

*Biology 223*

*Human Anatomy and Physiology*

*Week 1; Lecture 2; Wednesday*

*Dr. Stuart S. Sumida*

# Early Development of Humans

(Continued)

# Review:

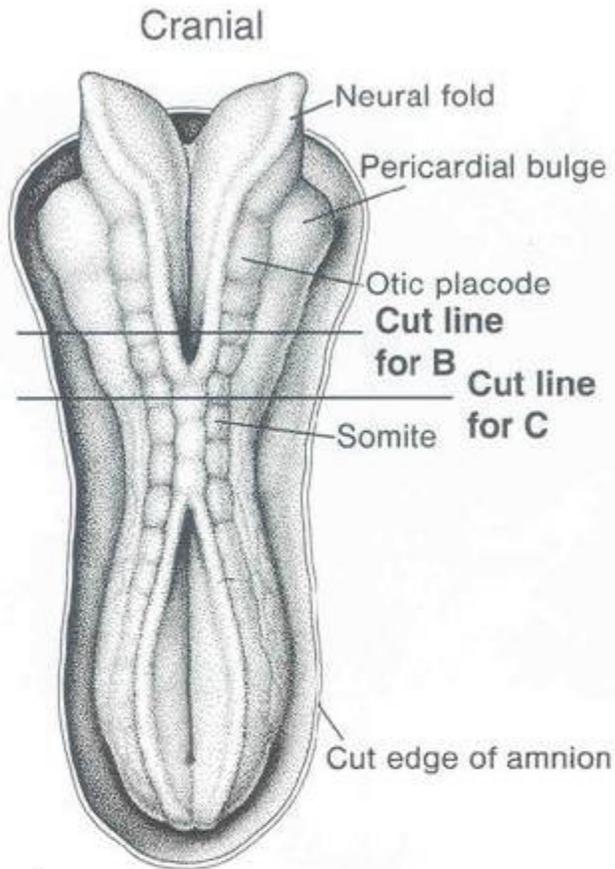
## Historical and Developmental Perspectives

Ontogeny

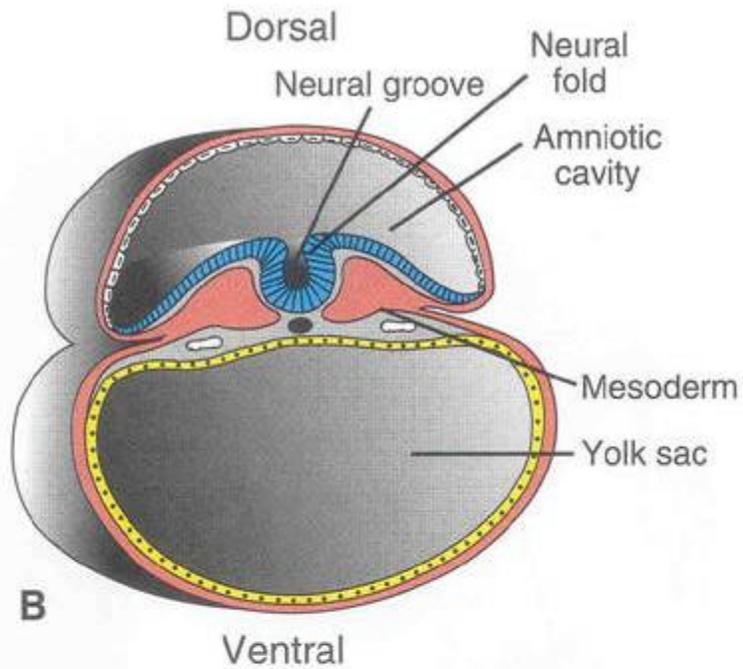
Early embryological development

Cross-section of the body

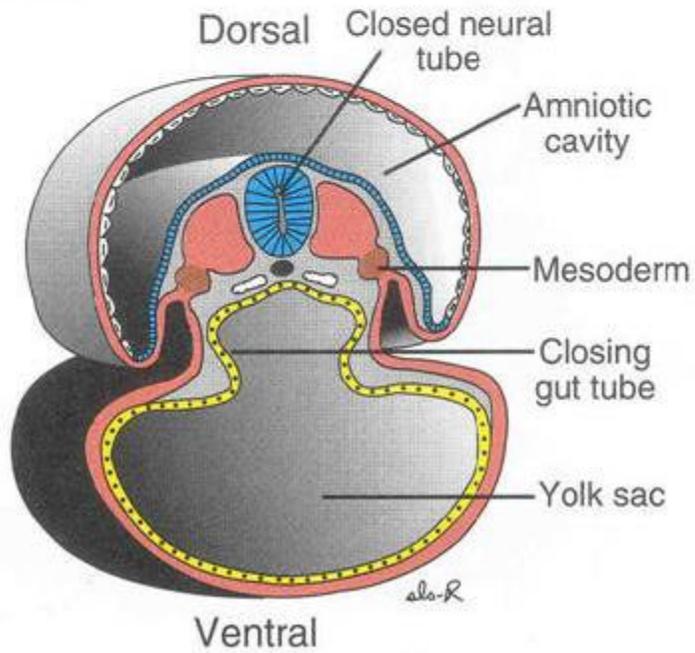
Chordate features – dorsal hollow nerve cord, notochord, gut tube, certain blood vessels, muscle blocks, and coelom.



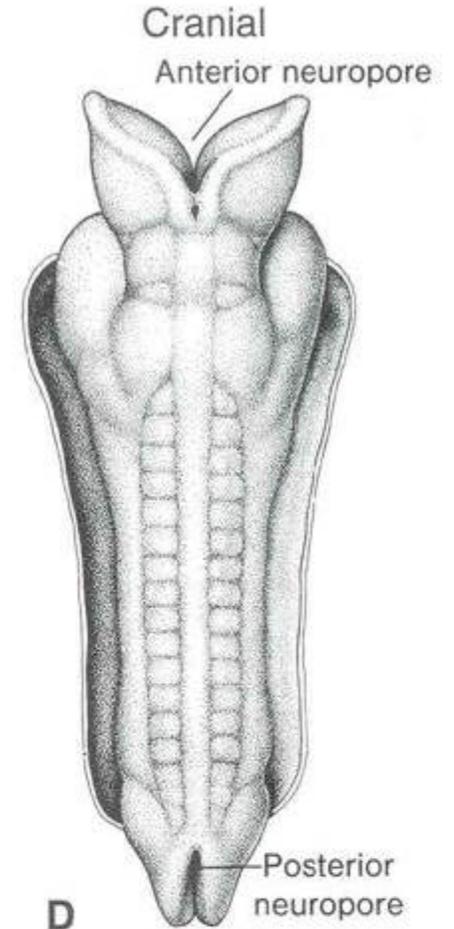
**A** Caudal  
22 Days  
Dorsal View



**B**



**C**

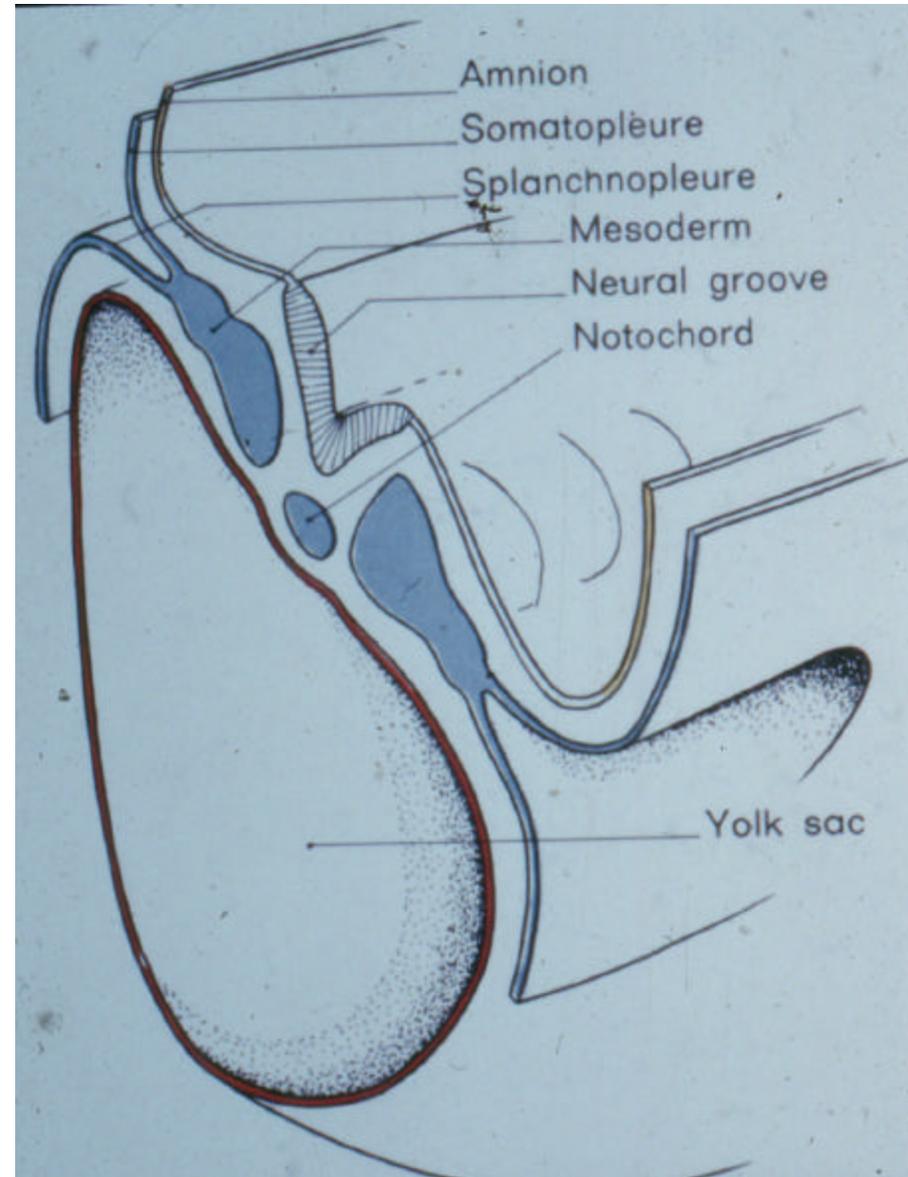


**D**

Caudal  
23 Days  
Dorsal View

Concurrent events:

Neural folds to  
Neural Groove





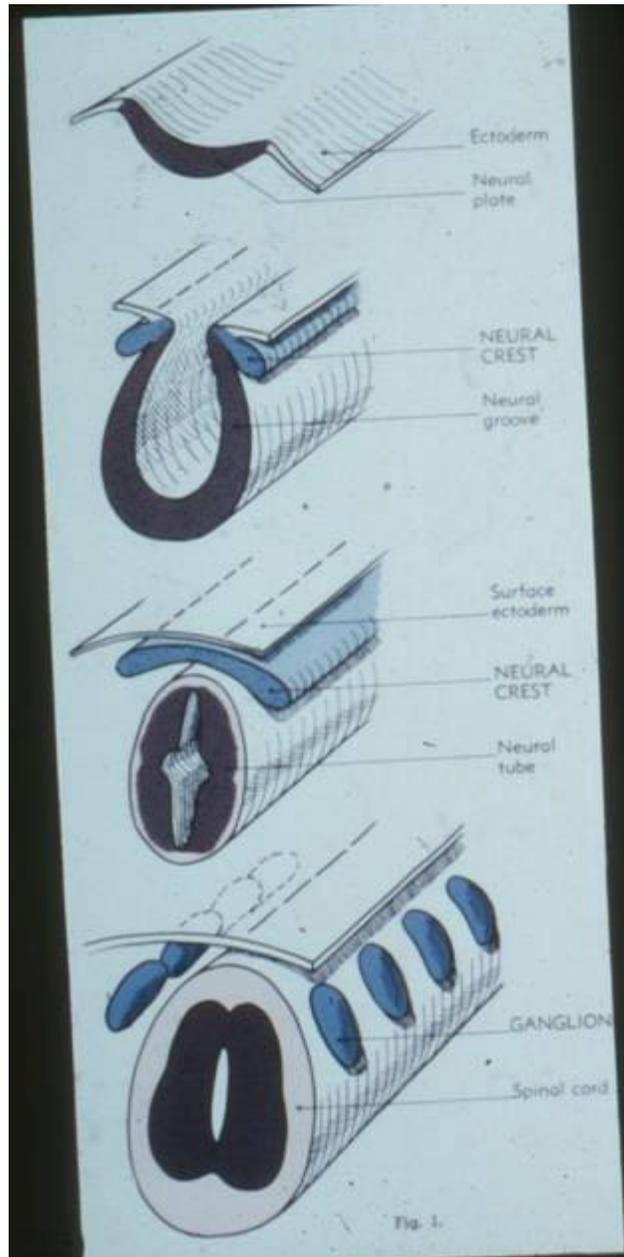
# Mesodermal structures

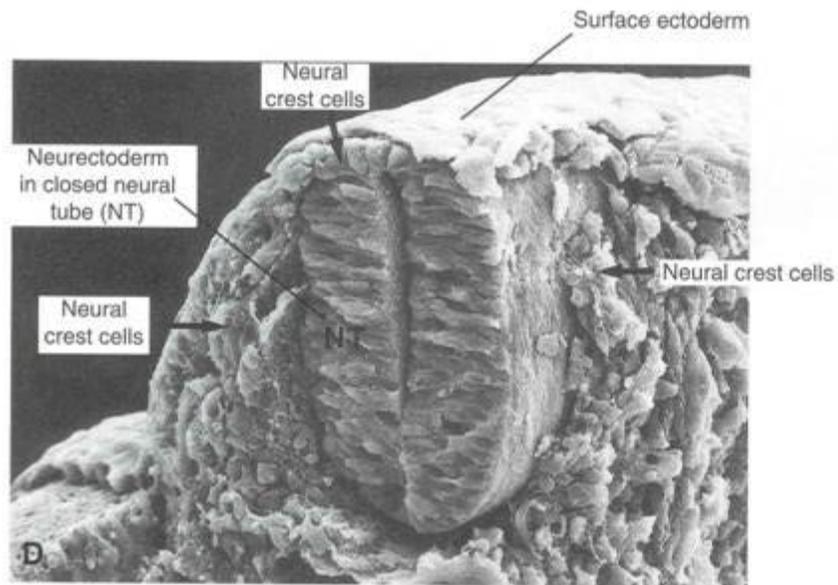
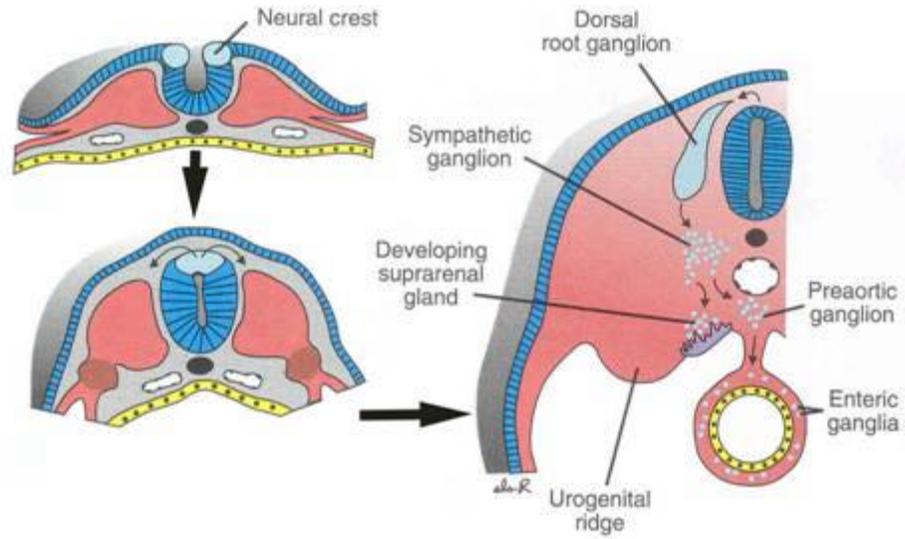
- Paraxial mesoderm
- Lateral mesoderm
- Intermediate mesoderm
- Somites
  - Segmental structures - how many in the head, neck, thorax, abdomen, pelvis, and in what remains of the tail. What is the total number of segments in the body?

# Early Development Continued:

- Dorsal hollow nerve tube
- Neural crest
- Further differentiation of the mesoderm

# Neural Crest Development

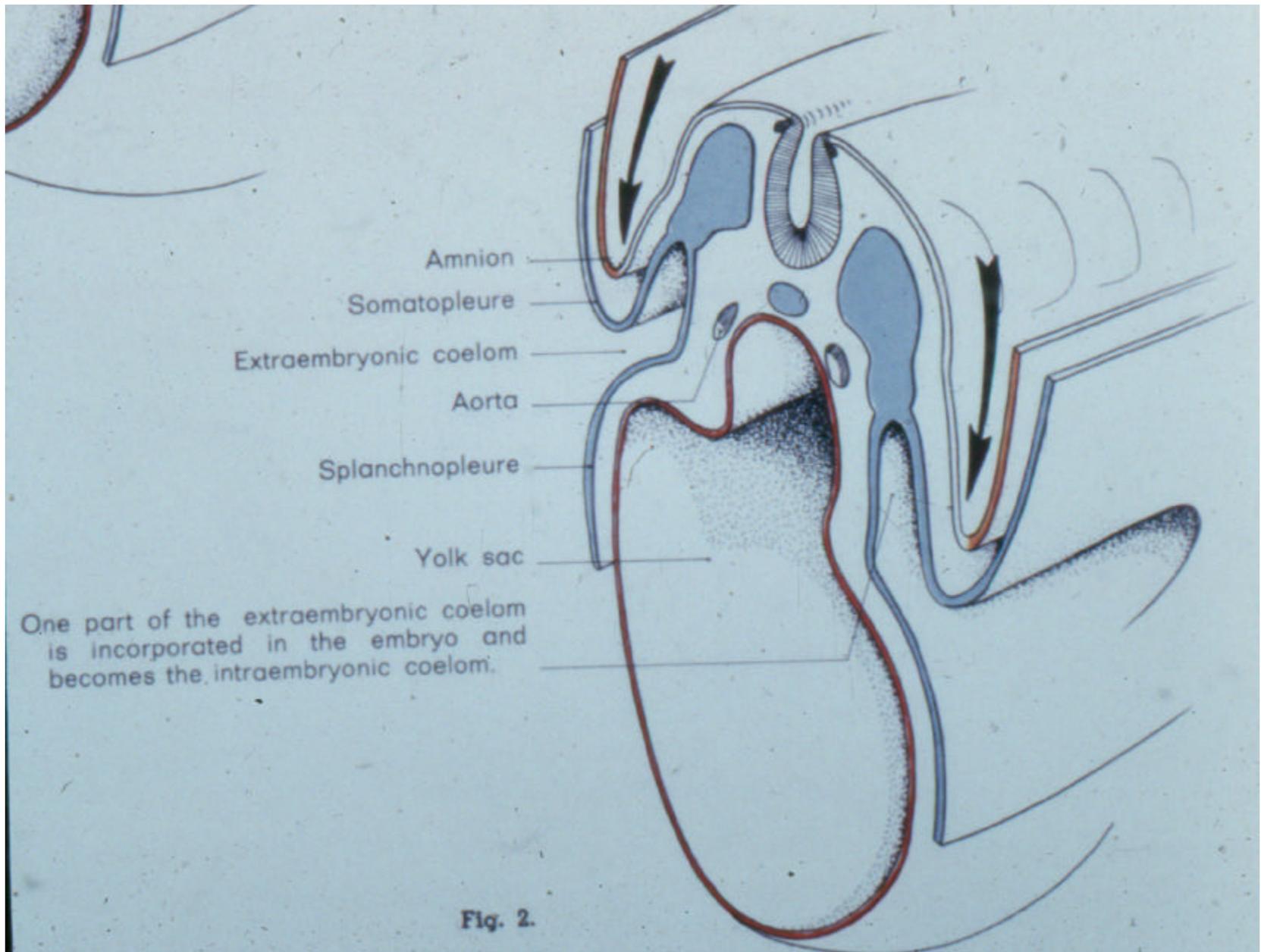




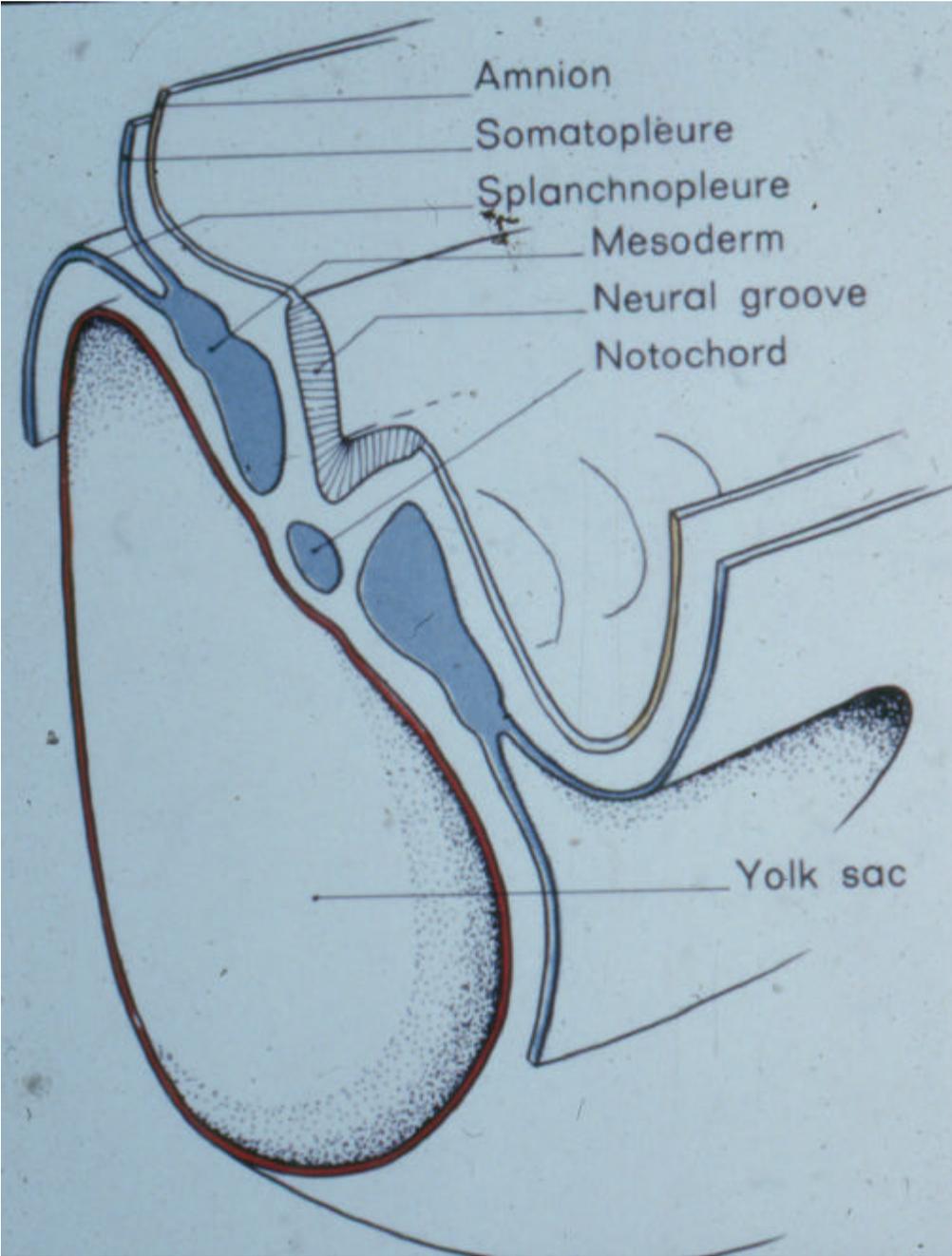
23 Days

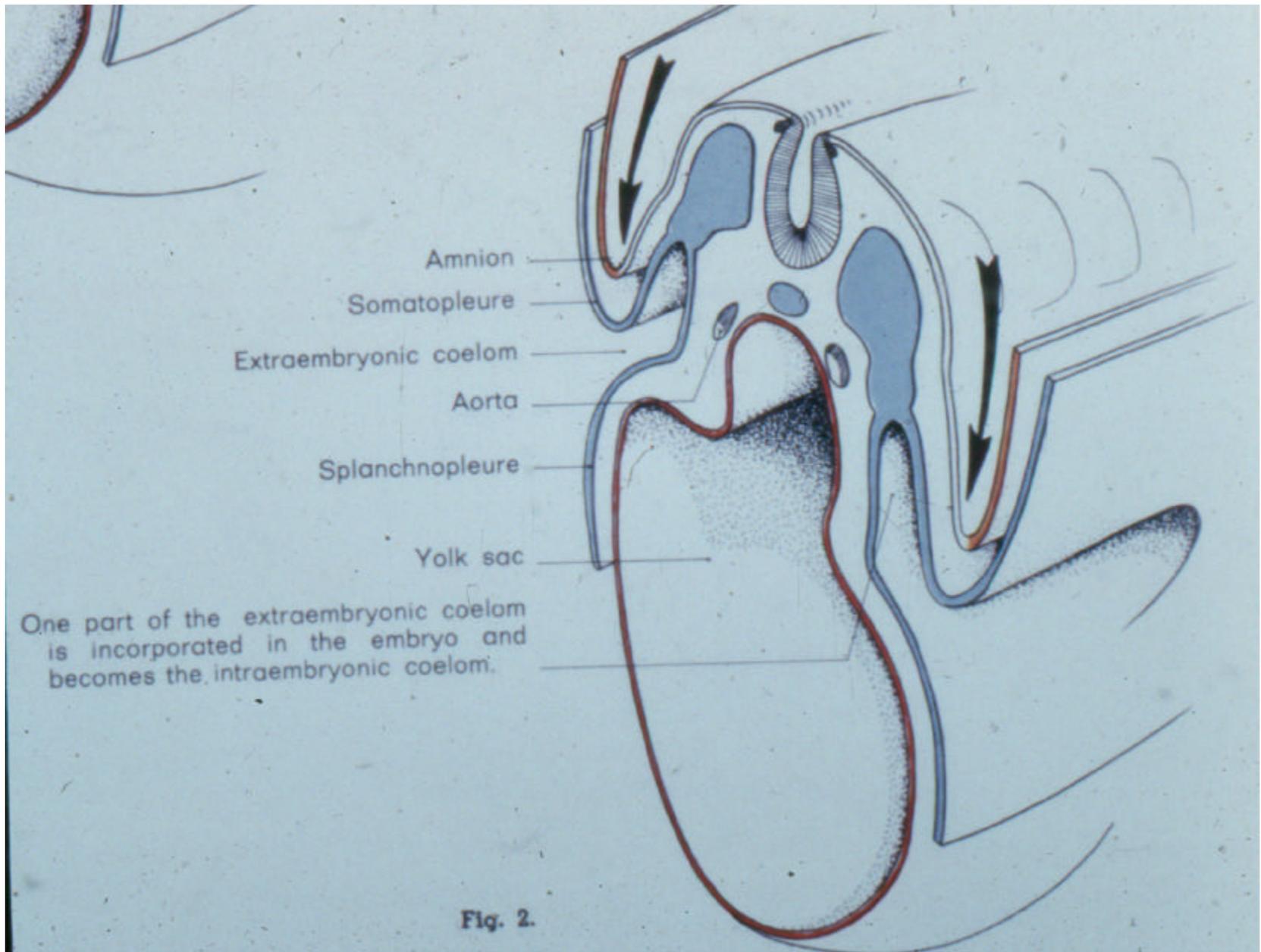
# Structures Visible in the Basic Cross-Section of the Body (Embryo or Adult!)

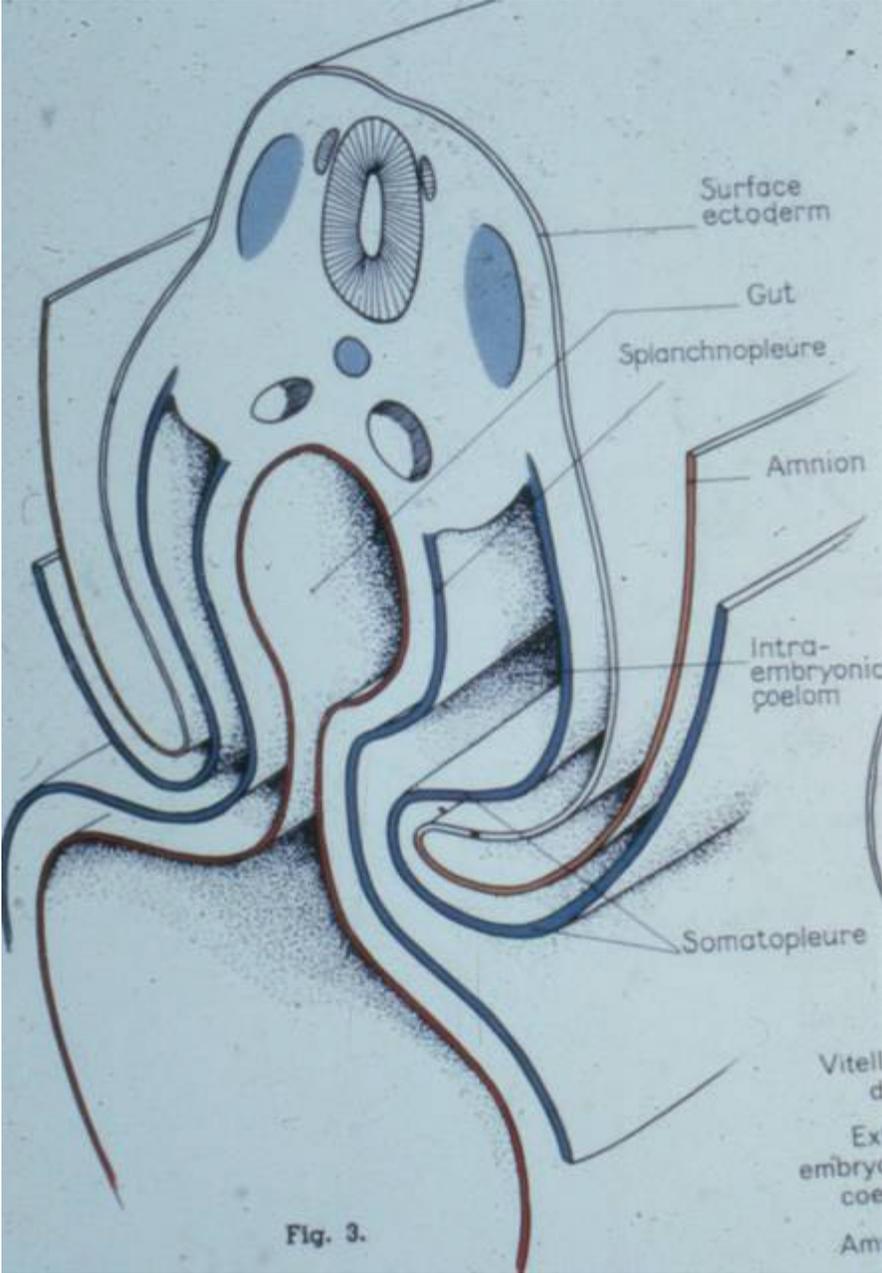
- Coelom
- Somatopleure
- Splanchnopleure
- Parietal Peritoneum
- Visceral Peritoneum
- Dorsal mesentery
- Ventral mesentery

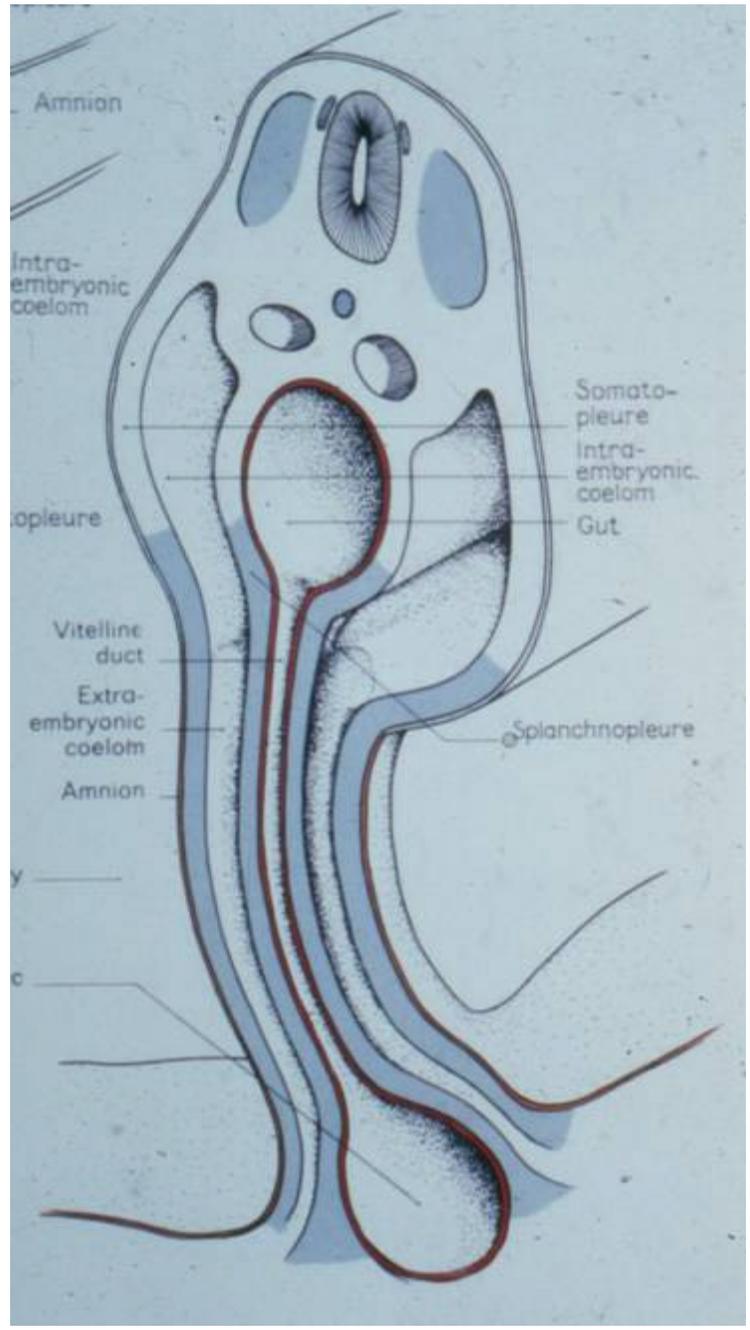




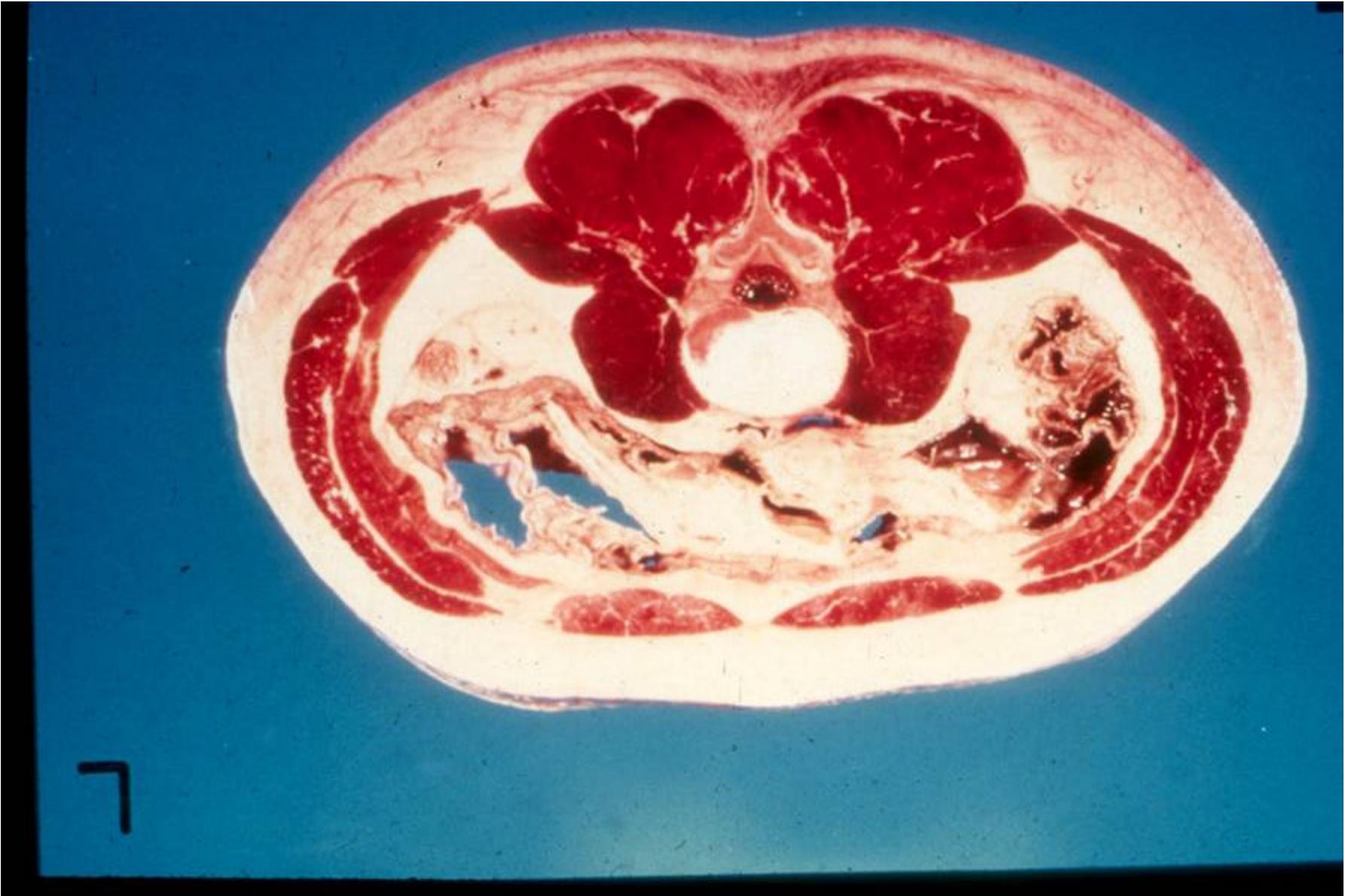


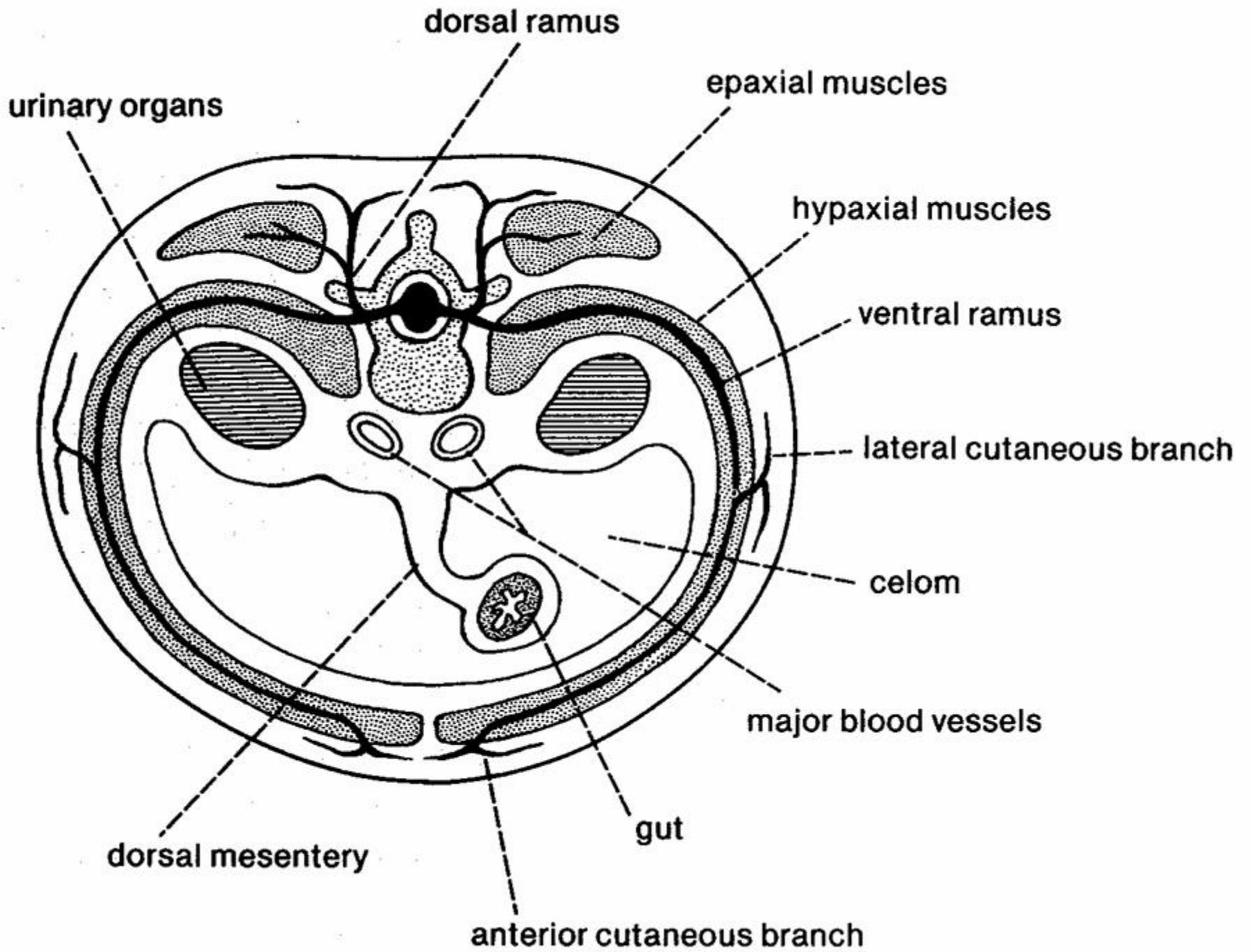




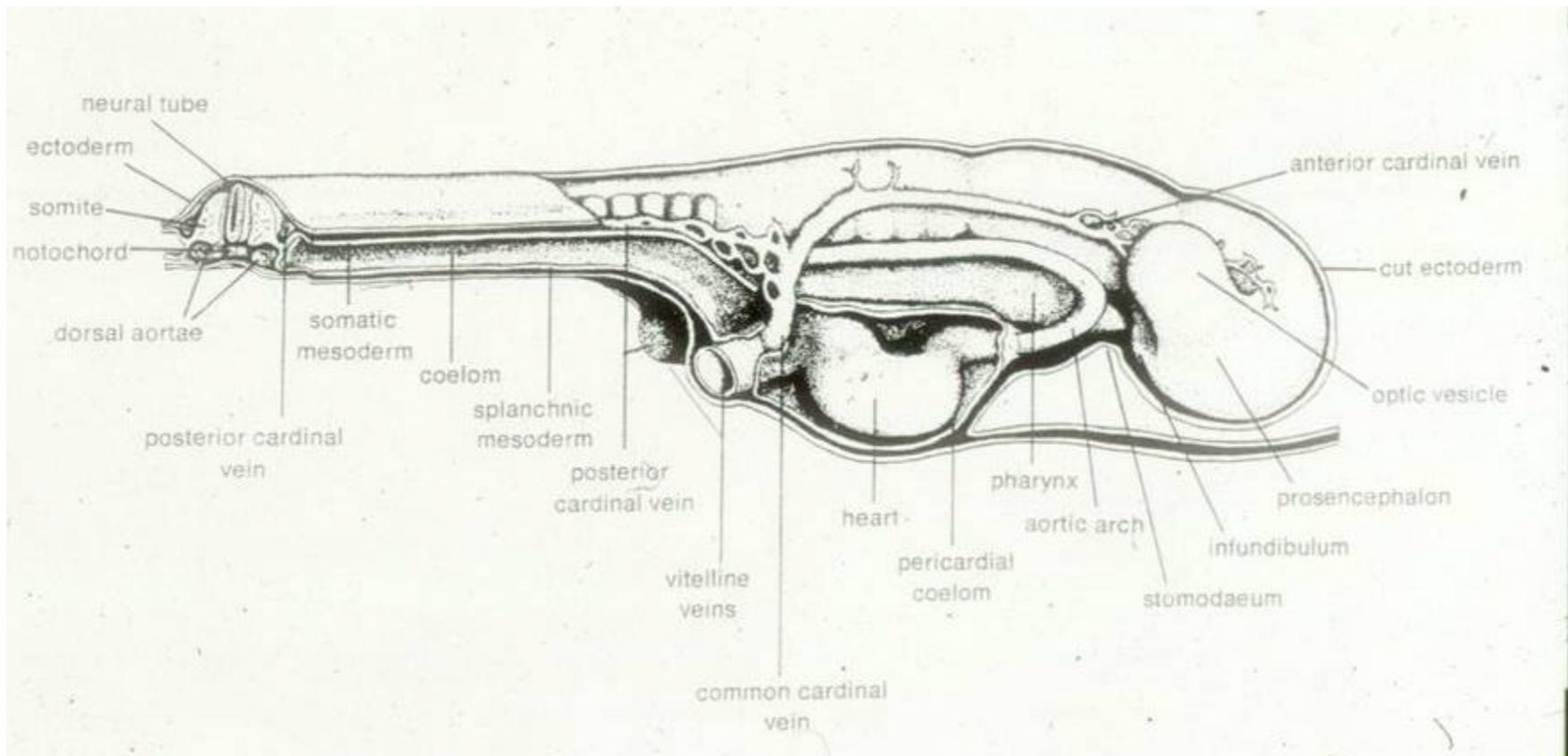


Test yourself...

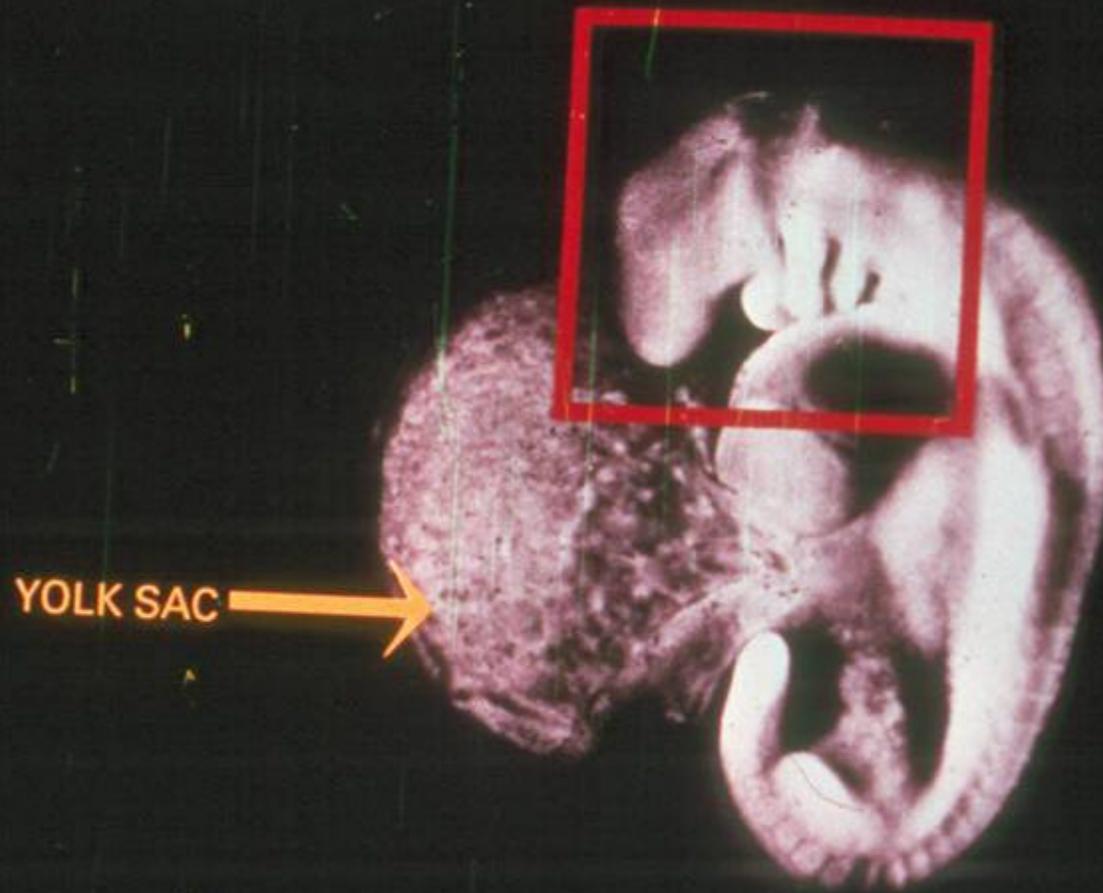




Trans-segmental structures  
versus  
Segmental structures



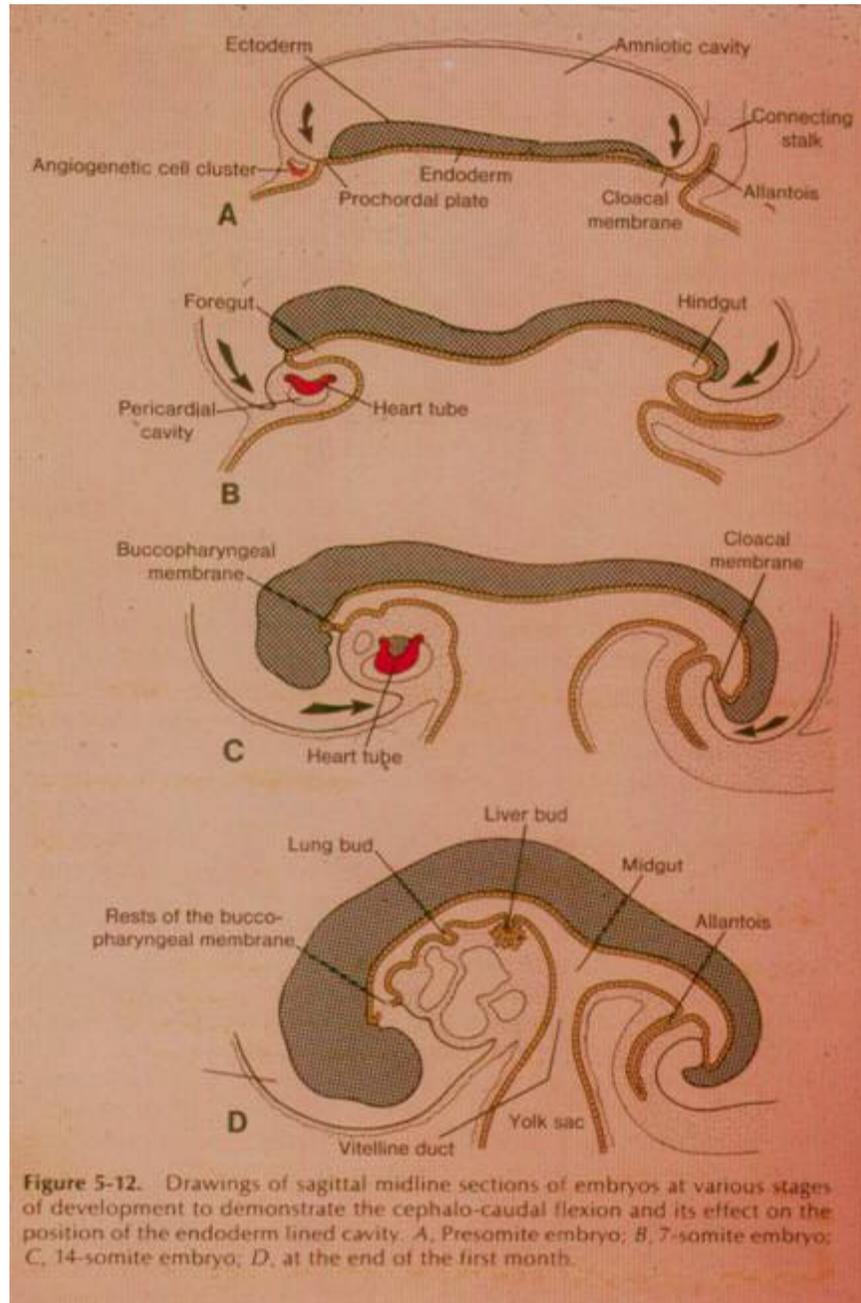
28-DAY-OLD EMBRYO. CHORION AND AMNION REMOVED.  
SIDE OF RED SQUARE = 1/16 INCH.



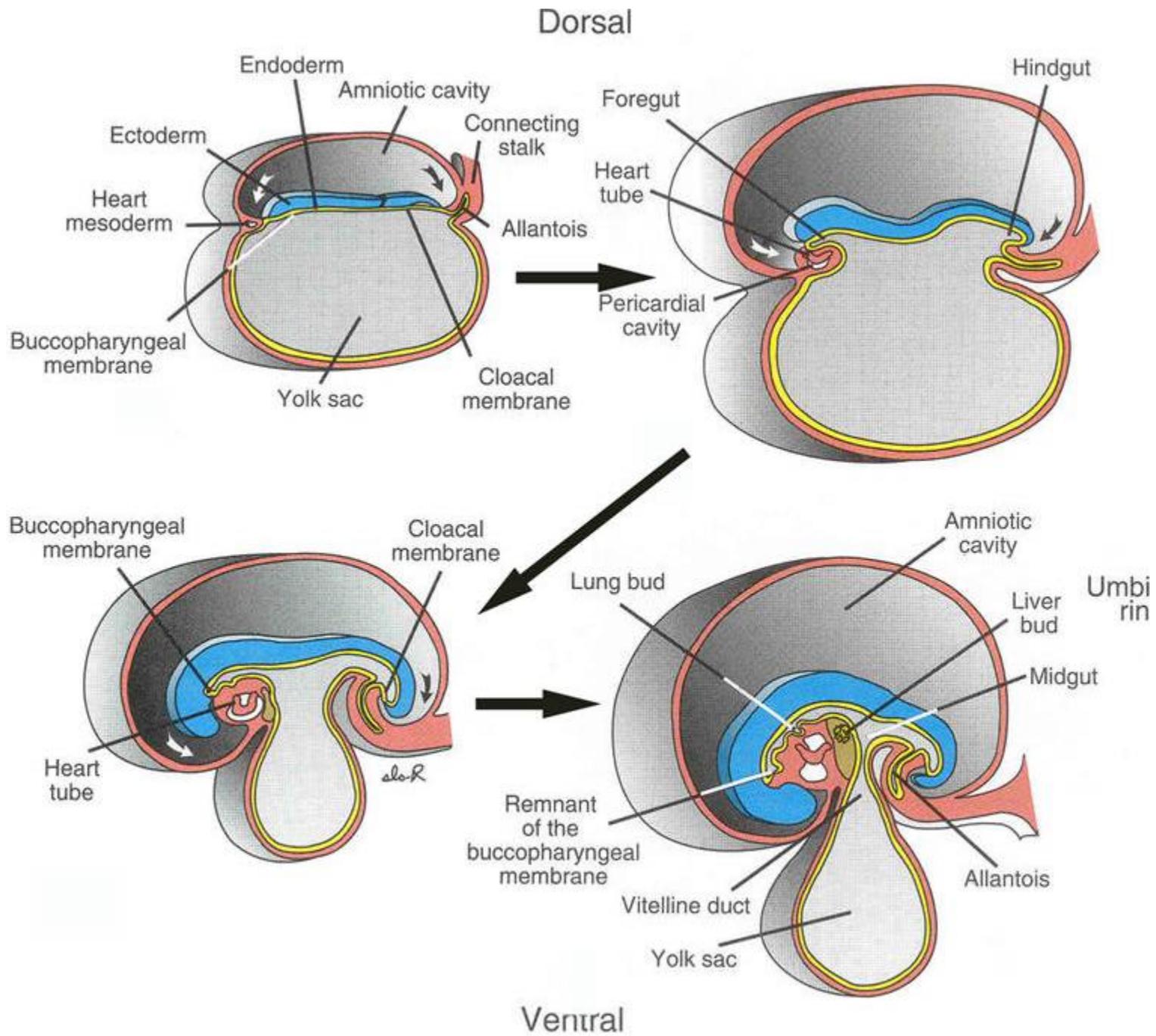
Gill slits / Gill pouches

# Further endodermal development:

- Lateral folds
- Oropharyngeal membrane
- Embryonic foregut
- Embryonic hindgut



**Figure 5-12.** Drawings of sagittal midline sections of embryos at various stages of development to demonstrate the cephalo-caudal flexion and its effect on the position of the endoderm lined cavity. *A*, Presomite embryo; *B*, 7-somite embryo; *C*, 14-somite embryo; *D*, at the end of the first month.

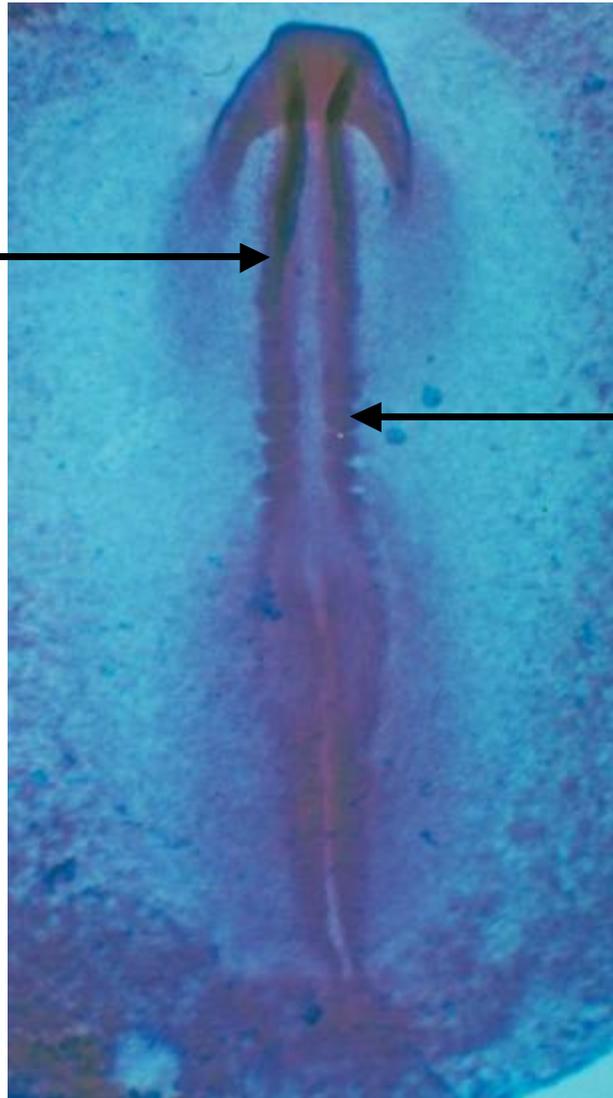




Biology 223  
Development MiniQuiz

# Question 1

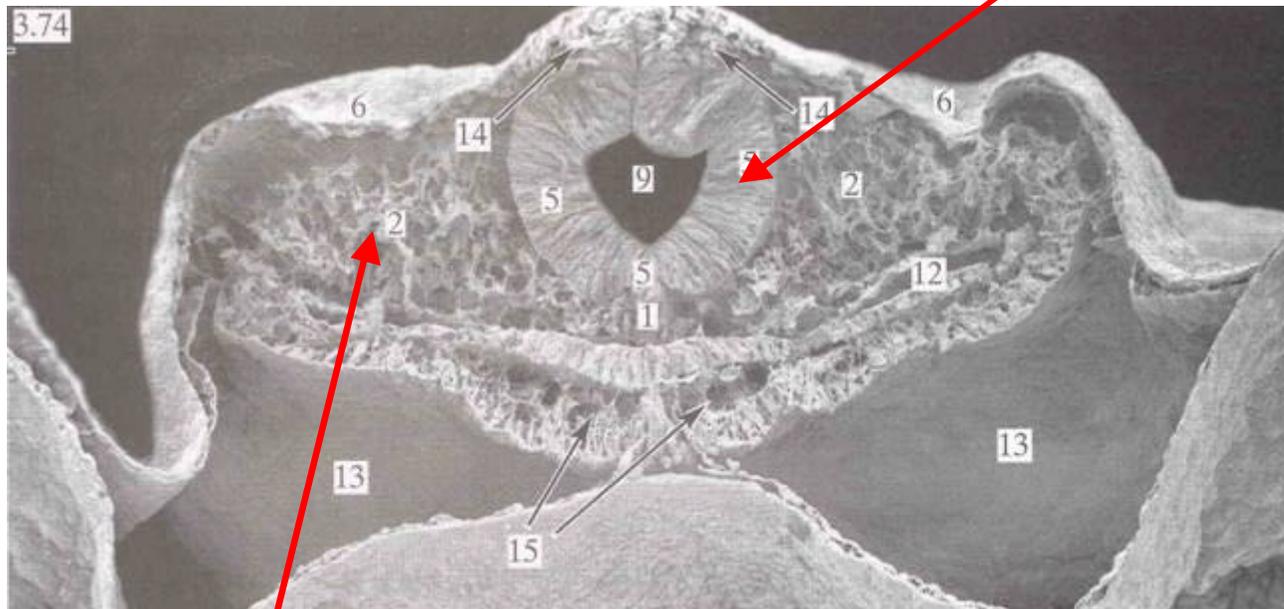
**1A. This fold will fuse with the one on the other side to give what structure?**



**1B. What structure is this?**

# Question 2

2B. Segmental or trans-segmental?



2A. From what embryonic material is this derived?

# Question 3

3A. What structure is this?



3B. The layer at the tip of the arrow is derived from what embryonic material?

# Question 4

4A. This is derived from what embryological material?



4B. What is this? Be specific.

# Question 5



**5A. What tube is this?**

**5B. From what embryological material is it derived?**

# Question 6

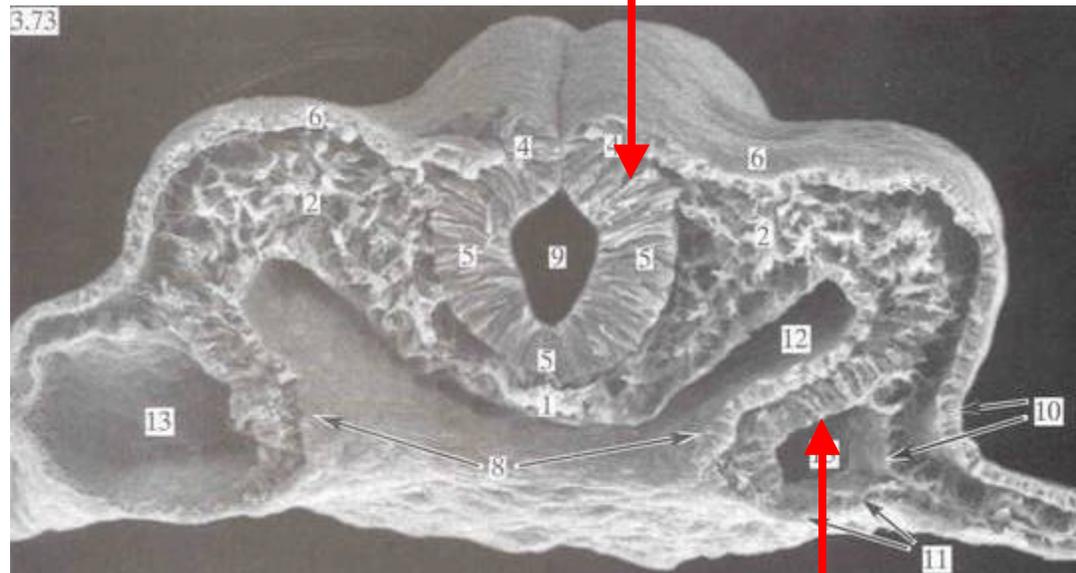


**6A. What is this?**

**6B. From what embryological material is the trans-segmental structure dorsal to it derived?**

# Question 7

7A. What embryological material?

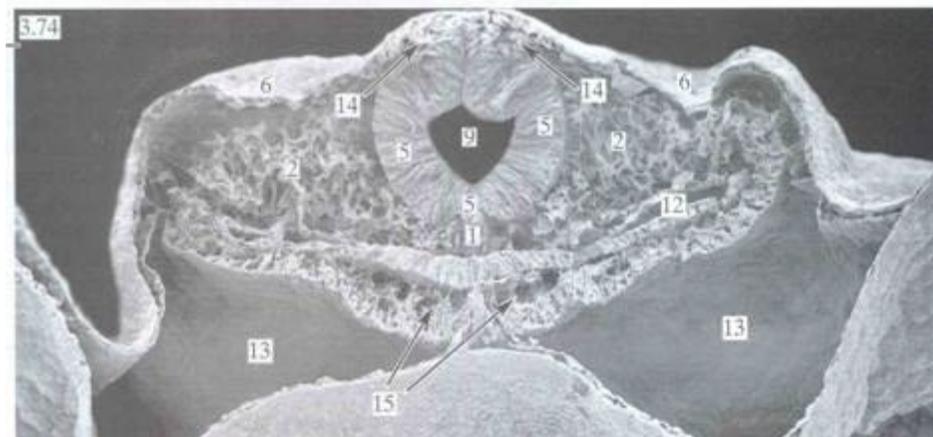
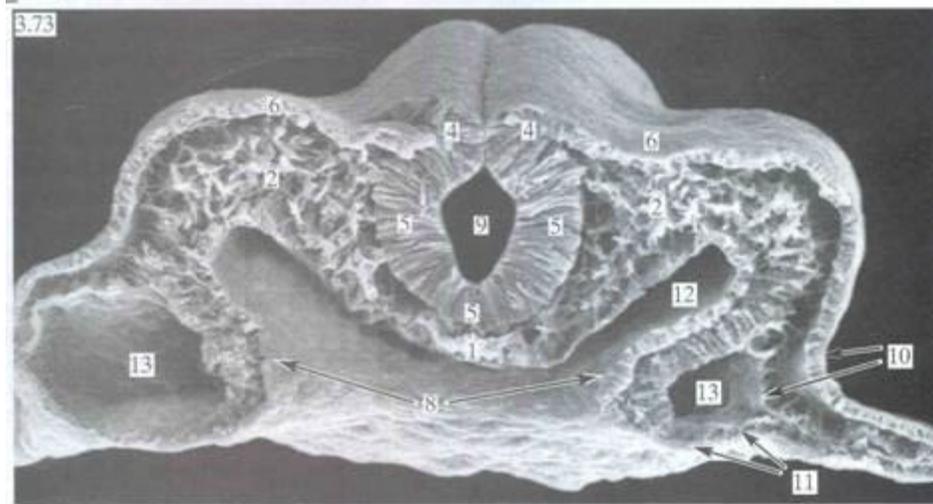
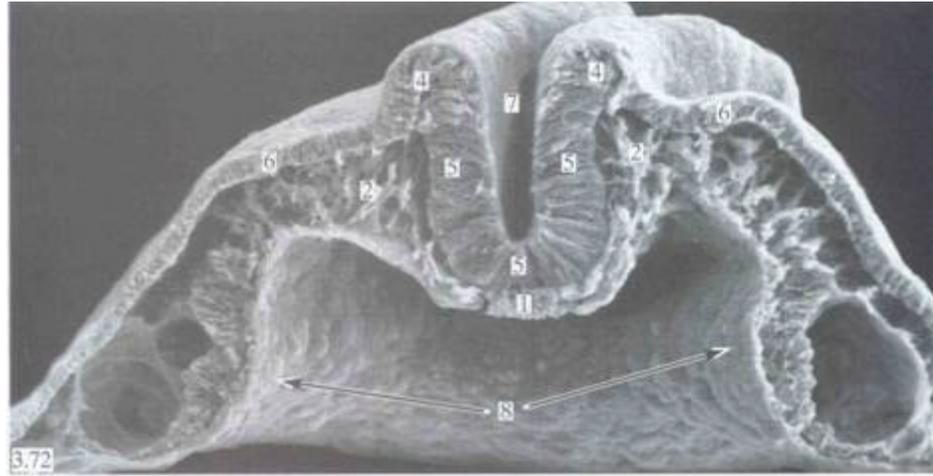


7B. What embryological material?

# Question 8

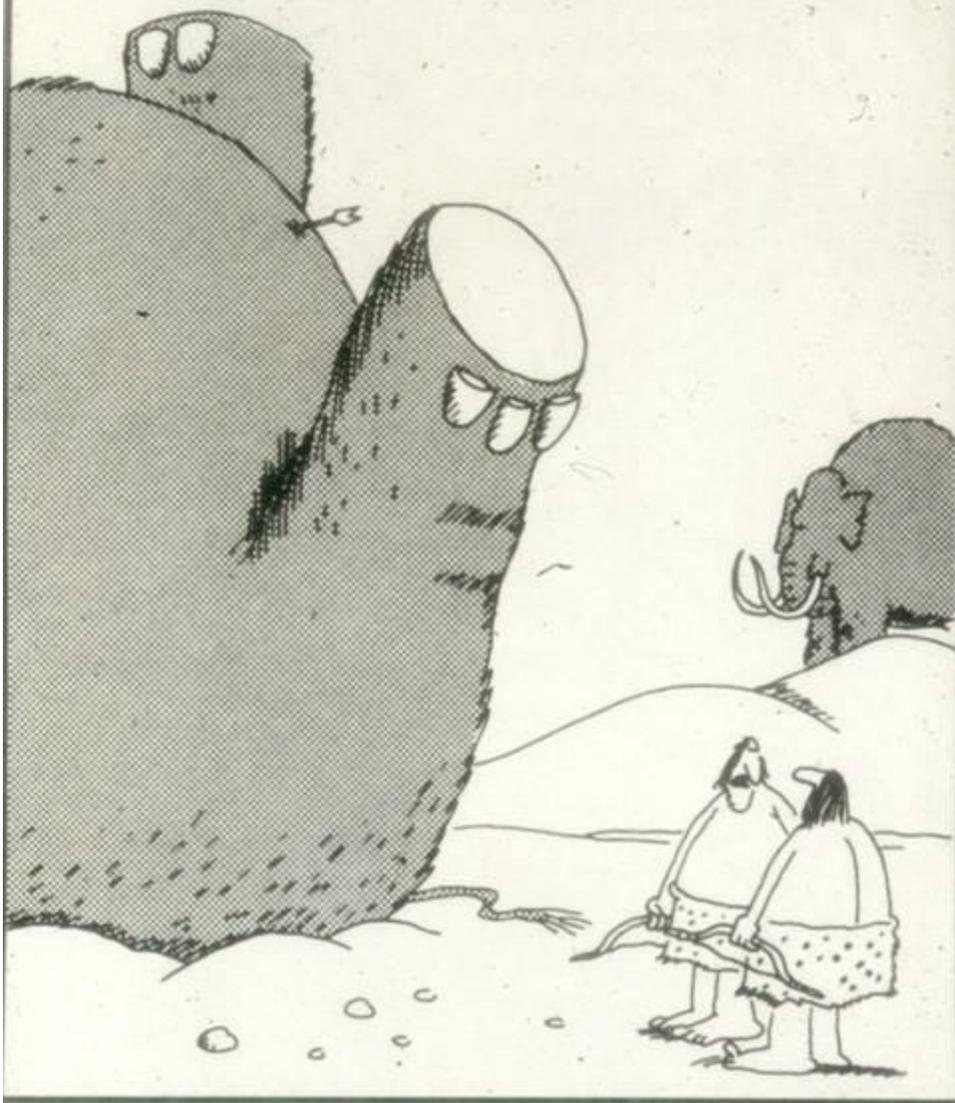


**8A&B. Besides the two structures indicated by the red arrows, name two other structures that are defining features of chordates.**



1986

Larson



"Maybe we should write that spot down."