PHYSIOLOGY OF SALIVA

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Tutor in physiology
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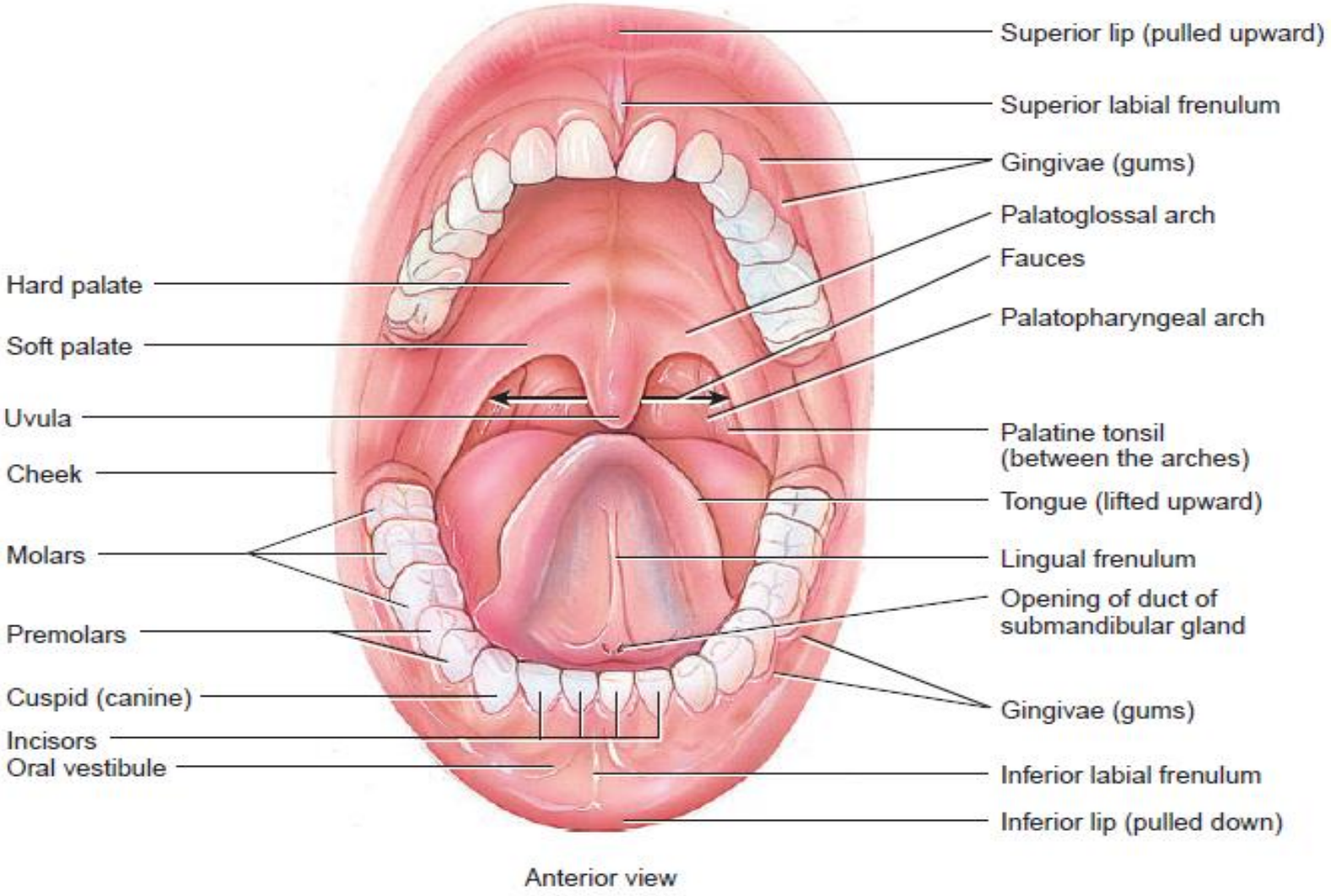
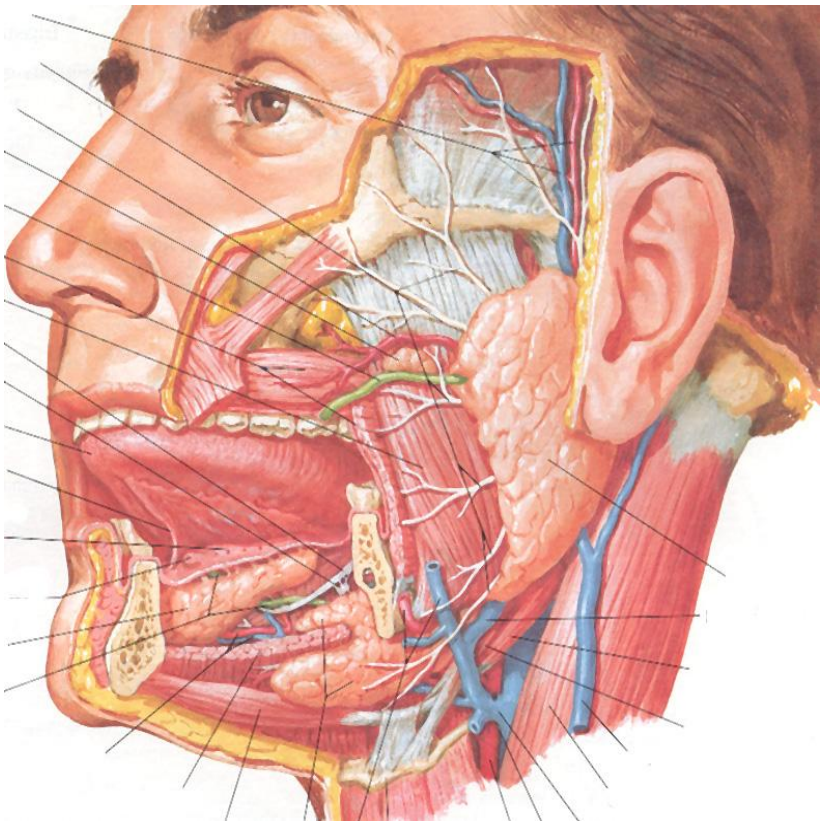
Oral cavity (mouth)

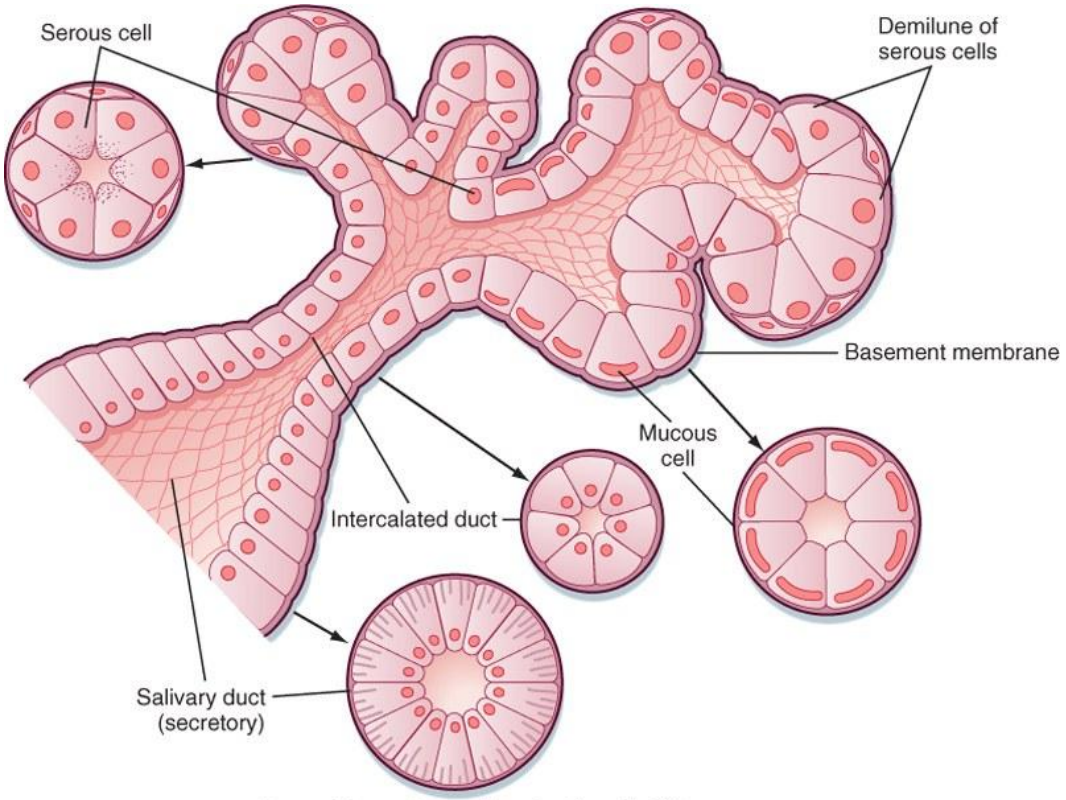


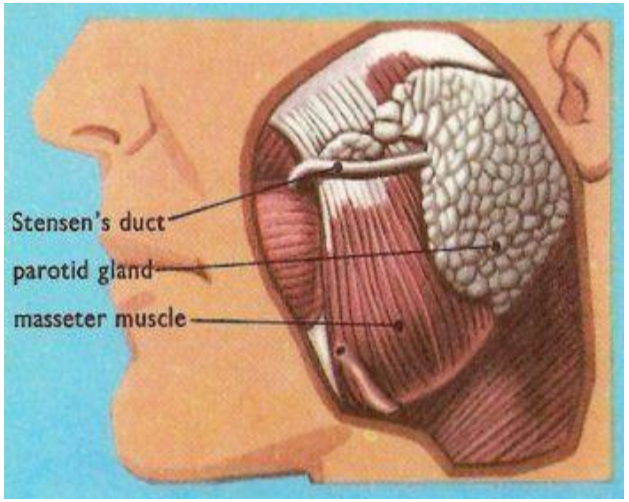
Introduction

- The Major <u>3 pairs of Salivary Glands</u>
  - Parotid
  - Submandibular
  - Sublingual
- The Minor Salivary Glands

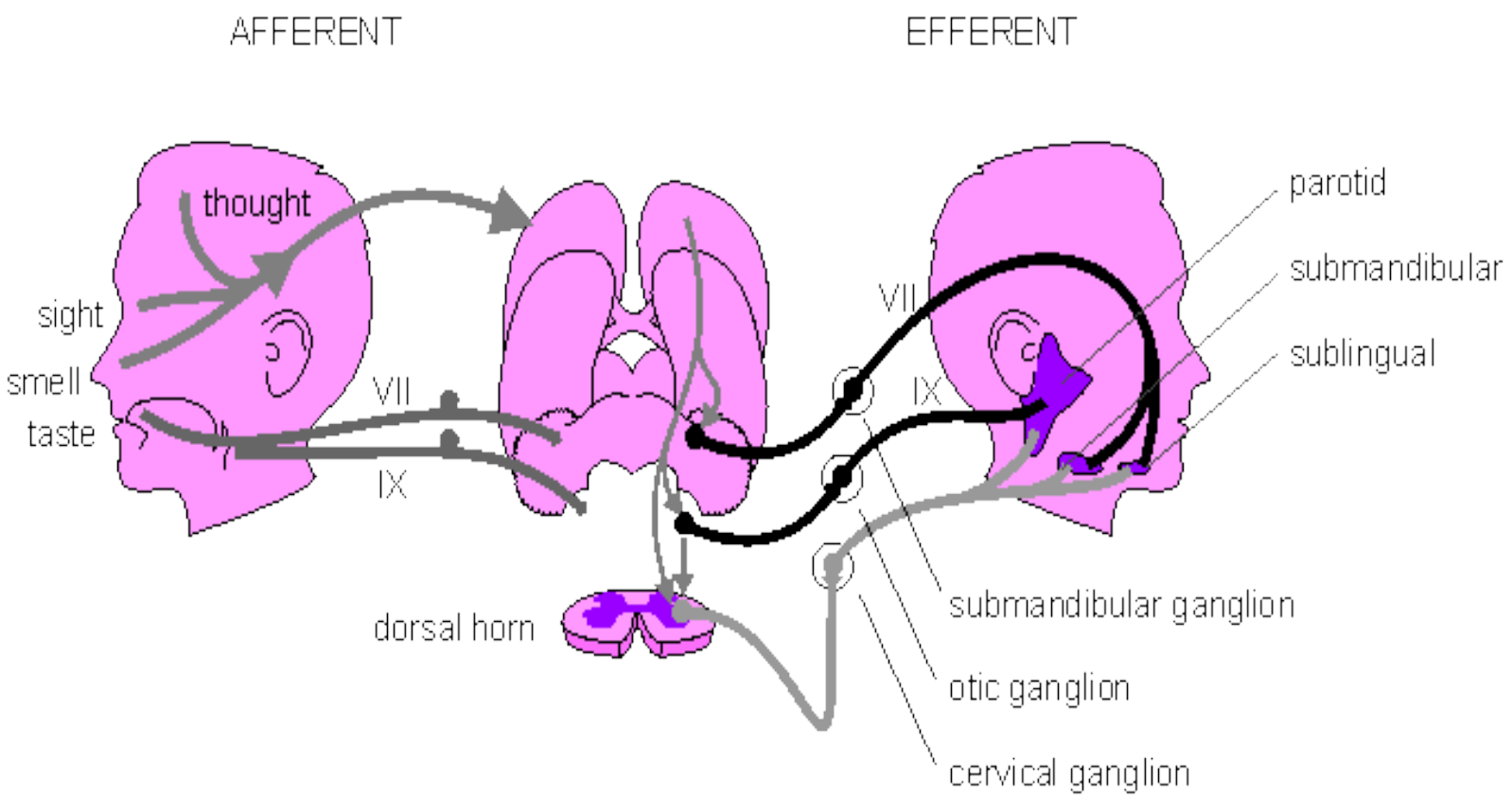


Histology of salivary glands



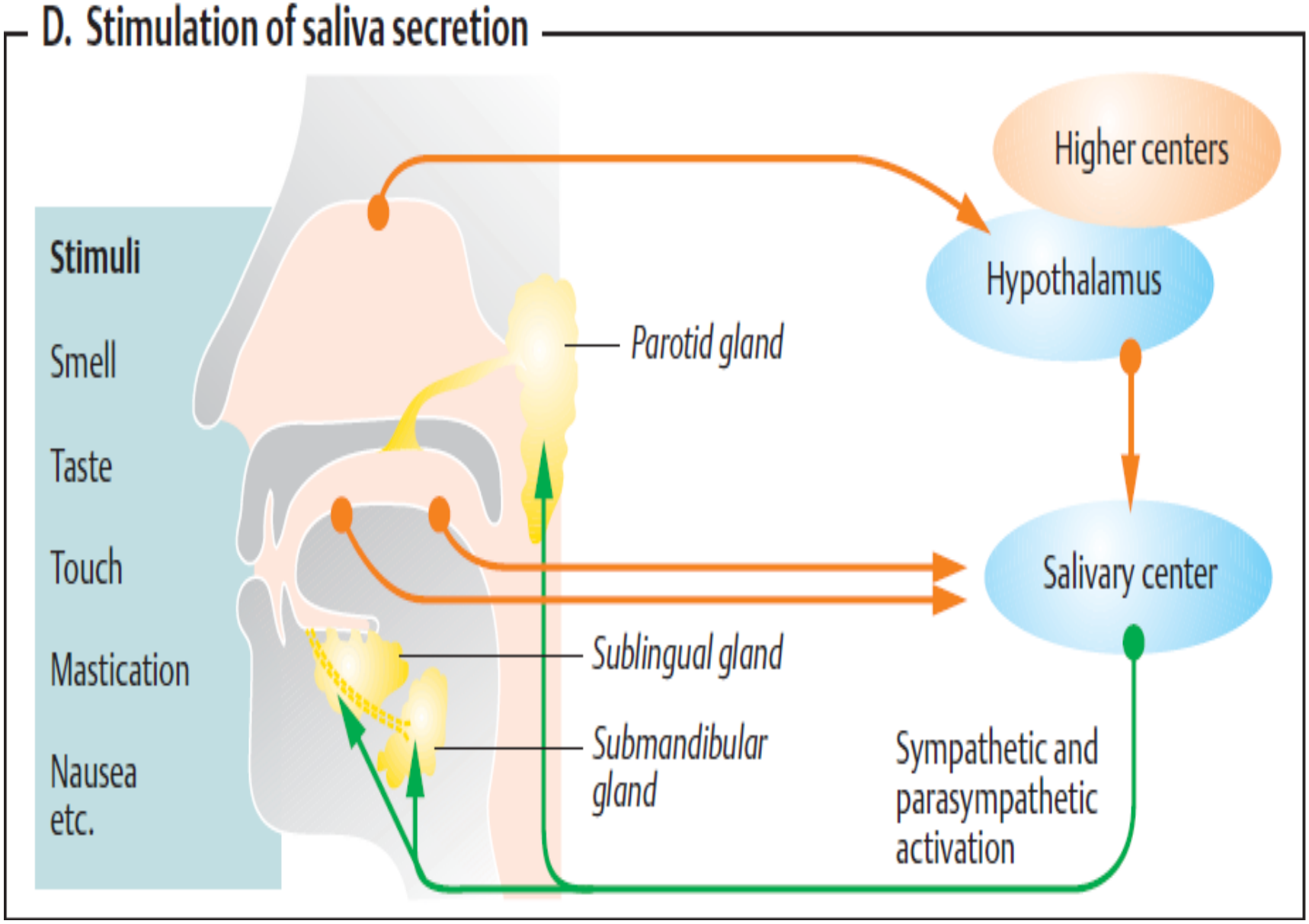


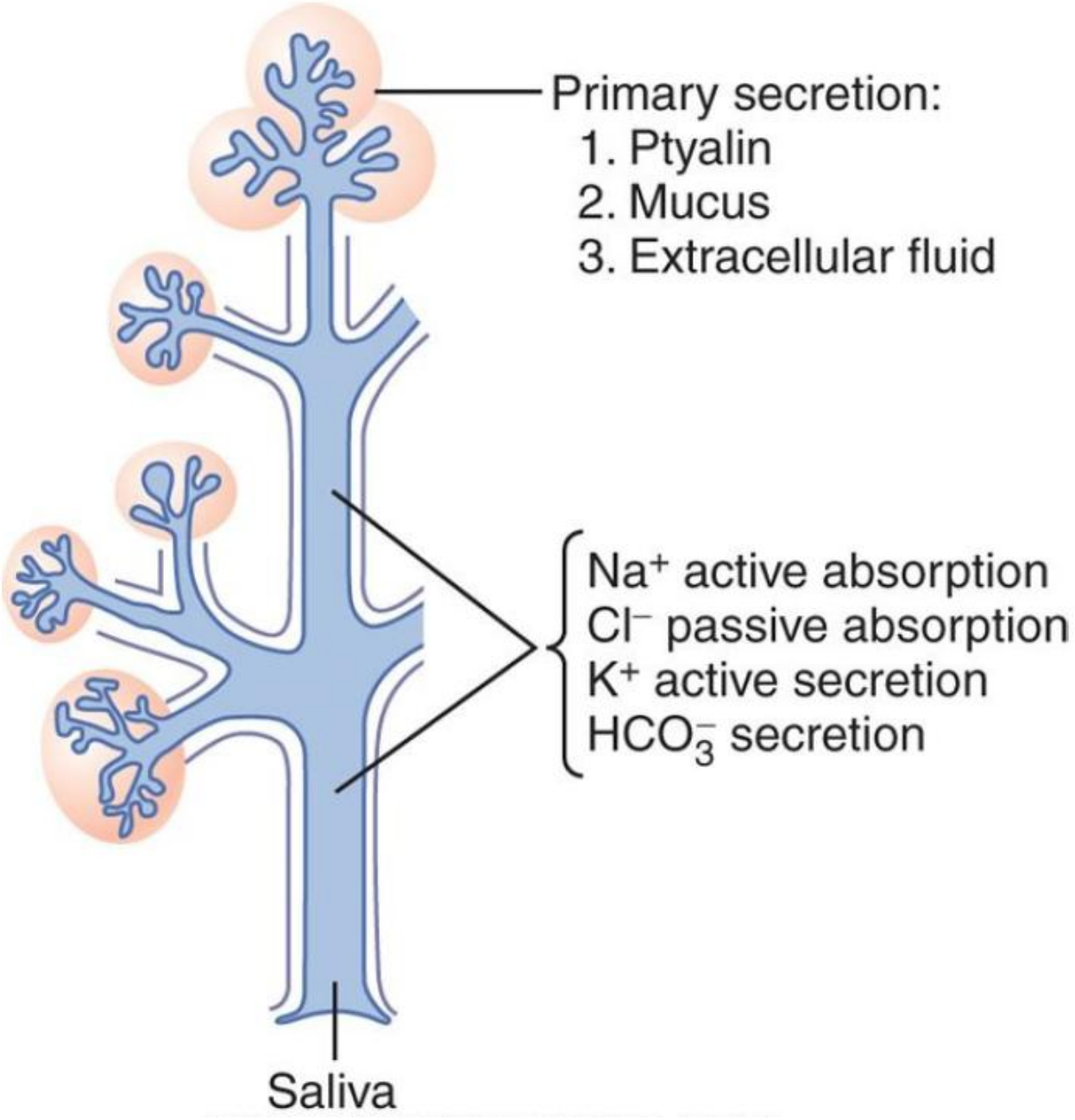
Nerve supply of salivary glands

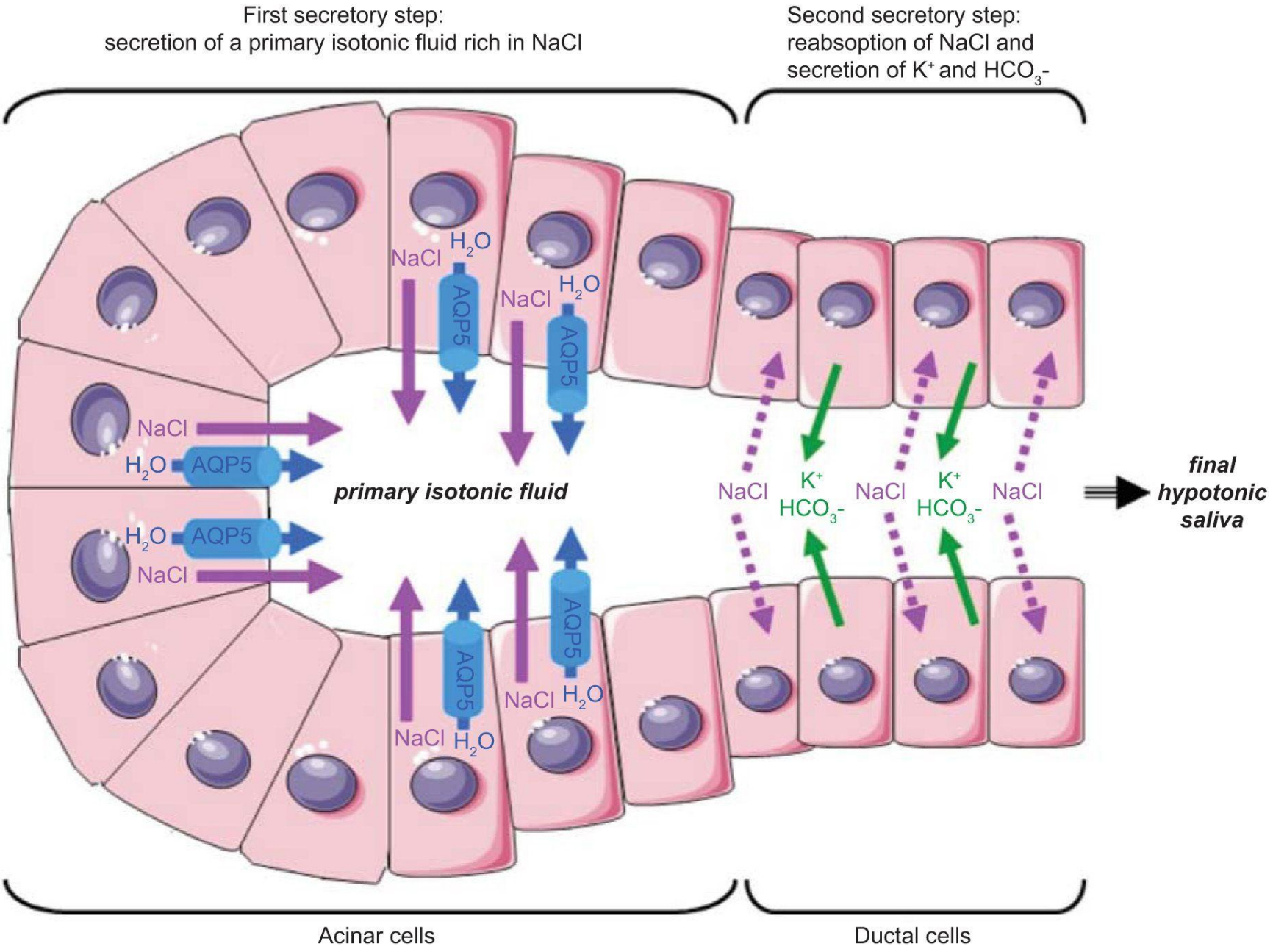


Composition of saliva

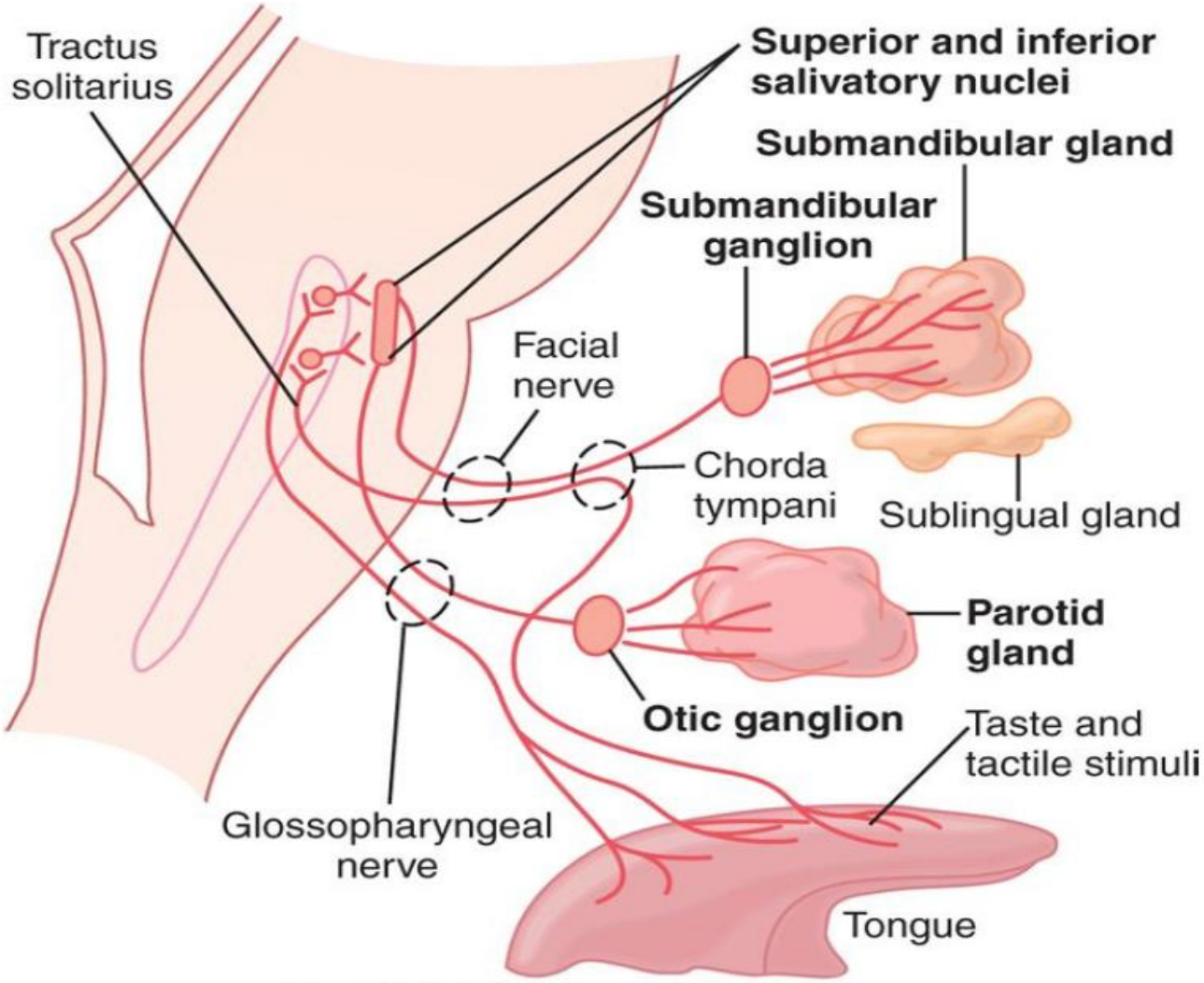
- Daily secretion : 800-1500 ml
- pH : 6-7.4
- Water – 99.5%
- Solids : 0.5%
- Organic (0.3%): ptyalin (salivary amylase), lysozyme, small amounts of urea, uric acid, cholesterol, mucin, enzyme kallikrein
- Inorganic (0.2%): NaCl, KCl, calcium carbonate, potassium thiocyanate (more in smokers)


D. Stimulation of saliva secretion
Stimuli
Smell
Taste
Touch
Mastication
Nausea
etc.
Higher centers
Hypothalamus
Parotid gland
Salivary center
Sublingual gland
Submandibular gland
Sympathetic and parasympathetic activation

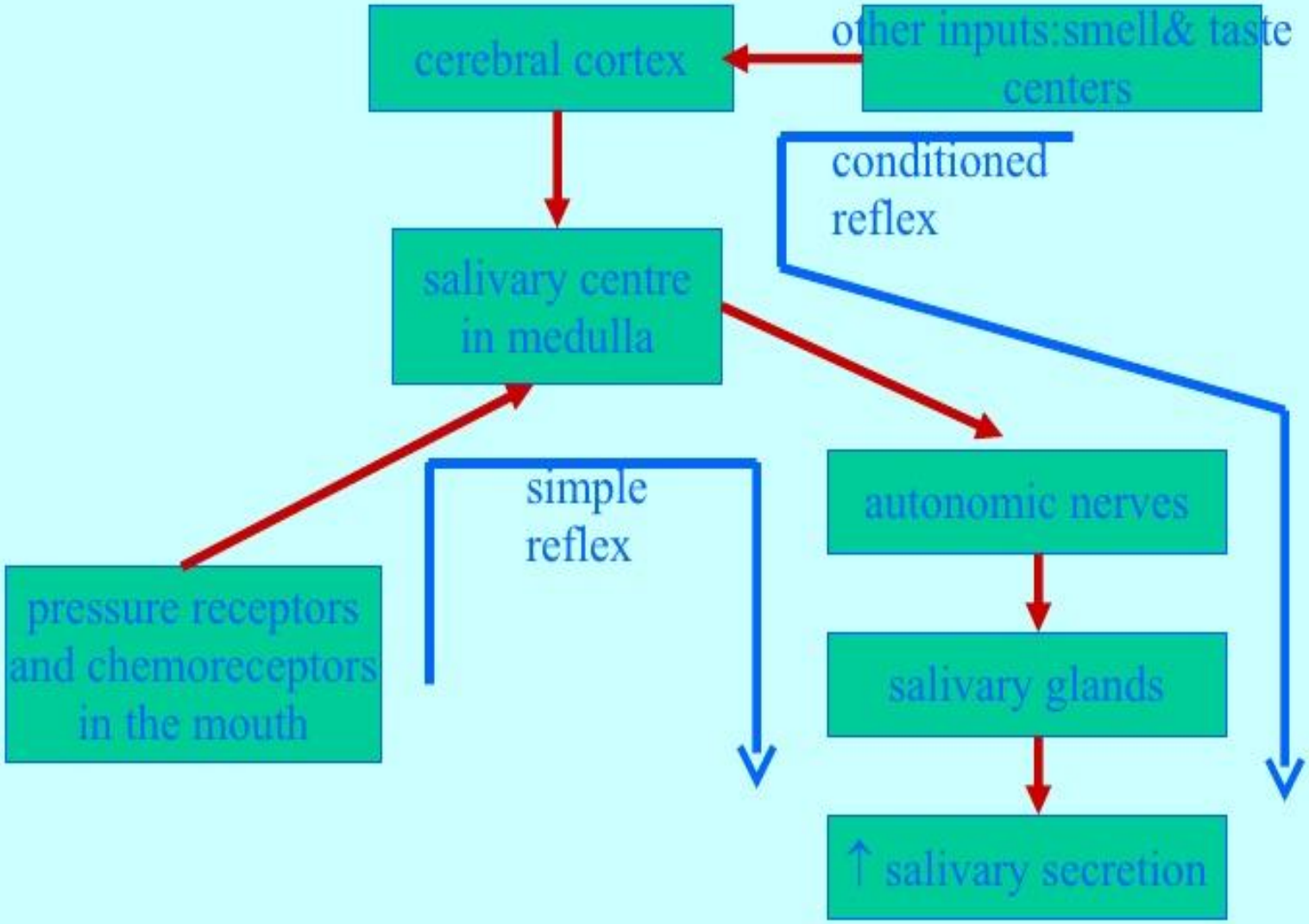

Primary secretion:
1. Ptyalin
2. Mucus
3. Extracellular fluid
Na^+ active absorption
Cl^- passive absorption
K^+ active secretion
HCO_3^- secretion
Saliva


First secretory step:
secretion of a primary isotonic fluid rich in NaCl
Second secretory step:
reabsoption of NaCl and
secretion of K+ and HCO3-
NaCl
H2O
AQP5
primary isotonic fluid
K+
HCO3-
final
hypotonic
saliva
Acinar cells
Ductal cells

CONTROL OF SALIVARY SECRETION

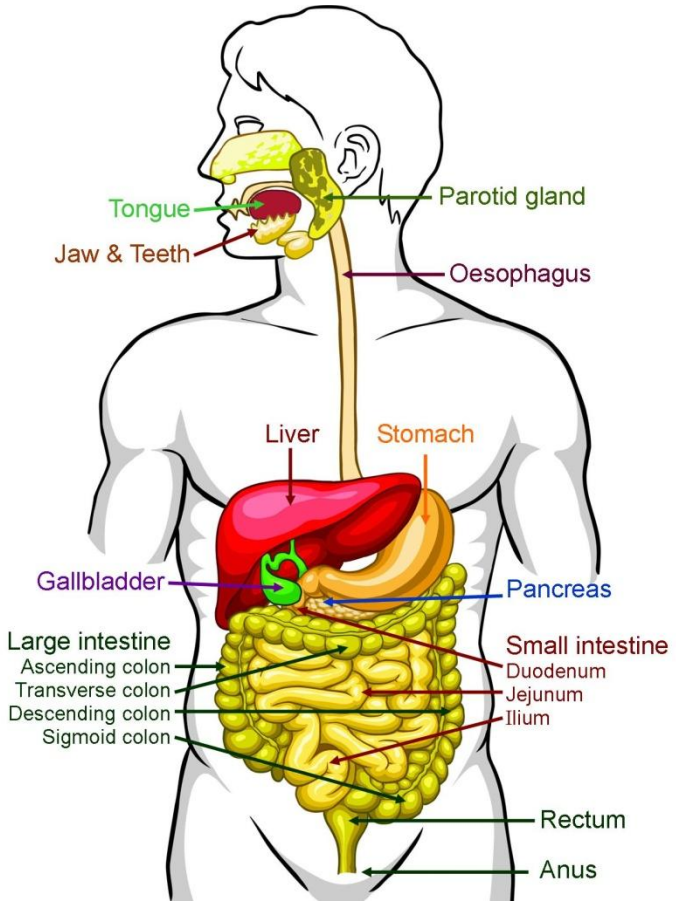


CONTROL OF SALIVARY SECRETION



PHASES OF SALIVARY SECRETION

- Cephalic phase
- Buccal phase
- Oesophageal phase
- Gastric phase
- Intestinal phase



Functions of Saliva

	Effect	Active Constituent
Protection	Lubrication, lavage, pellicle formation	Glycoprotein Water
Buffering Action	Regulates pH	Phosphate and Bicarbonate
Digestion	Digests starch Digests lipids Bolus formation	Amylase Lingual Lipase
Facilitation of Taste	Taste bud growth and maturation, dissolves substances to carry to taste buds	Gustin
Defensive Action Against Microbes	Antibodies Hostile Environment	Lysozyme Lactoferrin IgA
Ionic Exchange Between Tooth Surface	Posteruptive Maturation of Enamel Repair	Calcium Phosphate

Functions of saliva

- Digestive :-
- alpha- amylase (ptyalin) digests starch(boiled) into maltose.
- Helps in mastication & deglutition
- Taste sensation
- Role in speech
- Temperature regulation