

THE UNIVERSITY OF CONNECTICUT
Graduate School
Meds 384, Mammalian Neuroanatomy
Cells of the Nervous System &
Spinal Cord Gross Anatomy and Histology

INSTRUCTIONS: Use the microscope in the classroom.

GOLGI SECTIONS (CASE 95-79)

Sections are numbered 2-5 to 2-13. The second number is the section number. What major part of the brain is in these sections?

Choose any section and identify:

1. A neuron with dendrites in the medulla. What is the shape of the dendrite? Is it conical or cylindrical?
2. An axon. Is it conical or cylindrical? Look for terminal boutons and boutons in passage.
3. An astrocyte
4. A blood vessel (especially look for a capillary).

In the cerebellum, please find a Purkinje cell. Identify:

1. Cell body
2. Dendrites
3. Dendritic spines

NISSL SECTIONS

Choose any section and identify:

1. Neuronal cell body
2. Astrocyte cell body
3. Oligodendrocyte cell body
4. Capillary

GROSS ANATOMY OF SPINAL CORD

Examine the specimens of the gross spinal cord.

The meninges

Use your atlas to identify the following on the gross specimens:

dura	denticulate ligaments
pia	subarachnoid space
arachnoid	subdural space

The spinal cord

Use your atlas to identify the following on the gross specimens:

spinal nerve	ventral root	cauda equina
dorsal root ganglion	anterior median fissure	filum terminale
posterior median sulcus	cervical enlargement	
dorsal root	lumbar enlargement	

The blood supply

Use your atlas to identify the following on the gross specimens:

radicular branches	coronal arteries	anterior spinal artery
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posterior spinal artery

MICROSCOPIC ANATOMY OF SPINAL CORD

Use your microscope and the set of teaching slides.

Gray and white matter

Use a textbook or your atlas to locate each on the slide with a low magnification lens:

white matter	lateral funiculus (columns)	ventral horn
gray matter	ventral funiculus (columns)	intermediate horn
dorsal funiculus (columns)	dorsal horn	

Cellular anatomy of the spinal gray matter

With a high magnification objective, identify a **motor neuron** in the **ventral horn** of the **spinal gray**, (**Lamina IX**). At which levels do you find the largest number motor neurons? What type of information do motor neurons receive from primary afferents (the dorsal root ganglion cells)? Where do the axons of motor neurons synapse?

With a high magnification lens, identify **granule cells** in **substantia gelatinosa (layer II)** and intermediate-sized neurons in **nucleus proprius (layer IV)** of the dorsal horn of the spinal cord. What is the function of the cells in nucleus proprius? What type of information do they receive from primary afferents?