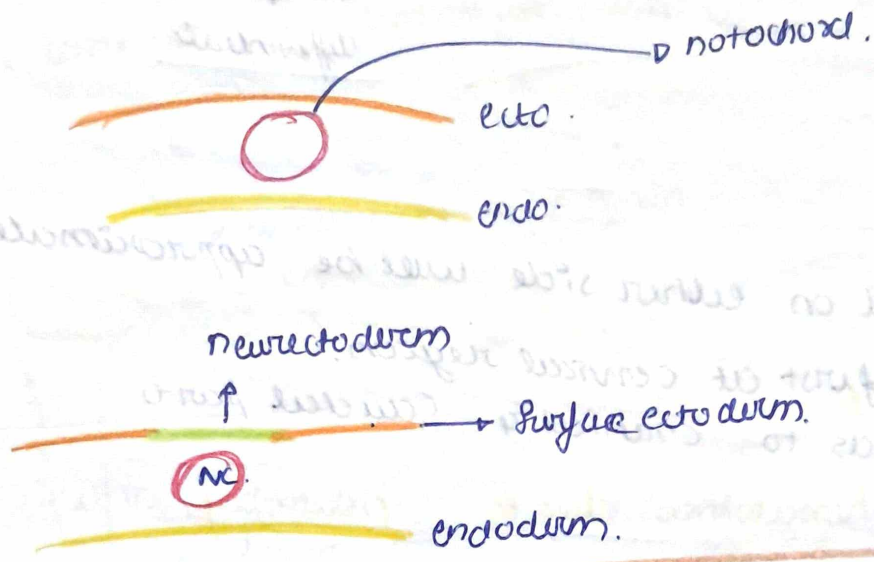


Development of CNS.

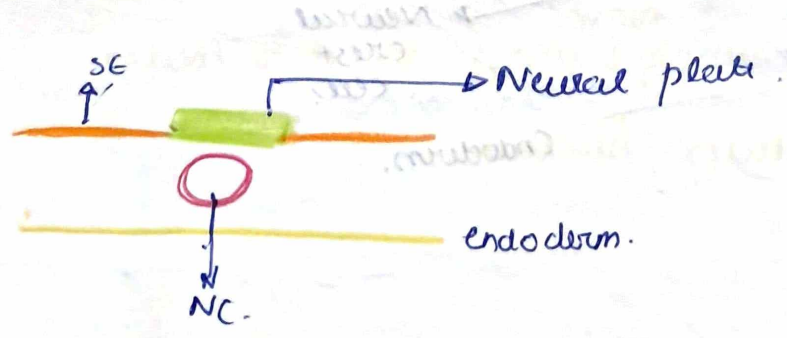
proliferation of cells within the neural tube to form the CNS. The neural tube is formed from the ectoderm, which is the outermost layer of the embryo.

Neurulation - Impt.

• process of formation of Neural tube.

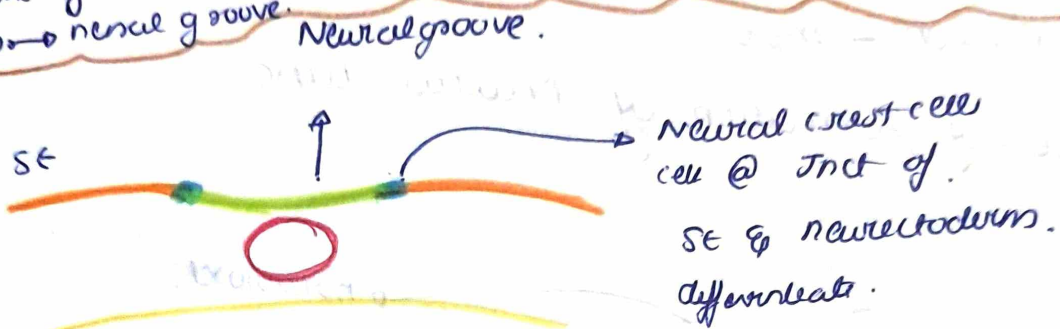


under the inductive influence of notochord, neuroectoderm thickens.

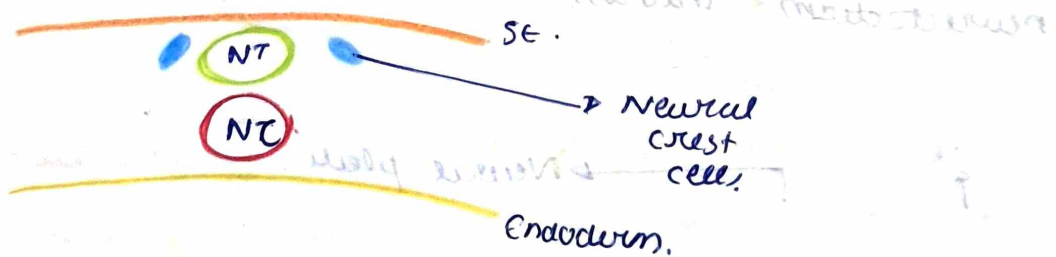


as there is longitudinal ↑ in length of embryo, there will be formation of neural groove.

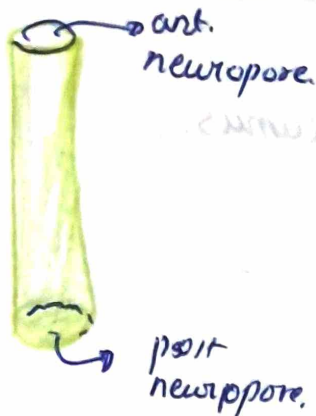
• due to proliferation of somatic mesoderm on either side of notochord, margins of neural plate are elevated as neural folds, centre of plate → neural groove.



Neural fold on either side will be approximated. It starts first at cervical region. then extends to cranial & caudal parts.



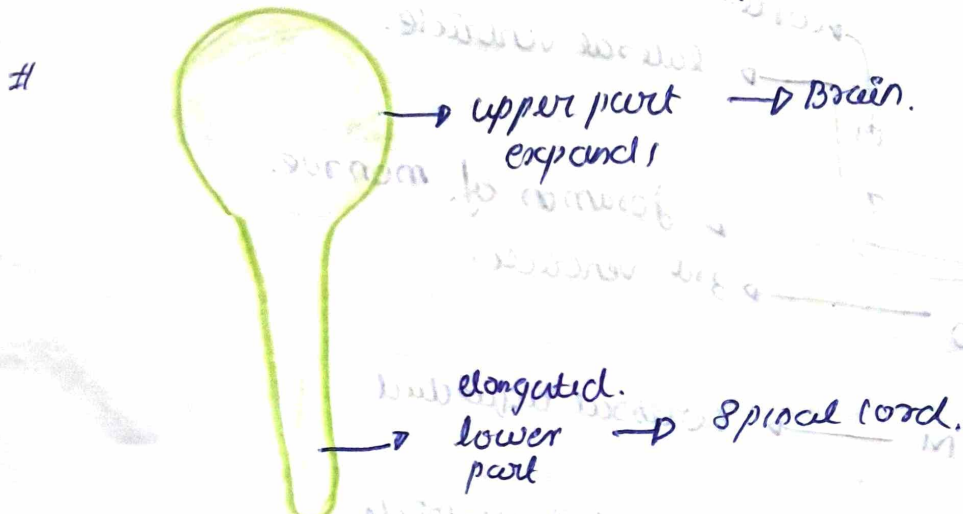
Initially, 2 opening



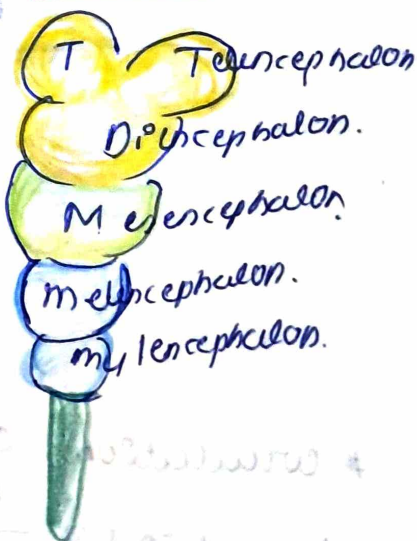
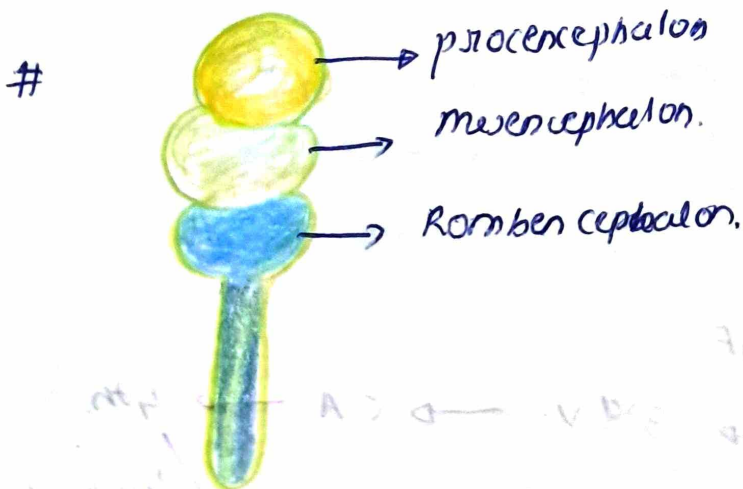
closed 25th day. → summit of ant. neuropore → lamina terminalis

28th day. → summit of post. neuropore → lamina vermicis

#. by the time the neural pores are closed



Dev. of Brain

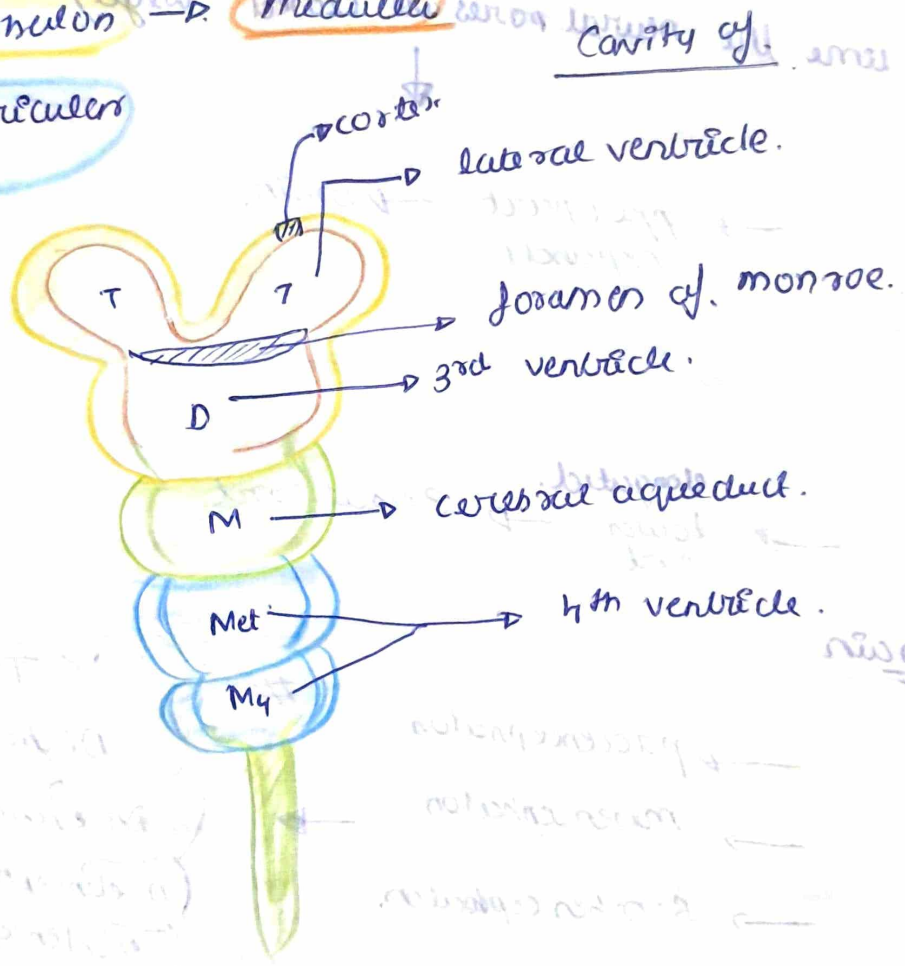


Name 5 brain vesicles

5 secondary brain vesicles

- Telencephalon → cerebrum.
- diencephalon → thalamus, hypothalamus.
- mesencephalon → midbrain.
- metencephalon → pons & cerebellum.
- myelencephalon → medulla.

dev of ventricular system.

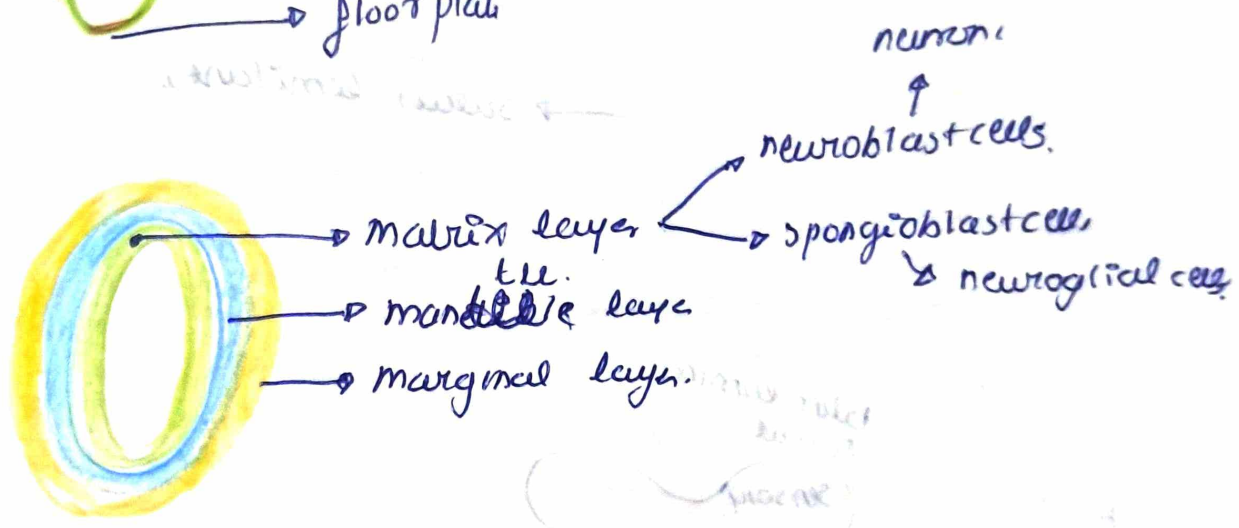
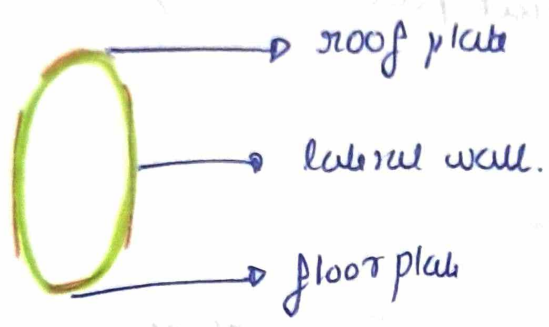


circulation of CSF.

→ formed in LV $\xrightarrow[\text{foramen of monroe.}]{\text{foramen of monroe.}}$ 3rd v. \rightarrow C.A. \rightarrow 4th,
 ↓
 leishner & magendie.
 Sub arachnoid space.

Histogenesis

from wall of neural tube → neural crest cells.



soon after formation, these cells migrate into mantle layer from matrix.

the remaining cells → ependymal cells.

from neuroblast → neural cell.

spongioblast → neuroglial cell.

cell bodies → mantle layer
 processes → marginal layer } spinal cord & Brain stem

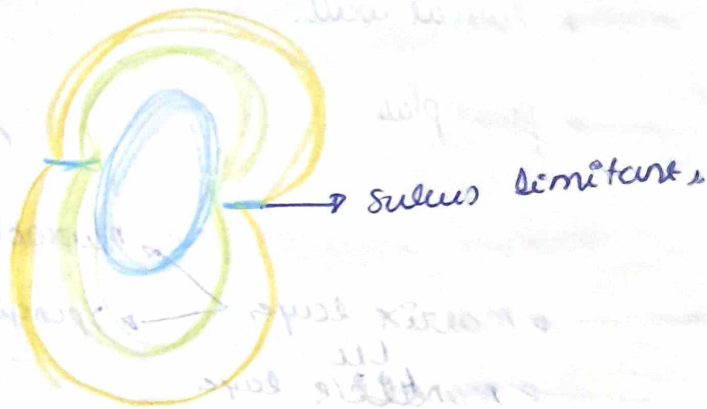
In Arthropods, neuroblast cells migrate to marginal layer.

cell bodies → marginal layer

~~axons~~ → mantle.

• for S-C.

mantle layer in ventral part encroache.



Cerebrum
Dorsal.

Sensory

motor

Basal
ganglia.

Ventral.

H

Neural crest cells. **Frequent** **★ Short Notes**

- Neural crest cells are developed from lip of neural folds.
- cells at joint of NE & SE diff → Neural crest cells
- with the approximation of neural folds,
- neural crest separates from neuroectoderm.

- later,
- It forms 2 mass. → dorsal mass, ventral mass.

dorsal mass.

- ① Neuroblasts → pseudounipolar neuron of dorsal nerve root ganglia.

neurons of sensory ganglia of 5, 7, 8, 9 & 10 CN.

- ② spongioblast → capsular/satellite cells.
 - Schwann cell.

- ③ pluripotent cell.

- odontoblast.
- melanoblast.
- Cartilage cells of branchial arches.
- leptomeninge.

Other:

- C cells of thyroid gland.
- Silva & choroid of eye.
- Bones of face & part of vault of skull.
- Substantia propria & post epithelium of cornea.

Ventral mass.

- ① Sympathoblast:

- Neurons of sympathetic ganglia.

- Neurons of peripheral.

- Parasympathetic ganglia of CN - 3, 7, 9, 10.

- ② Chromaffin cells (large cell)

- suprarenal medulla.

- Para-aortic body.

- Argentaffin cells.

- Endocrinomaffin cells (APUD cell).

Flexures of Neural tube

PMCT, Mukkam

- cervical flexure.
- mesencephalic flexure.
- ponine flexure.
- metencephalic flexure.

Just know these

names for one word.



Neural tube defects

SA

generally → 2 types - open & closed.

• failure of closure of anterior neuropore.

→ Anencephaly.



absence of cranial vault.

brain will be exposed as degenerate mass.



won't survive.

failure of closure of

→ posterior neuropore.

→ Spina bifida.



• usually, defect w/ for vertebrae.

① sprna bifida occulta. → asymptomatic.
justa tuft of hair.

sprna bifida - cystica.
② meningocoele → meninges is projecting outwards

③ meningo myelocoele → meninges &
spinal cord are
protruding
outwards.

Rachischisis → due to failure of closure of
neural groove.

Rachischisis - caudal neuropore.