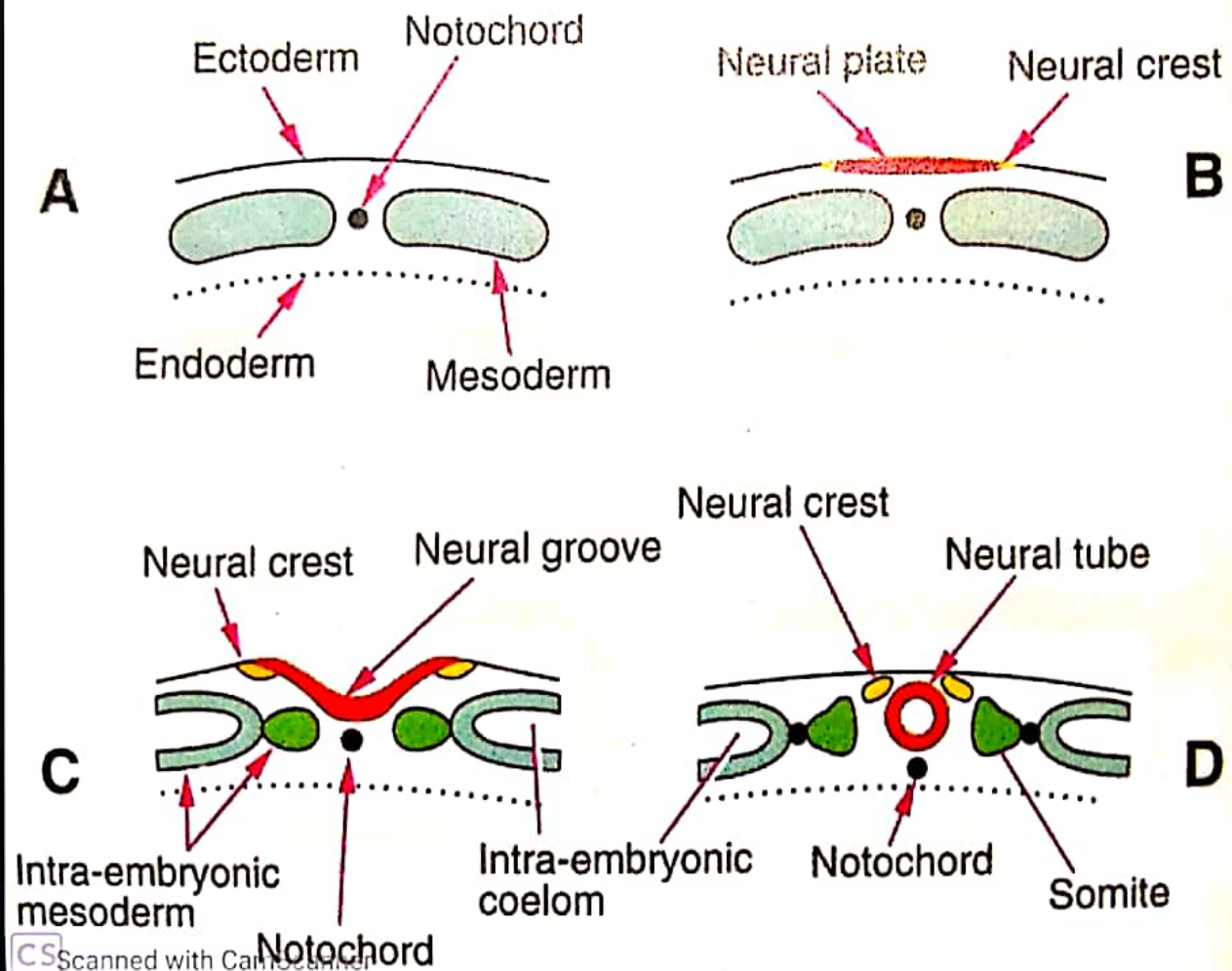


Part I Neurulation

- ☒ Step 1 - Formation of neural tube
- ☒ Time - 3rd to 8th weeks of intrauterine life
- ☒ This period is also called organogenesis period



Formation of neural tube

- During this period, the embryo is called a **neurula**
- Ectoderm overlying the notochord becomes thickened to form the **neural plate**
- Ectoderm of neural plate is called **neurectoderm**



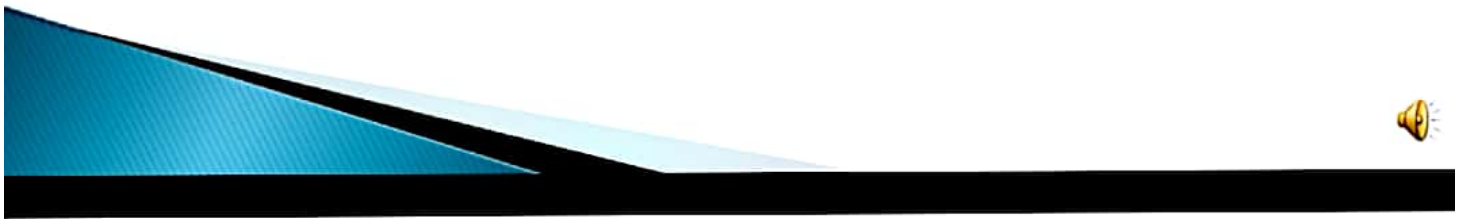
Neural tube.....

- Neural plate becomes depressed along the midline - a **neural groove** is formed
- Neural groove progressively becomes deeper
- The two edges of neural plate come nearer and fuse
- Neural groove converted into **neural tube**



Neural crest

- ☒ Some cells at the junction of neural plate and rest of the ectoderm become specialized
- ☒ Forms the primordia of neural crest



Derivatives of neural crest

1. Neurons of spinal or dorsal root **ganglia**
2. Neurons of sensory **ganglia** of 5,7,8,9 and 10th cranial nerves
3. Neurons of sympathetic **ganglia**

All ganglia in the body



Derivatives of neural crest....

4. Schwann cells
5. Adrenal medulla
6. Chromaffin tissue
7. Melanoblasts
8. Pia-arachnoid (Dura from mesoderm)
9. Odontoblasts and mesenchyme of dental papilla
10. Muscles of head , face
11. Ganglion cells of GIT and other parts of body

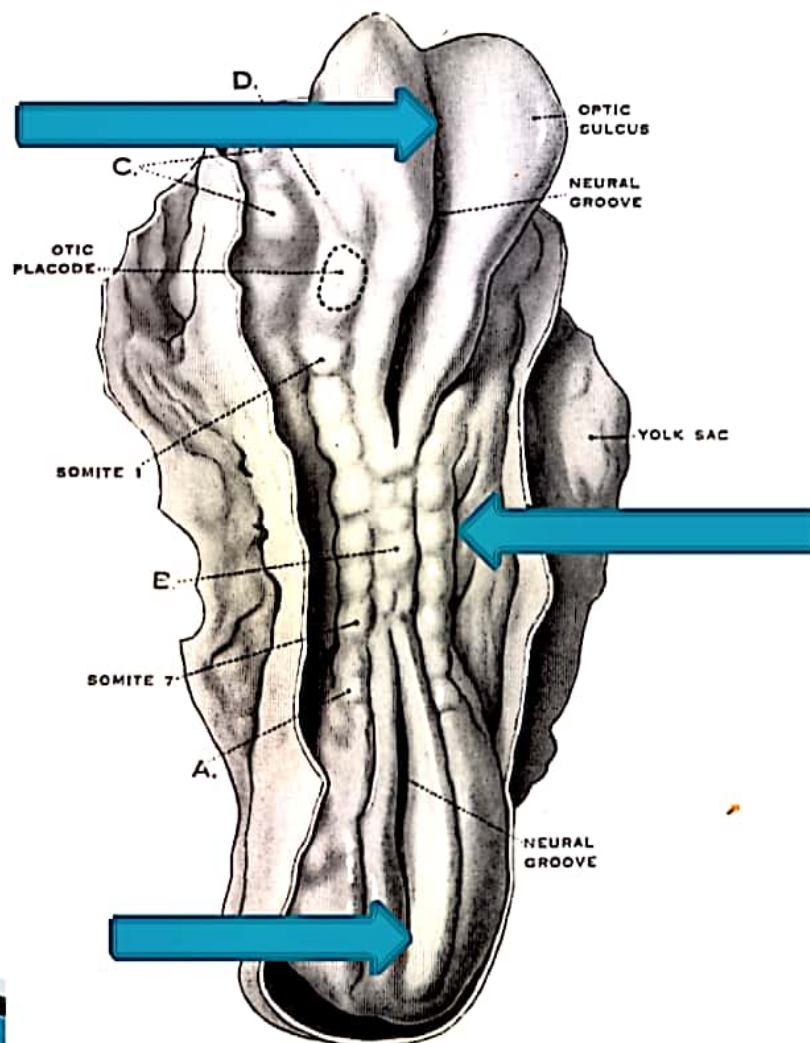


Neural crest.. New information

- ☒ Considered as the **fourth germ layer**
- ☒ Because it contributes so many organs and tissues
- ☒ One third of all birth defects are due to abnormality in the development of neural crest
- ☒ Cancers can arise from neural crest cells –
Melanoma , neuroblastoma

Neuropores

- Middle part of neural plate is the first to become tubular
- For a few days ,the cranial and caudal ends of the neural tube will be open
- These openings are called **cranial and caudal neuropores**
- These openings eventually close, forming a **closed neural tube**



Closure of neuropores

- ☒ Anterior neuropore closes on 25th or 26th day
- ☒ Posterior neuropore closes on 27th day
- ☒ Lamina terminalis represents the cranial end of the neural tube
- ☒ Caudal end - Conus medullaris

