

This is the **Foundation Combined** version — Higher Tier and Separate-only content removed.

Microscopes are essential tools for studying cells and sub-cellular structures.

**Required Practical: Preparing and observing stained specimens under a light microscope.**

- Light microscope: max  $\times 1500$ , resolution  $\sim 200\text{nm}$ , can view living cells
- Electron microscope: much higher magnification and resolution, samples must be dead
- Magnification = image size  $\div$  actual size
- $1\text{ mm} = 1000\ \mu\text{m}$  — always convert units before calculating
- Staining (iodine, methylene blue) makes cell structures more visible

### Key Terms

<b>Magnification</b>	How much larger the image appears compared to the actual object
<b>Resolution</b>	Ability to distinguish two separate points as distinct

■ **Exam Tip:** Show all working in magnification calculations. State units in your answer. Common error: forgetting to convert mm to  $\mu\text{m}$ .