

Optimizing the Upper GI:

**Mind, Mouth, and
Stomach**

**Anatomy and
Physiology of the
GI Tract**

With

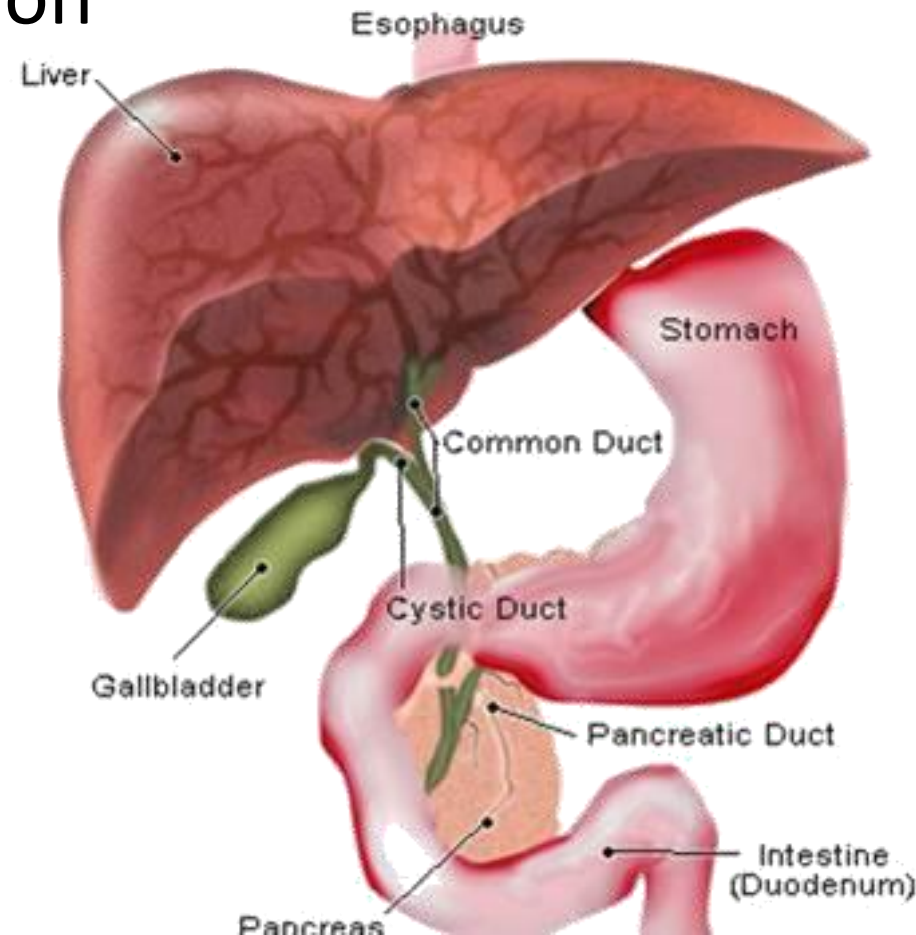
Dr. Ritamarie Loscalzo



Medical Disclaimer: The information in this presentation is not intended to replace a one-on-one relationship with a qualified health care professional and is not intended as medical advice. It is intended as a sharing of knowledge and information from the research and experience of Dr. Ritamarie Loscalzo, drritamarie.com, and the experts who have contributed. We encourage you to make your own health care decisions based upon your research and in partnership with a qualified health care professional.

Part 2: Optimizing Your Upper GI - Stomach Acid and Enzymes

- The structure and function of the upper GI tract
- The physiology of the upper GI tract – what it does and how it does it
- How to know when something is wrong
- How to correct what's wrong



3 Main Functions of the Digestive System

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graph TD; A[3 Main Functions of the Digestive System] --> B[Digestion  
Breaks down food into molecules your body can use]; A --> C[Absorption  
Molecules absorbed into the blood and carried through body]; A --> D[Elimination  
Wastes eliminated from the body];
```

Digestion

Breaks down food into molecules your body can use

Absorption

Molecules absorbed into the blood and carried through body

Elimination

Wastes eliminated from the body

2 Kinds of Digestion:

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graph TD; A[2 Kinds of Digestion:] --> B[Mechanical]; A --> C[Chemical]; B --> D[Food ground into small pieces]; C --> E[Large food molecules broken → small molecules by enzymes]
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Mechanical

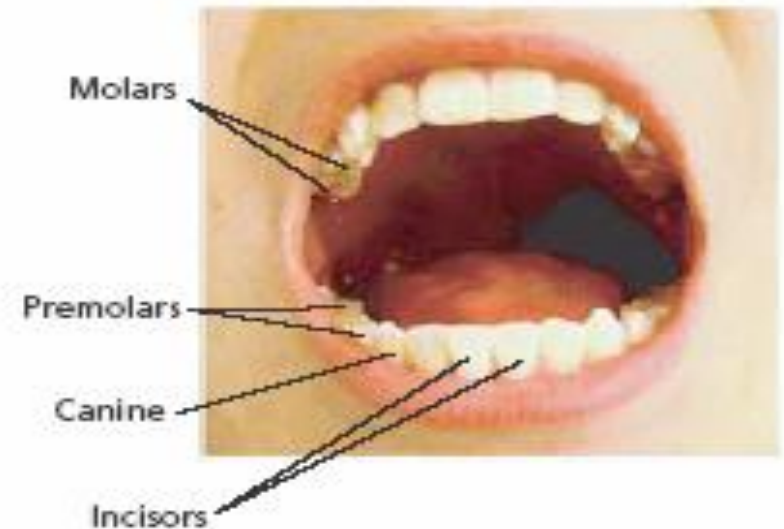
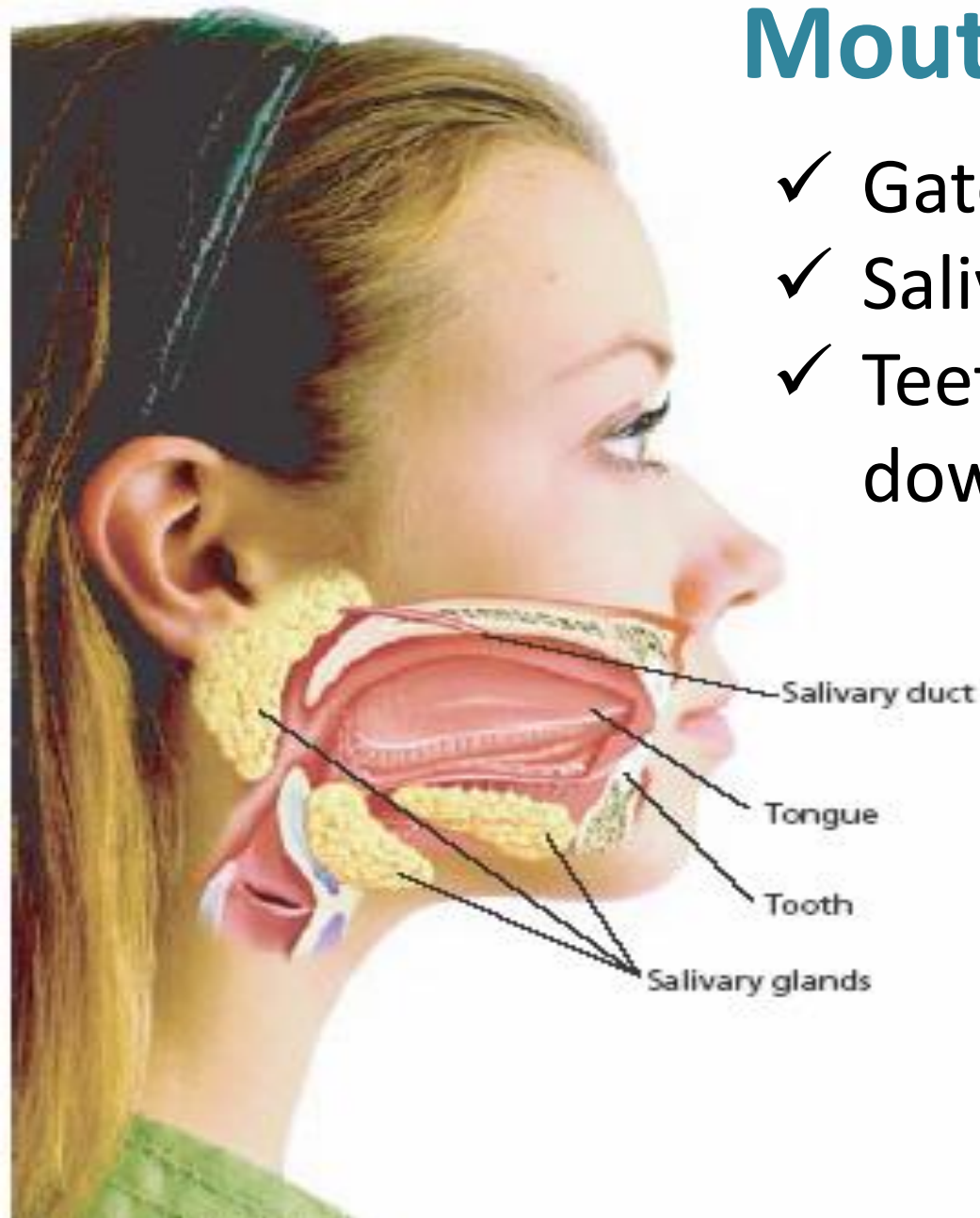
Food ground into
small pieces

Chemical

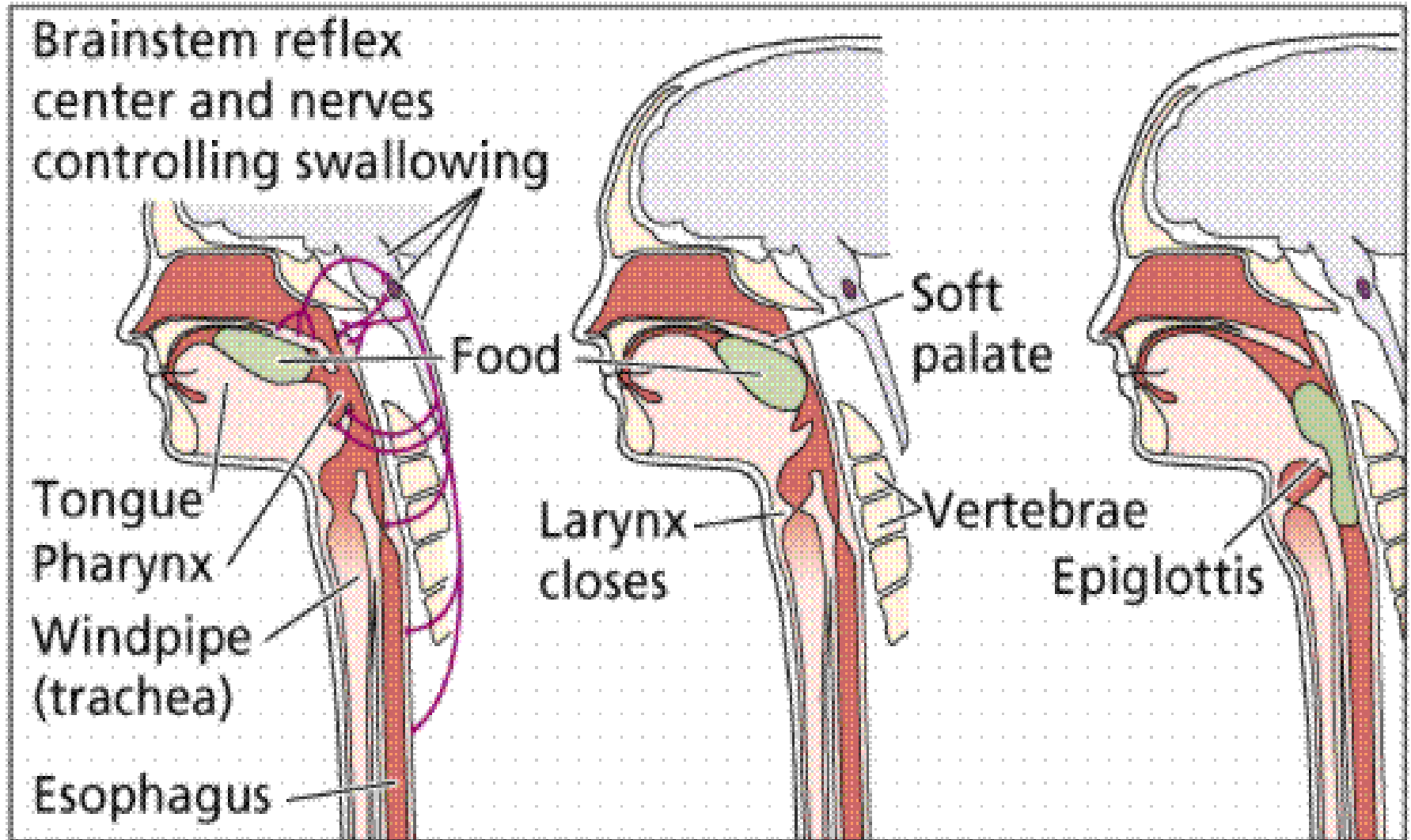
Large food molecules
broken → small
molecules by enzymes

Mouth

- ✓ Gateway
- ✓ Saliva: moistens food
- ✓ Teeth mechanically break it down



Swallowing



Esophagus

- Muscular tube
- Connects mouth with stomach

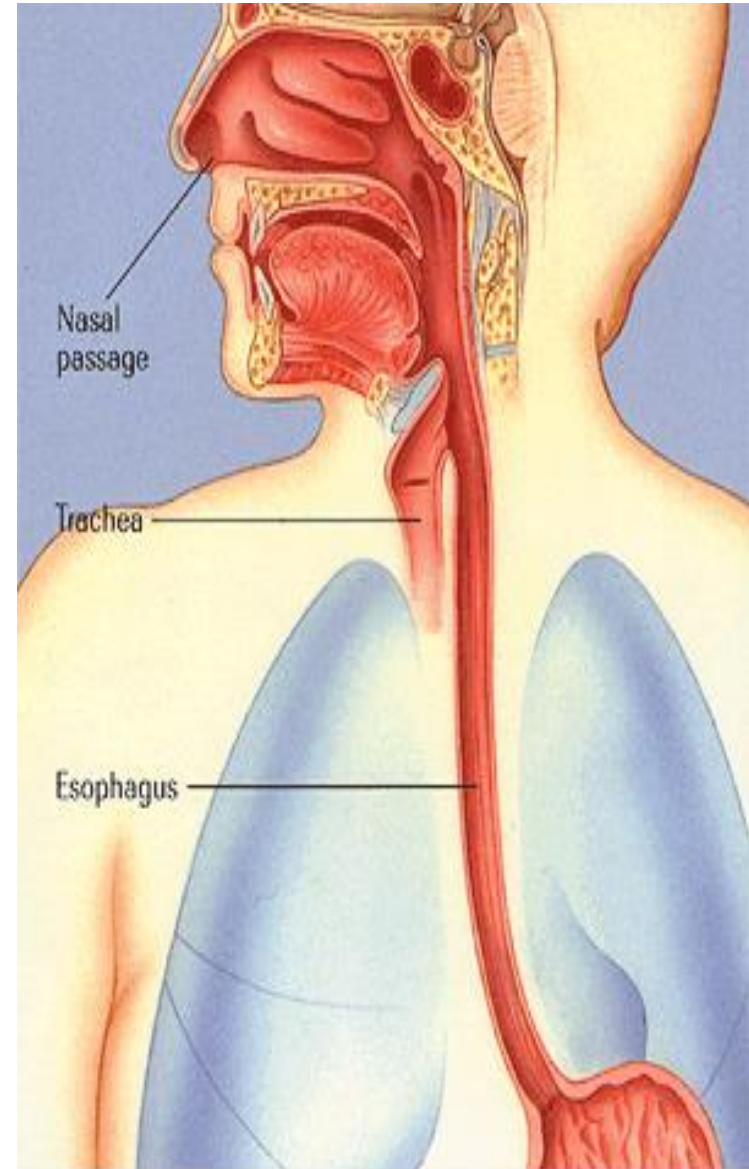


Image made available by a generous grant from Bristol-Myers Squibb

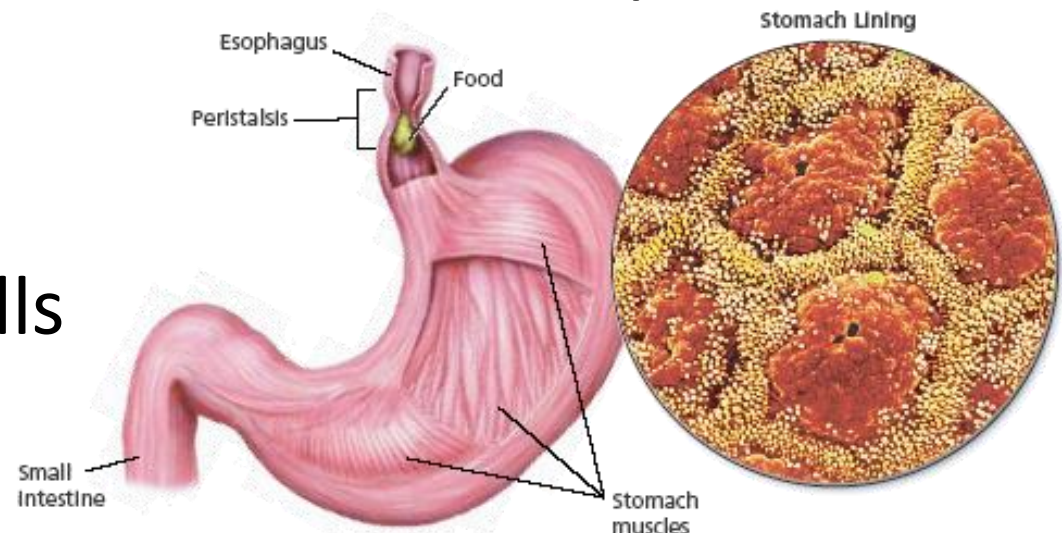
Your Stomach's Job Description

- Mix and churn the food into chyme
- Make stomach acid to start digestion of protein and minerals
- Make intrinsic factor to escort B12 into your blood
- Secrete pepsinogen to begin digestion of proteins
- Kill pathogens on food
- Nudges the other digestive organs to get ready



Stomach Secretions

- **Mucus:** mucous cells (protects)
- **Gastrin:** epithelial cells (stimulates acid)
- **Gastric Acid:** parietal cells (activates protein and mineral digestion)
- **Pepsinogen:** mucous and chief cells (protein)
- **Intrinsic Factor:** parietal cells (B12)
- **Ghrelin:** ghrelin cells (hunger)



Pancreas and Enzymes

- Pancreas produces enzymes to chemically break down starches, proteins, fats, and help digest all fat-soluble vitamins (E,A,K, and D).
 - ✓ Proteases
 - ✓ Amylase
 - ✓ Lipase
- Produces bicarbonate to neutralize stomach acid
- Secrete juices into duodenum
- Function not related to digestion
 - insulin, glucagon

