Third week of Development

(Lab 5)

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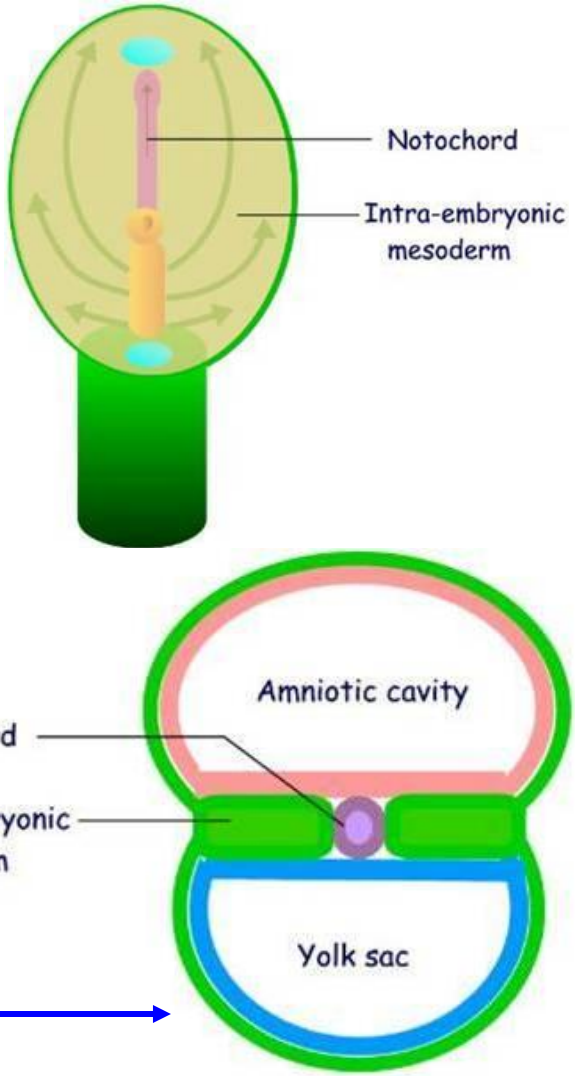
2021-2020

Intraembryonic Mesoderm

Origin: The epiblastic cells from the primitive streak (groove)

The newly formed cells migrate ventrally, laterally & cranially between the epiblast and hypoblast

At the margins of the embryoı disc, the intraembryonic mesoderm merges with the extra-embryonic mesoderm



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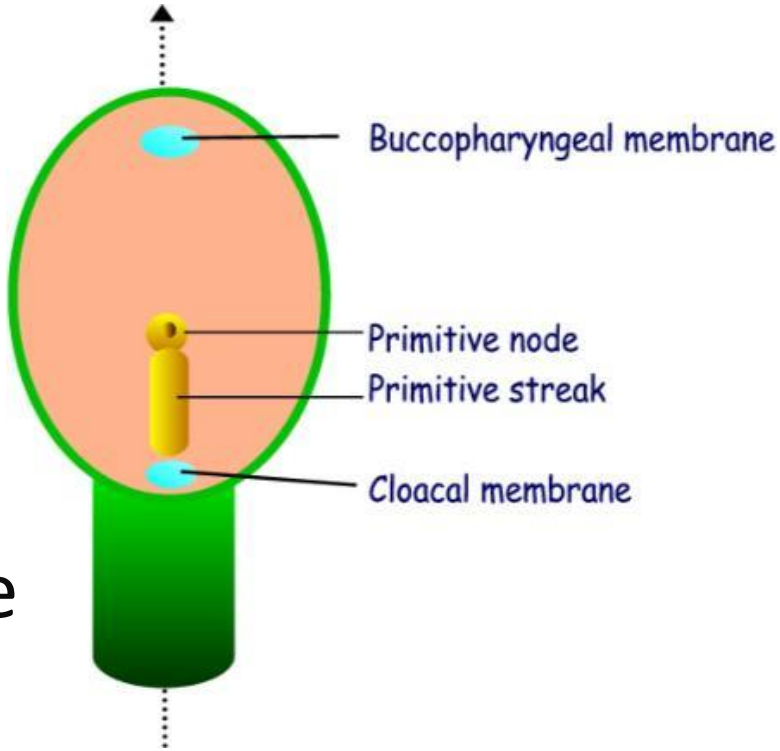
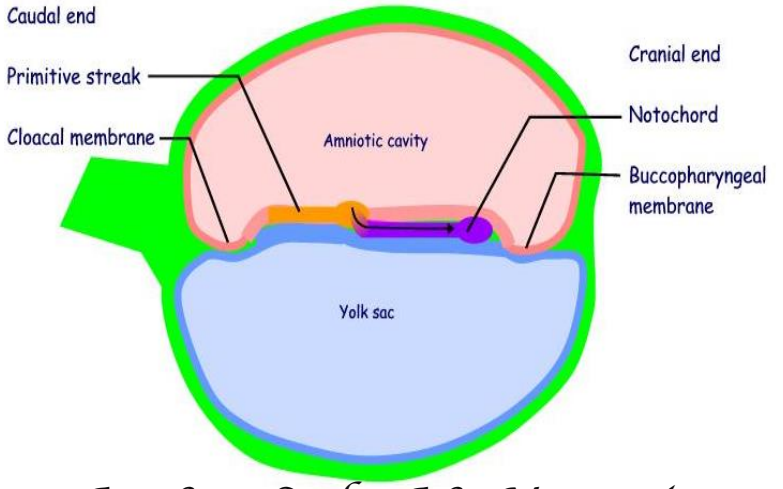
- By the end of 3rd week, mesoderm lies between embryonic ectoderm and endoderm everywhere, EXCEPT in the region of:
- Buccopharyngeal membrane (fused prechordal plate + ectoderm)
- Cloacal membrane, as the embryonic ectoderm & endoderm are fused at these regions

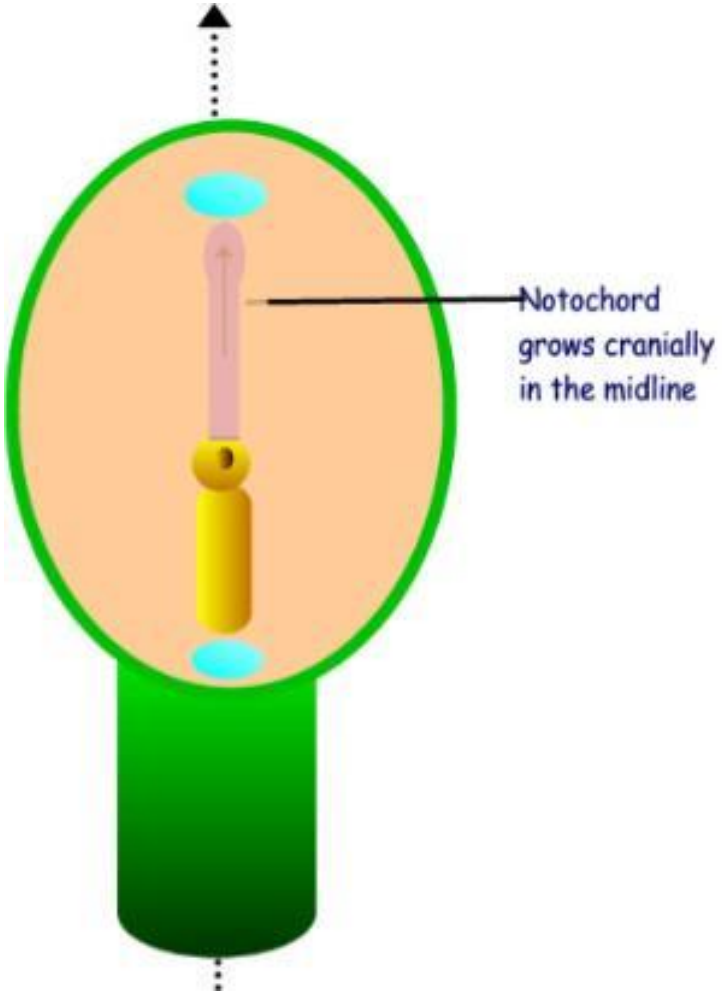




Notochord

Notochord is a rod of mesenchymal cells

- located in the midline
- extending cranially from the primitive node to the buccopharyngeal membrane



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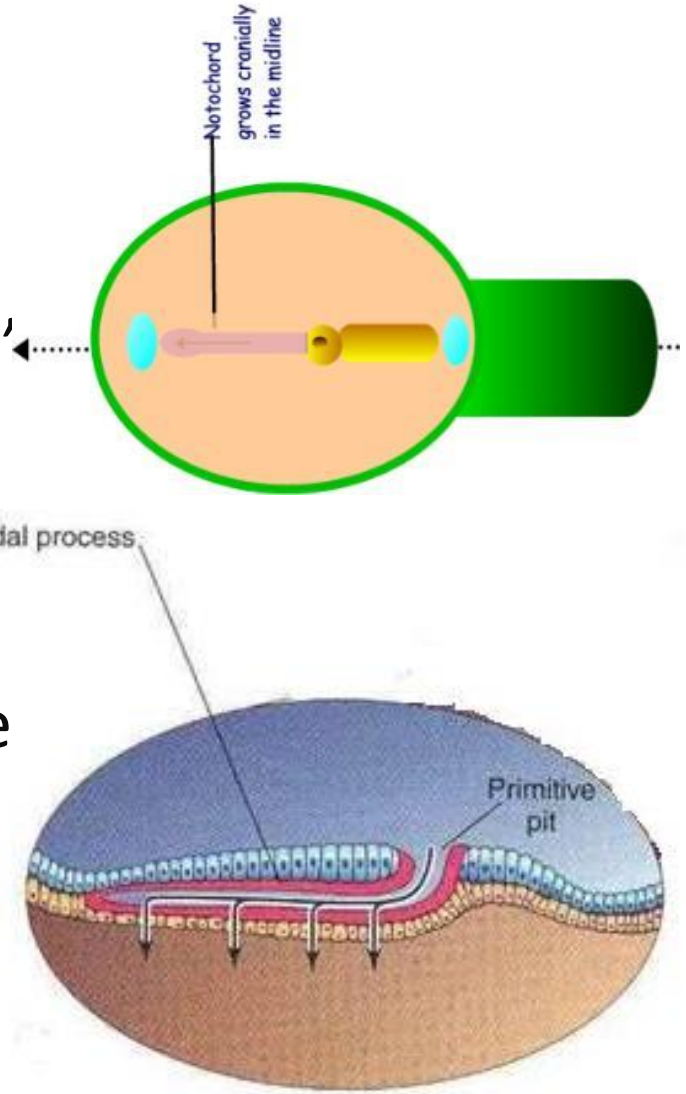
Formation of Notochord

- Origin: Primitive node/pit
- Like the primitive streak, the primitive pit cells proliferate and then migrate cranially in the midline, toward the buccopharyngeal membrane, and form a rod like notochordal process
- The notochordal process becomes canalized forming a hollow tube, the notochordal canal, which communicates with the amniotic cavity at the primitive pit.



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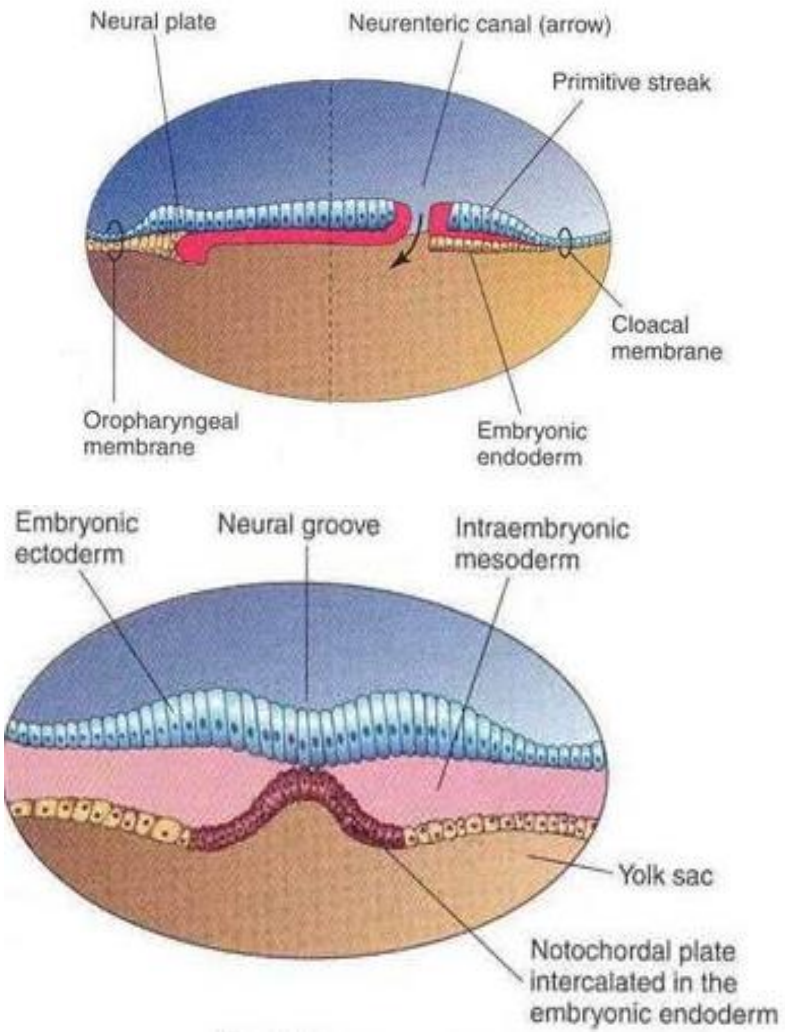
Formation of Notochord

- The floor of the tube and the underlying endoderm fuse and then break down, forming a notochordal plate
- The notochordal plate becomes continuous with the endodermal layer.



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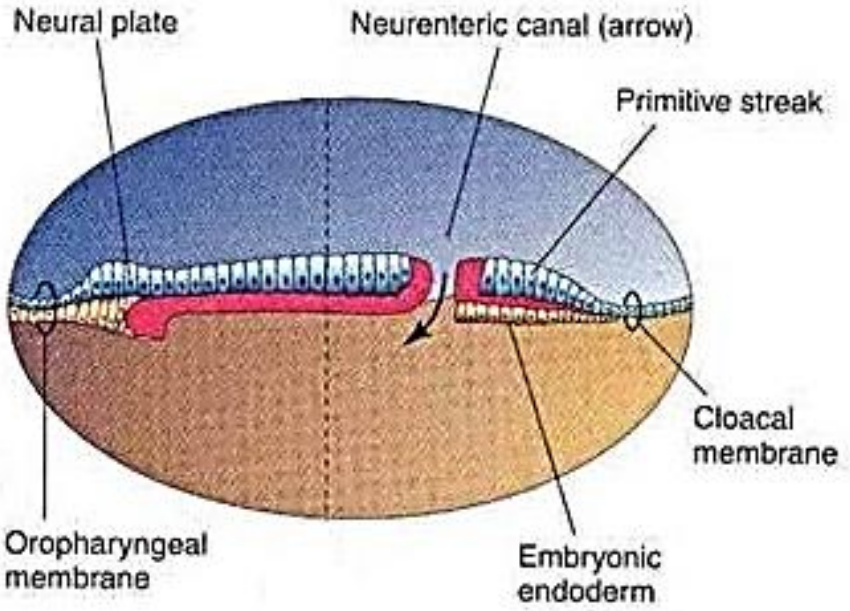
Formation of Notochord

- A temporary communication is established between the amniotic cavity and the yolk sac, termed the neurenteric canal.



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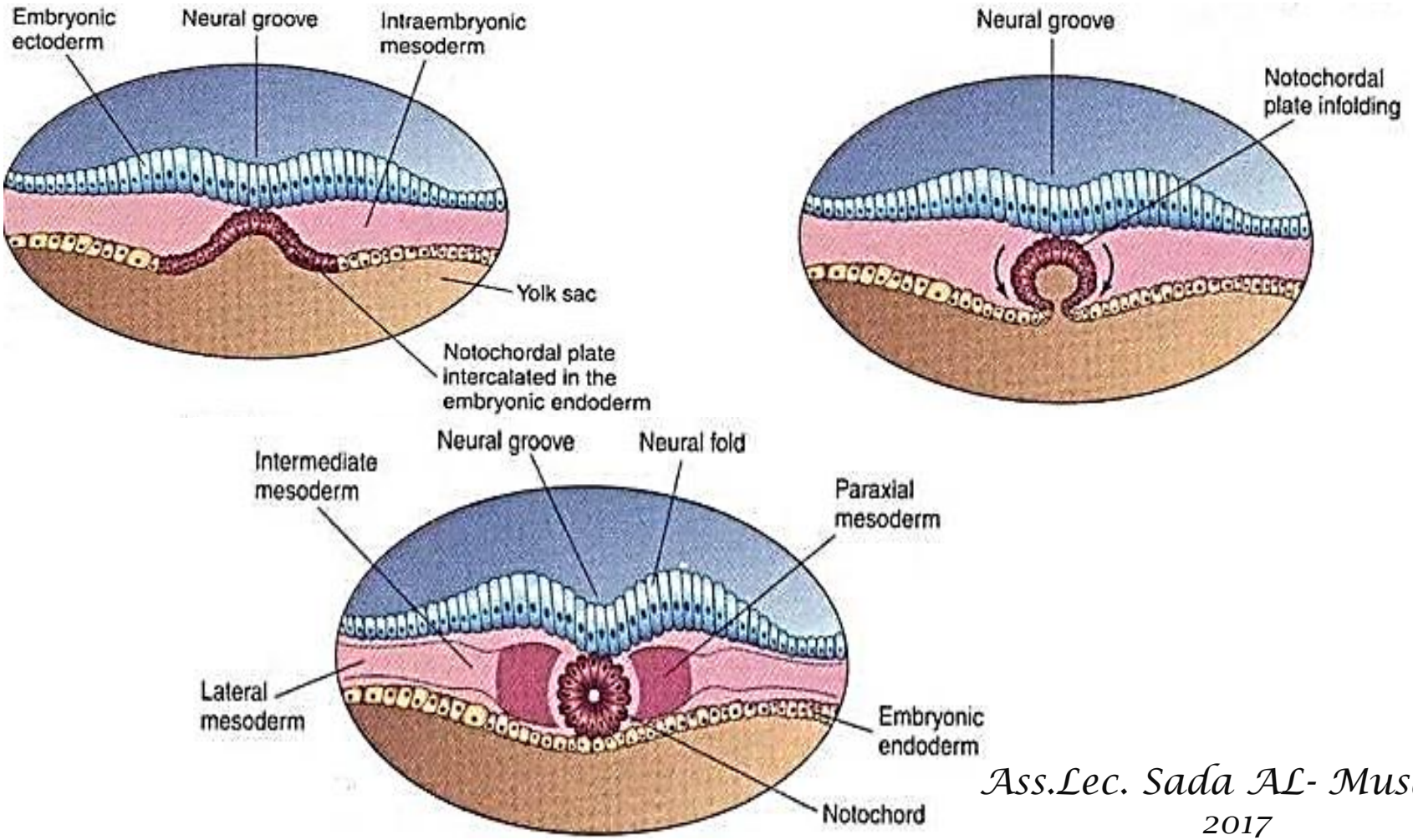
Notochordal plate folds to form the notochord, which gets separated from the underlying endoderm.



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Functions of Notochord

- Defines primordial axis of the embryo
- Provides rigidity to the embryo
- Serves as a basis for the development of the axial skeleton
- Indicates the future site of the vertebral bodies/column
- Regulates differentiation of surrounding structures including the overlying ectoderm and the mesoderm

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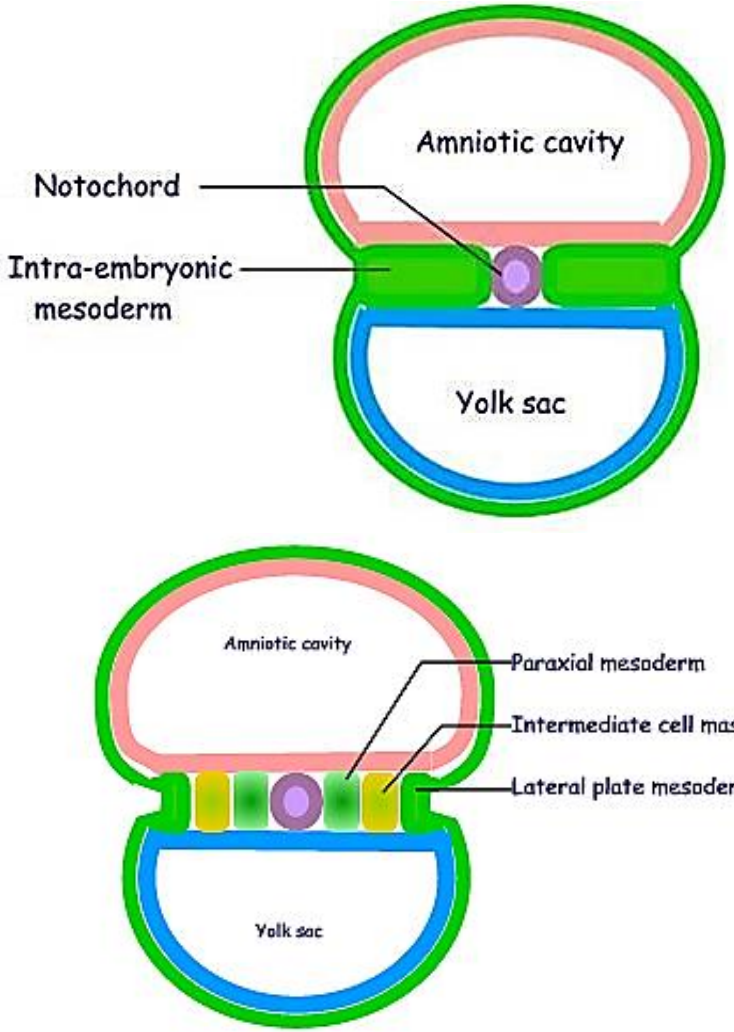
Differentiation of the Intraembryonic Mesoderm

- Induced by the notochord
- Differentiates into the:
  - Paraxial mesoderm
  - Intermediate cell mass
  - Lateral plate mesoderm



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