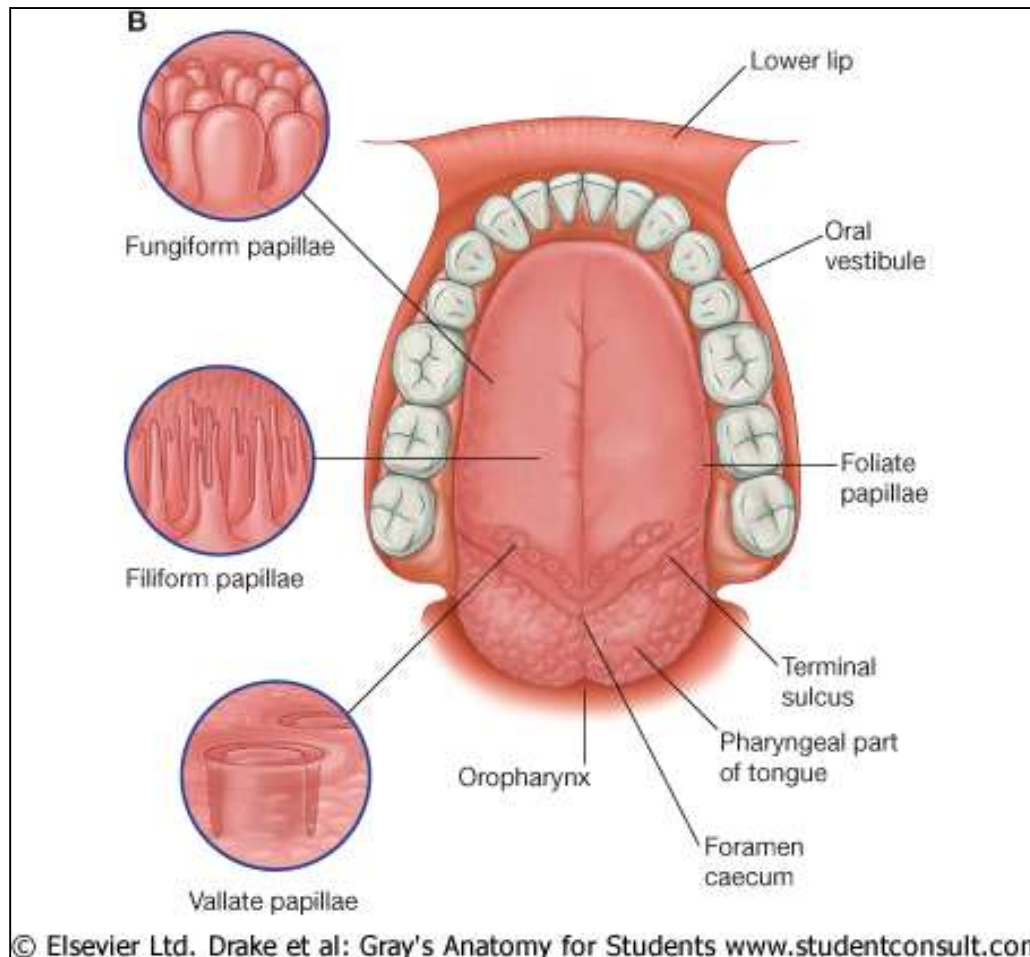
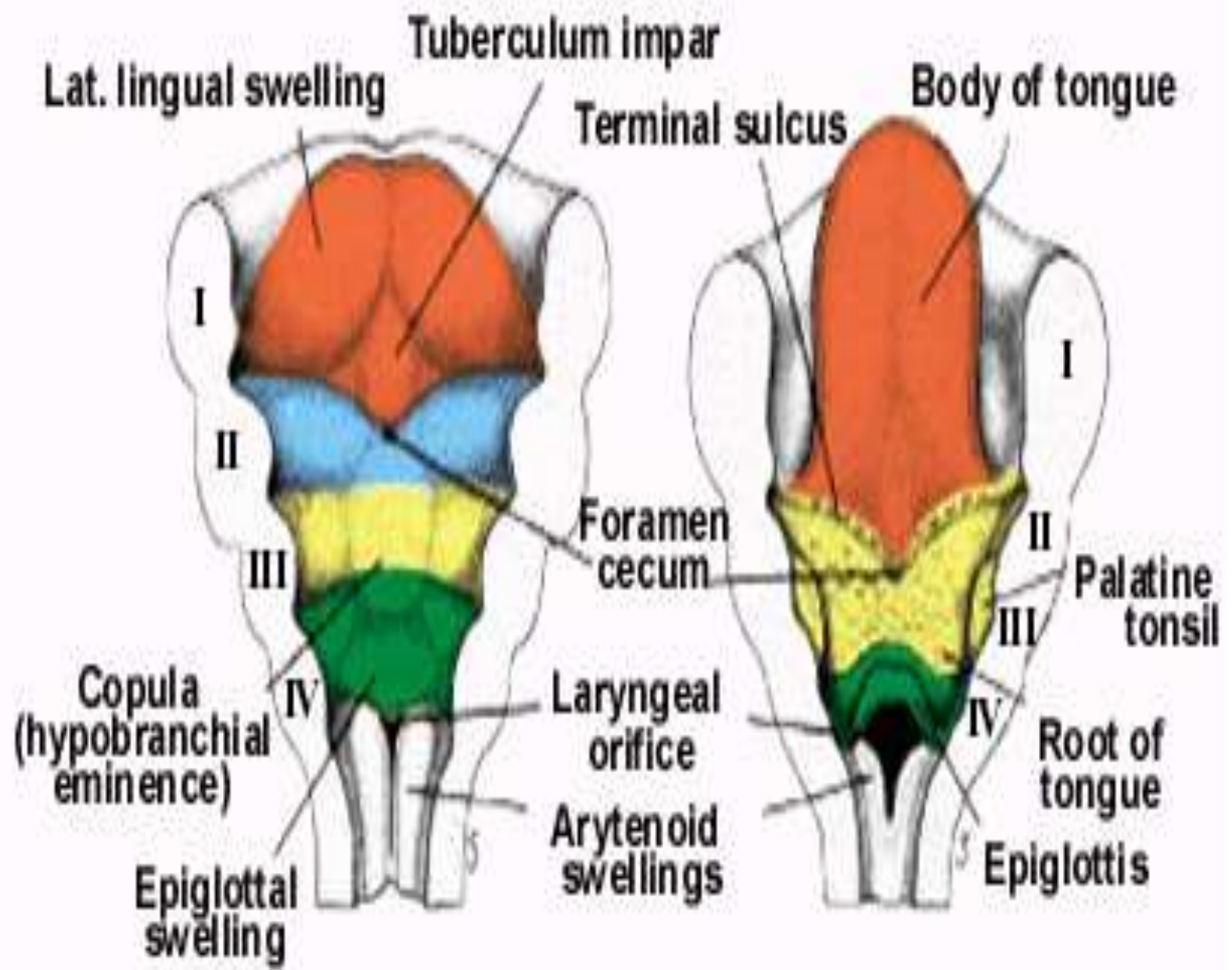


Development of, tongue, thyroid,
sinus and salivary glands

Development of tongue



- 1st, 2nd, 3rd, 4th pharyngeal arches
- Median swelling- tuberculum impar
- Two lateral swellings –lingual
- Caudal medial swelling- hypobranchial eminence

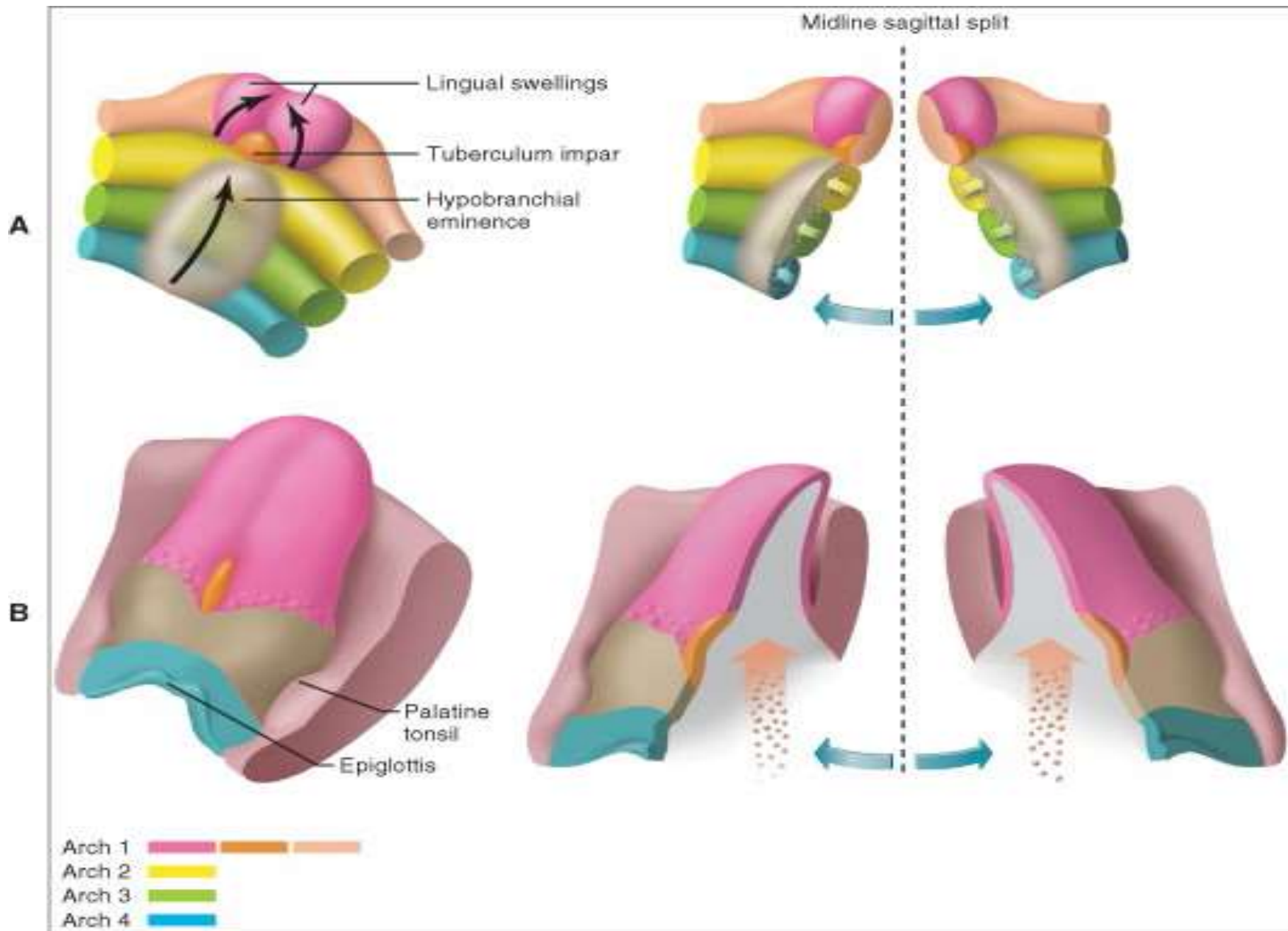


Anterior 2/3 of the tongue:

- **Formation:** median and lateral tongue buds that arise from the floor of the **1st pharyngeal arch** and then grow rostrally.
- thus it is formed by fusion of --
- **tuberculum impar ,**
- **two lingual swellings**
- The tongue buds are then invaded by occipital myoblasts that form the intrinsic muscles of the tongue.

- Thus anterior $2/3^{\text{rd}}$ of tongue is supplied by lingual branch of mandibular nerve ,(post trematic nerve of this arch) and chorda tympani nerve(pretrematic nerve of arch)
- posterior $1/3^{\text{rd}}$ of tongue is supplied by glossopharyngeal nerve (nerve of 3^{rd} arch)
- Most posterior $1/3^{\text{rd}}$ of tongue is supplied by superior laryngeal nerve (nerve of 4^{th} arch)

- Musculature of tongue is derived from occipital myotomes --explains nerve supply by hypoglossal nerve, nerve of these myotomes.



Posterior 1/3rd of tongue

- formed from cranial part of hypobranchial eminence (copula)
- the second arch mesoderm gets buried below the surface .
- the third arch mesoderm grows over it to fuse with mesoderm of first arch .
- posterior one third of tongue thus formed by third arch mesoderm.
- posterior most part of tongue is derived from fourth arch

- Thus swellings from the floor of the 3rd and 4th pharyngeal arches overgrow the 2nd arch and fuse with the anterior 2/3 of the tongue.
- **posterior 1/3 of the tongue is derived from the 3rd and 4th arches**
- Intrinsic musculature is also derived from occipital myoblasts.
- The line of fusion of the anterior 2/3 and posterior 1/3 of the tongue is indicated by the **terminal sulcus**.

Developmental anomalies

- **Macroglossia**
- **microglossia**
- **Median rhomboid glossitis** : smooth red rhomboidal zone of the tongue in front of foramen caecum due to *persistence of tuberculum impar*
- **Ankyloglossia**
- **Bifid tongue**: due to failure in the fusion of the 2 lateral lingual prominences.
- **Thyroid gland** may be persist at the base of the tongue.
- **Part of the thyroglossal duct** may persist at the base of the tongue & lead to cyst formation

Development of thyroid

- thyroid median endodermal thickening in the floor of pharynx, outpouch – thyroid diverticulum
- tongue grows, cells descend in neck
- thyroglossal duct - proximal end at the foramen cecum of tongue thyroglossal duct
- thyroid diverticulum - hollow then solid, right and left lobes, central isthmus



THYROID - DEVELOPMENT



Notes: The ultimobranchial bodies (UB) could give 50% cells

