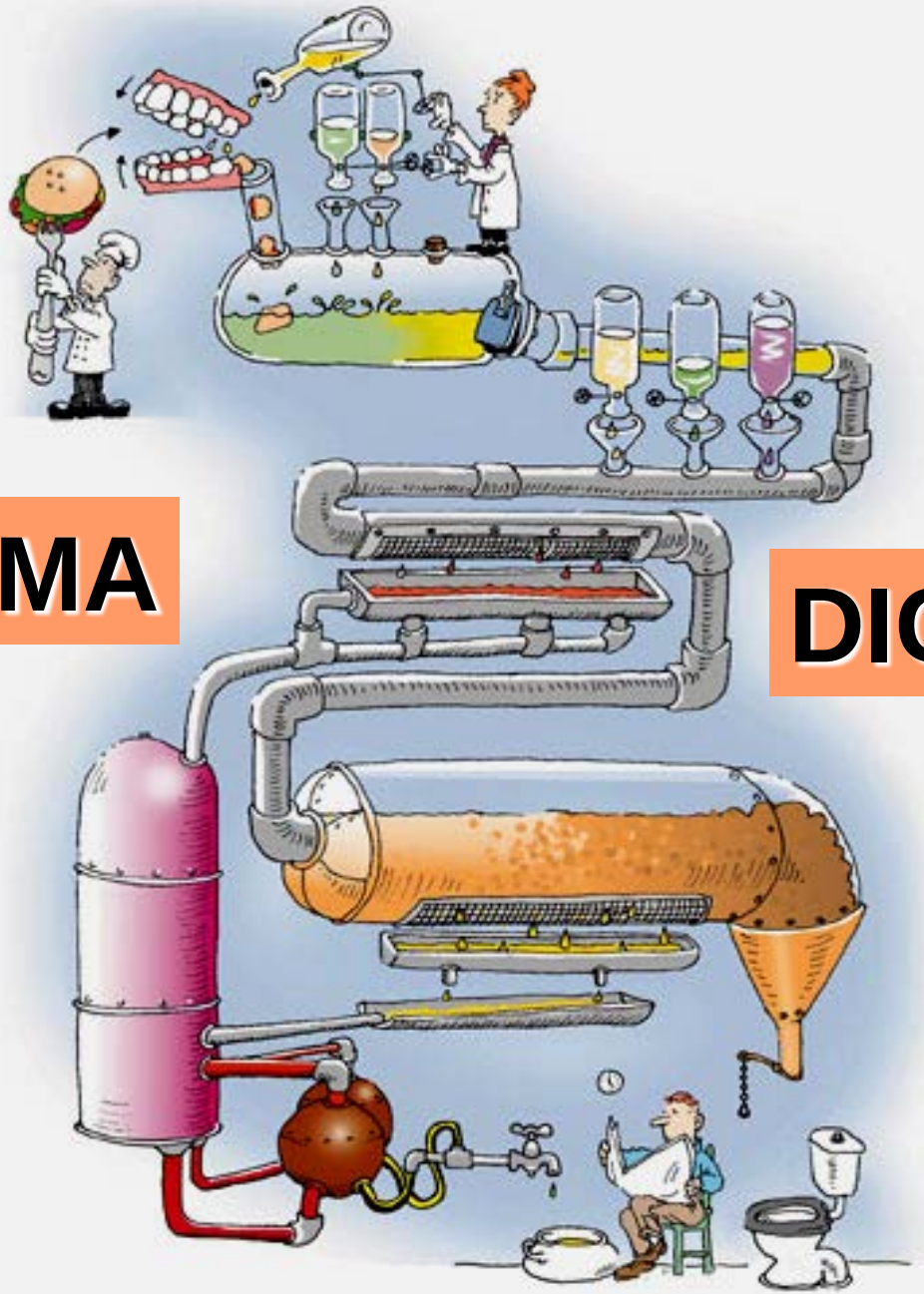
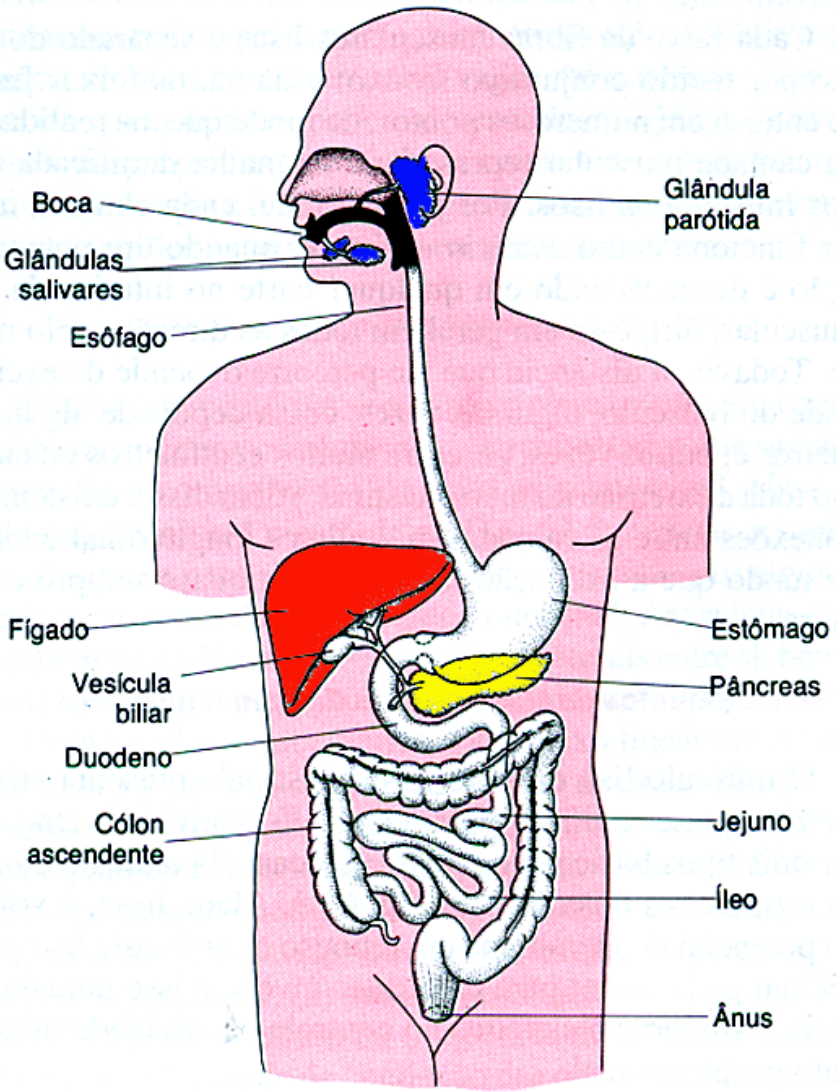
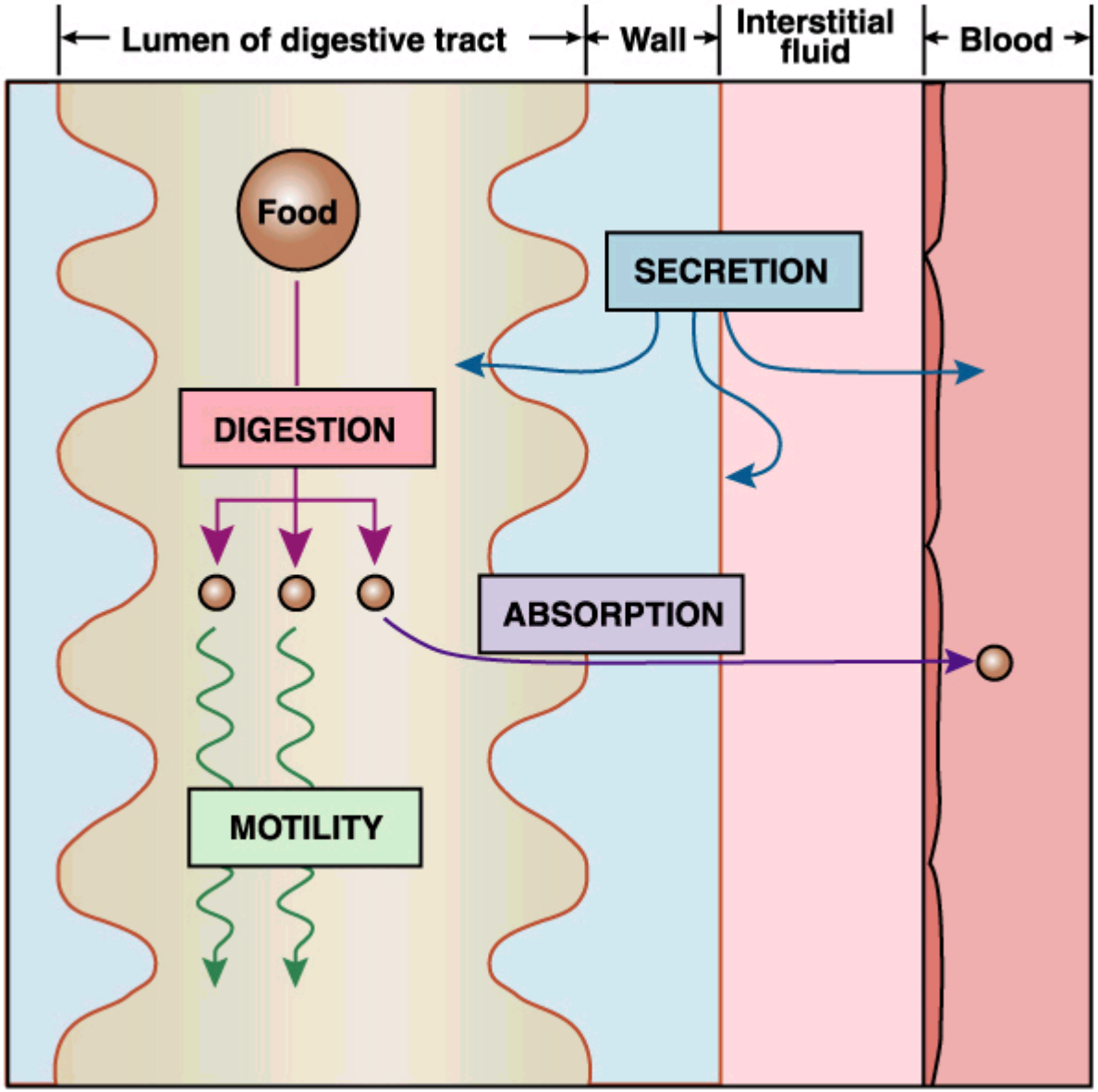
SISTEMA DIGESTÓRIO



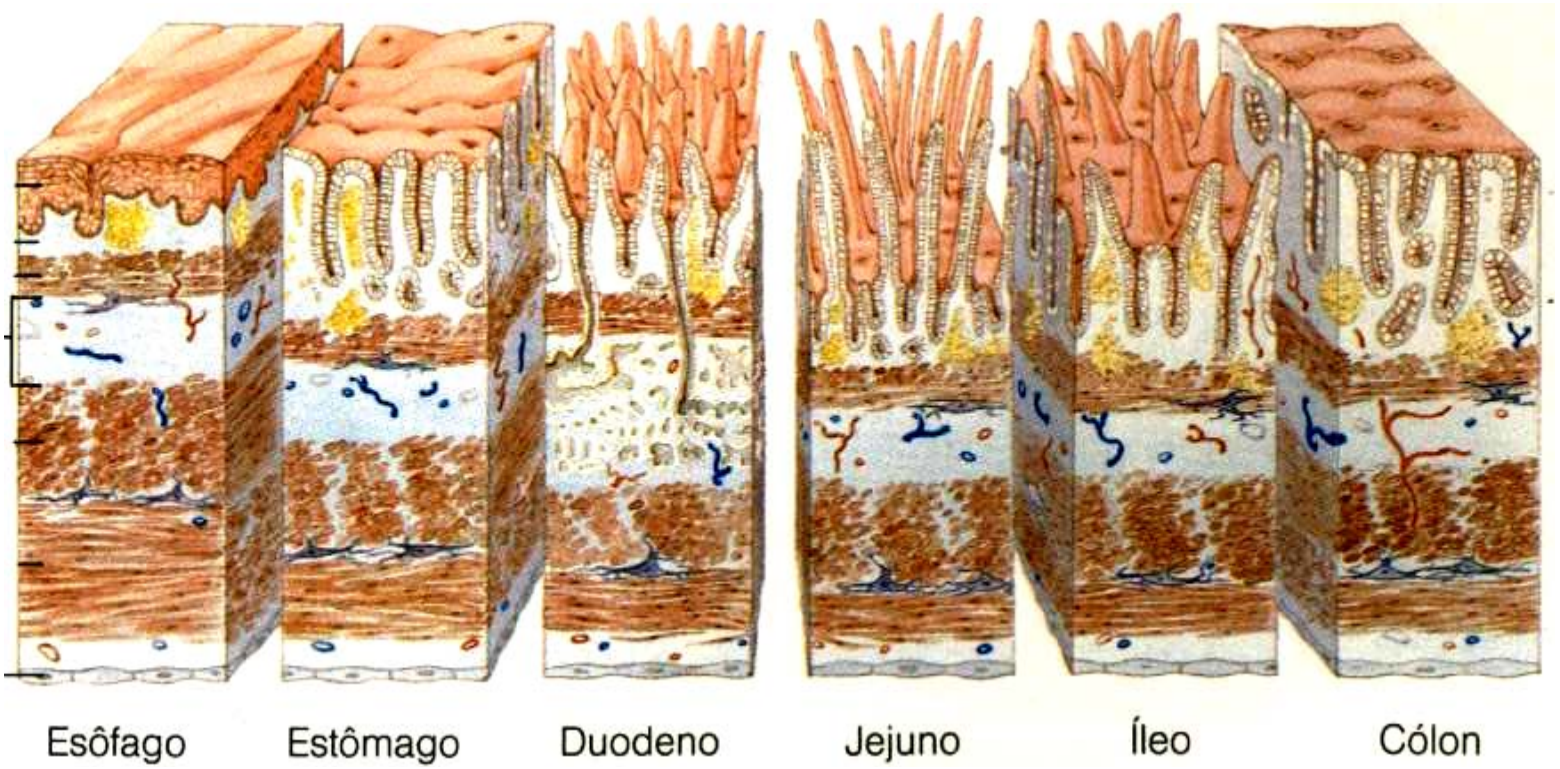
Componentes do TGI



Funções do TGI

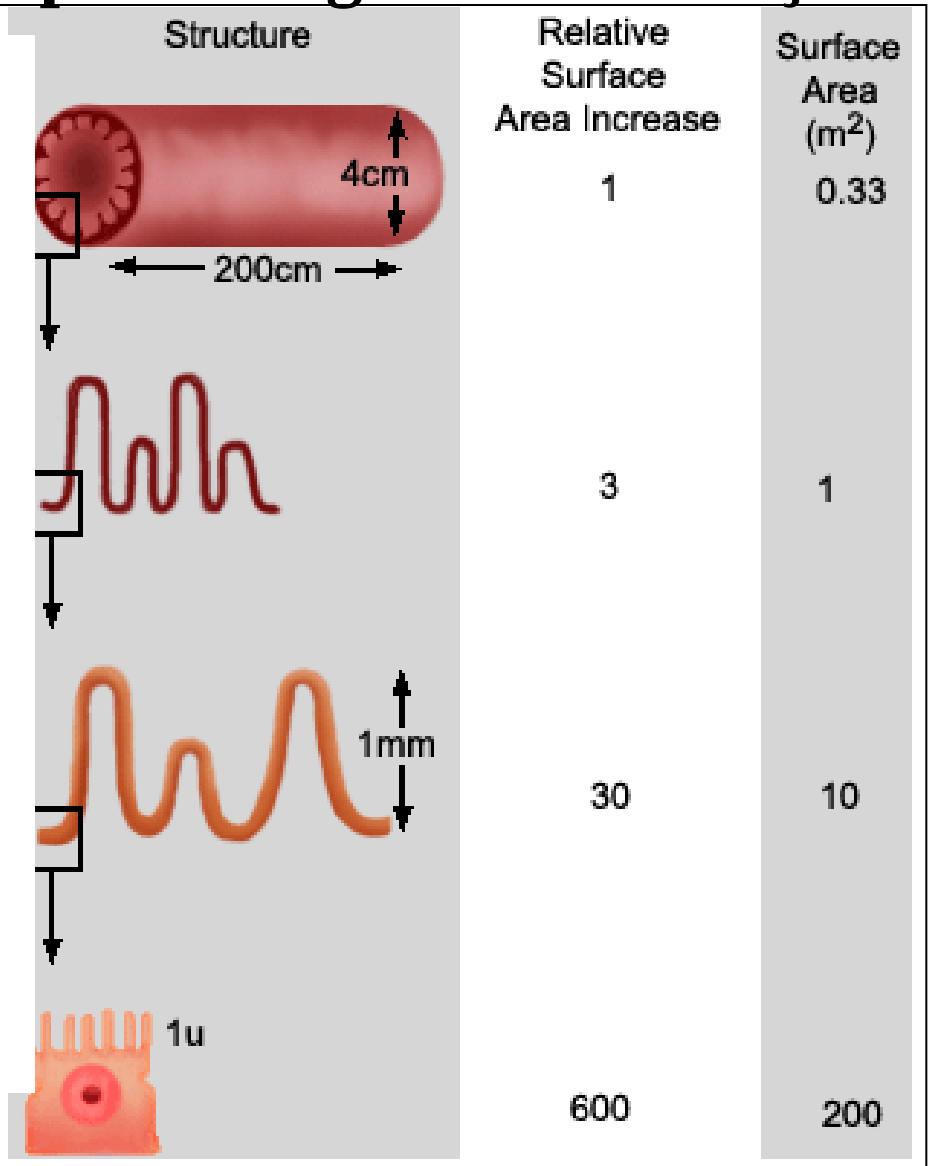


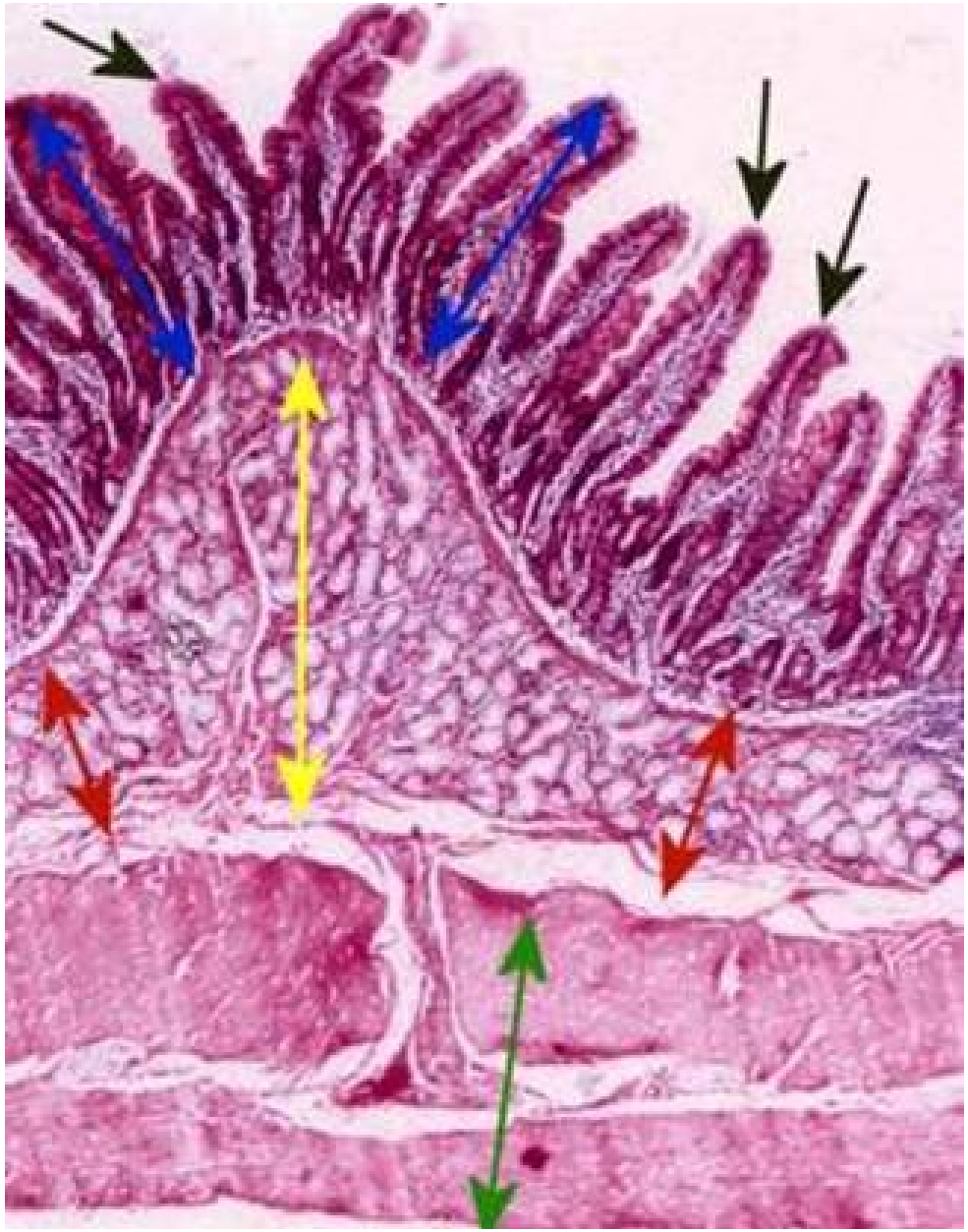
TIPOS DE EPITÉLIO DO TGI



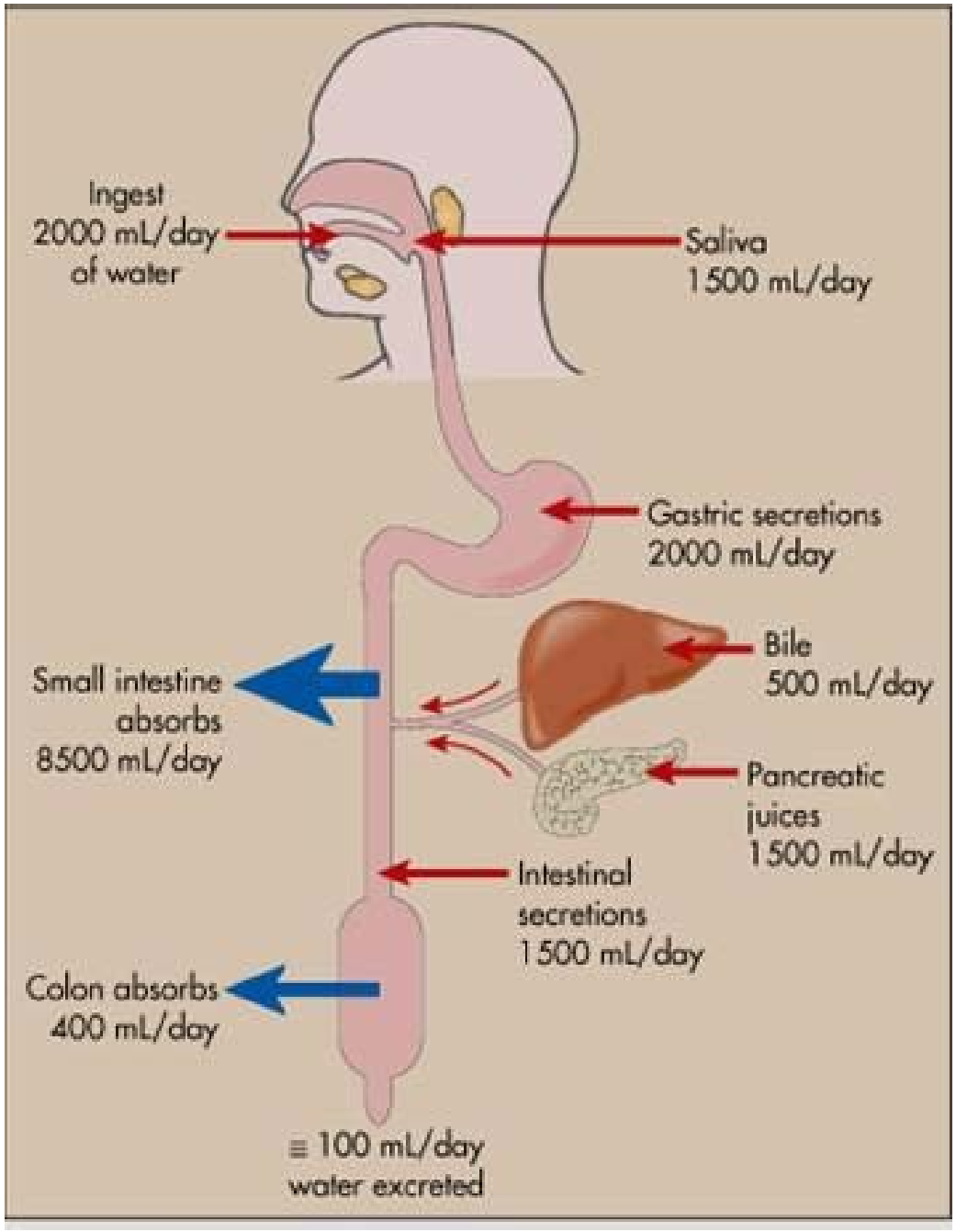
Características do Intestino Delgado:
adaptações morfofuncionais para a digestão e absorção

Pregas,
vilosidades e
microvilosidades
multiplicam
em 600 vêzes
a superfície
absortiva
e digestiva do
intestino delgado

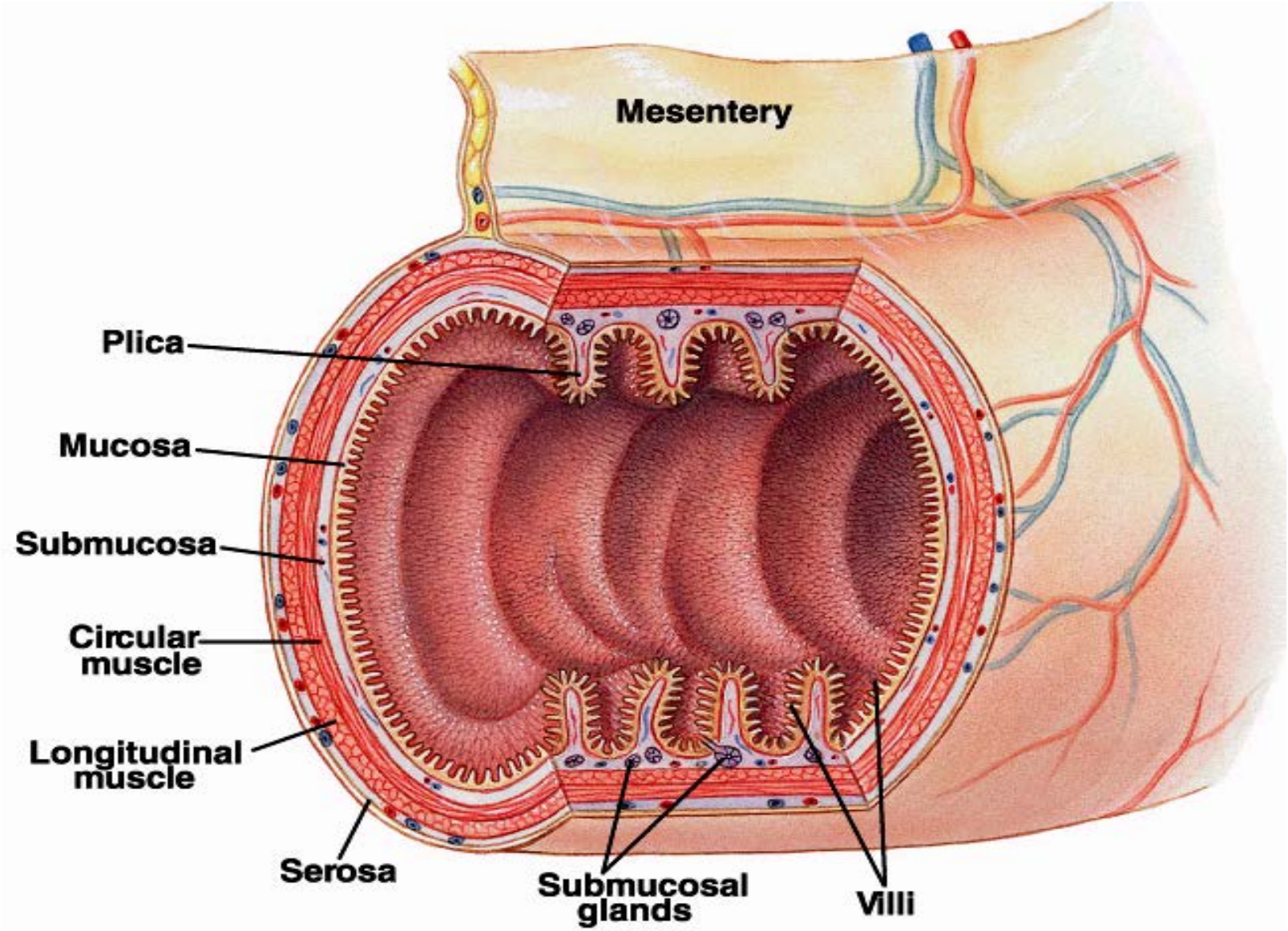




Características do Intestino Delgado:
adaptações morfofuncionais para a digestão e absorção

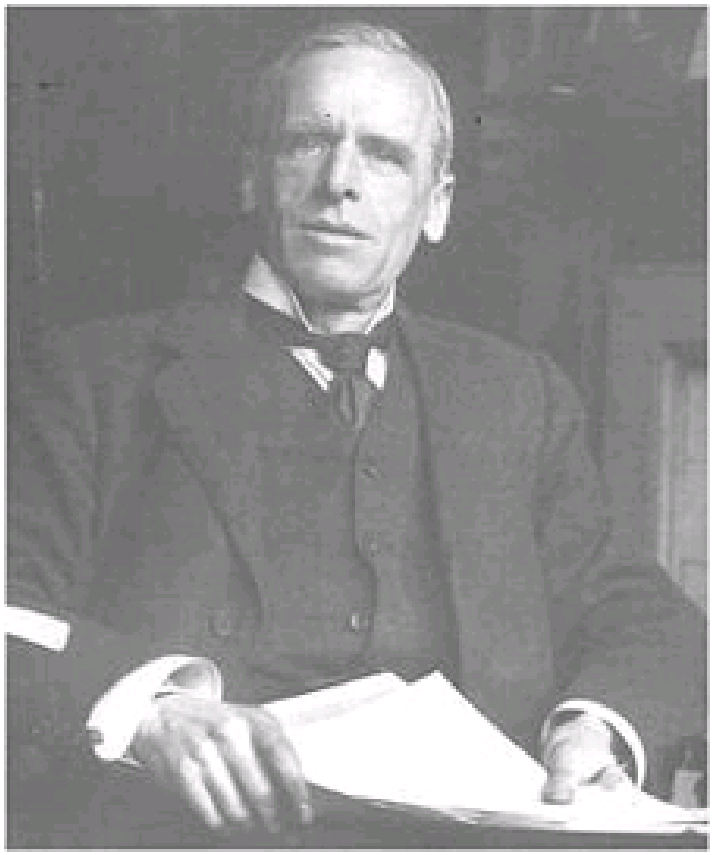

Ingest
2000 mL/day
of water
Saliva
1500 mL/day
Gastric secretions
2000 mL/day
Bile
500 mL/day
Small intestine
absorbs
8500 mL/day
Pancreatic
juices
1500 mL/day
Intestinal
secretions
1500 mL/day
Colon absorbs
400 mL/day
≡ 100 mL/day
water excreted

Parede do TGI



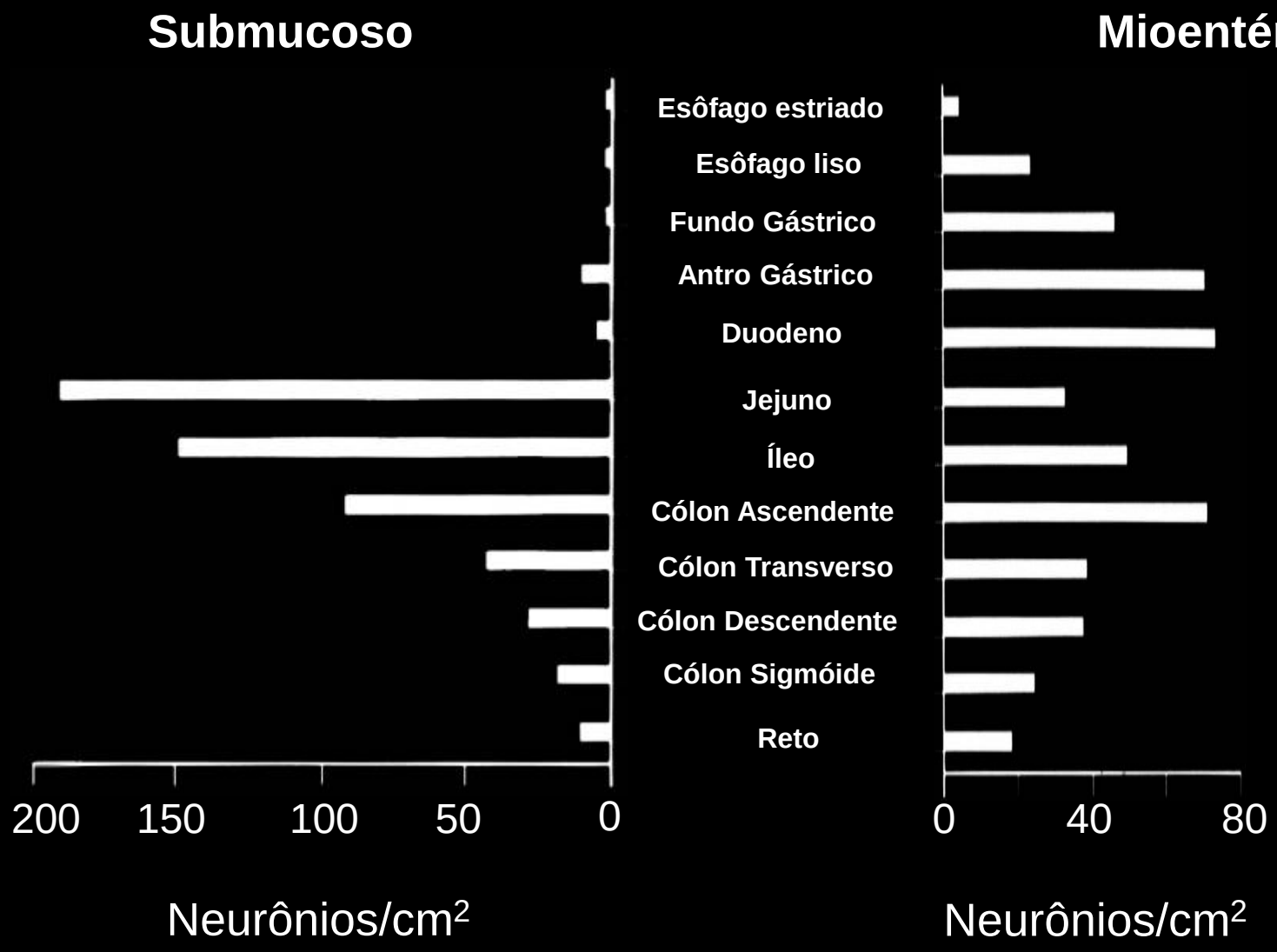
Reflexo Peristáltico

Sir William Maddock Bayliss

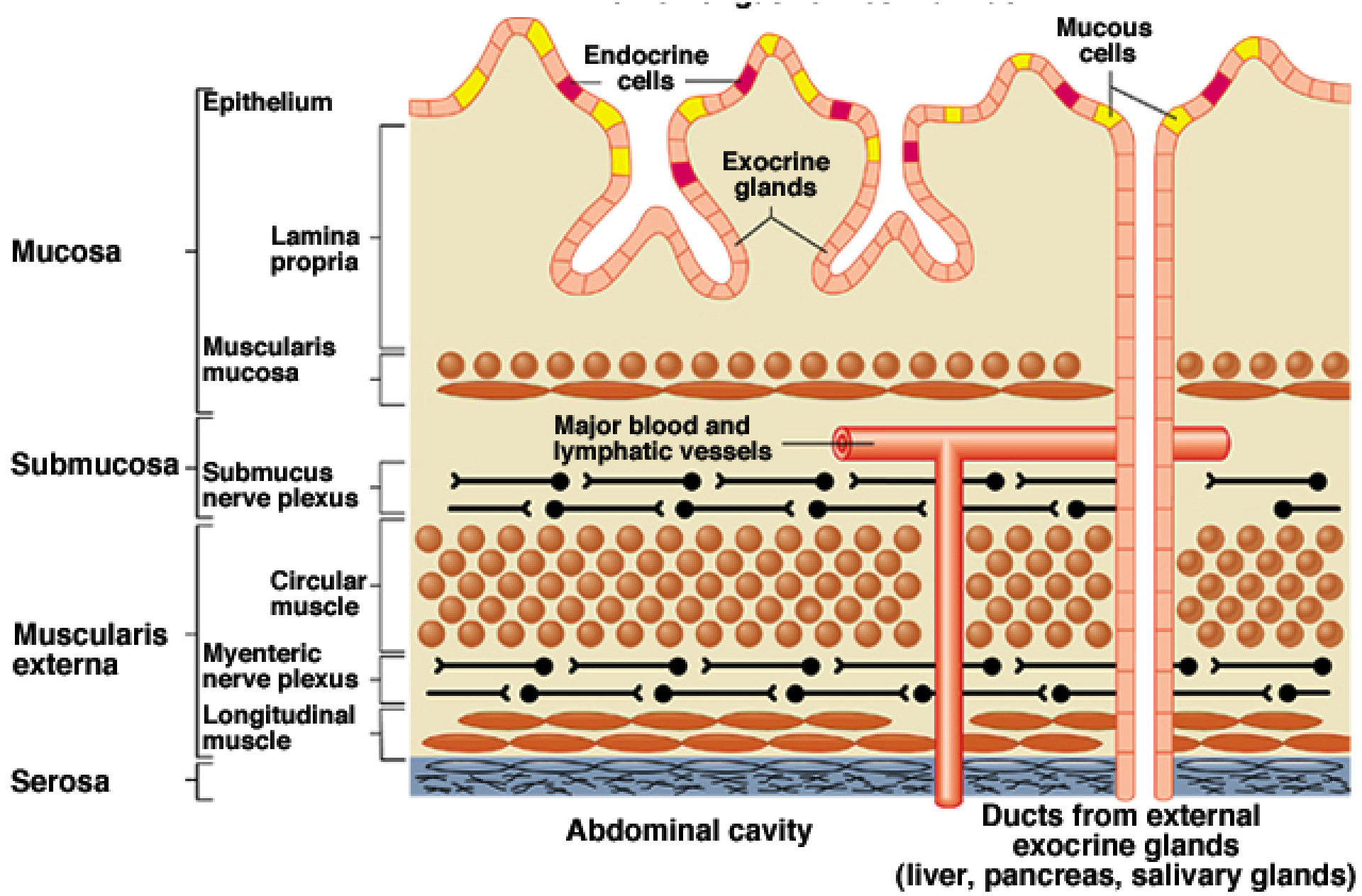


Ernest Starling

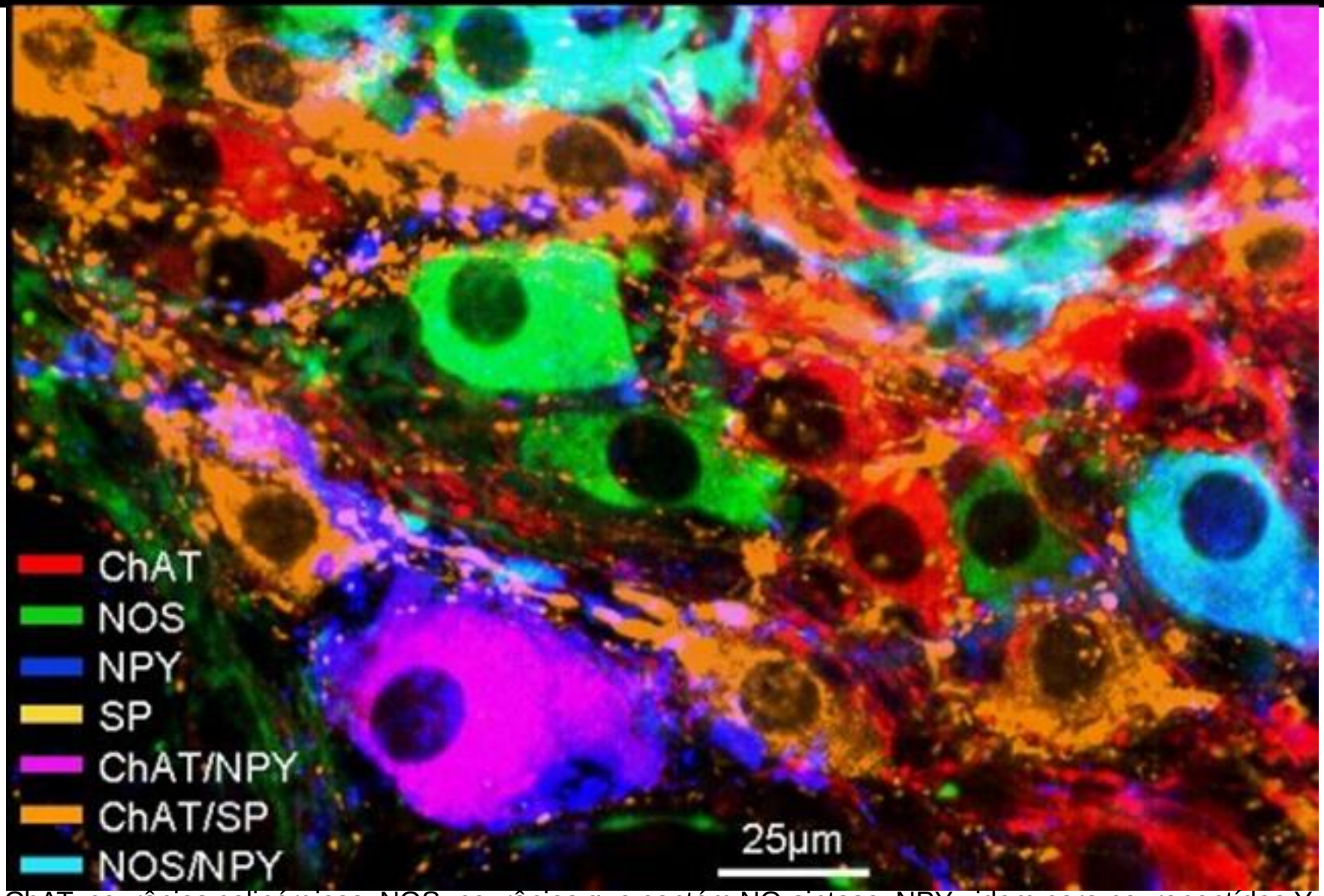
O PEQUENO CÉREBRO



O tubo digestivo e suas principais estruturas



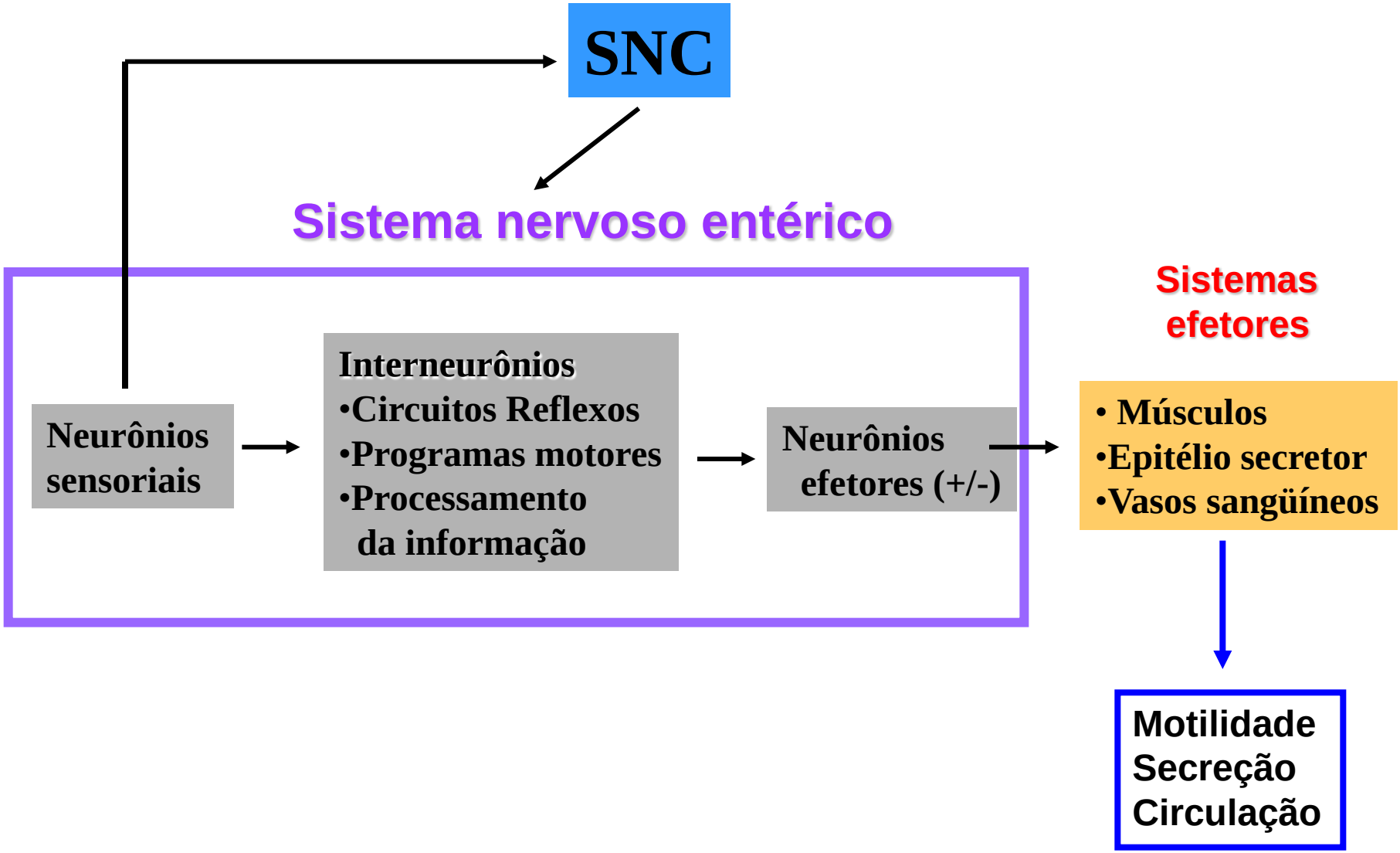
Gânglio do Sistema Nervoso Entérico com neurônios marcados por diferentes técnicas imuno-histoquímicas.



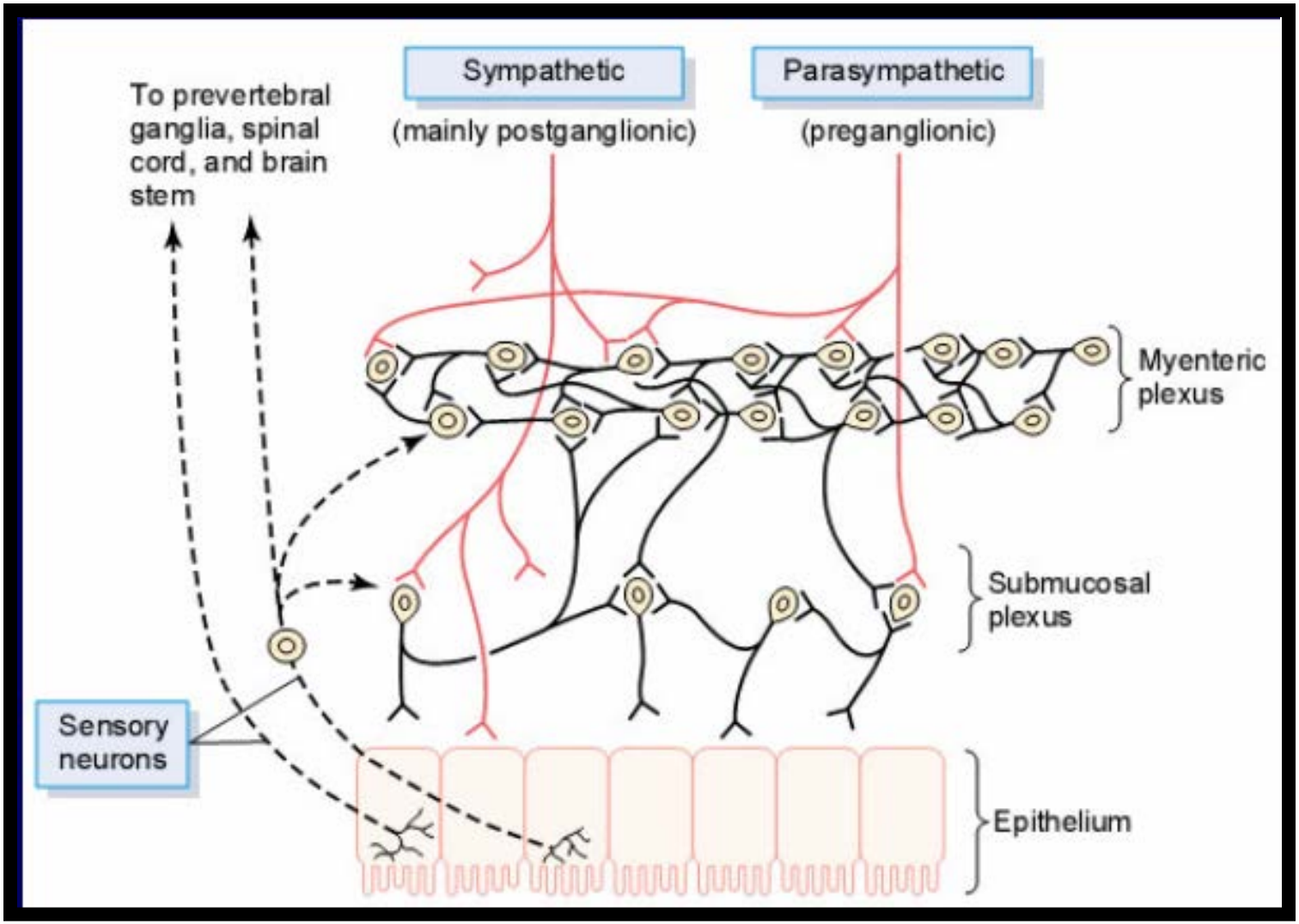
ChAT: neurônios colinérgicos, NOS: neurônios que contém NO-sintase; NPY: idem para neuropeptídeo Y; SP: idem para substância P; ChAT/NPY: neurônio com dupla marcação para ChAT e NPY (colocalização); ChAT/SP: idem para ChAT e SP (colocalização) e NOS/NPY: idem para NO-sintasee NPY (colocalização)

Megacólon

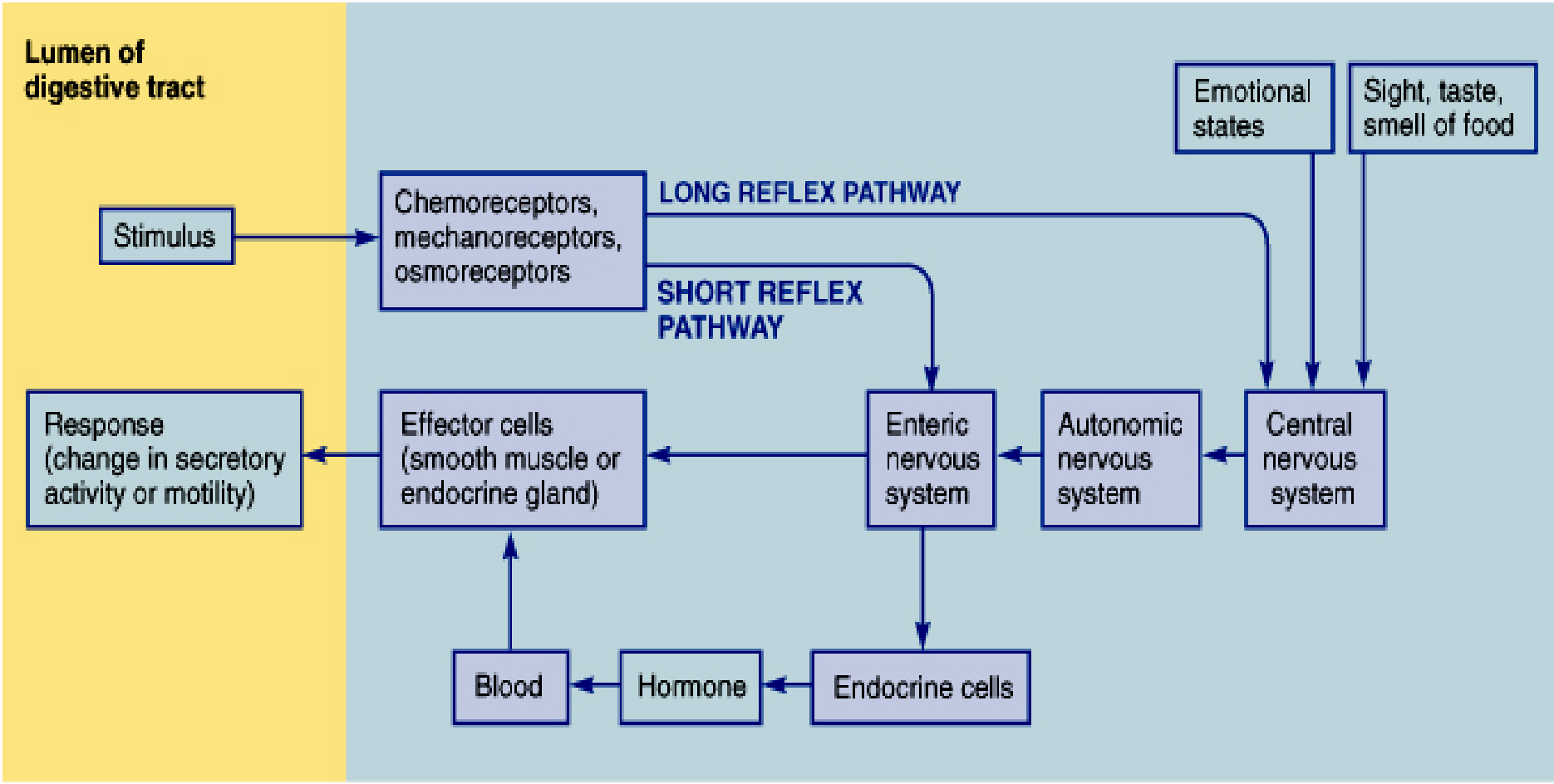
Sistema nervoso entérico

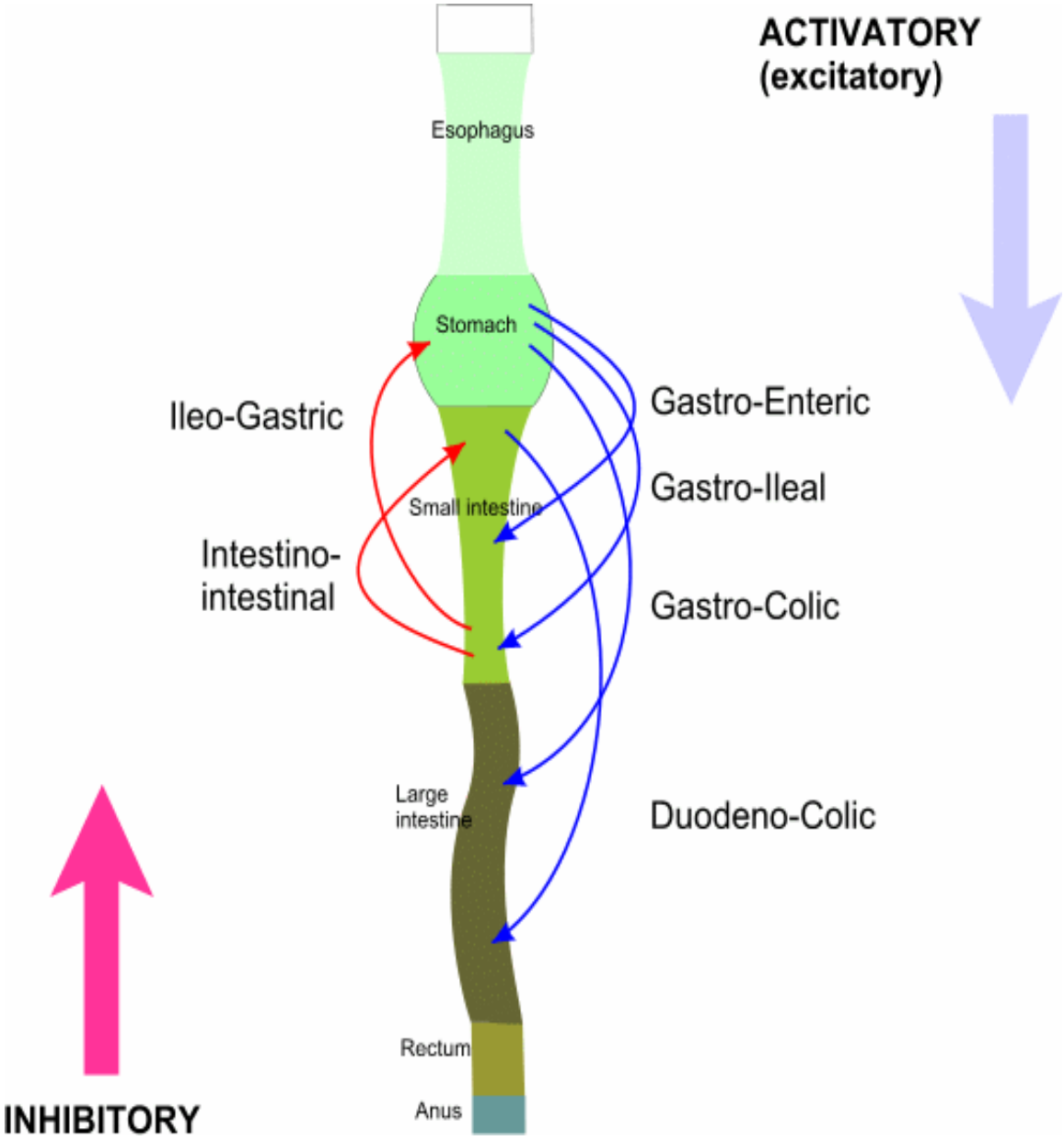


INERVAÇÃO NEUROVEGETATIVA DO TGI

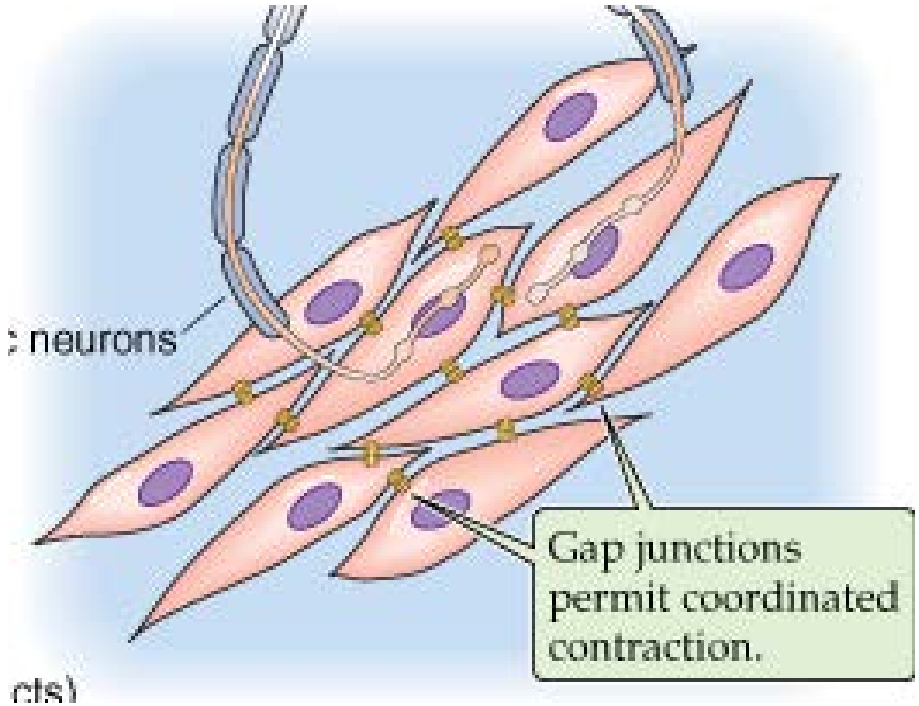


REFLEXOS

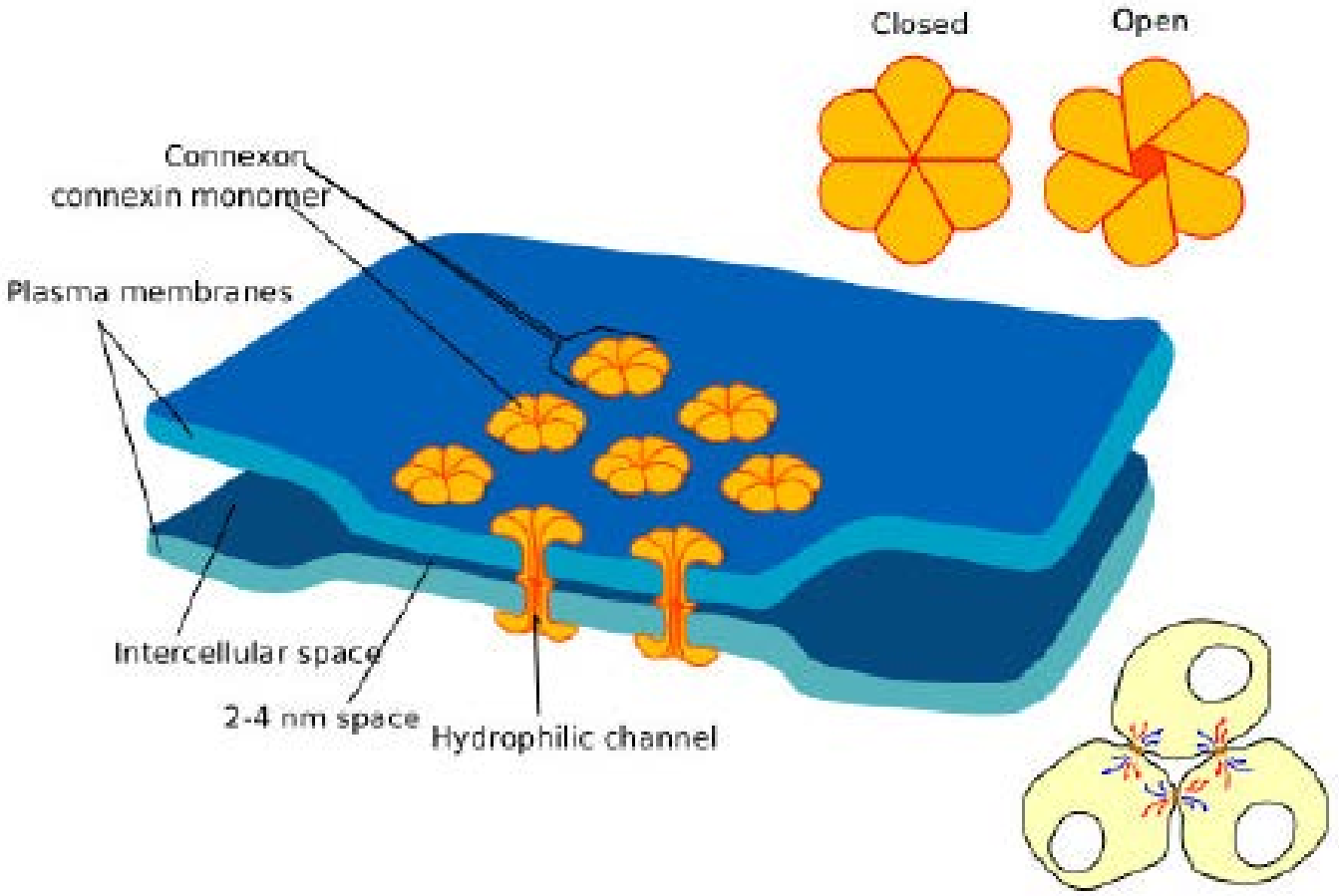



ACTIVATORY
(excitatory)
Esophagus
Stomach
Ileo-Gastric
Gastro-Enteric
Gastro-Ileal
Small intestine
Intestino-
intestinal
Gastro-Colic
Large
intestine
Duodeno-Colic
Rectum
Anus
INHIBITORY

Músculo Lisa Visceral Unitária do TGI

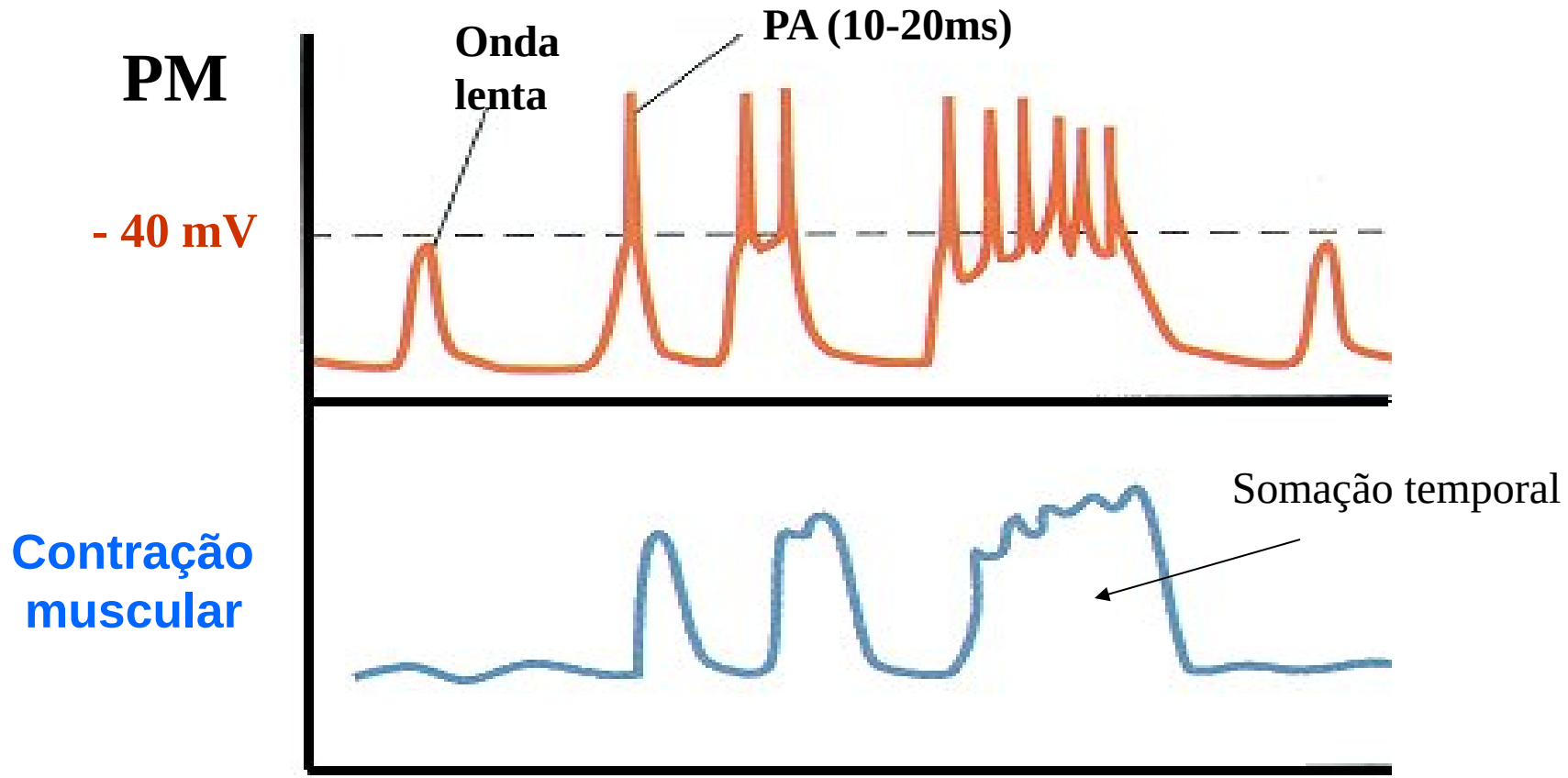


GAP JUNCTIONS

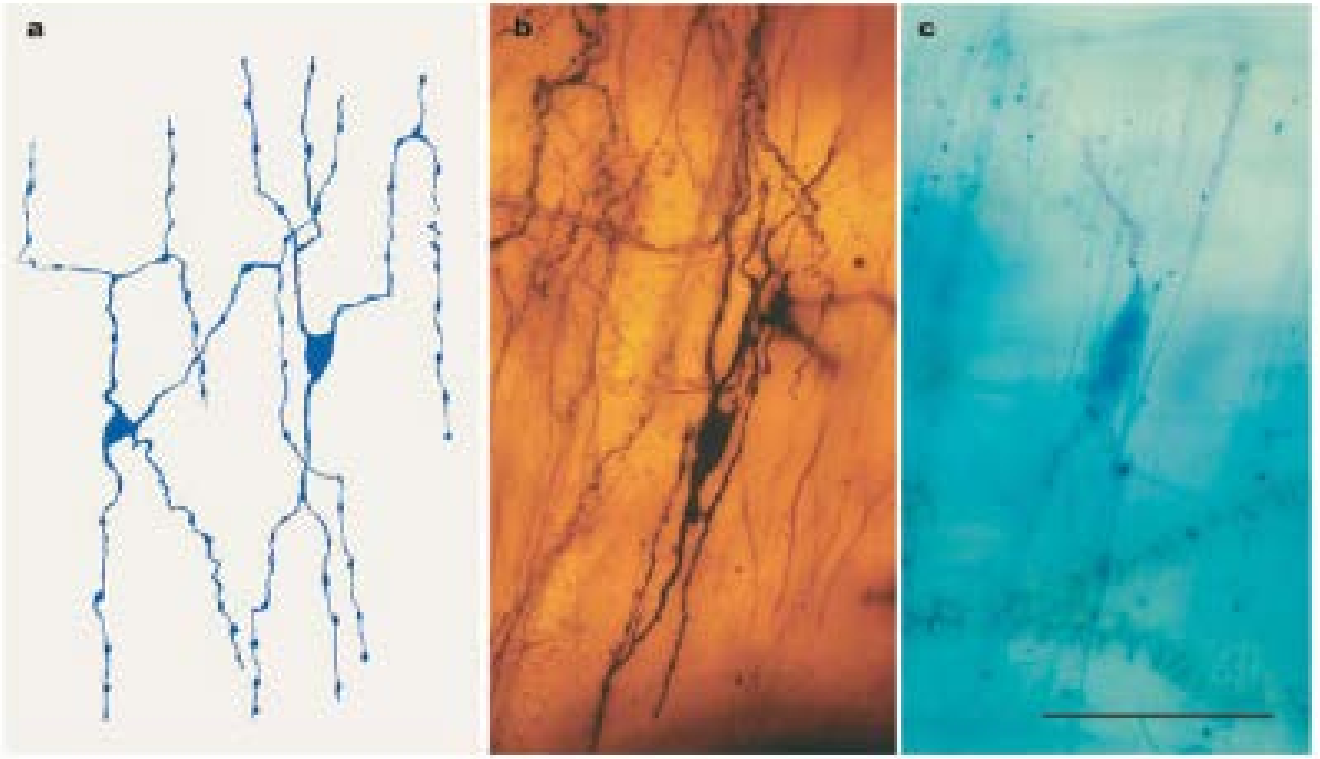


Tipos de Atividades Elétricas

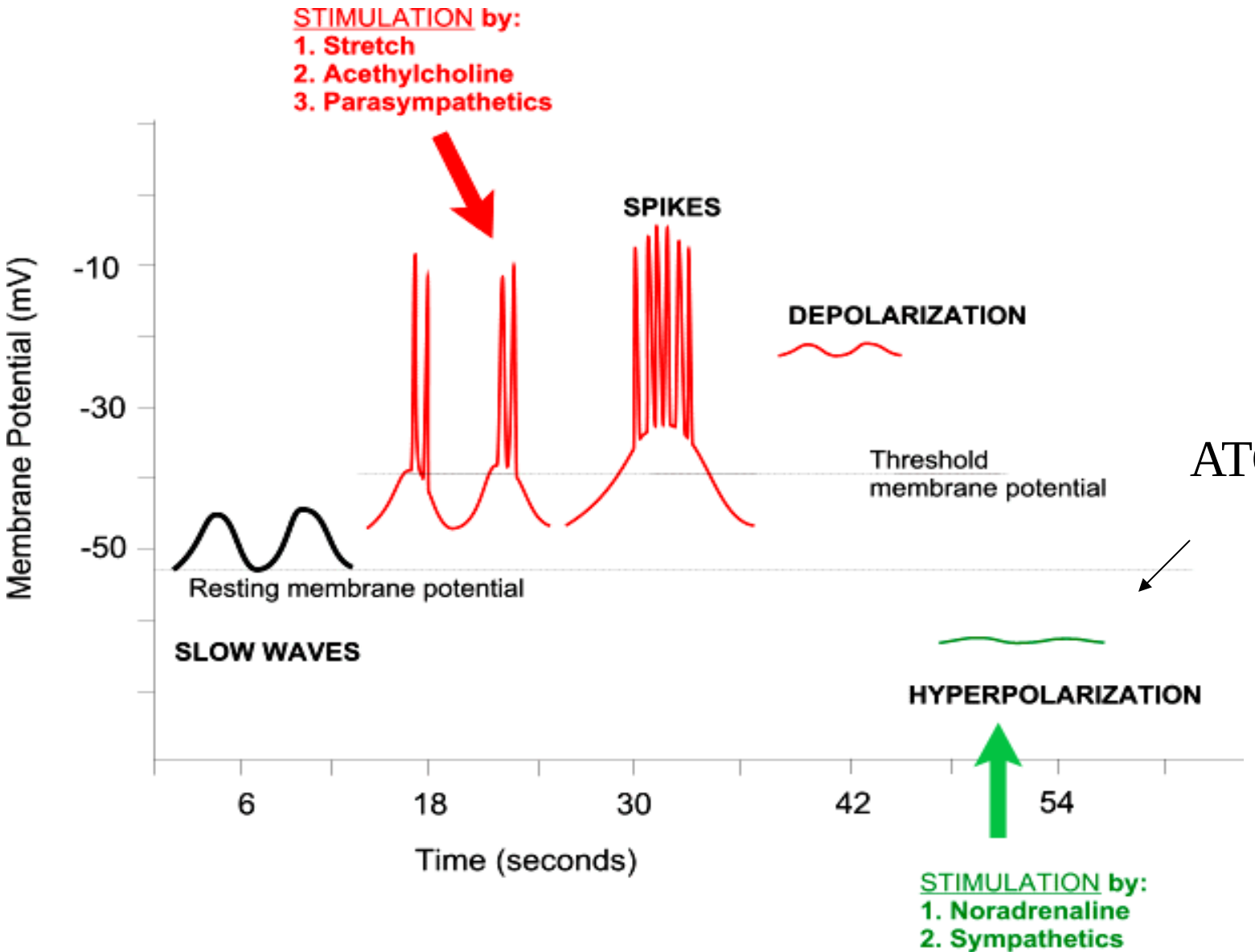
Ritmo elétrico básico (ondas lentas) e potenciais em ponta



Células intersticiais de Cajal

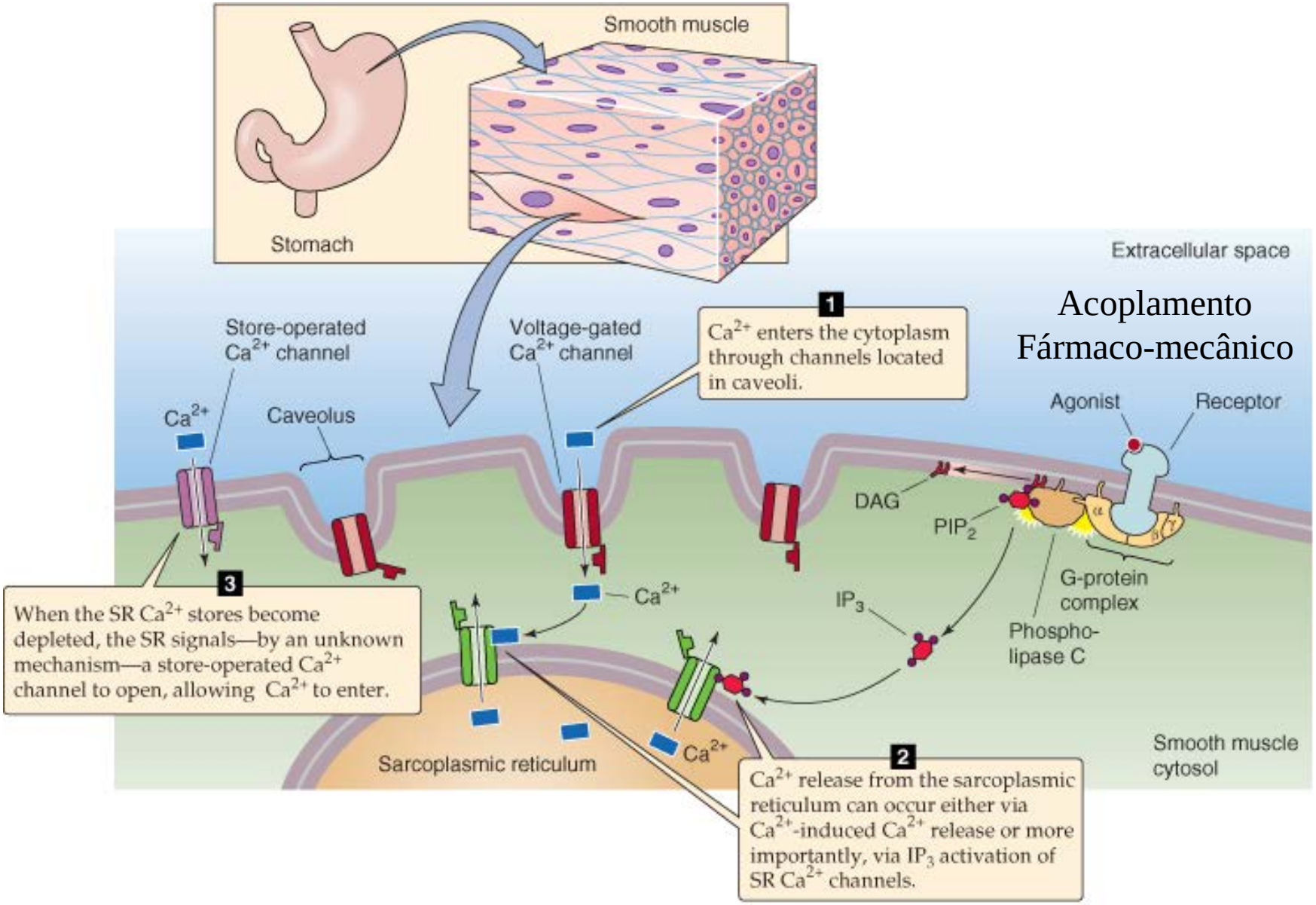


CARACTERÍSTICAS DO TGI



ATONIA

Papel central do Cálcio extracelular na contração da musculatura visceral



Acoplamento Fármaco-mecânico

PADRÕES DE COMPORTAMENTO MOTOR

MASTIGAÇÃO

DEGLUTIÇÃO

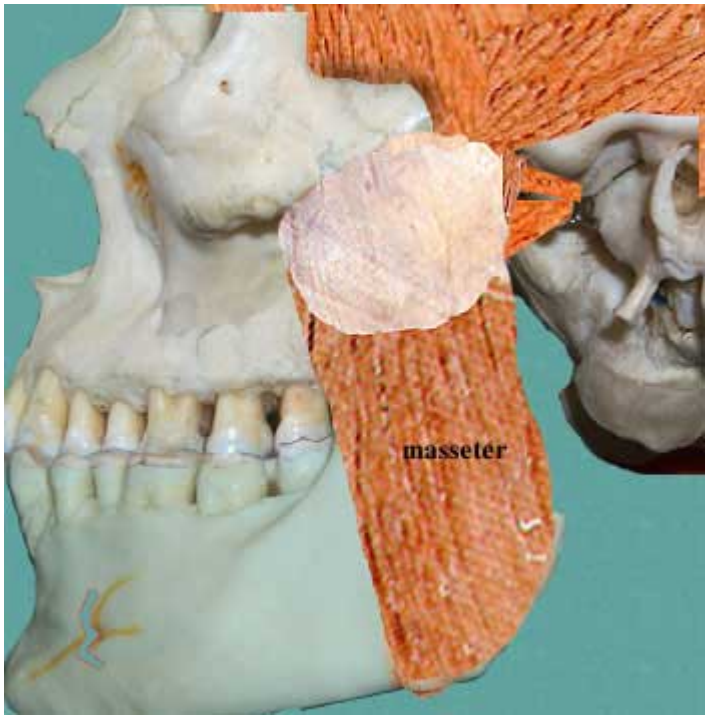
MOTILIDADE GÁSTRICA

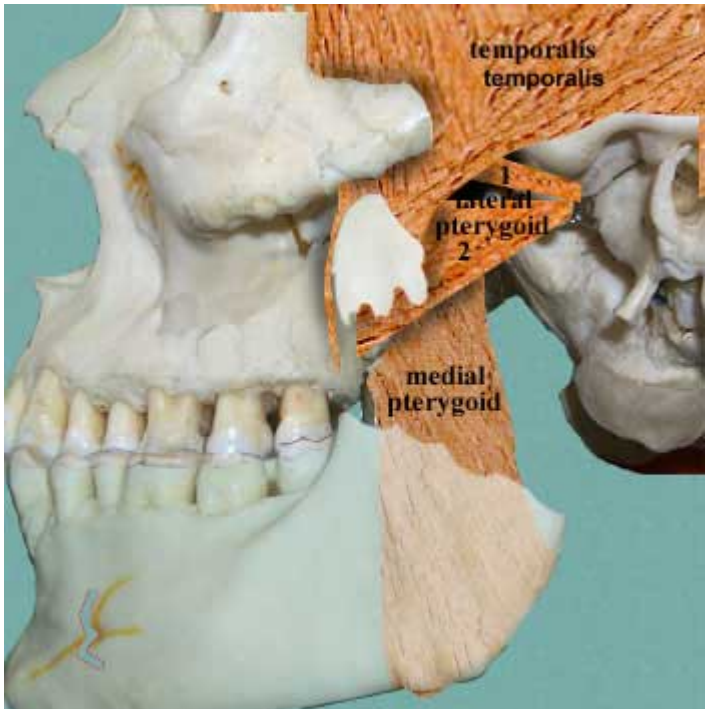
MOTILIDADE DO INTESTINO DELGADO

MOTILIDADE DO INTESTINO GROSSO E DEFECAÇÃO

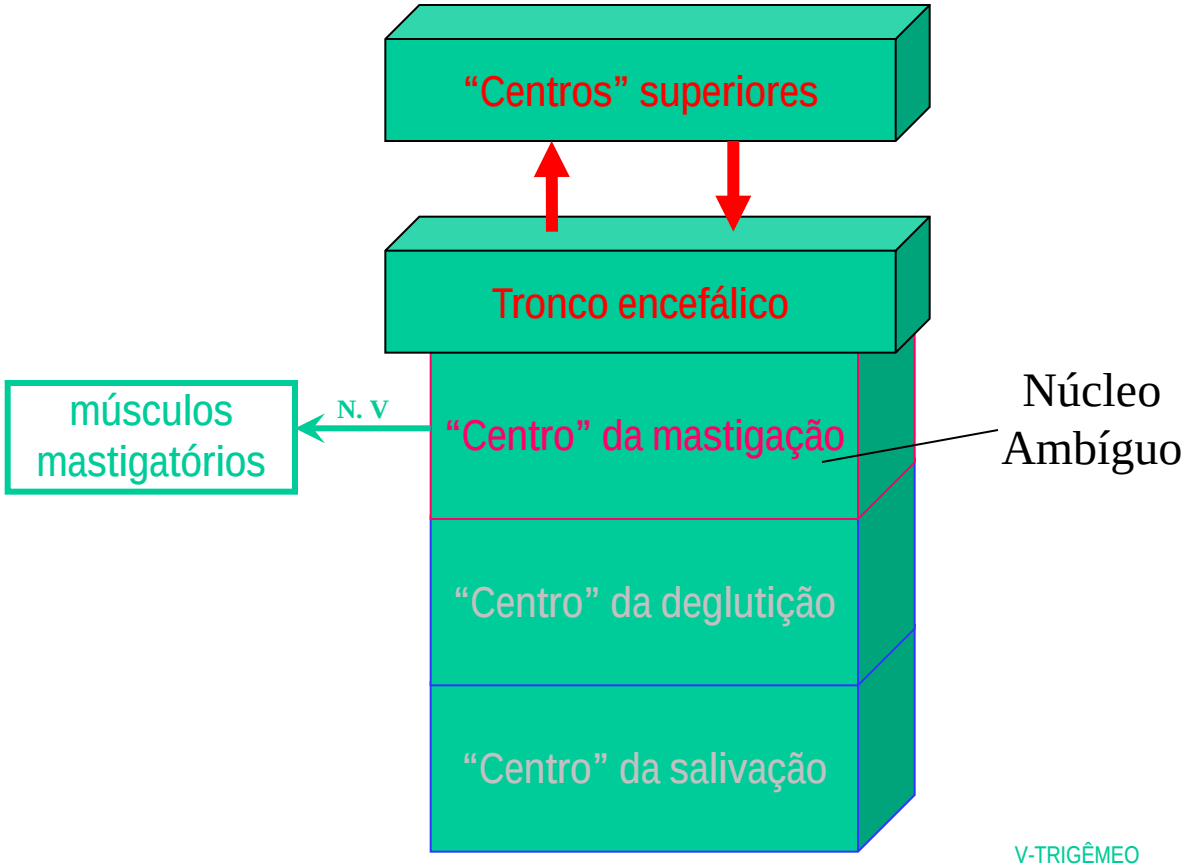
MÚSCULOS ENVOLVIDOS NA MASTIGAÇÃO

-masseter
-pterigoideo medial
-pterigoideo lateral *
-temporalis





http://mywebpages.comcast.net/wnor/lesson4.htm



Pedersen,et al., 2002.

Mastigação: reflexo mastigatório

Bolo alimentar

Pressão contra palato → **Inibição músculos de fechamento**

↓

Queda mandíbula

↓

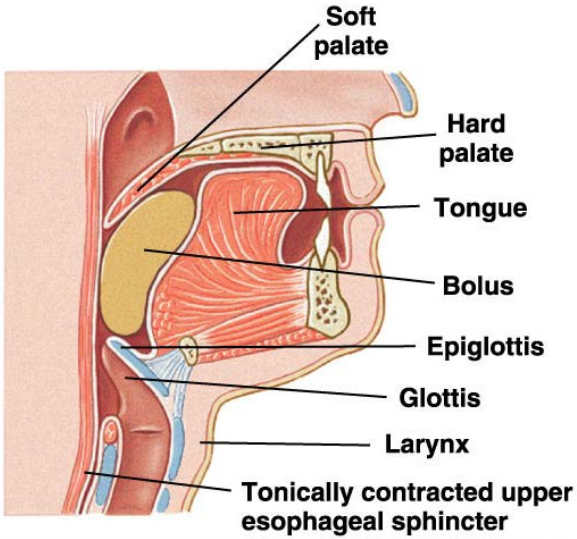
Estiramento muscular ← **Contração reflexa**

↑

Eleva mandíbula

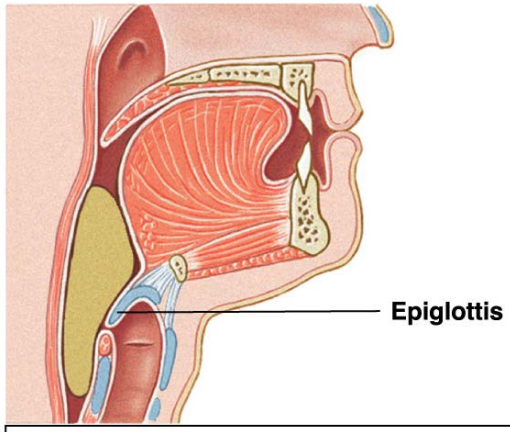
↑

Principais eventos que participam do reflexo da deglutição



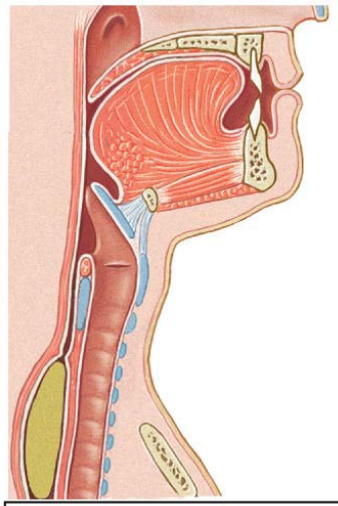
1. Tongue pushes bolus against soft palate and back of mouth, triggering swallowing reflex.

Fase oral (voluntária)



2. Upper esophageal sphincter relaxes while epiglottis closes to keep swallowed material out of the airways.

Fase faríngea (1 seg)



3. Food moves downward into the esophagus, propelled by peristaltic waves and aided by gravity.

Fase esofágica (10seg)

a,

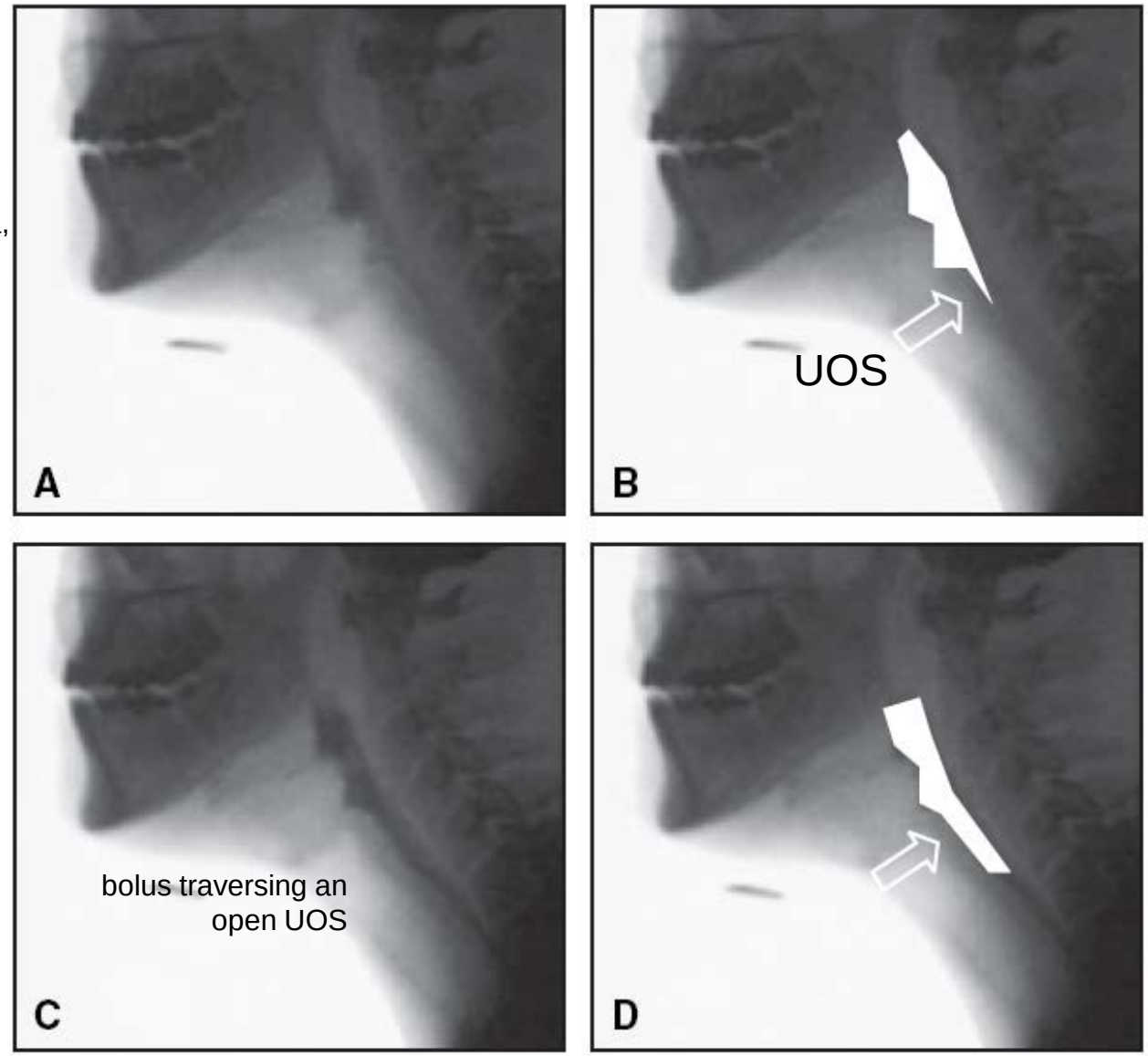
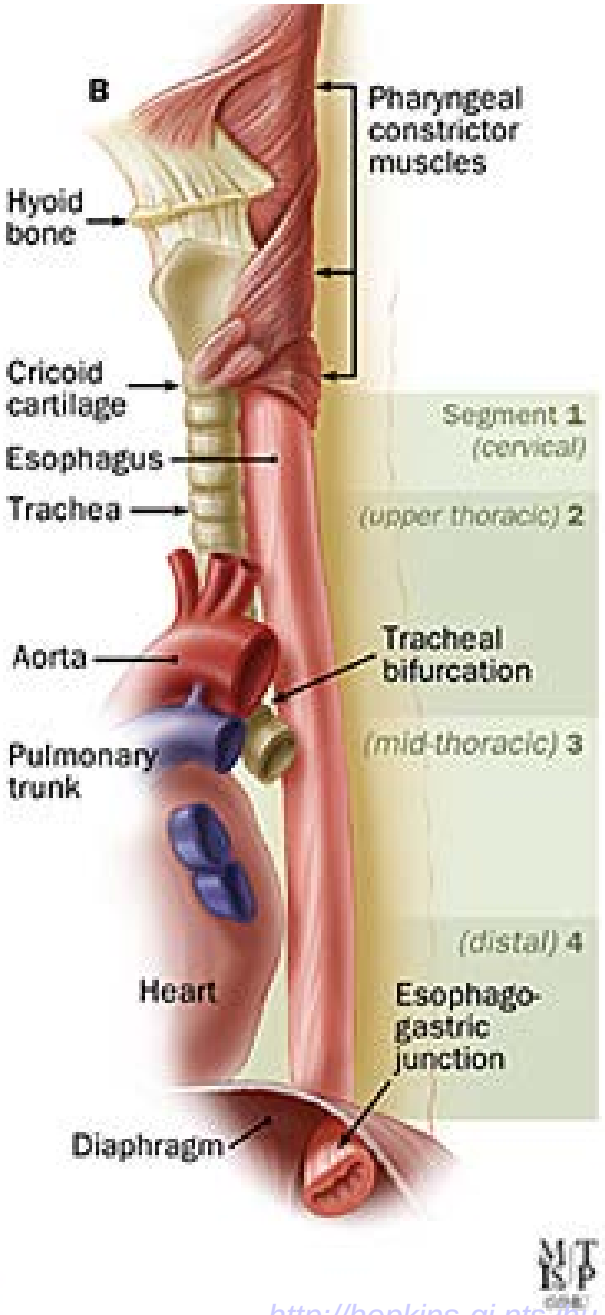


Figure 2 Lateral fluoroscopic images as barium is swallowed.
Image A shows the head of the bolus as it indents the upper oesophageal sphincter (UOS).
Image B is identical but annotated. The barium is highlighted and an arrow indicates the UOS.
Images C and D are also paired to show the bolus traversing an open UOS.

Singh e Hamdy, 2005



O EES complexo esfincteriano superior

-pressão em repouso: 30-200mmHg

Diminuição transitória do tônus do EES durante a deglutição

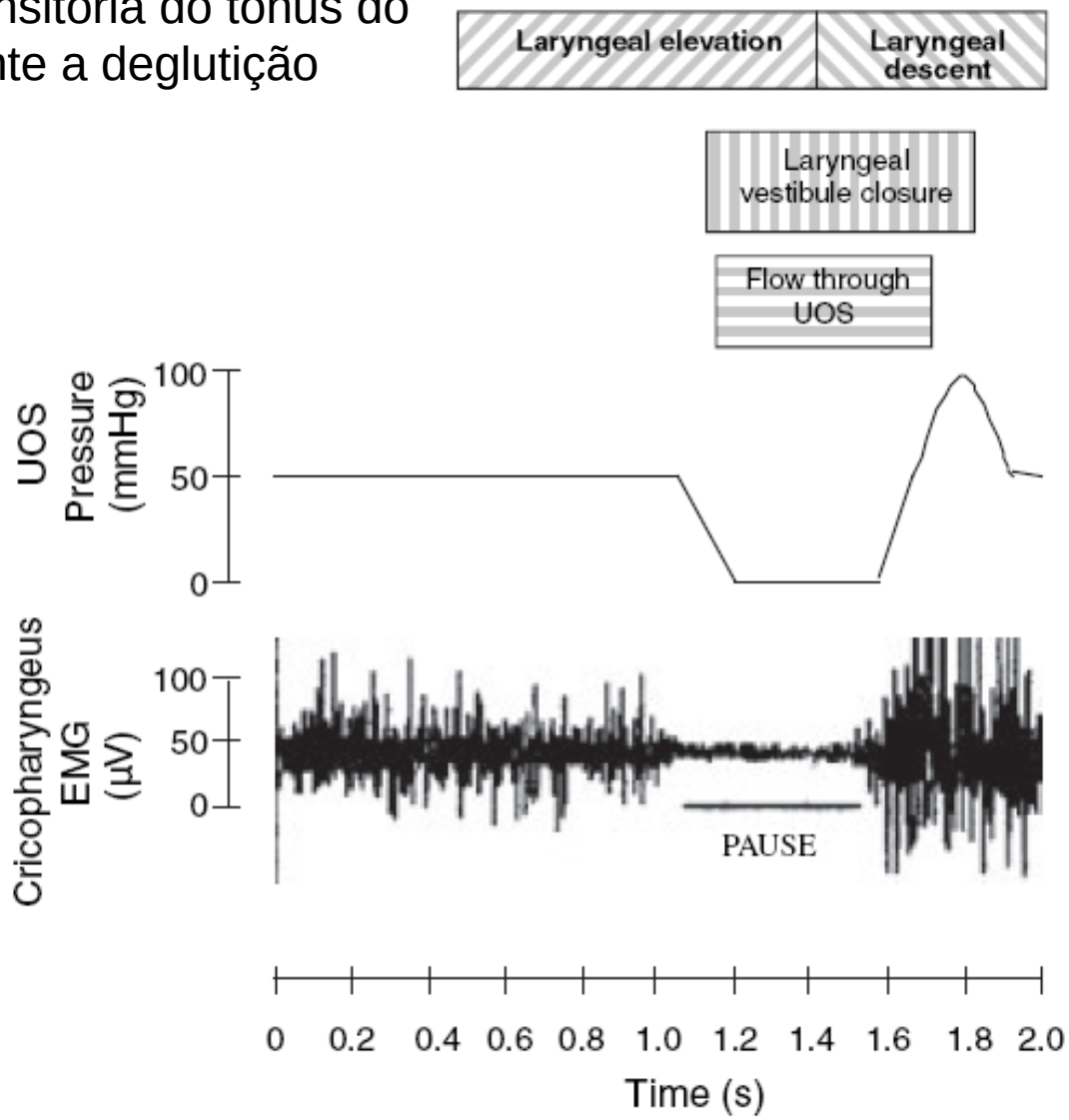
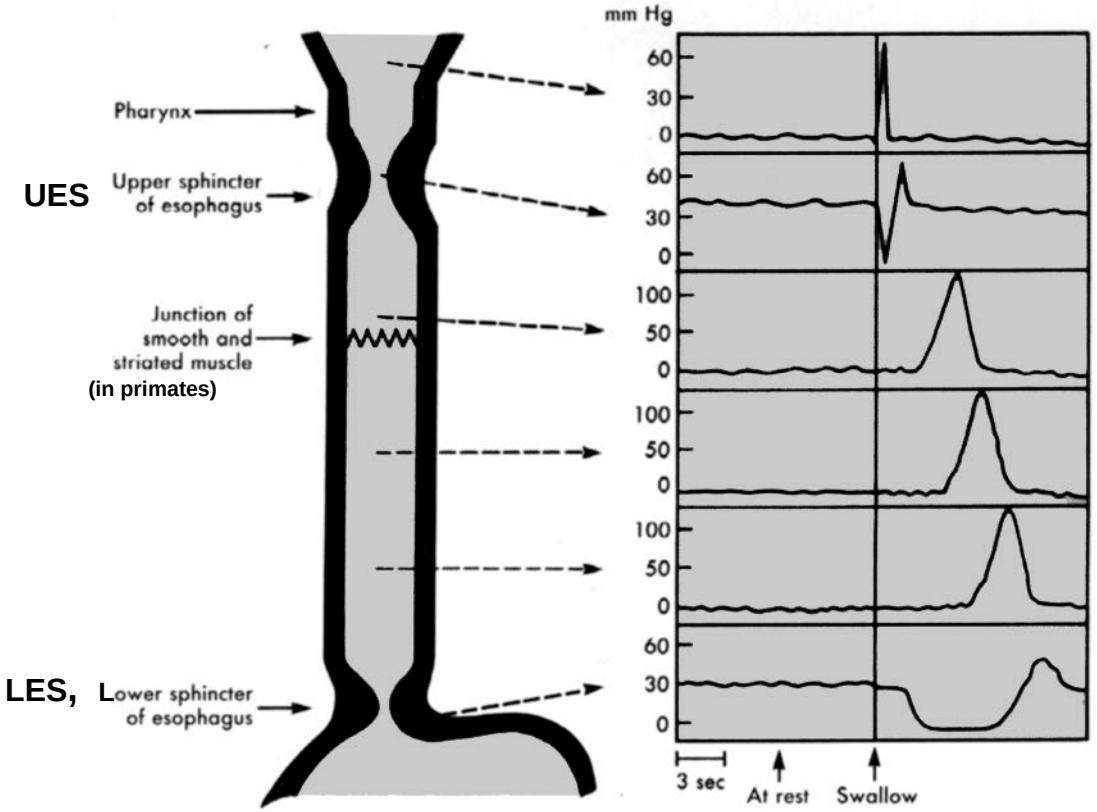
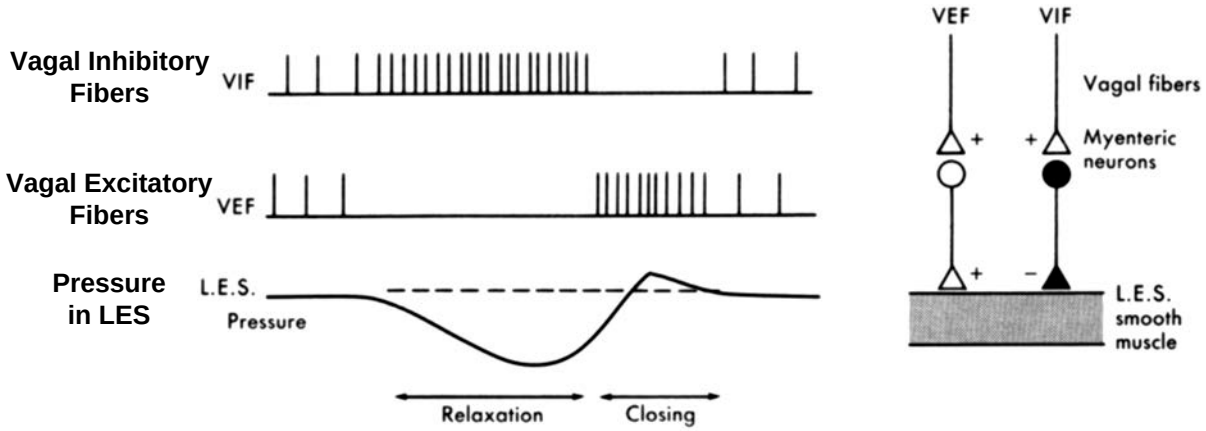


Figure 3 Time line showing the relationship of events during a normal swallow. The exact timings are influenced by factors such as age and bolus size.

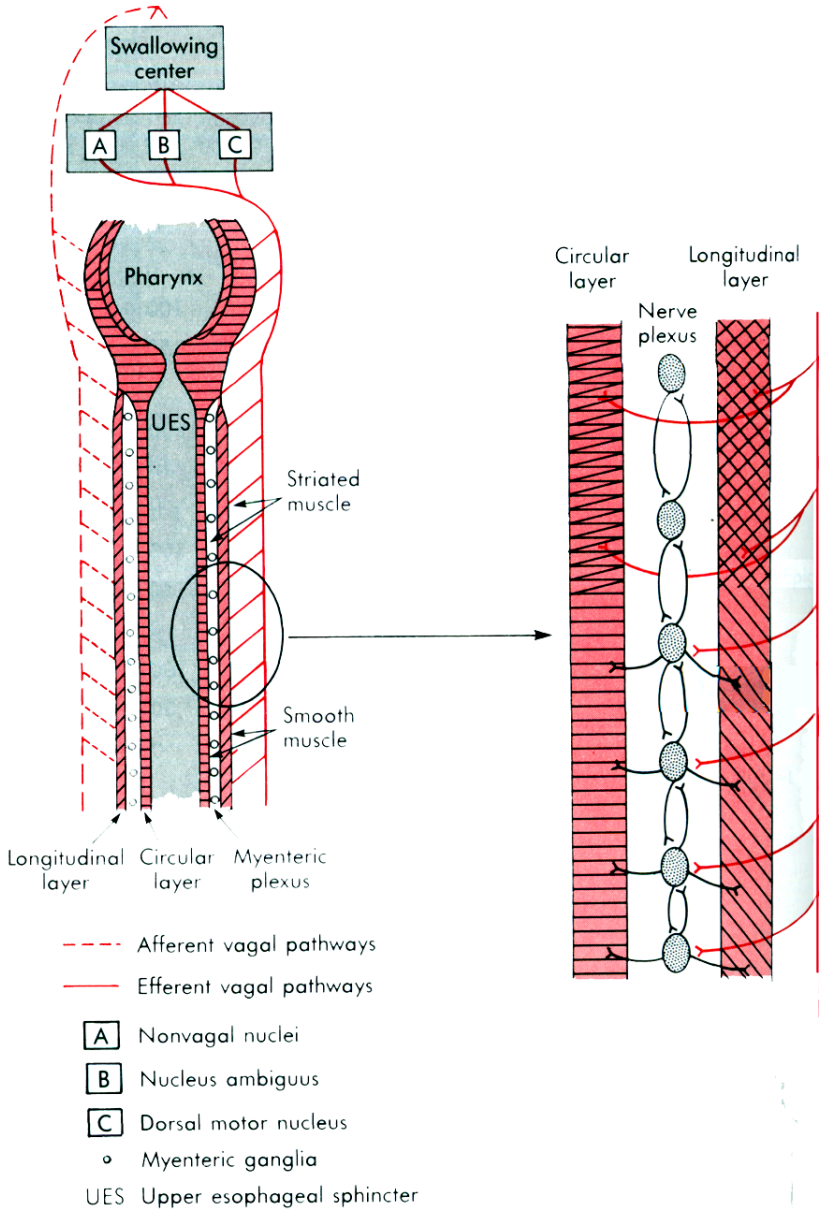
Singh e Hamdy, 2005

Integração do reflexo da deglutição

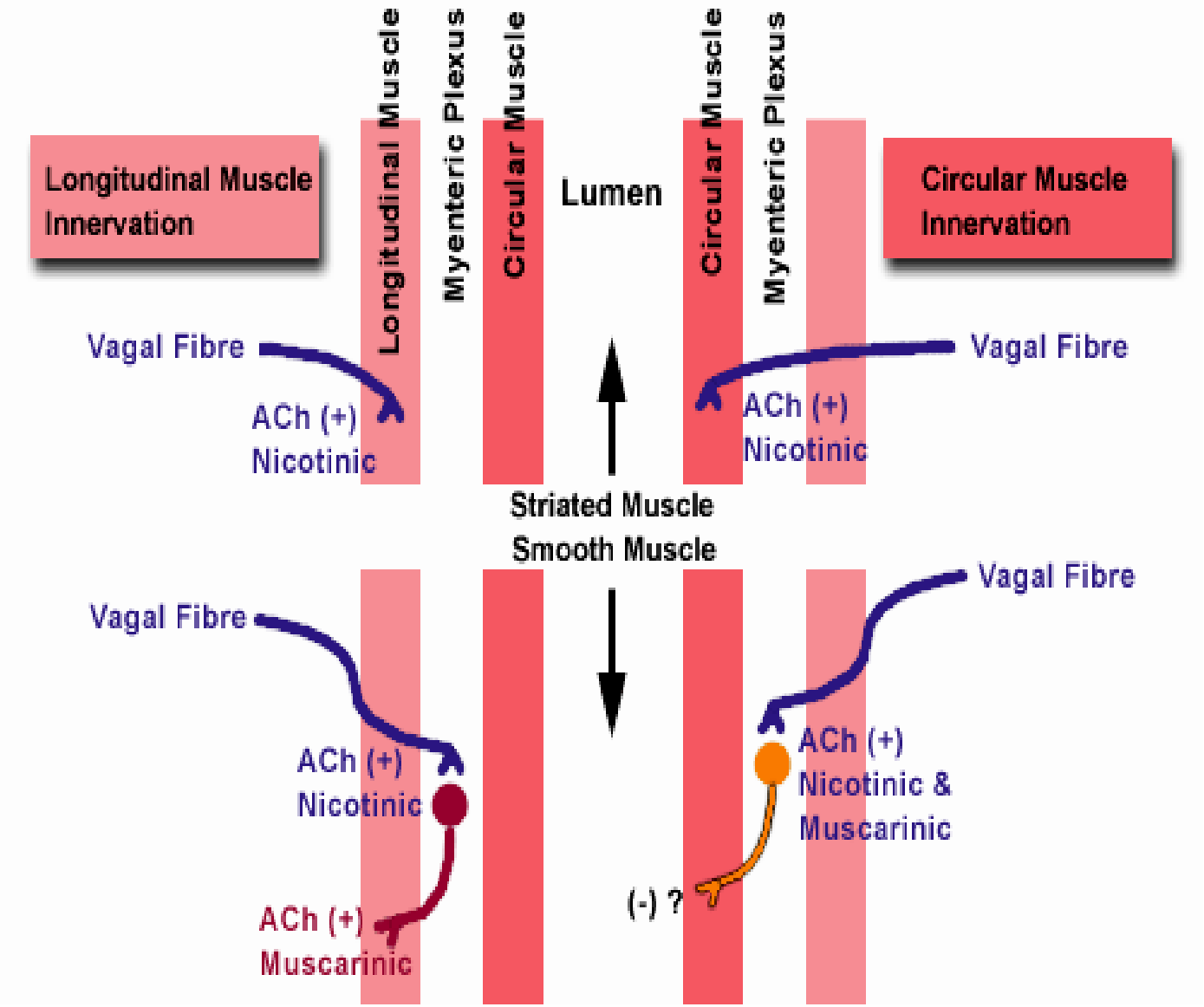




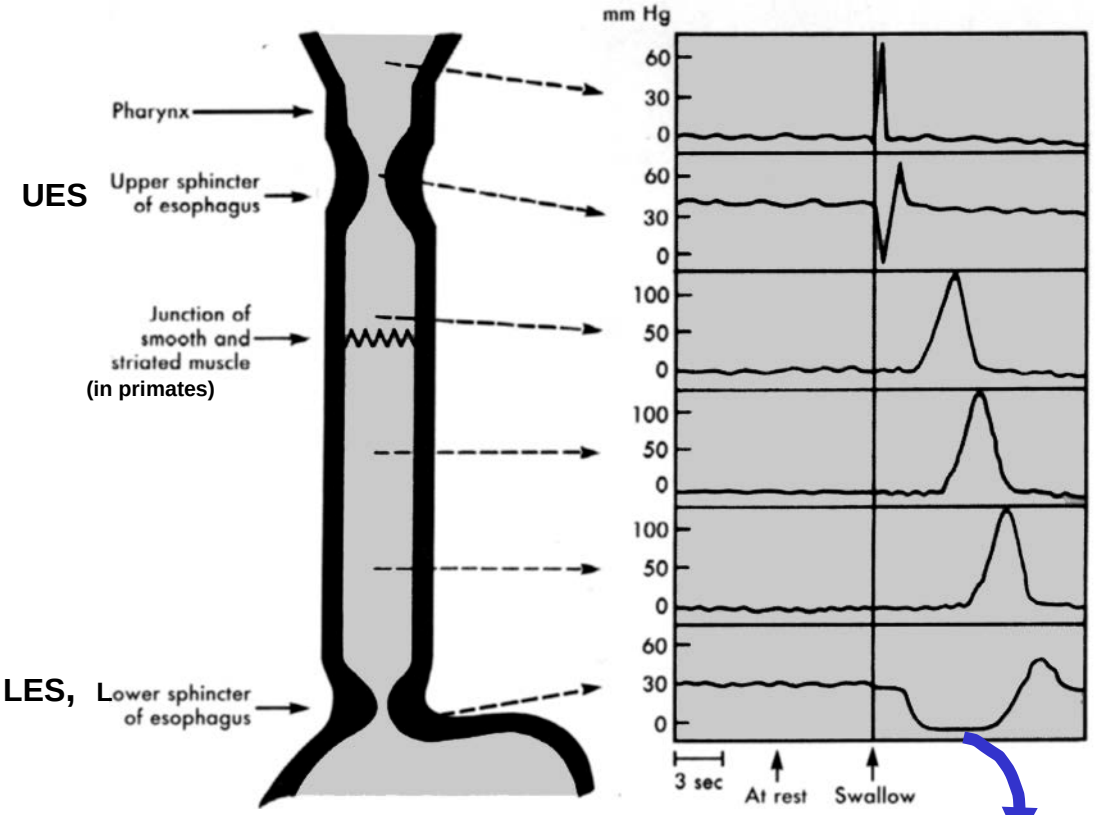
■ **Fig. 38-16** Schematic representation of vagal control of the lower esophageal sphincter *(LES)*. Note that relaxation of the *LES* is associated with an increase in the firing rate in vagal inhibitory fibers *(VIF)* and a decreased frequency of action potentials in vagal excitatory fibers *(VEF)*. Reciprocal changes occur when the sphincter regains its resting tone. (From Miolan, JP, and Roman, C: *J Physiol* [Paris] 74:709, 1978.)


Swallowing center
A
B
C
Pharynx
UES
Striated muscle
Smooth muscle
Longitudinal layer
Circular layer
Myenteric plexus
Circular layer
Longitudinal layer
Nerve plexus
Afferent vagal pathways
Efferent vagal pathways
A Nonvagal nuclei
B Nucleus ambiguus
C Dorsal motor nucleus
Myenteric ganglia
UES Upper esophageal sphincter

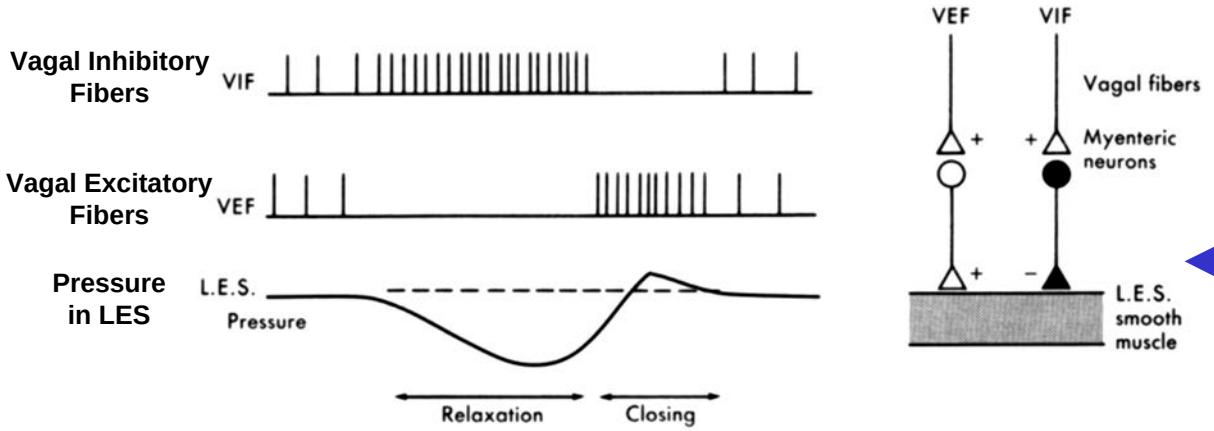
Inervação do esôfago



Integração do reflexo da deglutição



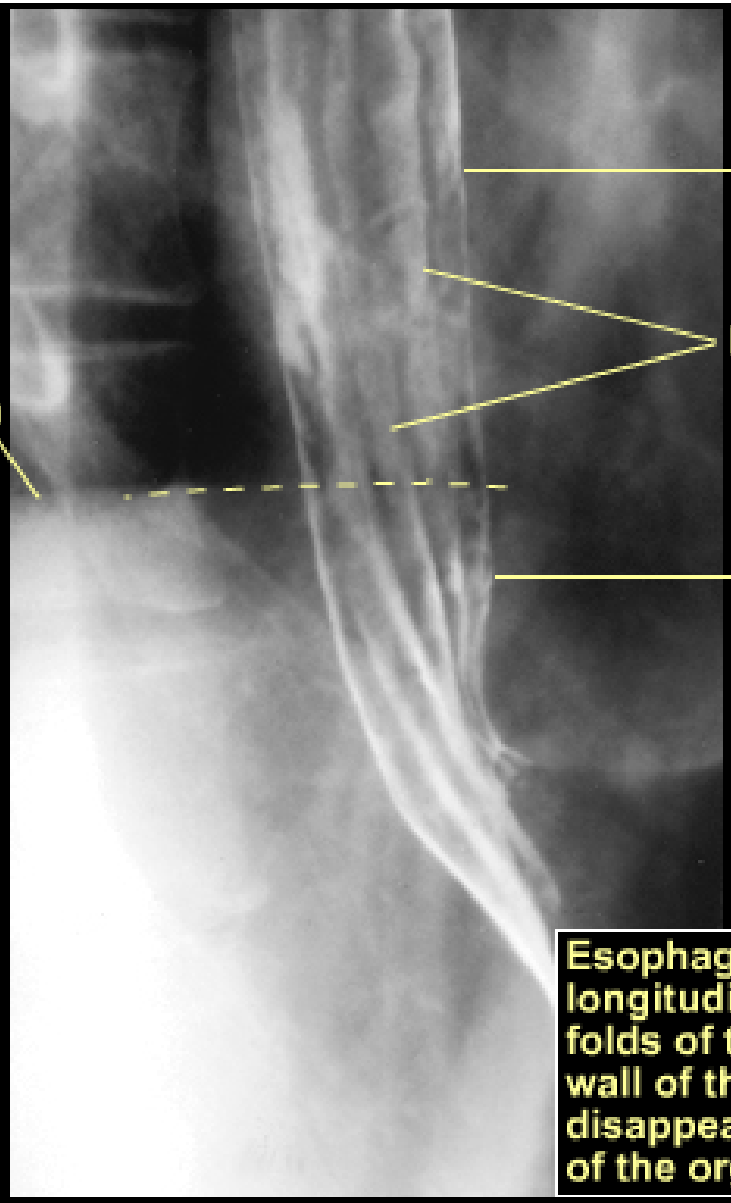
Como o EEI é regulado?



■ **Fig. 38-16** Schematic representation of vagal control of the lower esophageal sphincter *(LES)*. Note that relaxation of the *LES* is associated with an increase in the firing rate in vagal inhibitory fibers *(VIF)* and a decreased frequency of action potentials in vagal excitatory fibers *(VEF)*. Reciprocal changes occur when the sphincter regains its resting tone. (From Miolan, JP, and Roman, C: *J Physiol* [Paris] 74:709, 1978.)

An oblique projection of the esophagogastric junction following air and barium contrast; the patient swallowed thick barium contrast followed by air-producing granules, resulting in an air-contrast relief of the esophagus. Note:

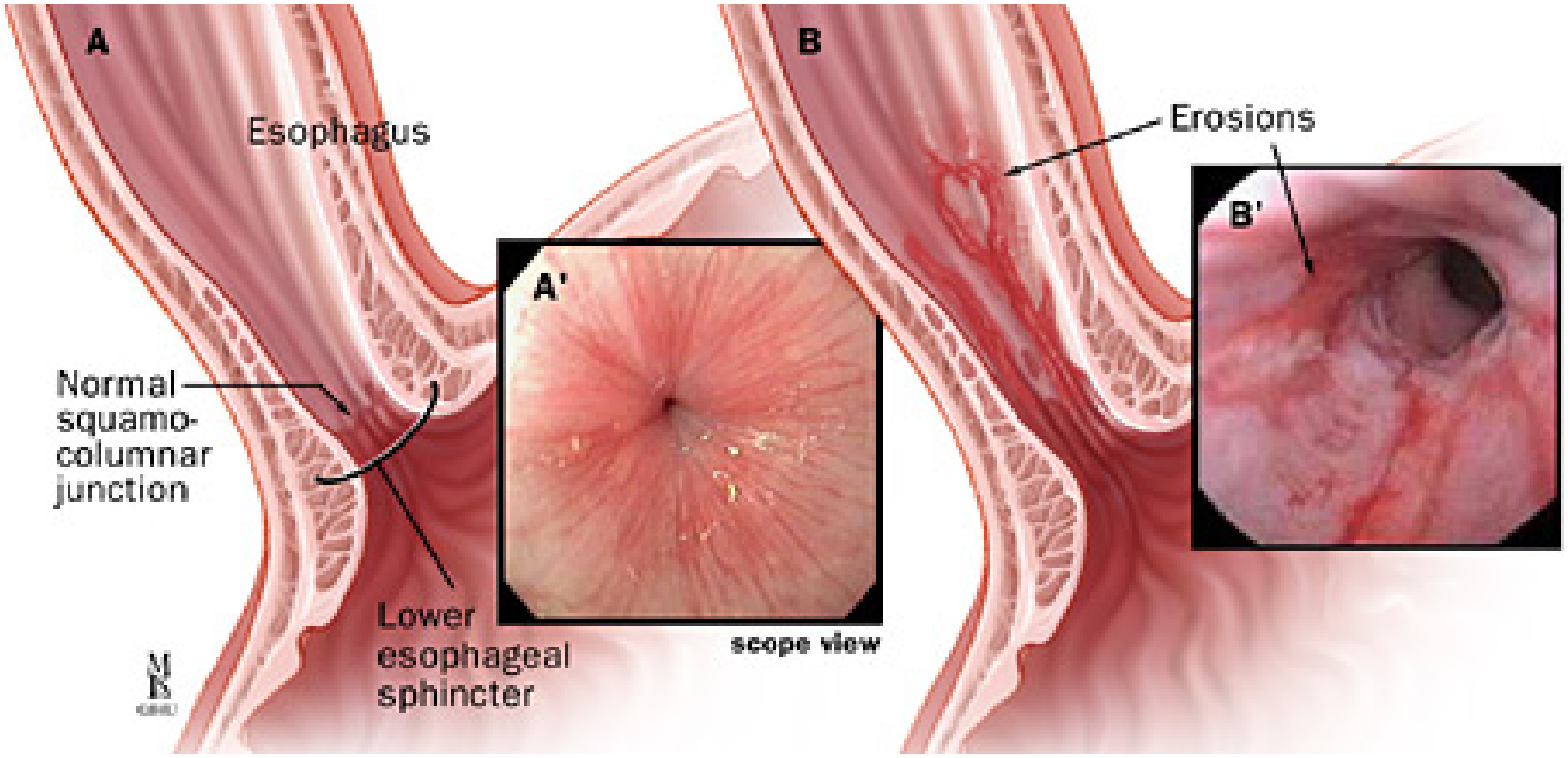
1) The radiograph depicts both thoracic and abdominal portions of the esophagus. The abdominal portion of the adult esophagus is typically about 1.5 cm in length.



extraído (enquanto disponível) de: http://www.netanatomy.com/nosubscription/notvalidip.htm

Doenças do refluxo gastroesofágico

A inflamação é resultante de contato prolongado da mucosa com o conteúdo gástrico, podendo levar a lesões/úlceras de mucosa.

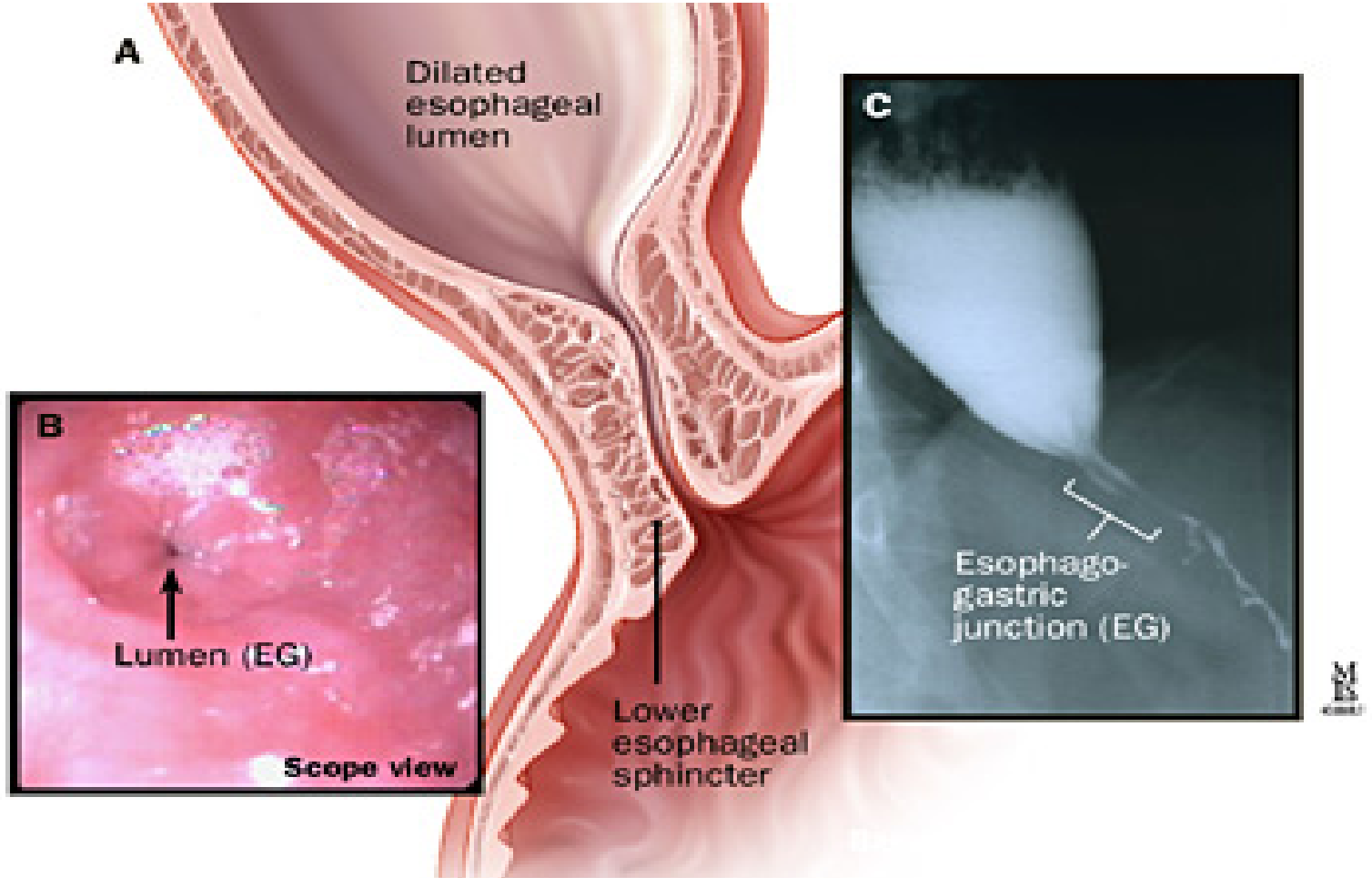


A, **B,** esôfago normal comparado à **esofagite erosiva**.;
A', **B',** visões endoscópicas

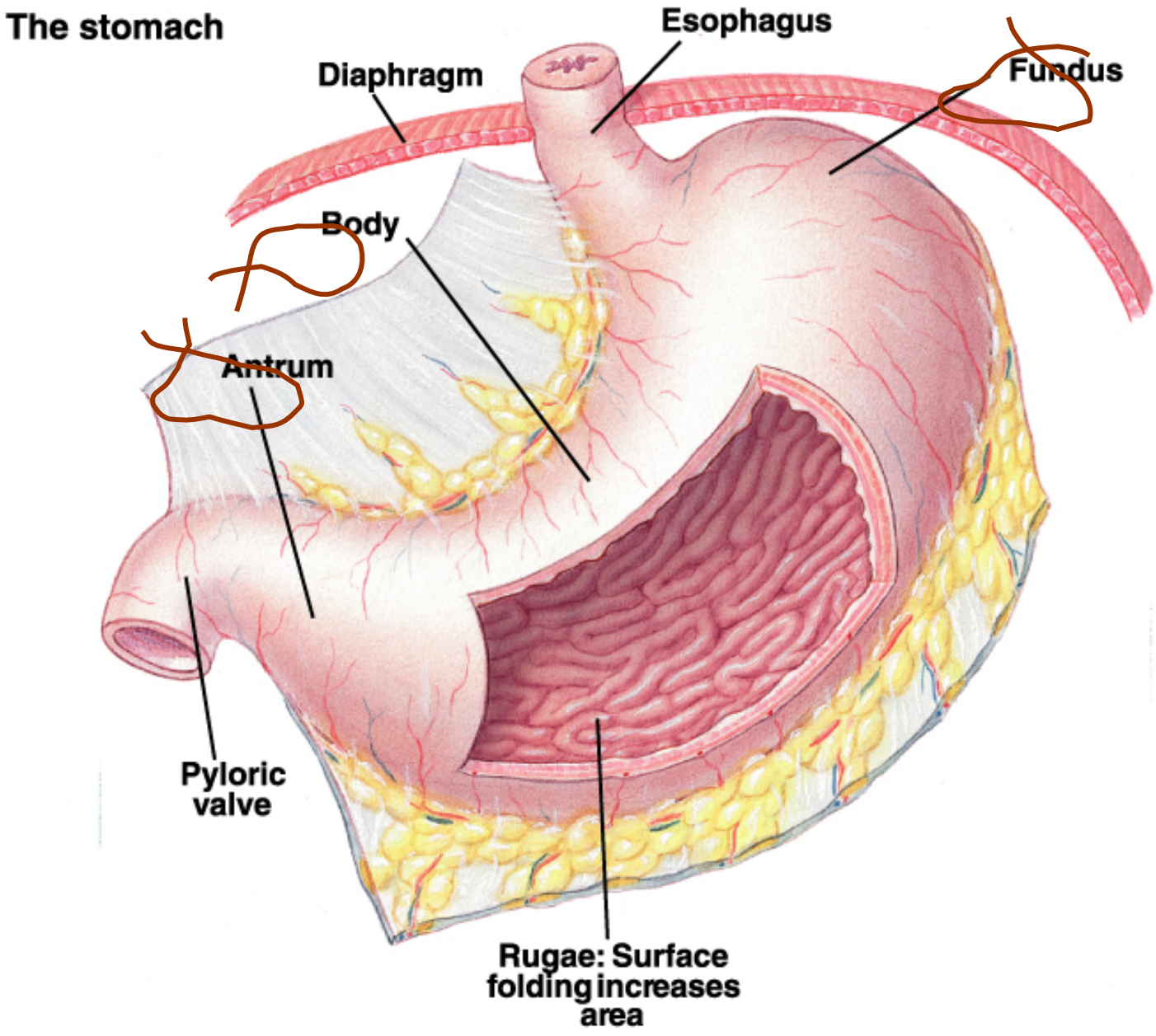
http://hopkins-gi.nts.jhu.edu/pages/latin/templates/?pg=disease3&organ=1&disease=37&pagetype=2&pagenum=588&lang_id=1

Acalasia

- esfíncter não relaxa
- perda neurônios inibitórios
- ausência de peristalse esofágica

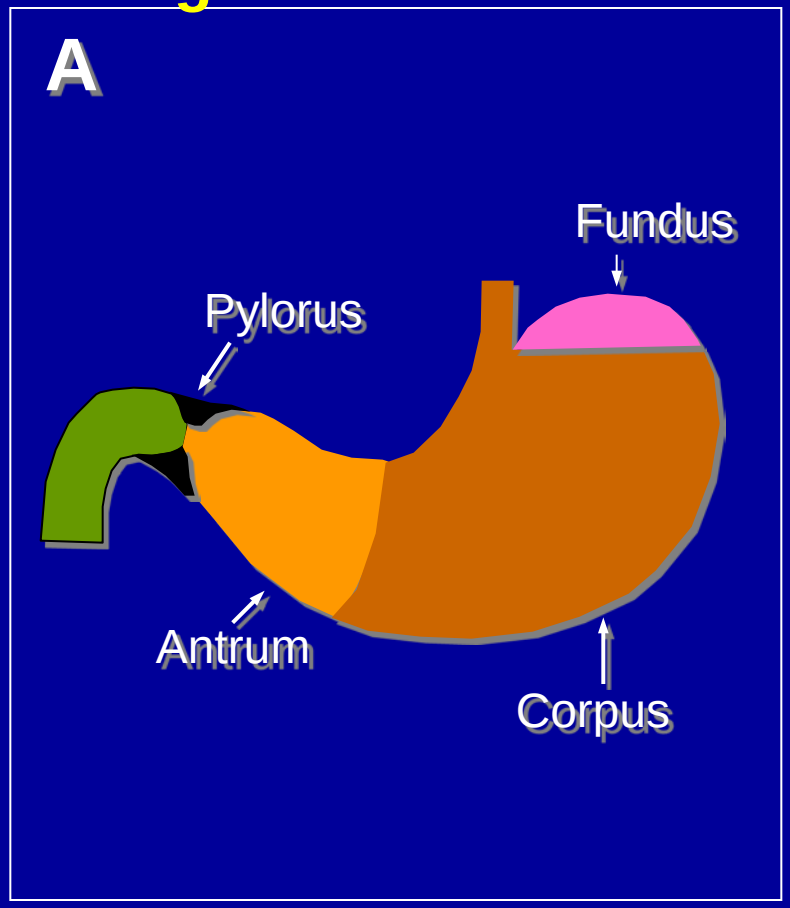


MOTILIDADE GÁSTRICA

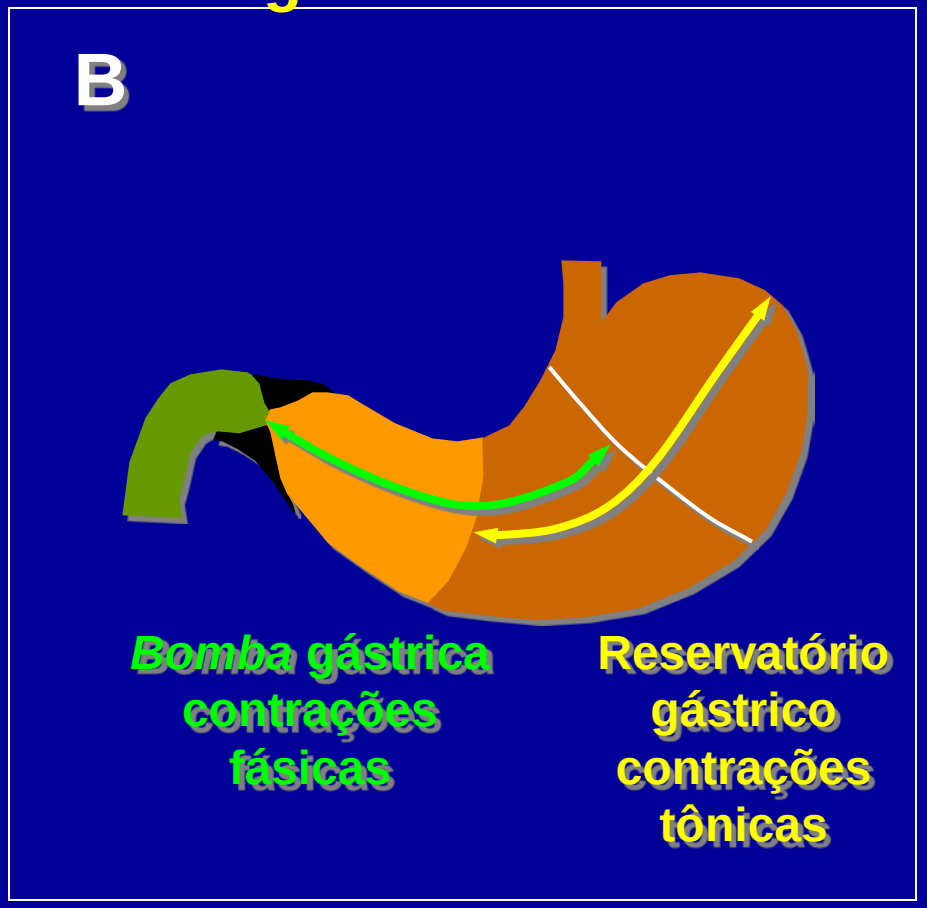


O estômago pode ser dividido em:

3 regiões anatômicas



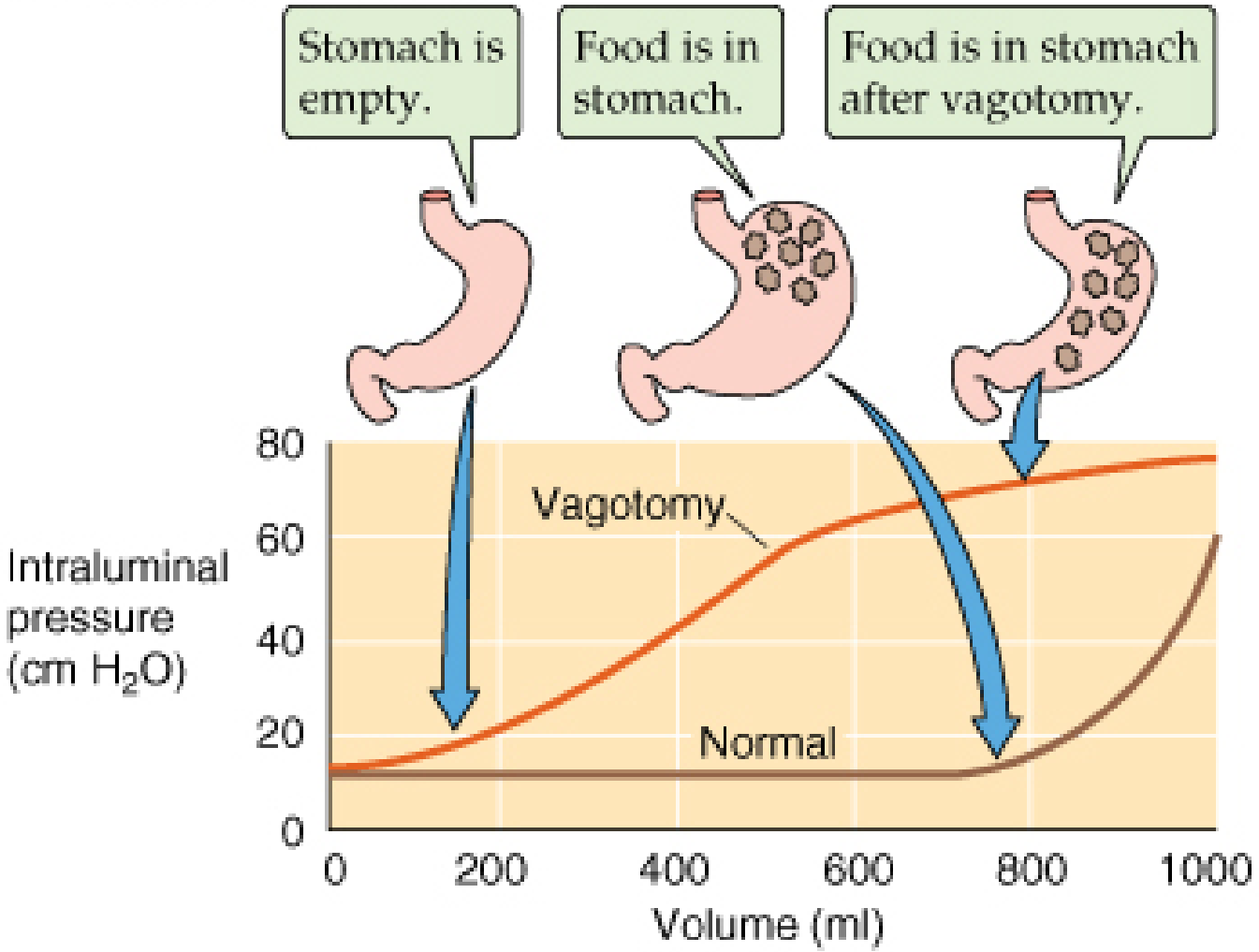
2 regiões funcionais



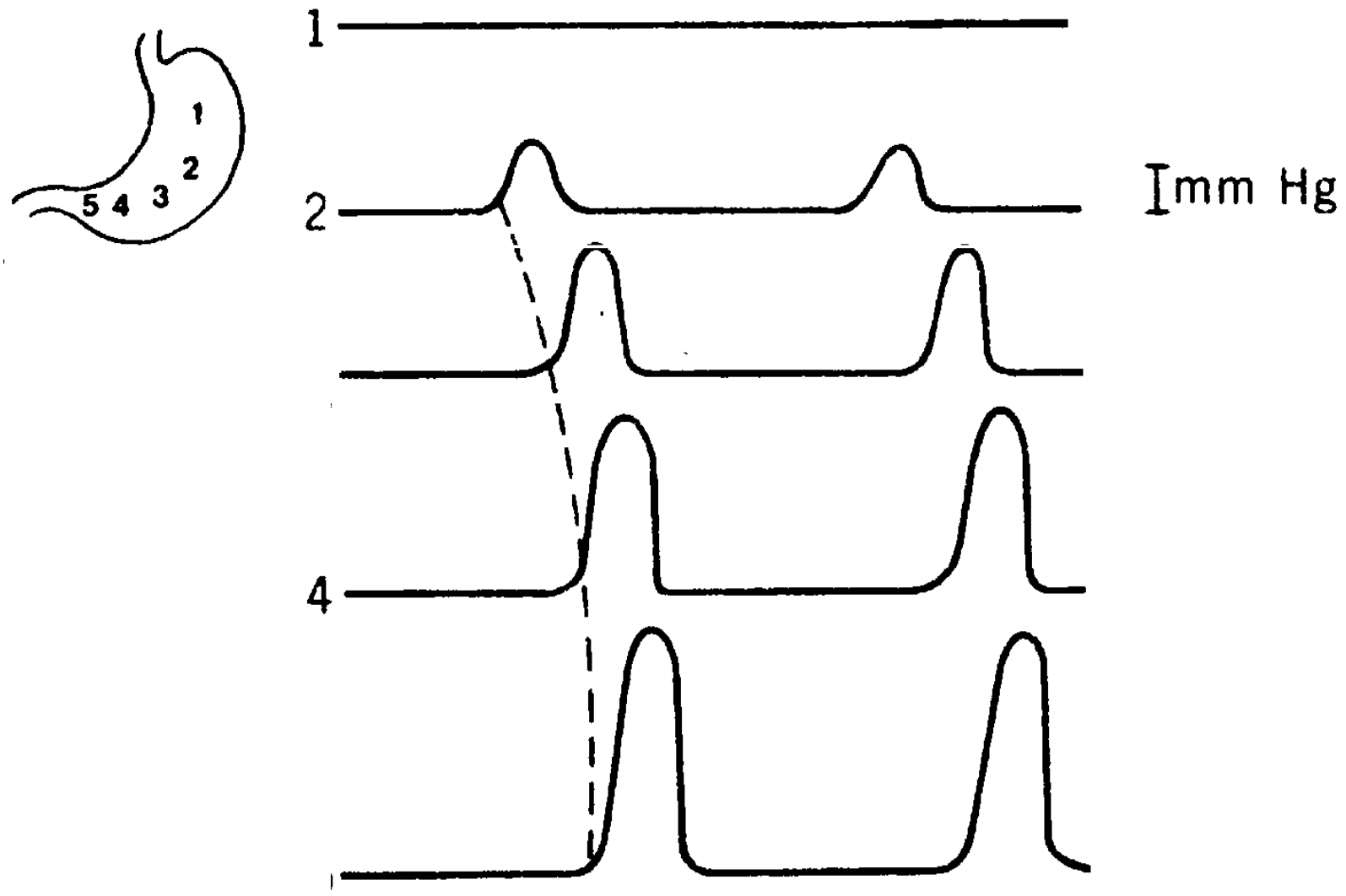
website original: http://www.wzw.tum.de/humanbiology/data/motility/34/?alt=english

Relaxamento gástrico

(receptivo e adaptativo)

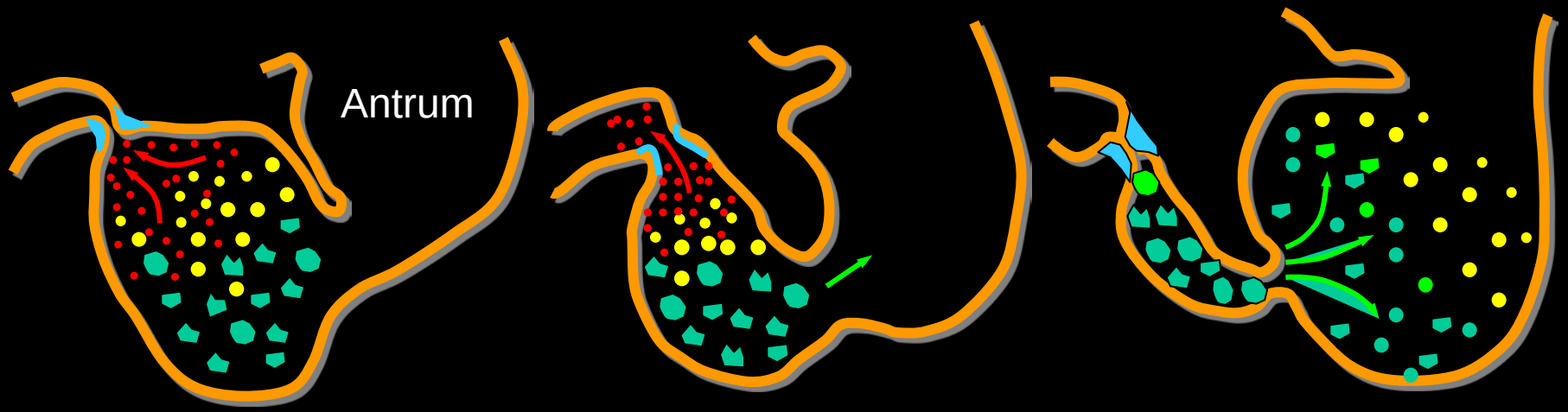


REGISTRO DA ATIVIDADE CONTRÁTIL DO ESTÔMAGO



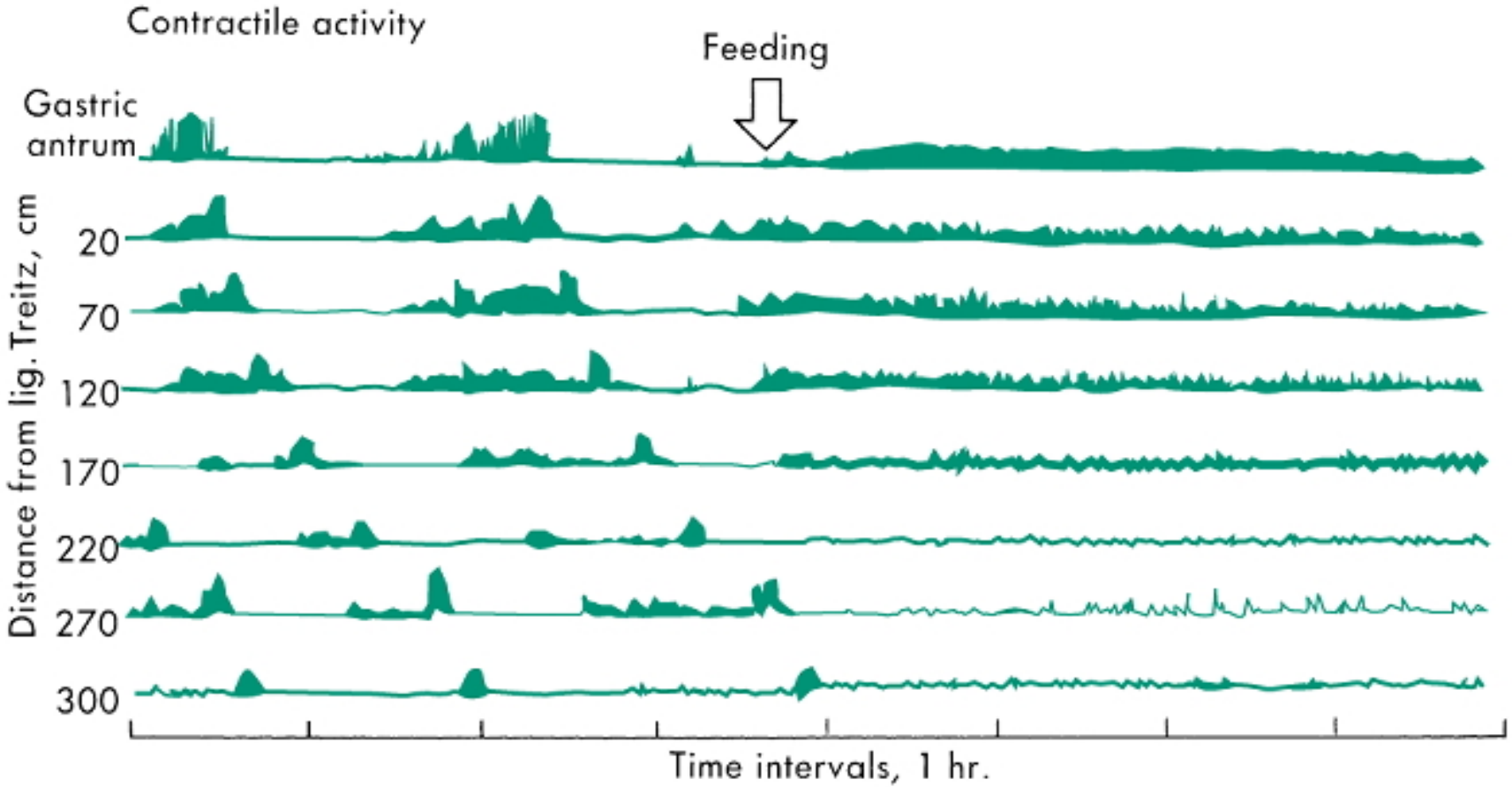
Antro gástrico: Função de propulsão, esvaziamento e moagem

Fase de propulsão **Fase de esvaziamento** **Fase de retropulsão**

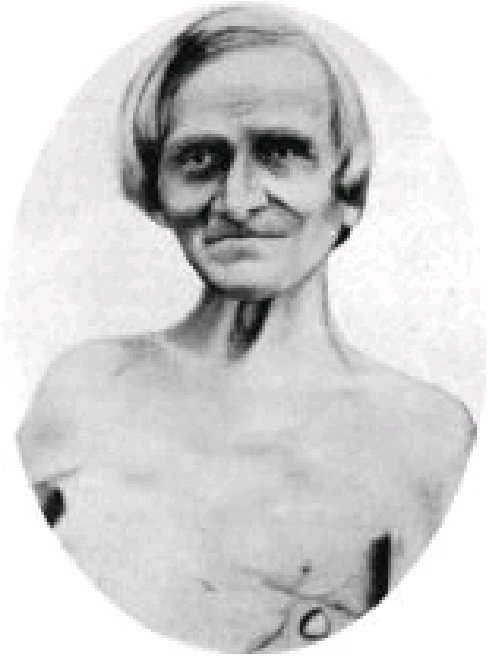


website original: *http://www.wzw.tum.de/humanbiology/data/motility/34/?alt=english*

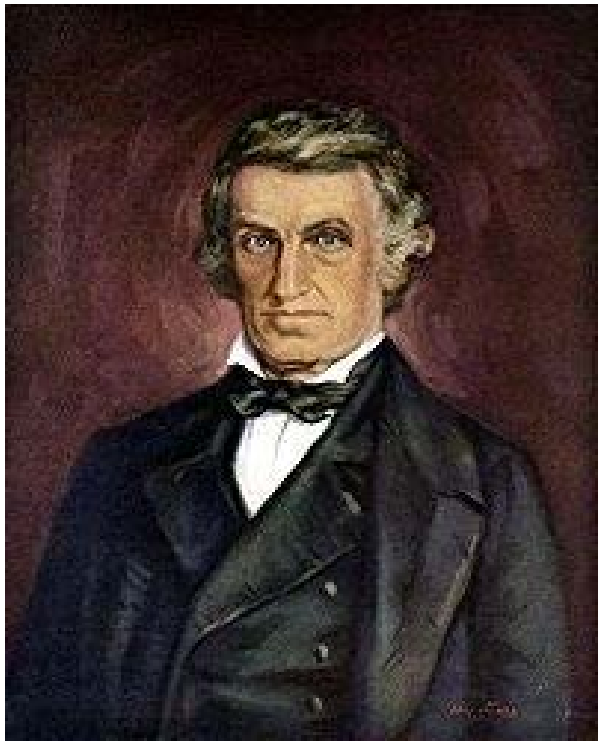
Motilidade durante o jejum:
complexo migratório mioelétrico (CMM, estômago ☞ Íleo terminal)



O pai da Fisiologia Gástrica



Alexis St Martin

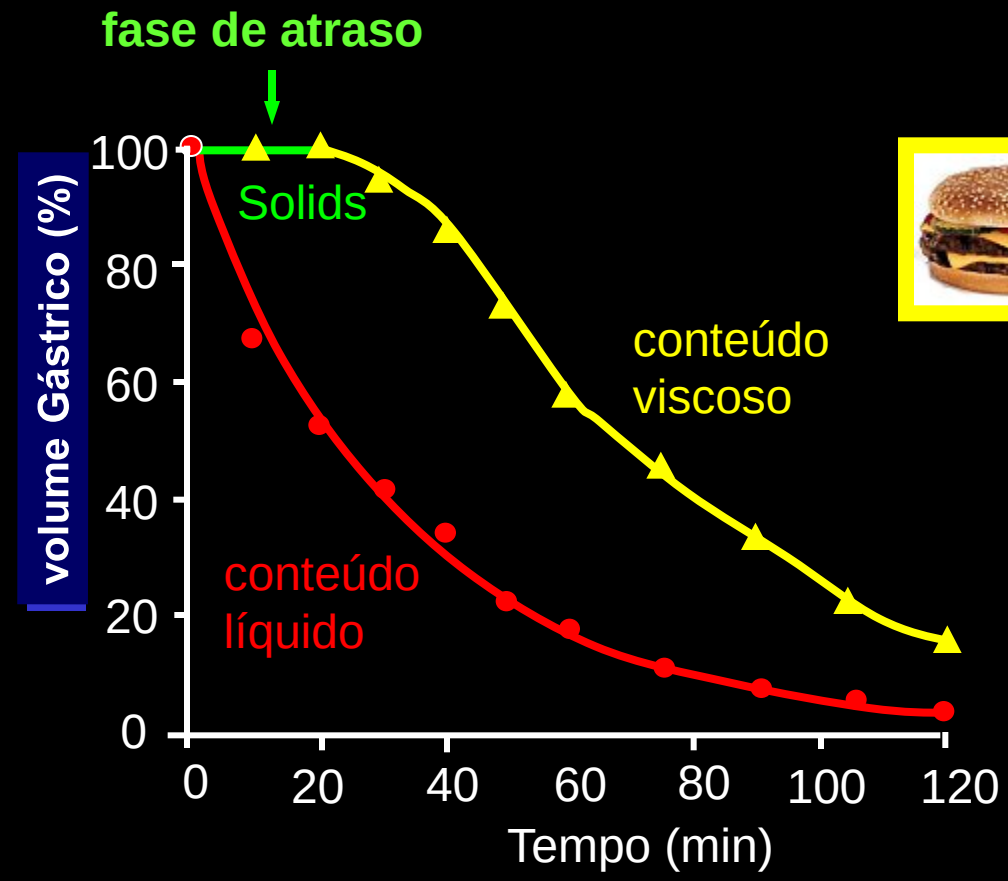


Willian Beaumont

Importância da regulação do esvaziamento gástrico

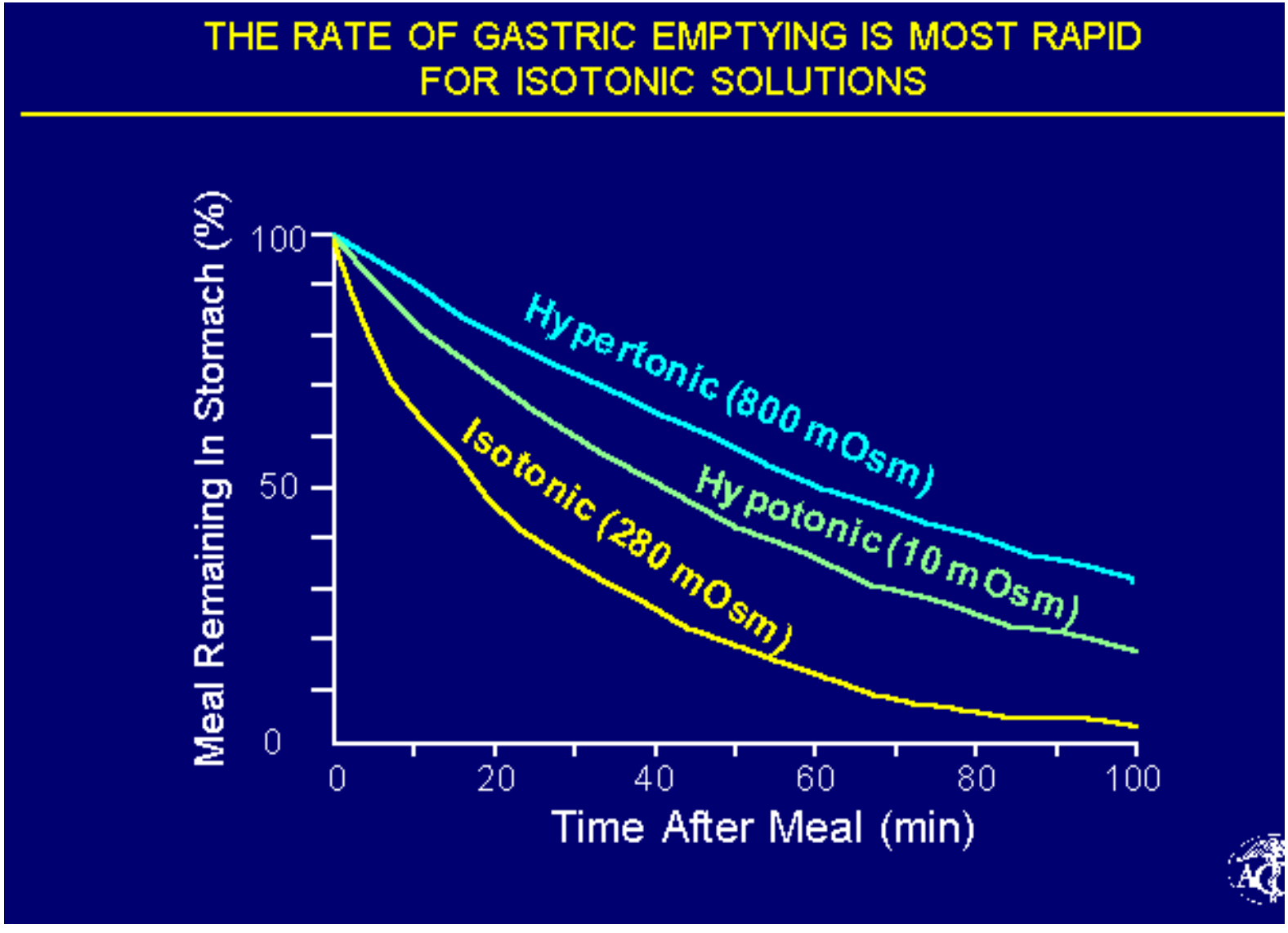
1-Permitir um esvaziamento regulado dos conteúdos gástricos a uma velocidade consistente com a capacidade de processamento do quimo pelo duodeno.

2-Evitar a refluxo dos conteúdos duodenais.

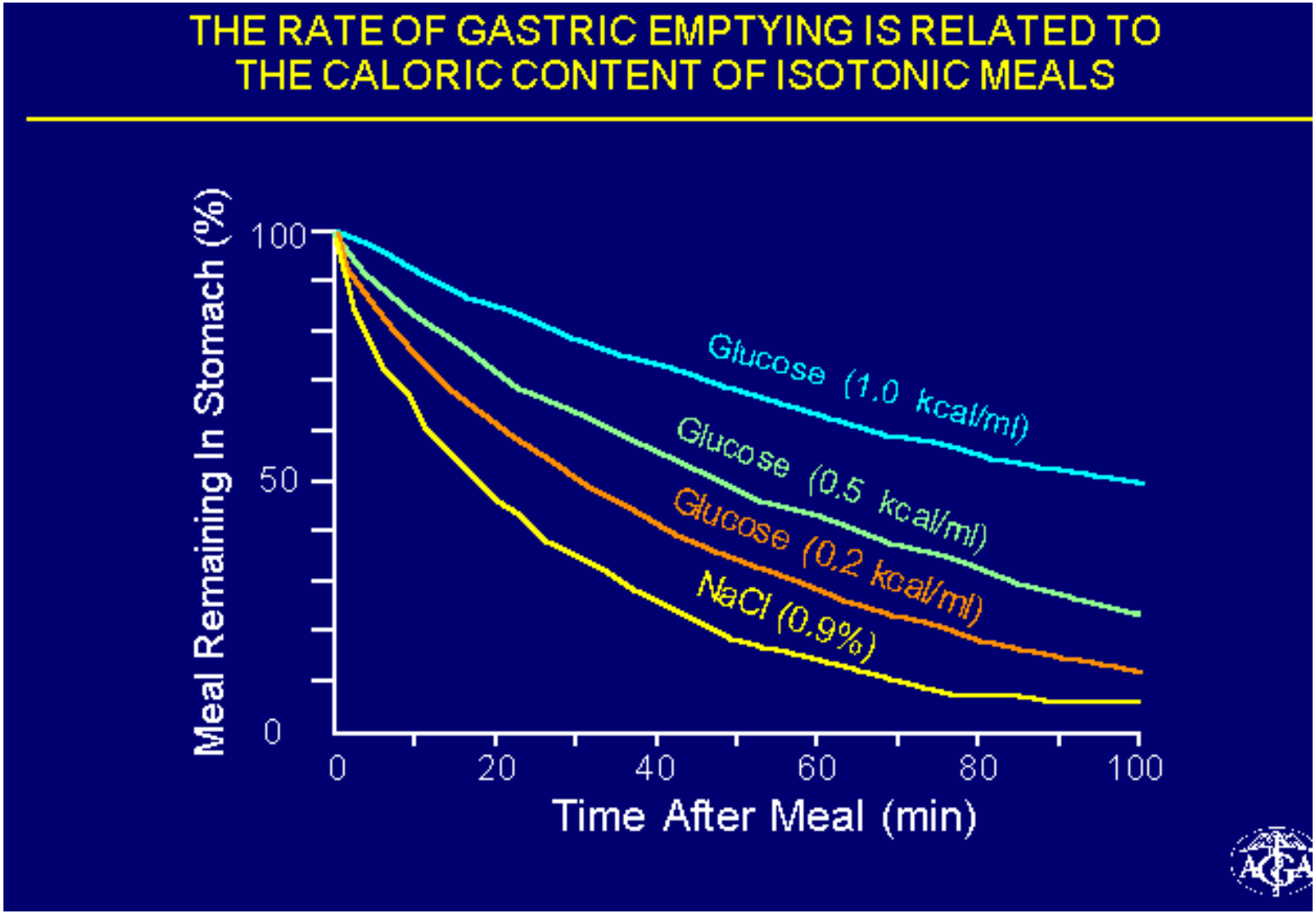


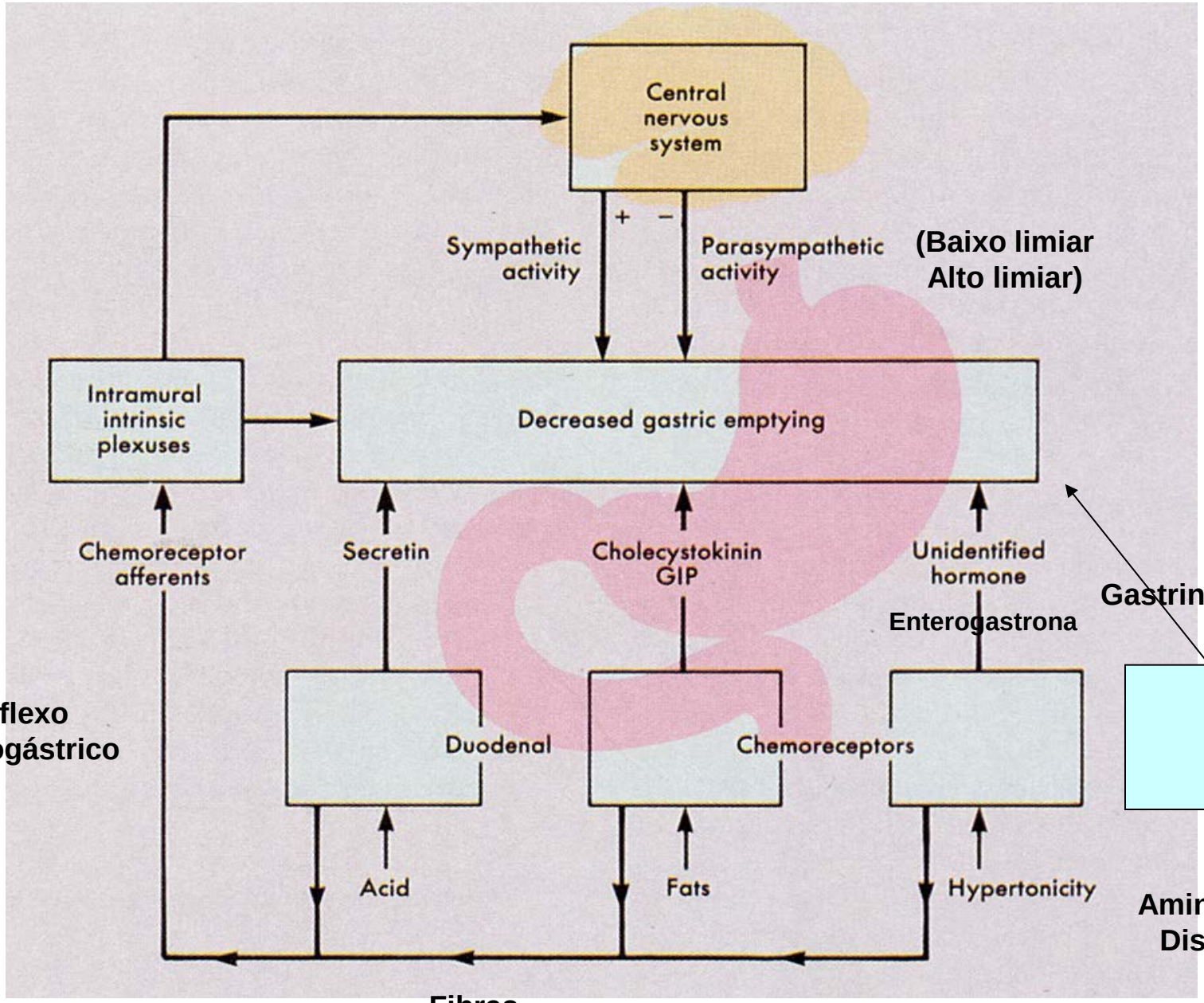
website original: http://www.wzw.tum.de/humanbiology/data/motility/34/?alt=english

Regulação esvaziamento gástrico



Regulação esvaziamento gástrico



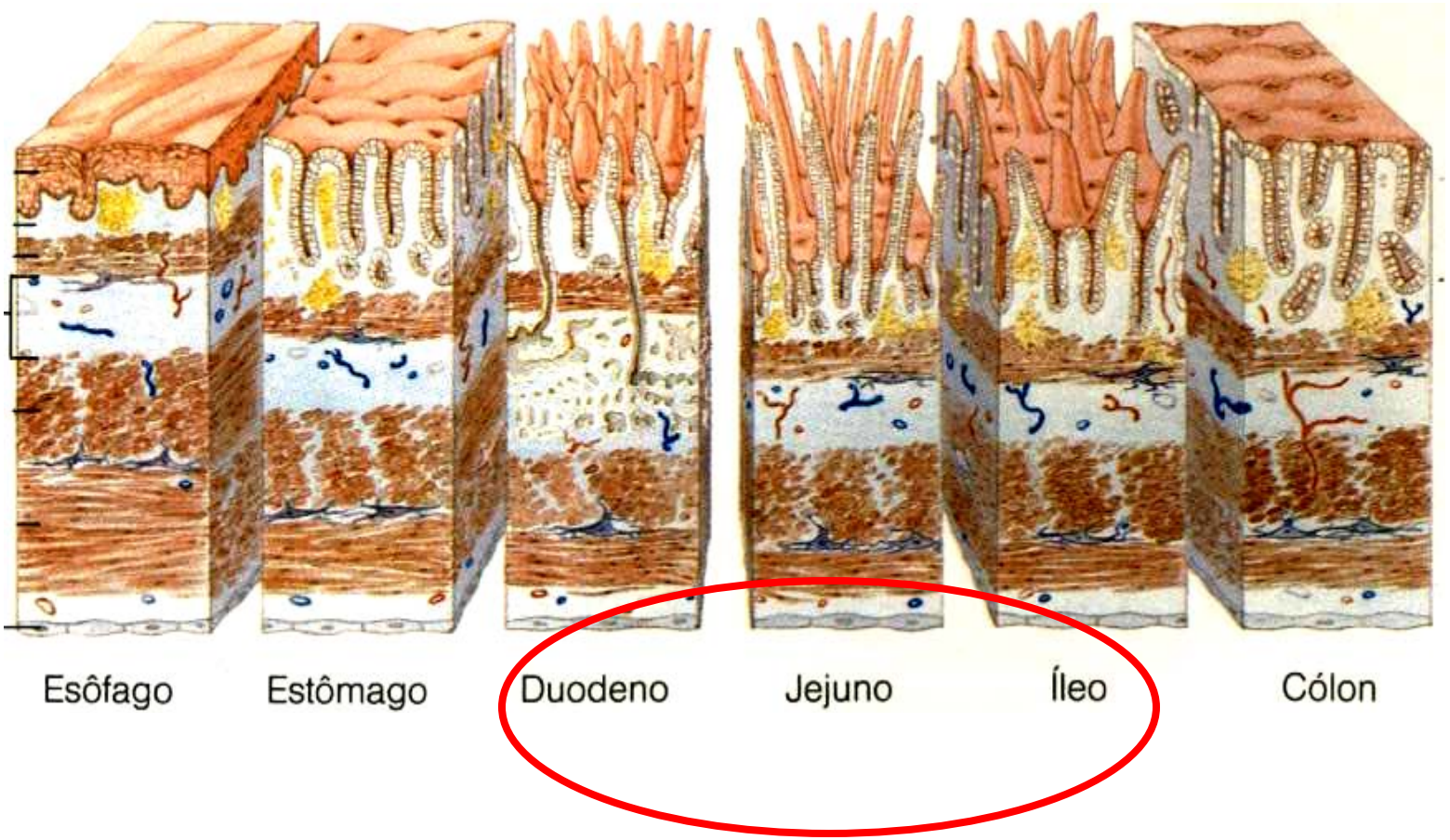

Central nervous system
+
−
Sympathetic activity
Parasympathetic activity
(Baixo limiar
Alto limiar)
Intramural intrinsic plexuses
Decreased gastric emptying
Chemoreceptor afferents
Secretin
Cholecystokinin GIP
Unidentified hormone
Gastrina
Enterogastrona
Reflexo Enterogástrico
Duodenal
Chemoreceptors
Acid
Fats
Hypertonicity
Aminoácidos
Distensão
Fibras Vagais

MOTILIDADE

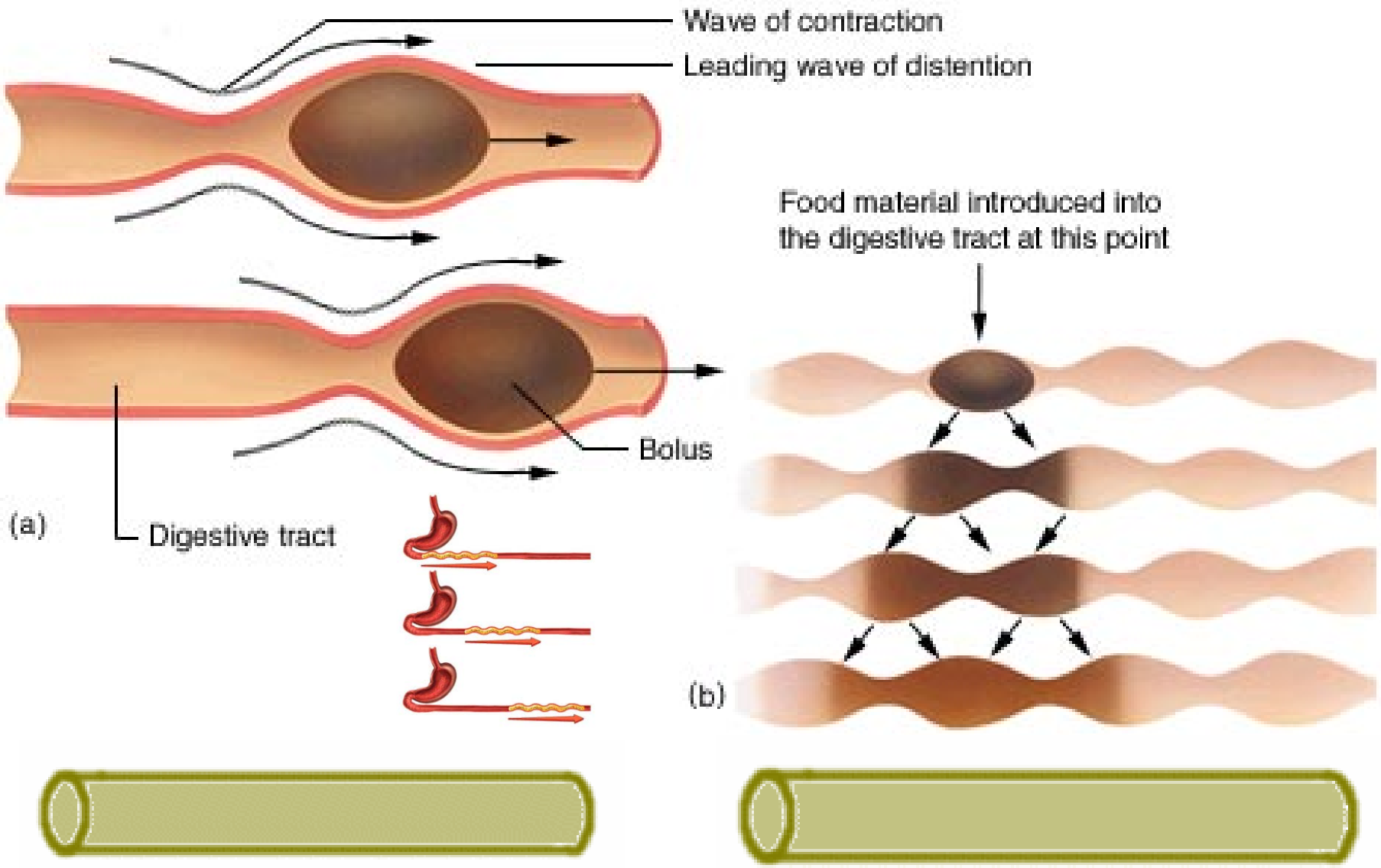
DO

INTESTINO DELGADO

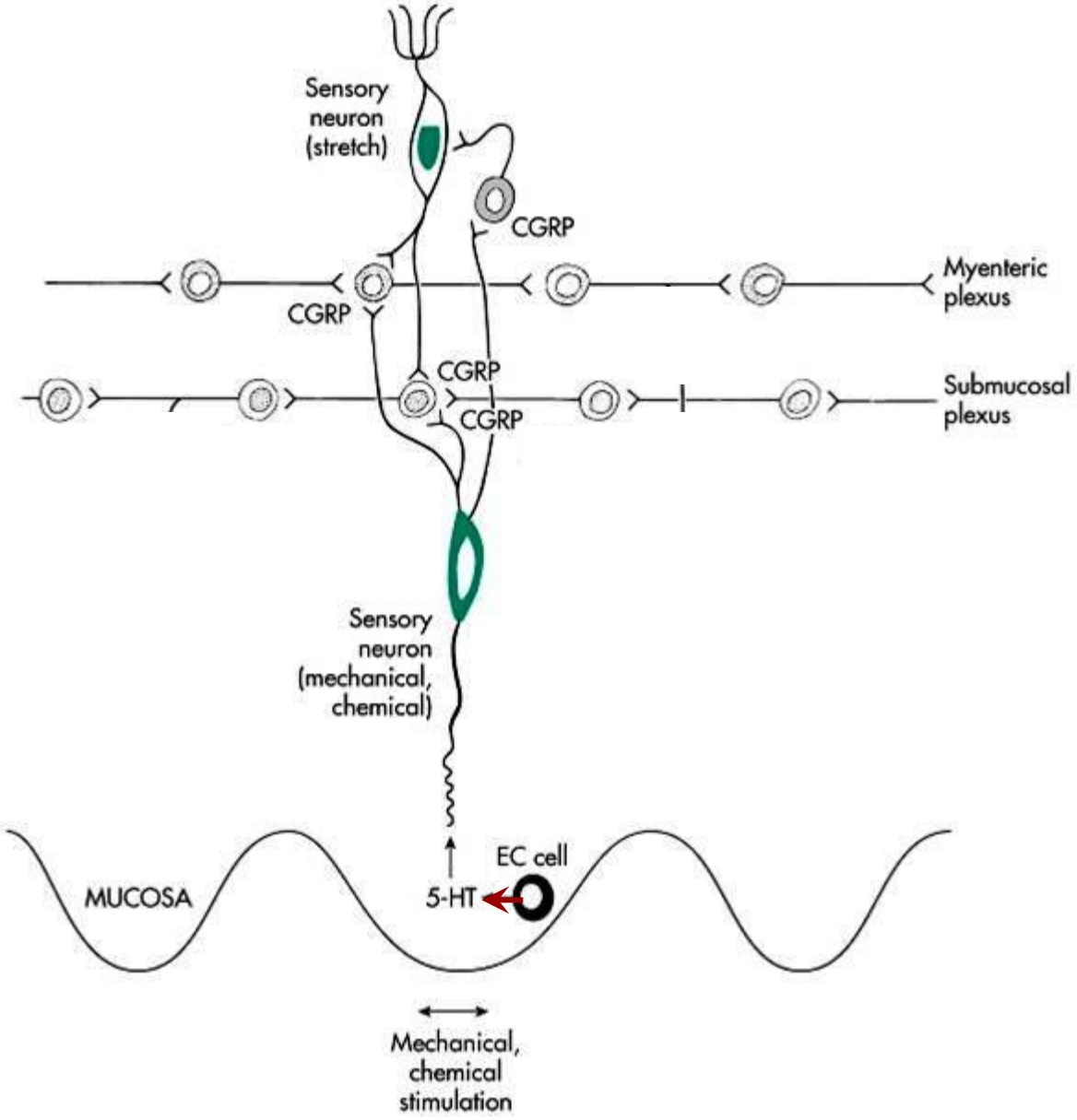
TIPOS DE EPITÉLIO DO TGI



Movimentos do intestino delgado: peristálticos (propulsivos) e de mistura (*segmentares*)

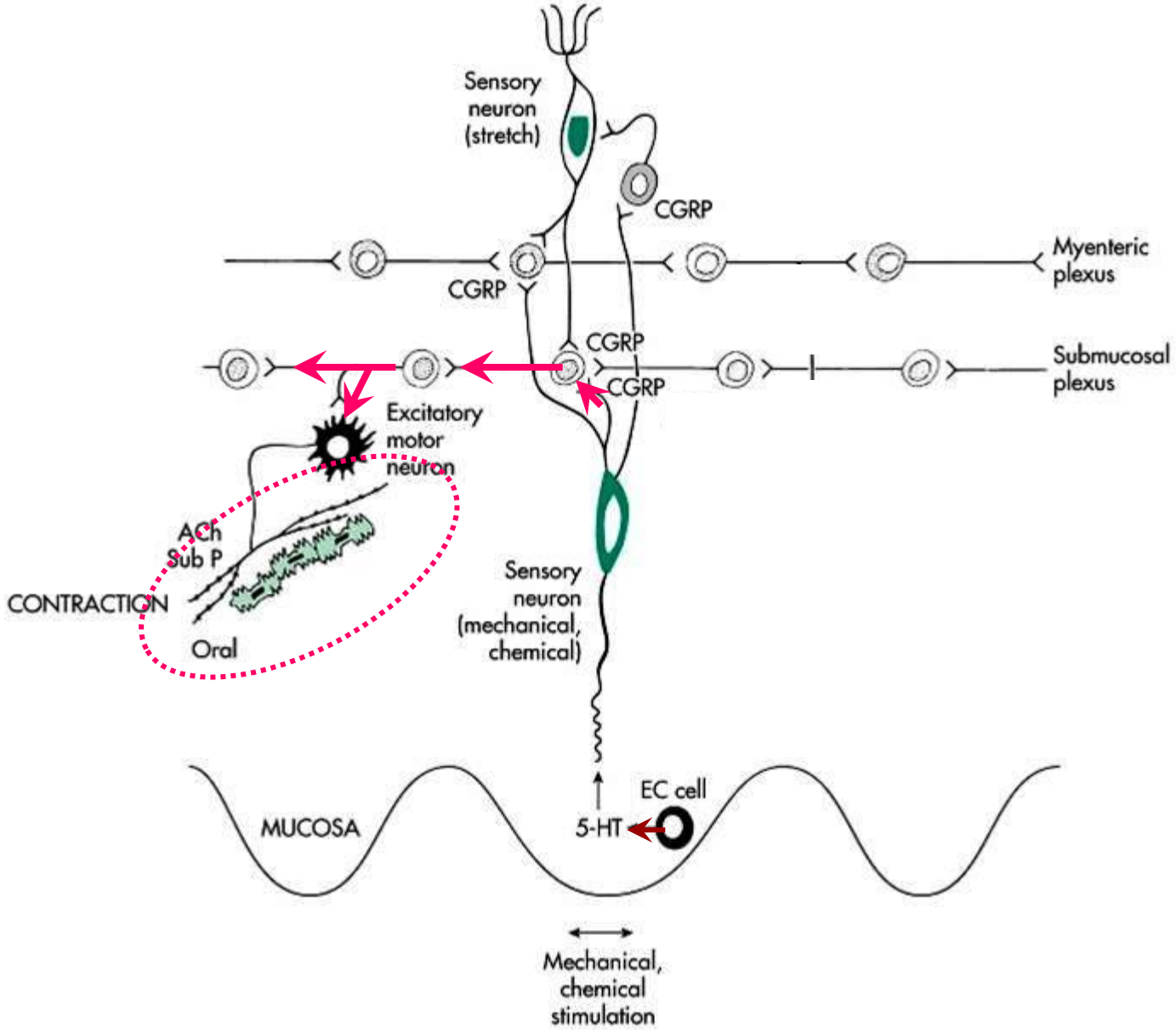


Exemplo de reflexos intrínsecos do sistema nervoso entérico
Movimento peristáltico



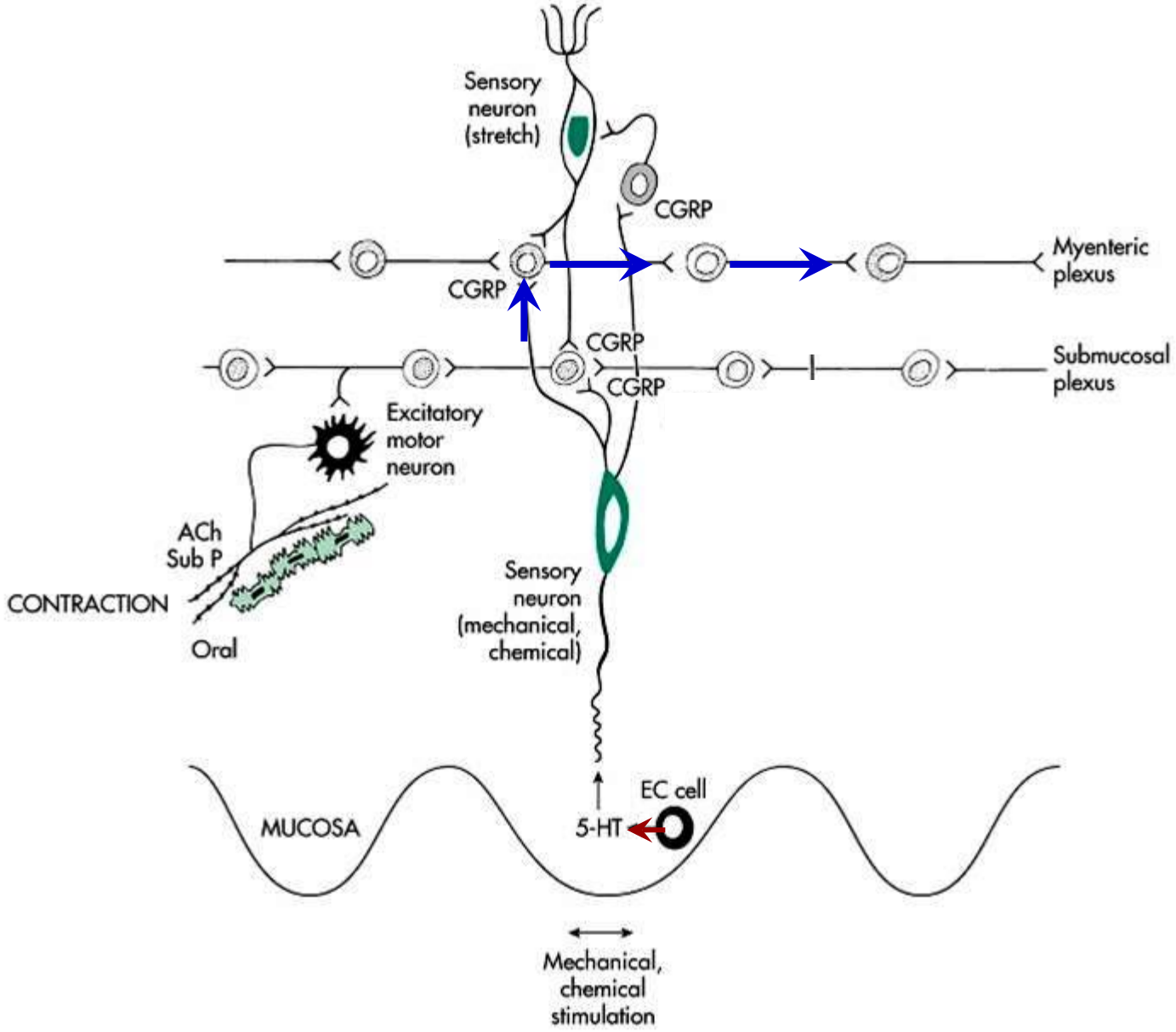
Berne et al., 2004

Exemplo de reflexos intrínsecos do sistema nervoso entérico
Movimento peristáltico



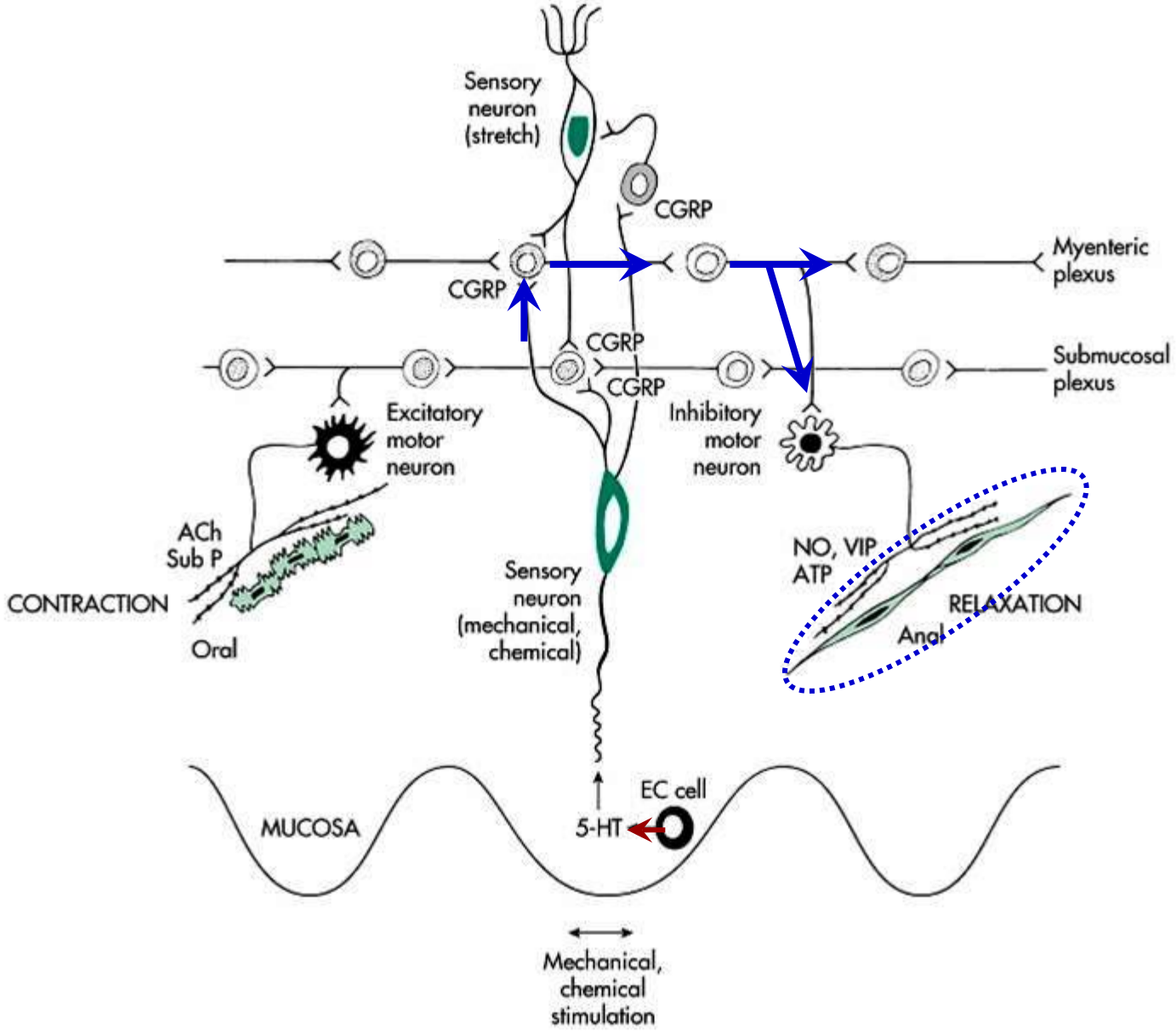
Berne et al., 2004

Exemplo de reflexos intrínsecos do sistema nervoso entérico
Movimento peristáltico



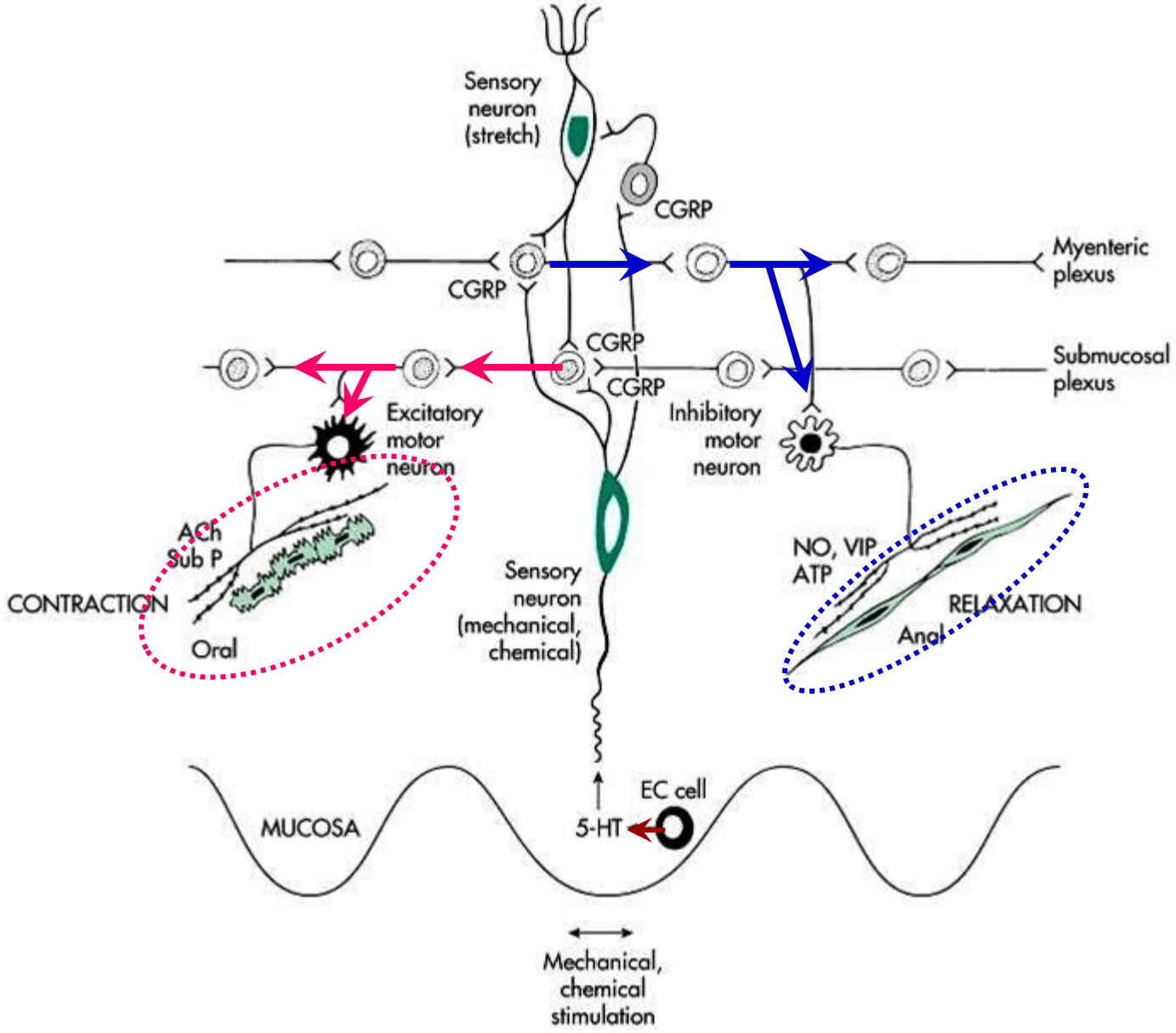
Berne et al., 2004

Exemplo de reflexos intrínsecos do sistema nervoso entérico
Movimento peristáltico



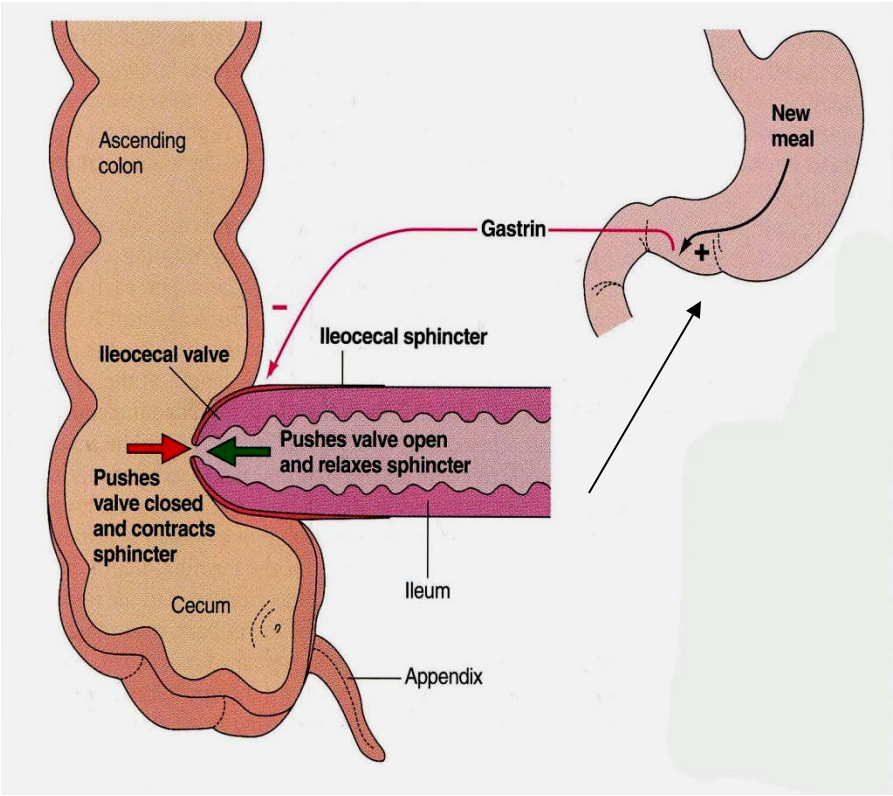
Berne et al., 2004

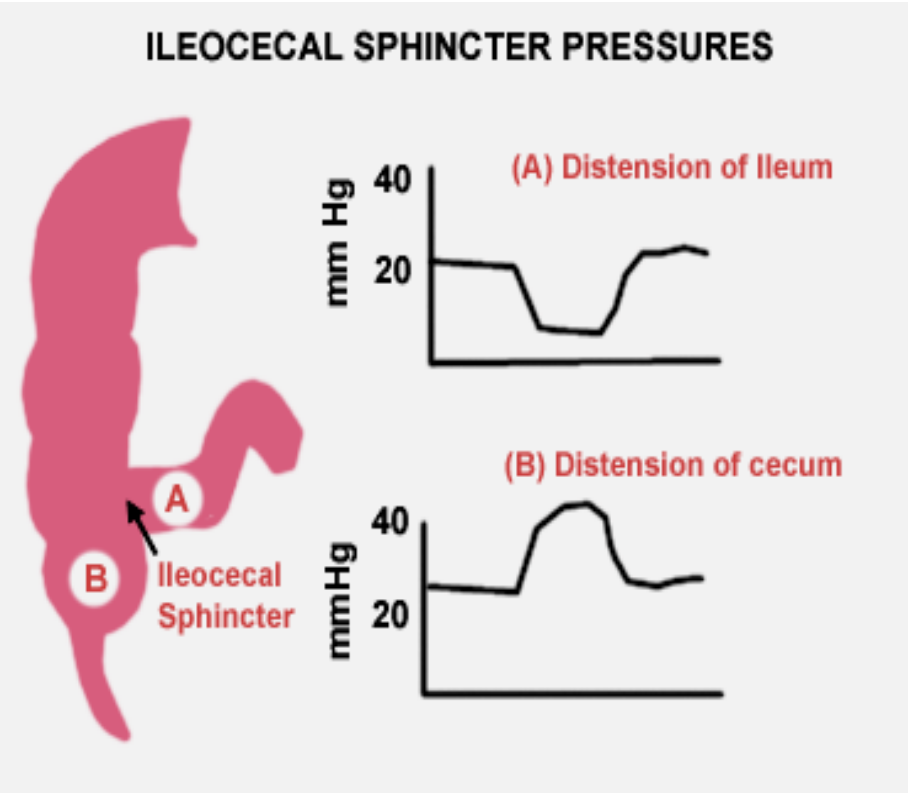
Exemplo de reflexos intrínsecos do sistema nervoso entérico
Movimento peristáltico



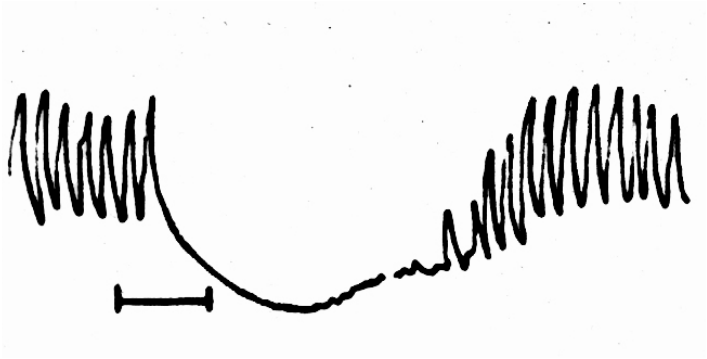
Berne et al., 2004

Esfíncter ileocecal e o “Freio ileal” (peptídeo YY)

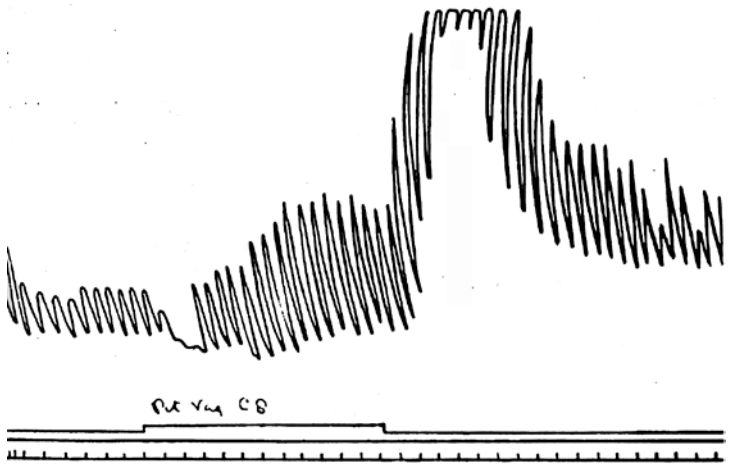




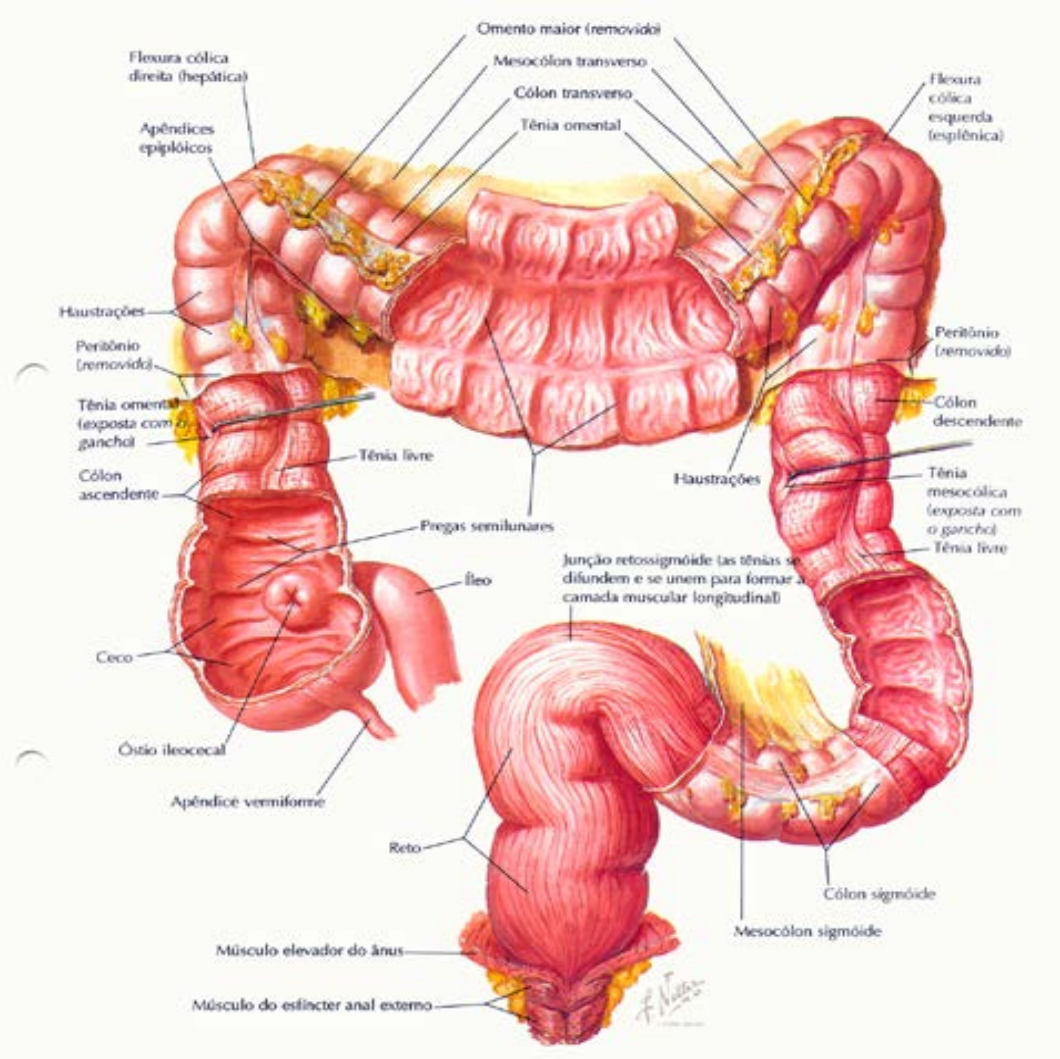
Esplâncnico



Vago

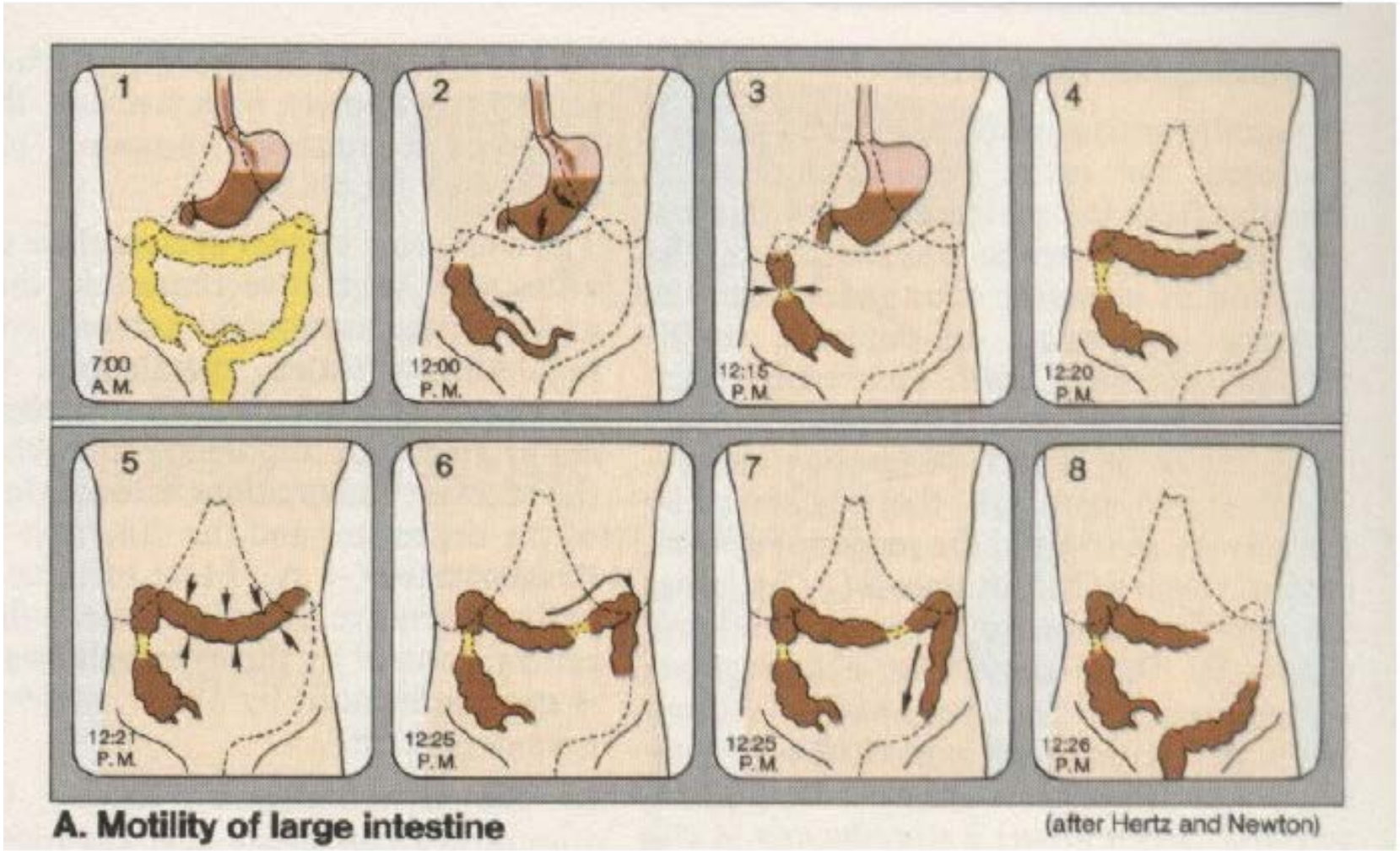


MOTILIDADE DO INTESTINO GROSSO



⇔ Movimento de mistura- haustrações

Movimentos de Massa



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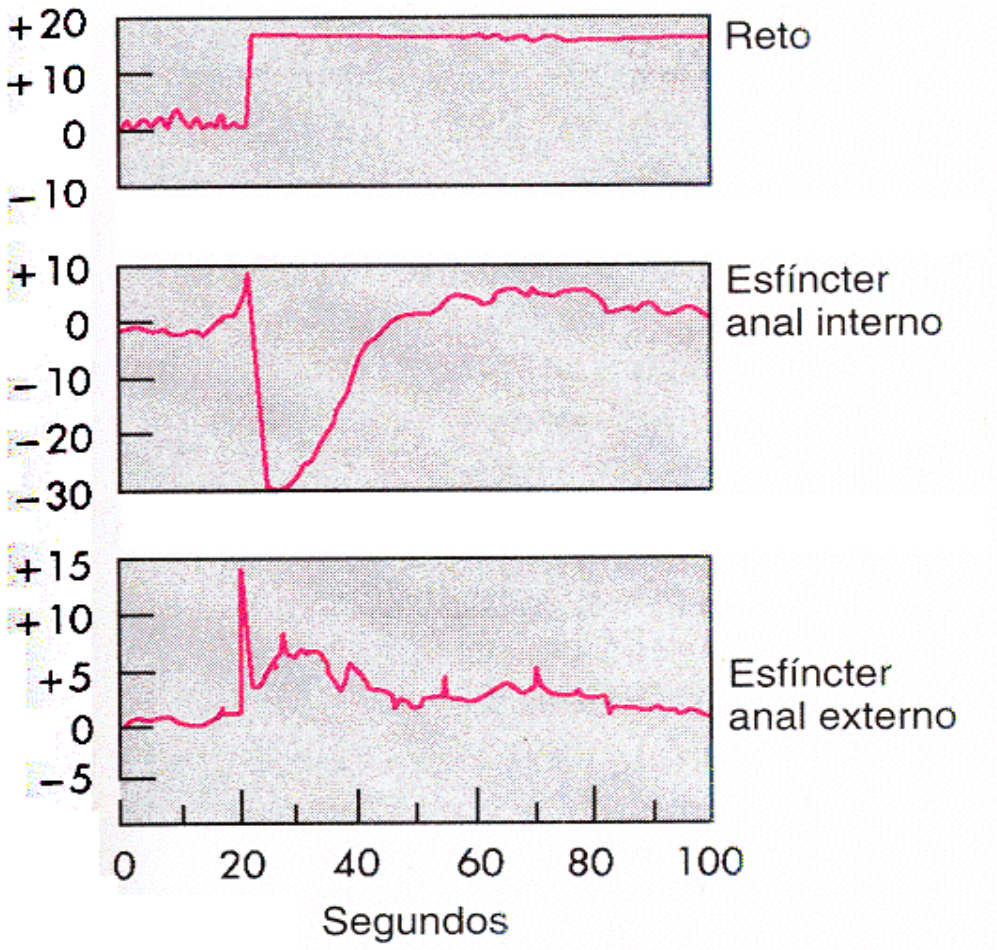

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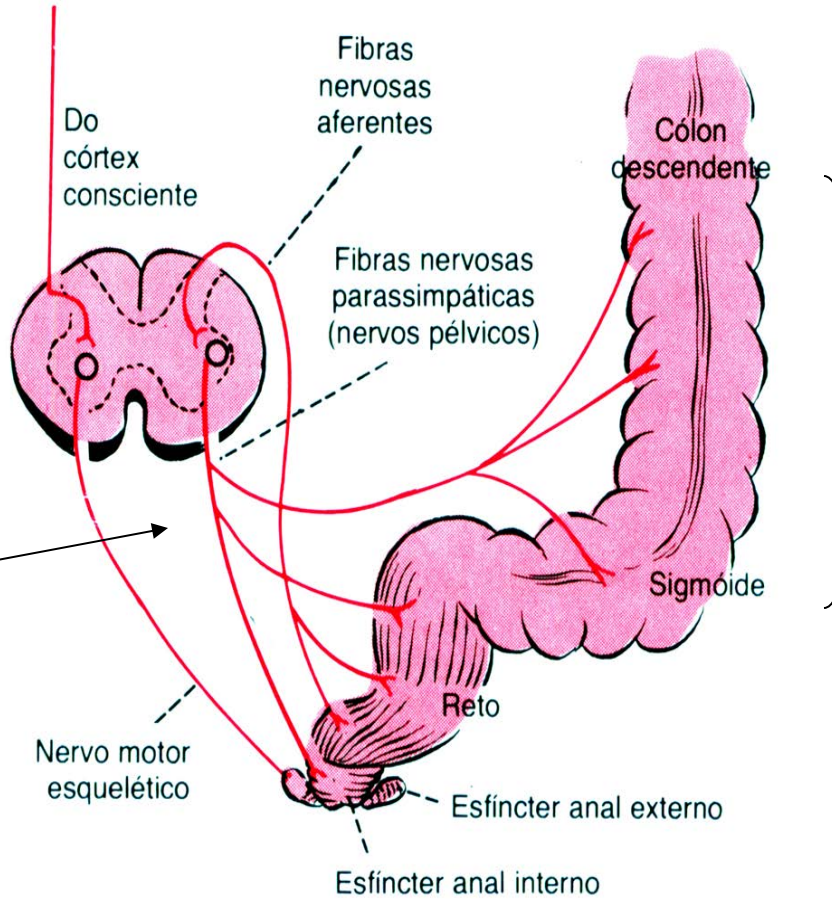

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INTRÍNSECO

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