

Solutions

2.1

- Fixation, dehydration, embedding, sectioning, staining ✓.

2.2

- Blue-purple: haematoxylin is basic and nuclei acidic.

2.3

- Shrinkage with artificial tissue spaces.

3.1

- Dehydration and embedding are skipped: the block is frozen and cut at once.
- Costs: ice-crystal artefact; poorer morphology and stain quality.
- Trade: a same-hour answer at lower certainty vs a perfect answer tomorrow.

3.2

- The 1.5 μm pair resolves; 180 nm < 200 nm does not ✓.
- EM wavelength 0.005 nm gives $\sim 40\,000\times$ the theoretical ratio – in practice $\sim 1000\times$ the usable resolution.
- Cost: vacuum, killed specimens, no living dynamics, no colour.