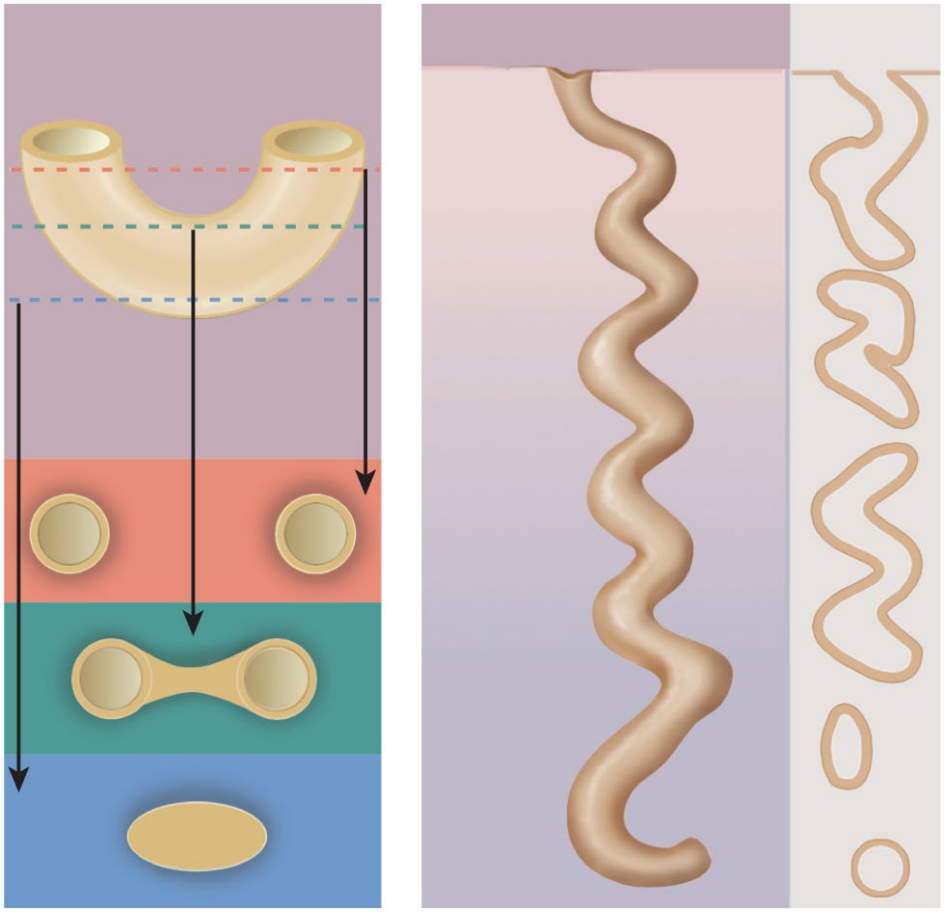
C5.1

How to Interpret Tissue Sections Using a Microscope



Interpreting Tissue Sections

• Microscopic sectioning changes a three-dimensional structure into a two-dimensional image

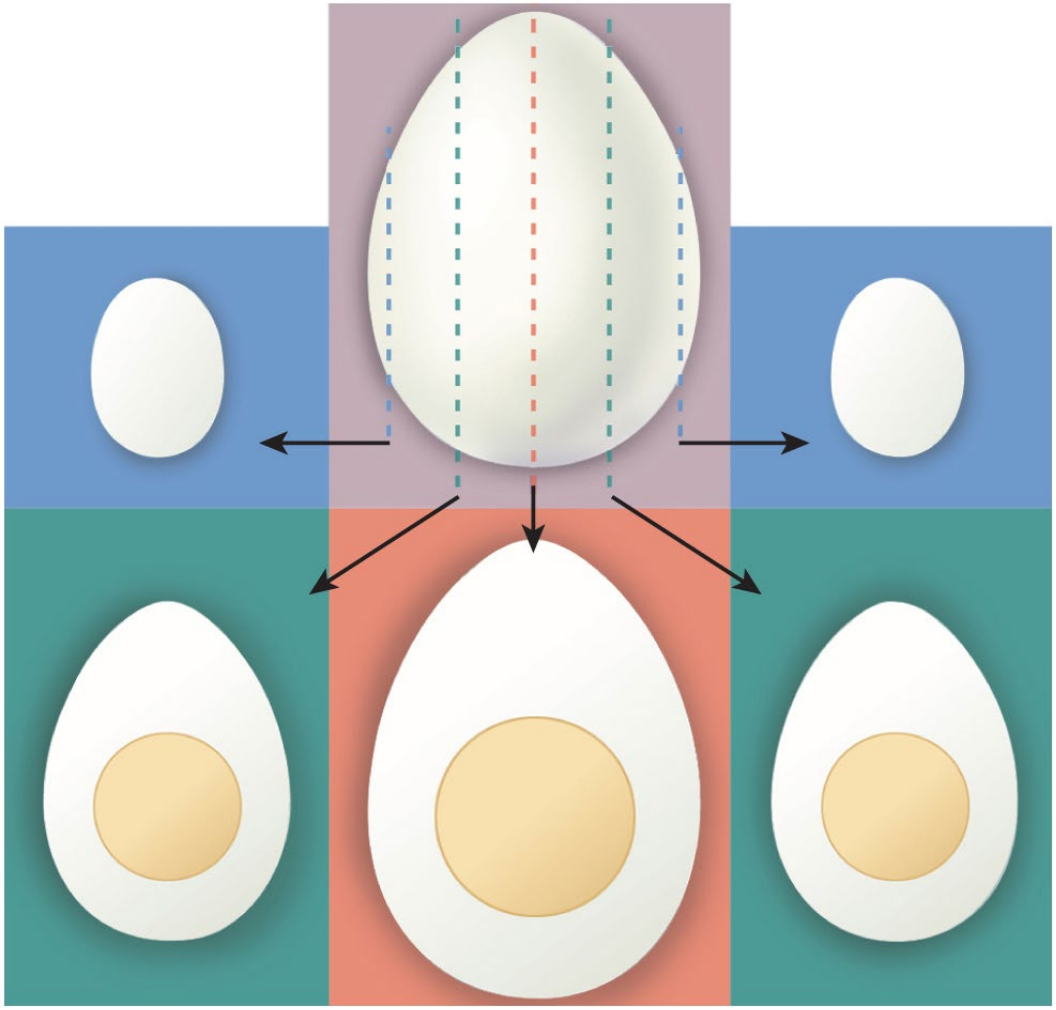
• Preparation of histological specimens

– Fixative prevents decay (e.g. formalin) // but in process dissolves and removes the fat from the tissue

–Histological sections – tissue is sliced into thin sections one or two cells thick

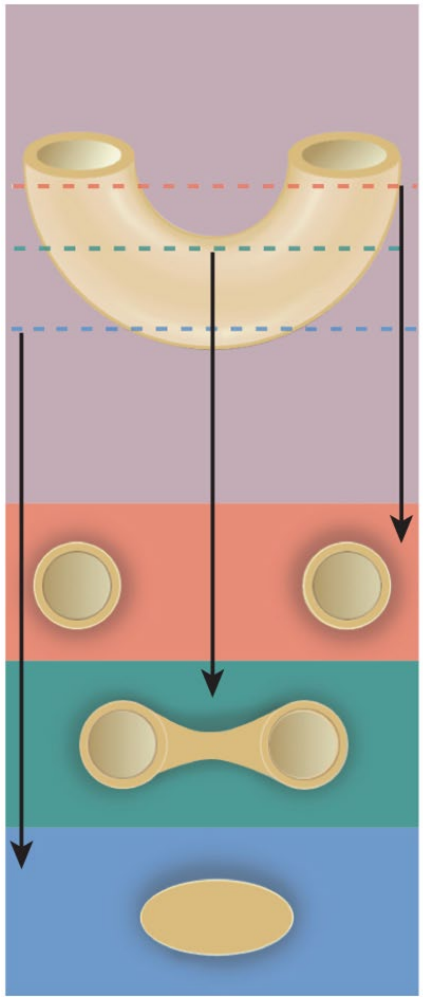
– Stains – tissue is mounted on slides and artificially colored with histological stain - increases contrast // different stains may be used to bind to different cellular components to increases contrast

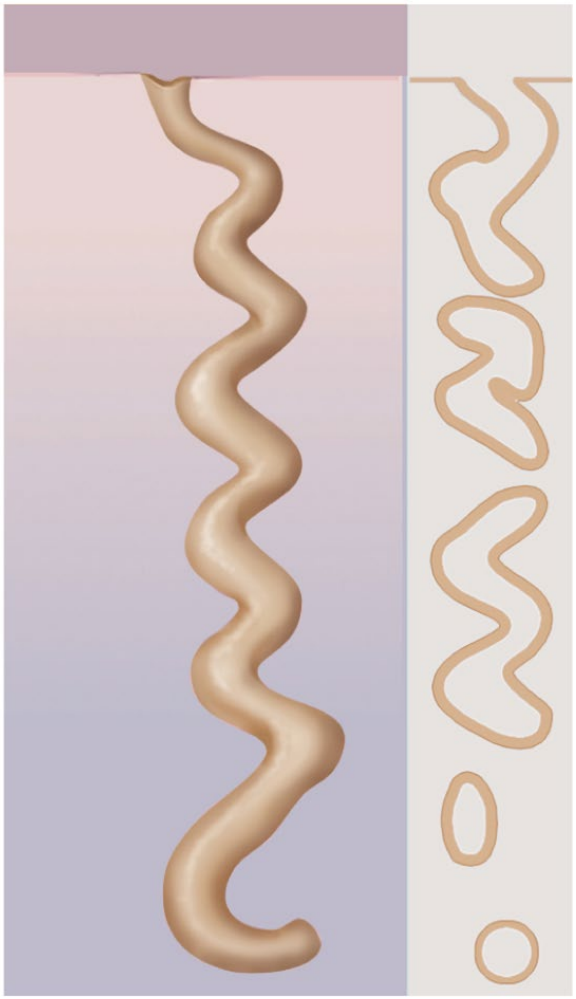
Sectioning Solid Objects



- sectioning a cell with a centrally located nucleus
- some slices miss the cell nucleus
- in some sections the nucleus looks smaller than other sections

Sectioning Hollow Structures



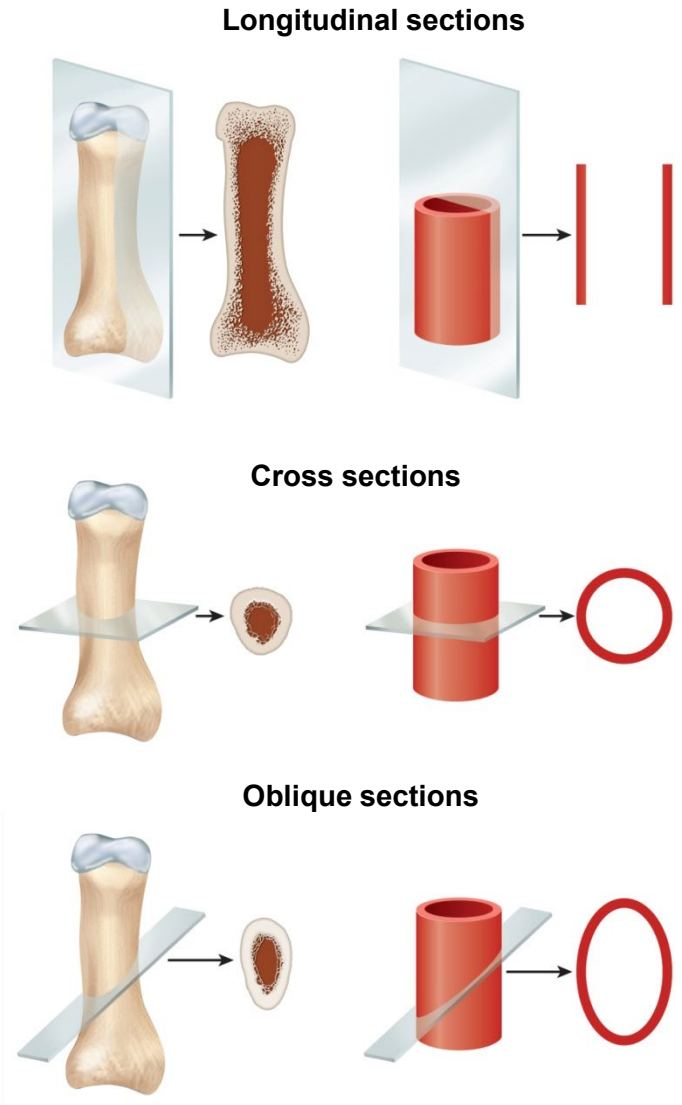


- **cross section** of blood vessel, gut, or other tubular organ.

- **longitudinal section** of a sweat gland /// notice what a single slice could look like.

- *You must use your knowledge about tissue function and your imagination to interpret what you are looking at under the microscope.*

Types of Tissue Sections



- **longitudinal section** (l.s.)
  – tissue cut along long direction of organ

- **cross section** (c.s. or x.s.) **or transverse section** (t.s.)
  – tissue cut perpendicular to length of organ

- **oblique section**
  – tissue cut at angle between cross and longitudinal section

Non-sectioned Preparation

- **Smear –** tissue is rubbed or spread across the slide and often a cover slip is placed over the tissue sample /// E.g. blood smear to identify formed elements

- **Spread –** cobwebby tissue is laid out on a slide without cover slip /// E.g. areolar tissue