

- go to: autonomic ganglia outside CNS.

- pass through: cranial and spinal nerve

- arise from: autonomic center in CNS

preganglionic

- go to: supply the involuntary muscle and gland.

- arise from: autonomic ganglia.

postganglionic



The gray matter of these segment possess a lateral horn

Contain the cell bodies of the sympathetic preganglionic neuron

cell body
↓
in lateral horn

axon

- Leave through → anterior root
then.

- pass through → white ramus.

to
- enter the → **sympathetic trunk.**

chain of ganglia located in vertebral column.

sympathetic

Thoraco lumbar

T₁

L₁

T₁₂

L₂

T₁ → L₂

parasympathetic

cranio sacral

3 III
7 VII
9 IX
10 X

S₂
S₃
S₄

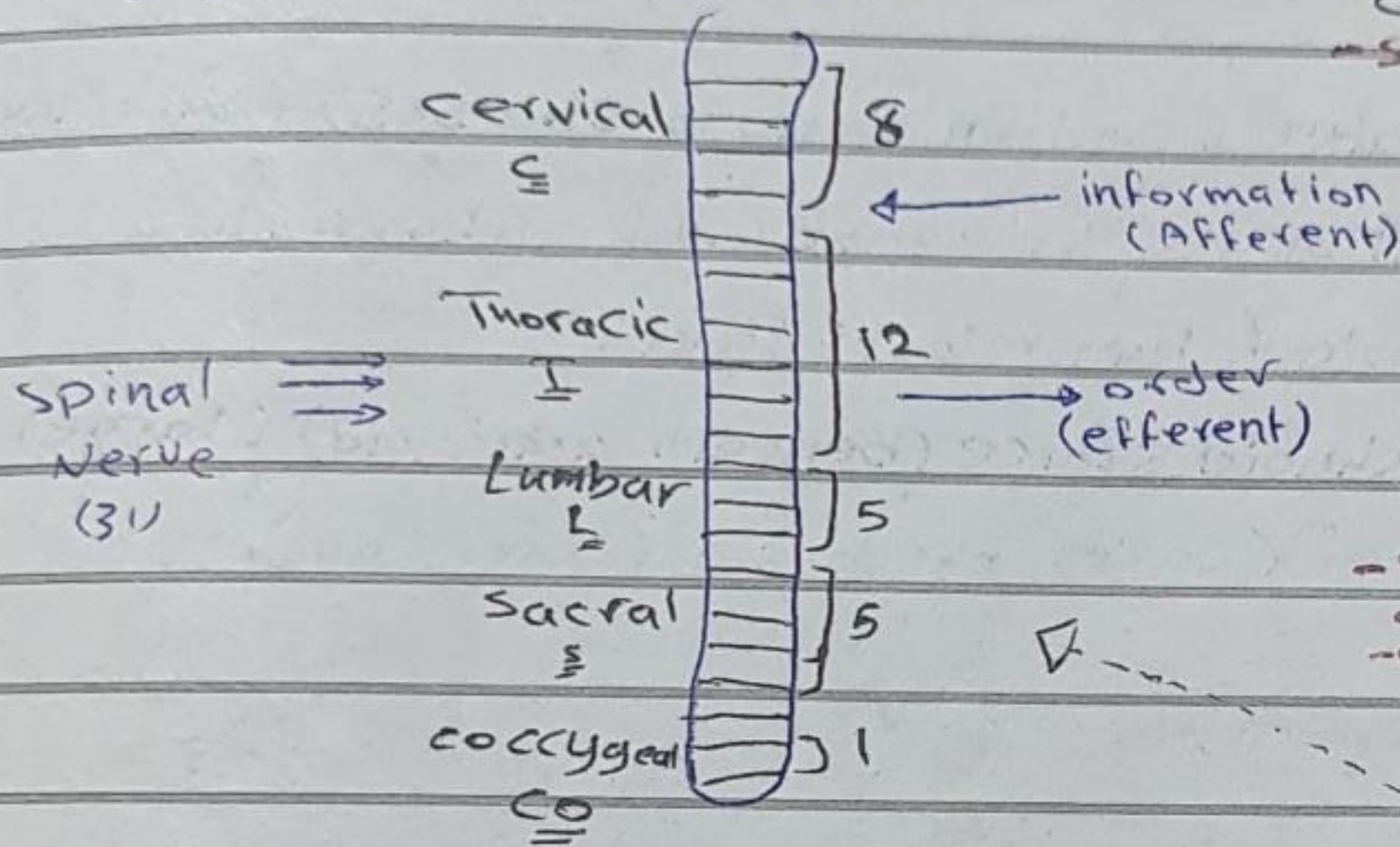
from pelvic splanchnic nerve.

a preganglionic neuron synapse with 4-5 postganglionic neuron.

so that the effect is limited.

cranial nerve (12) → 31 segment

cerebral cortex - sensation



Brain Stem
 - Respiratory center
 - cardiovascular center

midbrain
 pons
 Medulla oblongata

cerebellum - motor command

Spinal cord

Sympathetic

→ **Thoraco lumbar**

T ₁	L ₁
↓	↓
T ₁₂	L ₂

Parasympathetic

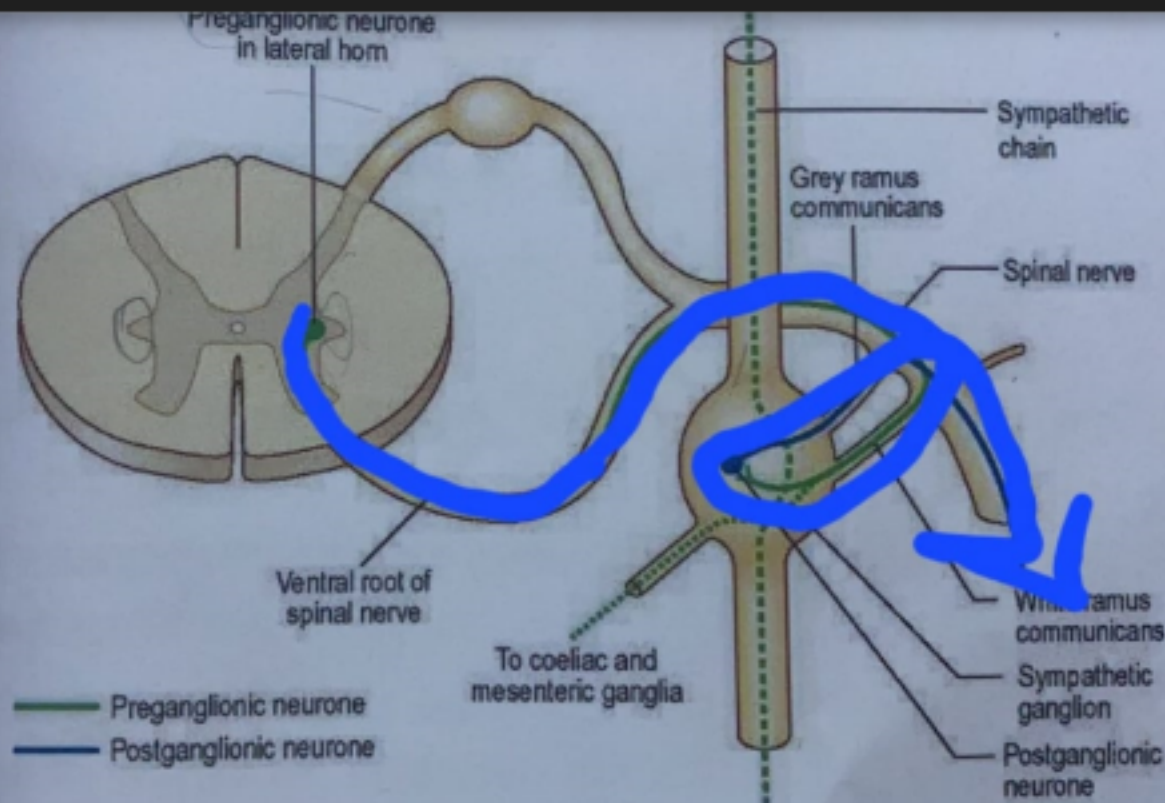
→ **cranial - sacral**

3 III	→ S ₂
7 VII	→ S ₃
9 IX	→ S ₄
10 X	

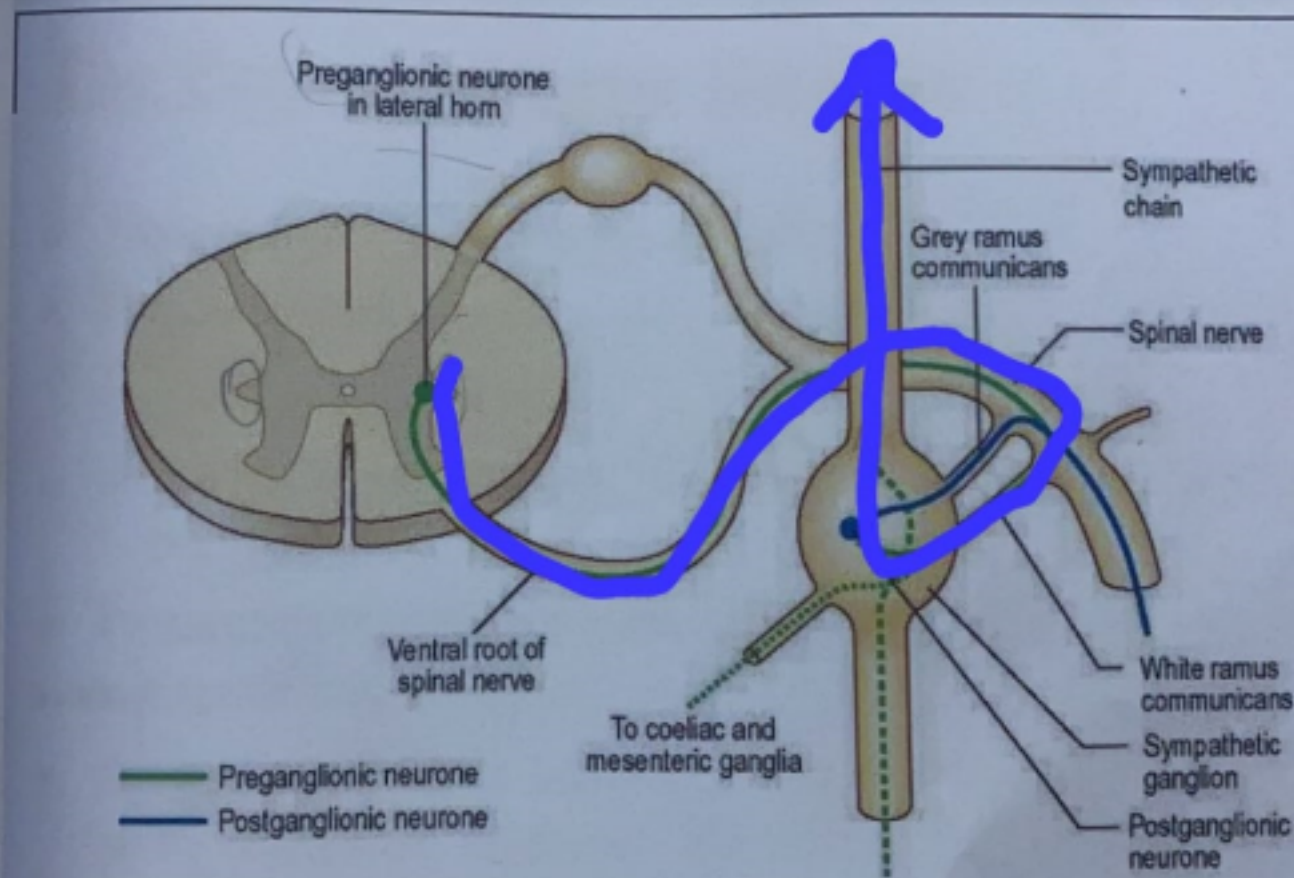
bridge between CNS with PNS

□ In the sympathetic trunk, the preganglionic neuron may either:

1. *Synapse* with the postganglionic neurons in the ganglia at the *same level* on the same side. In this case, the unmyelinated postganglionic fibers exit the trunk through the gray ramus to re-enter the spinal nerves where they pass to supply the smooth muscles of blood vessels, sweat glands, and the arrector pili muscles of the skin.

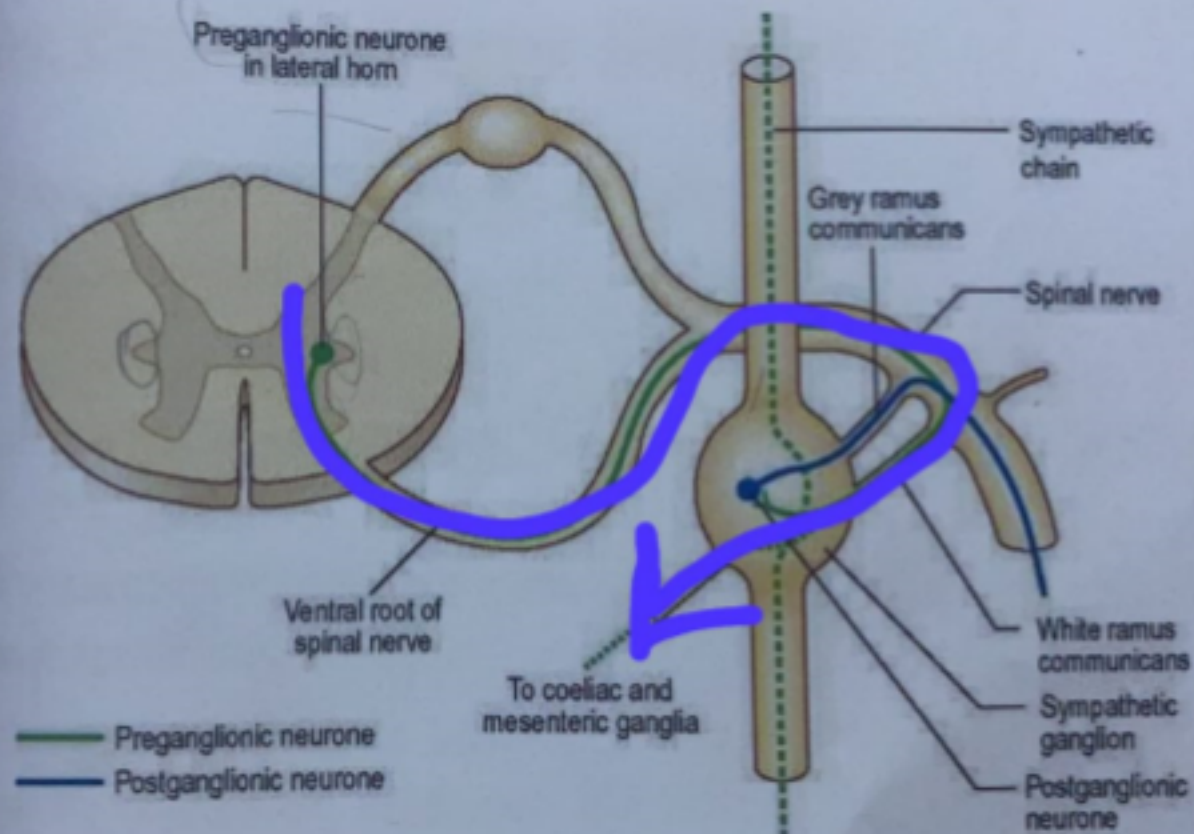


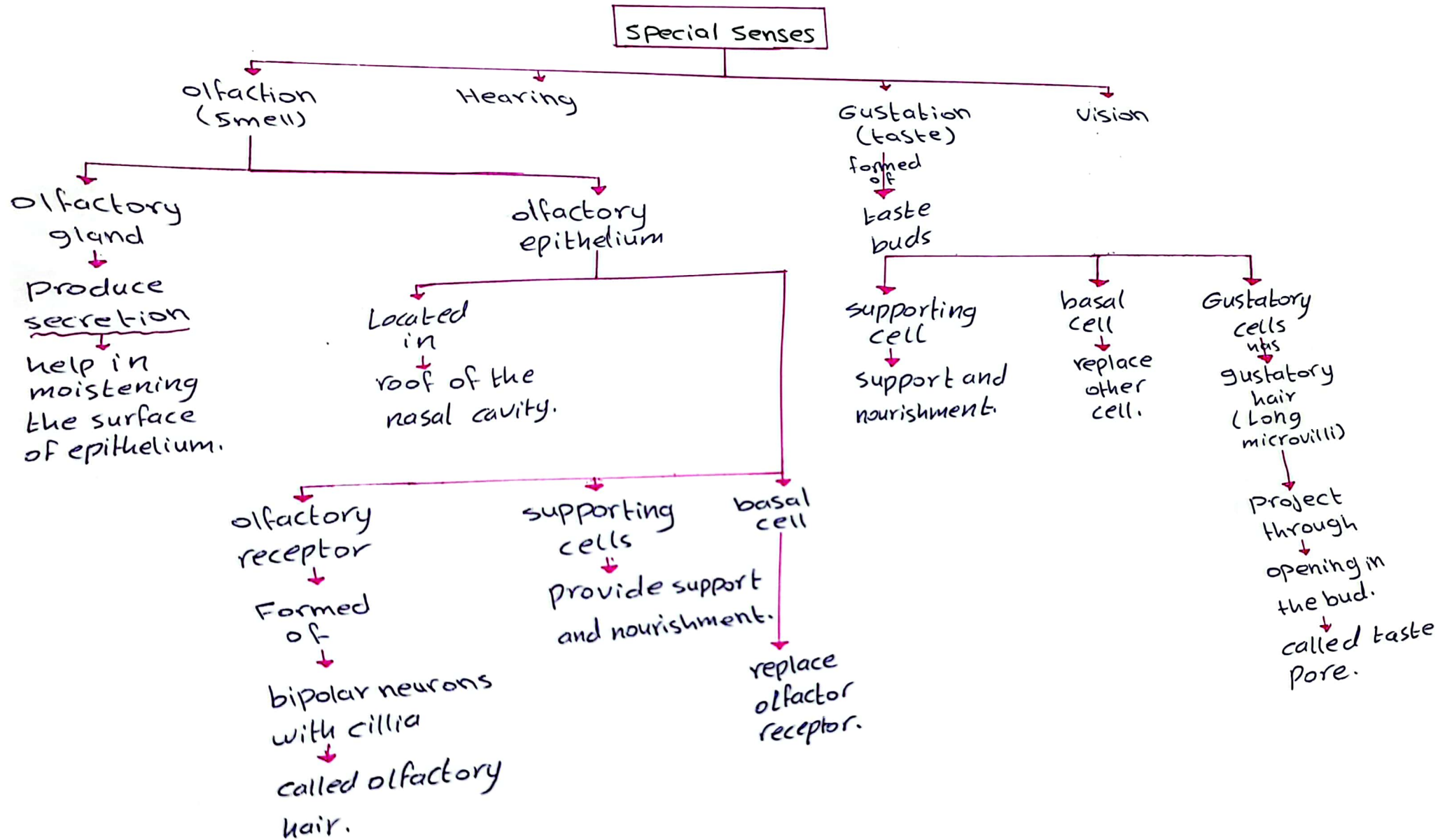
- glands, and the arrector pili muscles of the skin.
2. Pass up/down in the sympathetic trunk to *synapse* with postganglionic neurons at a *different level* to supply skin.
- Some postganglionic fibers will supply various organs in the head, chest, abdomen and pelvis.
3. Pass up the trunk *without synapsing*. Here preganglionic

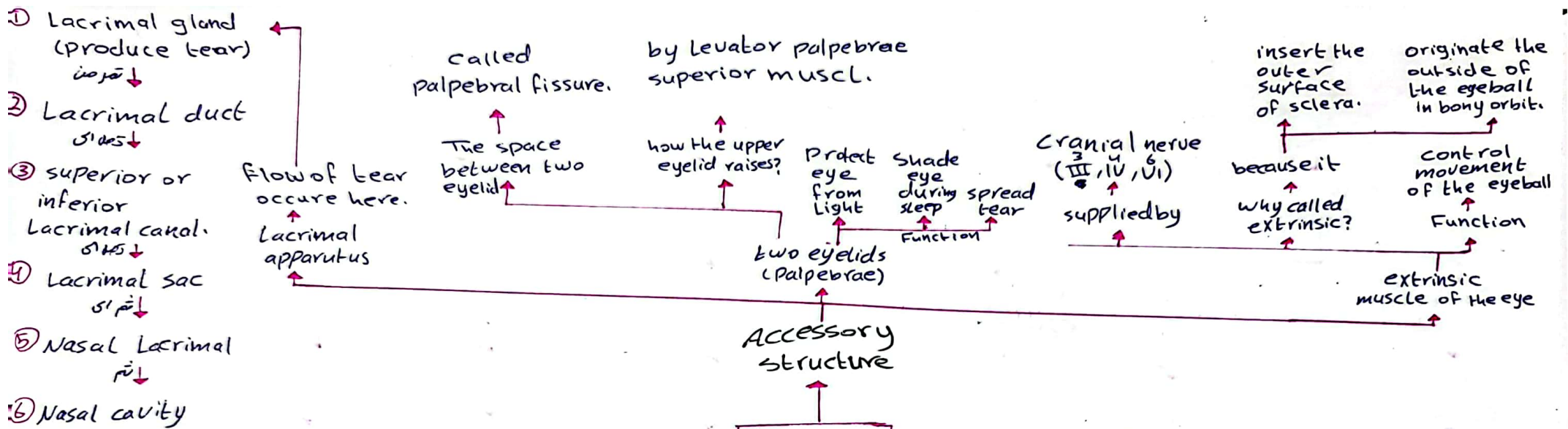


3. *Leave the trunk without synapsing.* Here preganglionic fibers will form the Splanchnic nerves and they will eventually synapse with postganglionic neurons in the preaortic ganglia (celiac, superior mesenteric, inferior mesenteric and renal). The postganglionic fibers will then pass to supply the viscera.

4







Accessory structure

Vision → it's function of eye.

Located in orbital cavity of skull. ← eyeball

Fibrous layer (outer layer)

Sclera (white of the eye)

cornea

Function

strong fibrous layer.

Larger posterior part

located in iris.

smaller anterior part.

Function

site of attachment of extrinsic eye muscle.

protect the eye.

help maintain the shape of eye.

major refractory structure of the eye

it allows the light to enter the eye.

Vascular layer (uvea)

Choroid

ciliary body

iris

Zonular fibers

القوية التي تربط الجسم القوسي بالعدسة

ciliary muscle

dilator pupillae muscle

توسيع الحدقة

تدخل الحجرة الكامرية من وراء الحدقة

ciliary process

circular sphincter pupillae muscle

تضييق الحدقة

تدخل الحجرة الكامرية من وراء الحدقة

عبر الحدقة

anterior + colored portion

Located in the posterior 2/3 of the eye ball.

Neural layer (retina) (inner)

neural part

pigmented part

The axons come together to form the optic nerve.

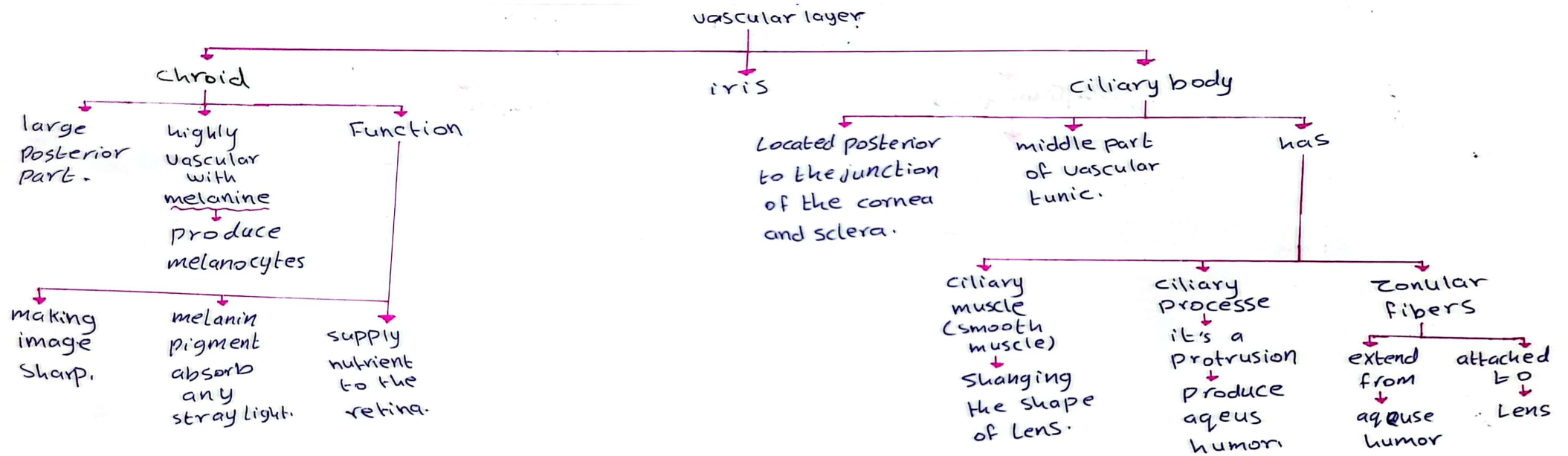
contain melanin

absorb stray light.

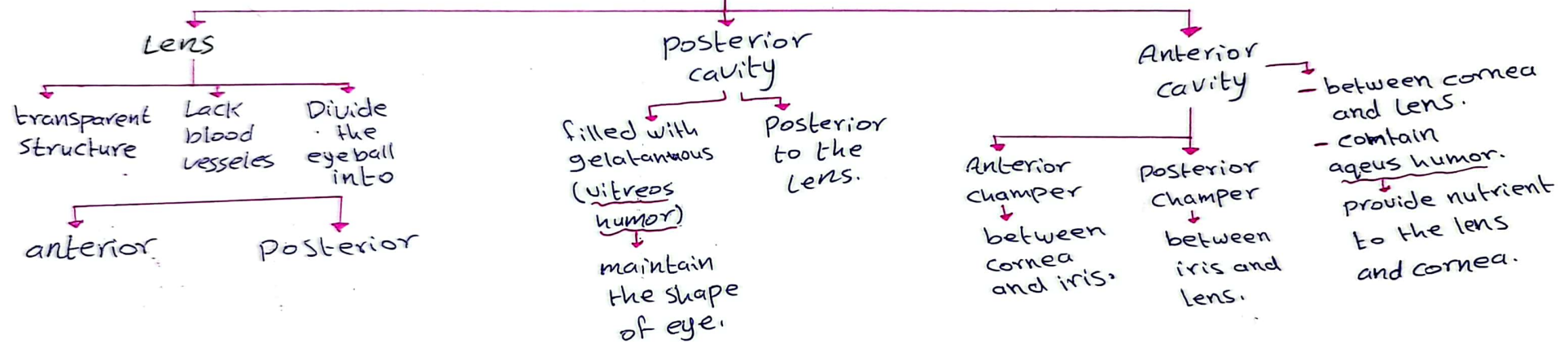
several type of cell include

photoreceptor

Rod cones

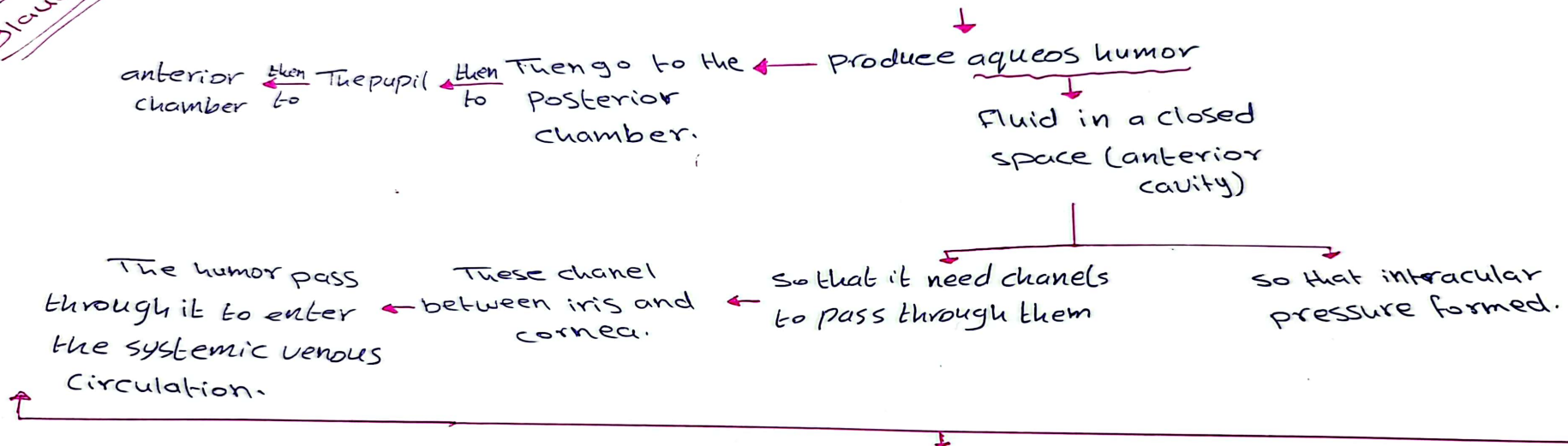


Interior of the eyeball



مرض الجلوكوما
Glaucoma

Ciliary processe



إذا زاد إنتاج humor أو إذا زاد إزالته (accumulation) ← هذا هو Glaucoma

