

# STOMACH

# Objectives

## Gastric secretion:

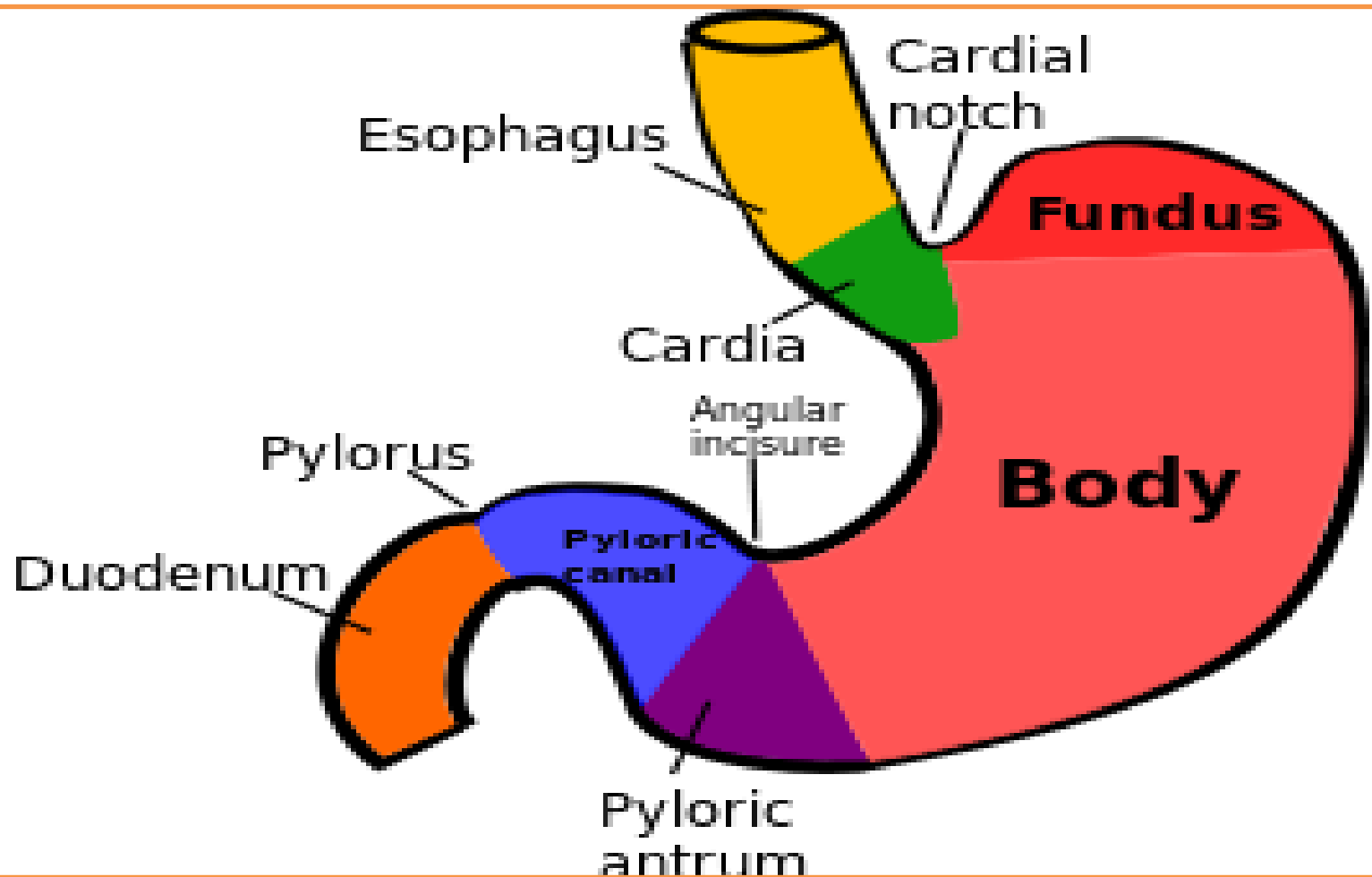
- Functional anatomy, histology, functions of stomach
- composition of gastric juice
- cellular mechanism of gastric secretion of acid, pepsin, intrinsic factor & other enzymes
- phases of gastric secretion
- regulation of gastric secretion.

- Gastric mucosal barrier
- experiments to study regulation of gastric juice secretion
- disorders of secretion
- peptic ulcer
- inhibitors of gastric secretion
- Effects of vagotomy

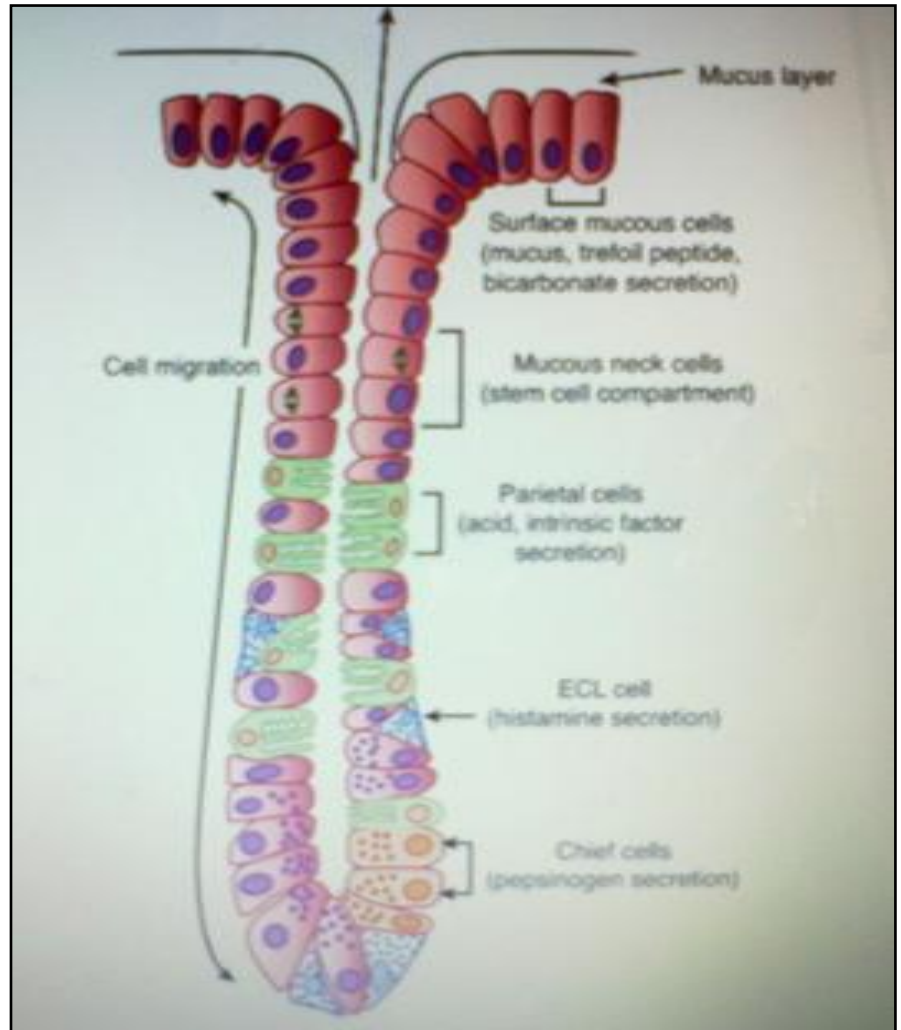
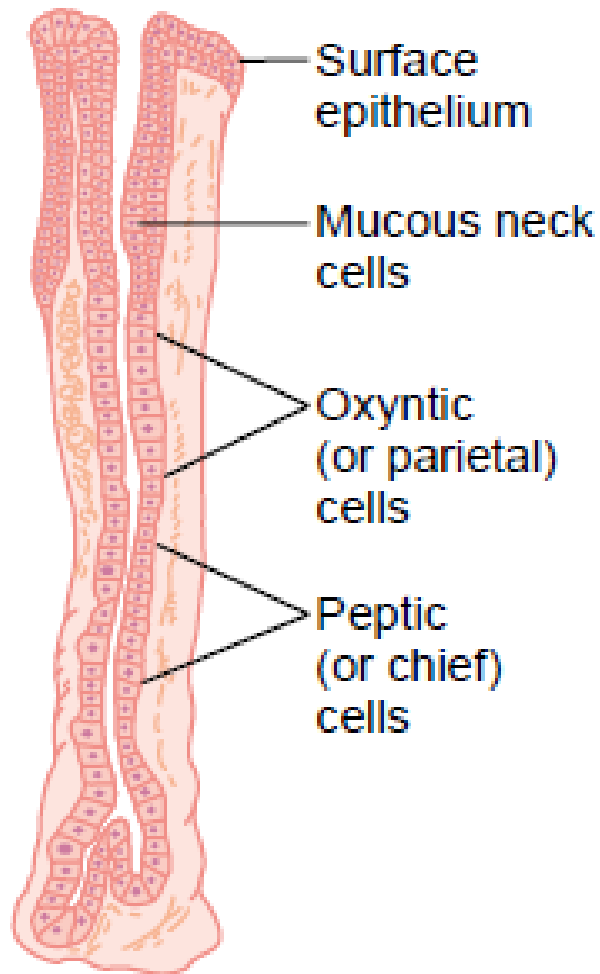


# *Gastric Secretion*

# Physiologic Anatomy of Stomach



# Physiologic Anatomy of Gastric Glands



- Nerve Supply:-

- Composition of Gastric Secretion:-

- 1) Water – 99.5%

- 2) Solids - 0.5%

inorganic- HCl, Na<sup>+</sup>, K, Cl<sup>-</sup>, HCO<sub>3</sub><sup>-</sup>

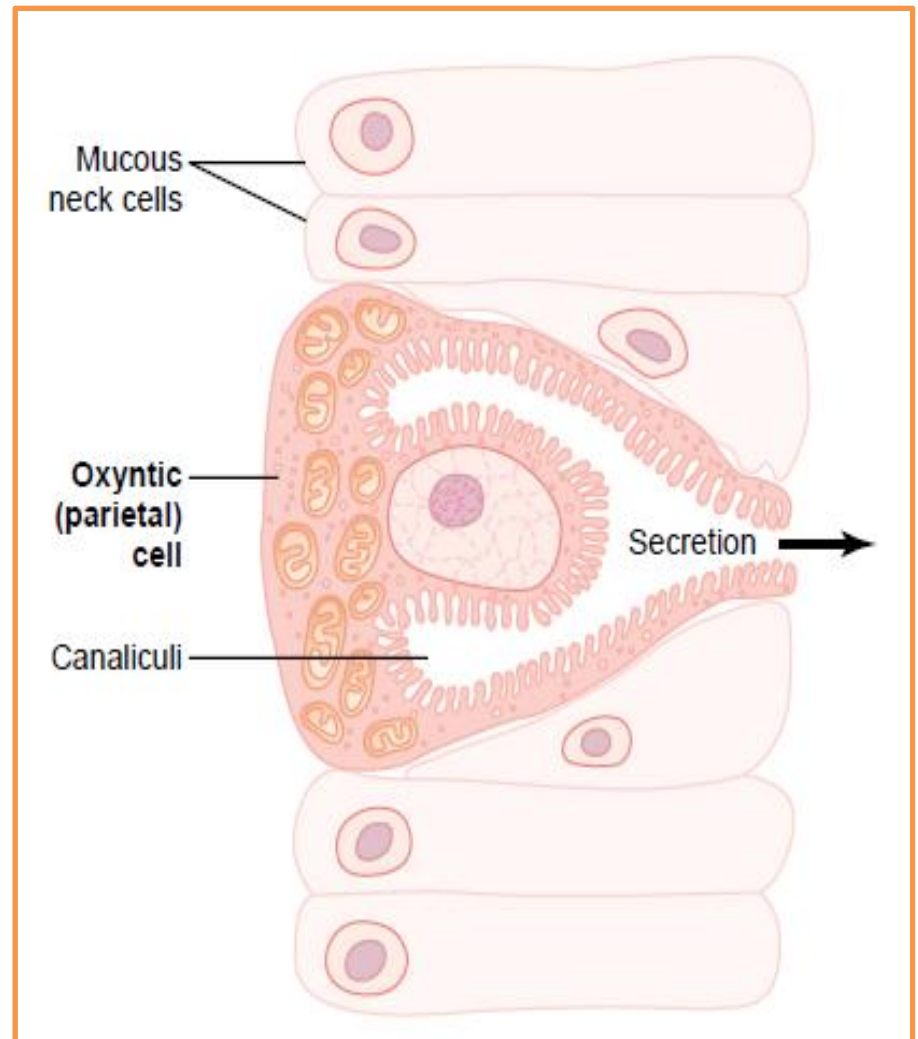
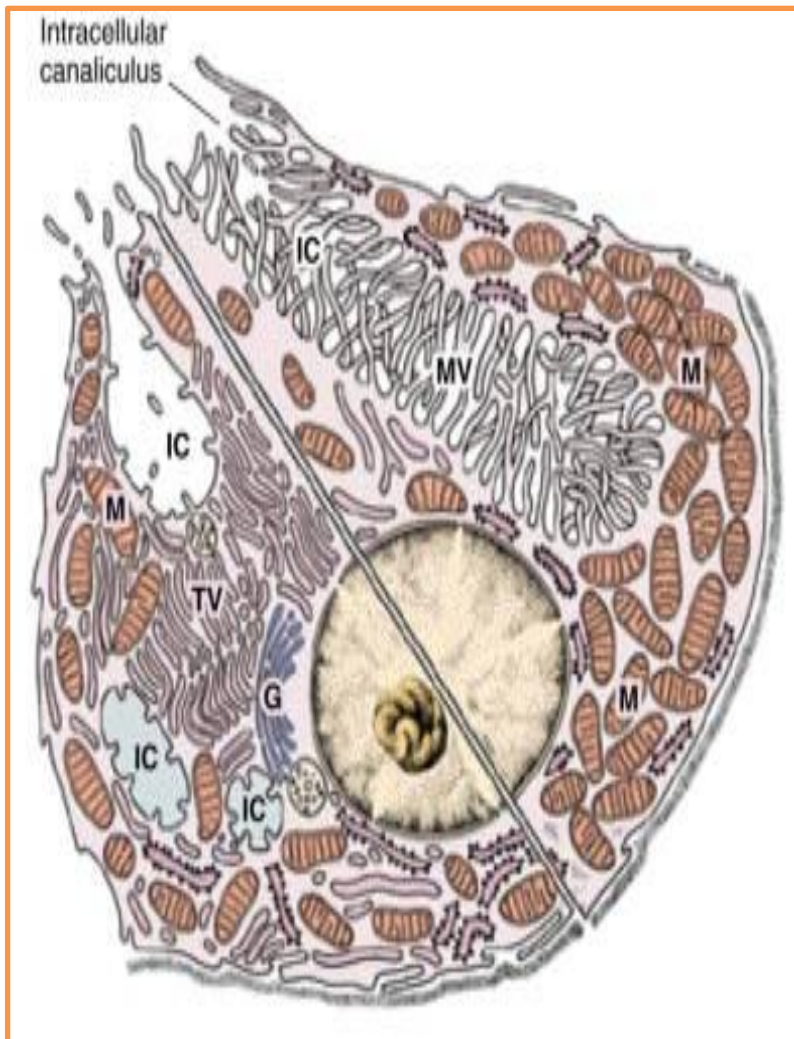
organic- enzymes, intrinsic factor, blood group antigen

- 3) Volume – 2500 ml/day

- 4) pH – 0.8

- Functions:-

# Mechanism of secretion of HCl





Resting

Secreting

Canaliculus

Tubulo-vesicle

$H^+$ ,  $K^+$  ATPase

$M_3$

$H_2$

CCK-B

$M_3$

ACh

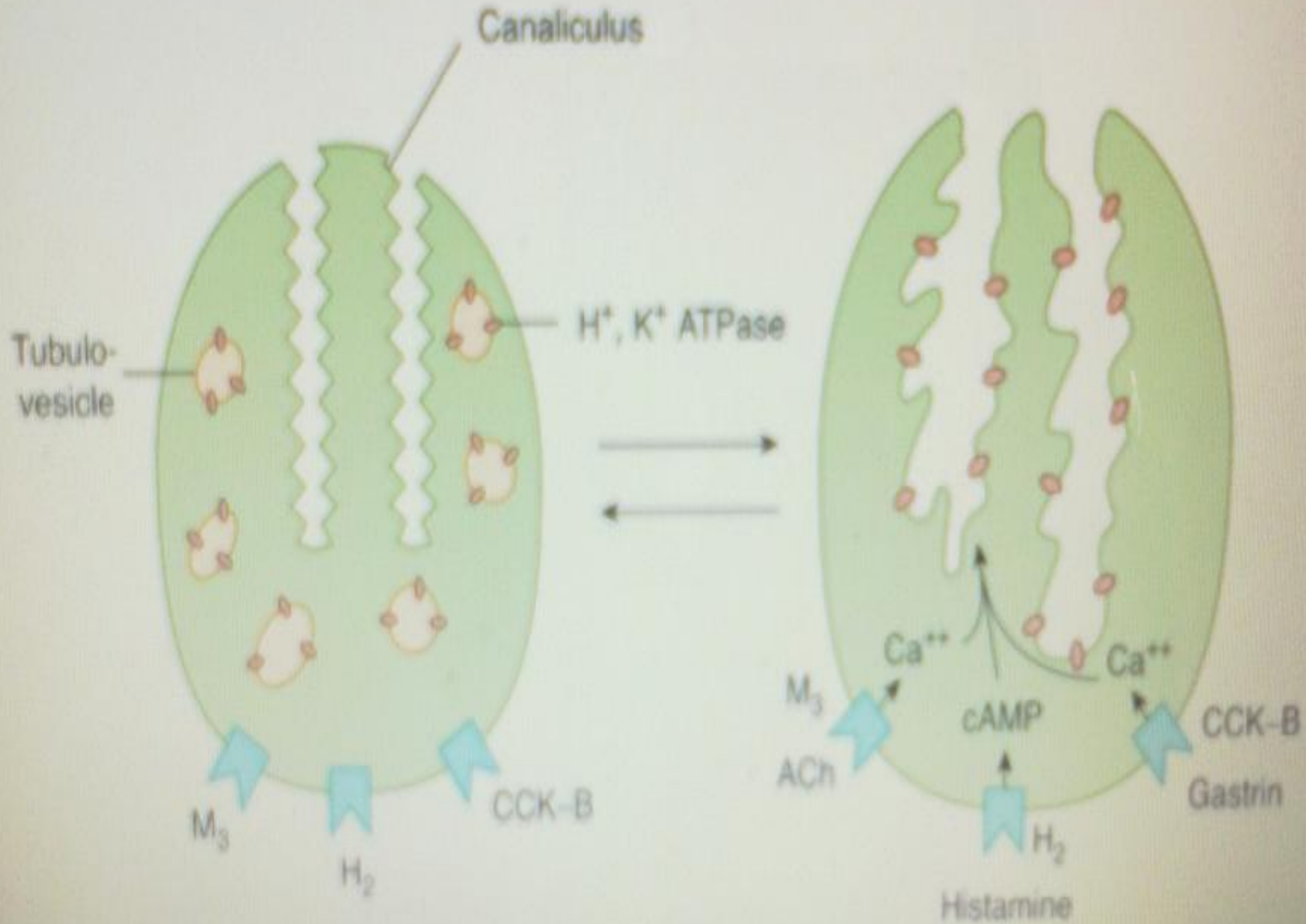
cAMP

$H_2$

Histamine

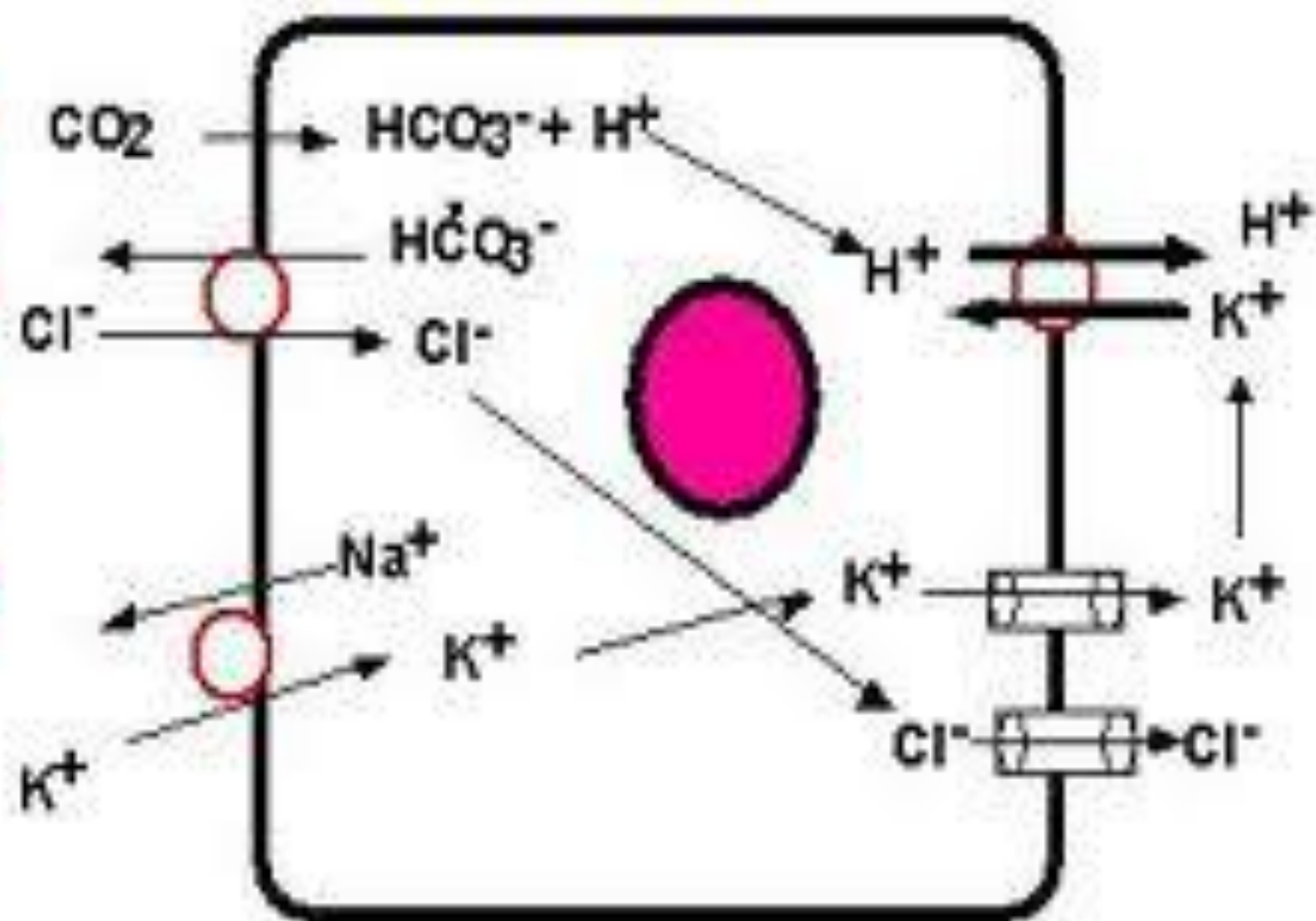
CCK-B

Gastrin



## Parietal Cell

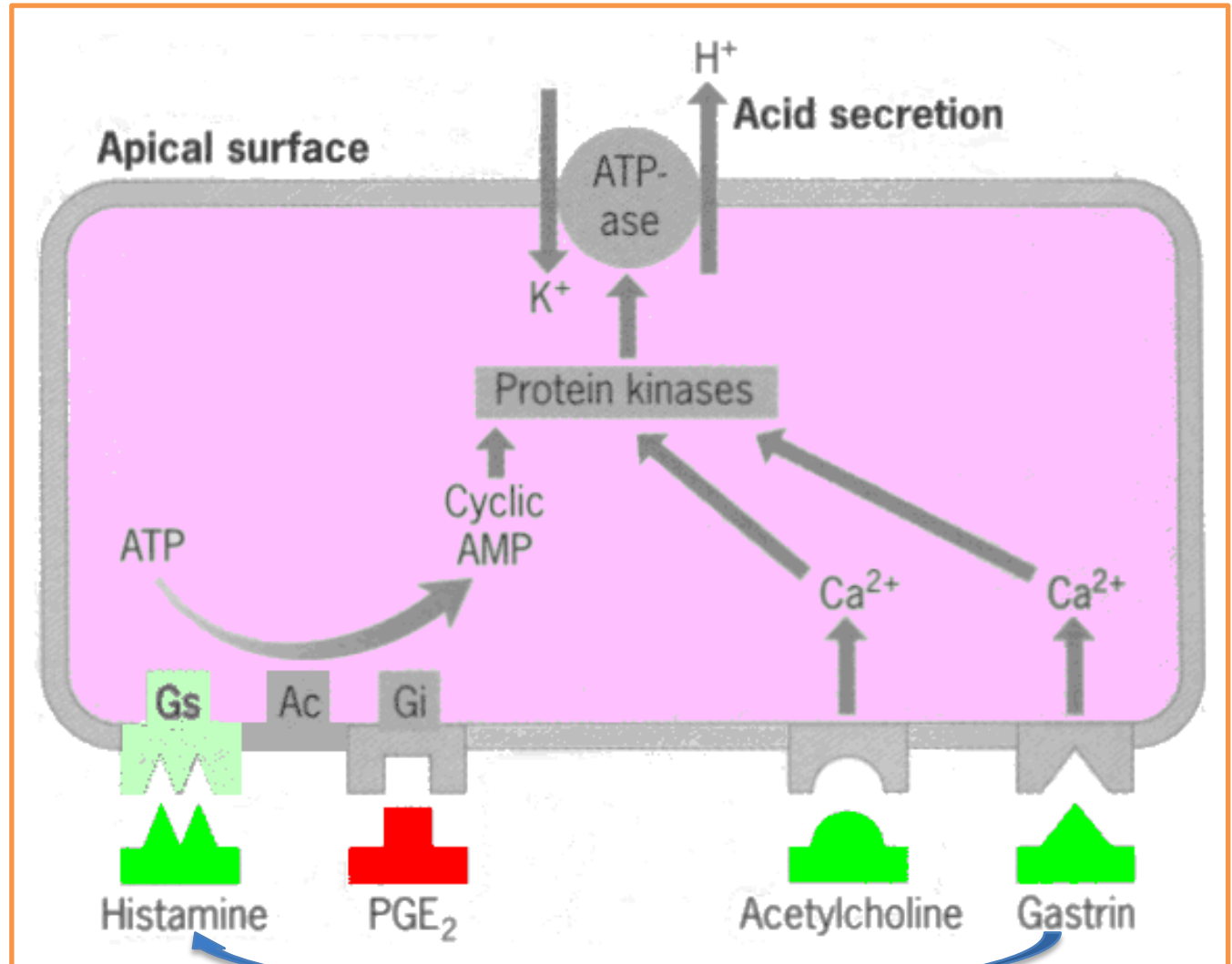
PLASMA

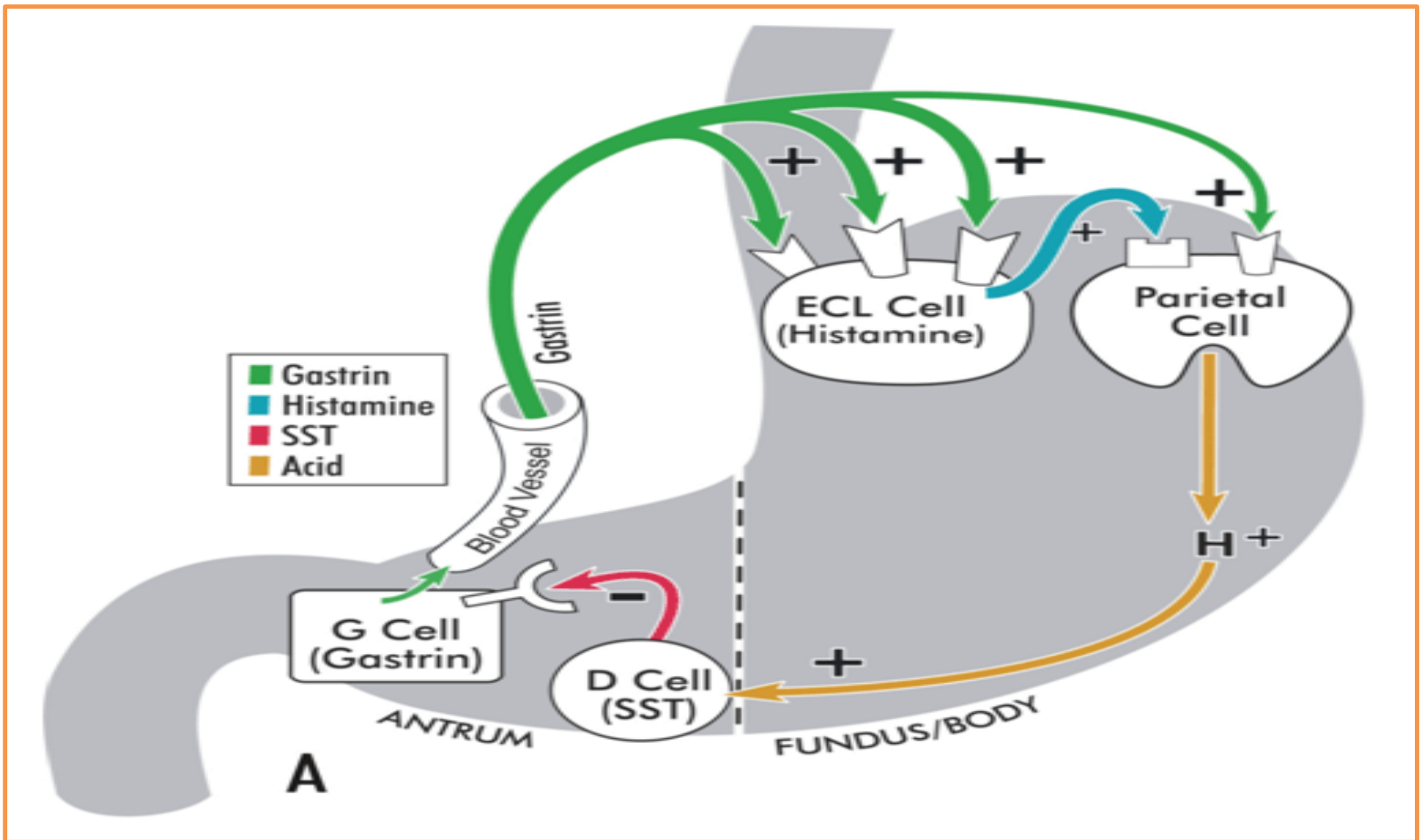


LUMEN

# Factors that Stimulate / Inhibit Gastric Secretion

- Ach
- Gastrin
- Histamine
- $\text{PGE}_2$

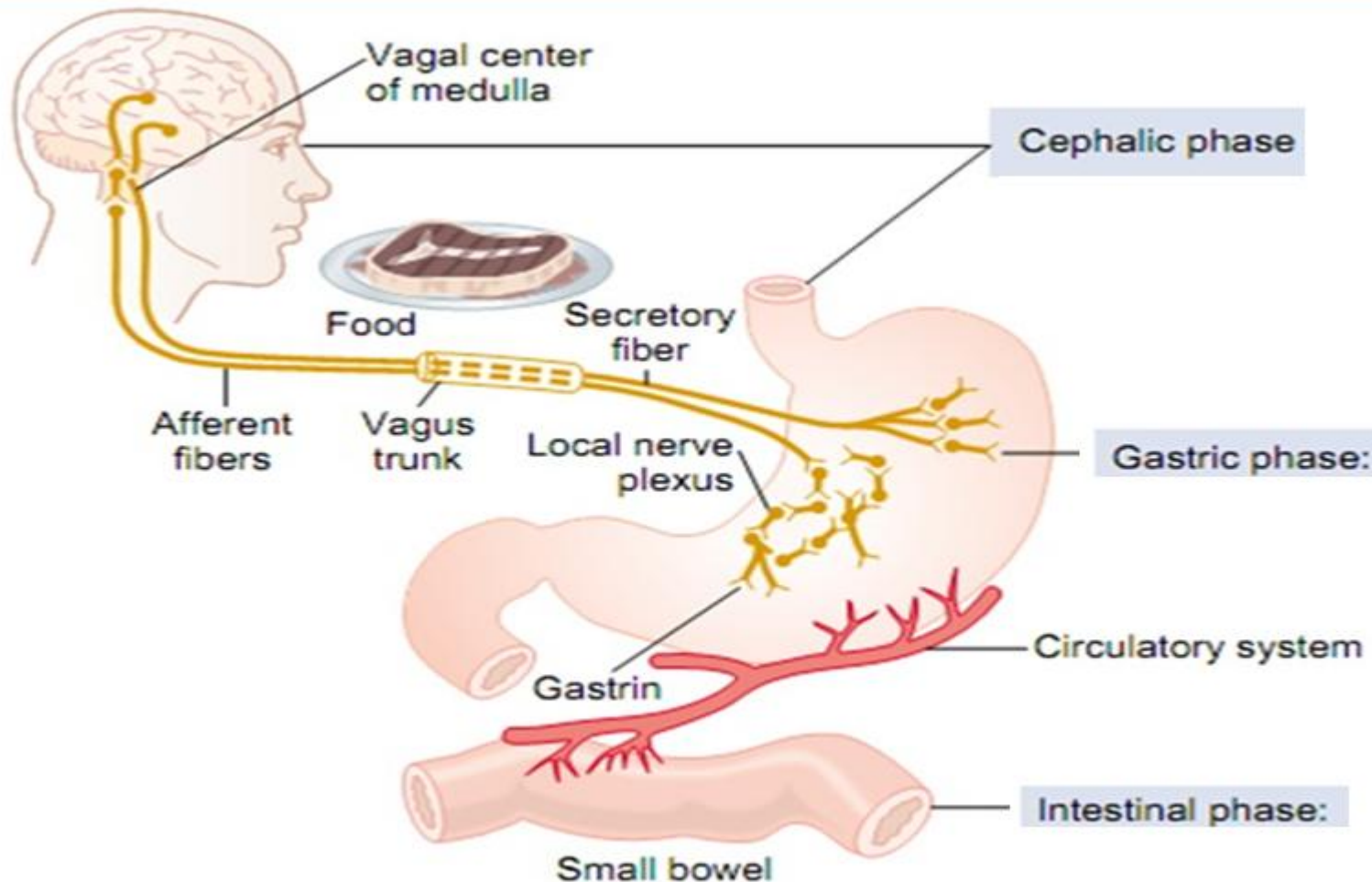




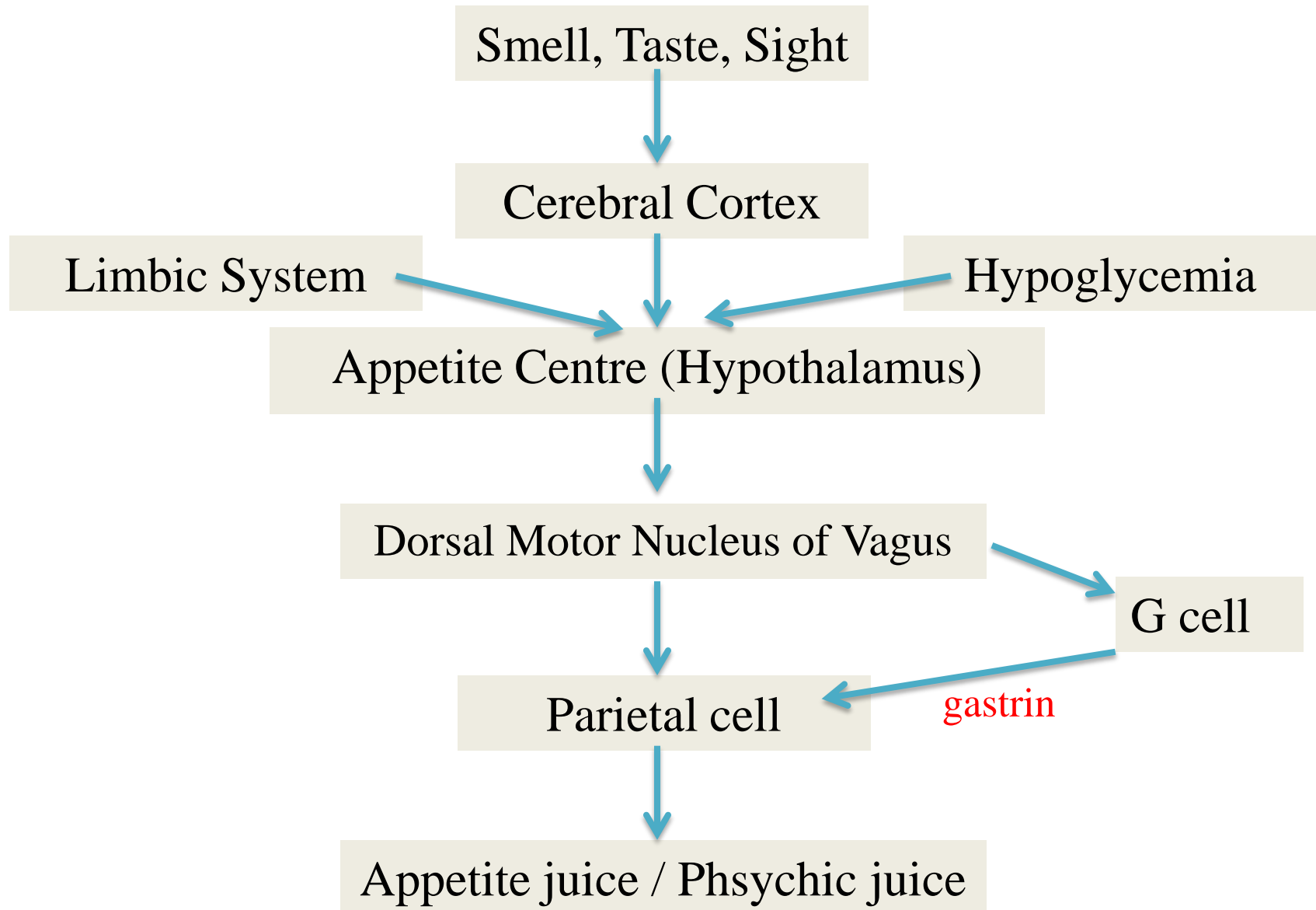
Gastrin itself → weak effect

Gastrin mediated release of histamine → strong effect

# Regulation of Gastric Secretion



# I. Cephalic Phase – 20%

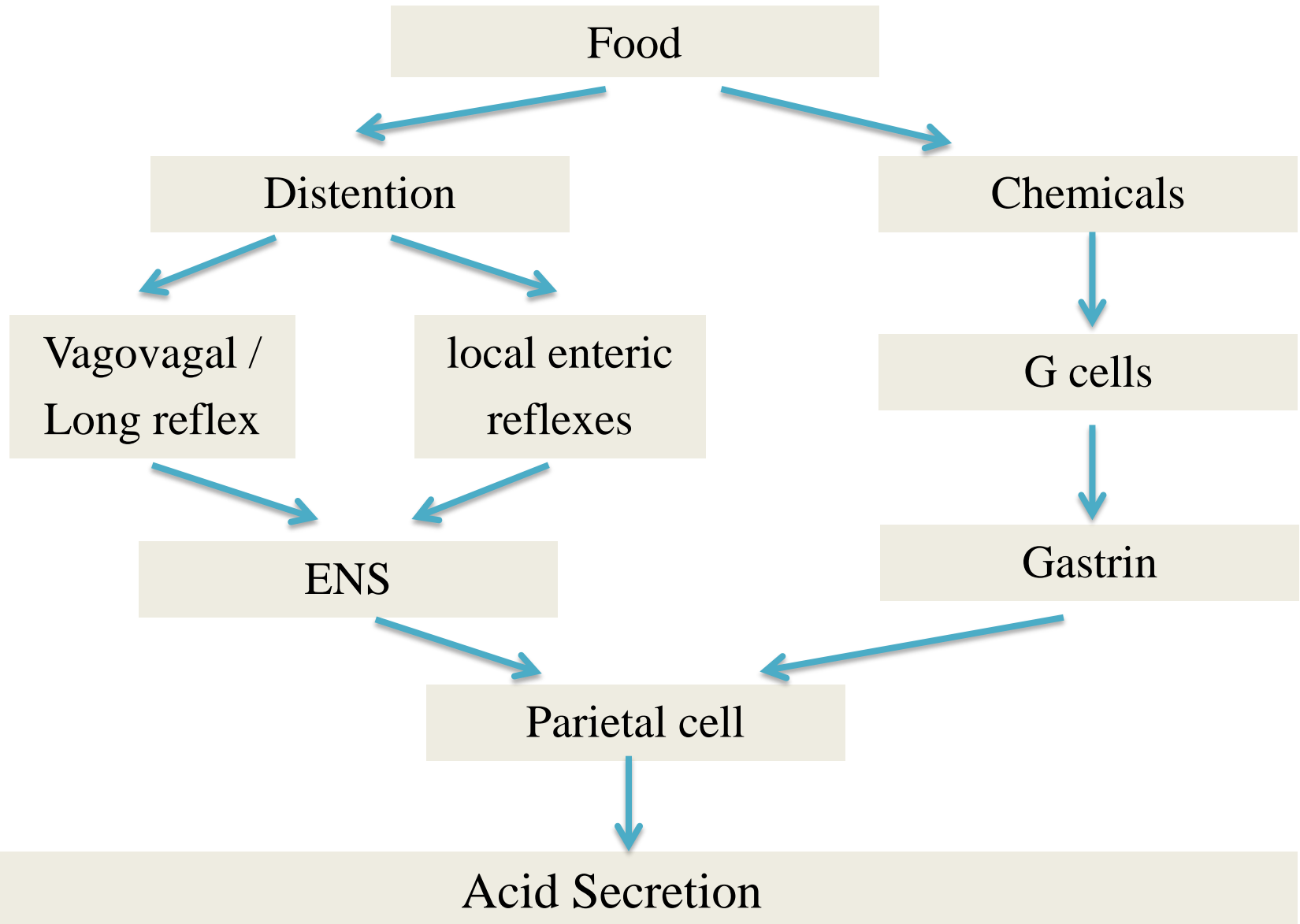




- Experimental proof: Sham Feeding



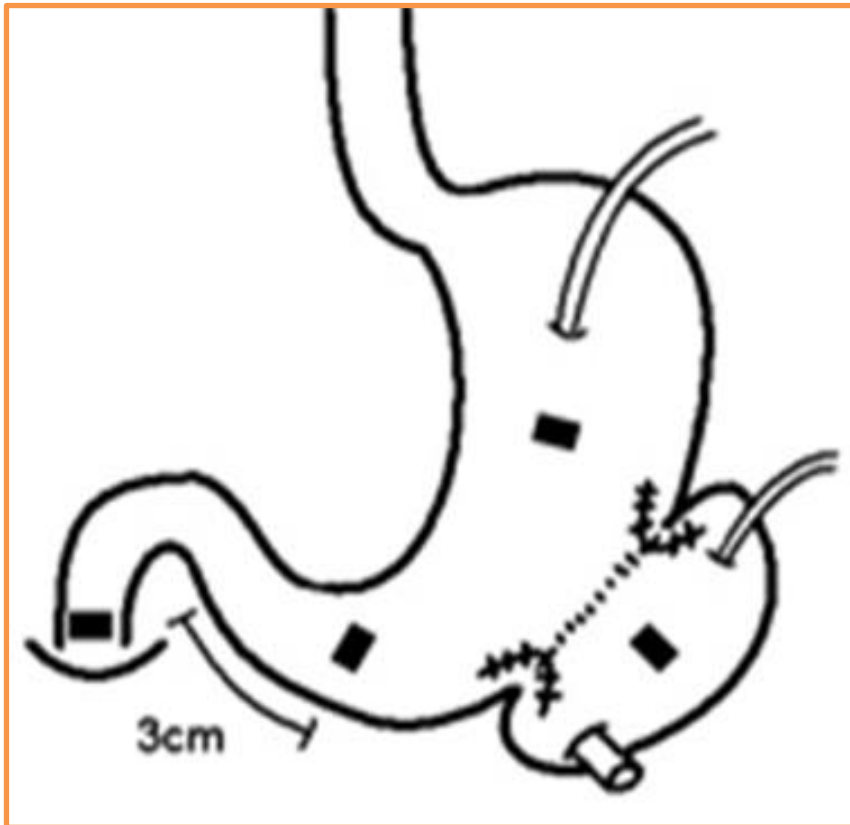
## II. Gastric Phase – 70%



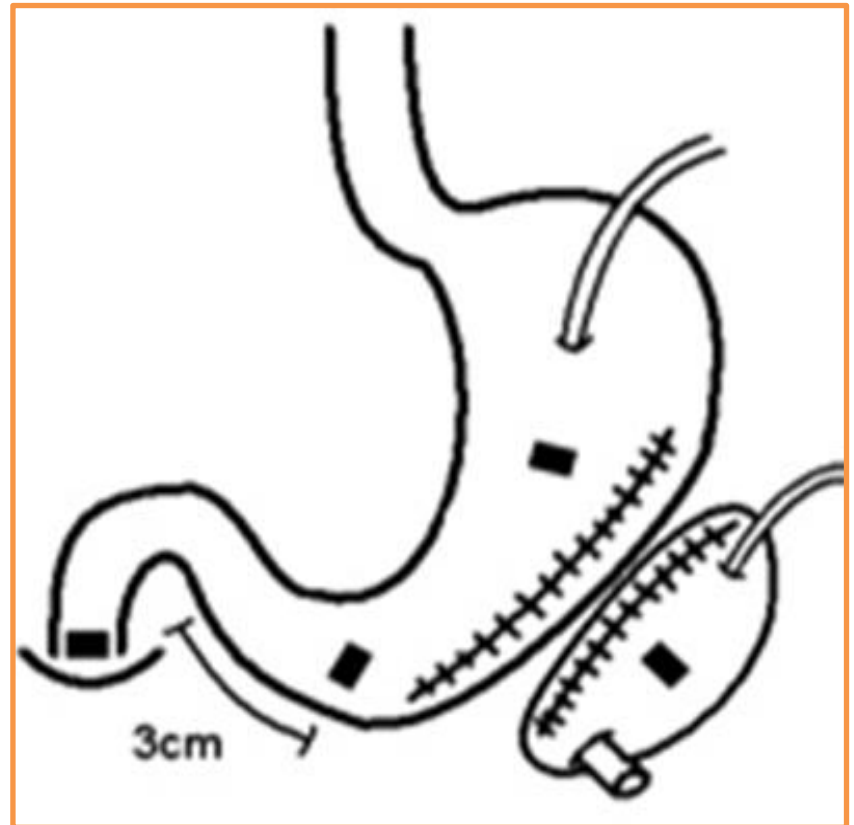


# Experimental proof

Pavlov's pouch



Heidenhain's pouch



III. Intestinal Phase – 10%

IV. Interdigestive / Basal / Nocturnal Secretion  
– 5-10%

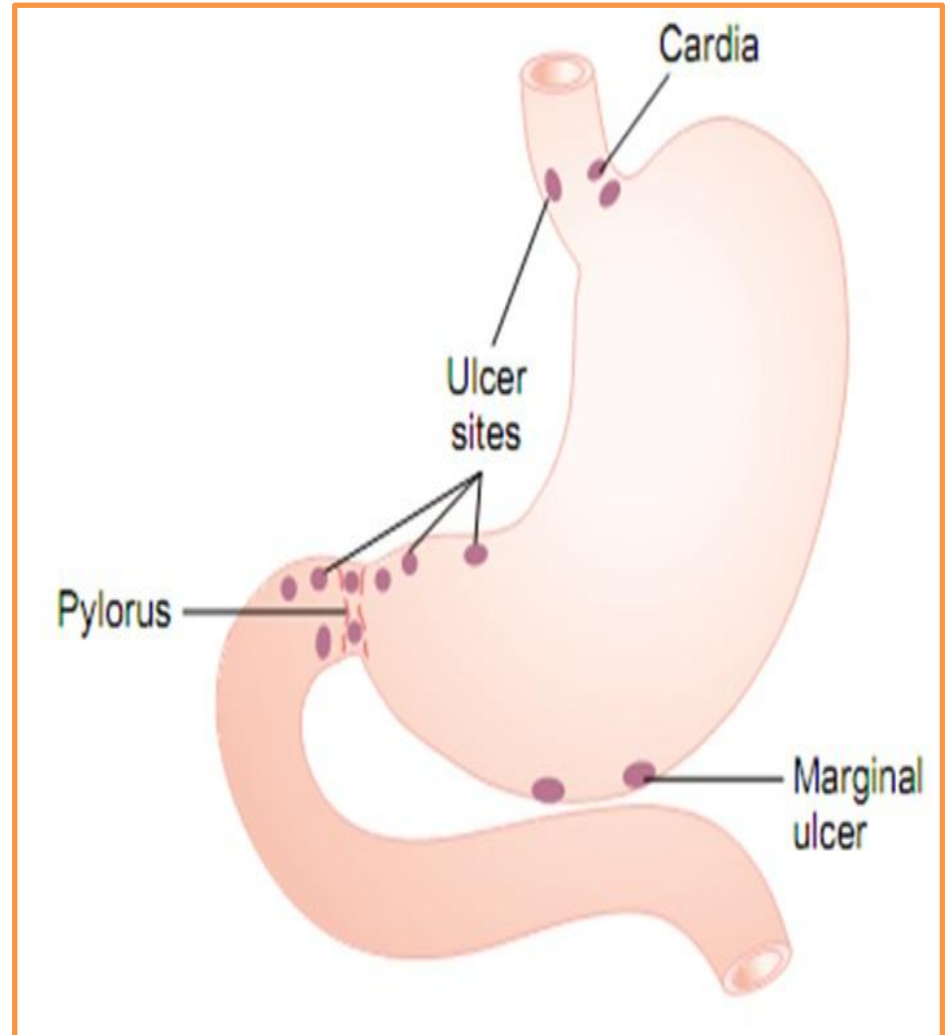
# Factors Affecting Gastric Acid Secretion

	↑ Secretion	↓ Secretion
<b>Emotions</b>	Anger, Worry	Fear, Grief
<b>Food</b>	Palatable, Spicy	bland
		Acids & Alkalies
	Smoking	
	↑ Serum $\text{Ca}^{++} \rightarrow$ gastrin	
<b>Hormones</b>	Steroids, Insulin, ACTH, Gastrin	
<b>Drugs</b>	Caffeine, Aspirin	Cimetidine, Omeprazole, Pirenzepine

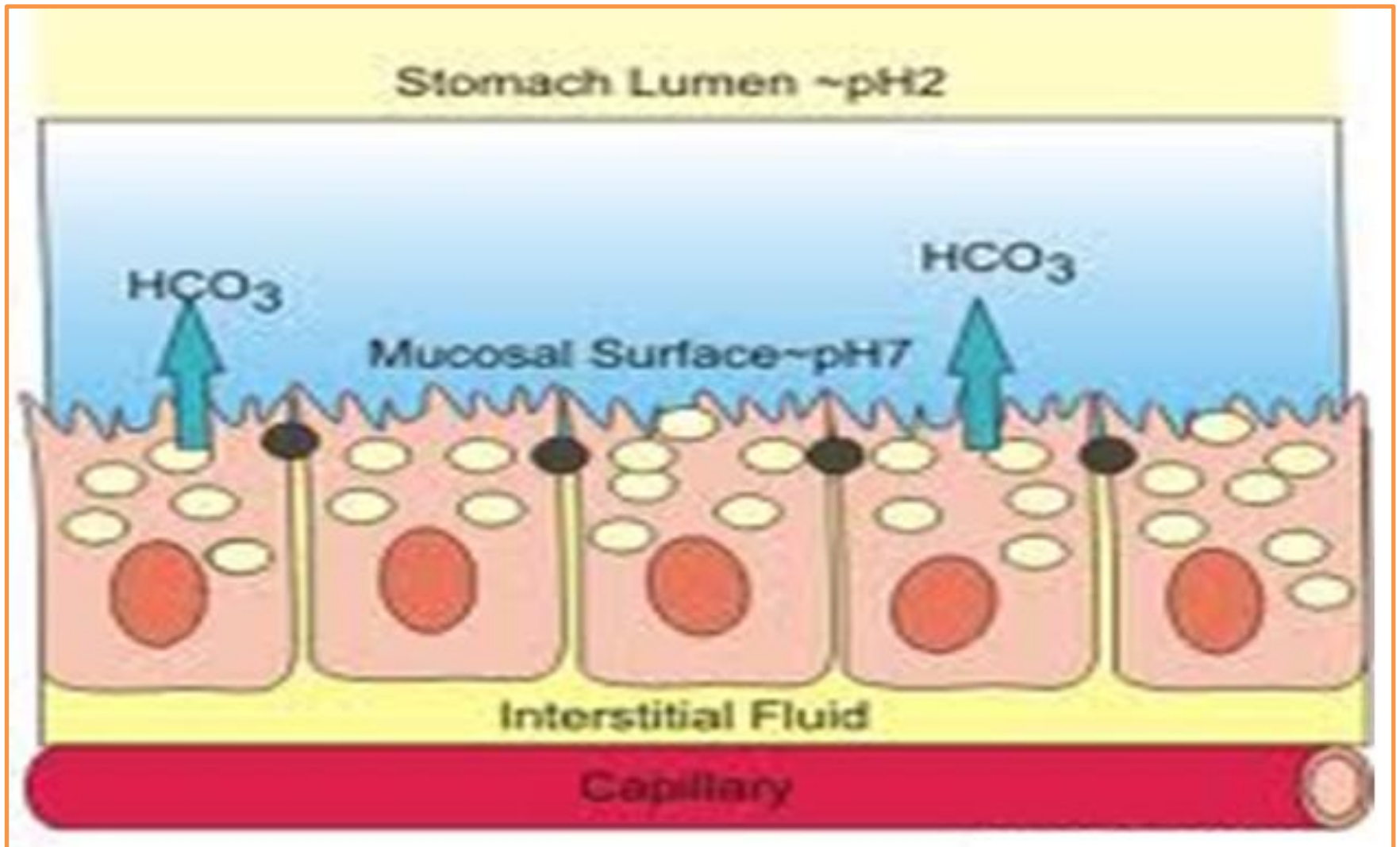


# Peptic Ulcer

- What is an Ulcer?
- Peptic ulcer -
- Common Sites -

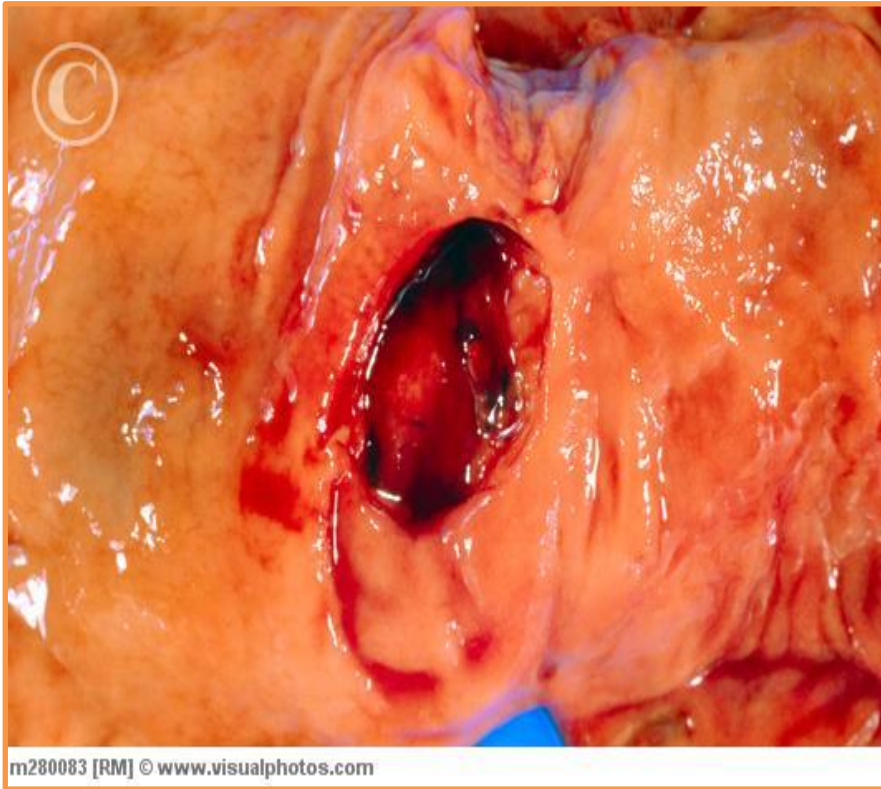


- Pathophysiology:-



- Causes-

1. ↑ Secretion of Gastric acid
2. Damage to mucosal barrier



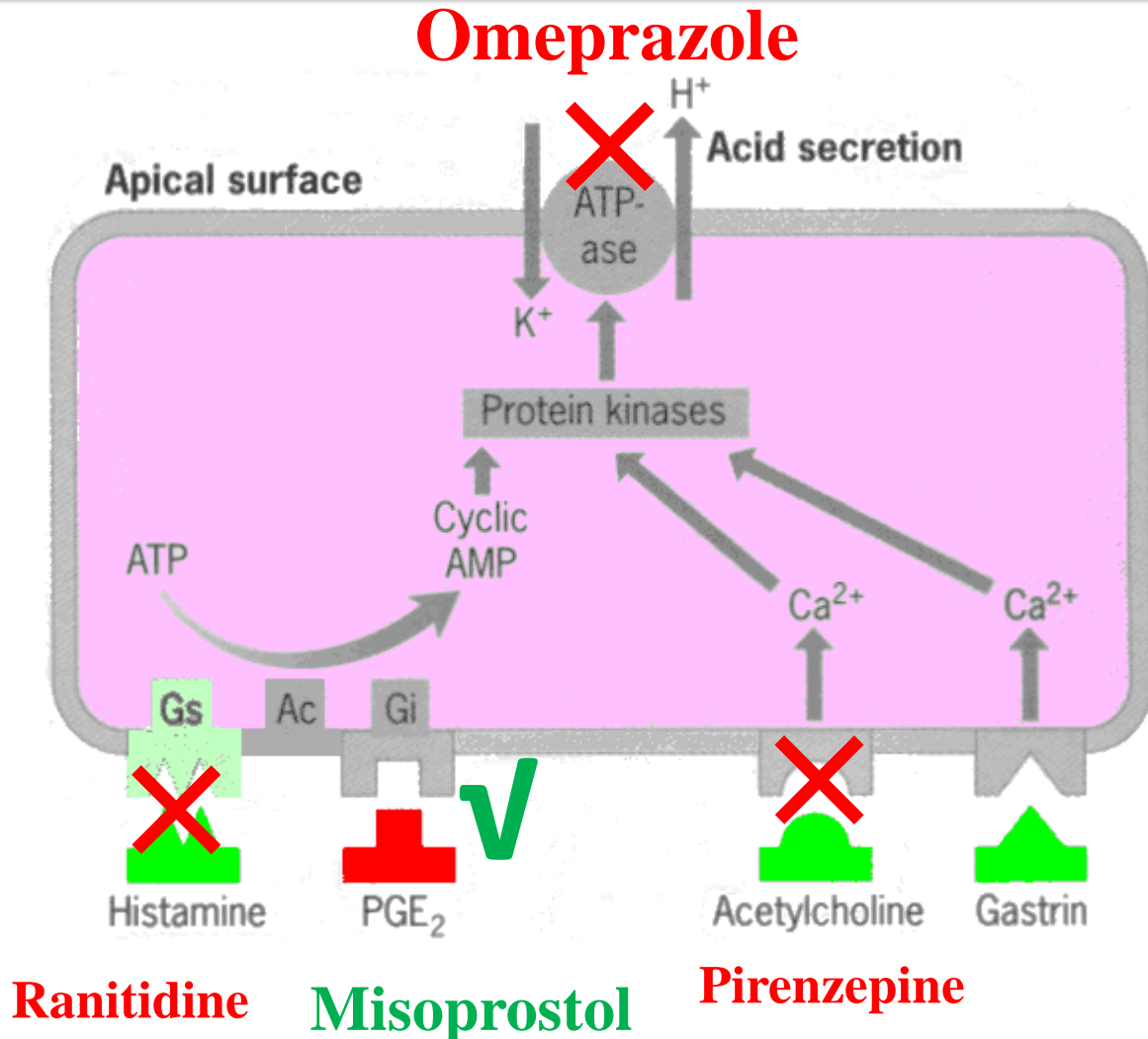
- Clinical features-



# Physiological basis of Treatment

Drugs

Operative





**THANK YOU**