

Human Histology

Reference: Junqueira's Basic Histology, Text and Atlas, 15th edition, By Anthony L. Mescher , Chapter 1.

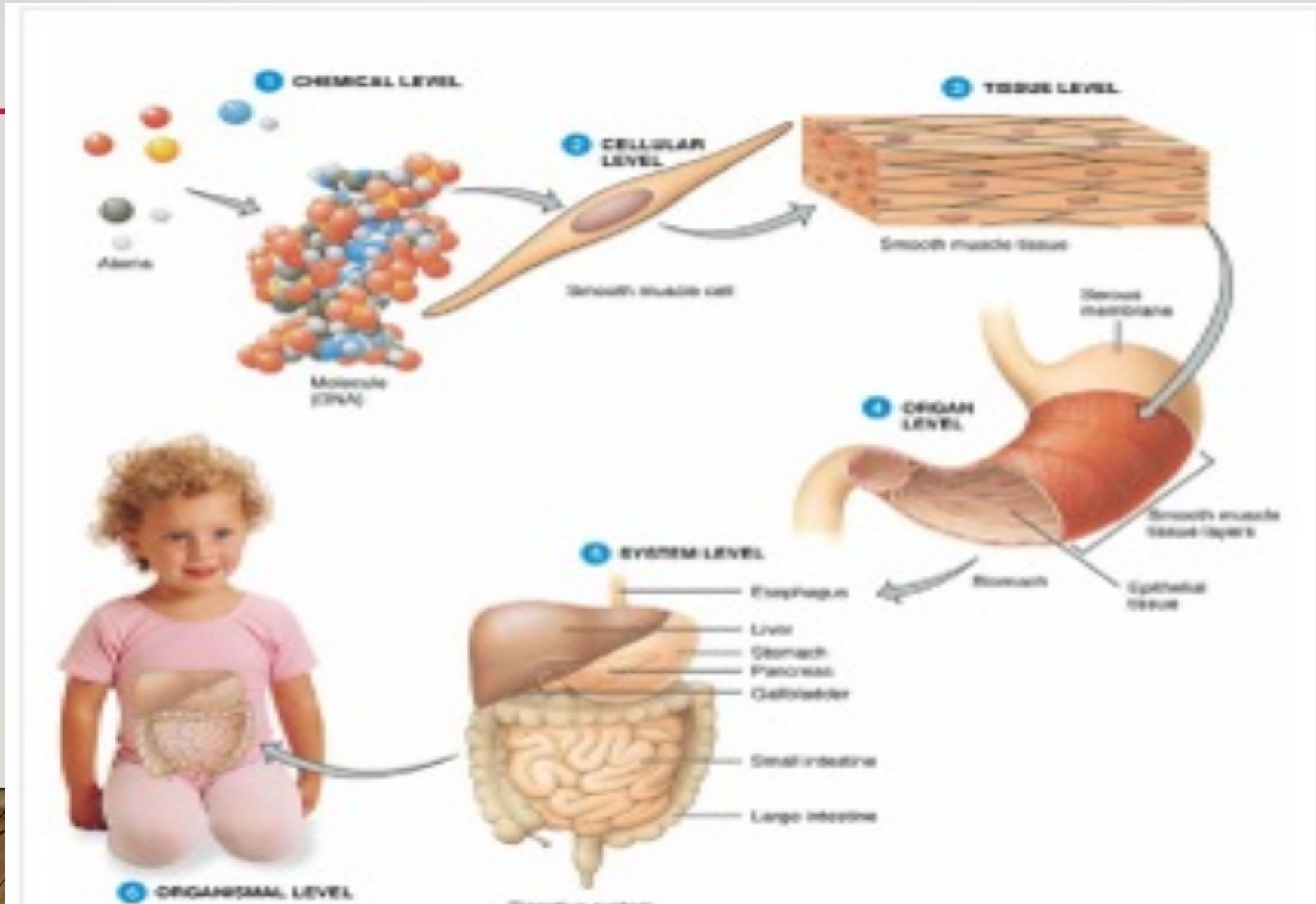
INTRODUCTION

1. Overview
2. Epithelium
3. Connective tissue
4. Cartilage
5. Bone
6. Muscular tissue
7. Nervous tissue

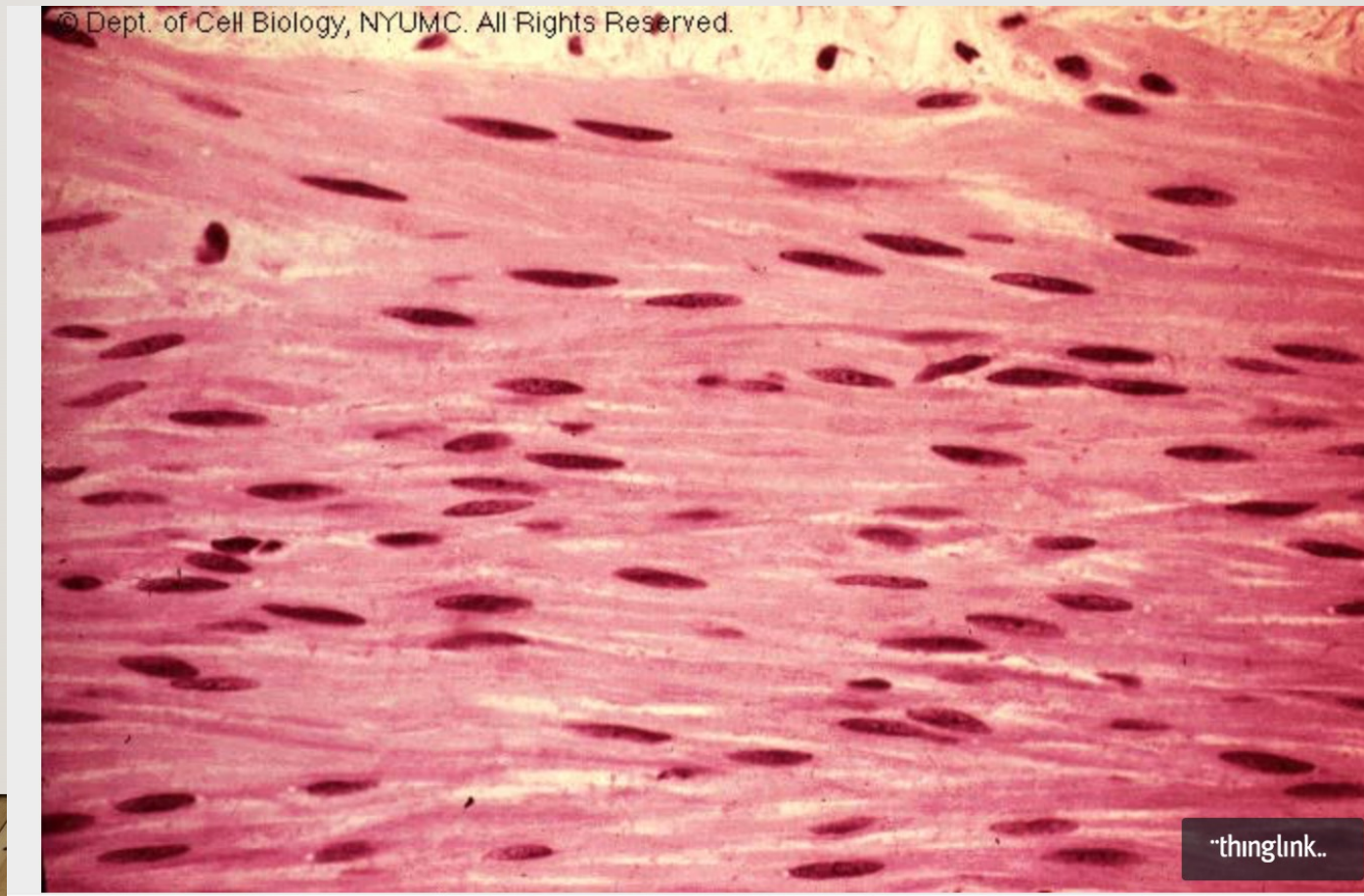
HISTOLOGY

- Histology is the study of the tissues of the body and how these tissues are arranged to constitute organs.
- Cells and ECM (extracellular matrix)

LEVEL OF ORGANIZATION



HOW DO WE GET THIS IMAGE?



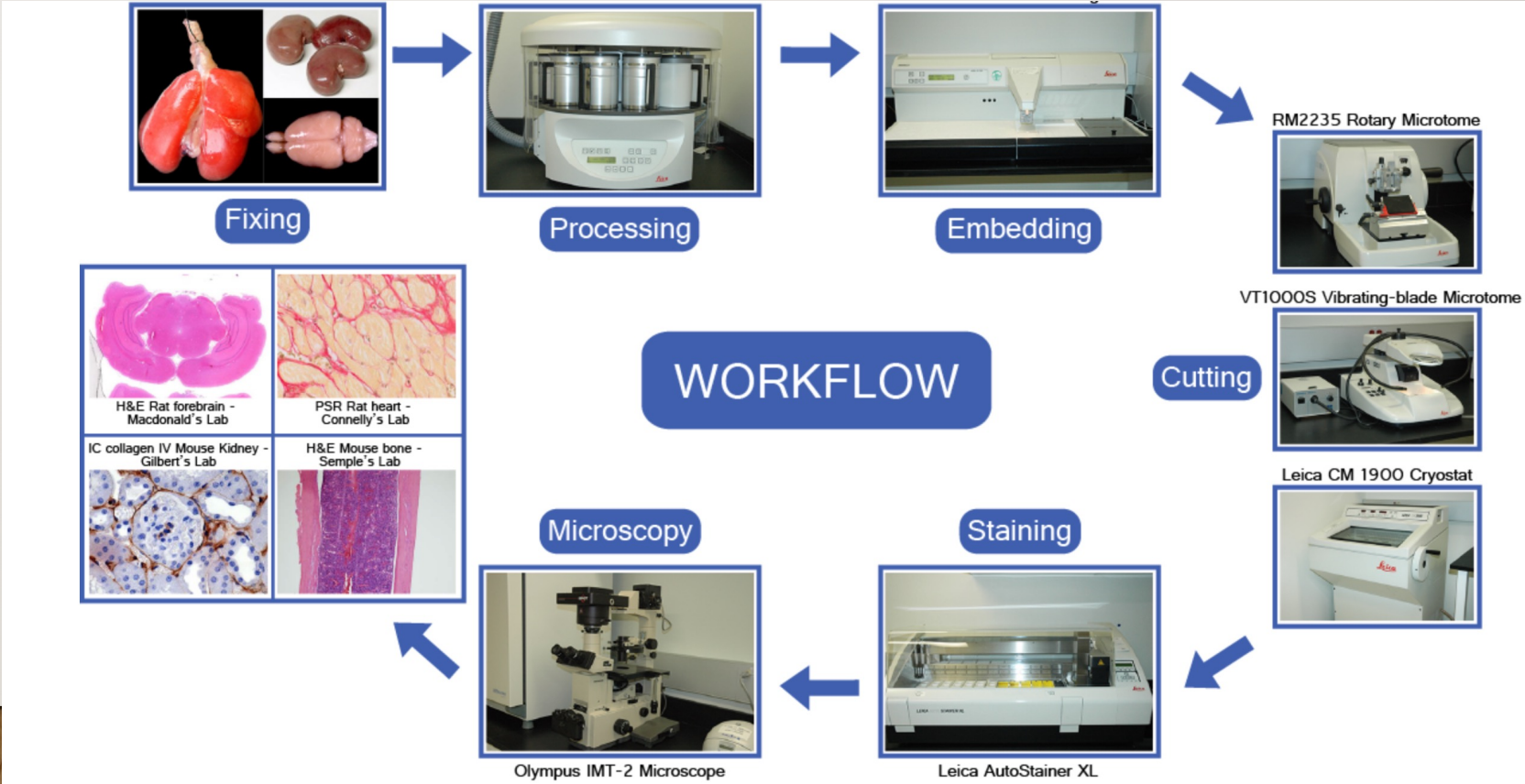
TISSUE PROCESSING FOR HISTOLOGY



<https://www.youtube.com/watch?v=4DJm4NLECQs>



Paraffin block

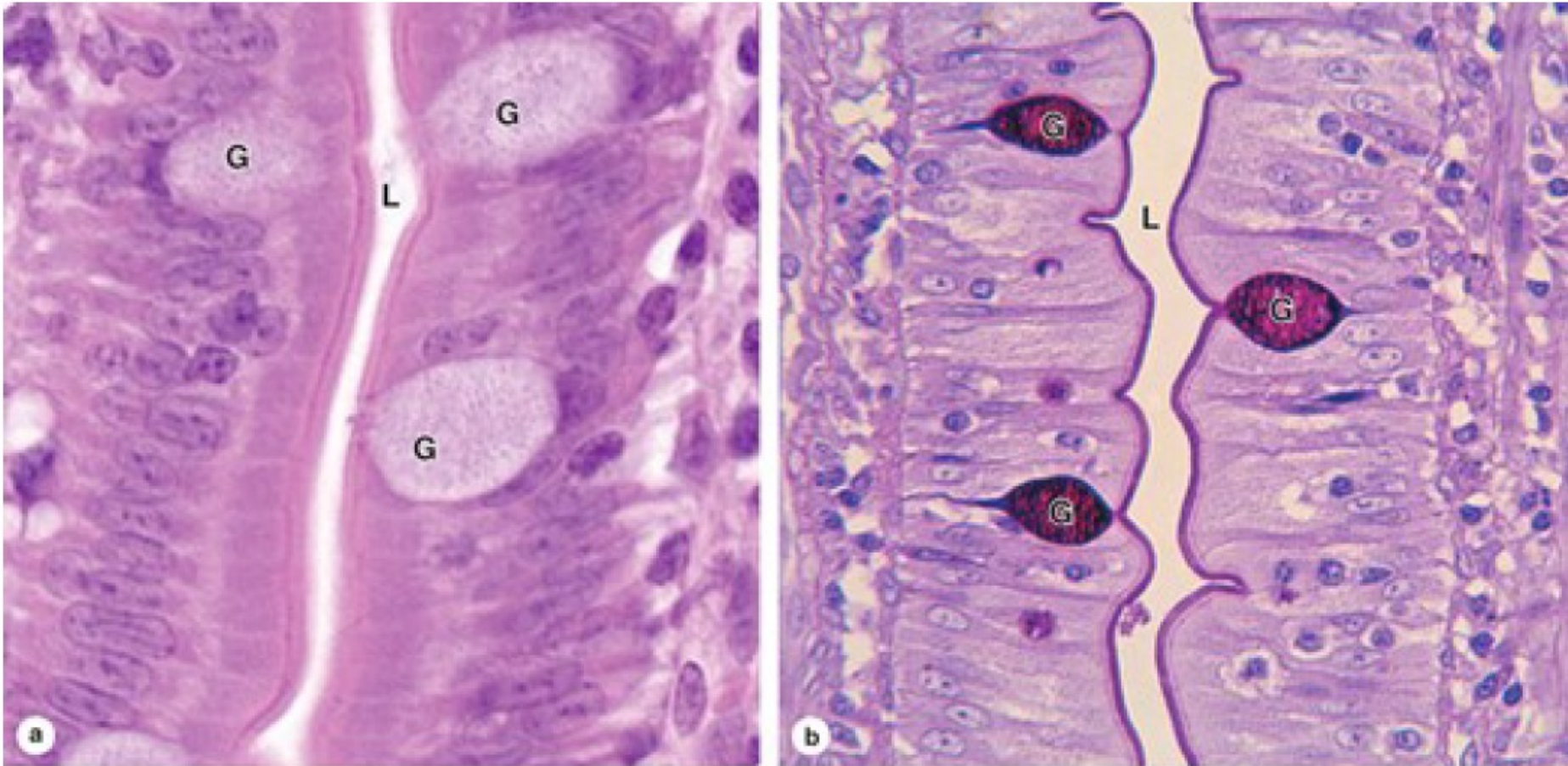


STAINING AND STAINS

- Most cells and extracellular material are completely colorless!
- Dyes stain material more or less selectively either acidic or basic.
- Cell components with a net negative charge have an affinity for basic dyes (**BASOPHILIC**)
- Cationic components stain more readily with acidic dyes and are termed (**ACIDOPHILIC**)
- Hematoxylin and eosin (H&E) is most commonly used stain

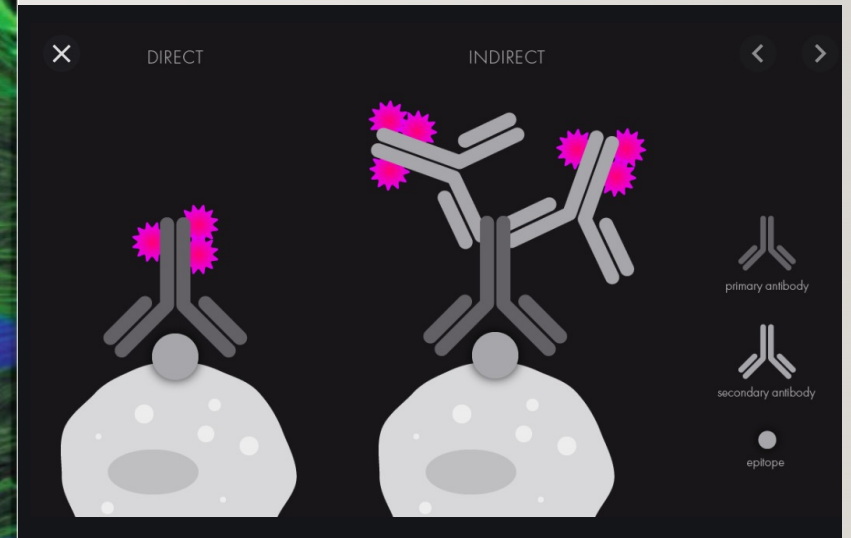
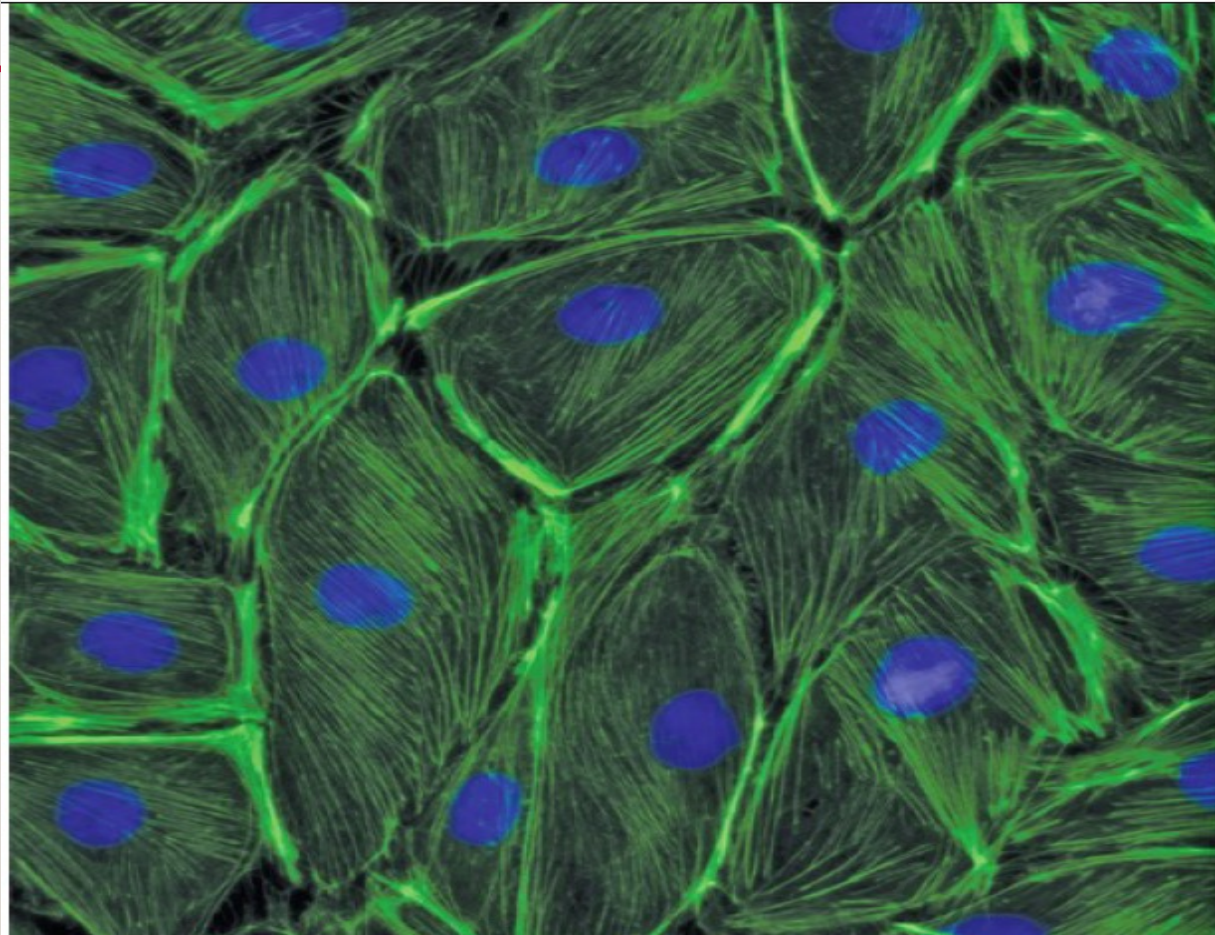
H&E

PAS STAINING!

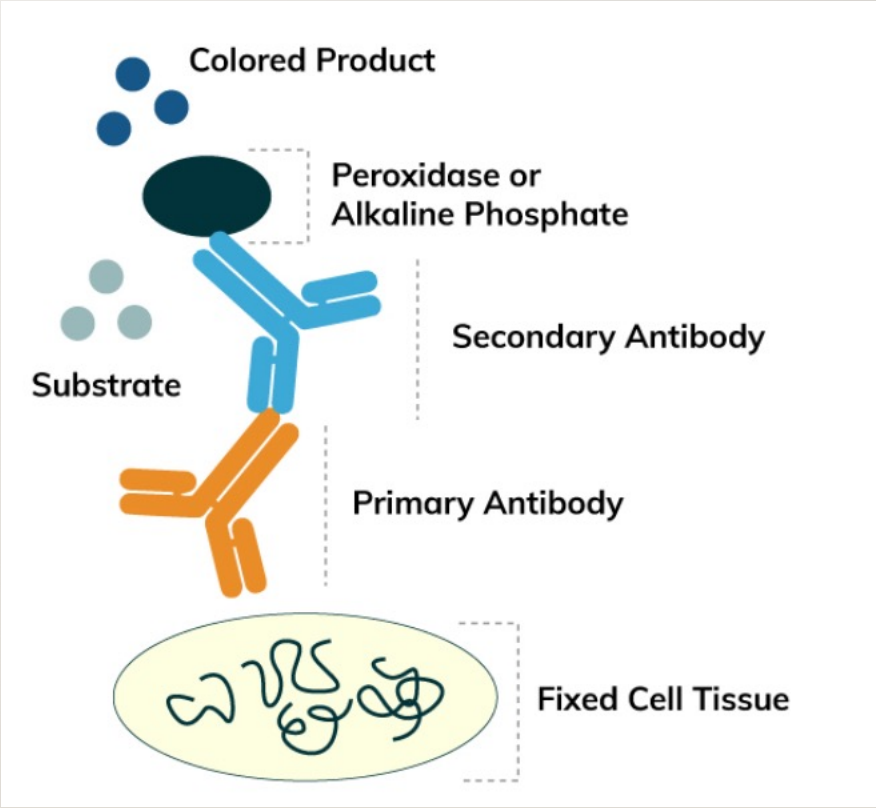
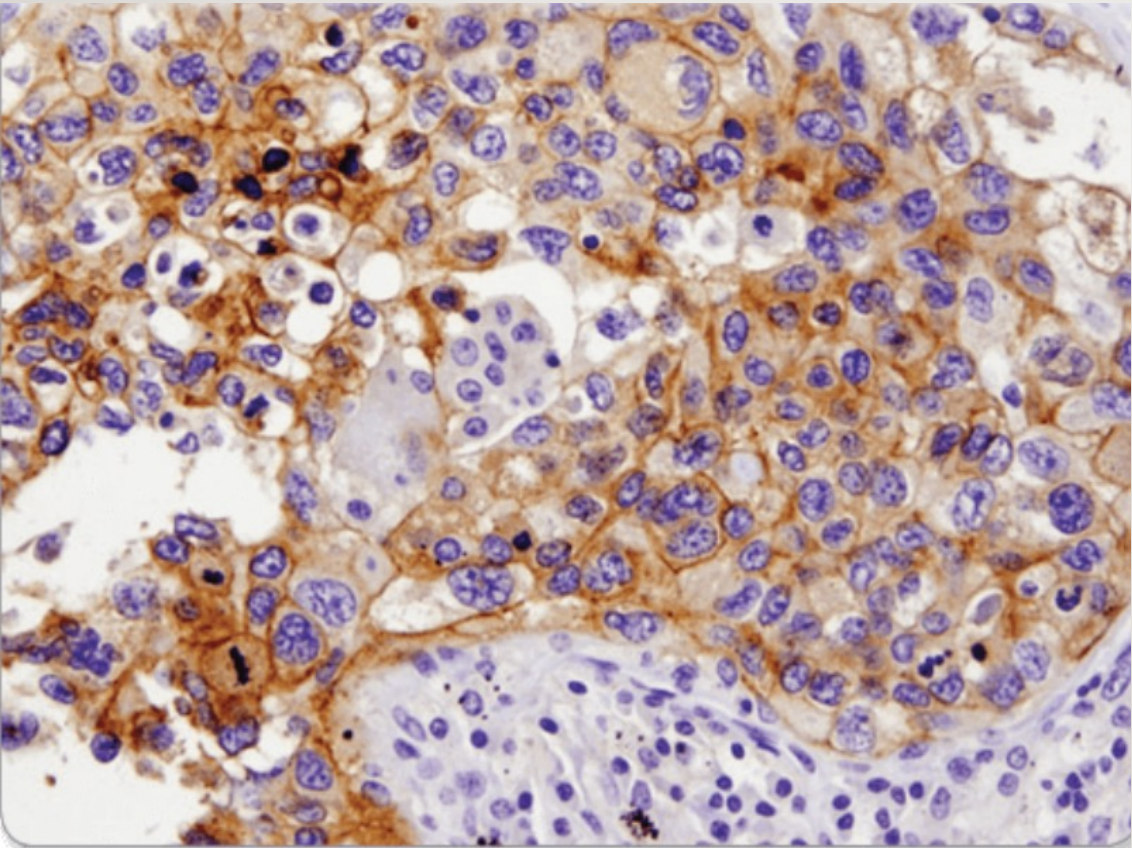


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IMMUNOFLUORESCENCE STAINING



IMMUNOHISTOCHEMISTRY



MICROSCOPES

- Light microscope (others: Confocal, Fluorescence, Phase-Contrast)

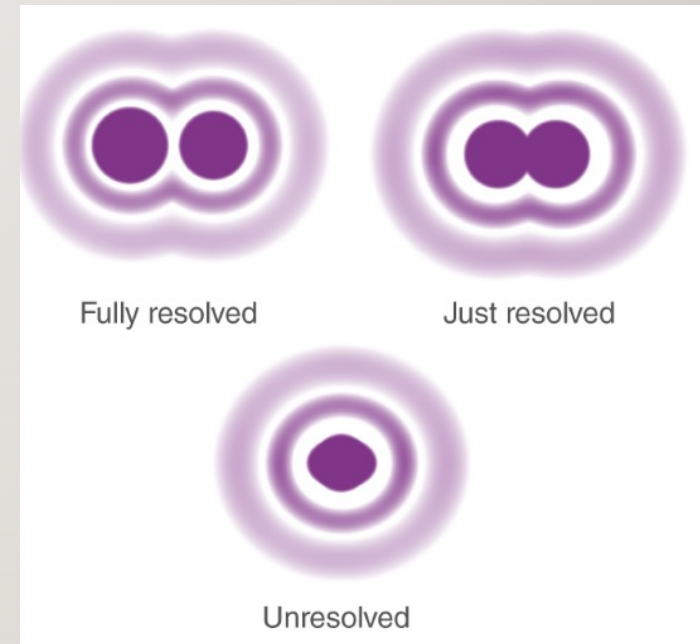
Interaction of light with tissue.

Resolution around 0.2 μm .

- Electron microscope.

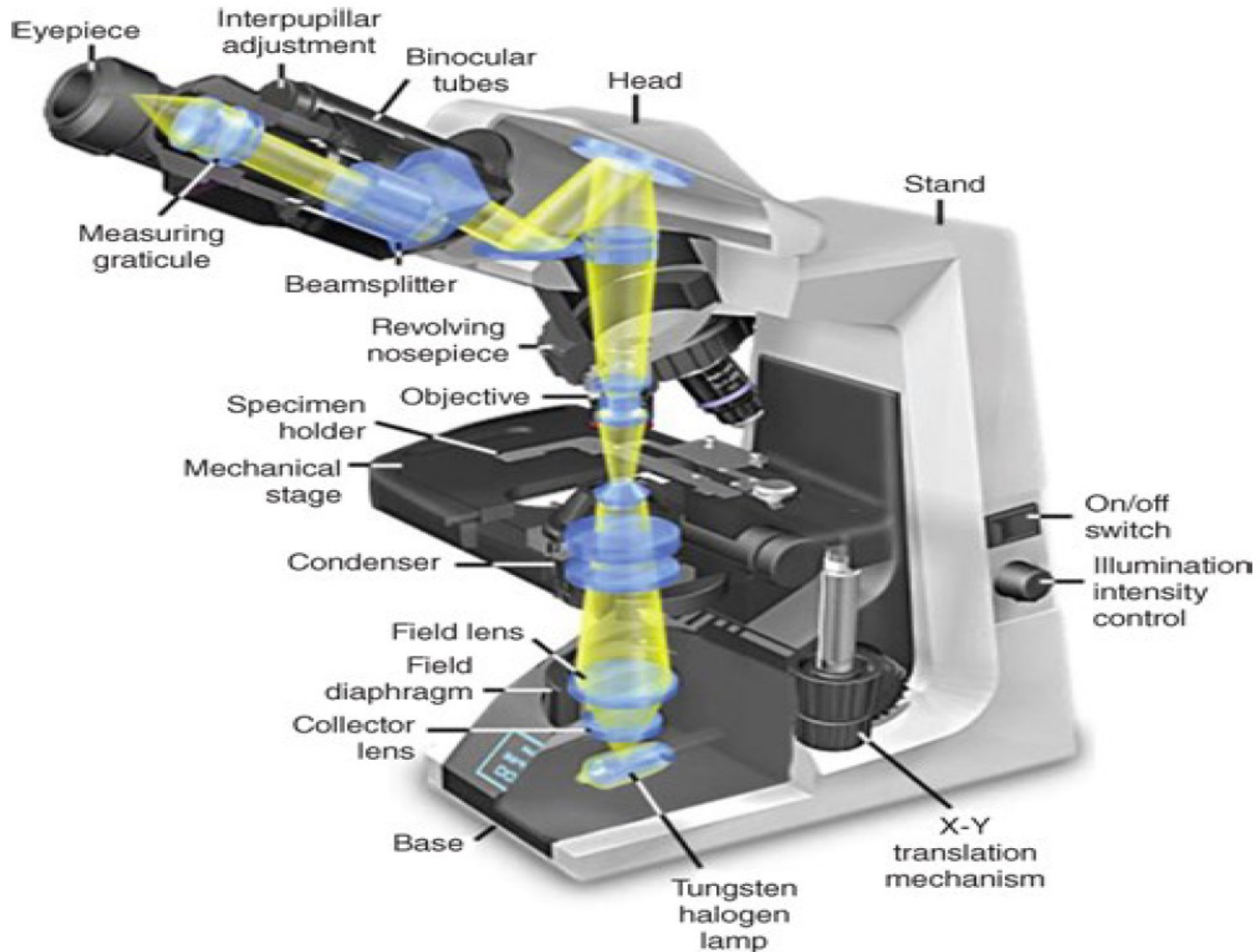
Interaction of tissue components with beams of electrons.

Resolution around 3 nm (transmission electron microscope).

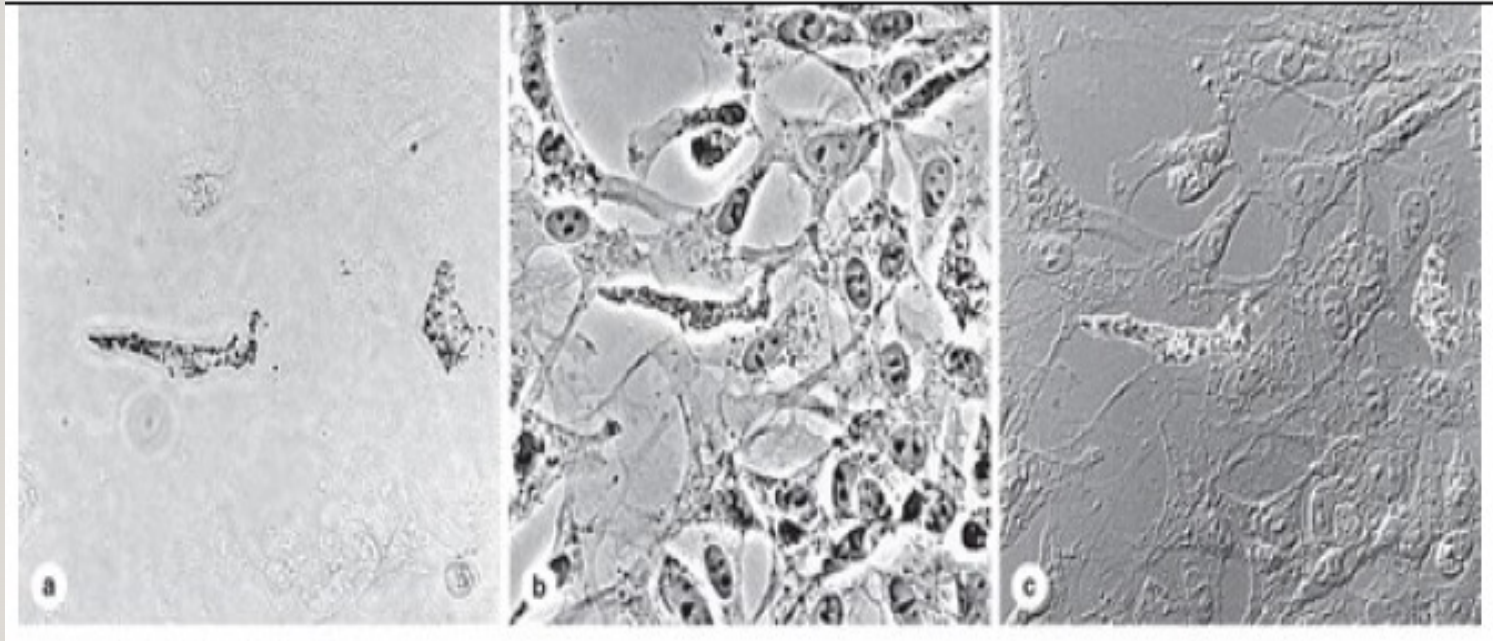


LIGHT MICROSCOPE (BRIGHT-FIELD)

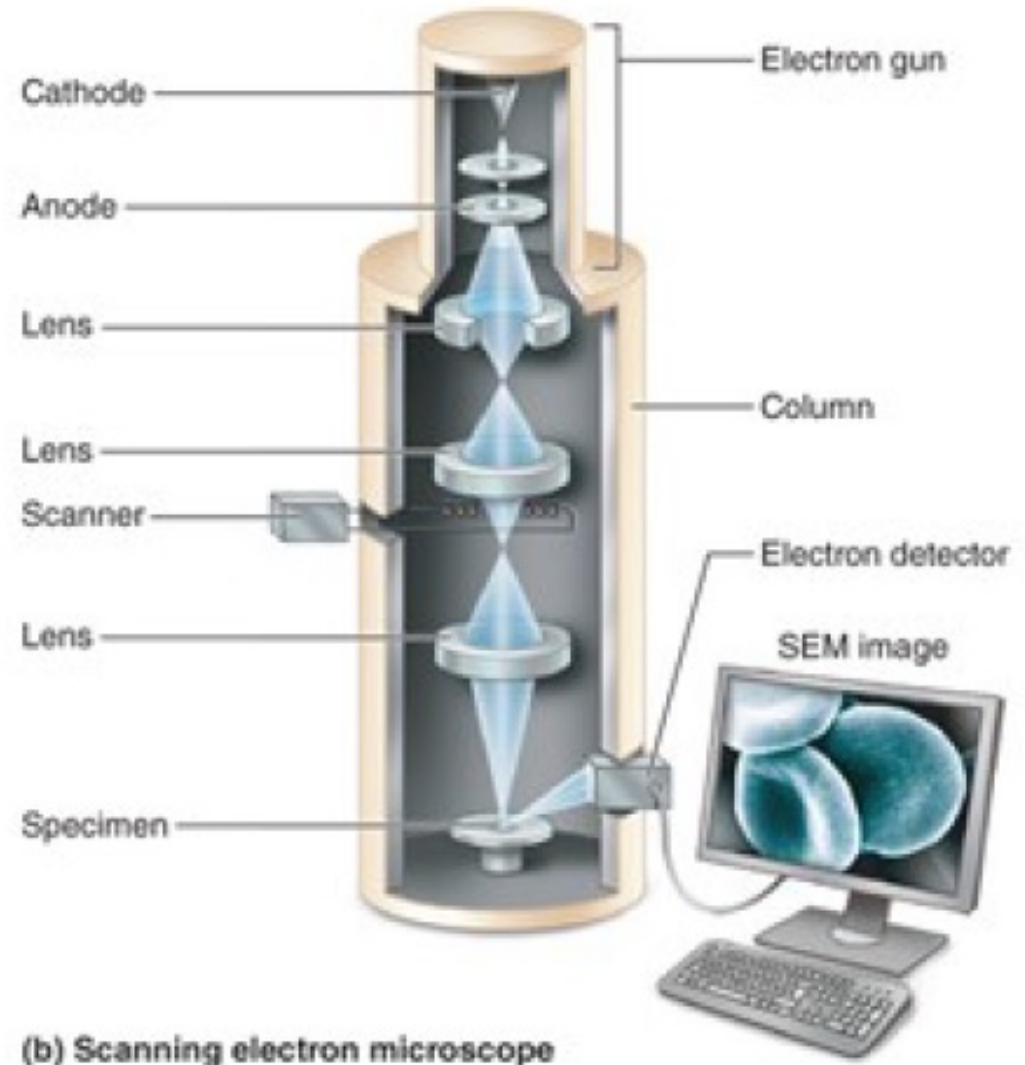
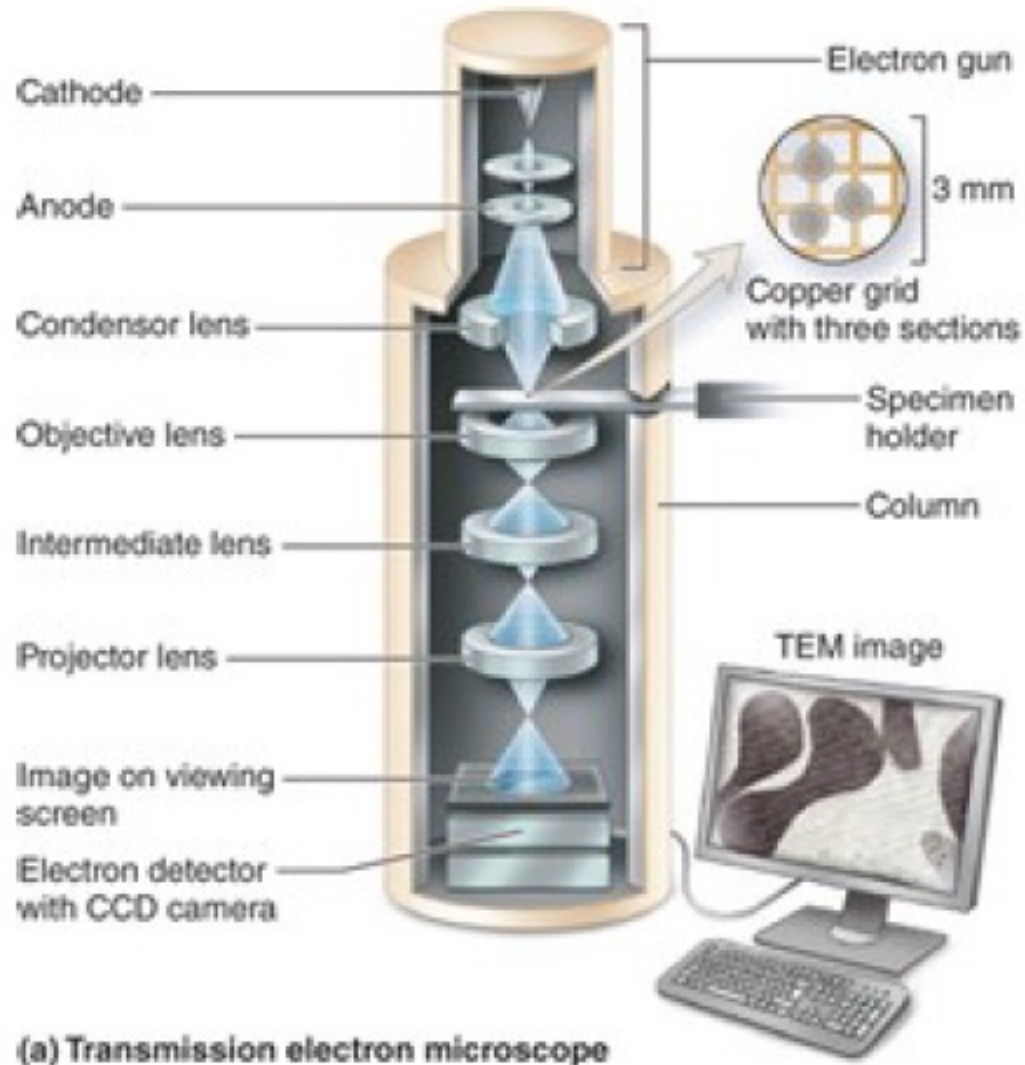
Components and light path of a bright-field microscope.



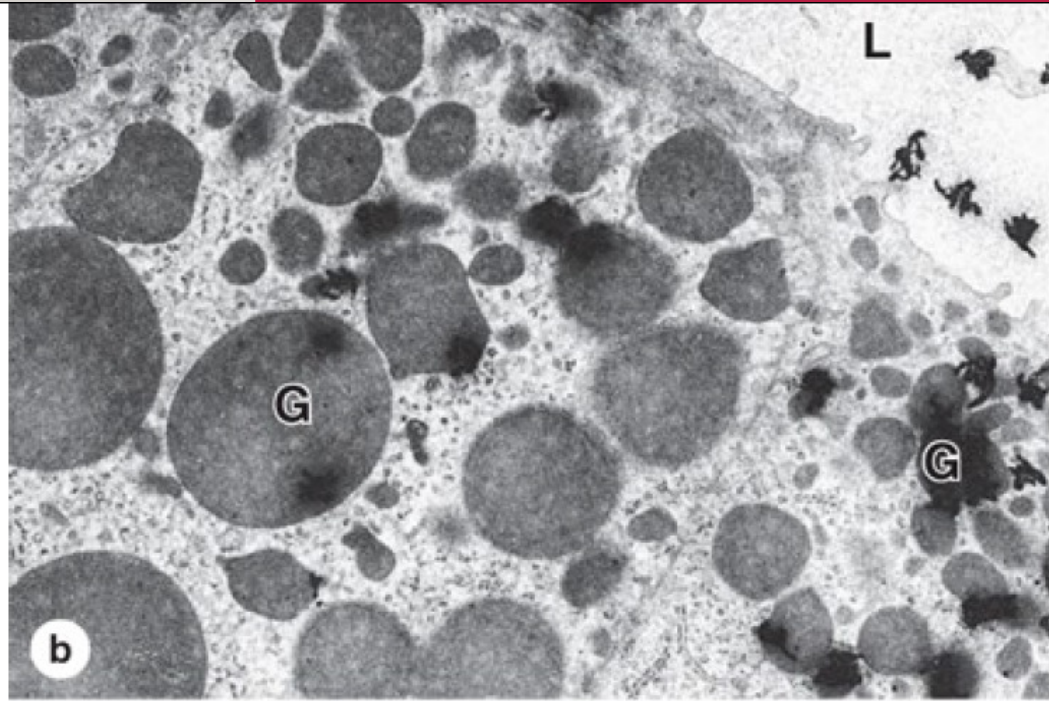
PHASE-CONTRAST MICROSCOPY



ELECTRON MICROSCOPE



TEM



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