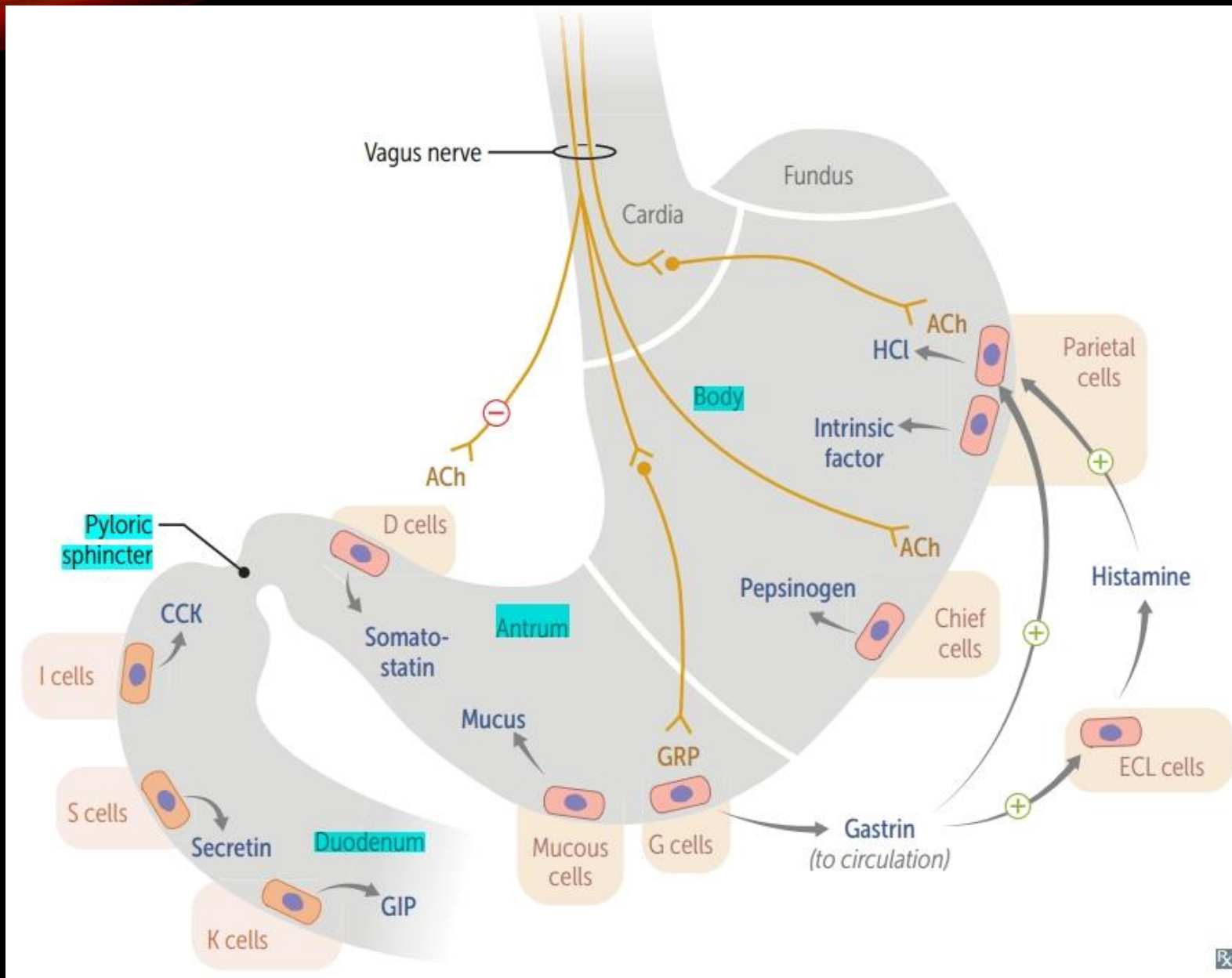




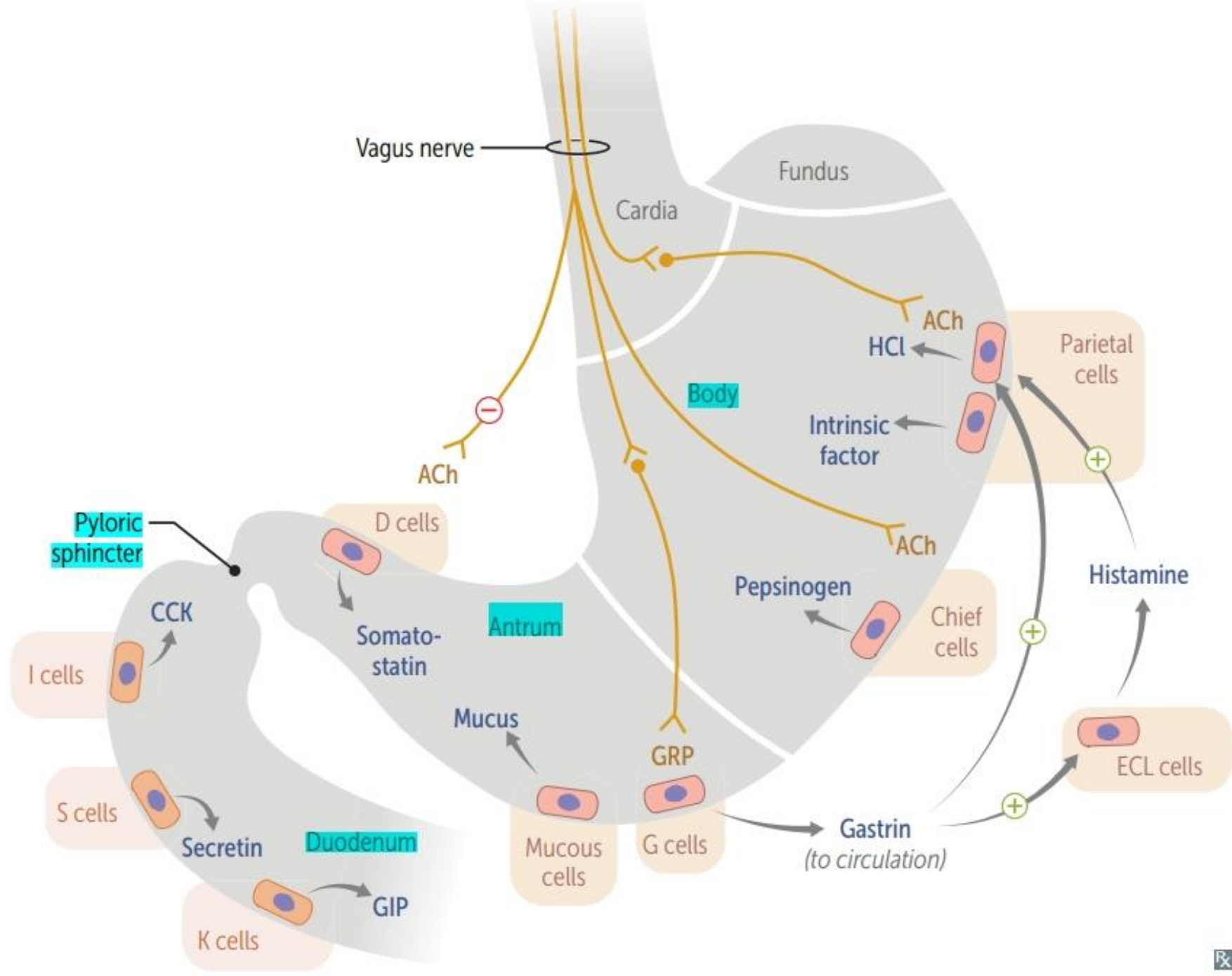
GASTROINTESTINAL HORMONES

PHYSIOLOGIC ANATOMY



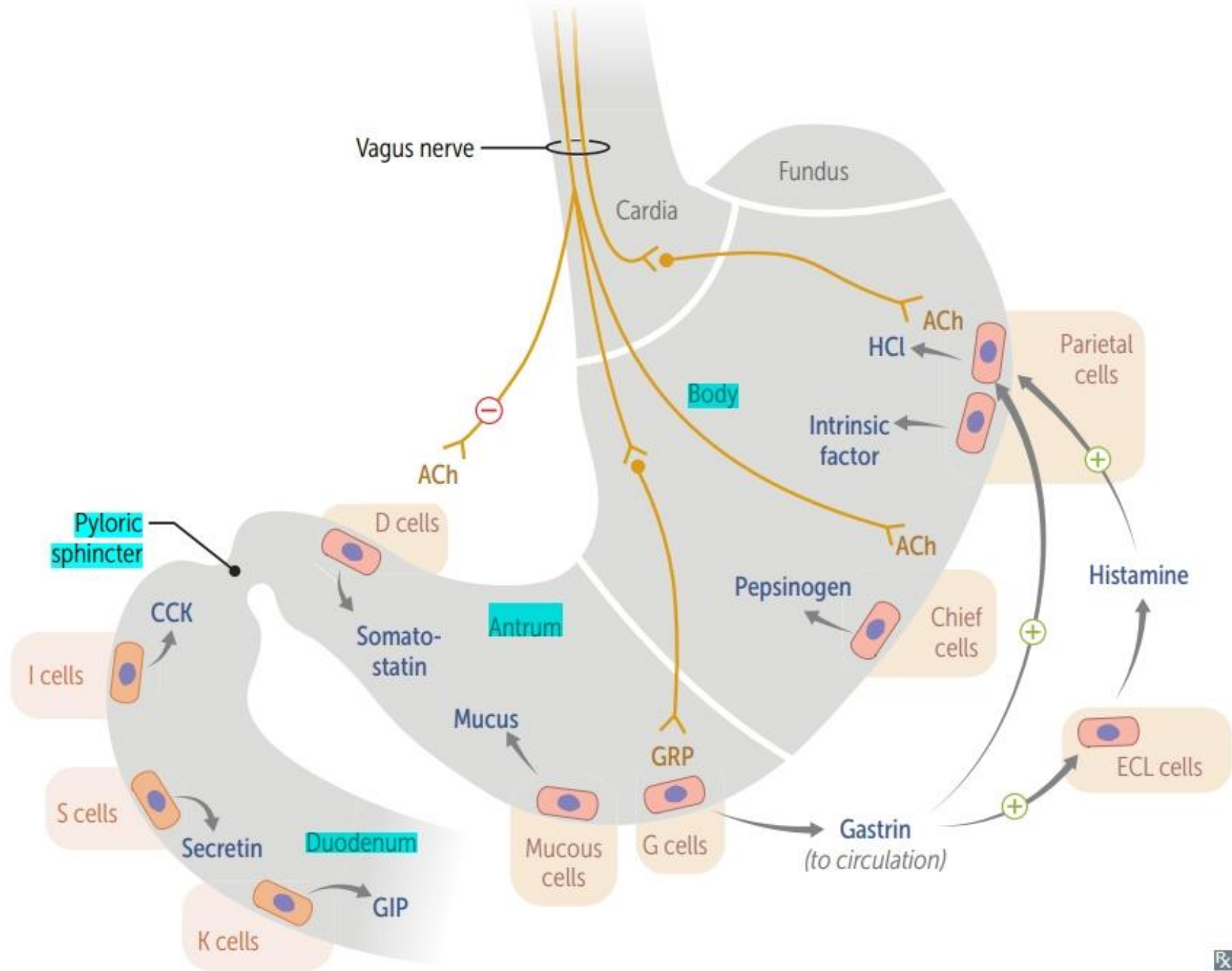
GASTRIN

- G cells of antrum of the stomach
- Stimulus for secretion:
 - 1) **Stomach distension** (food ingestion)
 - 2) **Proteins** in the stomach
 - 3) **Gastrin-releasing peptide** aka **GRP** (vagal stimulation)
- Release is inhibited by acid itself (by stomach **pH < 1.5**)
- Actions:
 - 1) **Gastric acid secretion**
 - 2) **Growth of gastric mucosa**
- Clinical correlates:
 - 1) ↑ in chronic PPI use, Zollinger-Ellison syndrome
 - 2) ↓ in chronic atrophic gastritis (e.g., H.pylori)



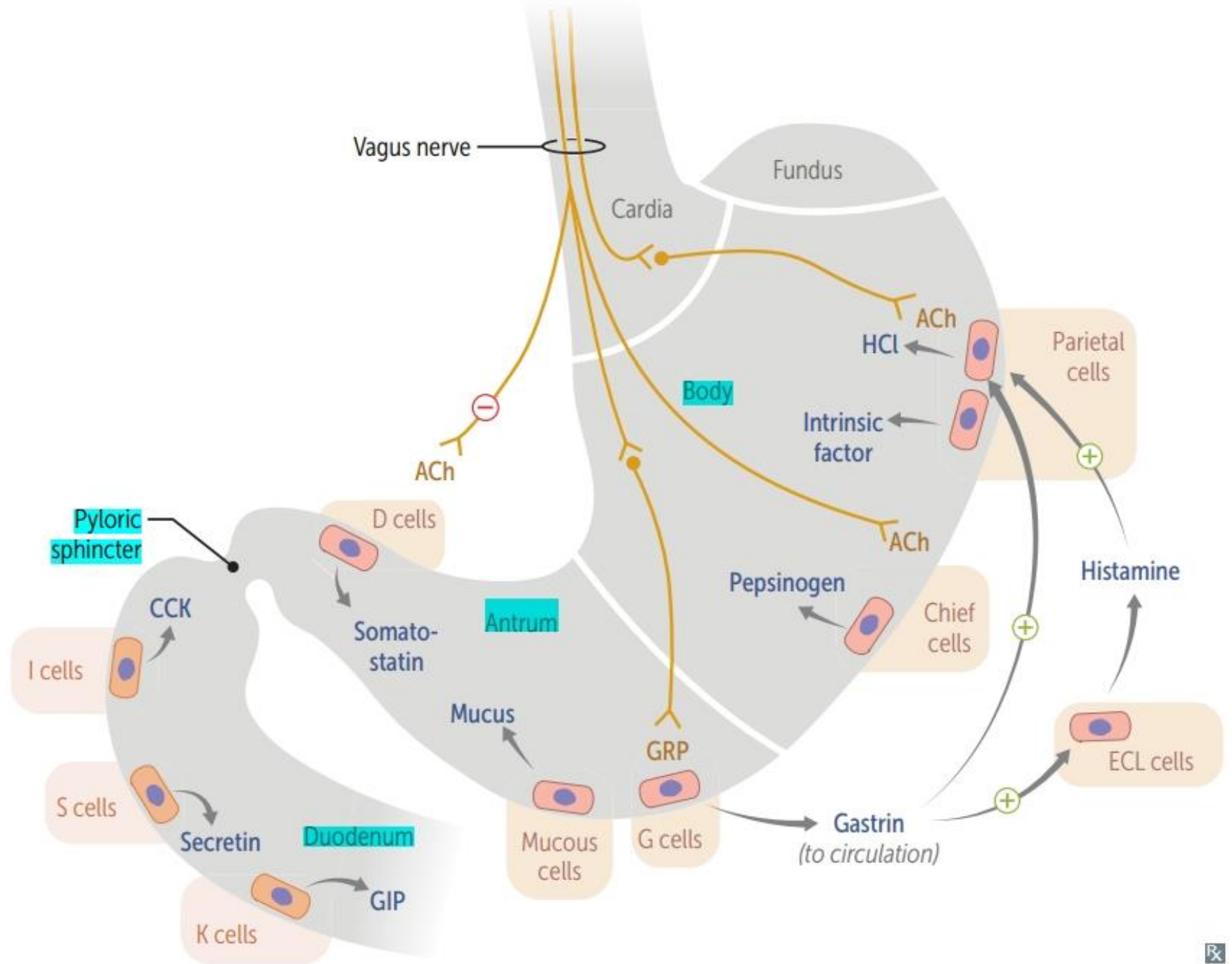
CHOLECYSTOKININ (CCK)

- **I cells** in mucosa of the **duodenum** and **jejunum**
- Stimulus for secretion:
 - a) Fats, Fatty acids
 - b) Proteins
- Actions:
 - a) **Contraction of gall bladder** → empties bile into the SI → emulsification of fats for digestion; **Sphincter of Oddi relaxation**.
 - b) **Pancreatic enzymes secretion**
 - b) **Slows down stomach contraction** → slows down emptying of food from stomach into small intestine → gives time for CCK to act on food already present in small intestine.
 - c) **Inhibits appetite** to prevent overeating (stimulates sensory afferents in the duodenum → through vagus nerve into the feeding centers)



SECRETIN

- **S cells** in mucosa of **duodenum**
- Stimulus for secretion:
Acid entering into duodenum from pylorus
- Action:
Pancreatic bicarbonates secretion → neutralization of acid in the duodenum, allowing pancreatic enzymes to function.
- **Also stimulates**
 - a) **Pepsin** secretion
 - b) **Biliary bicarbonate** secretion
 - c) Growth of **exocrine pancreas**
- **Inhibits**
Gastrin release and **gastric acid** secretion

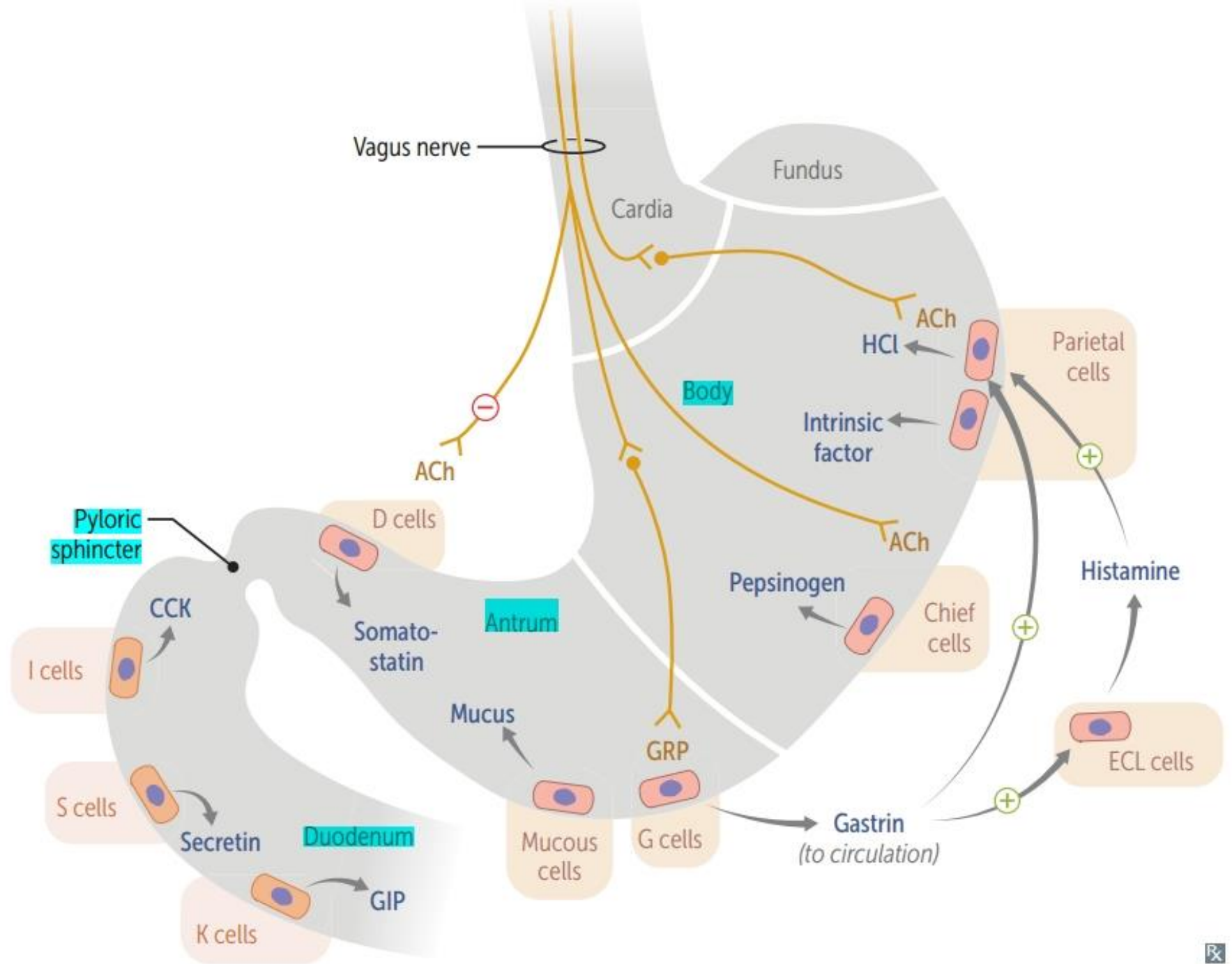


GLUCOSE-DEPENDENT INSULINOTROPIC PEPTIDE AKA GASTRIC INHIBITORY PEPTIDE

- **K cells** in **duodenum, jejunum**
- Stimulus for secretion:
Fatty acids, amino acids, oral glucose
- Actions:
Exocrine: **Decrease gastric acid** secretion

Endocrine: **Increases Insulin secretion**

Decreases gastric emptying into duodenum



MOTILIN

- **M cells** of duodenum and Jejunum

- Stimulus for secretion:
Fasting states

- Action: **Increases gastrointestinal motility**


Fasting → cyclic release of motilin → stimulates waves of gastrointestinal motility called **interdigestive myoelectric complexes** that move through the stomach and small intestine every 90 minutes.

- **Clinical correlates:** Erythromycin stimulates motilin receptors; used in diabetic gastroparesis

Hormone	Stimuli for Secretion	Site of Secretion	Actions
Gastrin	Protein Distention Nervous <i>(Acid inhibits release)</i>	G cells of the antrum, duodenum, and jejunum	Stimulates Gastric acid secretion Mucosal growth
Cholecystokinin	Protein Fat Acid	I cells of the duodenum, jejunum, and ileum	Stimulates Pancreatic enzyme secretion Pancreatic bicarbonate secretion Gallbladder contraction Growth of exocrine pancreas Inhibits Gastric emptying
Secretin	Acid Fat	S cells of the duodenum, jejunum, and ileum	Stimulates Pepsin secretion Pancreatic bicarbonate secretion Biliary bicarbonate secretion Growth of exocrine pancreas Inhibits Gastrin release and gastric acid secretion
Glucose-dependent insulinotropic peptide <i>(also called gastric inhibitory peptide)</i>	Protein Fat Carbohydrate	K cells of the duodenum and jejunum	Stimulates Insulin release Inhibits Gastric acid secretion
Motilin	Fat Acid Nervous	M cells of the duodenum and jejunum	Stimulates Gastric motility Intestinal motility

work hard
& be kind.

that is
all.



THANK YOU