Histology of the Nervous System and Sense Organs

The essential histological items that have to be recognized in the samples. firs practical assesment

15. Motor end plate (AChE)

axon
neuro-muscular junction
striated muscle fiber

70. Peripherial nerve (cross section; HE)

bundle of nerve fibers
    axon
    negative image of myelin sheath (the lipid was dissolved during the histological preparation)
    Schwann cells
endoneurium
perineurium
epineurium
    fibrocytes
    adipocyes

71. Peripherial nerve (longitudinal section; HE)

bundle of nerve fibers
    axon
    negative image of myelin sheath (the lipid was dissolved during the histological preparation)
    Schwann cells
endoneurium
perineurium
epineurium
    fibrocytes
    adipocyes

72. Peripherial nerve (cross section, OsO_4)

bundle of nerve fibers
    negative image of axon (unstained)
    myelin sheath
endoneurium
perineurium
epineurium
    adipocytes

73. Peripherial nerve ((longitudinal section, OsO_4)

bundle of nerve fibers
    negative image of axon (unstained)
    myelin sheath
        node of Ranvier
endoneurium
perineurium
epineurium
    adipocytes

74. Sensory ganglion (HE)

pseudounipolar neurons
- perikaryon
- euchromatic nucleus
  - nucleolus
- Nissl bodies/ tigroid-granules

satellite cells
nerve fibers
- axon
- negative image of myelin sheath (the lipid was dissolved during the histological preparation)
- Schwann cells

75. Sensory nerve ending (Ag)

epidermis
- stratified squamous keratinized epithelium

dermis
- stratum papillare (dermal papillae)
  - Meissner‘s corpuscle
    - axon
- stratum reticulare

hypodermis
- peripherial nerves
- vessels

76. Sensory nerve ending - Vater-Pacinian corpuscle (HE)

epidermis
- stratified squamous keratinized epithelium

dermis
- stratum papillare (dermal papillae)
- stratum reticulare
- merocrine sweat glands

hypodermis
- Vater-Pacinian corpuscle
  - capsule (fibrocytes)
  - l amellae (modified Schwann cells)
  - axon
- adipocytes
- peripherial nerves
- vessels

77. Vegetative ganglion (Ag)

multipolar neurons
- perikaryon
- dendrites
- nerve fibers
- nucleus
  - nucleolus

78. Spinal cord (HE)

anterior median fissure
posterior median sulcus
white matter

- anterior funiculus
- lateral funiculus
- posterior funiculus
- anterior white commissure
- glial cells
    - heterochromatic nucleus

gray matter
- anterior horn
    - Deiters's motoneurons / alpha motor neurons
        - perikaryon
            - Nissl-bodies / tigroid-granules
        - euchromatic nucleus
            - nucleolus
- lateral horn
- posterior horn
- neuropil

canalis centralis
- ependyma cells

meningies
- pia mater
- arachnoid mater
    - subarachnoid space
        - roots (rootles)
- dura mater (meningeal layer)
- epidural space
    - adipose tissue
    - veins of the internal vertebral venous plexus

79. Meninges (HE)

longitudinal cerebral fissure
sulcus
gyrus
- white matter
- gray matter

dura mater
- cerebral falx
- superior sagittal sinus
- lateral lacuna

arachnoid mater
- the fused layers of dural border cells and arachnoid barrier cells (external layer of arachnoid)
- internal layer
    - meningeal cells

subarachnoid space
- arachnoid trabeculae
- vessels
    - meningeal cells

arachnoid granulations
pia mater
- layer of meningeal cells
- subpial space

cerebral cortex
- vessels
- perivascular cells
- Robin-Virchow's space

80. Medulla oblongata (cross section; myelin staining and cresylviolet)

gracile nucleus

cuneate nucleus
accessory cuneate nucleus
internal arcuate fibers
medial lemniscus
spinal trigeminal nucleus
spinal trigeminal tract
hypoglossal nucleus
fibers of the hypoglossal nerve
nucleus ambiguus
dorsal nucleus of the vagus nerve
fibers of the vagus nerve
nucleus of the solitari tract
solitari tract
inferior olivary complex
pyramidal tract
central canal or 4th ventricle

81. Cerebellum (HE)

white matter
    glial cells
        heterochromatic nucleus
cerebellar cortex
    granule cell layer
    Purkinje cell layer
        Purkinje cells
            perikaryon
                Nissl bodies / tigroid-granules
            euchromatic nucleus
                nucleolus
    molecular layer
        dendritic tree of Purkinje cells

82. Cerebellum (Ag)

white matter
    axons
cerebellar cortex
    granule cell layer
        granule cells
    Purkinje cell layer
        perikaryal of Purkinje cells
    molecular layer
        dendritic tree of the Purkinje cells

83. Cerebral cortex (cresylviolet) granular cortex

molecular layer
external granular layer
external pyramidal layer
internal granular layer
(internal pyramidal layer)
multiform layer
white matter

84. Cerebral cortex (cresylviolet) agranular cortex

molecular layer
external granular layer
external pyramidal layer
(internal granular layer)
internal pyramidal layer
- giant pyramidal cells of Betz
  - nucleus
    - nucleolus
  - Nissl bodies / tigroid-granules
  - apical dendrits
  - basal dendrits
  - axon

multiform layer
white matter

85. Cerebral cortex (immunostaining - parvalbumin)

parvalbumin positive neurons
pericellular basket
boutons (axon-terminals)

86. Hippocampus (cresyviolet)

dentate gyrus
- molecular layer
- granule cell layer
  - granule cells
- polymorphic layer/ hilus

Ammon's horn (cornu Ammonis)
- regions: CA1, CA2, CA3, CA4
- layers of the hippocampus
  - str. moleculare (molecular layer)
    - str. lacunosum
  - str. radiatum
  - str. pyramidale
    - pyramidal cells
      - nucleus
        - nucleolus
      - Nissl bodies / tigroid granules
      - apical dendrits
      - basal dendrits
      - axon
  - str. oriens

fimbria of the hippocampus
alveus
lateral ventricle
choroid plexus
ependyma cells

87. Diencephalon (immunostaining - oxytocin)

supraoptic nucleus
paraventricular nucleus
hypothalamohypophyseal tract
III. ventricle

88. Astrocyta (immunostaining - GFAP)

astrocyte
membrana limitans gliae superficialis interna et externa
membrana limitans gliae perivascularis

89. Microglia (immunostaining -Iba1)

microglia cells