

"Derivatives of Mesodermal Germ Layer"

<- Divisions of Mesodermal Germ Layer ->

- Initially, forms thin sheet on each side of midline.
 - Around 17th day, cells close to midline proliferate, forming thickened plate called paraxial mesoderm
- More laterally, remains thin known as lateral plate mesoderm
- Intercellular cavities in lateral plate divide into two layers:
 - i) Somatic or parietal mesoderm layer (covering amnion)
 - ii) Splanchnic or visceral mesoderm layer (covering yolk sack)

<- Paraxial Mesoderm ->

» Somitomeres and Somites

- Begins to organize into segments by beginning of third week
- Segments called somitomeres first appear in cephalic region, forming cephalocaudally

- Each somitomere consists of mesodermal cells arranged concentrically
- Organize into somites from occipital region caudally

» Rate of Appearance of Somites

- Appear in pairs
- First occipital somite pair appears at -> 20th day
 - Each day -> 3 pairs formed
- By the end of 5th week > 42-44 pairs present

» Neuromeres

- Somitomeres in the head region (cranial to occipital somites) form into neuromeres contributing to mesenchyme in the head
- This occurs in association with segmentation of the neural plate

<- Intermediate Mesoderm ->

- Temporarily connects paraxial mesoderm with lateral plate
- Differentiates into urogenital structures:

» Urinary Structures:

- Kidney
- Ureter
- Urinary bladder
- Urethra

» Reproductive Structures

- Testis
- Ovaries
- External Genitalia
- Forms segmental cell clusters in cervical and upper thoracic regions (future nephrotomes)
 - Forms unsegmented mass of tissue (nephrogenic cord) more caudally

<- Lateral Plate Mesoderm ->

- Splits into parietal (somatic) and visceral (splanchnic) layers.

» Parietal layer forms:

- Dermis of skin in body wall and limbs
- Bones and connective tissue of limbs
- Sternum
- Costal cartilages, limb muscles, and most of the body wall muscles

- Parietal layer surrounding intraembryonic cavity forms mesothelial membranes, lining peritoneal, pleural, and pericardial cavities secreting serous fluid.

» Visceral layer forms:

- Visceral layer, with embryonic endoderm forms wall of gut tube
- It forms thin serous membrane around each organ