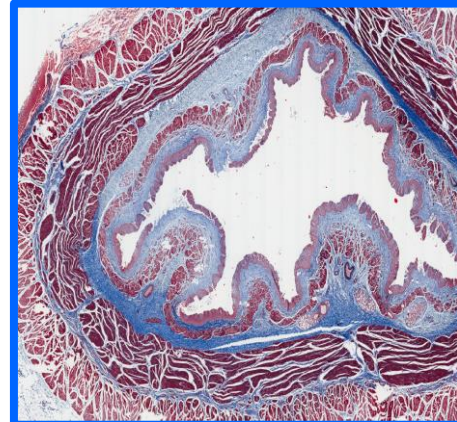
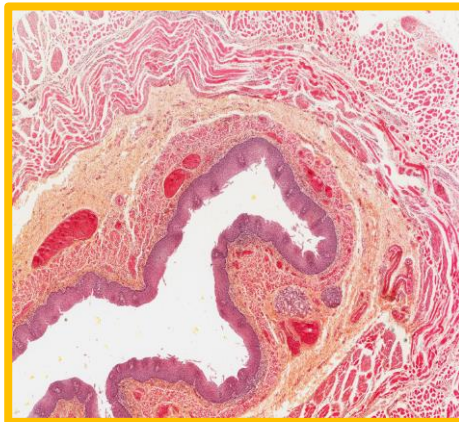
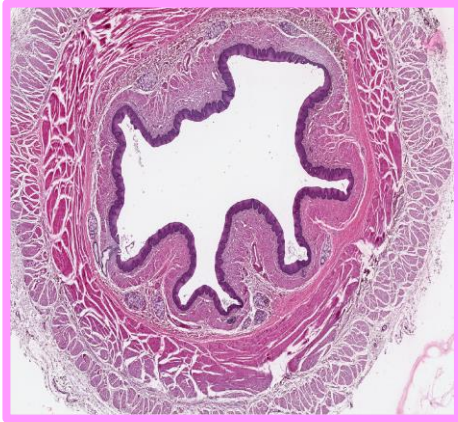




Overview of staining methods in histology



STAINING

Different cell or tissue structures are not apparent without staining. Cellular structures exhibit different affinity to staining dyes:

alkaline dyes – react with anionic structures  **BASOPHILIA**
(basophilic structures in the cell – nucleus, nucleolus, ribosomes, cytoplasm with rough ER)

acid dyes – react with cationic groups  **ACIDOPHILIA** –
(acidophilic structures in the cell – cytoplasm, smooth ER)

no or weak reaction  **NEUTROPHILIA**

ROUTINE STAINING with HEMATOXYLINE – EOSIN (HE)

Hematoxyline – basic (nuclear) dye

Eosin – acid (cytoplasmic) dye



- Staining procedure:
- paraffin must be removed (dissolved) by xylene
- sections are rehydrated in descending series of ethanol (100% →96% →80%)
- staining with hematoxyline
- differentiation in acid ethanol and water (excess of dye is removed)
- staining with eosin
- rinsing in water (excess of dye is removed)
- dehydration in graded ethanol series (80% →96% →100%)
- clearing in xylene

HEMATOXYLINE – EOSIN (HE)

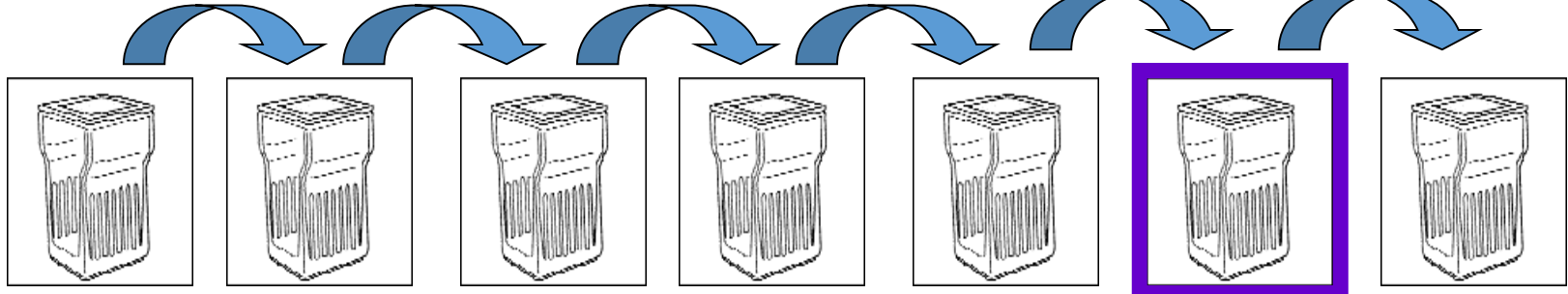
Deparaffination

Rehydration

Washing

Staining

Differentiation



Xylen I

Xylen II

100% ethanol

96% ethanol

H₂O

hematoxyline ethanol

acid ethanol

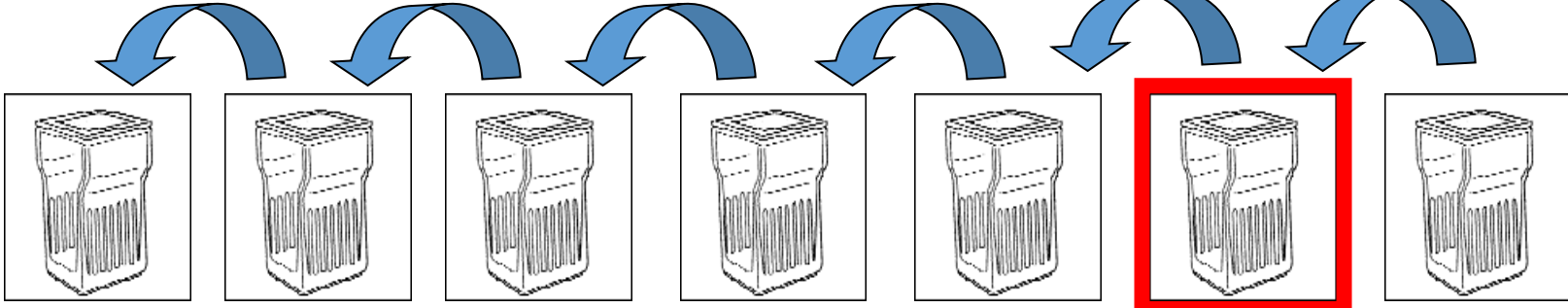
Clearing

Dehydration

Washing

Staining

Washing



Xylen IV

xylen III

100% ethanol

96% ethanol

H₂O

eosin

H₂O



Automatic slide stainer



staining set of boxes with media



Hematoxyline Eosin (HE)

Results of staining:

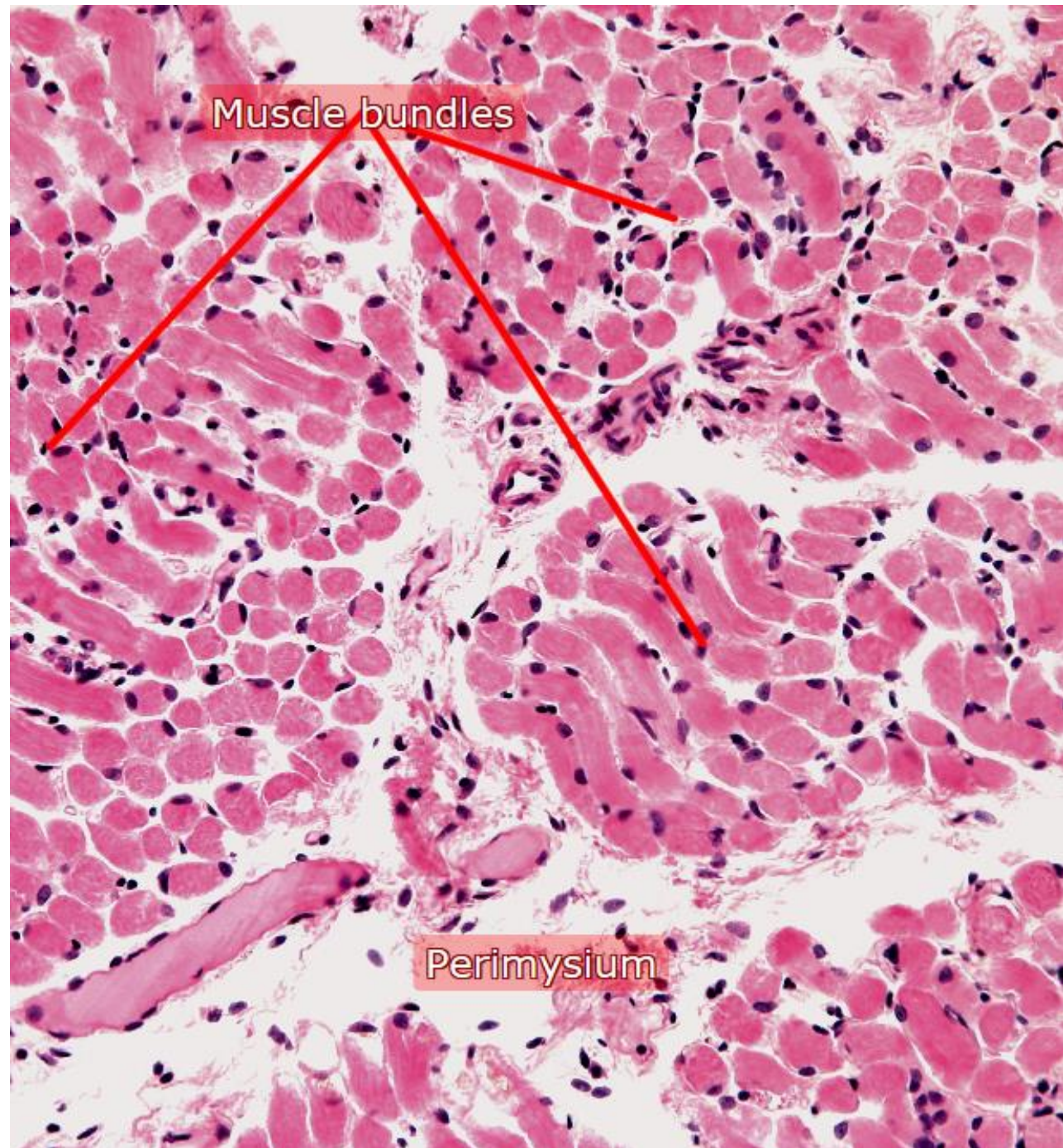
cell nuclei – blue/violet

cytoplasm – pink

collagen fibers – pink

muscle cells – dark pink/red

2 – Apex linguae (HE)



Hematoxyline

Eosin

Saffron

(HES)

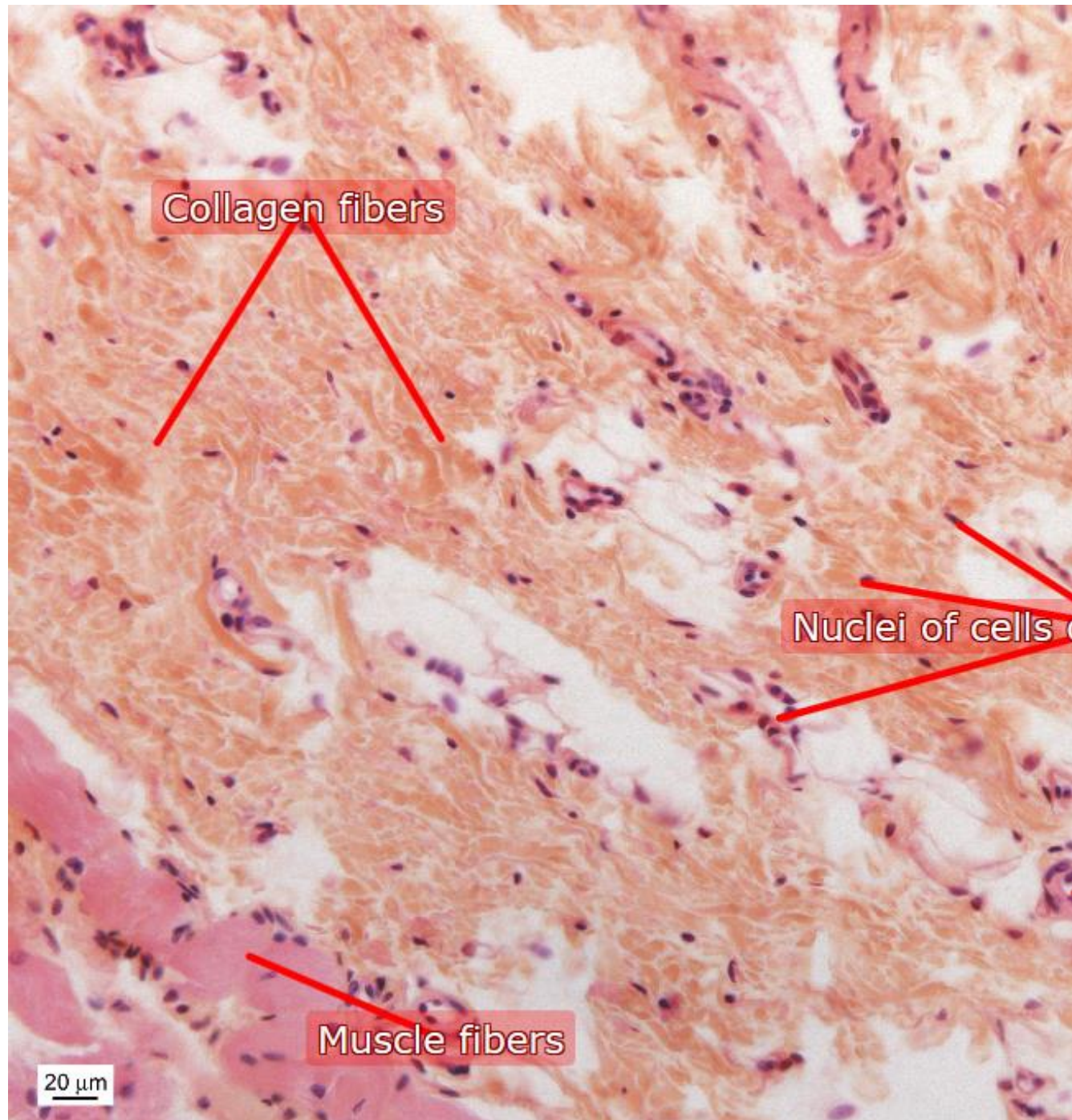
Results of staining:

cell nuclei – blue/violet
cell cytoplasm – pink
collagen fibers – yellow



yellow Masson trichrom

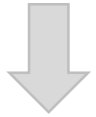
11 – Oesophagus (HES)



Azokarmin
Aniline blue
Orange G
(AZAN)

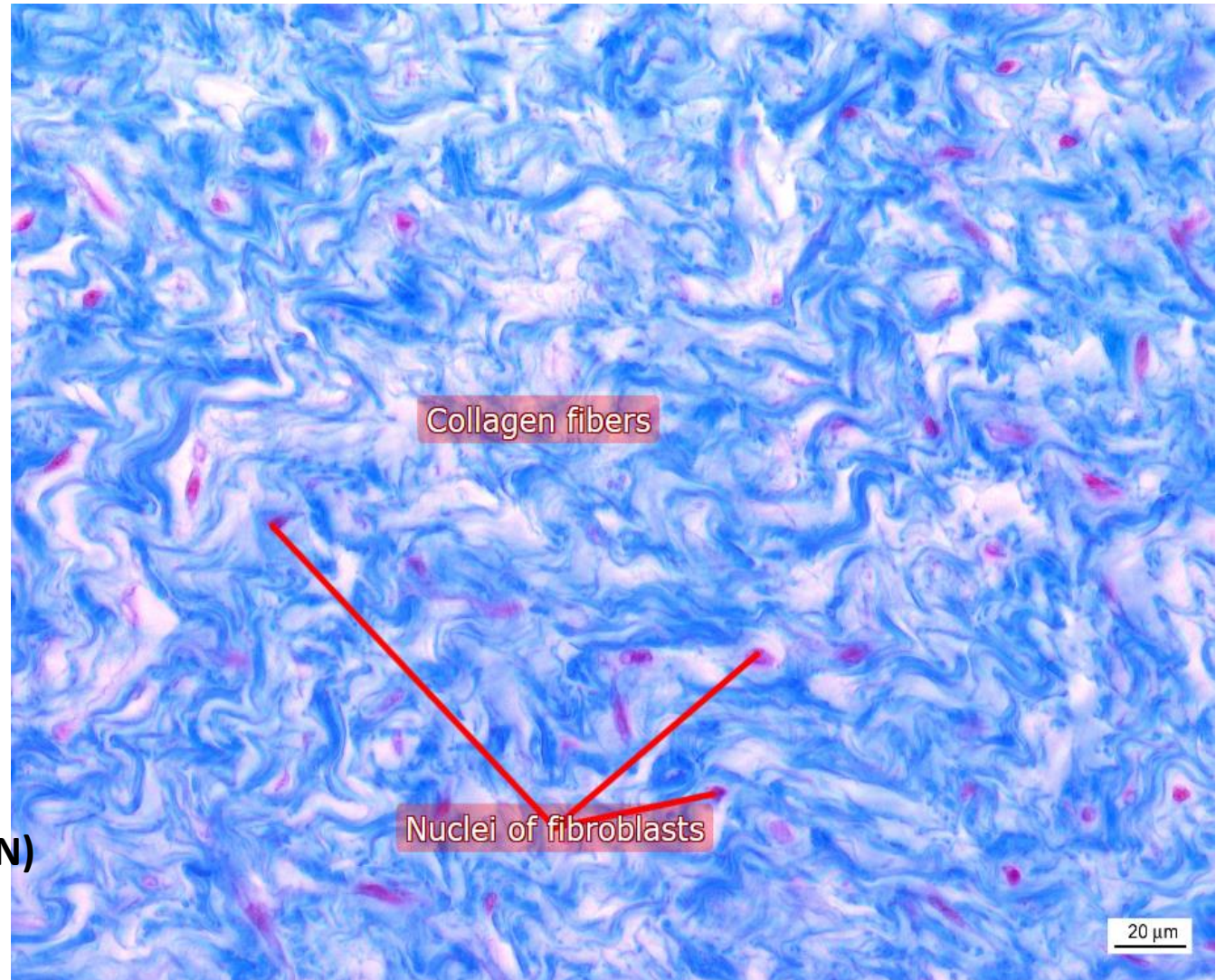
Results of staining:

- cell nuclei – purple
- cell cytoplasm – pink
- collagen fibers – blue
- erythrocytes – orange

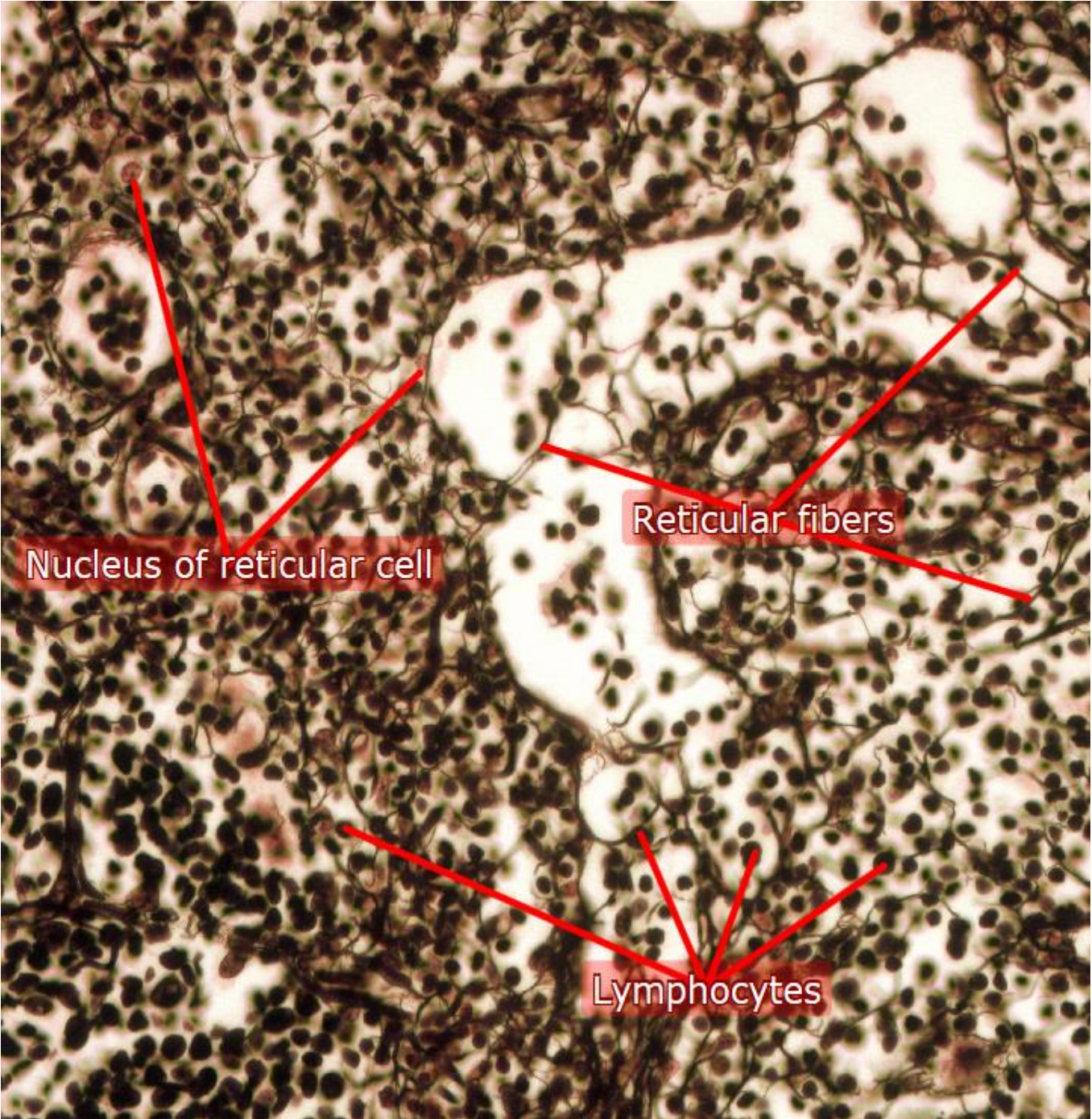


blue Masson trichrom

99 – umbilical cord (AZAN)



Impregnation with AgNO_3



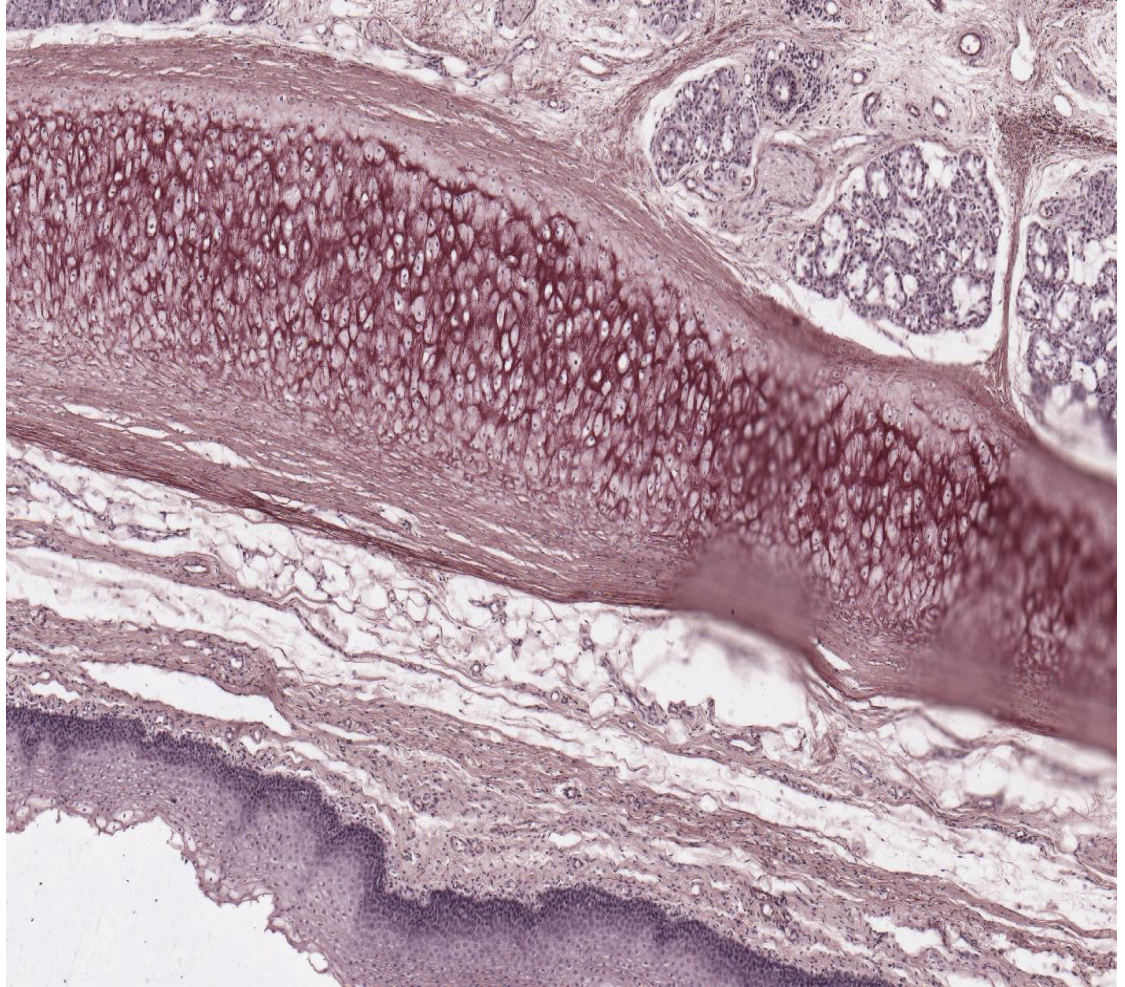
68 – Lien (impregnation)

Special staining methods

Slide 28 – elastic cartilage

Staining – **orcein**

Result – **red-brown elastic fibers**

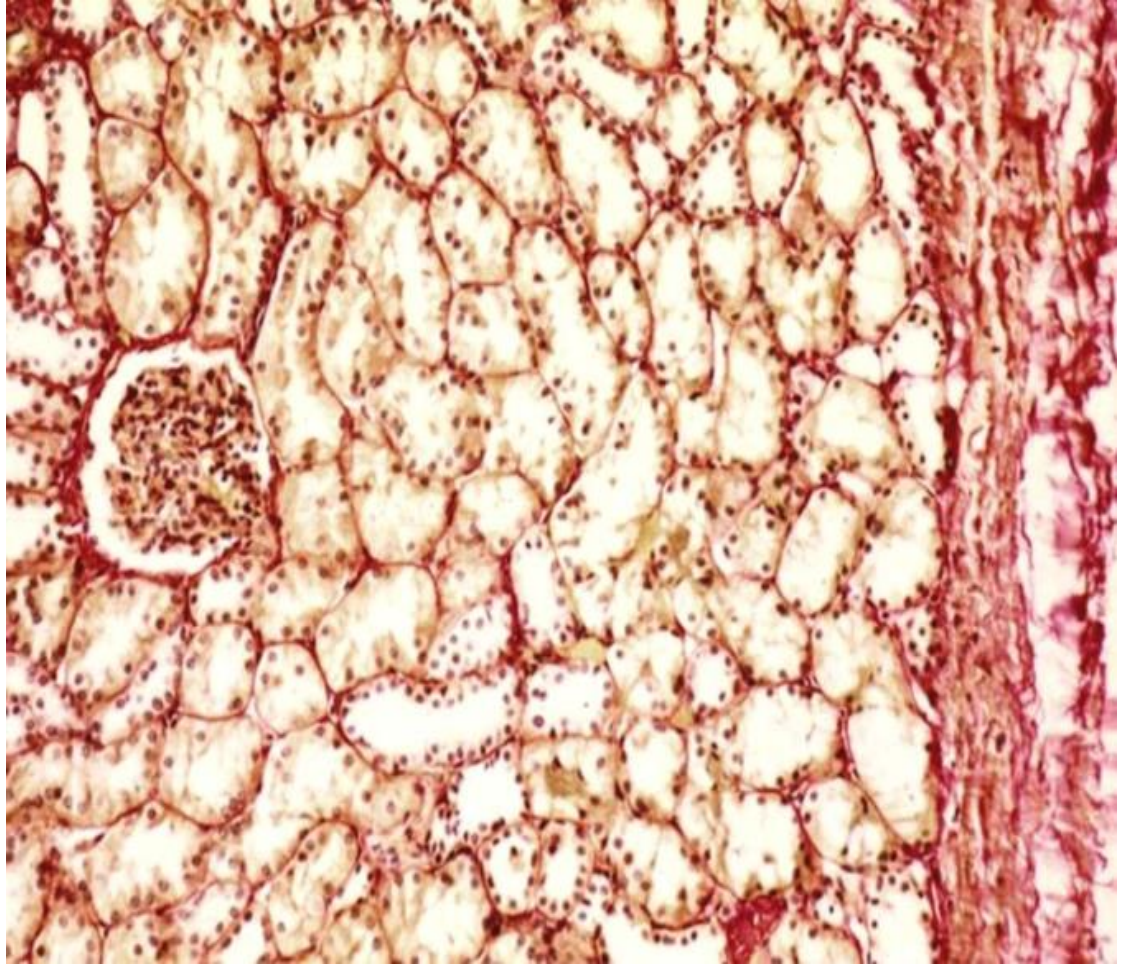


Special staining methods

Slide 31 – renal cortex

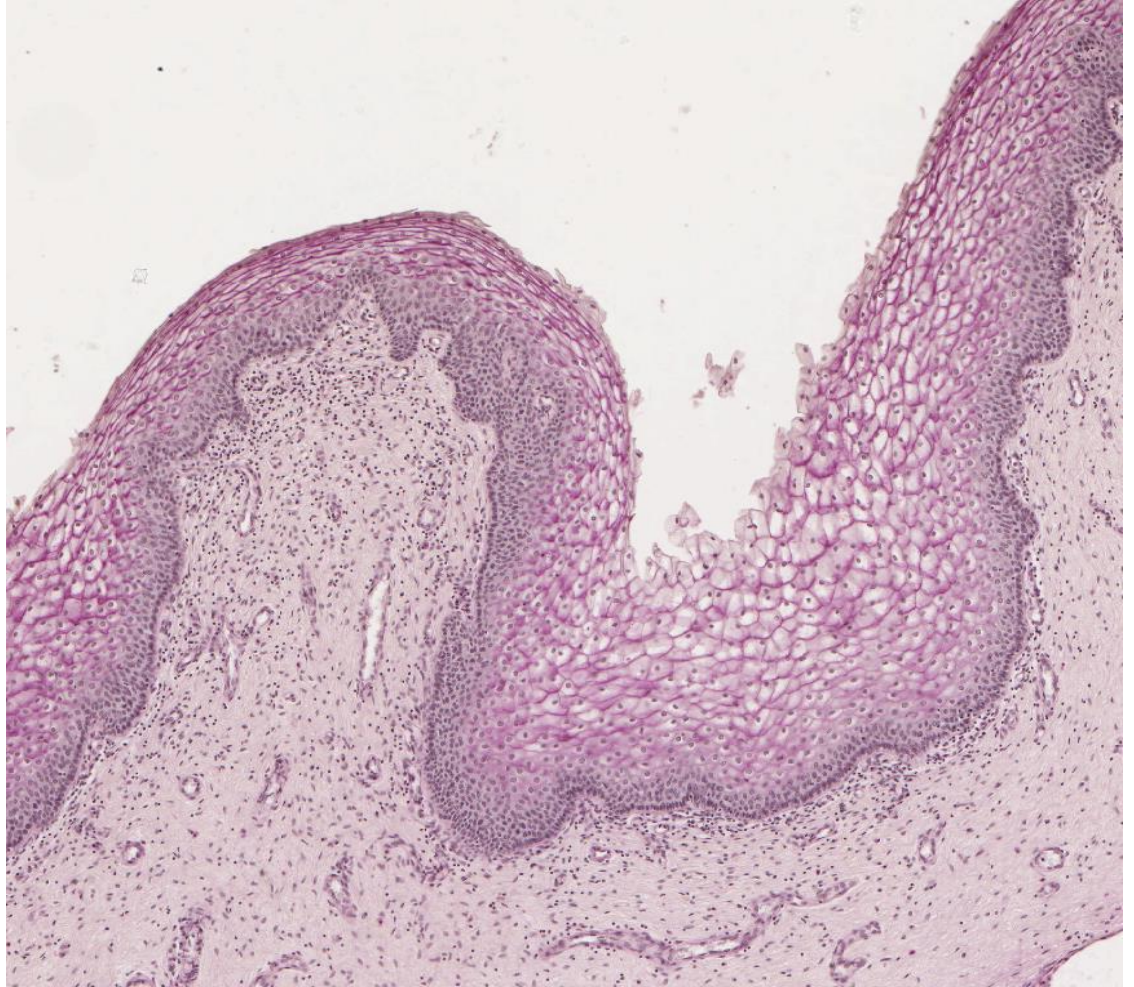
Staining – **Weigert-van Giesson**

Result – **cherry-red collagen fibers**



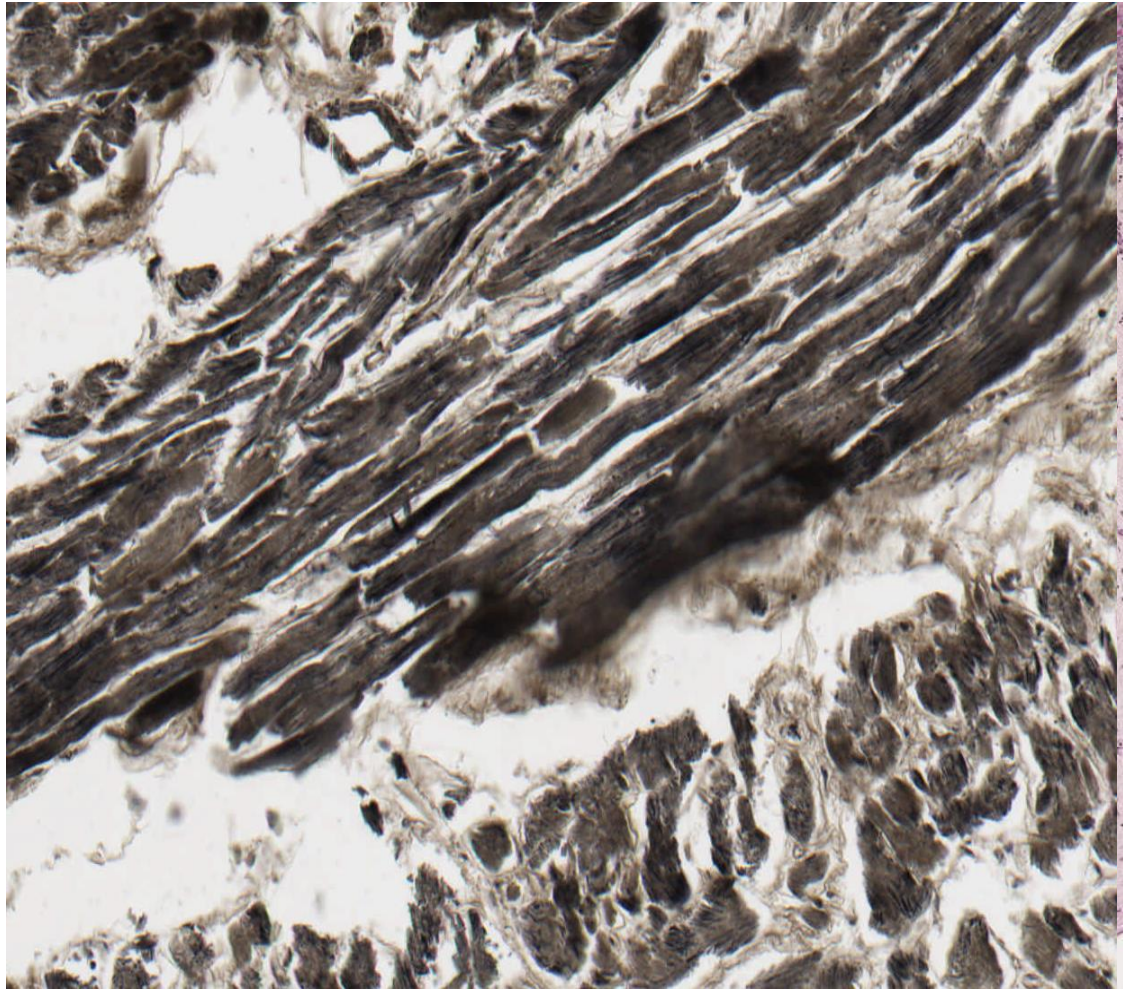
Special staining methods

Slide 49 – vagina - glycogen
Staining – **Best carmine**
Result – **dark pink glycogen**



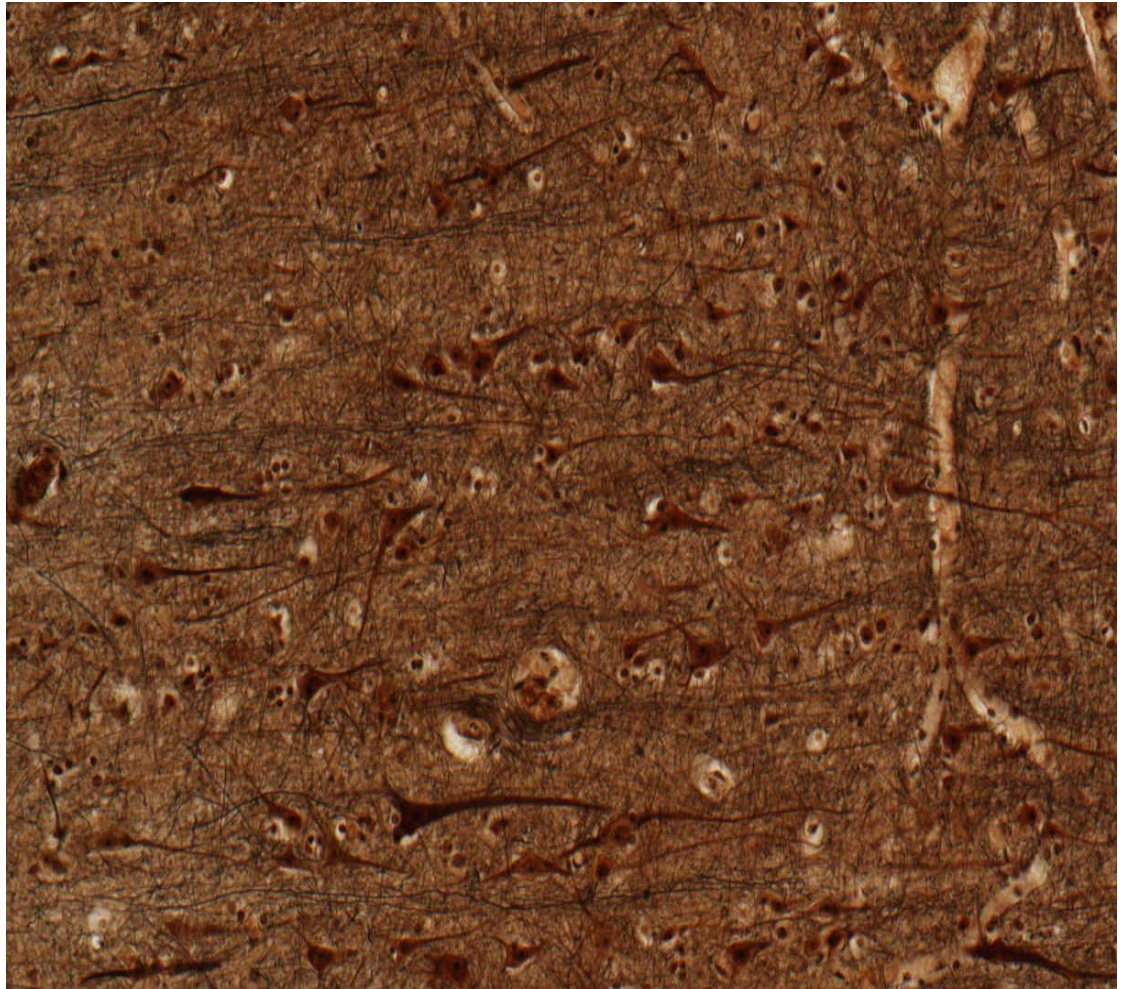
Special staining methods

Slide 65 – myocardium
Staining – **Heidenhain**
Result – **black cardiomyocytes**



Special staining methods

Slide 76 –cortex cerebri
Staining – **impregnation**
Result – **brown cells**

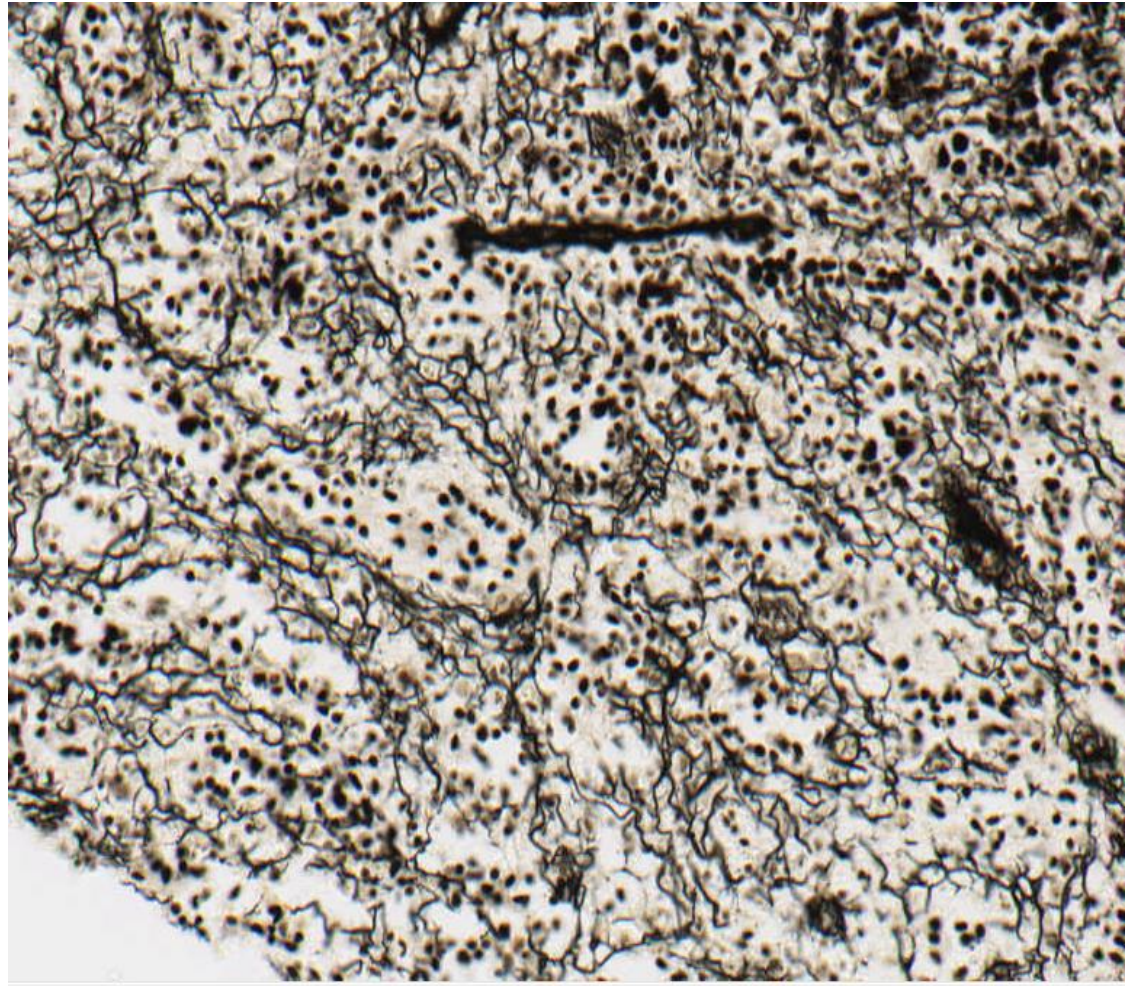


Special staining methods

Slide 68 – lien

Staining – **impregnation**

Result – **black reticular fibers**

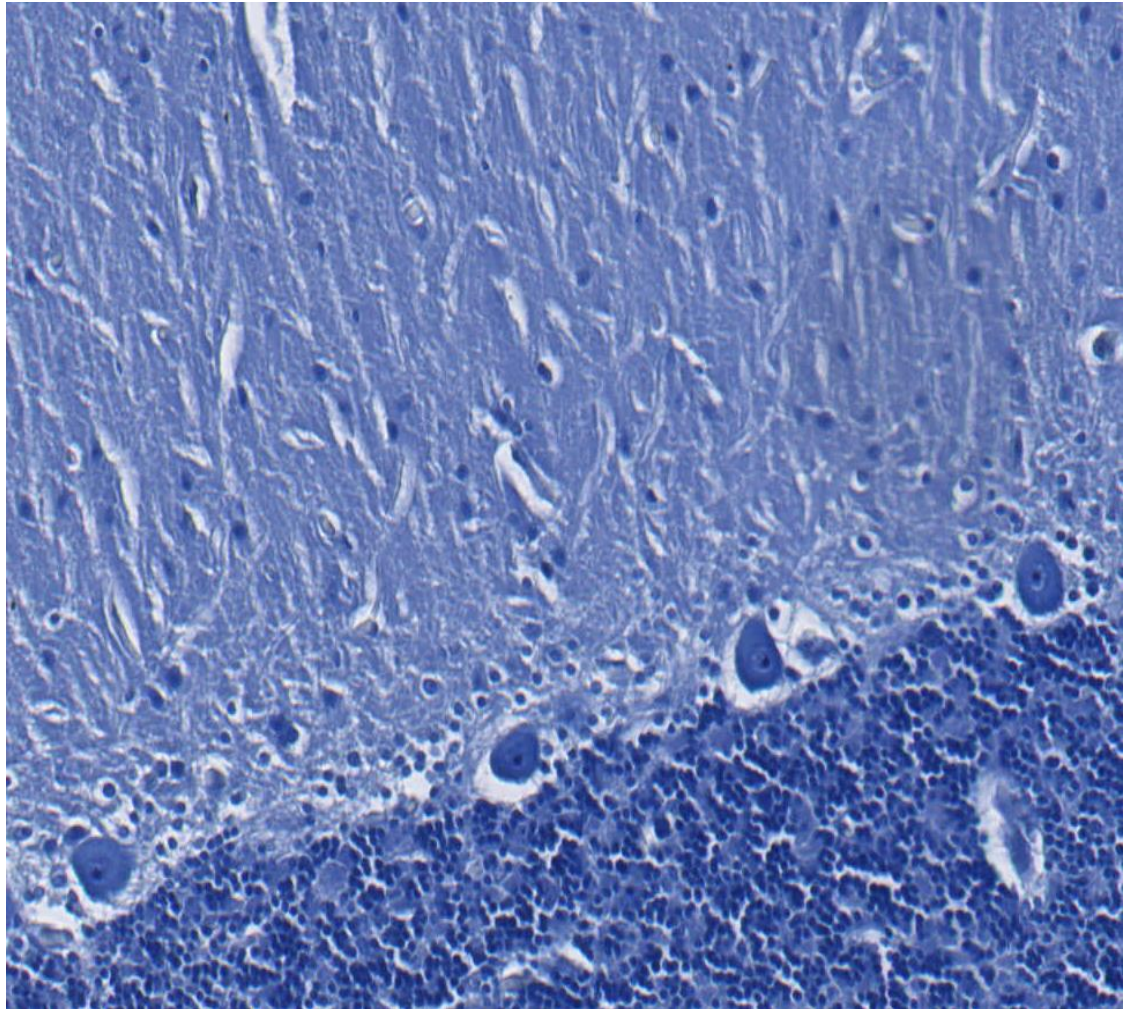


Special staining methods

Slide 78 – cerebellum

Staining – **Nissl**

Result – **blue RER, N, ncl.**

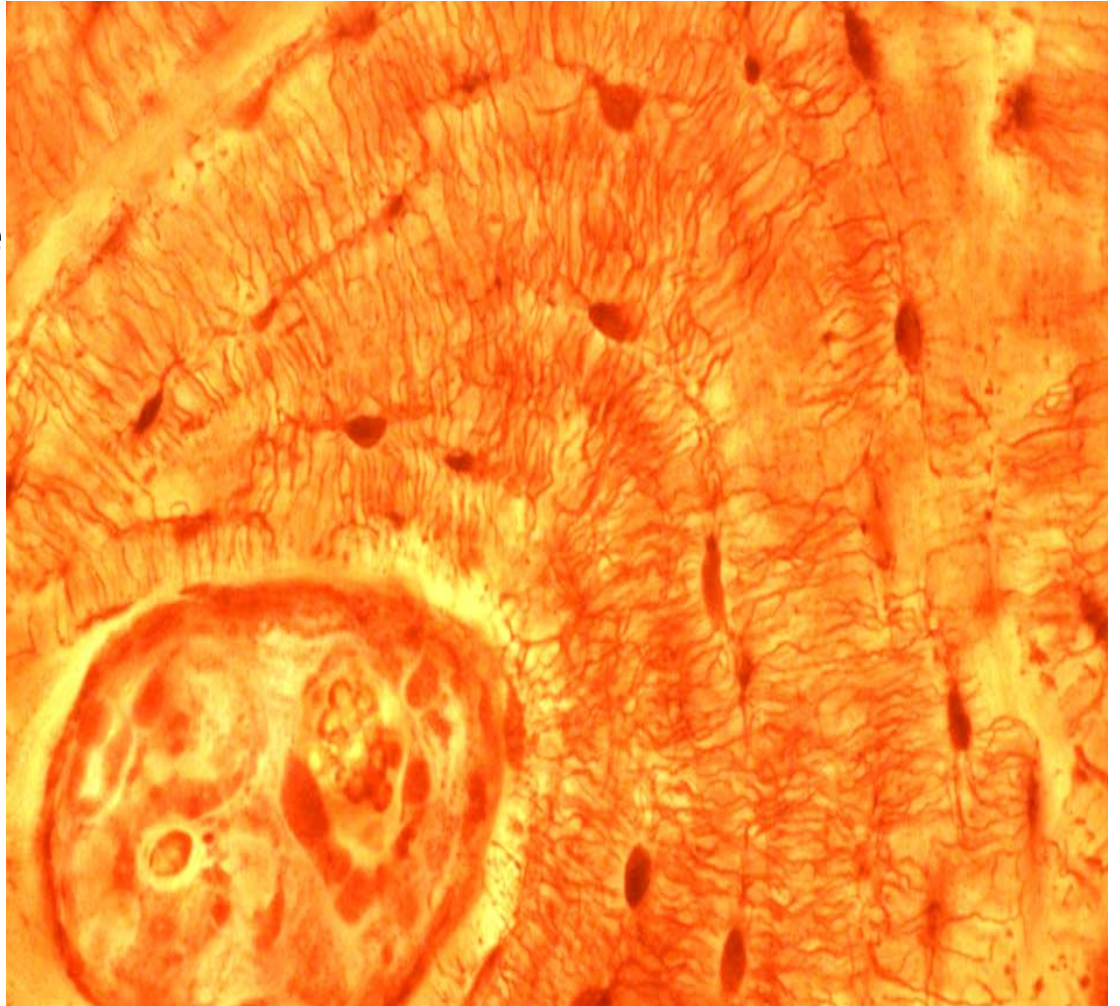


Special staining methods

Slide 95 – bone

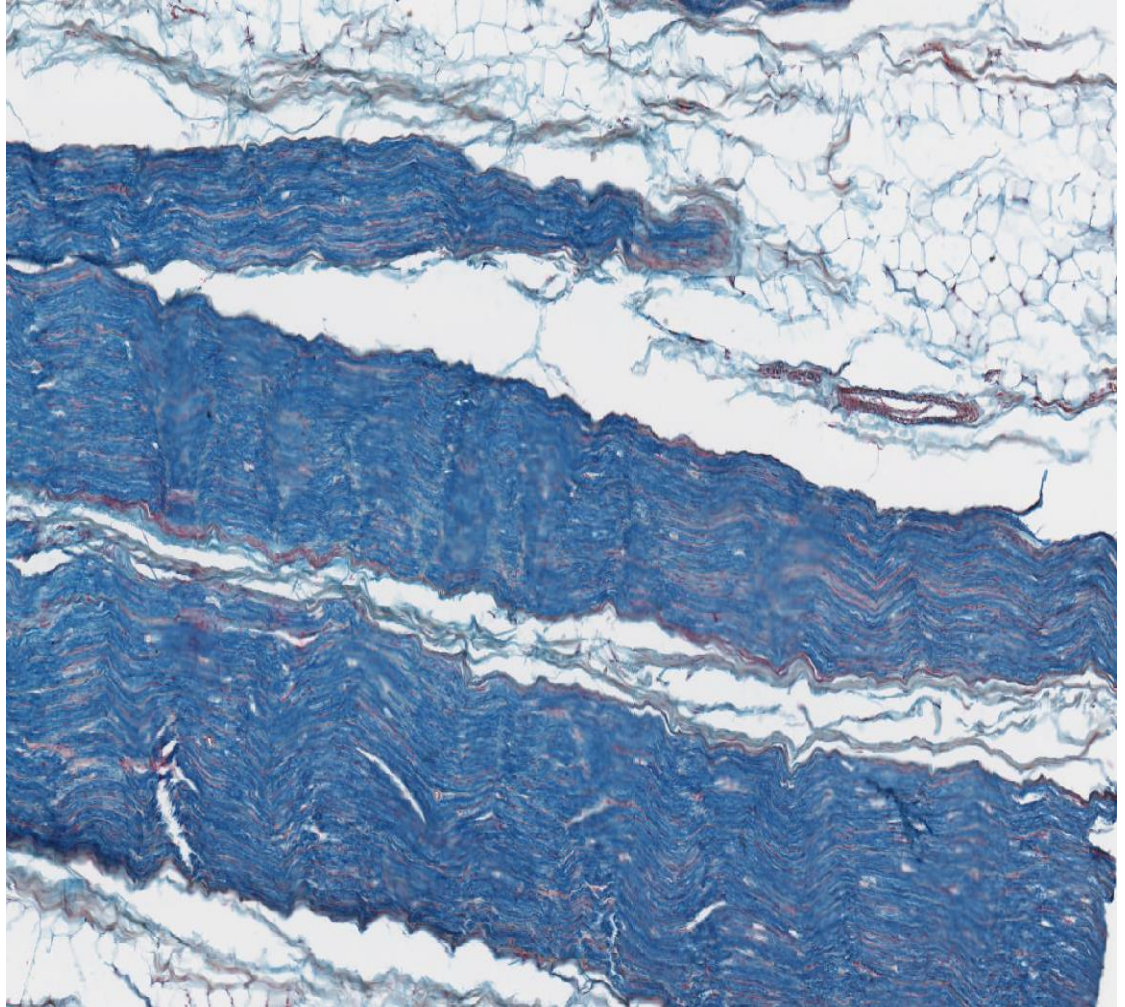
Staining – **Schmorl**

Result – rusty brown **bone tissue**



Special staining methods

Slide 87 – nerve - myelin
Staining – **luxol blue**
Result – **blue myelin**



Overview of staining methods in histology

Slides:

2 – Apex linguae (HE)

11 – Oesophagus (HEŠ)

99 – Pupečník (AZAN)

68 – Lien (impregnace)

64, 65 – Myokard (HE, Heidenhain)

Numbers by the slides indicate their position in sets in Microscopic Hall, not in online atlases.

They allow you to find them easily and study them using a microscope when the normal classes are opened.