

## **Digestive system**

### **I. LIPS**

The **lips** control access to the **oral cavity** from the outside environment.

#### **A. External Surface**

The external surface is covered with thin **skin** and therefore possesses **hair follicles**, **sebaceous glands**, and **sweat glands**.

#### **B. Transitional Zone**

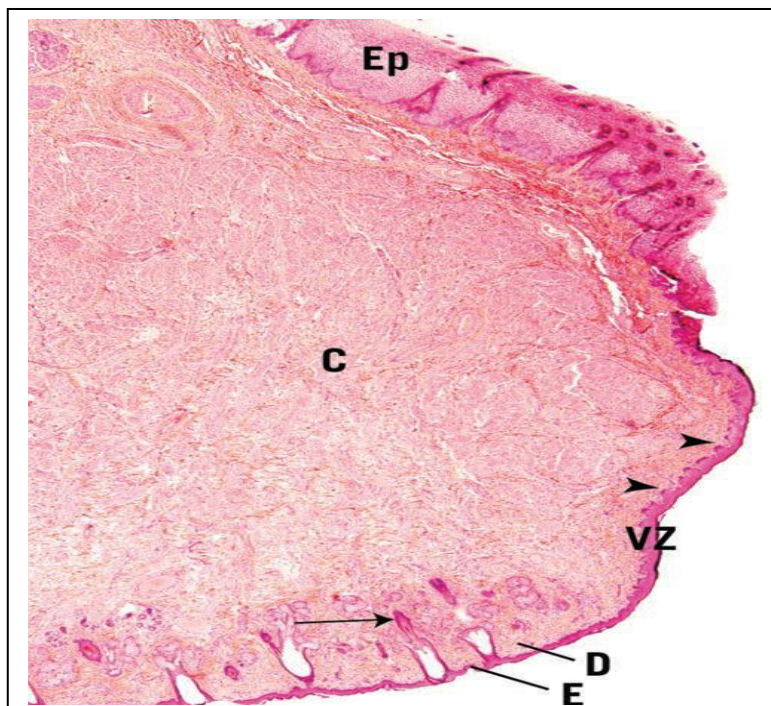
The **transitional zone (vermillion zone)** is the pink area of the lip. Here the connective tissue papillae extend deep into the epidermis. Hair follicles and sweat glands are absent, whereas sebaceous glands are occasionally present.

#### **C. Mucous Membrane**

The vestibular aspect of the lip is lined by a **wet epithelium** (stratified squamous nonkeratinized) with numerous **minor mixed salivary glands** in the subepithelial connective tissue.

#### **D. Core of the Lip**

The core of the lip contains **skeletal muscle**.



**Ep** epithelium , **E** epidermis , **D** dermis , **VZ** vermillion (red) zone , **C** core

## **II. TONGUE**

The **tongue** is a **muscular organ** whose oral region is freely moving; its root is attached to the floor of the pharynx. **Skeletal muscle** forms the core of the tongue, among which groups of serous and seromucous glands are interspersed.

### **A. Oral Region (Anterior Two-Thirds)**

The mucosa of the dorsal surface of the anterior two thirds of the tongue is modified to form four types of lingual papillae.

#### **1. Filiform Papillae**

**Filiform papillae** are long and slender and are the most numerous. They form a roughened surface (especially in animals such as cats) and are distributed in parallel rows along the entire surface. They are covered by a **parakeratinized stratified squamous epithelium** (but bear no taste buds) over a **connective tissue core**.

#### **2. Fungiform Papillae**

**Fungiform papillae** are mushroom-shaped, are scattered among the filiform papillae, and may be recognized by their appearance as red dots. They contain **taste buds** along their dorsal aspect.

#### **3. Foliate Papillae**

**Foliate papillae** appear as longitudinal furrows along the side of the tongue near the posterior aspect of the anterior two-thirds. Their **taste buds** degenerate at an early age in humans. Serous **glands of von Ebner** are associated with these papillae.

#### **4. Circumvallate Papillae**

**Circumvallate papillae** are very large and form a V-shaped row at the border of the oral and pharyngeal portions of the tongue. Circumvallate papillae are each surrounded by a moat or groove, the walls of which

contain **taste buds** in their **stratified squamous nonkeratinized epithelium**. Serous **glands of von Ebner** open into the base of the furrow. The connective tissue core of the circumvallate papilla possesses a rich nerve and vascular supply.

## **B. Pharyngeal Region (Posterior One-Third)**

The **mucosa** of the posterior one-third of the tongue presents numerous **lymphatic nodules** that constitute the **lingual tonsils**.

