

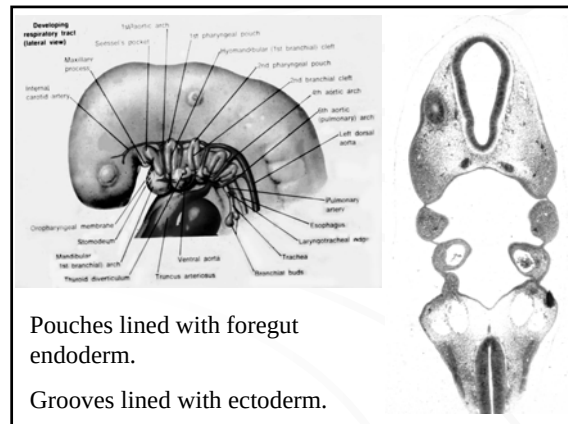
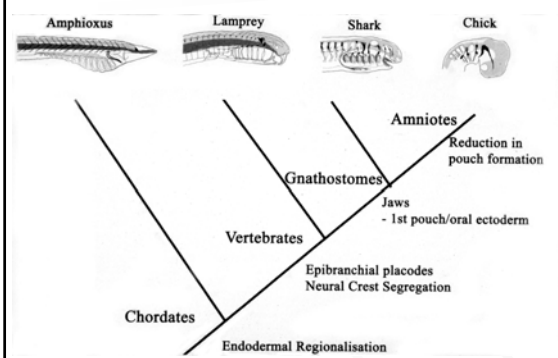
Pharyngeal pouches

L.Moss-Salentijn

Outline

- Pharyngeal grooves
- Development of external ear
- Development of tongue
- Development of thyroid gland
- Pharyngeal pouches

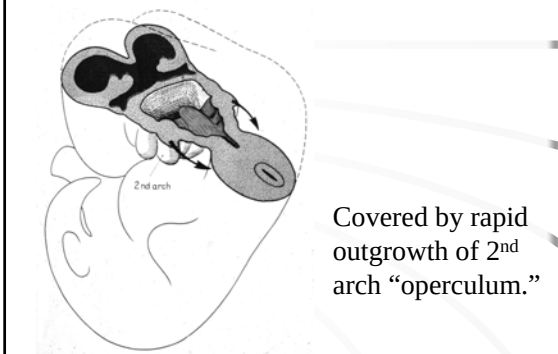
Pharyngeal pouch evolution



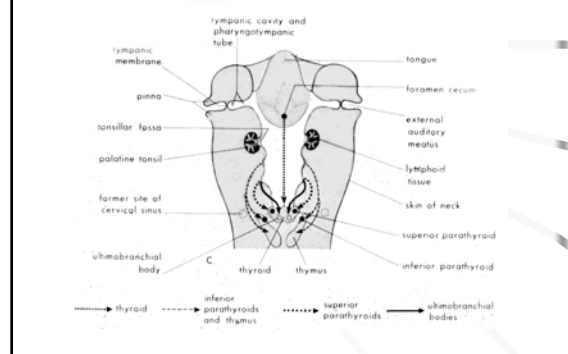
Pouches lined with foregut endoderm.

Grooves lined with ectoderm.

Fate of pharyngeal grooves 2-4



Fate of 1st pharyngeal groove and pouch



First groove → external auditory meatus

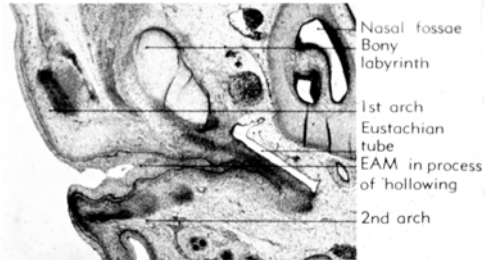
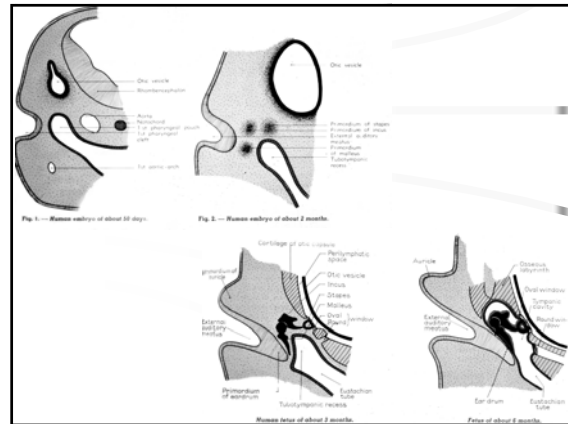
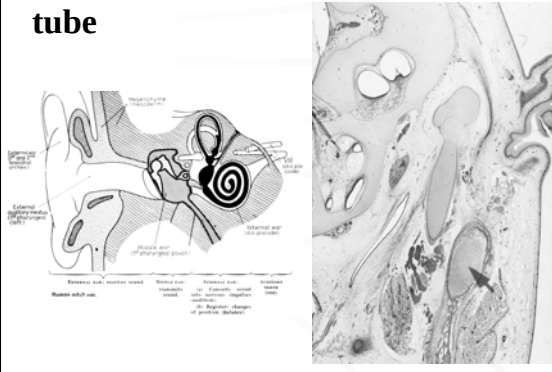


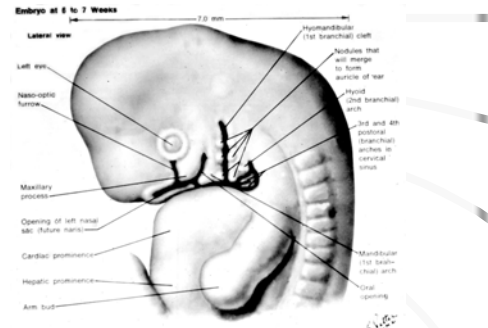
Fig. 1. — Frontal section of ear of a human fetus of about 70 days ($\times 27$).



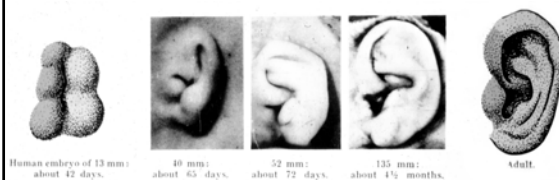
First pouch → pharyngotympanic tube



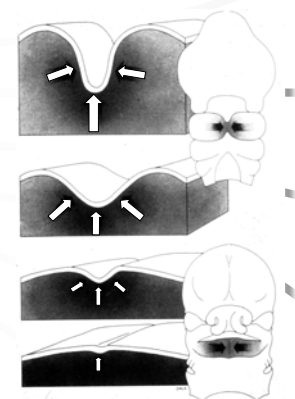
External ear receives contributions from arches 1 and 2



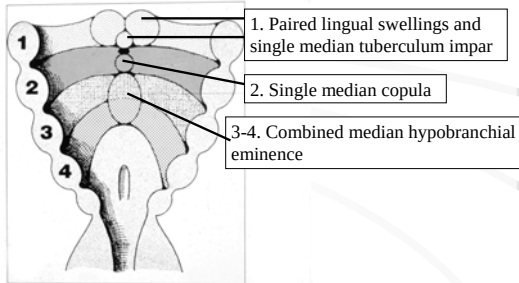
External ear development by merging of 6 auricular hillocks



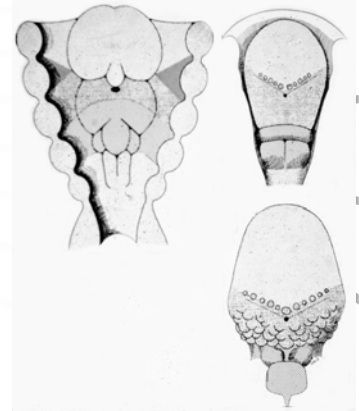
External ear and tongue development require merging: the elimination of a groove between facial processes by differential growth.



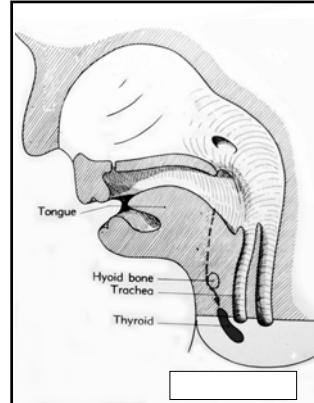
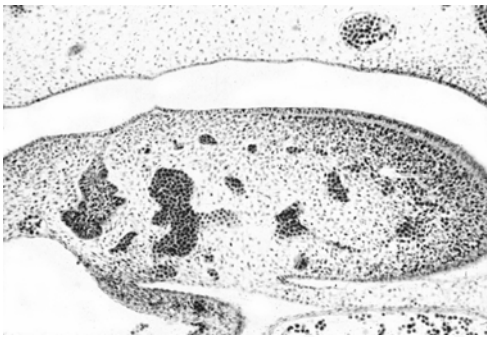
Endodermal swellings on arches 1-4 contribute to the tongue



Merging of lingual swellings

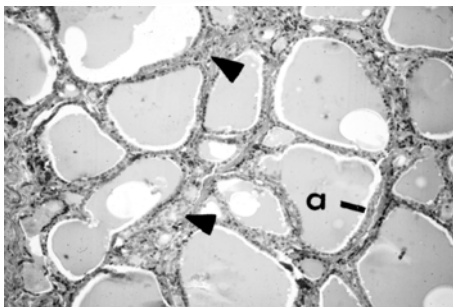


Thyroid gland development. Thyroglossal duct

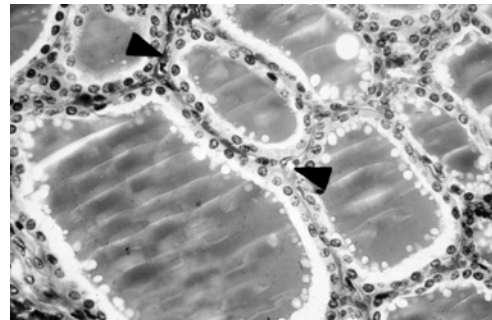


Descent of
developing
thyroid.
Thyroglossal
tract is no
longer intact,
allowing
gland to
move.

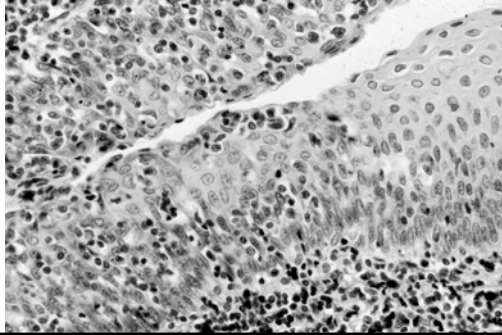
Adult thyroid gland



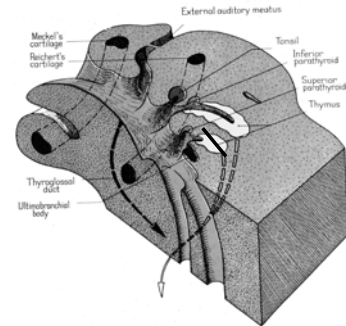
Thyroid gland



Palatine tonsil: epithelium of tonsillar crypt

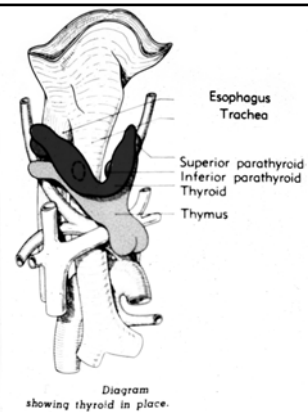


Third pharyngeal pouch, ventral: development of thymus



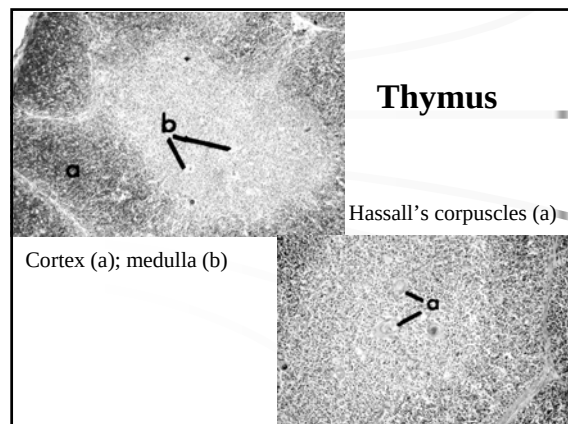
Thymus development

- 4th week: initially bilateral hollow tubes
- 5th week: elongation of primordia - still attached to pharyngeal pouches
- 6th week tips of primordia meet and fuse in midline below sternum

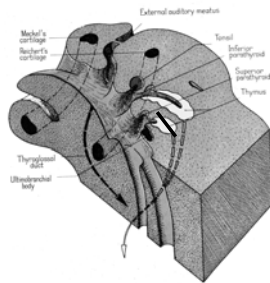


Thymus histogenesis

- During downward (caudal) growth lumina are lost. Epithelium is transformed into solid branching cords: future thymic lobules
- Densely packed epithelium develops into loose reticulum into which lymphocytes appear
- 12th week: development of well-defined medulla and cortex
- Hassall's corpuscles in medulla: ectodermally derived (third pharyngeal groove?)

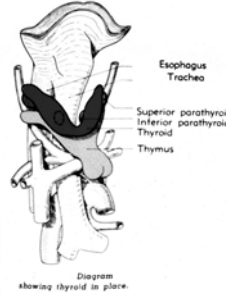


Third pharyngeal pouch, dorsal: inferior parathyroid gland



- Closely associated with thymus primordium.
- Detach together from pharyngeal wall and travel together; parathyroid bud encased in thymic tissue.
- When primordia pass thyroid by 7th week, primordia separate: inf. parathyroid becomes located on infero-posterior surface of thyroid.

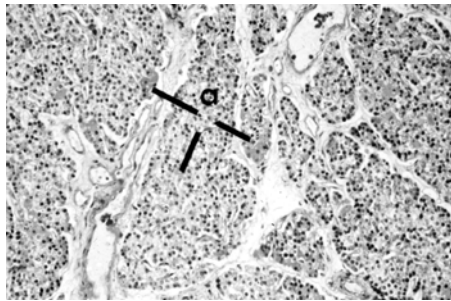
Fourth pharyngeal pouch, dorsal: superior parathyroid gland



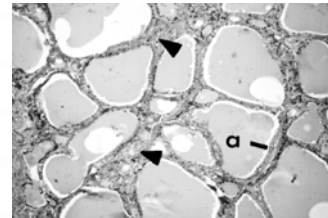
- Primordia of superior parathyroid glands develop very near the supero-posterior surface of the thyroid gland.
- They become readily attached or even embedded in the thyroid parenchyma.

Oxyphil cells (a) and
Principal or chief cells

Parathyroid gland



Fourth pharyngeal pouch, ventral: ultimobranchial bodies



Ultimobranchial bodies migrate inferiorly. They become embedded in posterior wall of thyroid and give rise to C-cells or parafollicular cells (arrowheads)