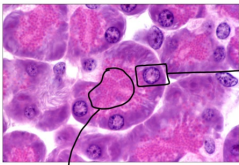


# Histology - Stains

\* Hematoxylin and eosin → the most basic type of stains

① 

Hematoxylin behaves like a basic dye it stains basophilic tissue components like → DNA [nucleus] → RNA → glycosaminoglycans

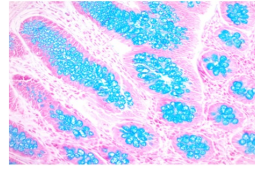
Eosin, an acidic dye staining acidophilic tissue components with **Pink** like → mitochondria → secretory granules → collagen

\* Hematoxylin is basic and it reacts with negatively charged tissue components staining these components in **blue**

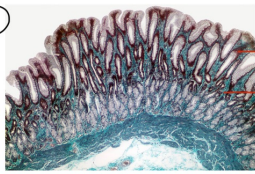
② 

The cytoplasm (Pink) eosin  
The nucleus (blue) Hematoxylin

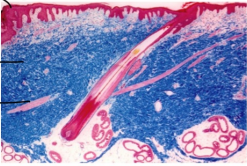
\* Alcian blue → used to stain → epithelial mucin → connective tissue → goblet cells → cartilage



\* Trichrome (Masson trichrome)

① 

nuclei (dark brown)  
connective tissue (blue)  
\* cytoplasm will be stained in pink (but not clear in this image)

② 

nuclei (dark brown)  
connective tissue (blue)  
cytoplasm (pink)

- it uses 3 colors to emphasize support fibers

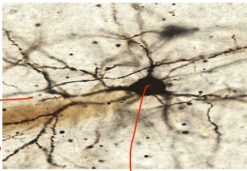
\* The Periodic acid-Schiff (PAS)



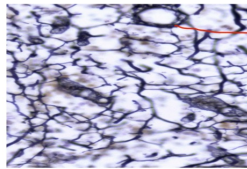
the nucleus in bluish  
the cytoplasm in pinkish more purple (magenta) than hematoxylin and eosin

it utilizes the hexose rings of Polysaccharides and other carbohydrate-rich tissue structures → these macromolecules are stained in **Purple (magenta)**

\* Silver stain (metal impregnation) → to visualize certain ECM fibers and specific cellular elements of the nervous tissue

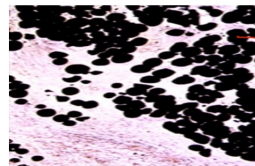


it looks like a net because of the structure of nerves  
nerve cell (cell body)



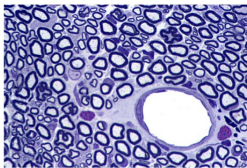
reticular fibres  
→ Collagen type III

\* Sudan black → lipid-soluble dyes stain lipids

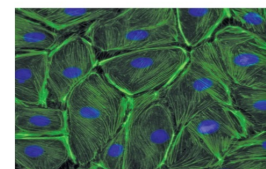
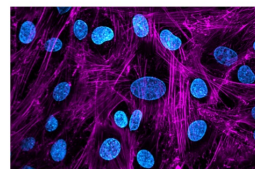


lipids  
\* in other types of staining like H&E lipids are removed in tissue preparation in the steps that remove lipids / so sudan black helps in observing them

\* Toluidine blue → A basic dye

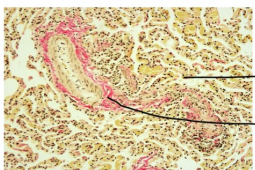


\* Immunofluorescence → with a black background



\* Requires UV light where the UV light reacts with the fluorophore emitting colors that we see  
\* the nuclei are stained in blue

\* Van Gieson method



muscle (yellow)  
collagen (pink)

\* used to view muscles and collagen

\* Phase contrast microscope specimen



\* TEM

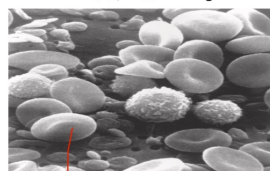
→ a 2d image



RBC  
WBC

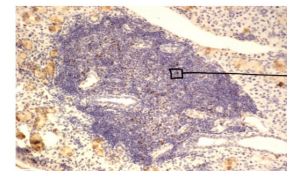
\* SEM

→ a 3d image



RBC

\* Immunohistochemical staining



Specific structures are identified by protein reacting with an (antigen)

(antibody) having an enzyme attached, this enzyme will react with an added substance to give a specific color

→ And we will know that the protein we want is where the color appears