Light Microscope Vs Electron Microscope

Light Microscope	Electron Microscope
Inexpensive to buy and operate	Expensive to buy
Small and portable	Vacuum is required
Simple sample preparation	Preparation often distorts material
Natural colour of sample is seen (or stains are used)	Black & white images produced (but can be coloured digitally)
Up to x2000 magnification	Over x500,000 magnif-ication
Resolving power is 200nm	Resolving power of a TEM microscope is 0.5mm and a scanning electron microscope is 3 – 10nm
Specimen can be living or dead	Specimen are dead

Eukaryotic Cell Structure

Nucleus	- Contains coded genetic information - Directs synthesis of proteins - Controls metabolic activities - Nuclear envolope has pores to allow molecules to move in and out
Nucleolus	- Makes the ribosomes
Mitoch-ondria	- Where respiration takes place - Releases energy - Cristae (fold) used in aerobic respiration and ATP is produced
Vesicles	- Membranous sacs that stores and transports - Single membrane with fluid inside

Eukaryotic Cell Structure (cont)

Lysosomes	- No clear internal structure - Conatins hydrolytic enzymes which breakdown waste and organelles
Centrioles	- Help to position organisms with a flagella and cilia
Ribosomes	- Site of protein synthesis
Golgi apparatus	- Modifies proteins and ‘packages’ them in to vesicles to leave the cells or lysosomes to stay in the cell

Cytoskeleton:
- Microfilaments
  - ☐ Cell movement
  - ☐ Contraction during cytokinesis
- Microtubules
  - ☐ Forms a stable structure determining cell shape
  - ☐ Acts as a track to determine movement e.g. vesicles
  - ☐ Make up spindle fibres that separate chromosomes
- Intermediate Fibres
  - ☐ Mechanical strength, helping to keep integrity

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