الكلية	الصيدلة
القسم	العلوم المختبرية السريرية
المادة باللغة الانجليزية	Histology
المادة باللغة العربية	علم الانسجة
المرحلة الدراسية	الاولى
اسم التدريسي	م.م علاء عماد عبدالرزاق
عنوان المحاضرة باللغة الانجليزية	Nervous System
عنوان المحاضرة باللغة العربية	الجهاز العصبي
رقم المحاضرة	الرابعة
المصادر والمراجع	Junqueira's Basic Histology: Text and Atlas

محتوى المحاضرة

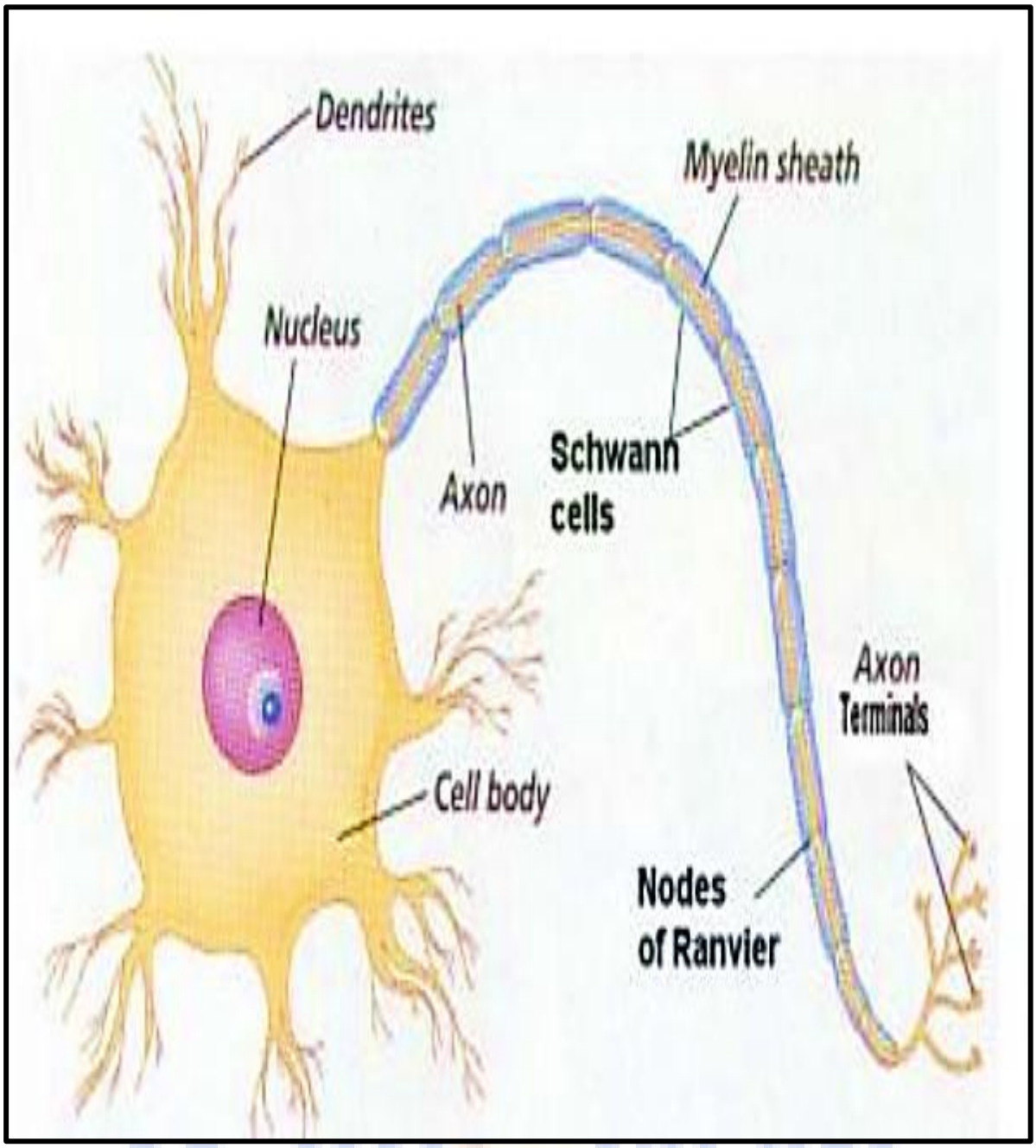
- The most complex system in the body is formed by a network of many billion **nerve cells (neurons),** all assisted by many more supporting cells called **glial cells.**

Nervous system divided into

- **Central nervous system (CNS)**
  - **Brain**
  - **spinal cord**
- **Peripheral nervous system (PNS)**
  - peripheral nerves
    - **cranial nerves** (emanate from the brain)
    - **spinal nerves** (emanate from the spinal cord)
  - ganglia (collections of nerve cell bodies outside the CNS)

- **Basic functional cell of nervous system**
- **Transmits impulses up to (250 mph)**

- **Cell Body:** which contains the nucleus and most of the cell's organelles.
- **Axon:** fiber that carries impulses away from cell body.
- **Dendrite:** receive stimuli from other neurons at unique sites called synapses.
- **Schwann Cells:** cells which produce myelin or fat layer in the peripheral nervous System.
- **Myelin sheath:** dense lipid layer that insulates the axon – makes the axon look gray.



Types of Neurons

1. **Functional (Based on The Function Performed)**
   - **Sensory neurons:** bring messages to CNS.
   - **Motor neurons:** carry messages from CNS.
   - **Interneurons:** between sensory & motor neurons in the CNS.

   - Types of Neurons

2. **Morphological (Based on The Number of Processes)**

- ❖ **Unipolar neuron.**
- ❖ **Bipolar neuron.**
- ❖ **Multipolar neuron.**
- ❖ **Pseudo-unipolar neuron.**

Functions of The Nervous System ❖

1. Gathers information from both inside and outside the body **(Sensory** ❖ **Function).**

2. Transmits information to the processing areas of the brain and spine.

❖

3. Processes the information in the brain and spine **(Integration Function).**

❖

4. Sends information to the muscles, glands, and organs so they can respond
appropriately **(Motor Function) .**

- ❖ Central Nervous System
- ❖ **Brain**
  - ➢ **Cerebellum**
  - ➢ **Cerebrum**
  - ➢ **Brain stem – medulla, pons, midbrain**
  - ➢ **Diencephalon – thalamus & hypothalamus**
- ❑ **Gray matter**
  - periphery (cortex) of the cerebrum and cerebellum
  - basal ganglia
- ❑ **White matter** lies deep to the cortex

❖ **Spinal cord**

- **Gray matter** lies centrally where it forms an H shape in cross-section
- **White matter** is located in the periphery

- Peripheral Nervous System
- peripheral nervous system (PNS) is that part of nervous system that lies outside brain and spinal cord. It plays key role in both sending information from different areas of your body back to your brain, as well as carrying out commands from your brain to various parts of your body.
- **Autonomic**: These are nervous system processes that can brain runs automatically and without thinking about them.
- **Somatic**: These are functions you manage by thinking about them.