

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



Benha University
Faculty of Vet Medicine
Histology Dept.



NERVOUS SYSTEM

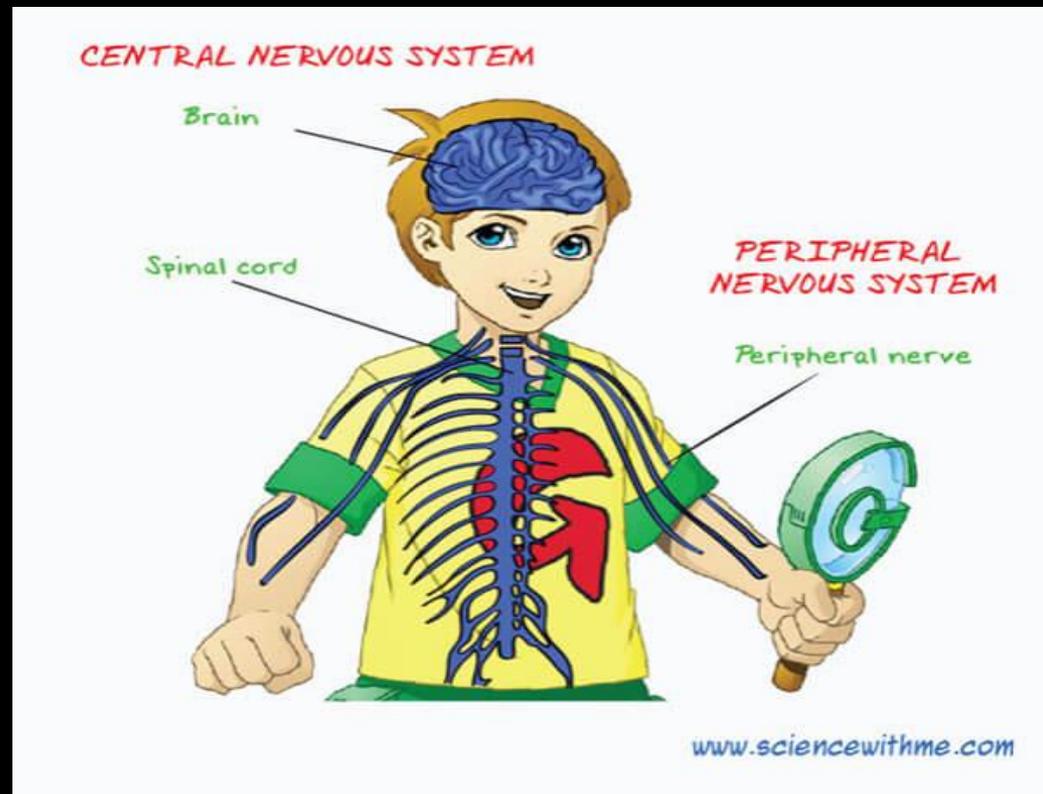
First year – Second semester

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■ NERVOUS SYSTEM



A- Peripheral NS (PNS)

- 1- Peripheral ganglia
- 2- Peripheral nerves
- 3- P nerve endings

B- Central NS (CNS)

- 1- cerebrum
- 2- cerebellum
- 3- Spinal cord



Peripheral Nervous System



Peripheral Ganglia



■ *Peripheral ganglia*

- This is collection of nerve cells bodies outside the CNS.
- There are **2 types** according to basis of morphology & function

1-Cerebrospinal ganglia

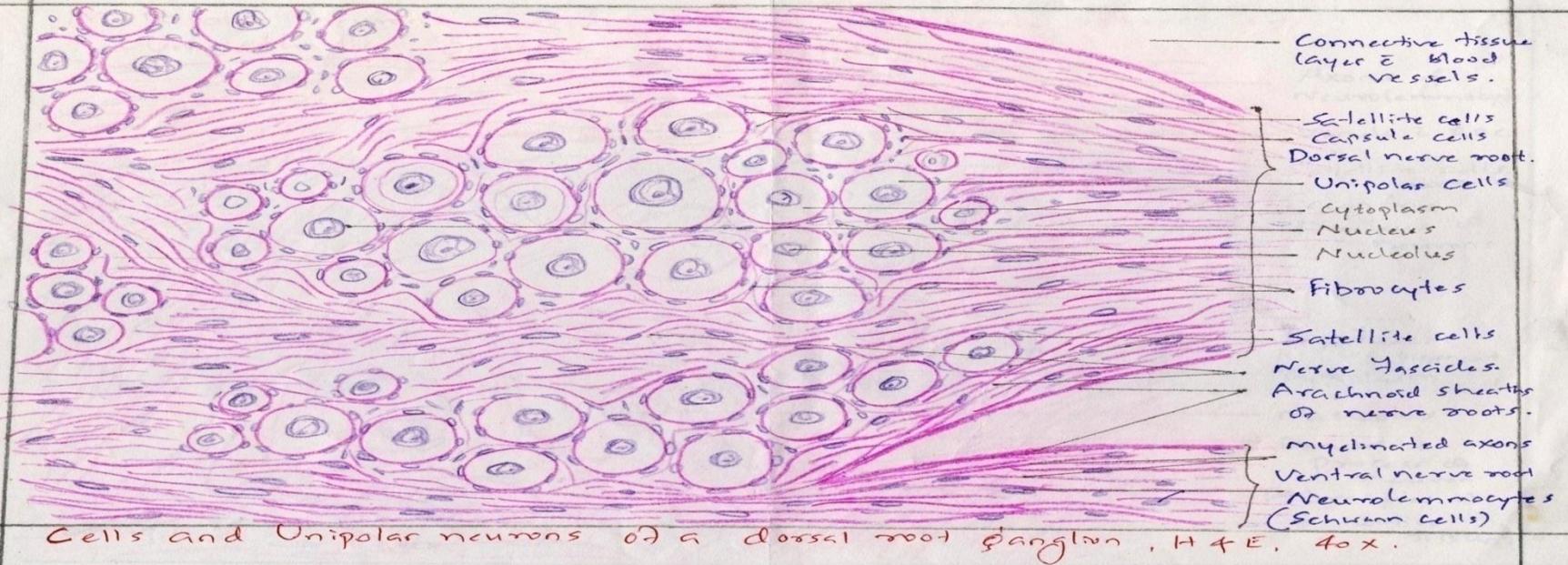
2- Autonomic ganglia



■ *Cerebrospinal Ganglia*

- It includes cerebral and spinal ganglia.
- present on the
 - 1- Dorsal root of the spinal nerve.
 - 2- Sensory branch of the cranial nerve.





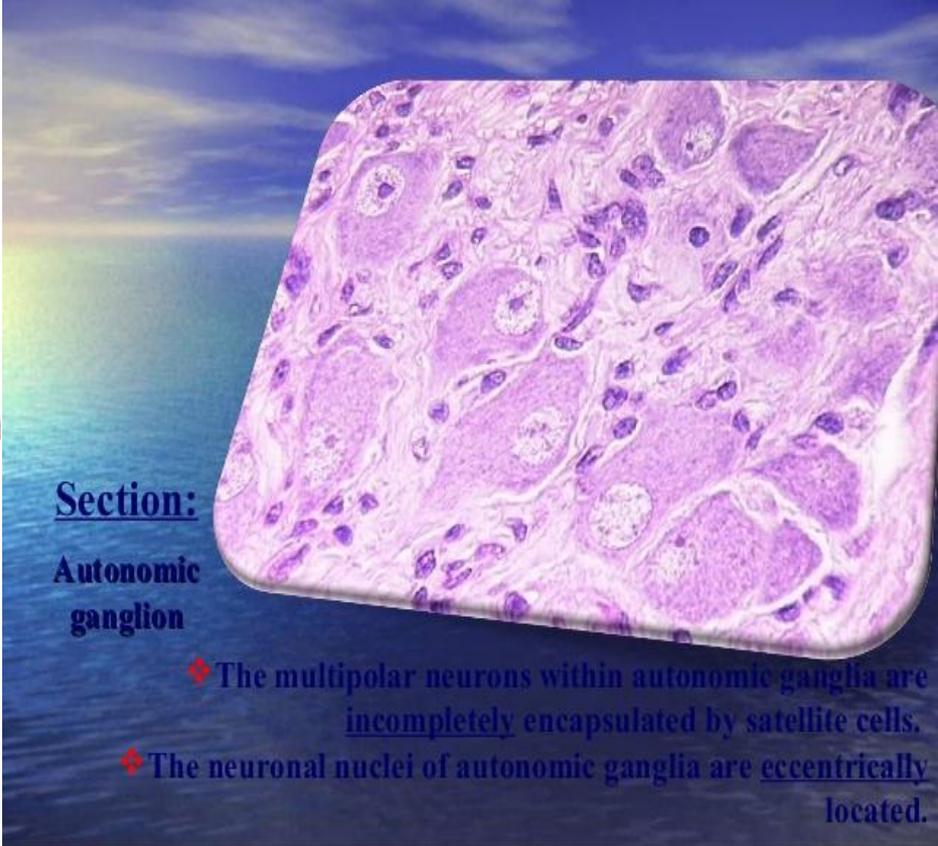
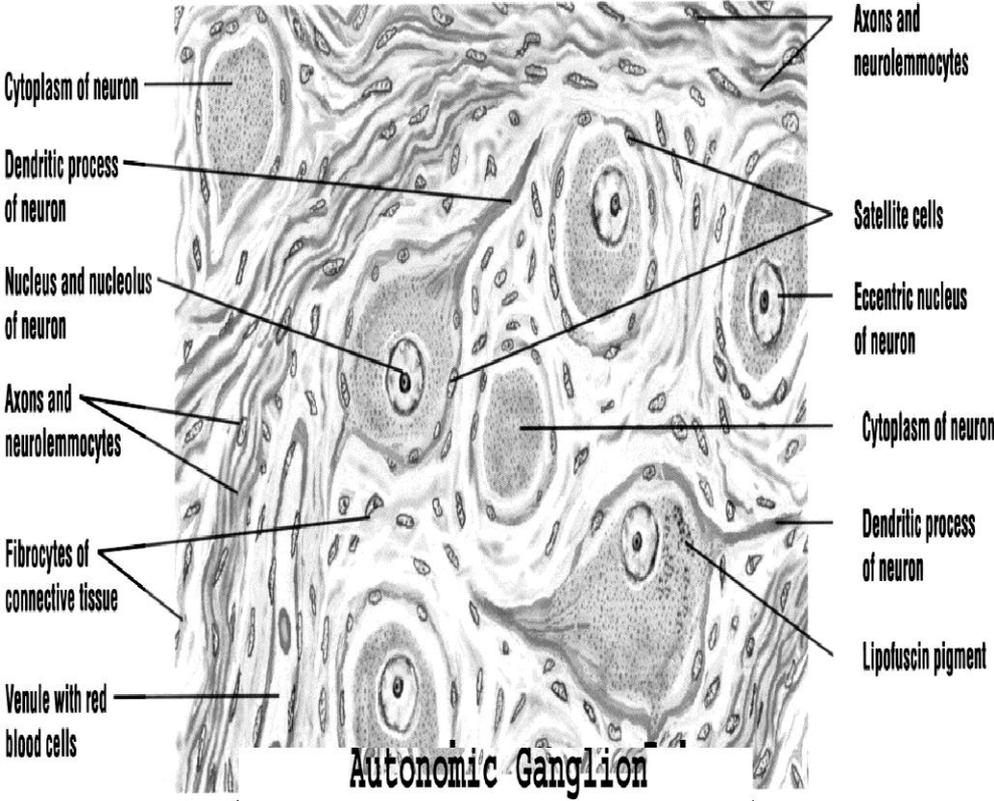
- Pseudounipolar n. cell " surrounded with capsular cells
- the cells gathered in groups
- nerve fiber "myelinated nerve fiber
- Delicate C.T capsule covering derived from endoneurium of the nerve fiber



▪ *Autonomic Ganglia*

- Appear bulbous dilatation in the autonomic nerves.
- It is located in the wall of certain organs (**intramural ganglia**).
- intramural ganglia which is **devoid** of C.T capsule





- Multipolar n. cell “ surrounded with ill-defined capsular cells
- No groups
- nerve fiber “unmyelinated nerve fiber
- Absent CT capsule



Peripheral Nerve endings



Nerve endings



Effectors



Receptors

- 1-motor end plate
- 2-secretory endings



■ *Receptors*



- **Classification of Receptors According To Structure Basis**

1. **Free, diffuse, non-encapsulated**

2. **Encapsulated**

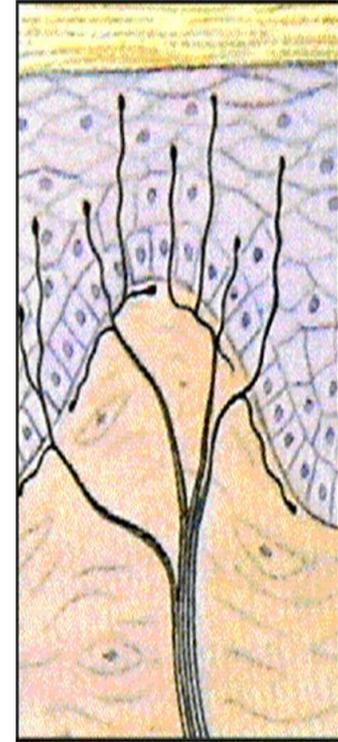


Free, diffuse, non-encapsulated

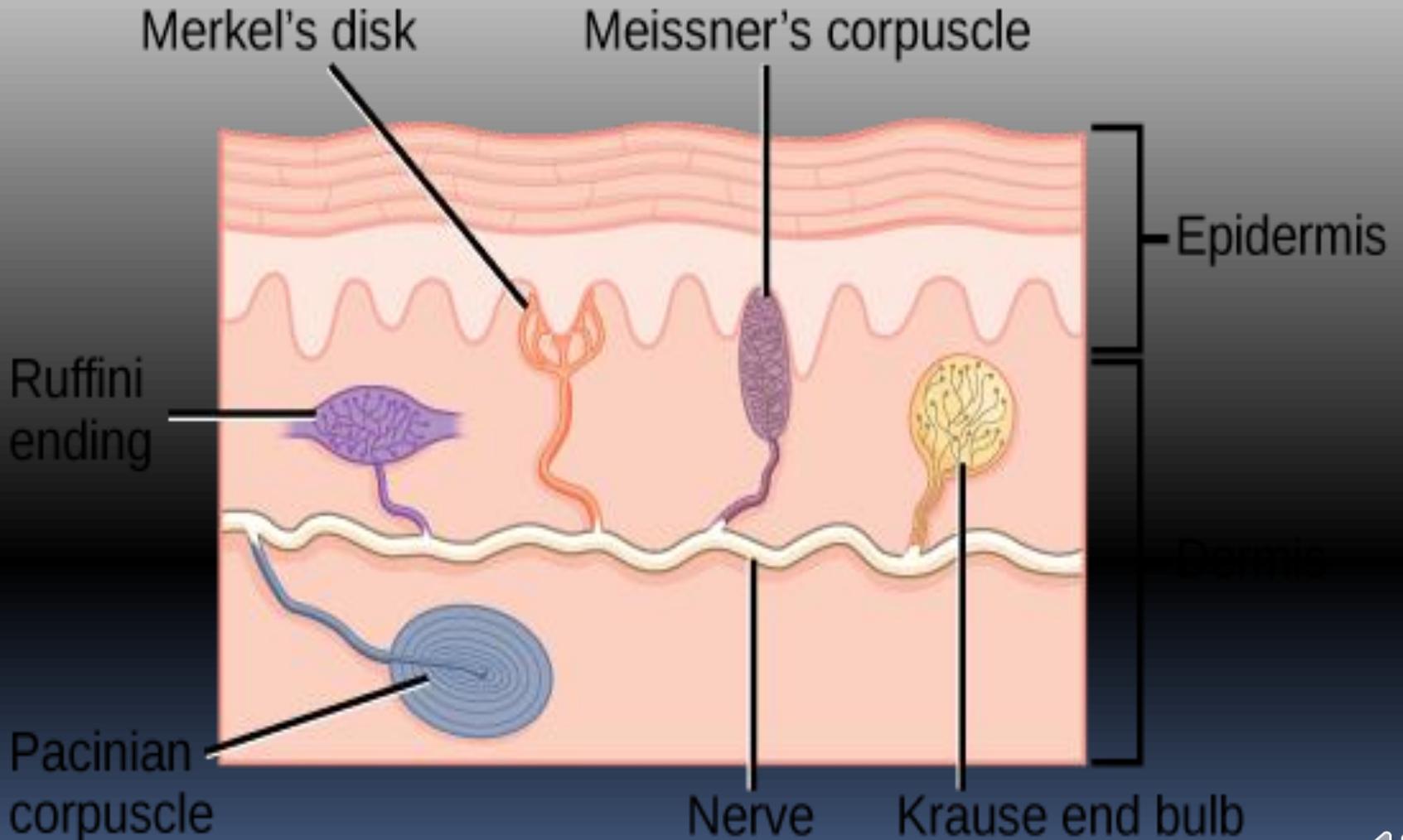
Free nerve endings

- They are present in:
 1. epidermis
 2. serous and mucous membrane
 3. Ms, joints, viscera
- Fine naked nerve penetrate & end freely
- Free nerve ending ramify also in
- Function: pain sensation

1. A. **Free nerve endings** – pain, thermal receptors



Encapsulated Receptors

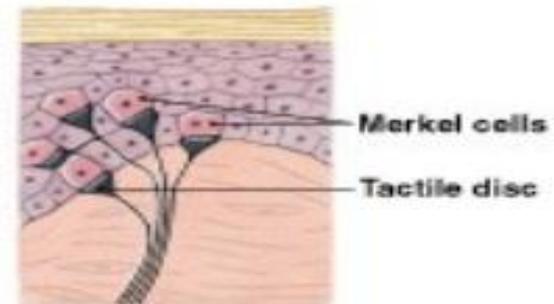


Encapsulated Receptors

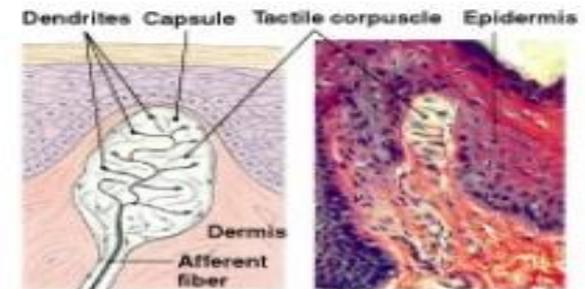
Merkel's disks

- Modified free nerve ending
- Present in deep epidermal cells & hair less skin
- Terminal branch are flatten or disc like
- *Function* → *tactile stimulation which is pain associated*

Tactile Receptors



(c) Merkel cells and tactile discs



(d) Tactile corpuscle

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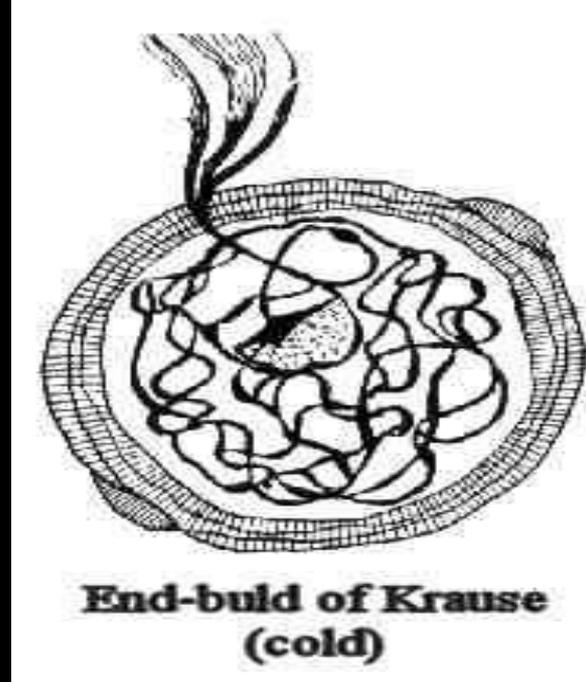
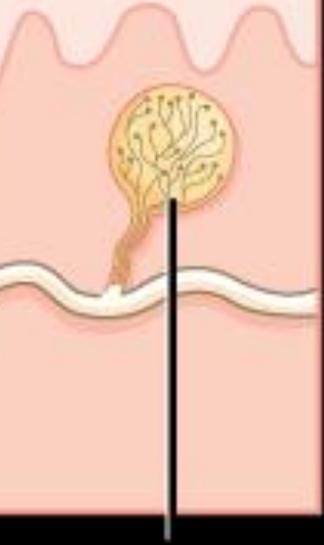
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Encapsulated Receptors

Bulb of Krause (Krause end bulb)



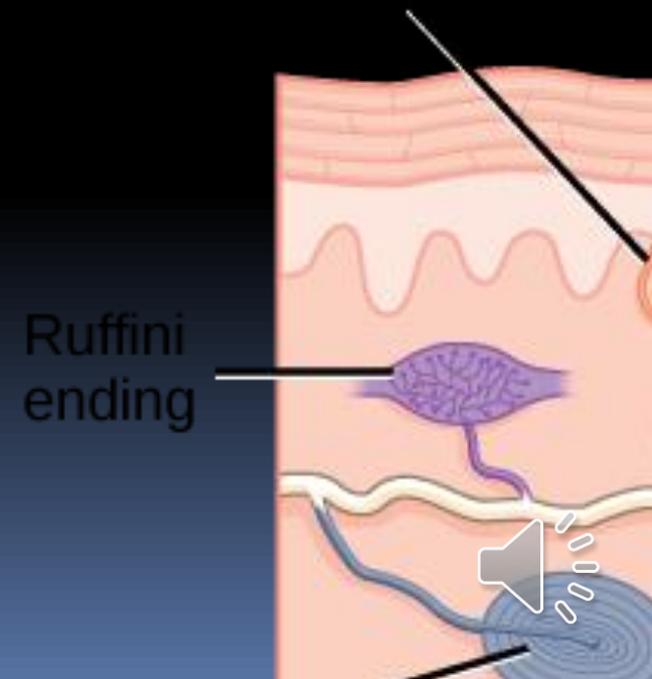
- It located in Skin & associated mm.
- spherical
- The nerve terminal enters granular mass & undergo arborization & expanded ending
- Function → *responsible for cold sensation*



Encapsulated Receptors

Ruffini corpuscle

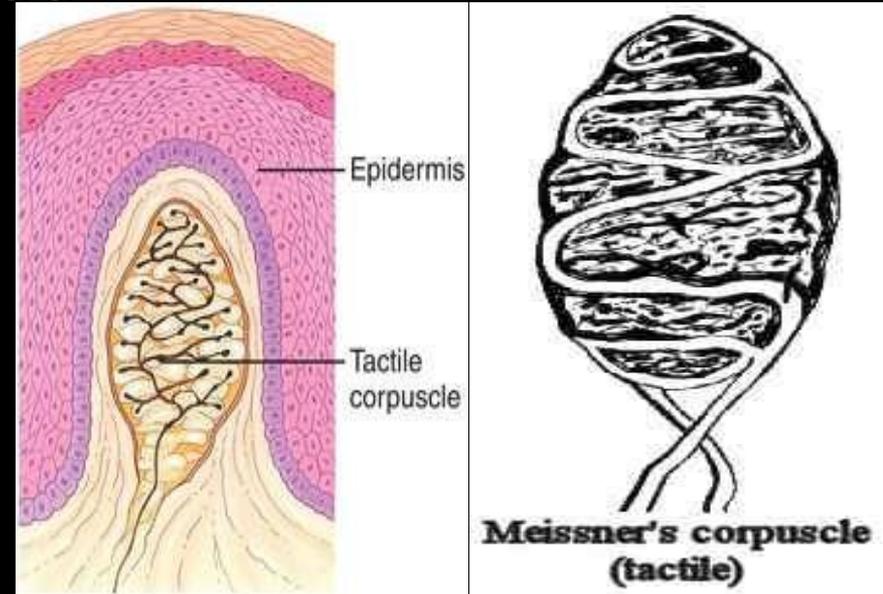
- It is arborization of interlacing nerve through granular mass which enclosed by CT capsule.
- *Function* → *heat receptor*



Encapsulated Receptors

Meissner's Corpuscle

- One of the most widely spread corpuscle in hairless skin
- occur in dermal papillae in sole and palm.



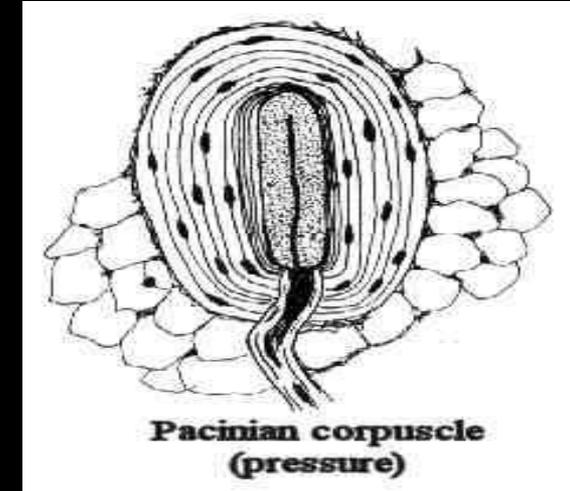
- In terminal end one or more nerve arranged in helical order around a mass of cell similarly arranged
- *Function* → *touch (tactile) receptors*



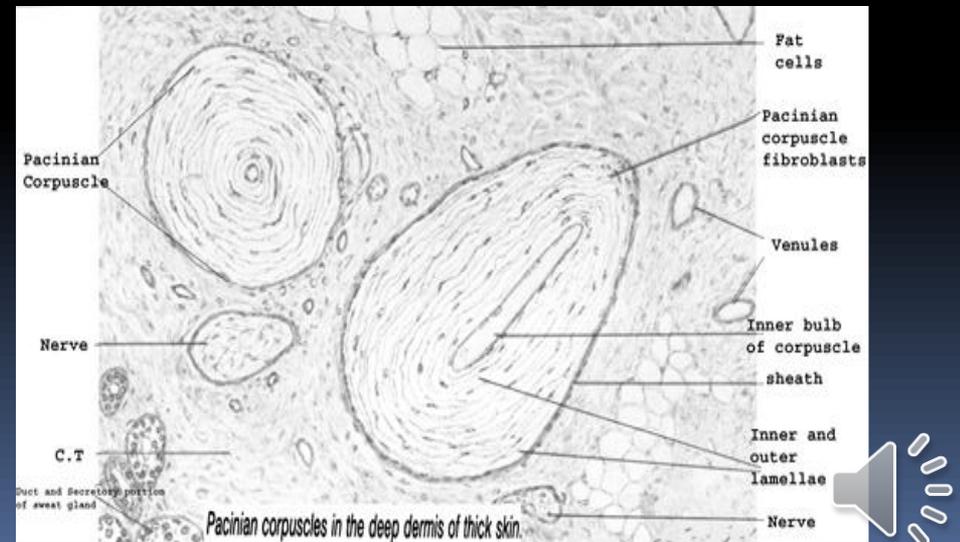
Encapsulated Receptors

Pacini corpuscle ***"lamellar corpuscle"***

- Onion slices like
- It present in epithelium, C.T , serous membrane, Ms, visceral organs and associated with ligament, tendon



- *Function:*
- responsible for pressure



AUDIO
JUNGLE

Thank you

