Micron advanced imaging course

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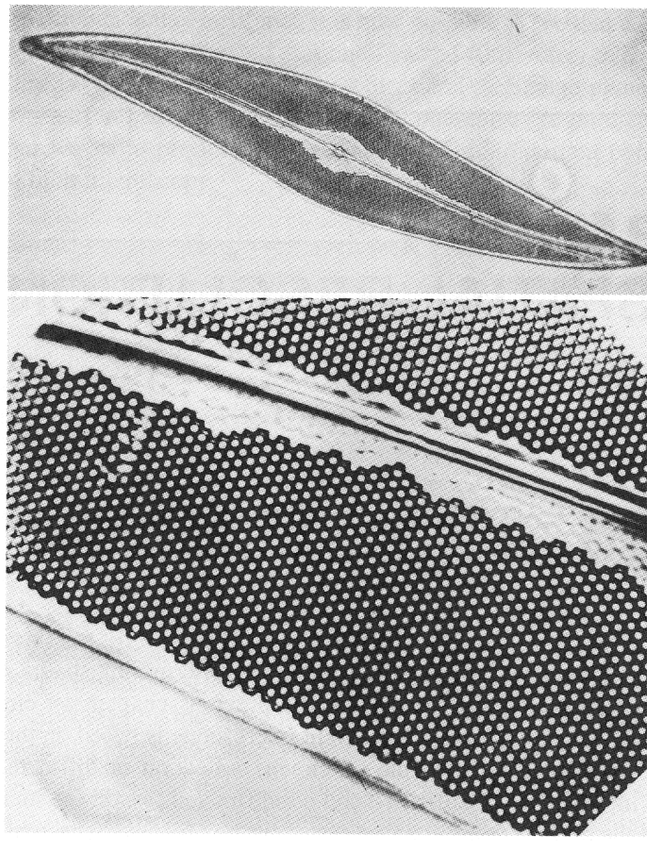
Why microscopy?

What can you do with a microscope?



100 years ago:

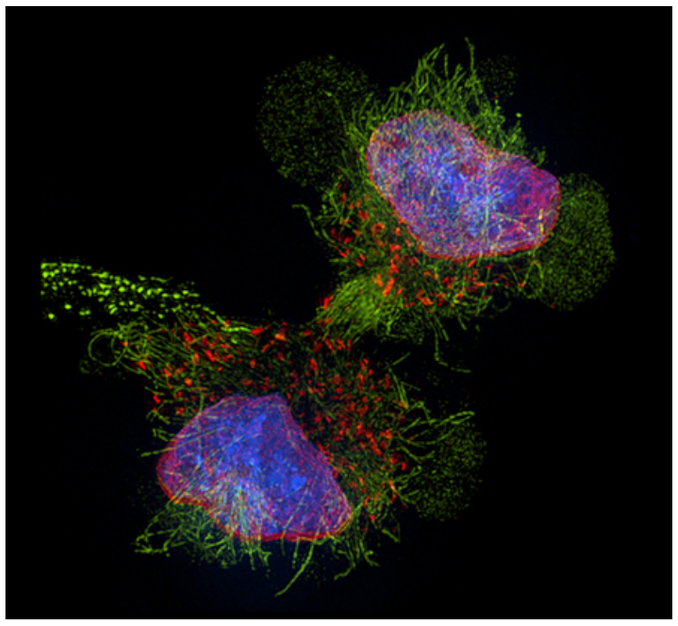
Magnify small things to visualise more details

Now:

Image the distribution of specific molecules inside cells

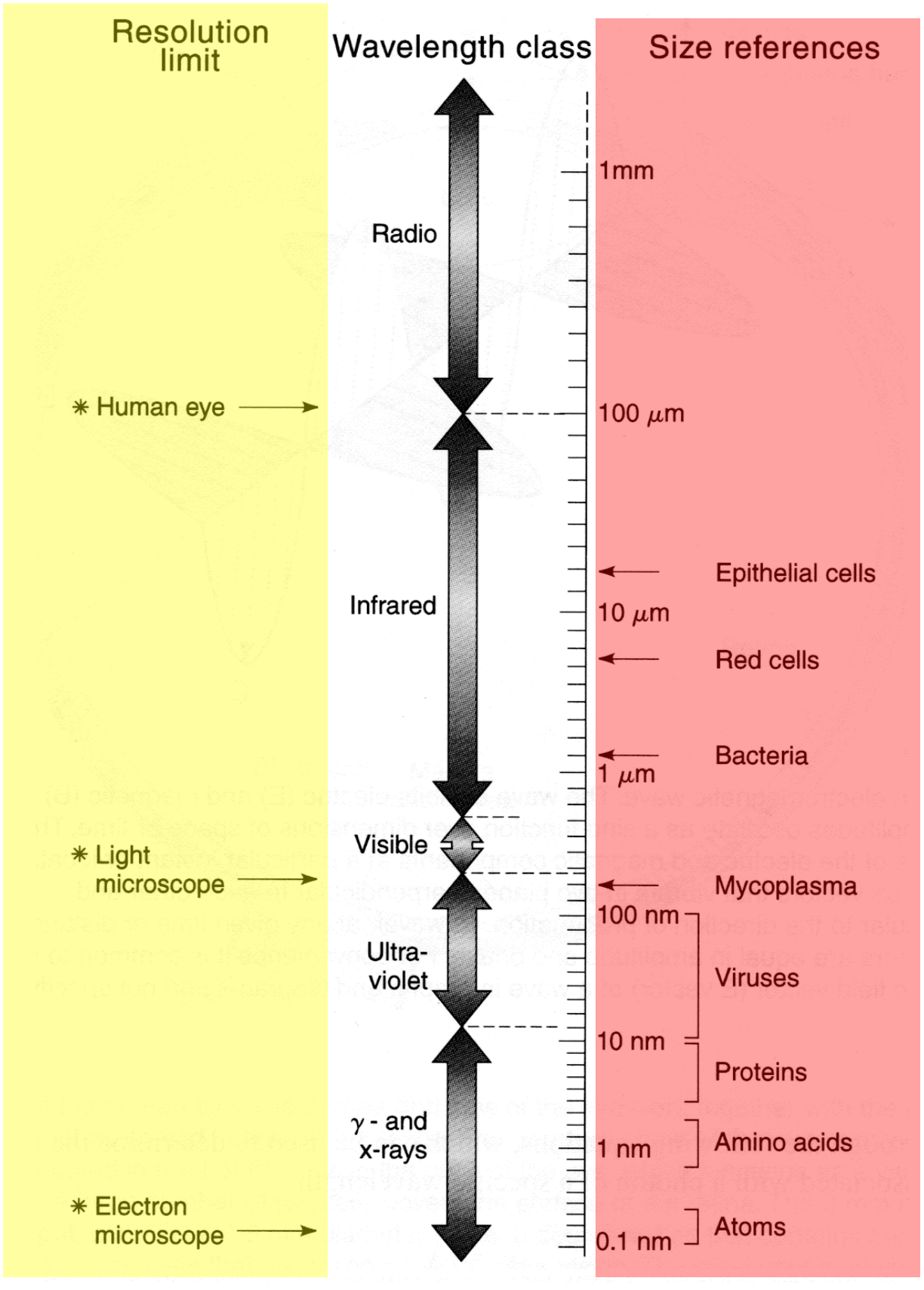
Follow changes in the distribution of molecules or the morphology of cells over time

Determine how close molecules are to each other within cells



Useful size range for light microscopy

We use the light microscope to image structures and substructures within this range: from about 300 μm down to about 0.2 μm (200 nm)



What is important?

Whats Important in Microscopy ?

Contrast :- What is the difference between what you want to see and everything else?

Resolution :- How small things can you see?

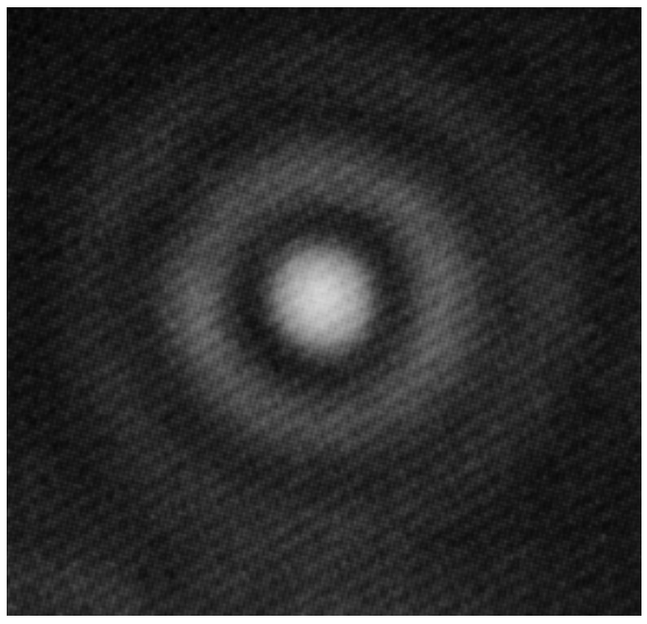
Nothing else

A single point image in a microscope.

A single point imaged on a microscope generates a diffraction pattern

Called a Point Spread Function (PSF)

Central region is the Airy disk, outer bits are Airy rings

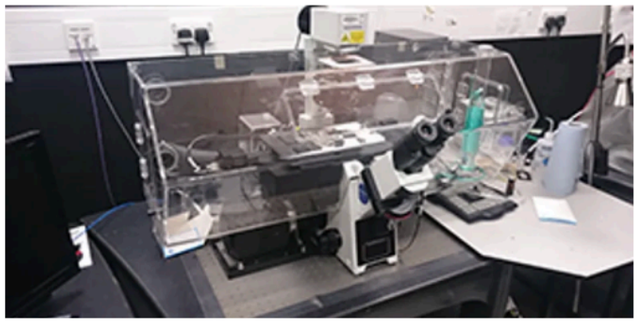


Contrast enhanced point spread function

Why so many different microscopes?

FLUORESCENCE MICROSCOPES

Deltavision Elite

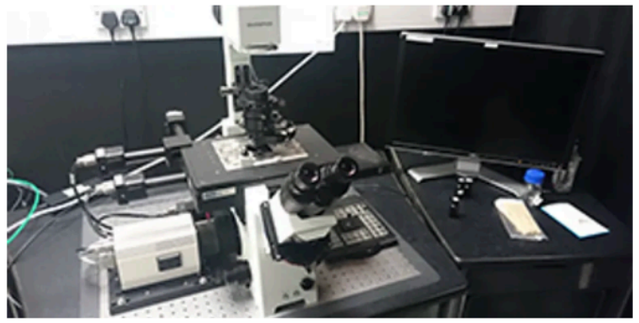


New Biochemistry Room 00-031

Widefield fluorescence system

FIND OUT MORE

Deltavision Core



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Widefield fluorescence system

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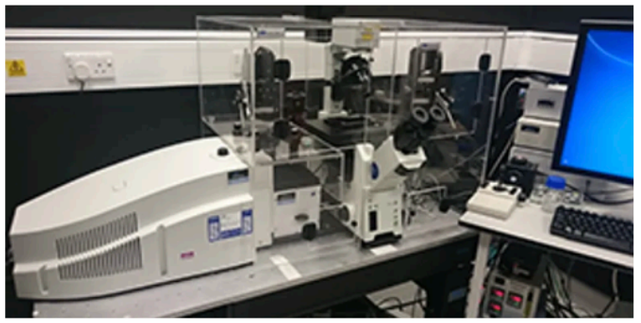
Spinning Disc (Nasmyth)



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An Ultraview spinning-disc system equipped with a temperature and CO2 controlled chamber

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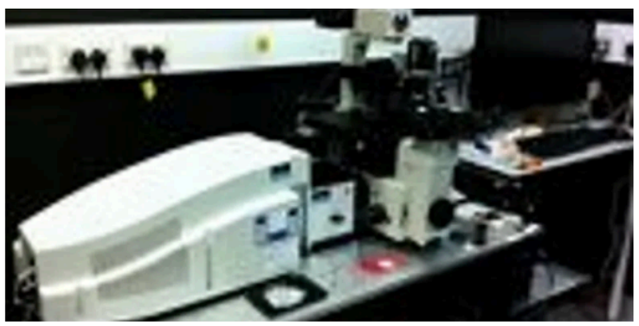
Spinning Disc (Barr)



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A fast-acquisition spinning disc system suitable for live or fixed imaging.

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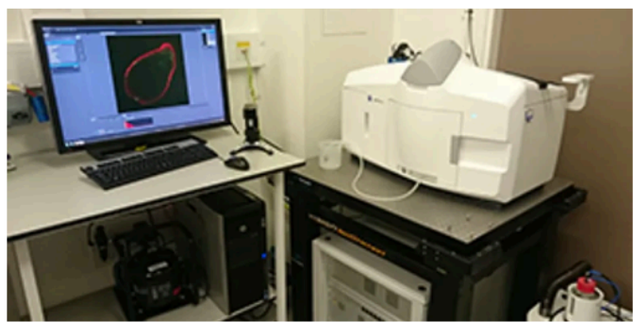
Zeiss Z1 Lightsheet



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This is a commercial lightsheet microscope designed primarily for time-lapse imaging of thick specimens.

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Olympus FV1000

Dunn School of Pathology Room 214.00.25

Olympus FV1000 Laser Scanning Microscope with Becker and Hickel FLIM system.

FIND OUT MORE

What is YOUR application?

Your application

- The Sample
- Magnification
- Resolution
- Objective
- Fluorescent label
- Fixed/live
- Imaging speed
- …..