**Lec. 12**

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**Development of the tongue**

The **tongue** is divided into two parts: **oral part** (anterior two-third) and **pharyngeal part** (posterior one-third).

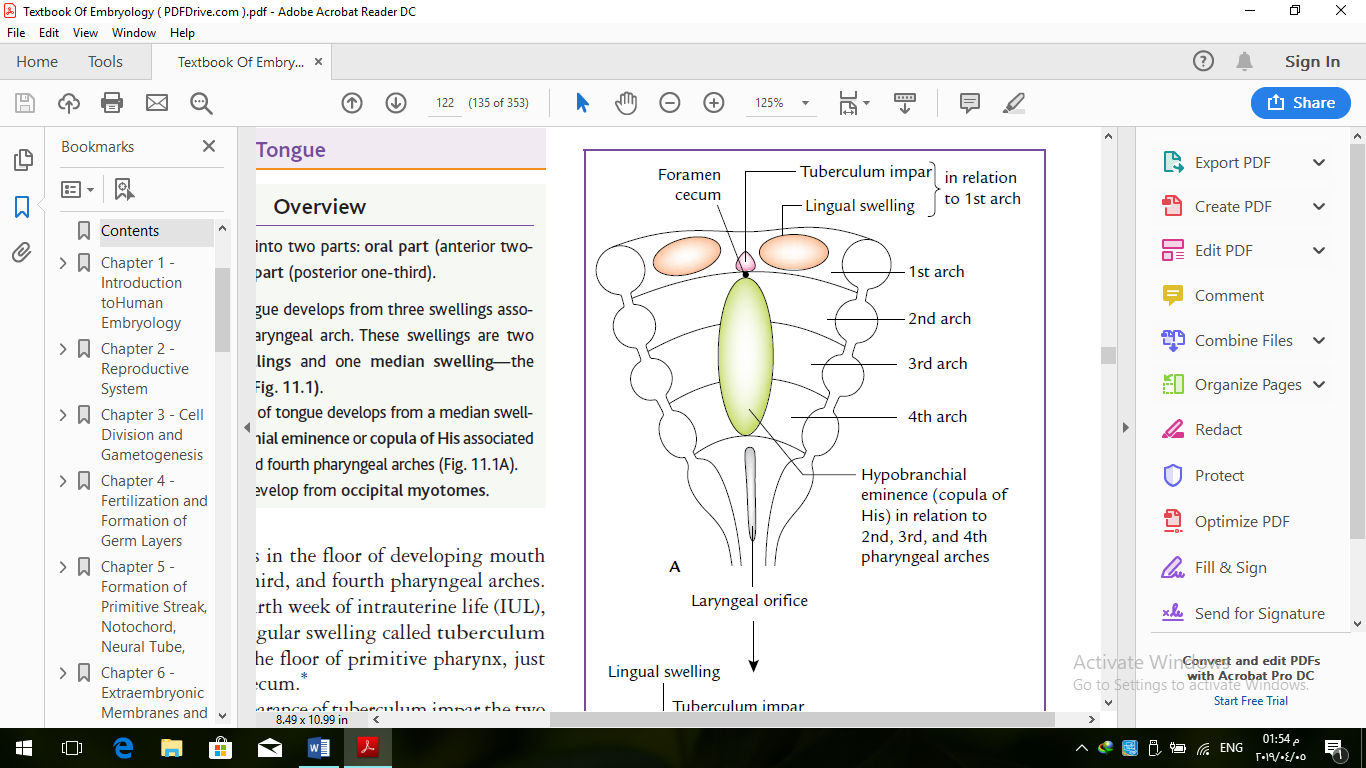
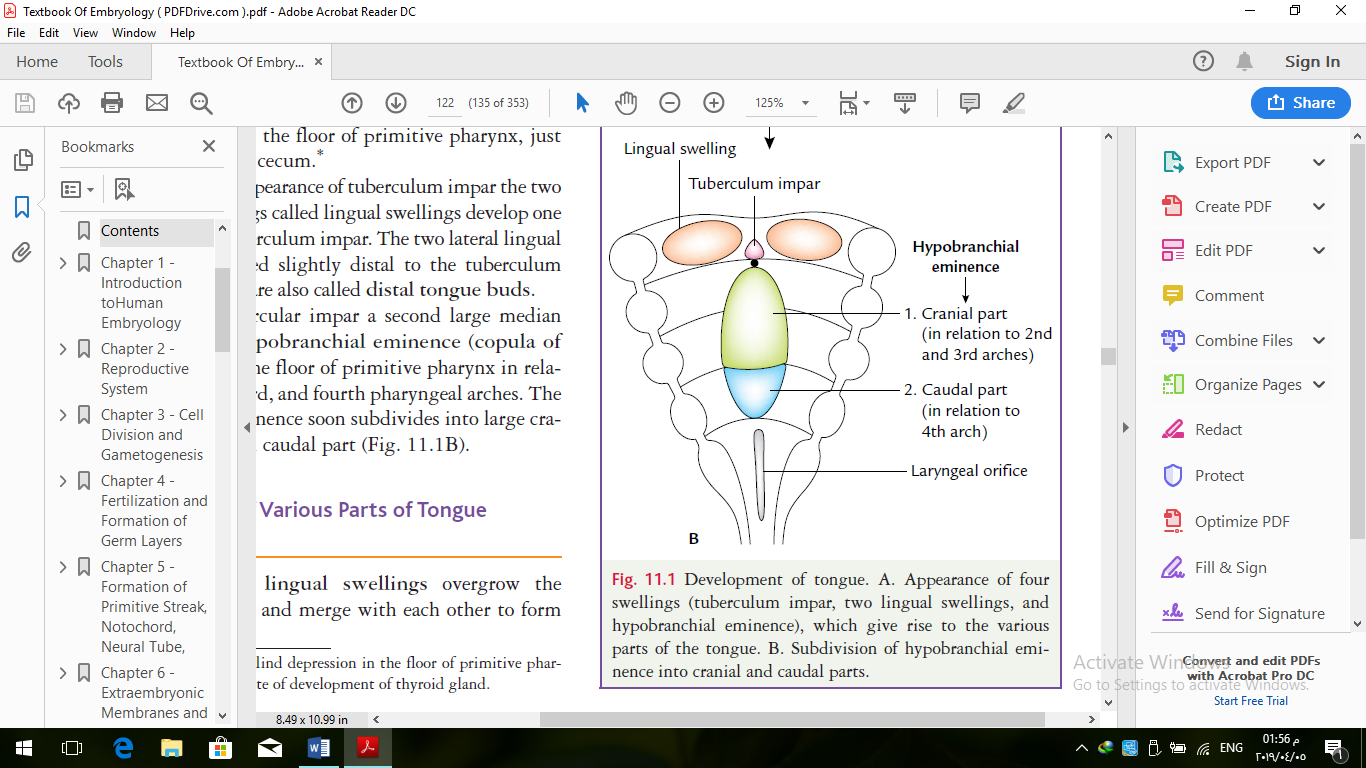
● The **oral part** of tongue develops from three swellings associated with first pharyngeal arch. These swellings are two lateral **lingual swellings** and one **median swelling**—the **tuberculum impar**.

● The **pharyngeal part** of tongue develops from a median swelling called **hypobranchial eminence** or **copula of His** associated with second, third, and fourth pharyngeal arches.

At the end of the fourth week of intrauterine life (IUL), a small median triangular swelling called **tuberculum** **impar** develops in the floor of primitive pharynx, just cranial to foramen cecum.

Soon after the appearance of tuberculum impar the two lateral oval swellings called lingual swellings develop one on each side of tuberculum impar.

Caudal to tubercular impar a second large median swelling called **hypo-branchial eminence** (**copula of** **His**) develops in the floor of primitive pharynx. The hypobranchial eminence soon subdivides into large cranial part and small caudal part.

1. **Oral part (anterior two-thirds) of the tongue**

The two distal tongue swellings overgrow the median tongue swelling and fuse in the midline, forming the **median sulcus**.

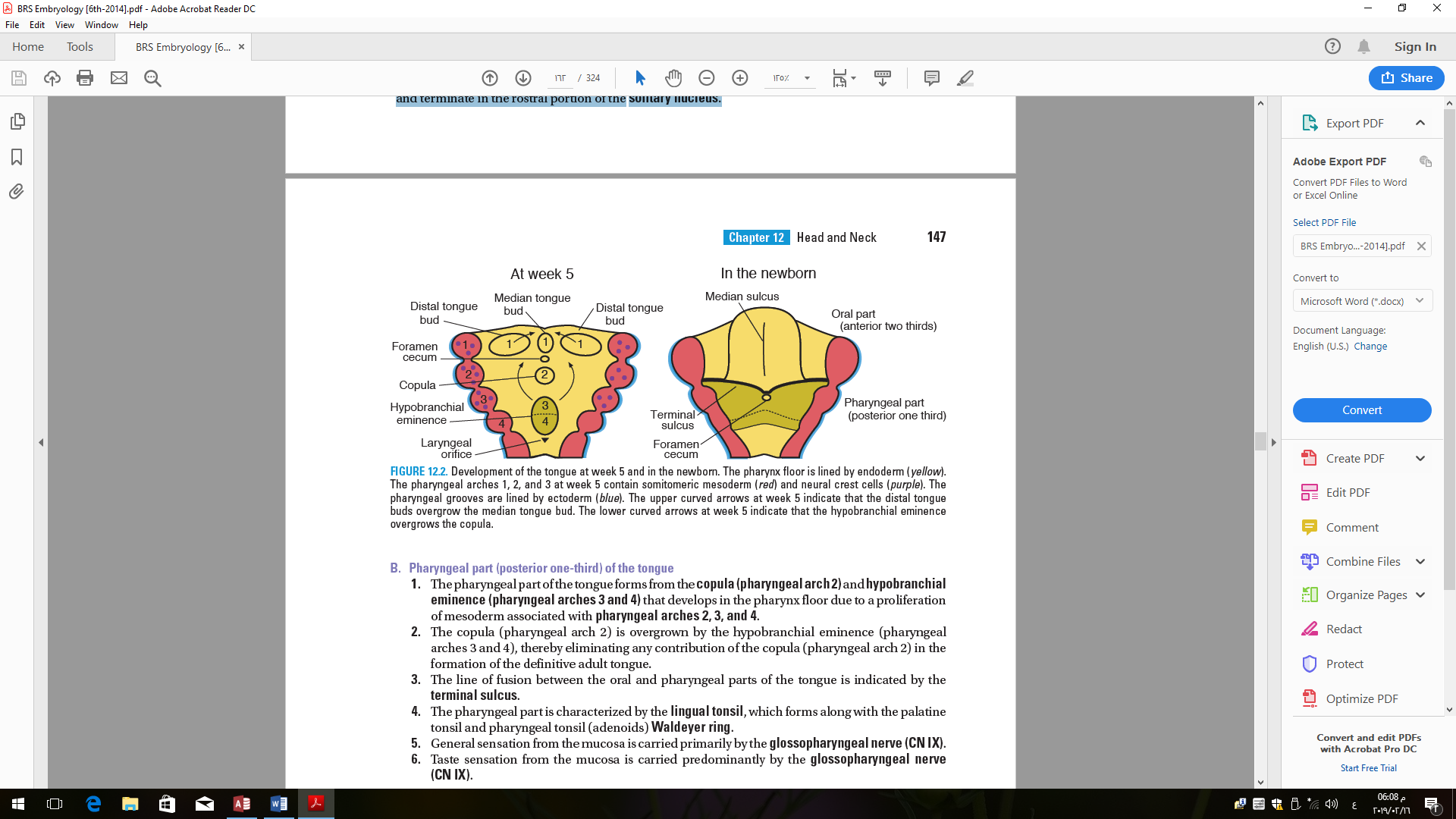
The oral part is characterized by tiny round bumps called papillae at the back of the tongue;

* **filiform papillae** (no taste buds),
* **fungiform papillae**, **foliate papillae**, and **circumvallate papillae** (taste buds present).

Taste buds are small sensory organs that allow person to enjoy different flavor located on papillae.

General sensation from the mucosa is carried by the **lingual branch of the trigeminal nerve (cranial nerve V)**.Taste sensation from the mucosa is carried by the **chorda tympani branch of the facial nerve (CN VII)**.

Special visceral afferent (SVA) neurons, travel within chorda tympani, convey taste sensation from the anterior two thirds of the tongue to the central nervous system. The cell bodies for these neurons lie in the **geniculate ganglion**. The central processes enter the brain stem via the **intermediate nerve** and terminate in the **solitary nucleus** in medulla.



1. **Pharyngeal part (posterior one-third) of the tongue**

The pharyngeal part of the tongue forms from the **copula** and **hypobranchial eminence**.The copula (pharyngeal arch 2) is overgrown by the hypobranchial eminence (pharyngeal arches 3 and 4), thereby eliminating any contribution of the copula (pharyngeal arch 2) in the formation of the definitive adult tongue.

The line of fusion between the oral and pharyngeal parts of the tongue is indicated by the **terminal sulcus**.The pharyngeal part is characterized by the **lingual tonsil**, which forms along with the palatine tonsil and pharyngeal tonsil (adenoids) **Waldeyer ring**.

General sensation and taste sensation from the mucosa is carried primarily by the **glossopharyngeal nerve (CN IX)**.

**Muscles of the tongue**

The intrinsic muscles and extrinsic muscles (styloglossus, hyoglossus, genioglossus, and palatoglossus) are derived from myoblasts that migrate into the tongue region from **occipital** **somites**.

Motor innervation is supplied by the **hypoglossal nerve (CN XII)**, except for palatoglossus muscle, which is innervated by CN X.