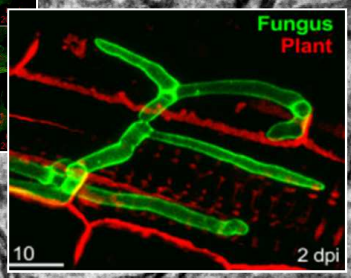
Lasers	Excitation(s)
Diode 405 30mW	405nm
Argon/2 30mW	458,477,488,514nm
He Ne 1.2mW	543nm
He Ne 5.0mW	633nm

Objectives: 10x – 100x, plus optical zoom
Adjustable Pinhole
Environmental chamber

Applications

Life cell imaging
Permits optical sectioning of sample
Localisation of your particle of interest within a cell
Use of 3 or 4 different colour probes at once
Co-localisation of different particles
FRET, FRAP and other specialised bleaching techniques
3D Reconstruction
Emission fingerprinting





Spinning Disc Confocal Microscope

Olympus IX81

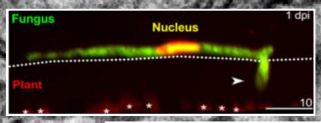
Main Features

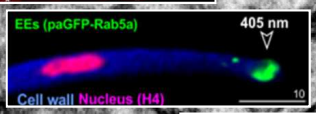
Lasers	Excitation(s)
Blue diode	405nm
Solid State Lasers	488nm
Solid State Lasers	561nm

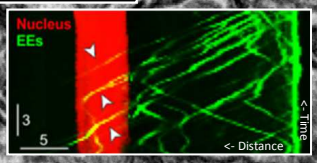
Objectives: 10x – 100x,
Environmental chamber
2D-VisiFRAP Realtime Scanner
CSU-X1 Spinning Disc unit (Yokogawa)
Eppendorf micro injector

Applications

Life cell imaging
Time series capture
Permits optical sectioning of sample
Localisation of your particle of interest within a cell
Co-localisation of different particles
FRAP and other specialised bleaching techniques
3D Reconstruction
Injection of antibody's, dyes, drugs or siRNA into single cells







Electron Microscopy

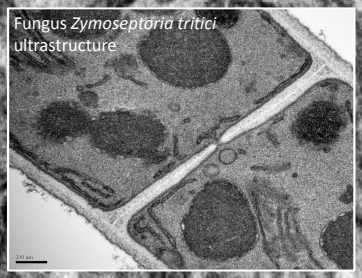
Jeol Jem 1400 Transmission Electron Microscope

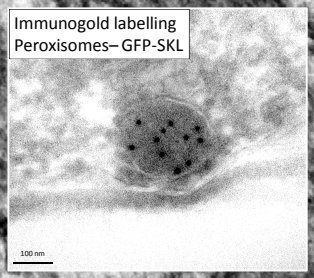
Main Features

Acc .voltage 40,60,80,100,120kV
Resolution: 0.38nm
Motorized Goniometer
Range of specimen holders including High Tilt +/- 70°
Gatan ES100w CCD camera
Gatan Tomography Software

Applications

Cell Ultastructure
Immunogold labelling
Negative staining
Tomography
Nano particles
Jet Propane/Freeze Substitution





Jeol JSM 6390LV Scanning Electron Microscope

Main Features

Acc voltage 0.5-30kV
Detectors:
SEI (Secondary electrons) resolution 3.0nm
BSI (Backscattered electrons) resolution 4.0nm
LV mode (Low Vacuum)
Gatan Alto 2100 Cryo-Preparation

Applications

SEI: Topographical observation of surface
BEI: Compositional observation of surface
LV: Observing non-conducting specimen without metal coating
Cryo-observation: Freeze fixation, ability of fracturing frozen specimens allowing internal surfaces to be scanned.