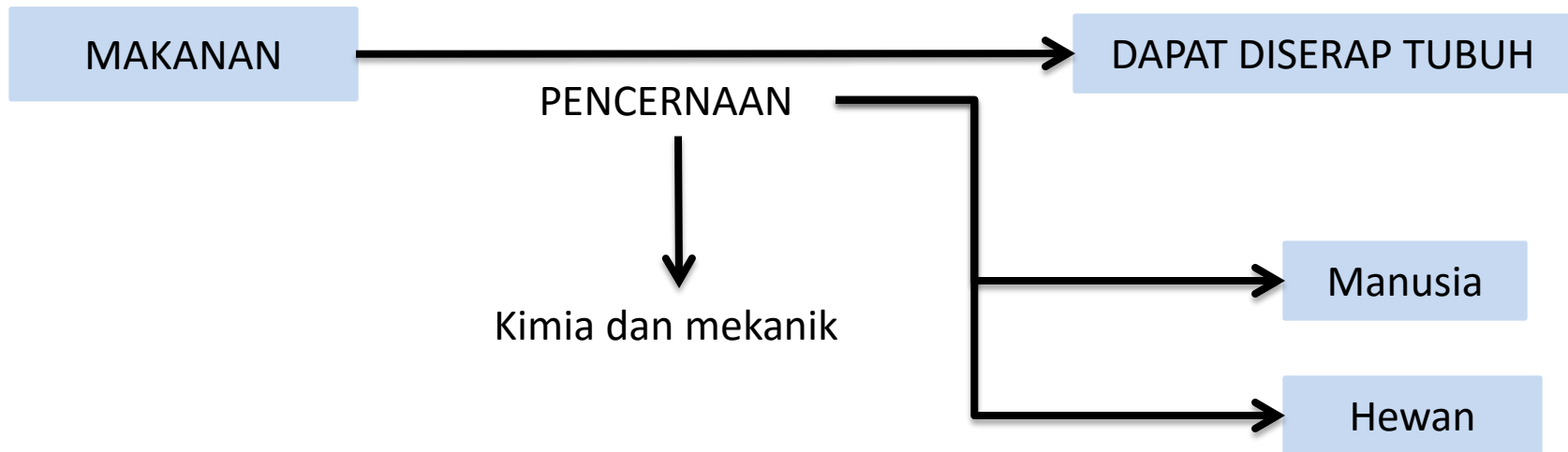


## SISTEM PENCERNAAN

## Kompetensi

Memahami fungsi organ dan mekanisme sistem pencernaan

0. Apa itu pencernaan?
1. Organ-organ penyusun sistem pencernaan
2. Peran masing organ-organ
3. Mekanisme pencernaan



Lihat enzim

Lihat semua cerna

Gigi dan Lidah

Tongue

Parotid gland

Sublingual gland

Submandibular gland

Oral cavity

Pharynx

Salivary glands

Esophagus

Cardiac orifice

Liver

Pyloric sphincter

Stomach

Ascending portion of large intestine

Gall-bladder  
Pancreas

Small intestine

Duodenum of small intestine

Ileum of small intestine

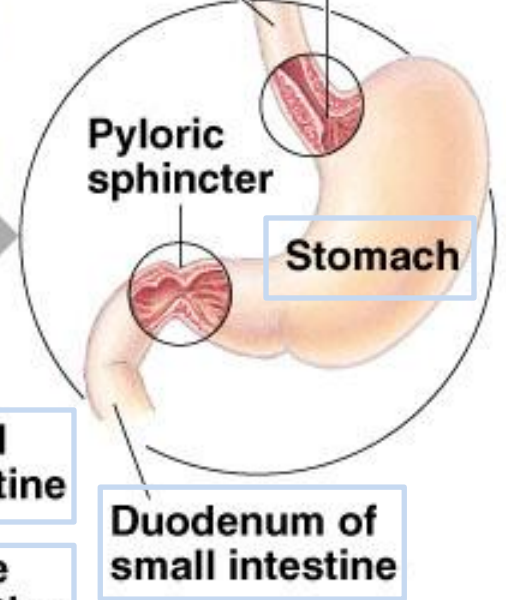
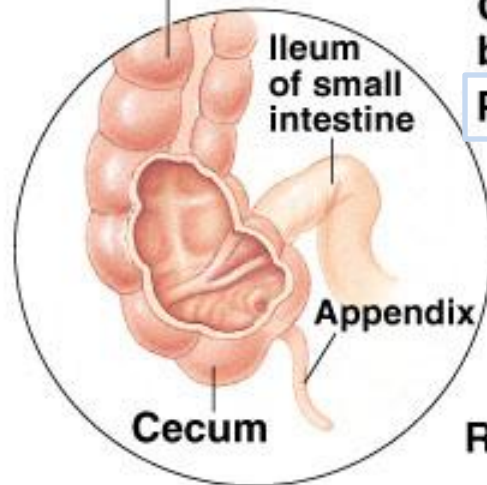
Appendix

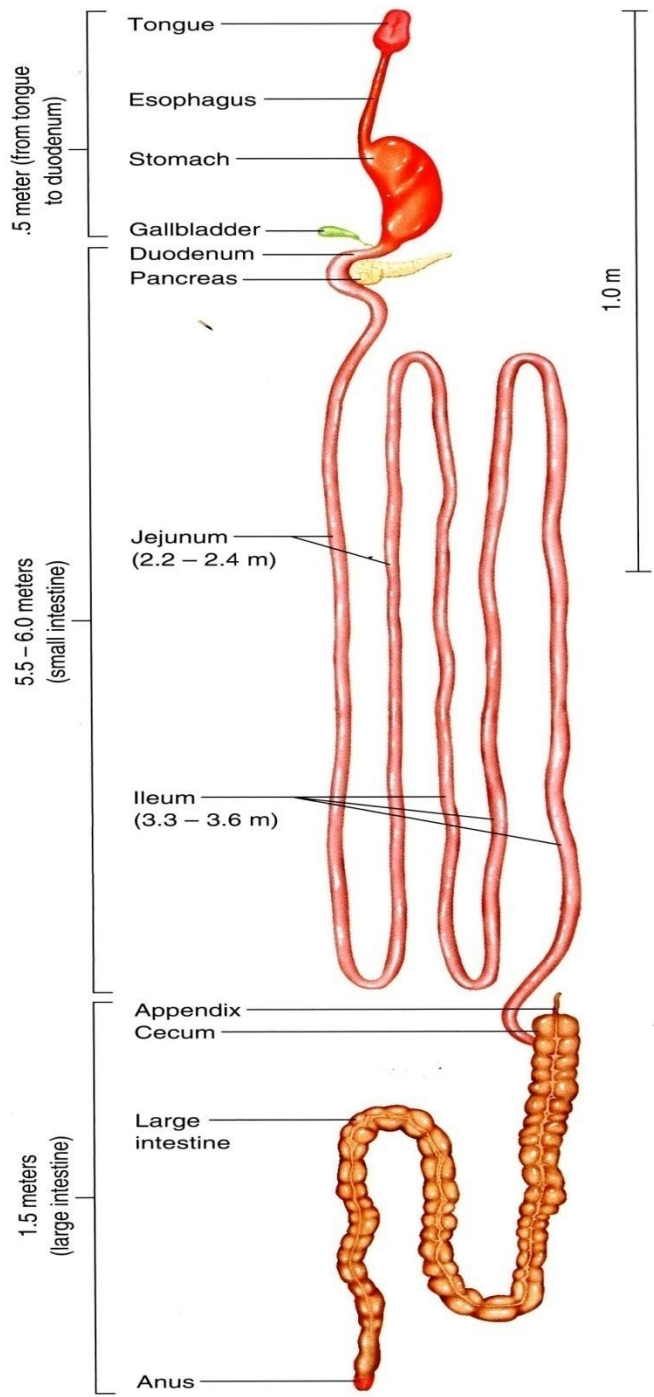
Large intestine

Cecum

Rectum

Anus







Gigi :

Menghancurkan makanan secara mekanik

Seri untuk memotong

Taring untuk mengoyak

Geraham untuk mengunyah



Lidah membantu membolak balik makanan




## Kelenjar Ludah

Menghasilkan air ludah

Membasahi makanan

Menghasilkan enzim

Amilase untuk menyederhanakan karbohidrat (amilum)

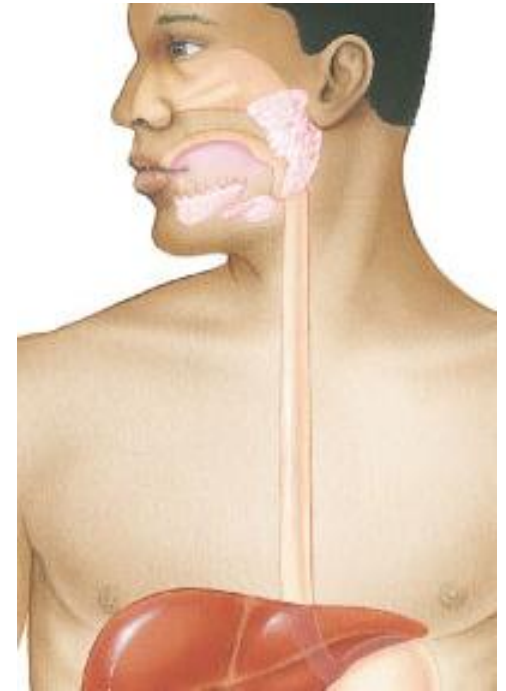


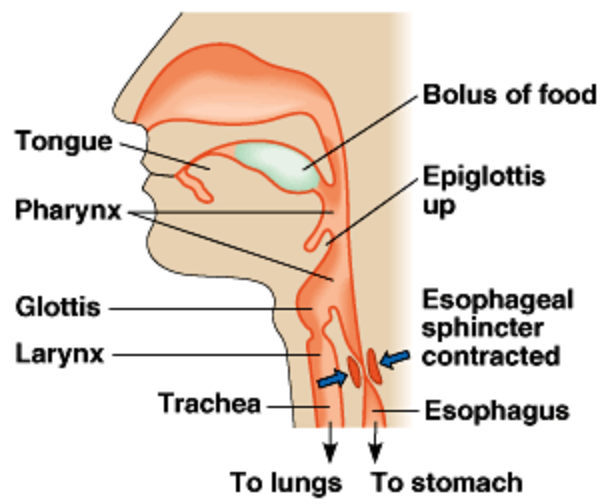
Pencernaan  
kimiawi

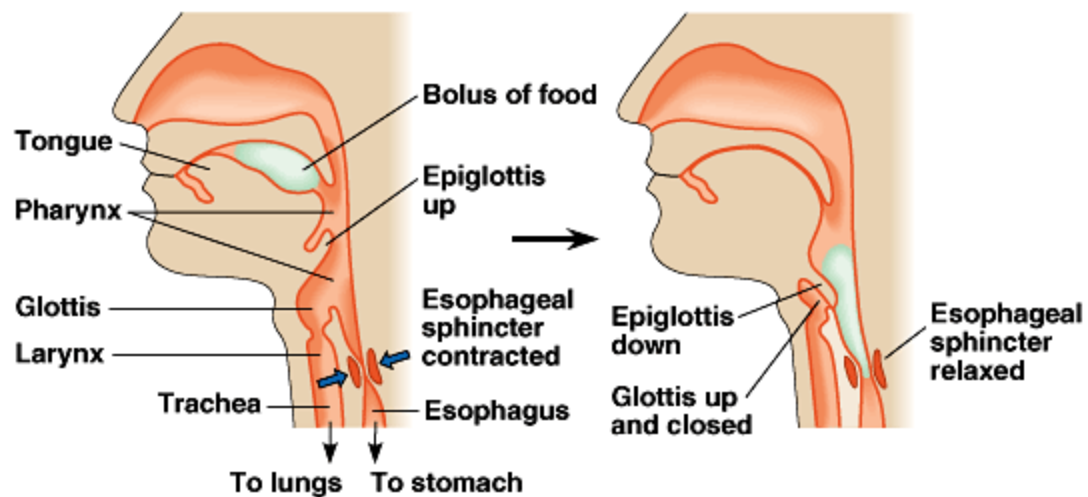
Tidak terjadi pencernaan secara mekanik

Secara kimia, mungkin masih terjadi, karena bawaan kerja enzim dari mulut

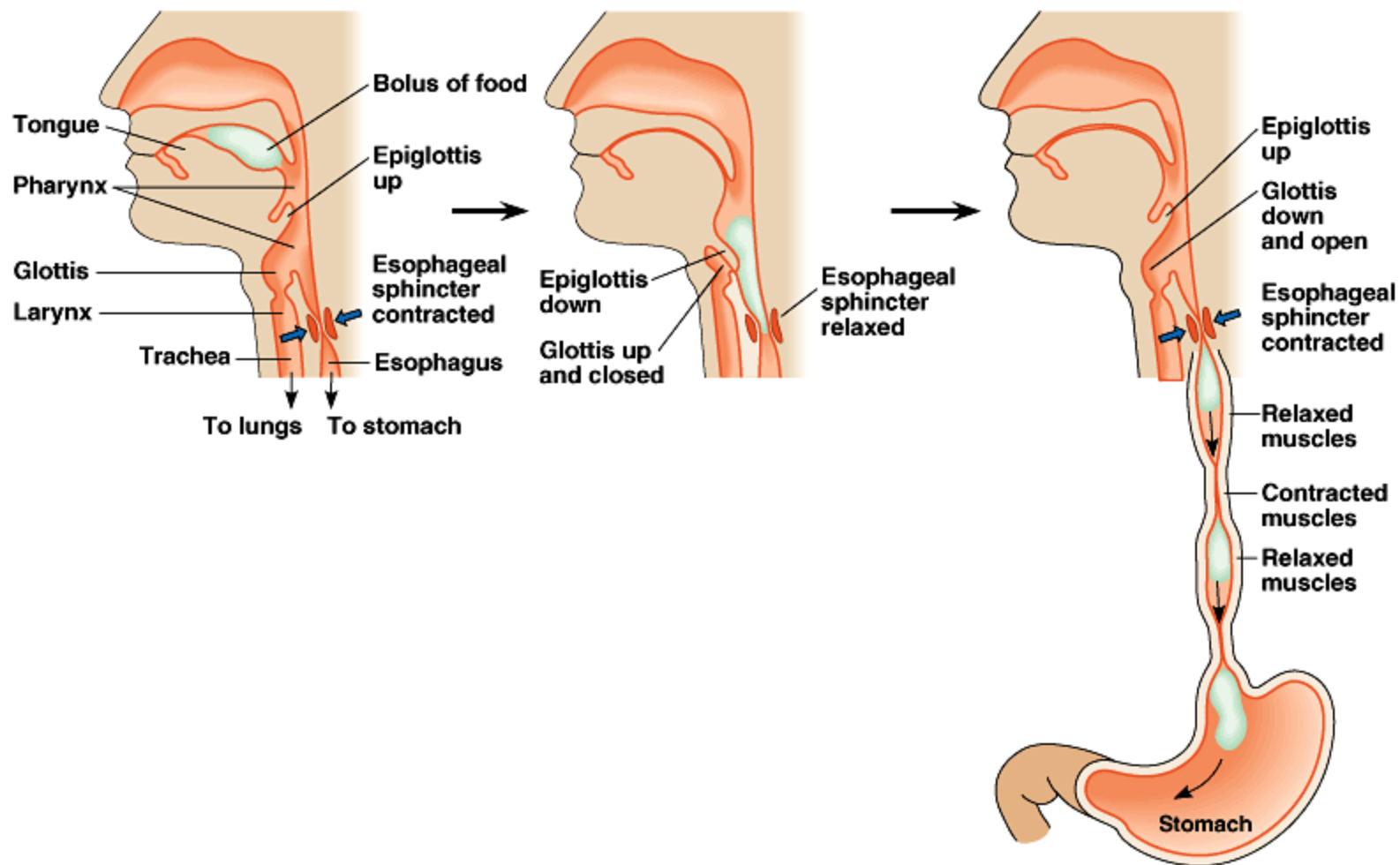
Makanan dalam bentuk *chyme* (*kim*) dikirim ke lambung dengan gerak peristaltik







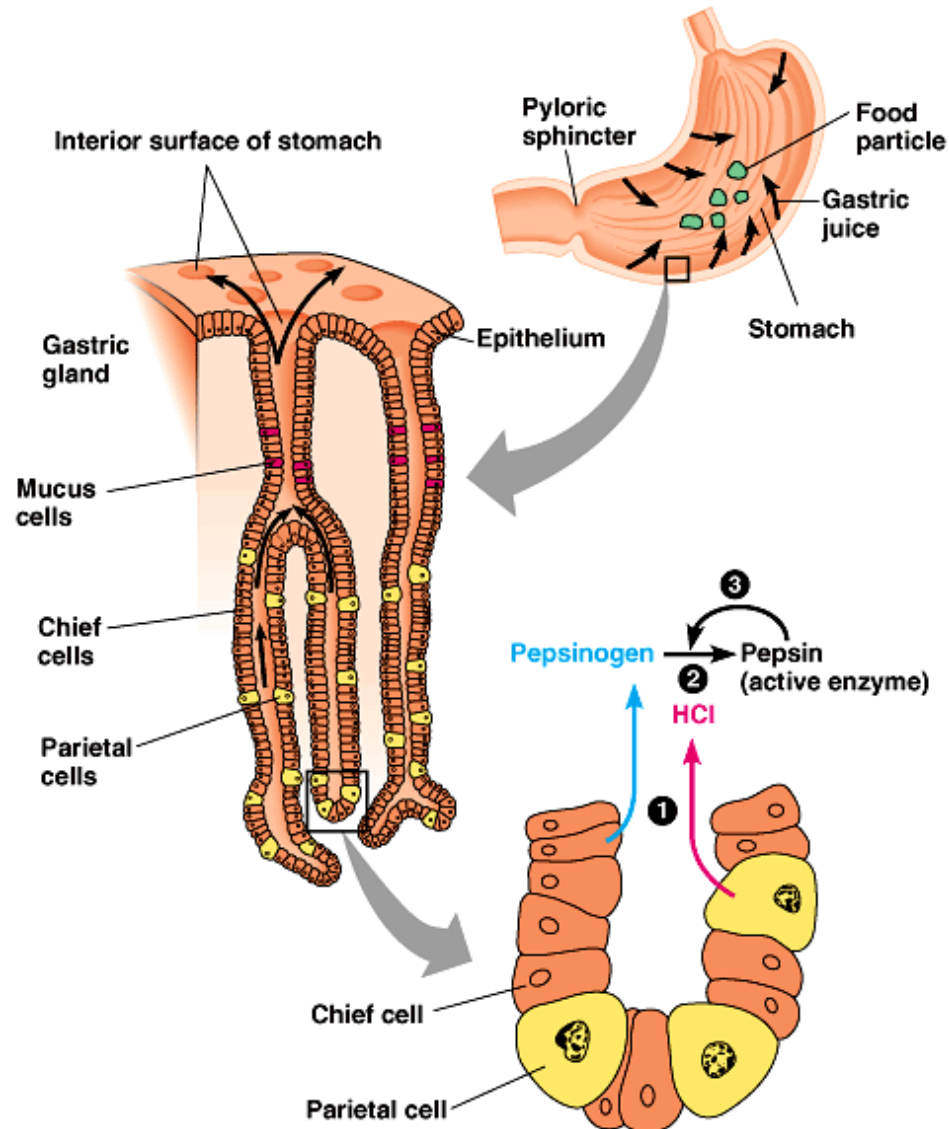




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Pencernaan mekanik terjadi dengan remasan otot lambung

Pencernaan kimia dengan bantuan enzim dan asam



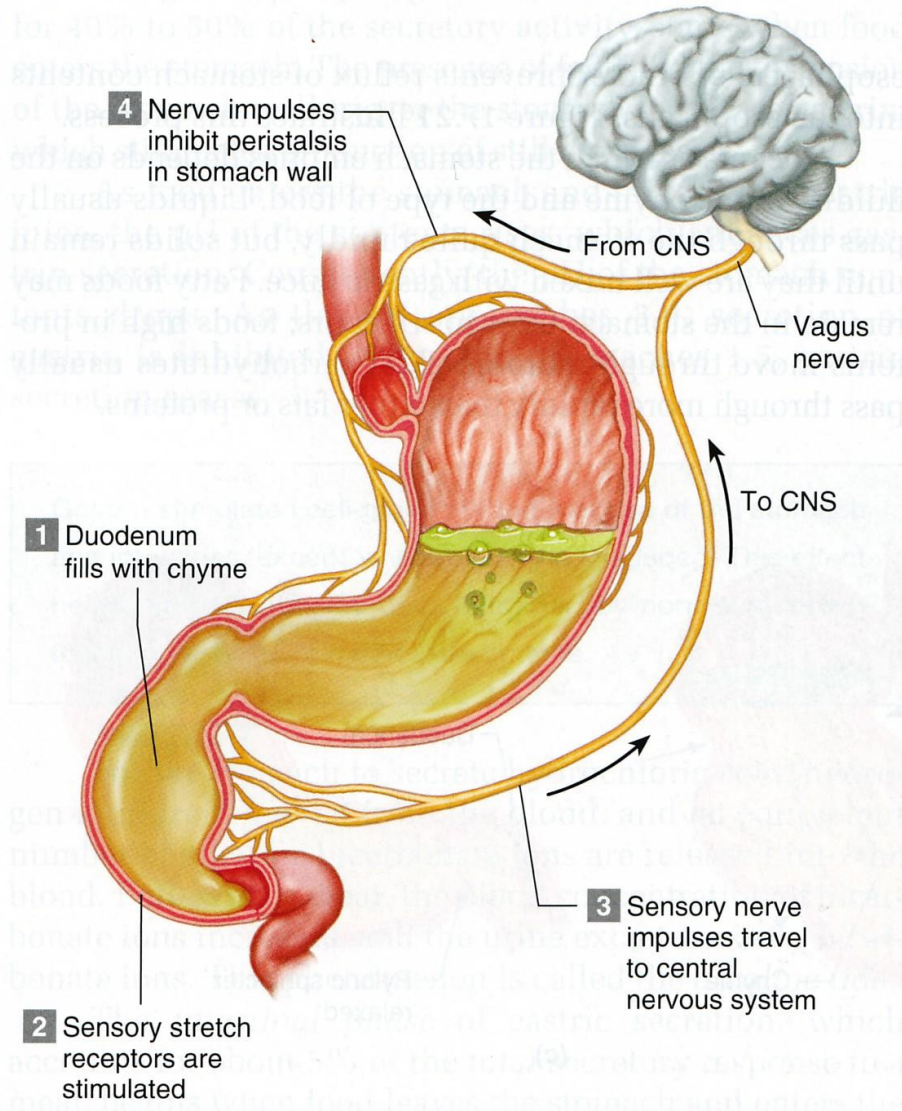
### Kelenjar Gastrik :

1. Faktor intrinsik Absorpsi B12

2. HCl → pH 1,5-2

- Bunuh mikroorganismen
- Non aktif enzim amilase
- Menghancurkan makanan keras
- Mengaktifkan enzim protein

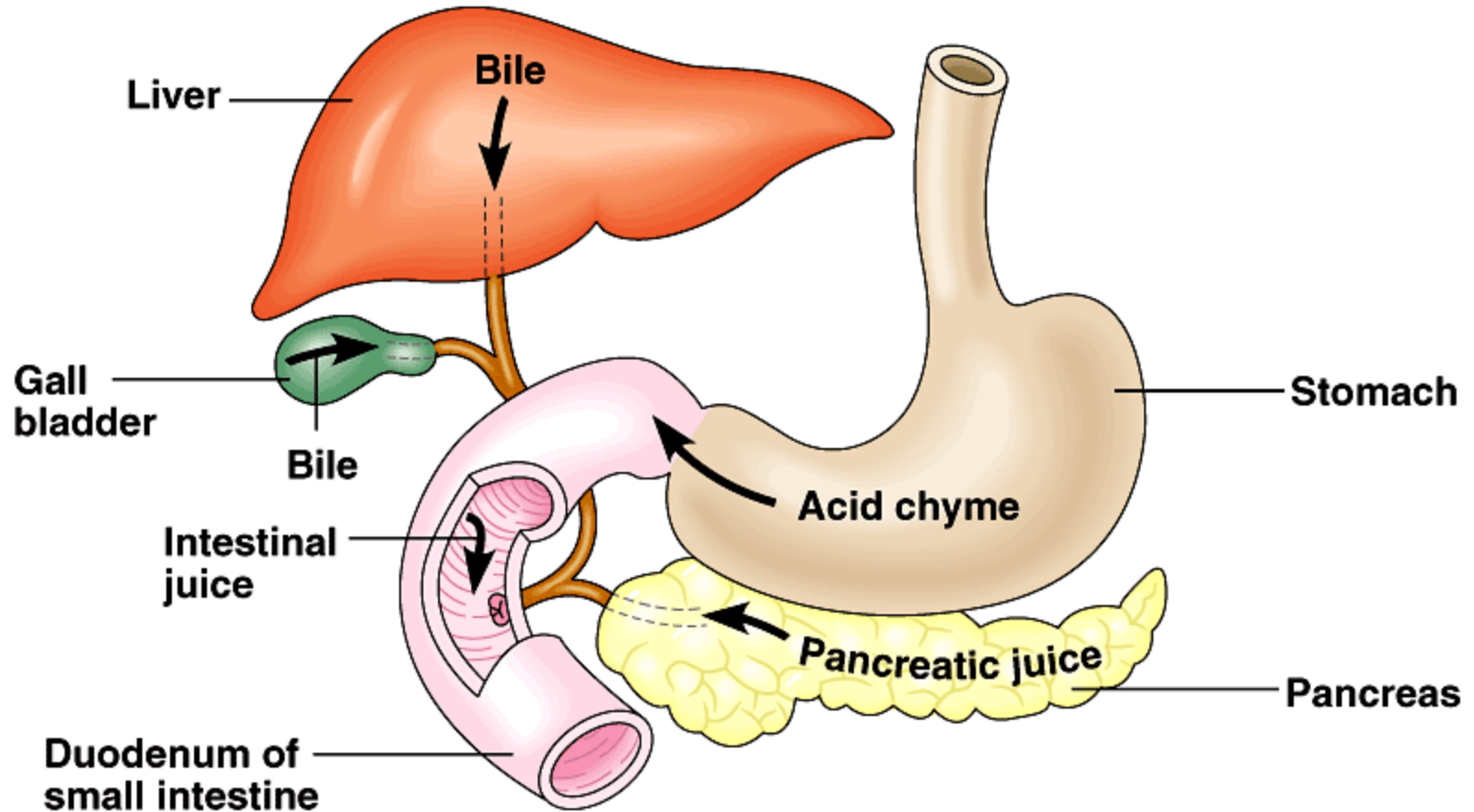
3. Pepsinogen



Kerja mekanik lambung dihentikan dengan kontrol dari sistem syaraf pusat (otak)



- Terhubung langsung dengan lambung
- Tempat bermuaranya saluran dari pankreas dan kantung empedu

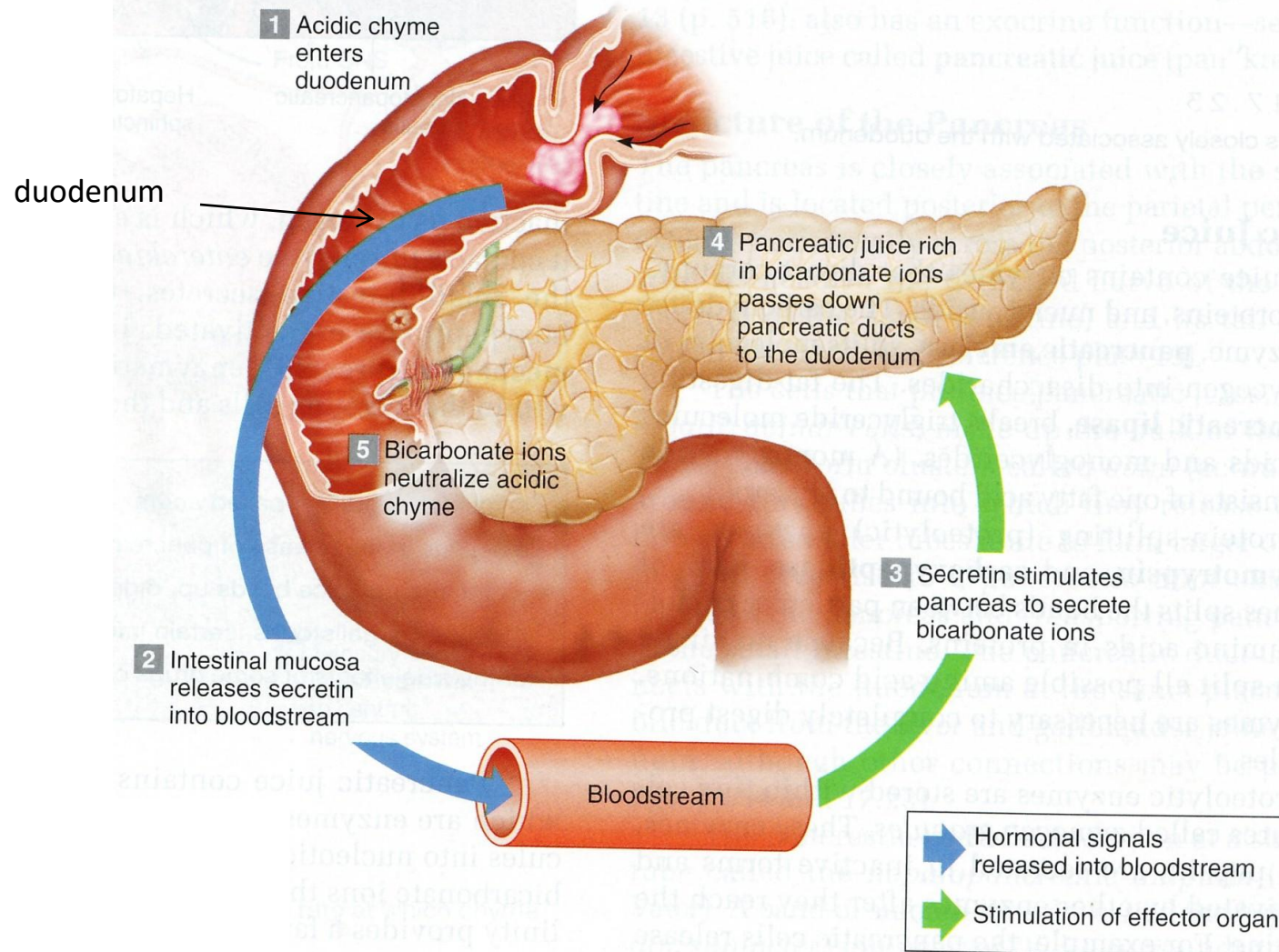


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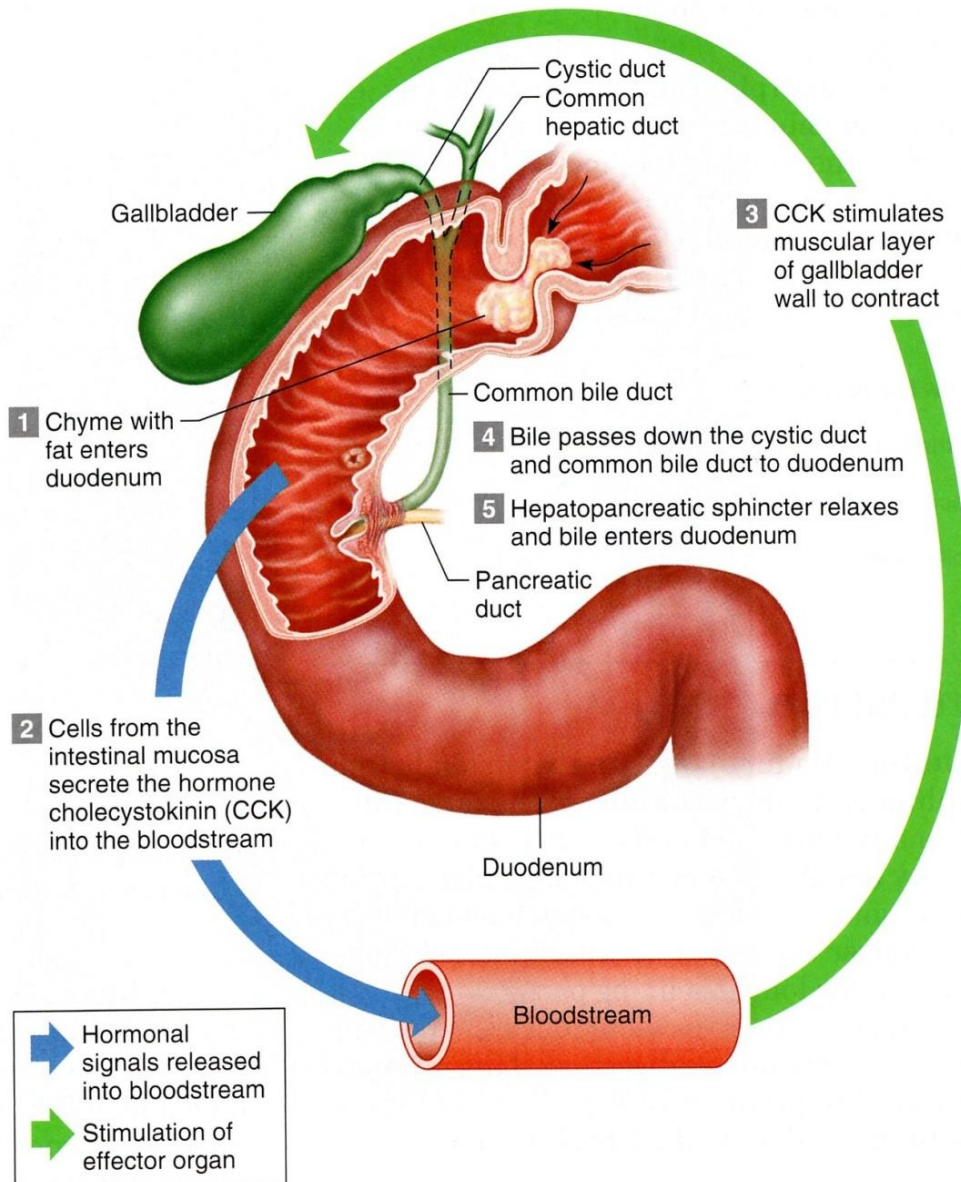




Sifat asam *chyme* yang berasal dari lambung akan dinetralkan oleh ion bikarbonat ( $\text{HCO}_3^-$ ) dari pankreas

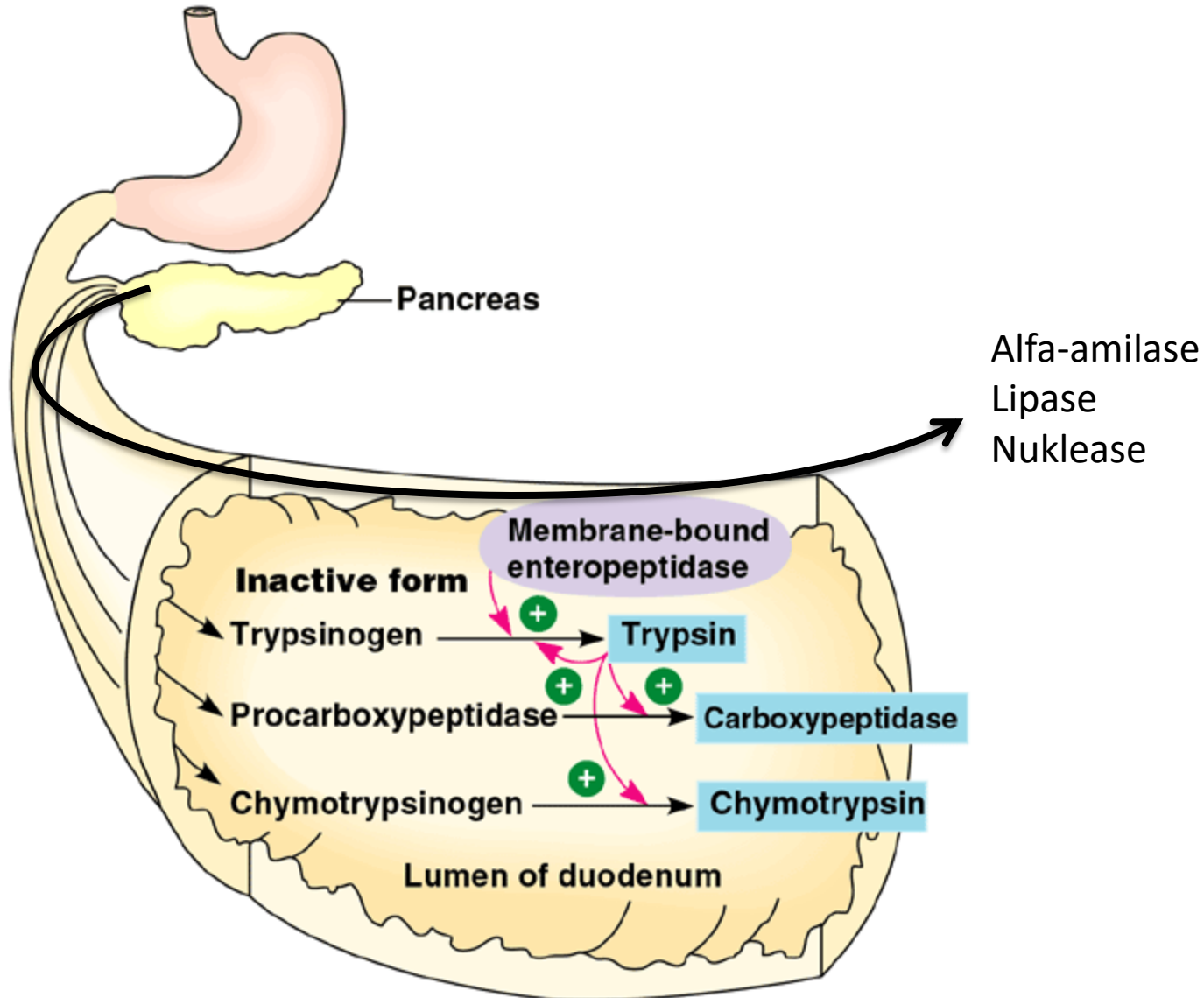


Jika *chyme* mengandung lemak masuk ke duodenum, maka kantung empedu akan berkontraksi untuk mensekresikan empedu



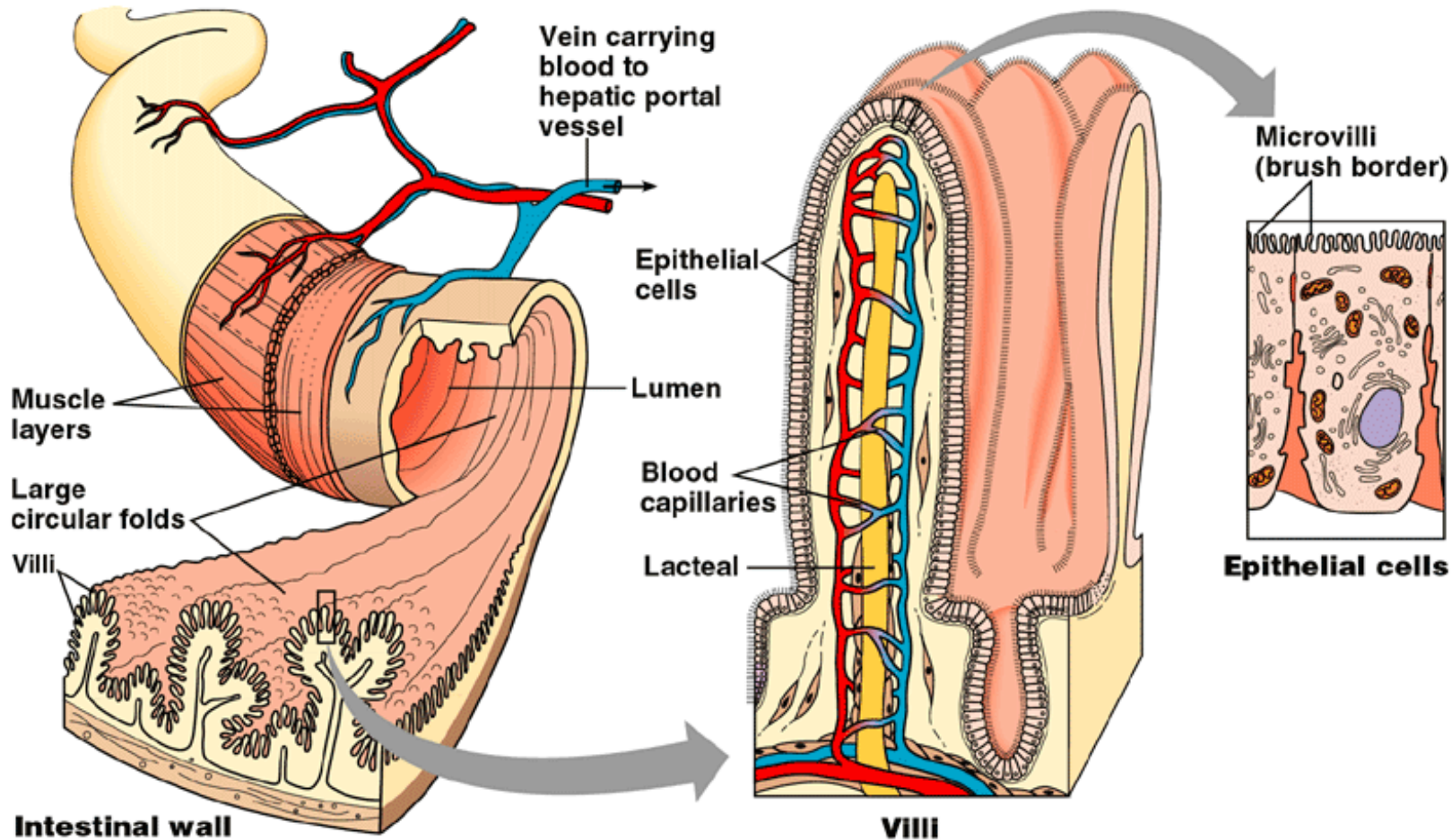
Apa guna empedu bagi lemak???

Mensekresikan 1 liter cairan per hari  
Stimulasi berdasarkan perintah dari duodenum





## Tempat penyerapan nutrisi



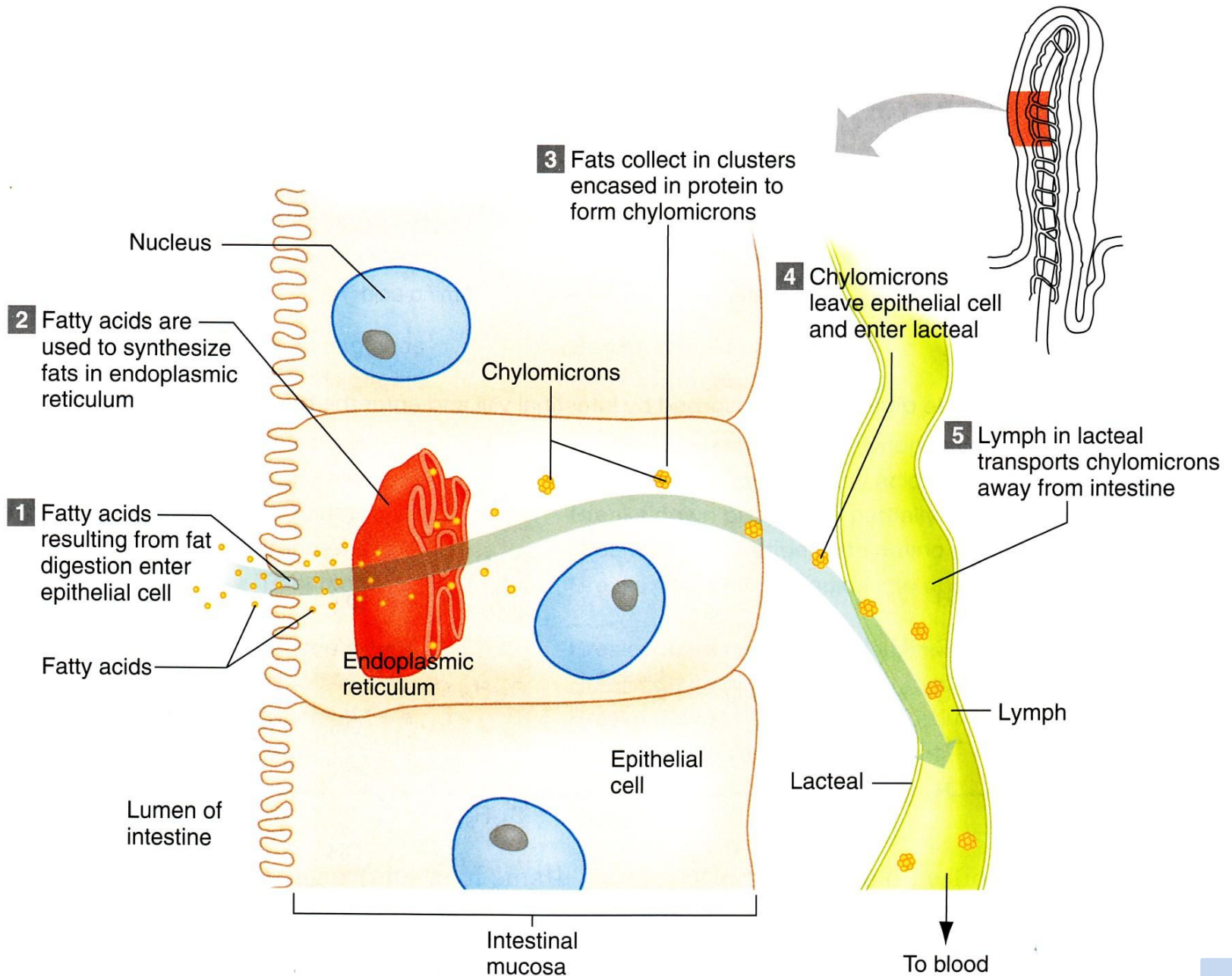
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Karbohidrat, protein, air, mineral, vitamin → diserap peredaran darah

Kecuali Lemak.....







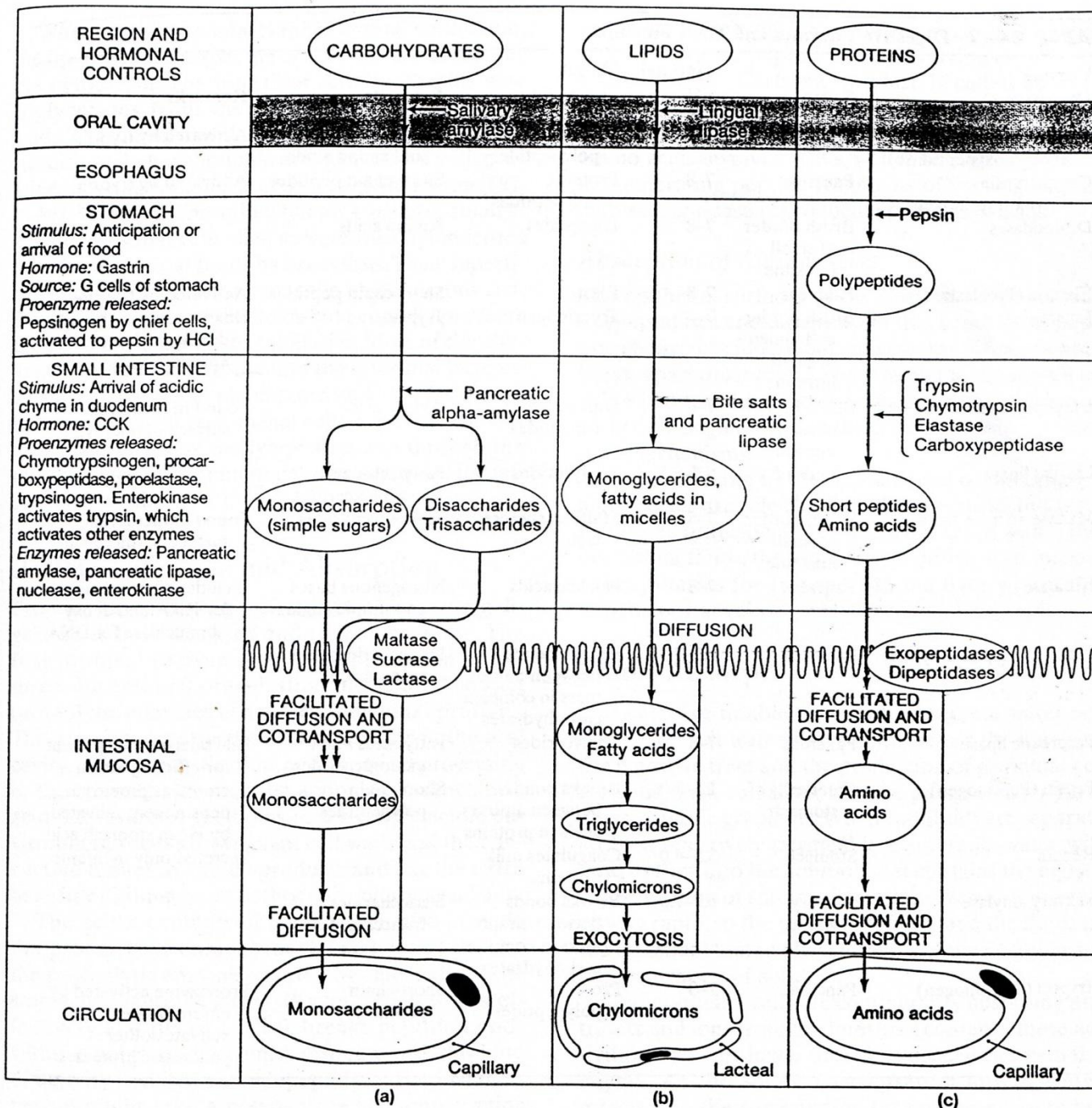
Absorpsi beberapa vitamin yang dibebaskan/dipecah  
oleh bakteri → K, B5, Biotin

Reabsorpsi air dan pematatan materi menjadi feses



Mengumpul materi untuk defekasi

	(a) Carbohydrate digestion	(b) Protein digestion	(c) Nucleic acid digestion	(d) Fat digestion
<b>Oral cavity, pharynx, esophagus</b>	Polysaccharides (starch, glycogen) ↓ <b>Salivary amylase</b> Smaller polysaccharides, maltose			
<b>Stomach</b>		Proteins ↓ <b>Pepsin</b> Small polypeptides		
<b>Lumen of small intestine</b>	Polysaccharides ↓ <b>Pancreatic amylases</b> Maltose and other disaccharides	Polypeptides ↓ <b>Trypsin, Chymotrypsin</b> Smaller polypeptides ↓ <b>Aminopeptidase, Carboxypeptidase</b> Amino acids	DNA, RNA ↓ <b>Nucleases</b> Nucleotides	Fat globules ↓ <b>Bile salts</b> Fat droplets (emulsified) ↓ <b>Lipase</b> Glycerol, fatty acids, glycerides
<b>Epithelium of small intestine (brush border)</b>	↓ <b>Disaccharidases</b> Monosaccharides	Small peptides ↓ <b>Dipeptidases</b> Amino acids	↓ <b>Nucleotidases</b> Nucleosides ↓ <b>Nucleosidases</b> Nitrogenous bases, sugars, phosphates	



(a)

(b)

(c)

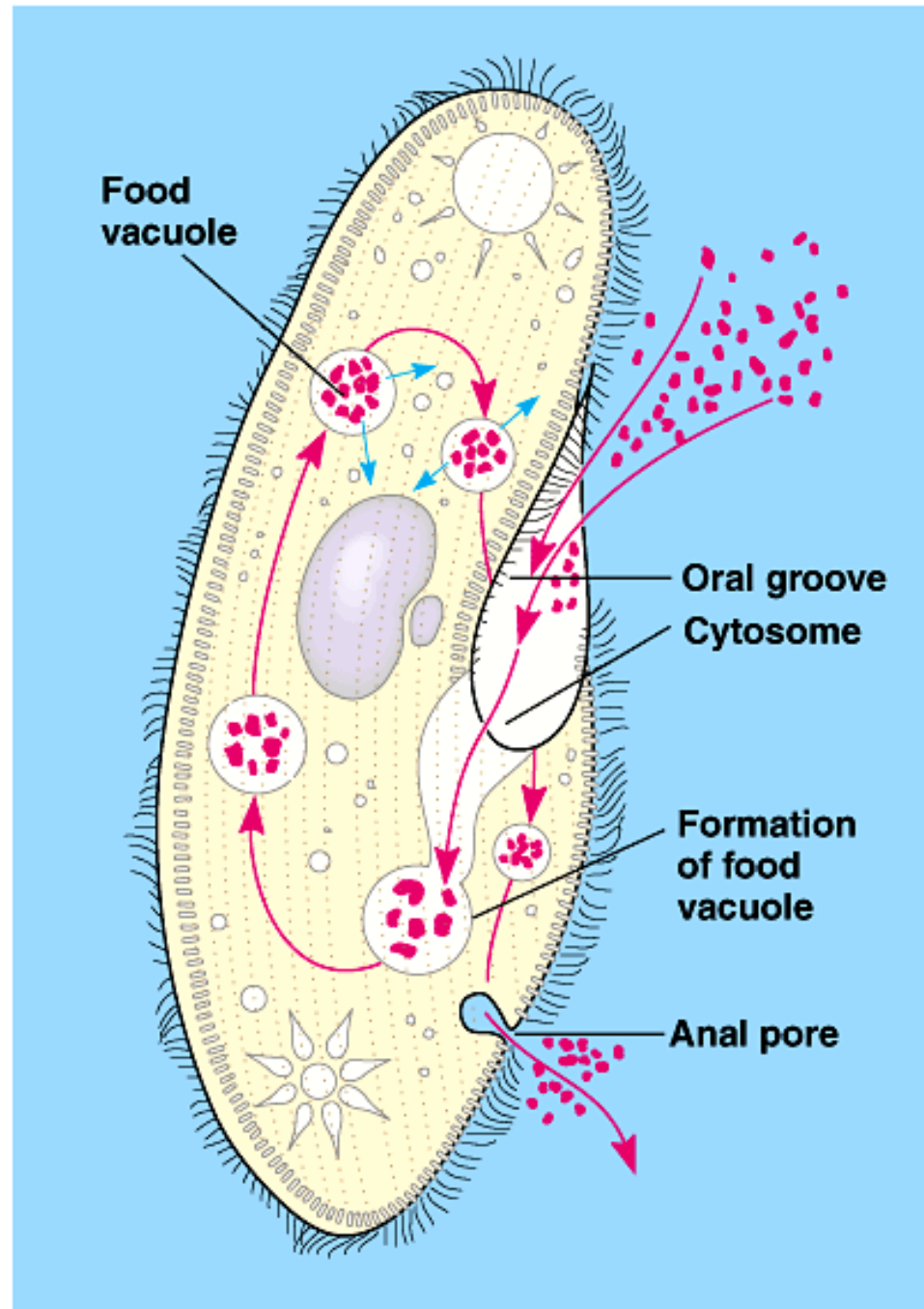
Hewan bersel tunggal dan sederhana

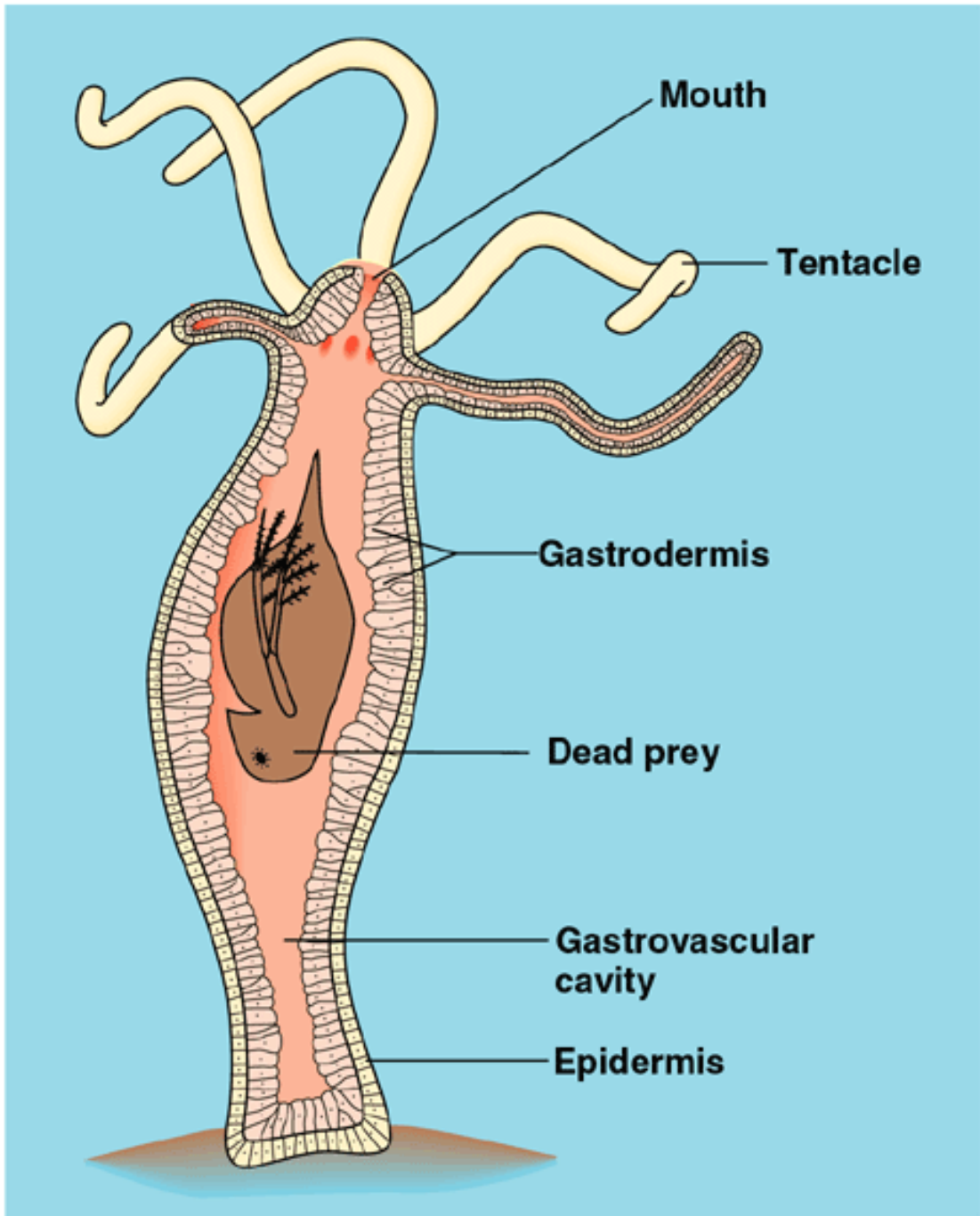
Tidak memerlukan saluran khusus

Hewan multisel atau tingkat tinggi

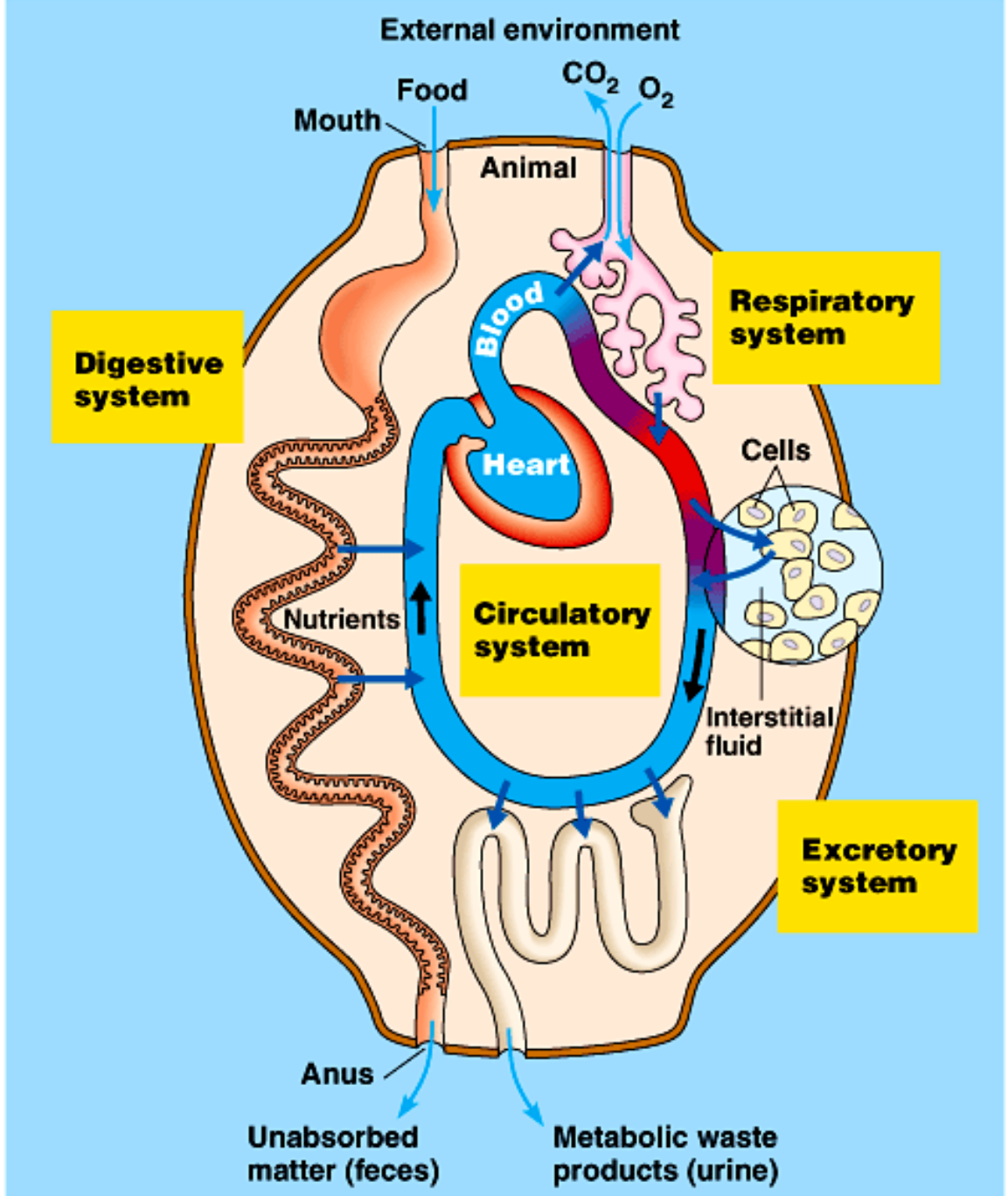
Memerlukan saluran khusus (sistem)



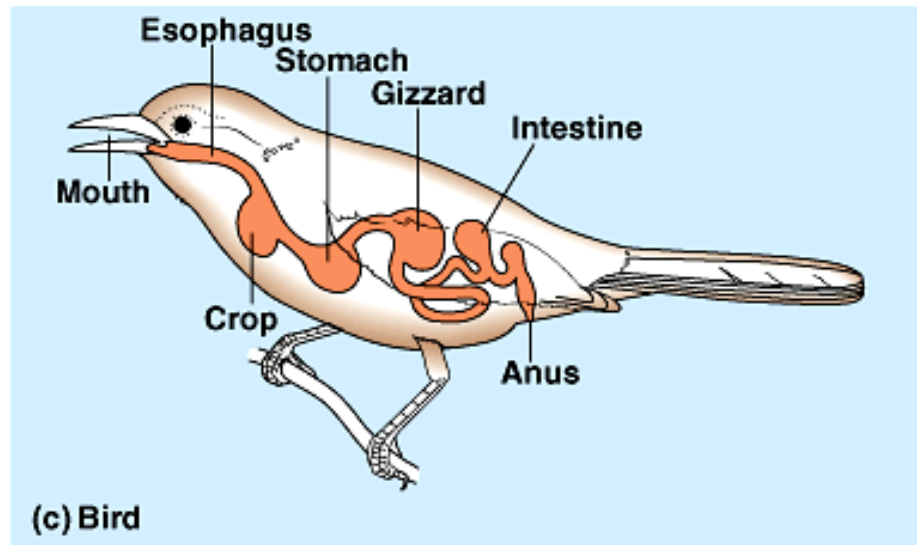
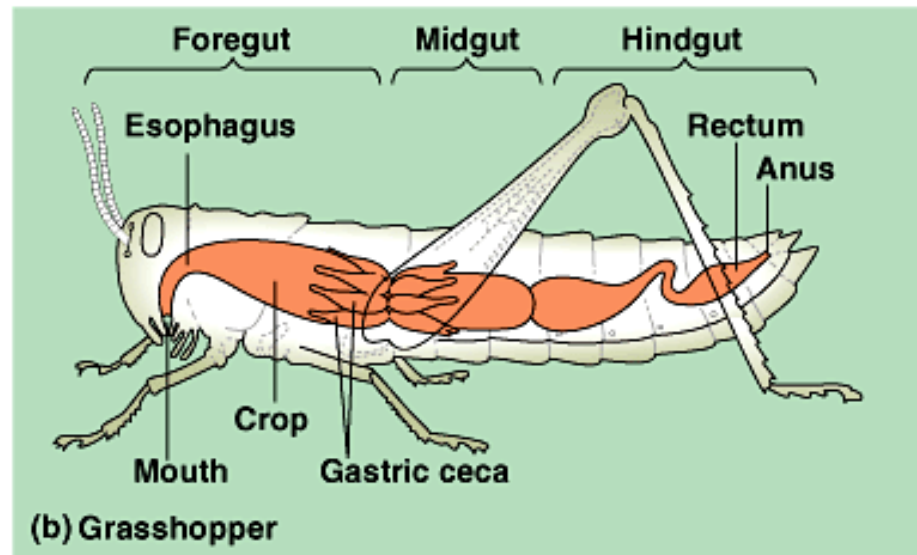
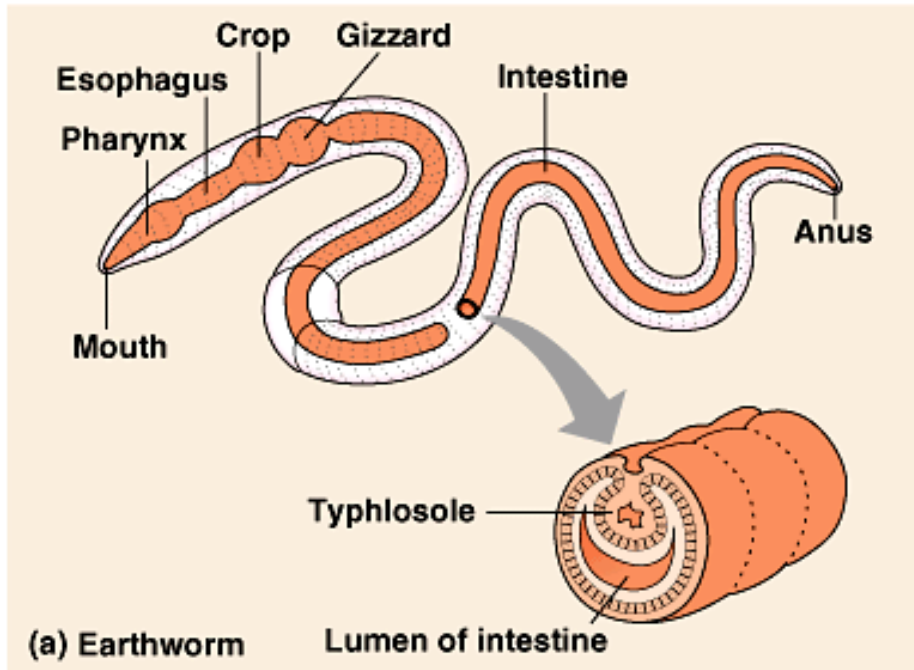


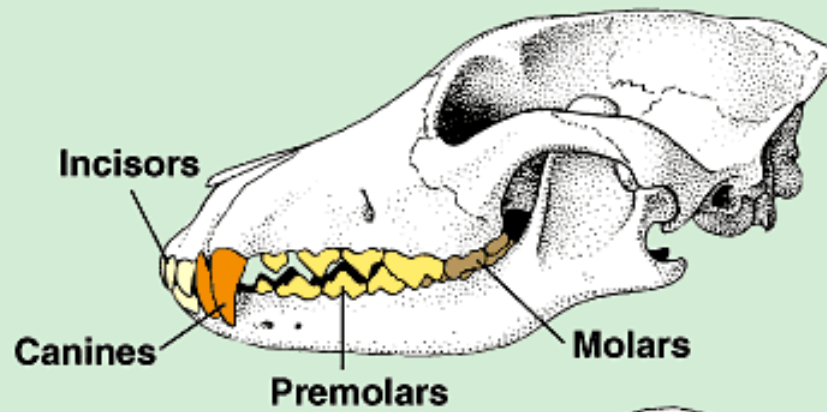


- Mempunyai saluran khusus yang mampu mencerna
- Terhubung dengan suatu sistem transportasi

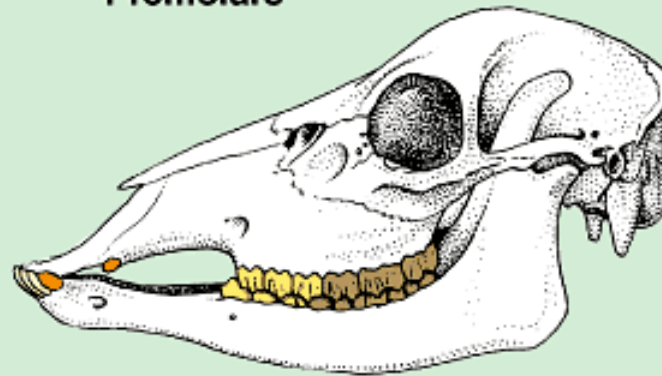




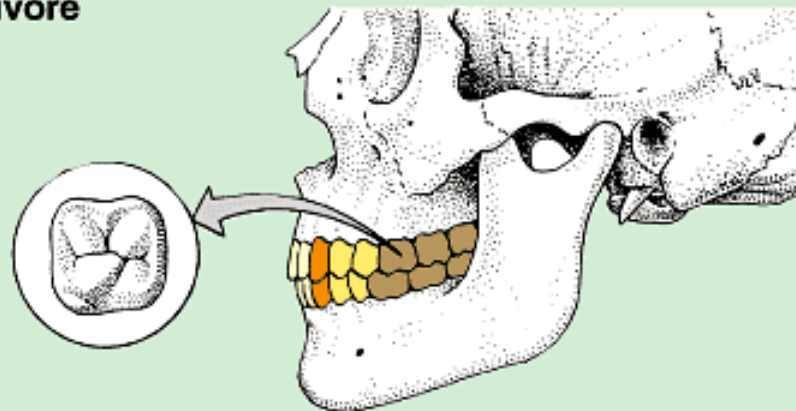




(a) Carnivore

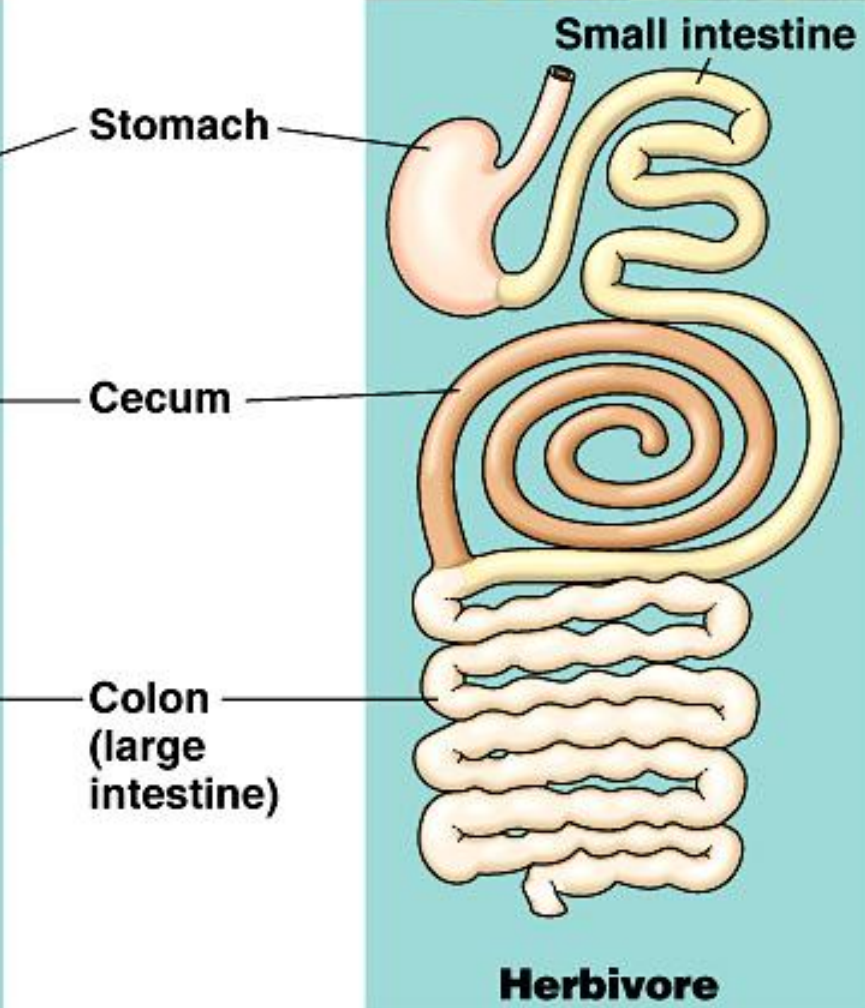
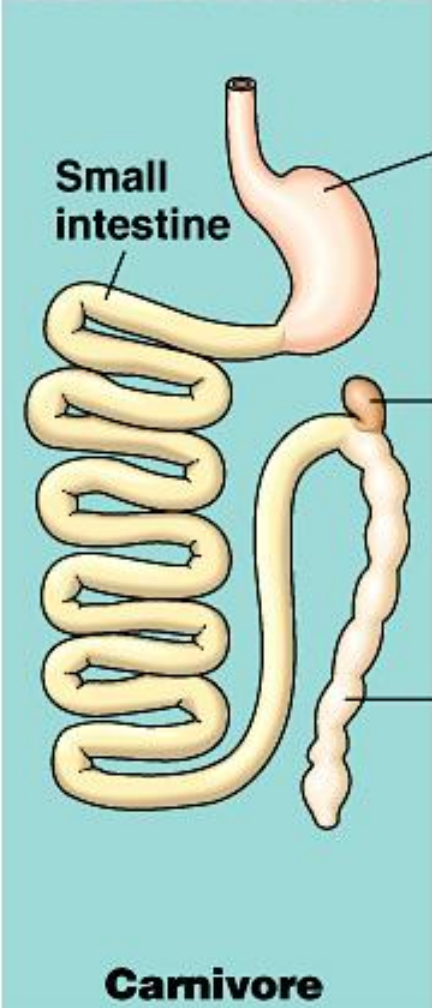


(b) Herbivore

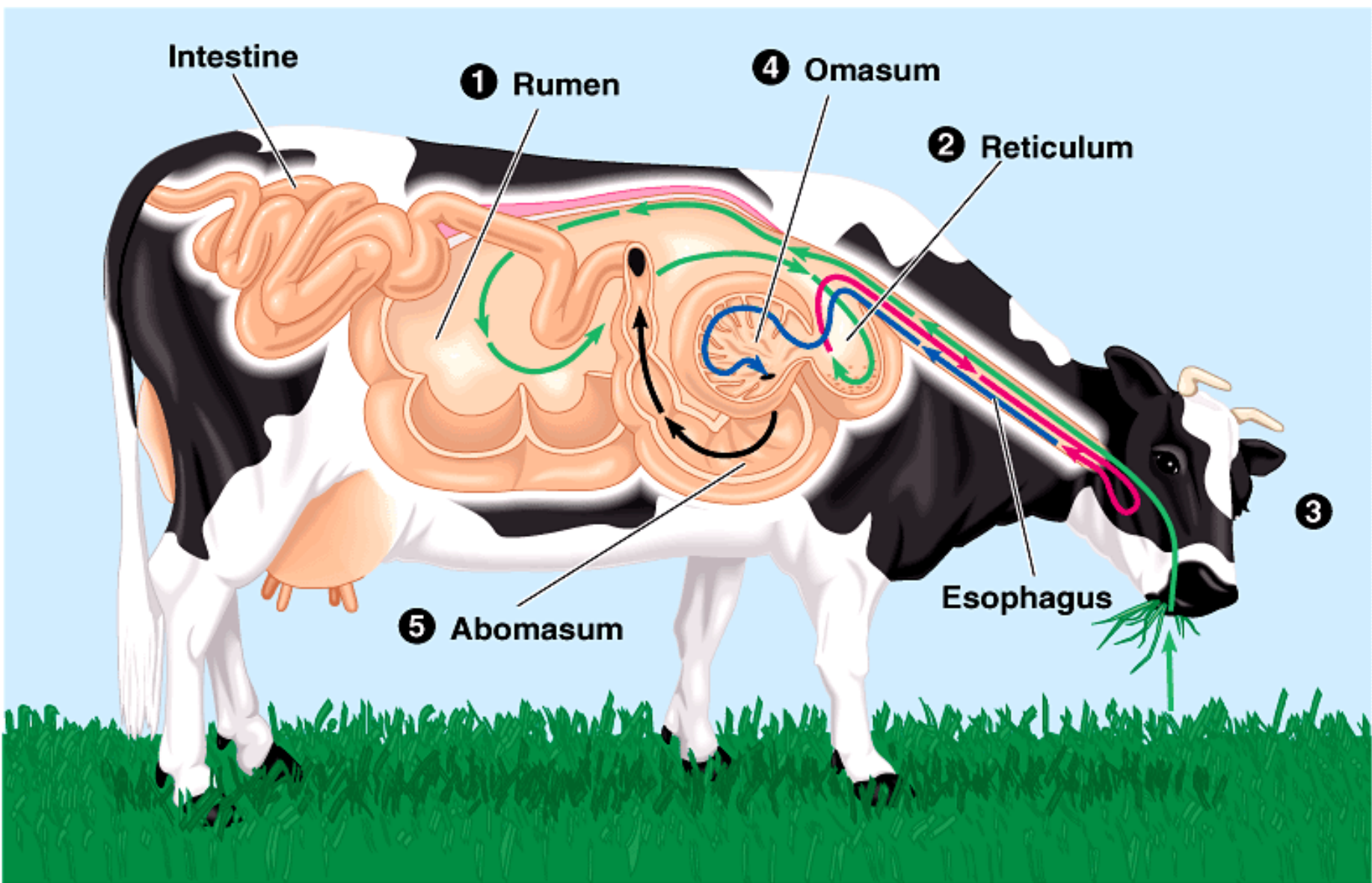


(c) Omnivore









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