Pharyngeal Arches, Pouches and Grooves/Clefts (Lab6)

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#### Pharyngeal Apparatus

- The head and neck region of four week human embryo somewhat resemble these regions of a fish embryo of comparable stage
- This explains the former use of designation branchial apparatus
- Branchial is derived from the Greek word branchia or gill

Pharyngeal Apparatus

Pharyngeal apparatus consists of:

- Pharyngeal arches
- Pharyngeal pouches
- Pharyngeal grooves/clefts
- Pharyngeal membrane

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# Pharyngeal Arches

- Pharyngeal arches begin to develop early in the fourth week as neural crest cells migrate into the head and neck region
- The first pair of pharyngeal arches (primordium of jaws) appears as a surface elevations lateral to the developing pharynx
- Soon other arches appear as obliquely disposed, rounded ridges on each side of the future head and neck regions 2017



# Pharyngeal Arches

- By the end of the fourth week, four pairs of pharyngeal arches are visible externally
- The fifth and sixth arches are rudimentary and are not visible on the surface of the embryo
- The pharyngeal arches are separated from each other by fissures called pharyngeal grooves

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• They are numbered in craniocaudal sequence

# Pharyngeal Arches

- The first pharyngeal arch (mandibular arch) develops maxillary and mandibular prominences
- The first pair of pharyngeal arches plays a major role in facial development
- The second pharyngeal arch (hyoid arch) contributes to the formation of hyoid bone

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# Pharyngeal Arch Components

- Each pharyngeal arch consists of a core of mesenchyme
- Is covered externally by ectoderm and internally by endoderm
- In the third week the original mesenchyme is derived from mesoderm
- During the fourth week most of the mesenchyme is derived from neural crest cells that migrate into the pharyngeal arches Ass.Lec. Sada AL-Musawi
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## Fate of Pharyngeal Arches

- The pharyngeal arches contribute exclusively to the formation of the face, nasal cavities, mouth, larynx, pharynx and neck
- During the fifth week, the second pharyngeal arch enlarges and overgrows the third and fourth arches, forming the ectodermal depression called cervical sinus
- By the end of seventh week the second to fourth pharyngeal grooves and the cervical sinus have disappeared, giving the neck a smooth contour

