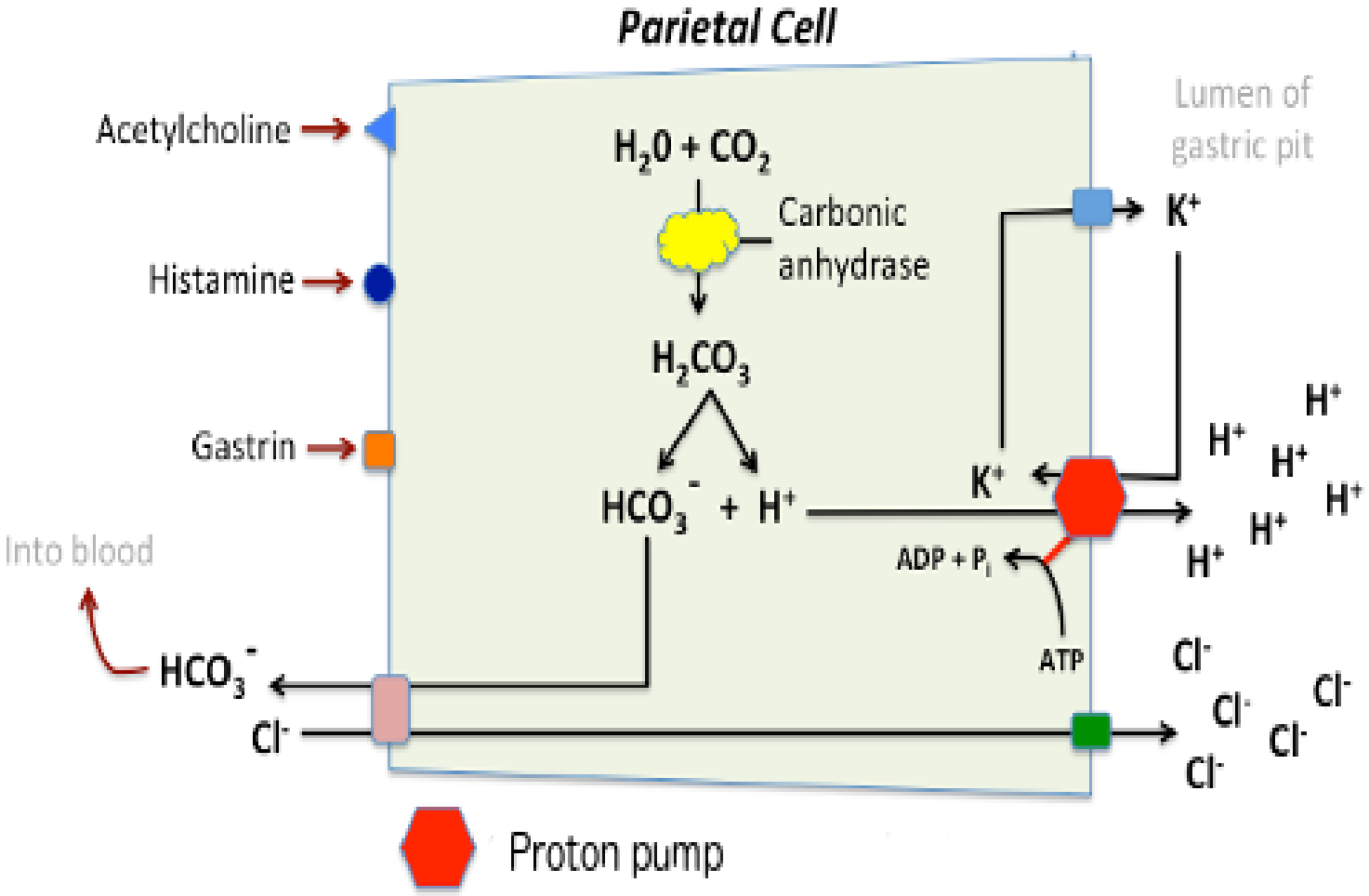
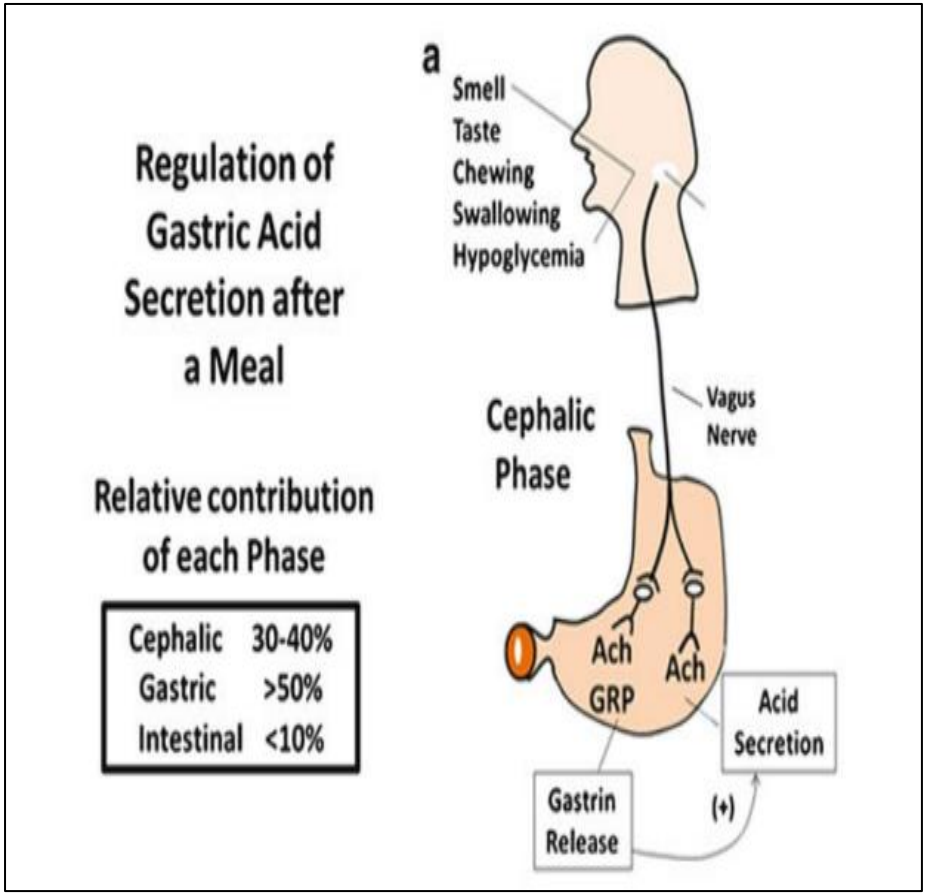
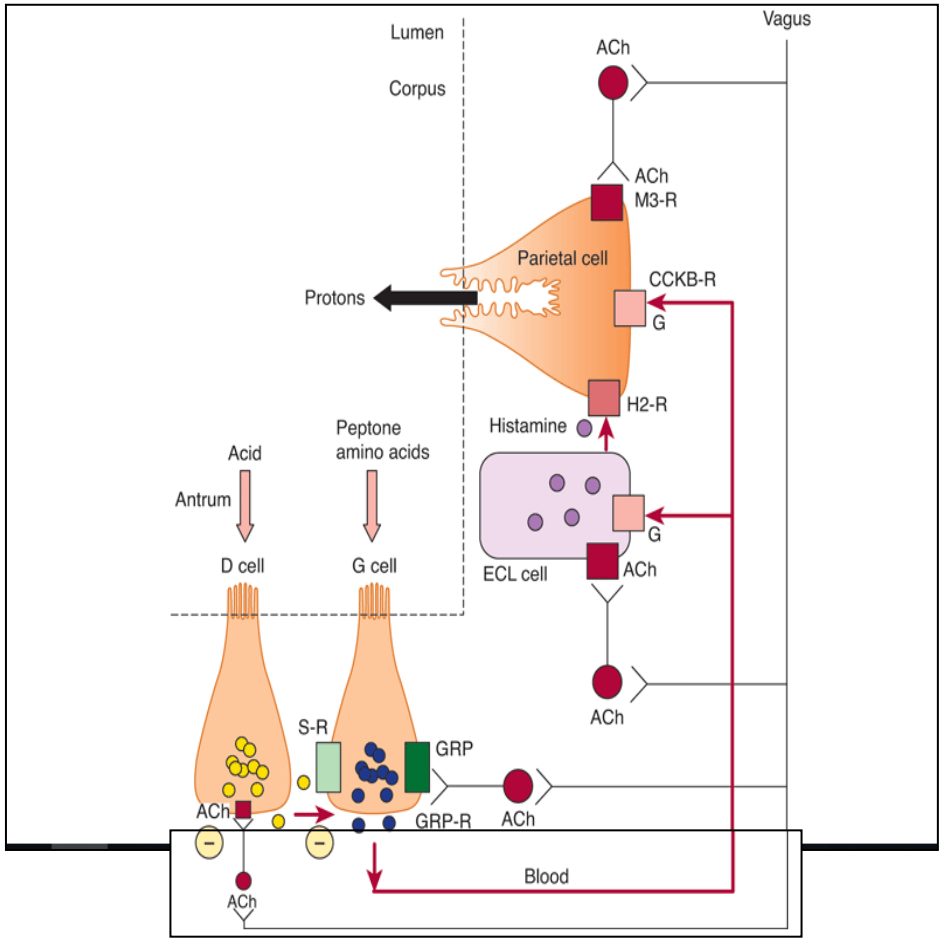
Gastric Acid Secretion

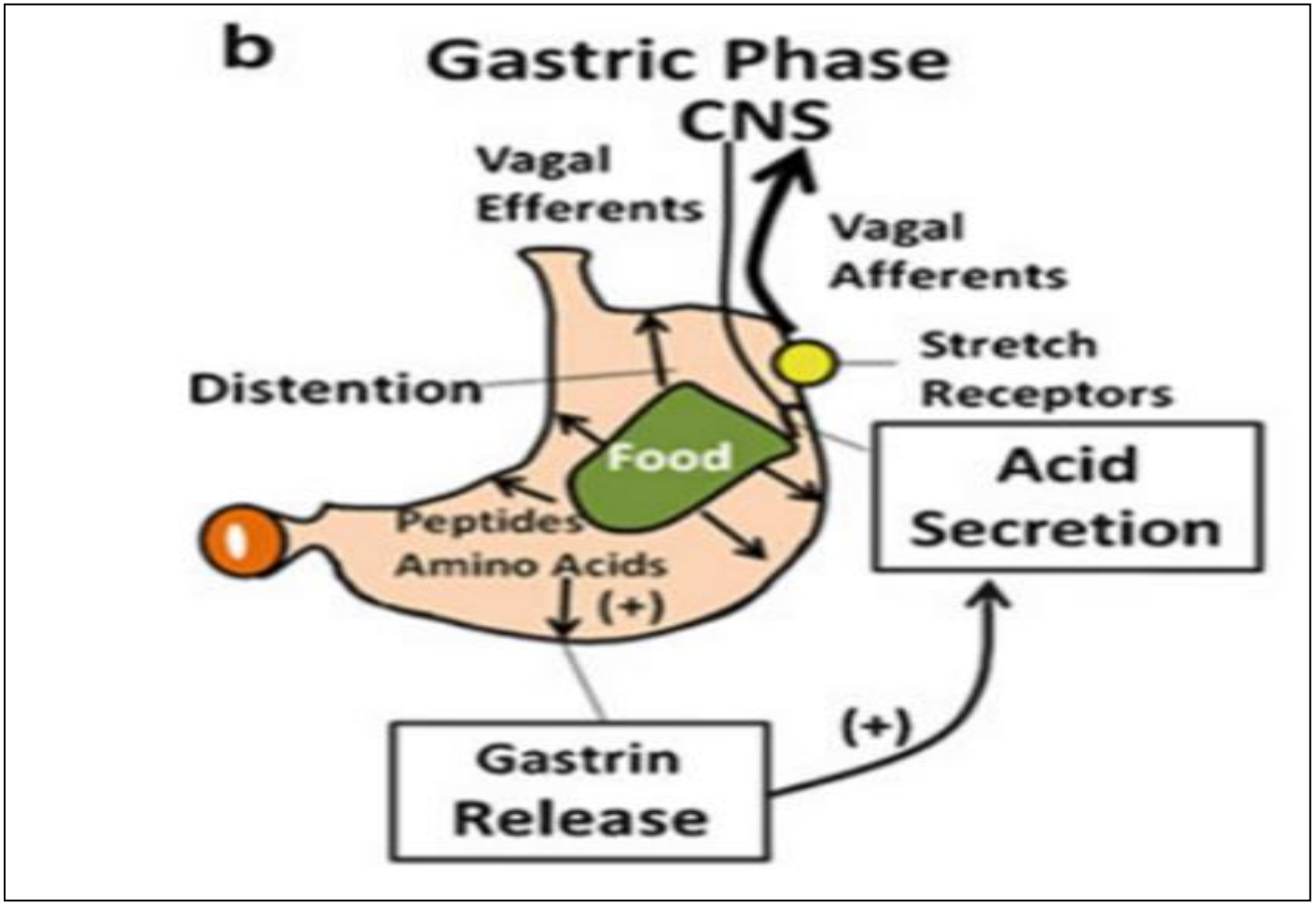


Regulation of Gastric Secretion

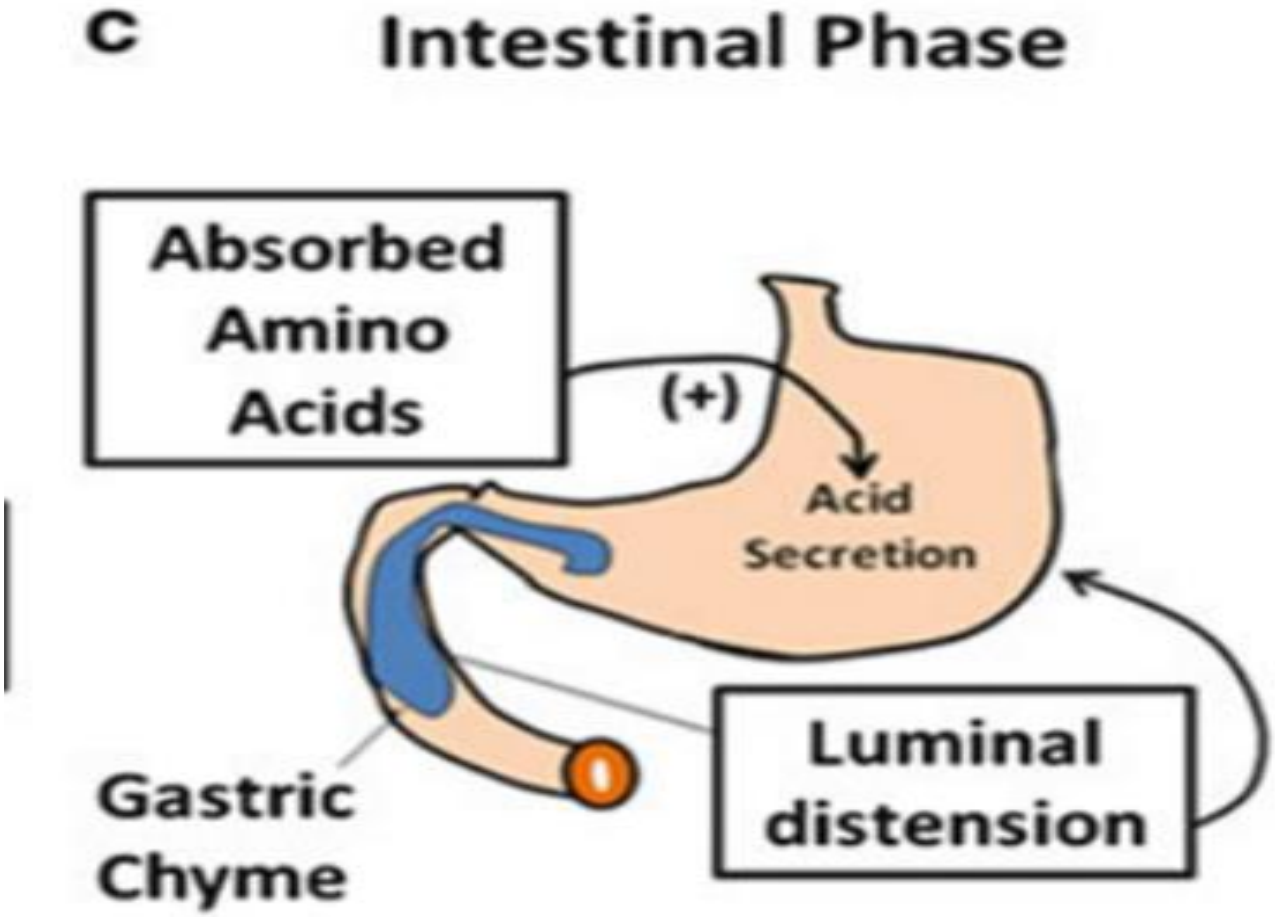




Regulation of Gastric Secretion



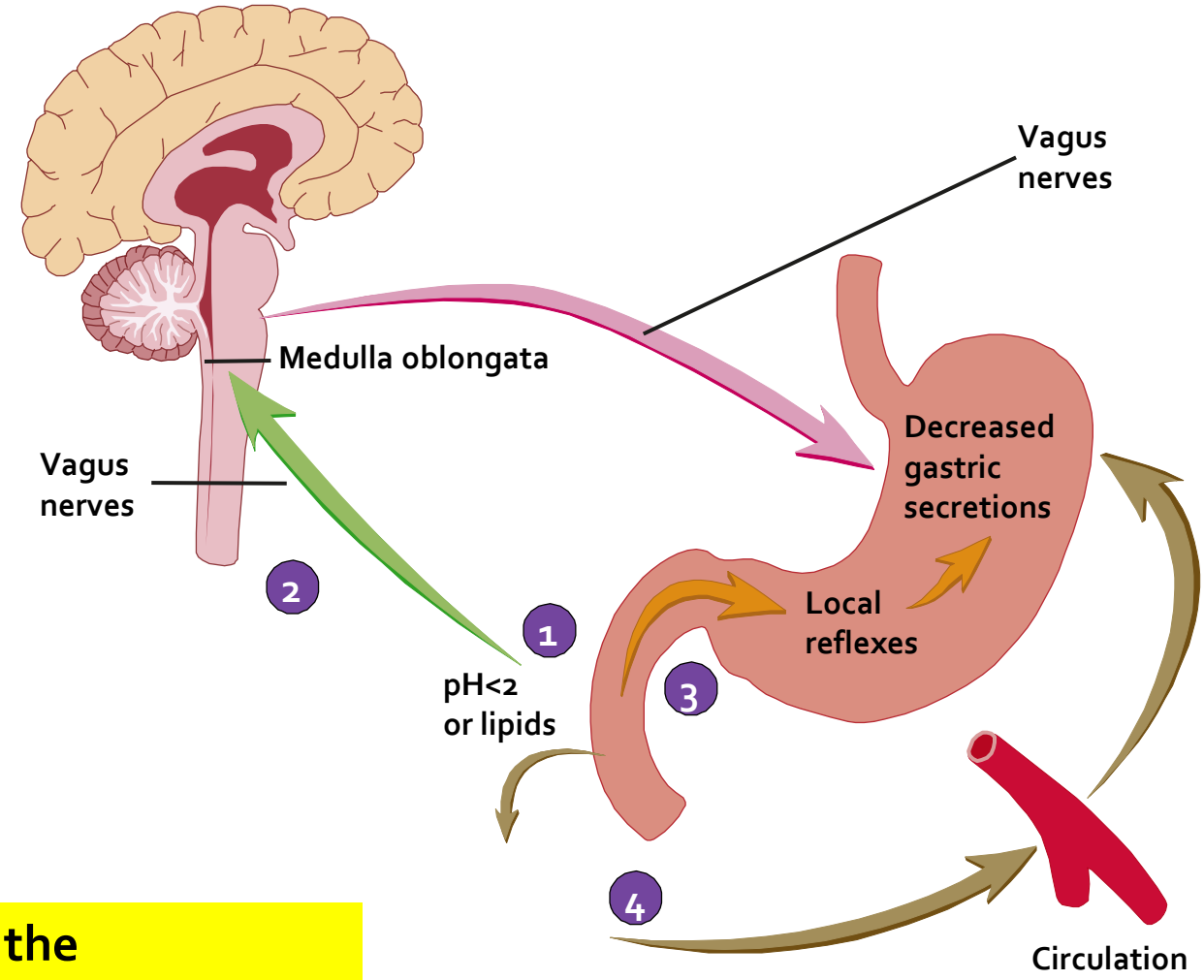
Regulation of Gastric Secretion



Mechanism of Inhibition of Gastric Secretion

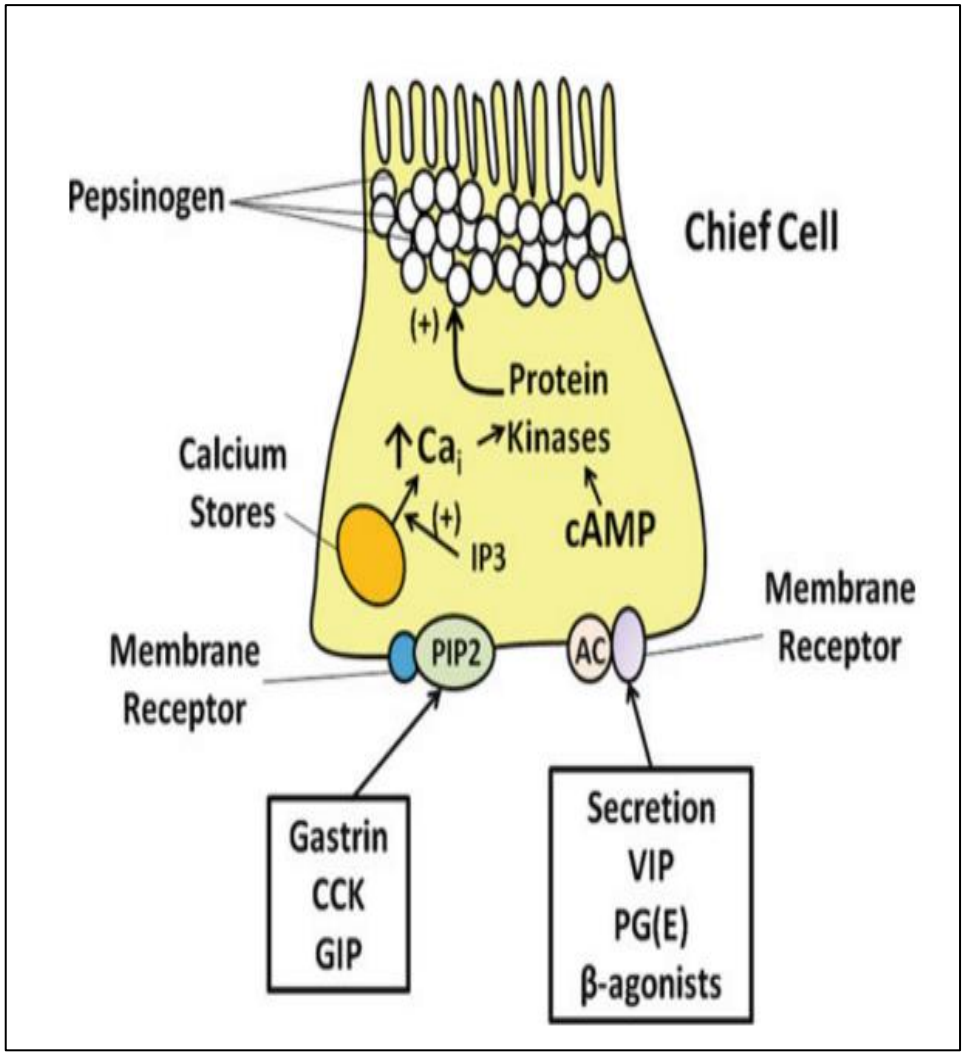
Enterogastrone hormones:

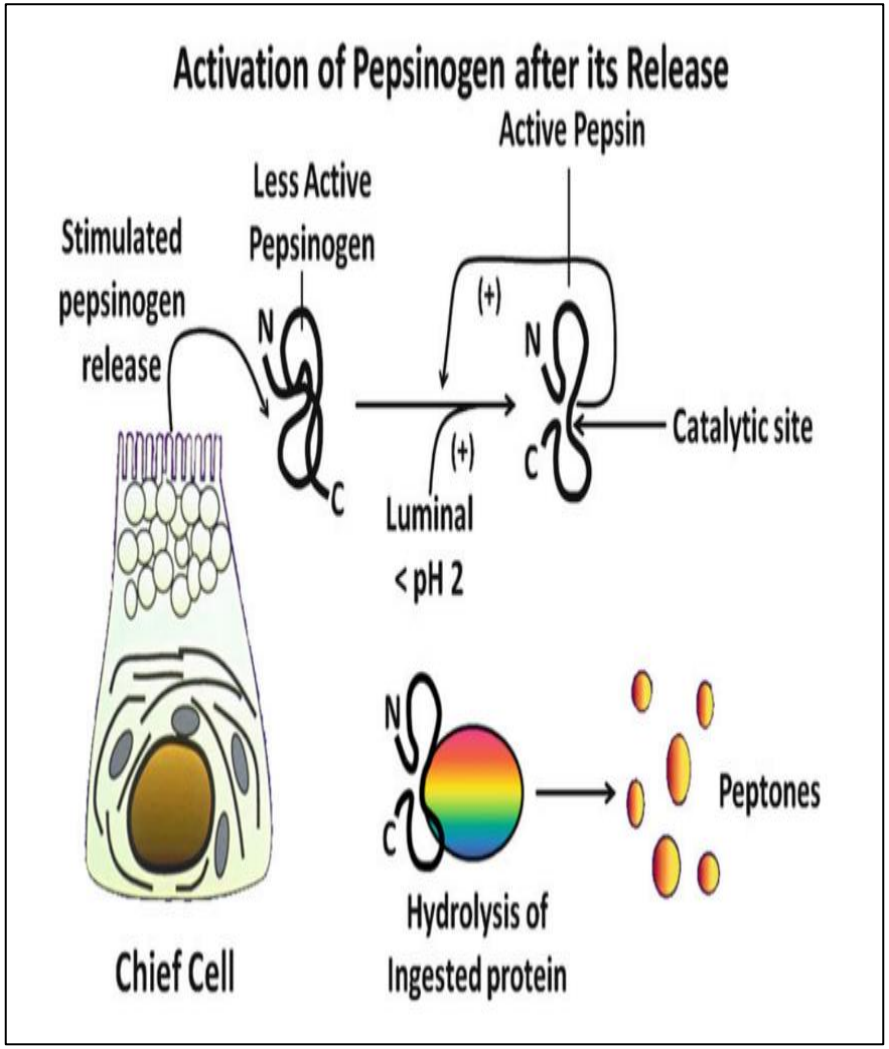
- Secretin
- GIP
- VIP
- CCK



Gastric Secretion During the Interdigestive Period??

Pepsinogen Secretion





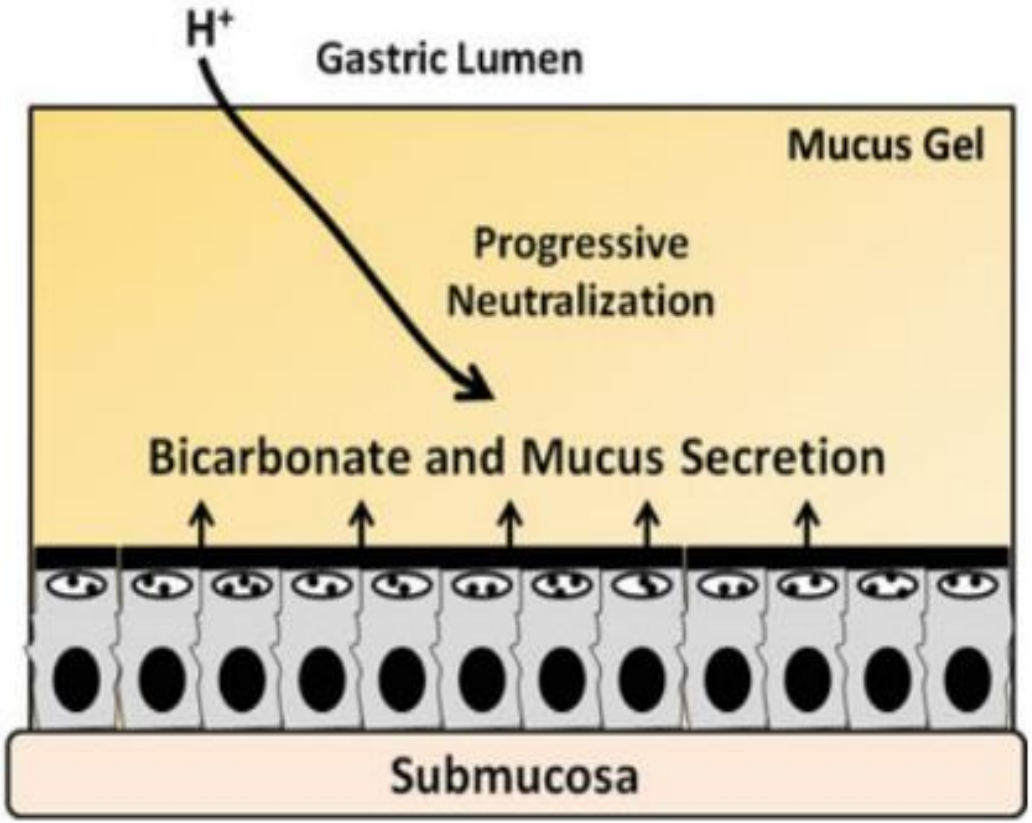
Mucus Secretion

Factors that affect mucus secretion:

- Cholinergic stimulation
- Seratonin
- Prostaglandins A & F

Factors that affect Bicarbonate Secretion

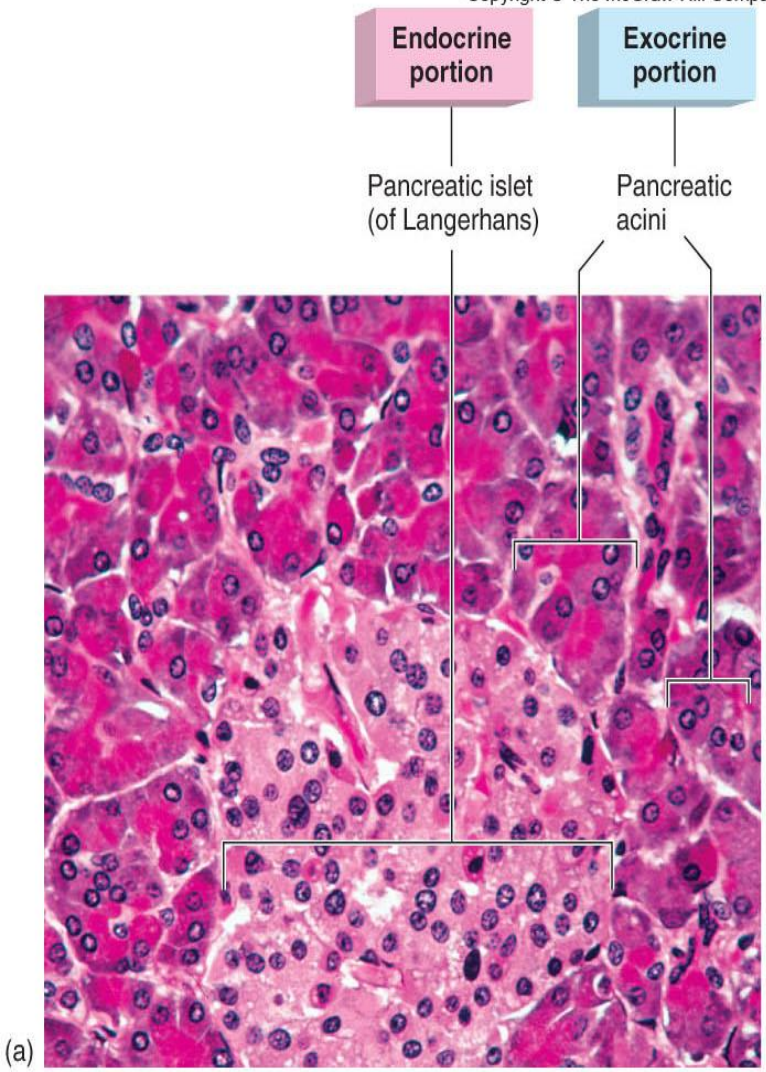
- Cl^-/HCO_3^- channel.
- Vagal nerve and E-prostaglandins

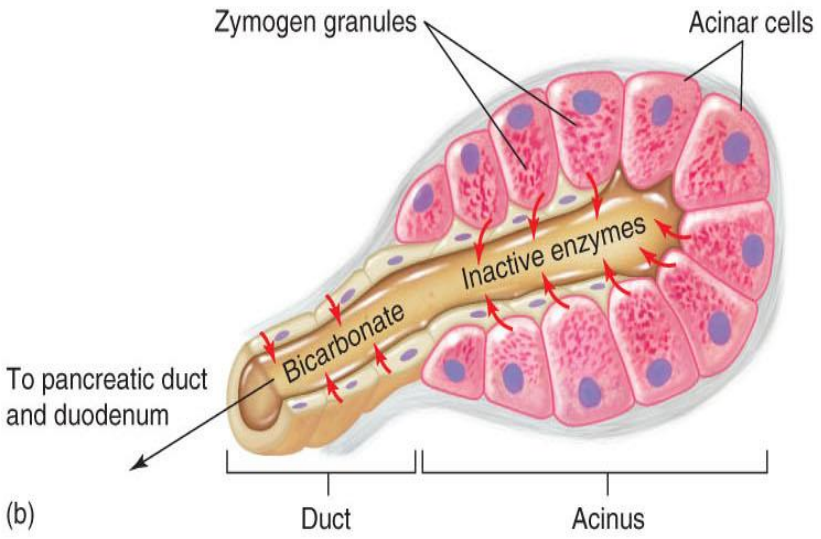


Other protective mechanisms??

Pancreatic Secretions

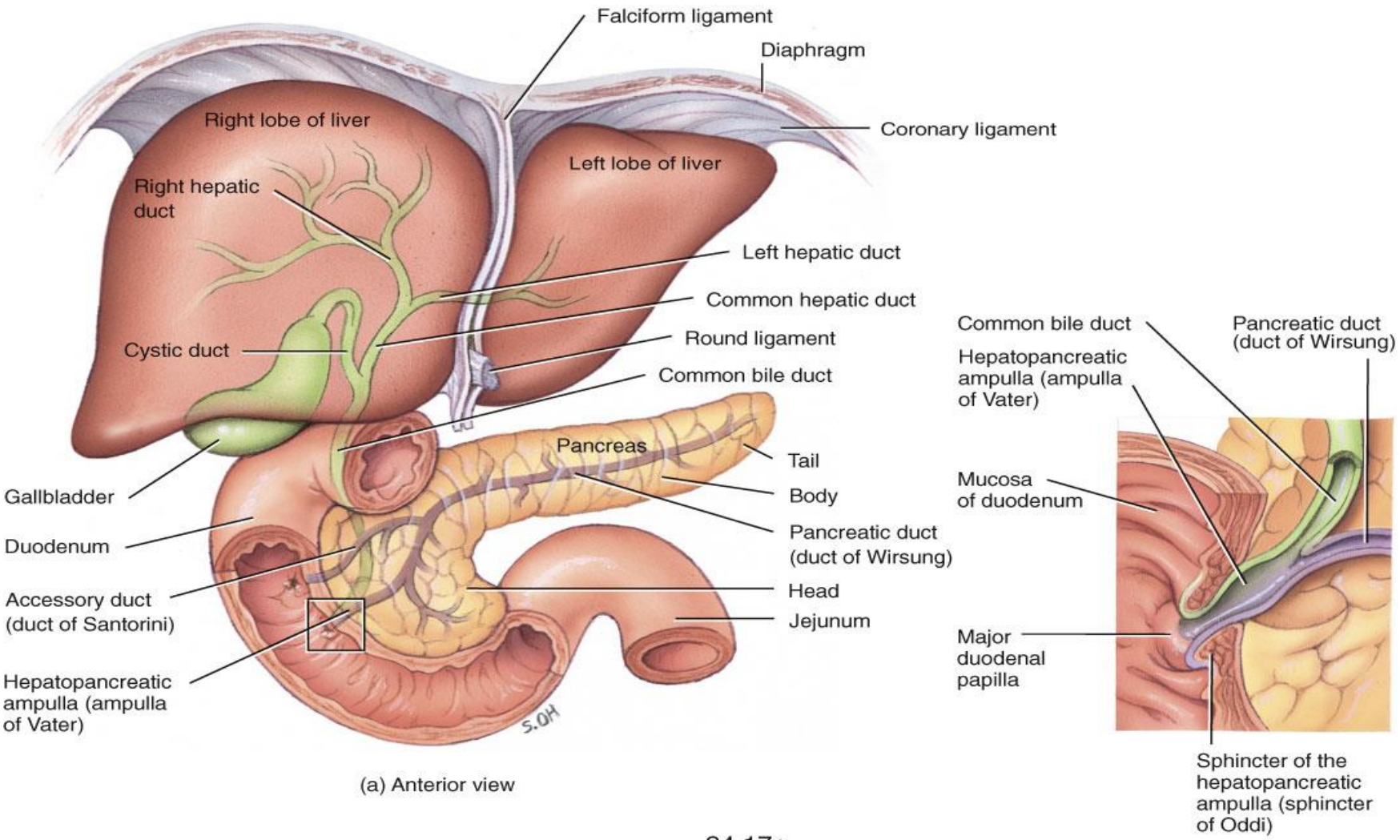
Functional anatomy of Pancreas





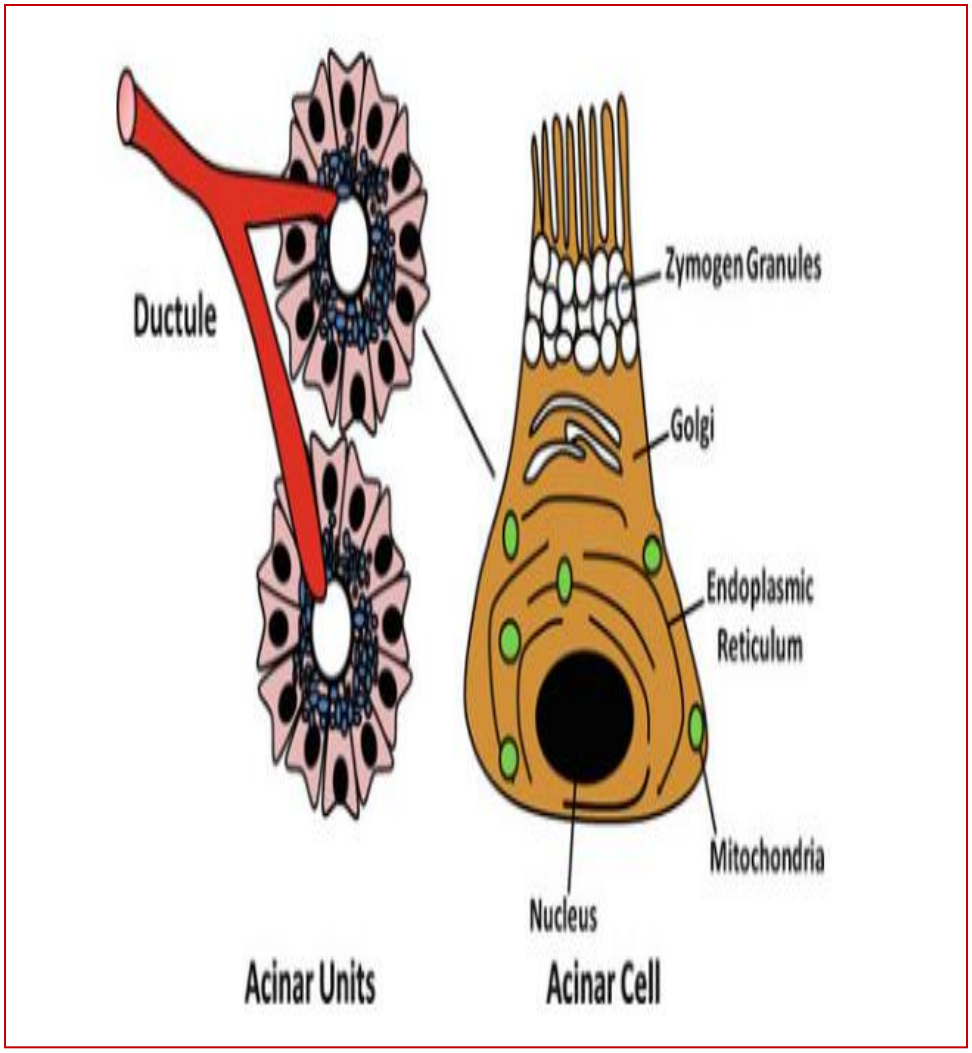
a: © Ed Reschke

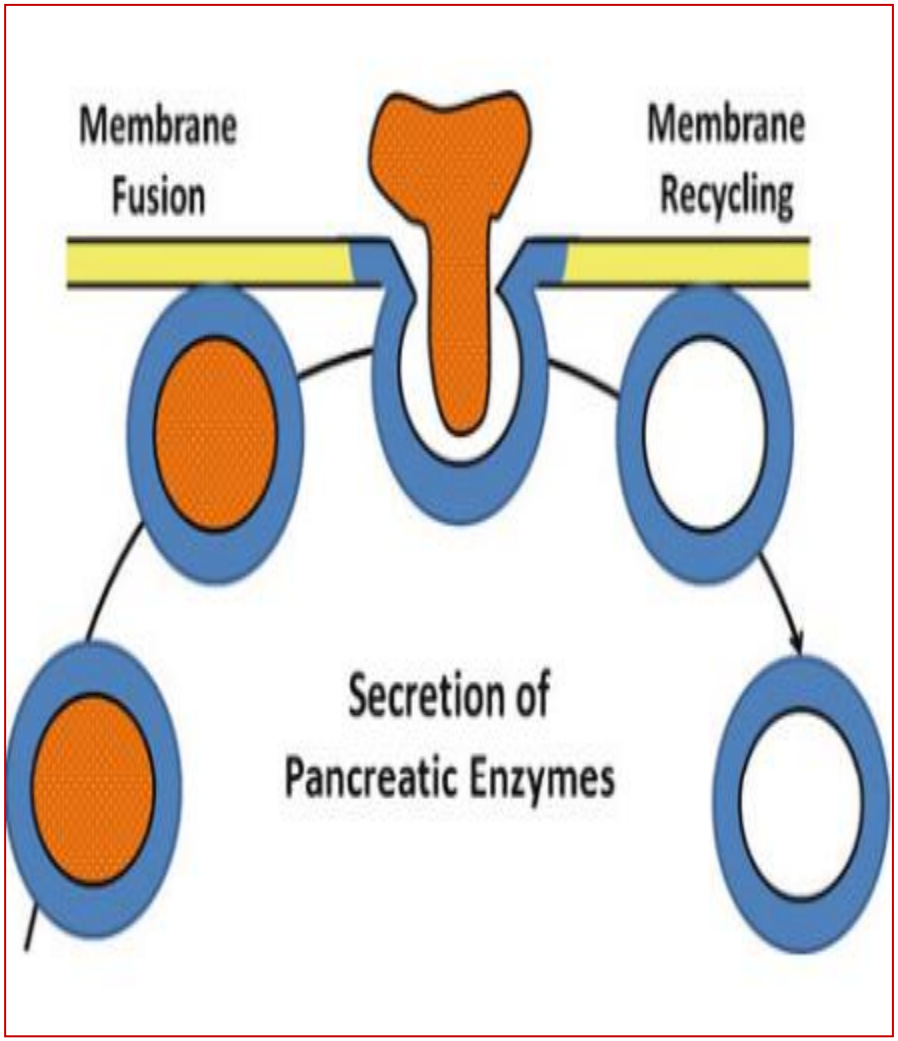
Routs of pancreatic secretion



24.17a

Mechanism of Pancreatic Digestive Enzymes Secretion by the Acinus





Pancreatic Secretion Essential for Digestion

a

Proteolytic Enzymes

Trypsinogen 1, 2 & 3
Proelastase 1 & 2
Chymotrypsinogen
Procarboxypeptidase A1 & A2
Procarboxypeptidase B1 & B2

Lipolytic Enzymes

Lipase
Phospholipase A_2
Pancreatic lipase

Amylolytic Enzymes

α-Amylase

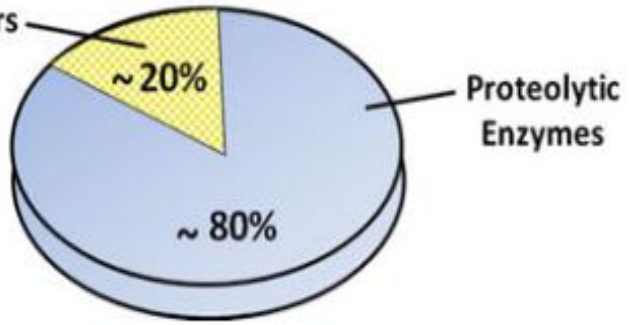
Nucleases

DNase
RNase

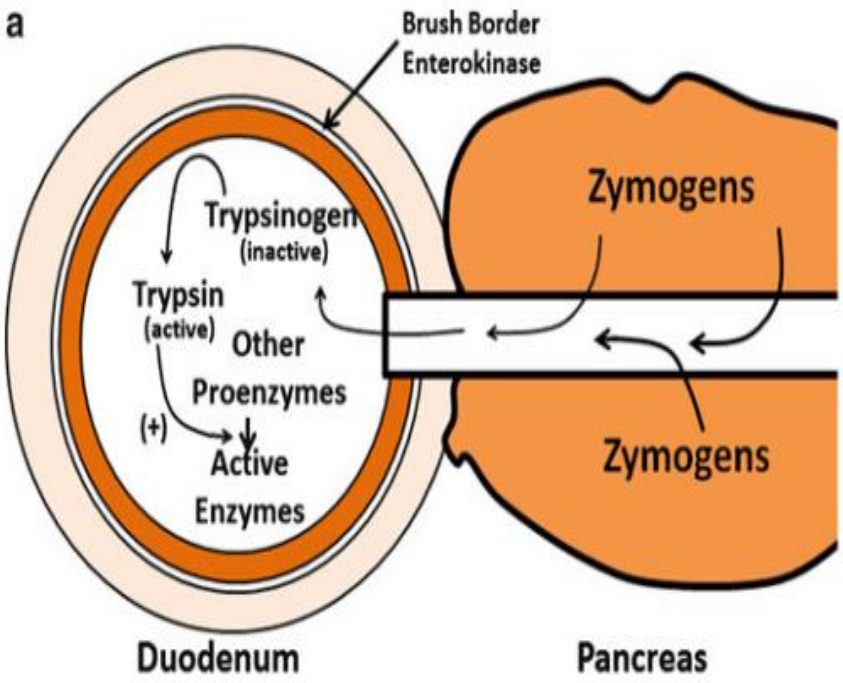
Others

Procolipase
Trypsin Inhibitor

b



a



b Prevention of Autodigestion by Pancreatic Enzymes

1. Zymogens are made in an inactive form.
2. Cellular sequestration of zymogens in granules.
3. Co-packaging of trypsin inhibitor.
4. Geographical separation of sites of zymogen release and activation.

Acute pancreatitis

Regulation of pancreatic secretions

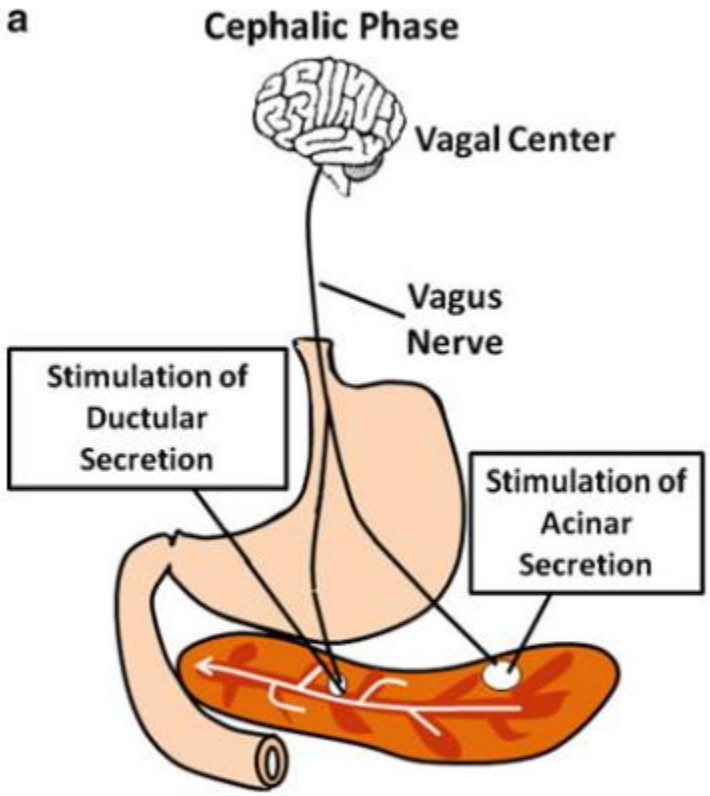
- **The regulation of pancreatic function can be divided into three phases:**

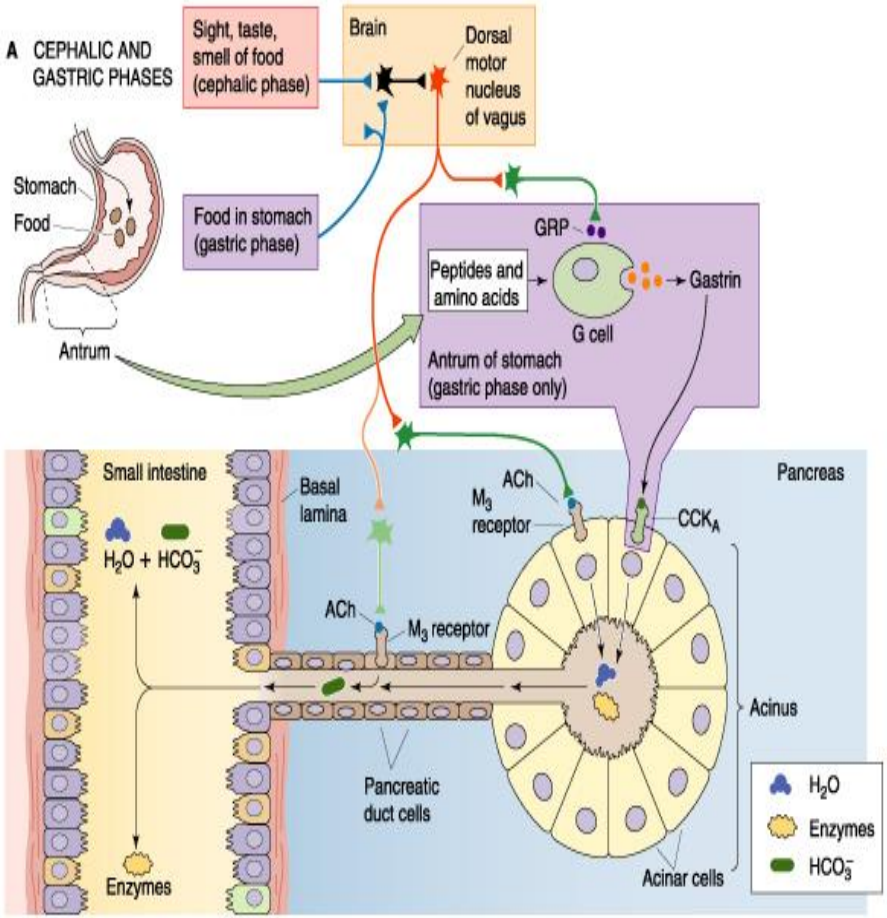
Three Phases of Pancreatic Secretion

Phase	Contribution Output	Stimulus	Mediators
Cephalic	10%-20% enzymes	Sight and smell	Vagus
Gastric	15%-20% enzymes	Gastric distension Food in stomach	Vagus
Intestinal	60%-70% enzymes and bicarbonate	Food and acid in duodenum	Vagus, CCK, secretin

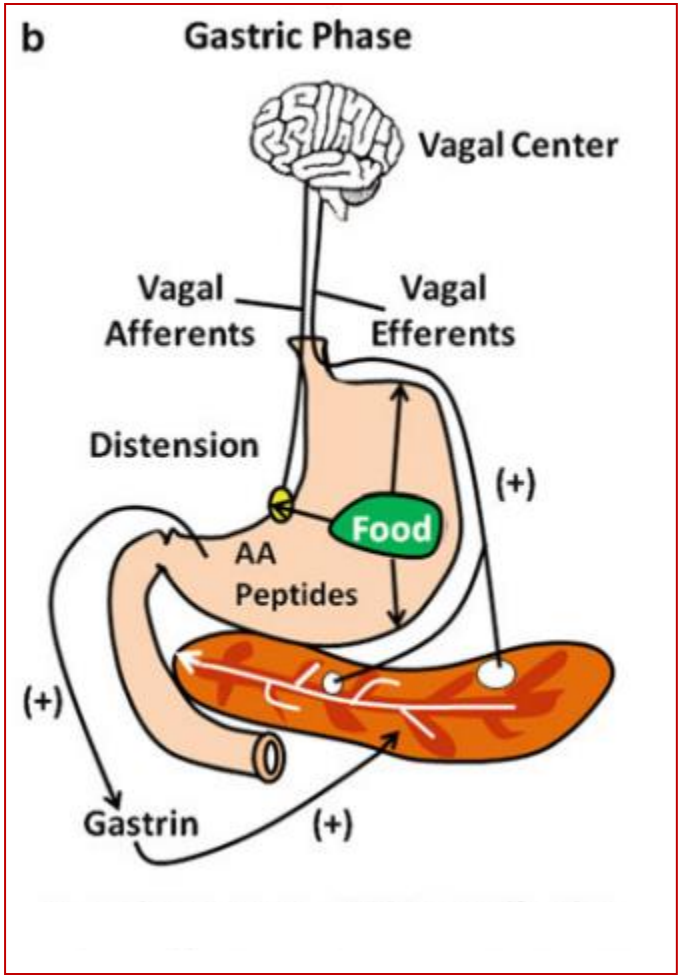
CCK, Cholecystokinin.

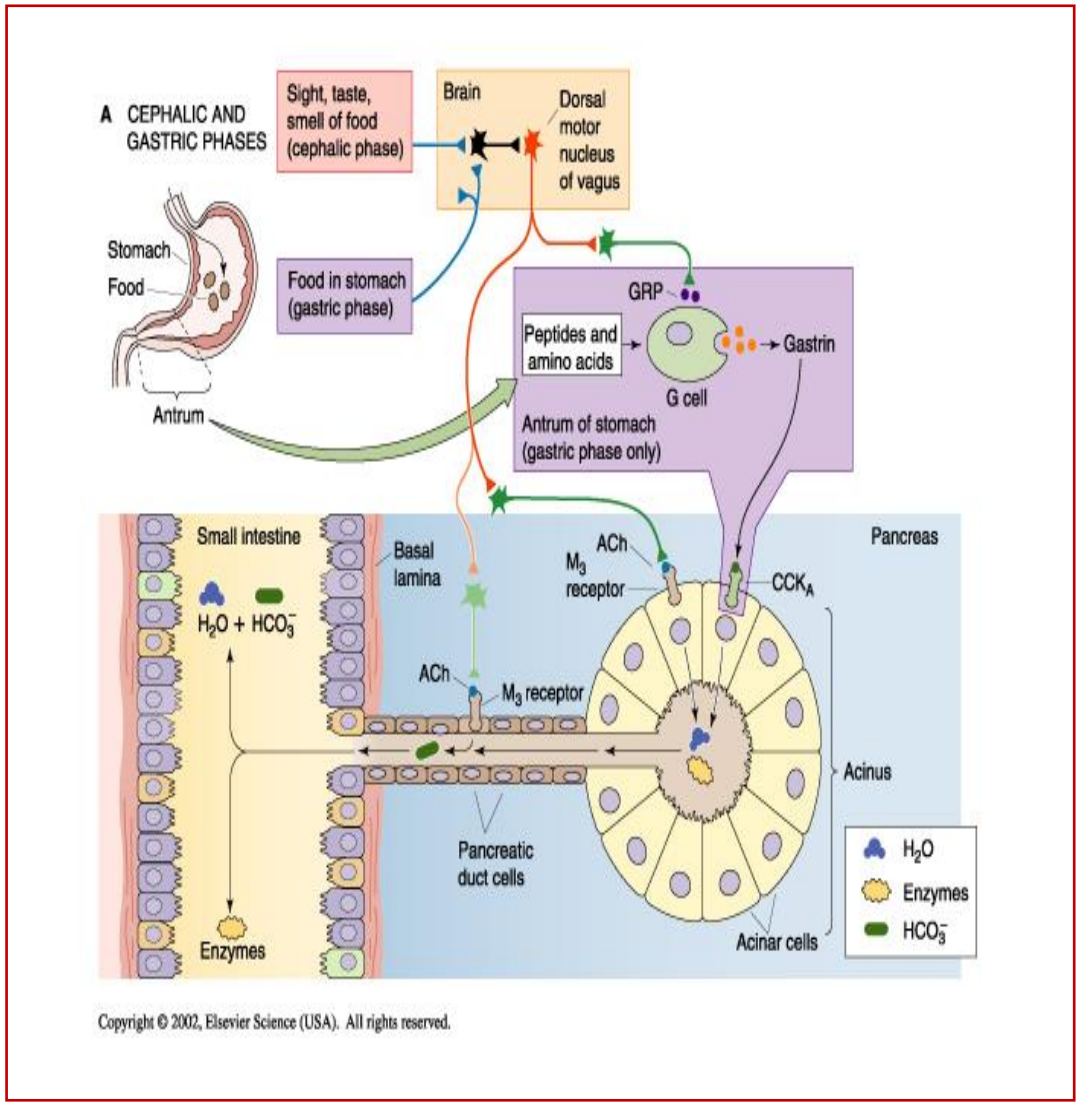
Cephalic-Phase of Pancreatic Secretion



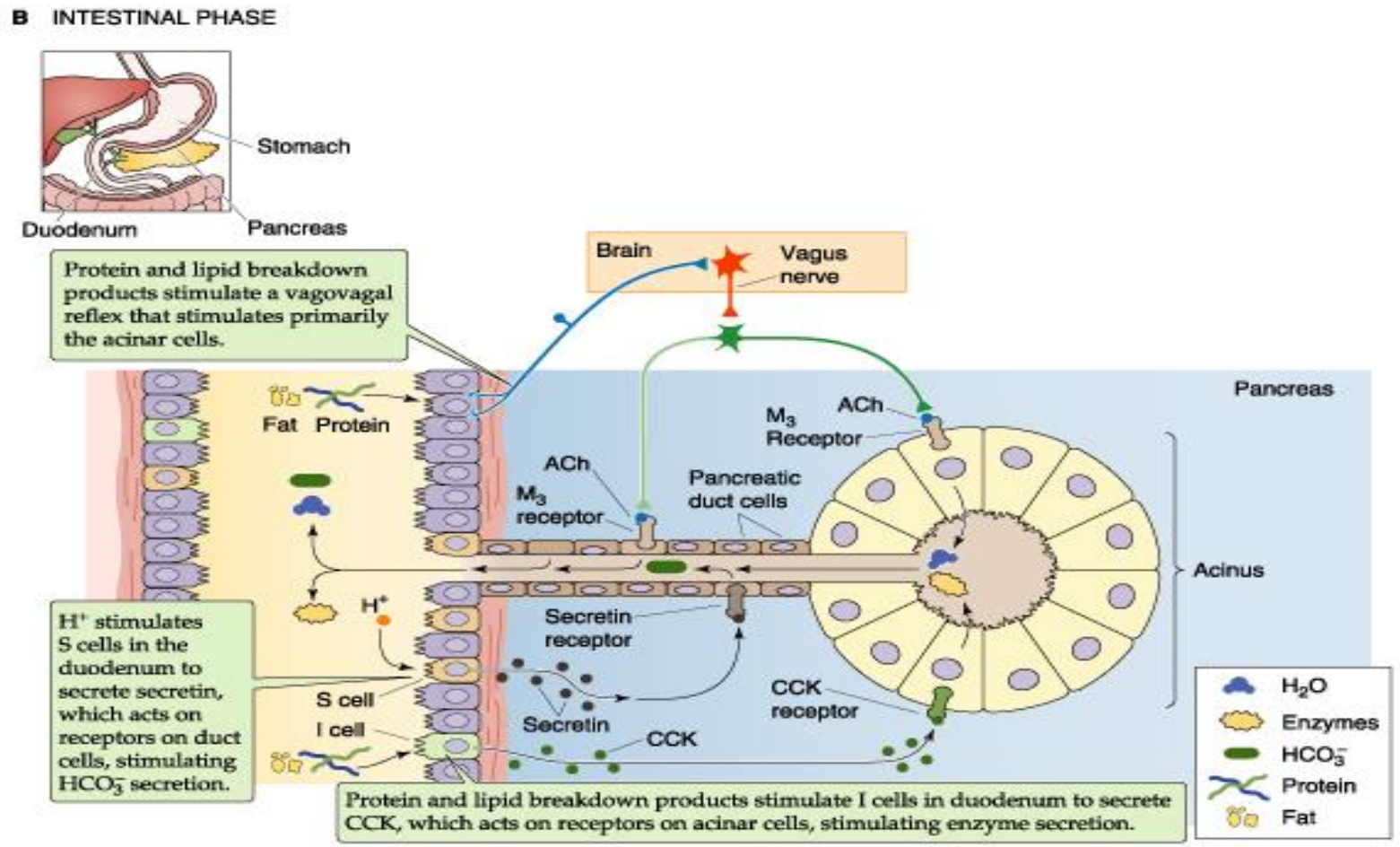


Gastric-Phase of Pancreatic Secretion

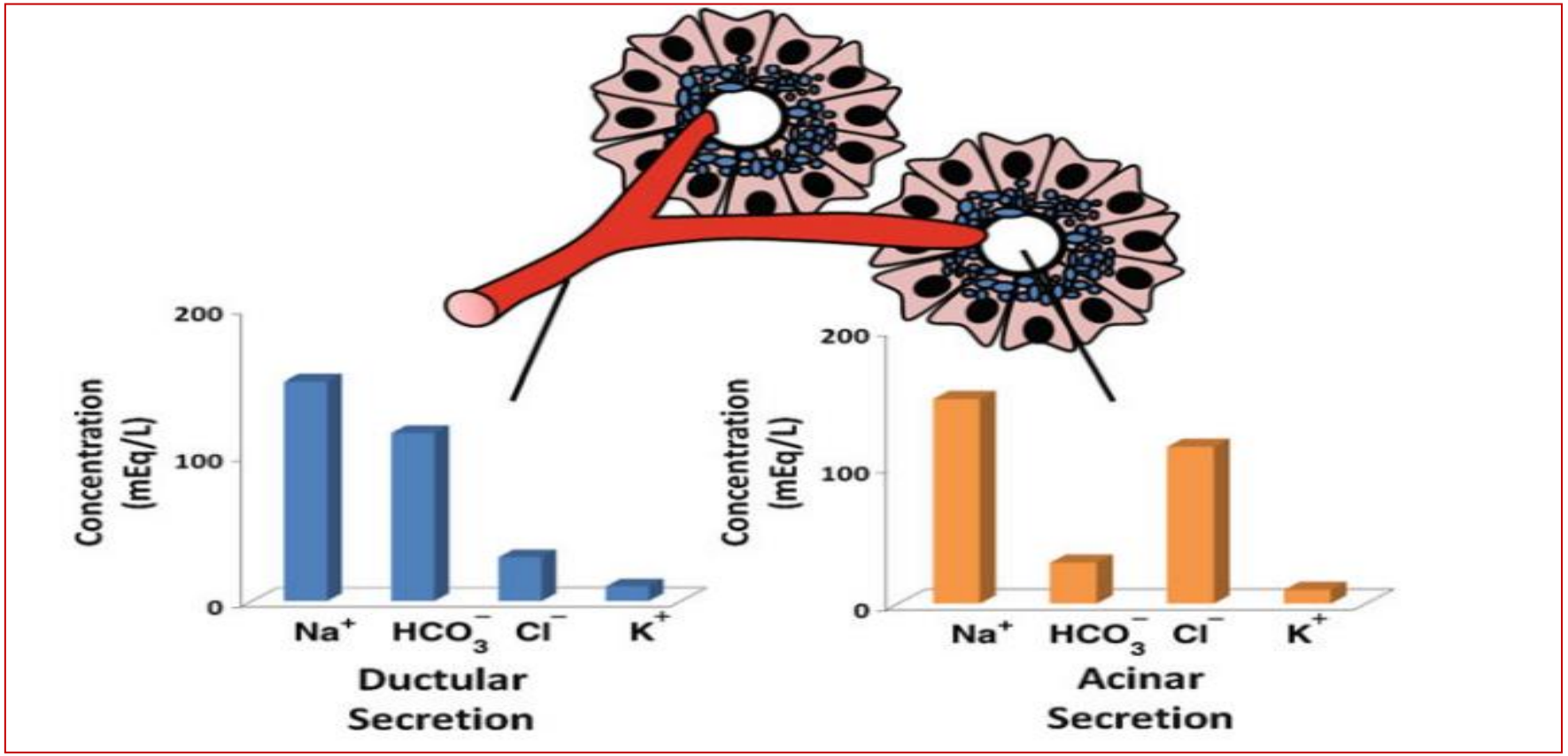




Intestinal-Phase of Pancreatic Secretion

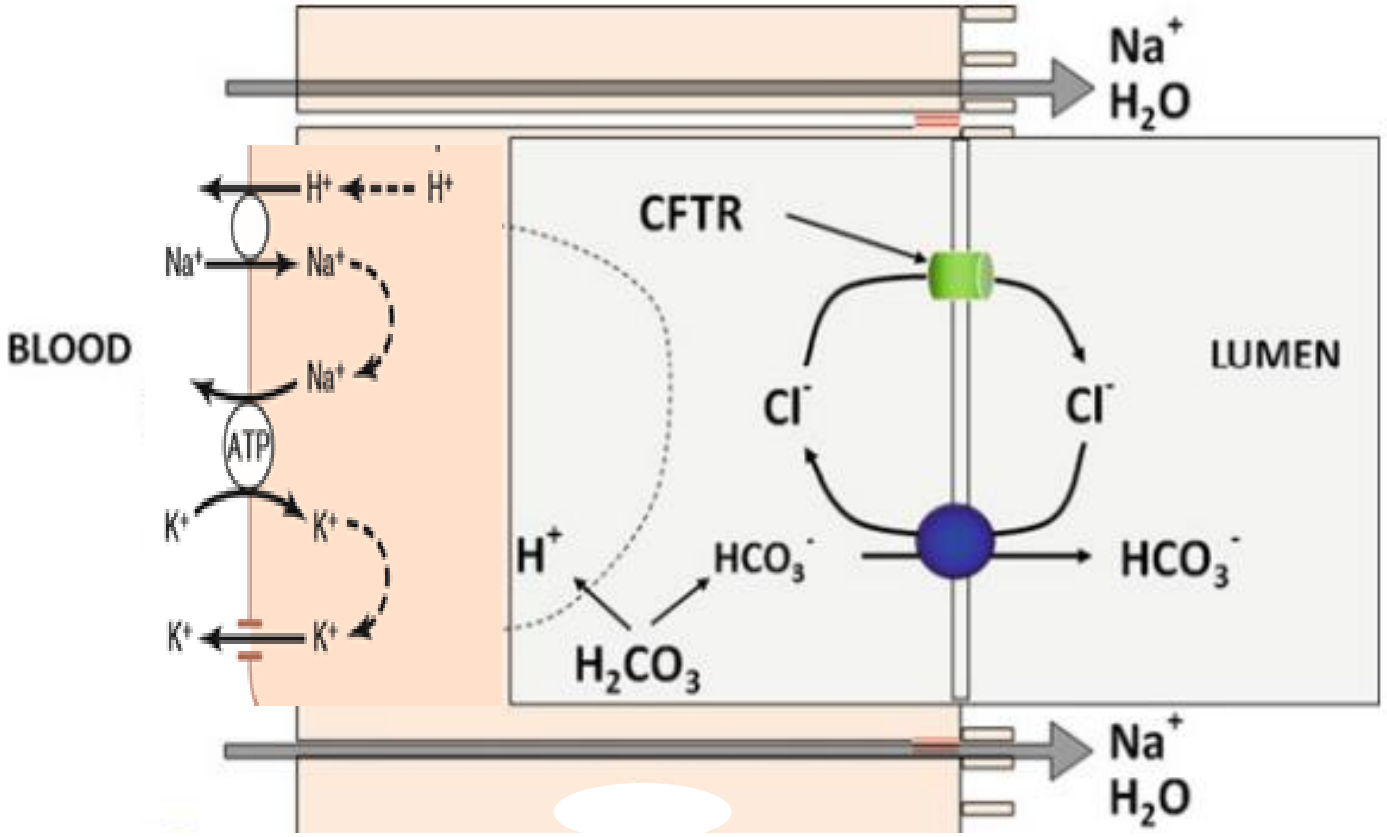


Pancreatic Fluid and Electrolyte Secretion by the Pancreas

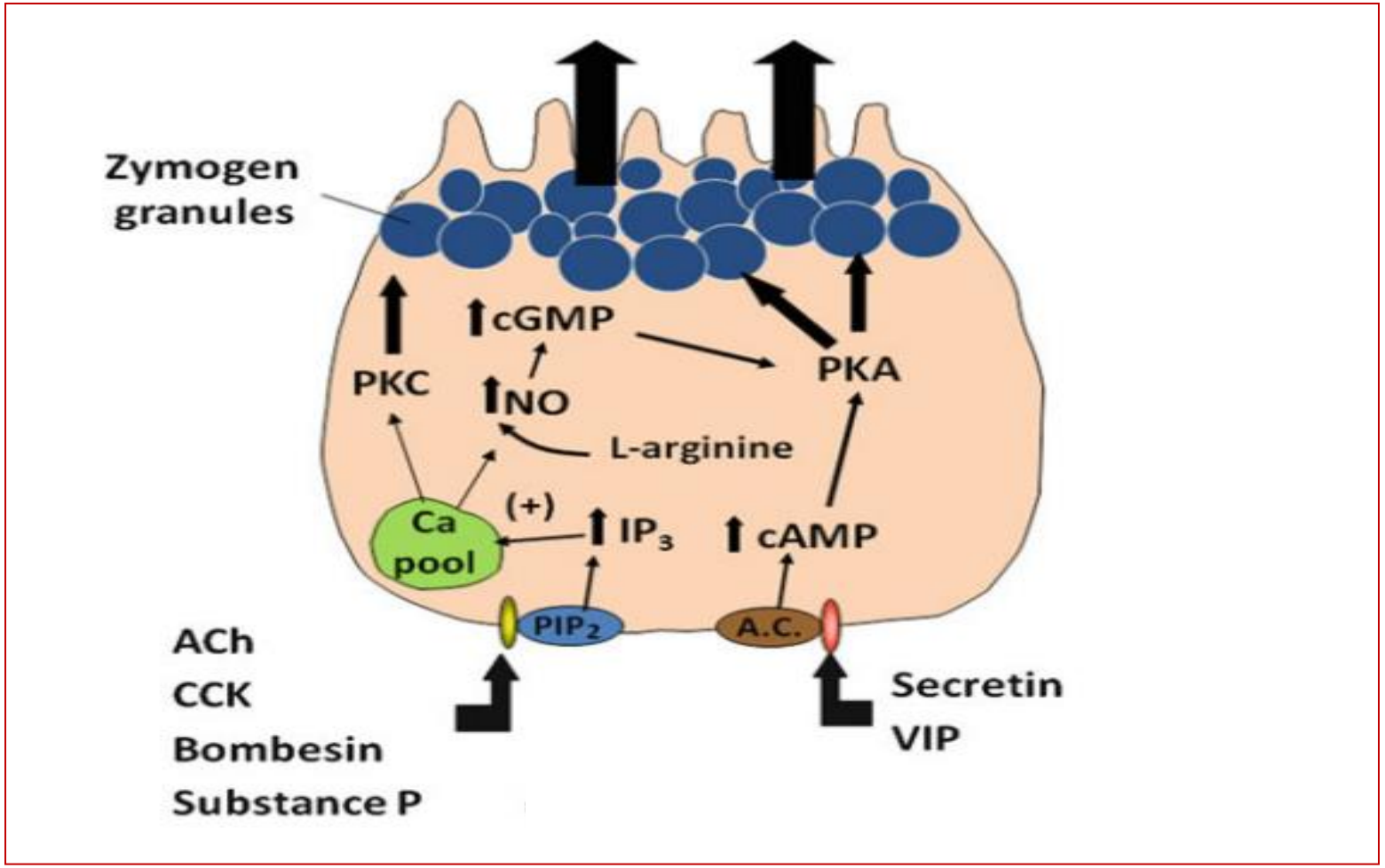


The daily output of pancreatic juices is 2.5L/day

Cellular Mechanism for Ductal Bicarbonate Secretion



Regulation of Pancreatic Digestive Enzyme Secretion



Regulation of Electrolyte and Water Secretion