Optimum
Integrative Health Centre

PRESENTS…

Gut Health

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Section I

DIGESTION OVERVIEW

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Interesting Digestive Facts

- The digestive tract contains 100 trillion bacteria → 3% of your body weight!
  - 10x more bacteria in your body than your own cells!
  - 60% of feces weight is bacteria
- Over 50% of food has left your stomach after 2 hours, but total time from ingestion to defecation is 12-50 hours
- Food travels a total of 22-25 feet through a 2 inch diameter tube
- 70% of your immune system is in your gut → gut associated lymphoid tissue (GALT)

The Digestive System

1. Gastrointestinal Tract
   - Long continuous tube that starts in the mouth and ends at the anus
2. Accessory Organs
   - Support digestion
   - Teeth, tongue, salivary glands, liver, gallbladder, pancreas

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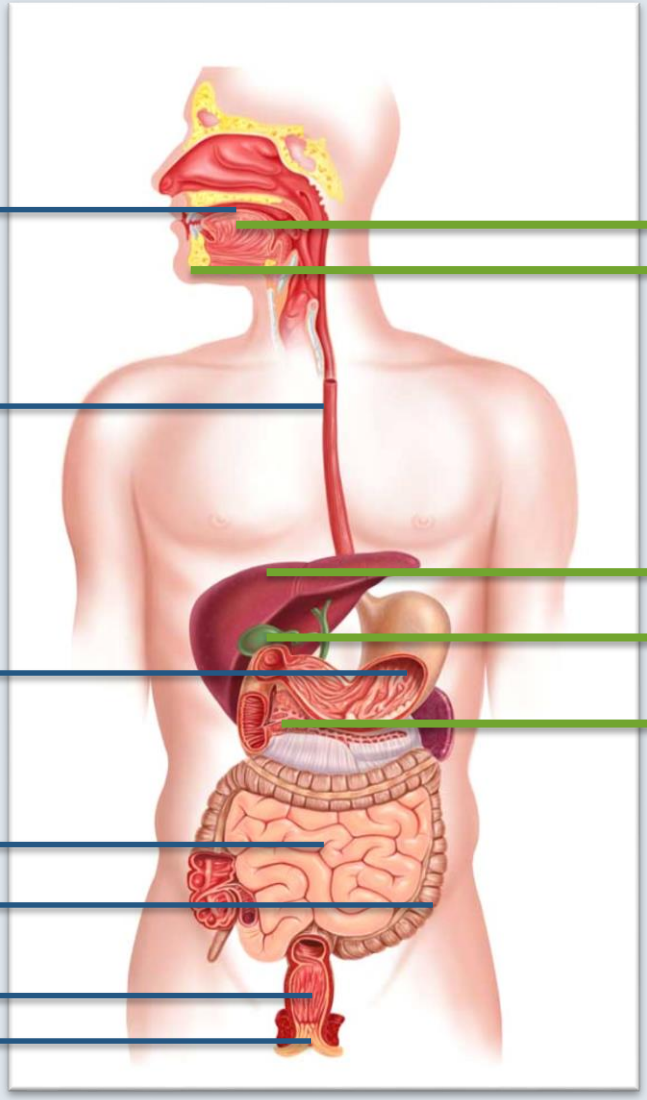
Digestive Anatomy

GI Tract

1. Mouth
2. Esophagus
3. Stomach
4. Small Intestine
5. Large Intestine
6. Rectum
7. Anus



Accessory Organs

1. Tongue
2. Salivary Glands
3. Liver
4. Gall Bladder
5. Pancreas

Digestive System Functions

1. Ingestion: taking food in to the mouth
2. Secretion: 7 liters of fluid secreted in to the digestive tract each day
   - water, acid, enzymes
3. Propulsion: movement of food from mouth to anus (motility)
4. Digestion: breakdown of food in to small pieces
   - Mechanical: teeth, stomach churning
   - Chemical: breakdown from digestive enzymes
5. Absorption: entrance of nutrients in to the blood stream
6. Defecation: elimination of waste

Digestive Process

- Digestion is a step-by-step process that begins at ingestion and ends at defecation
- We will follow the path of apple with nut butter as it passes through the digestive tract

Digestive Process – Cephalic Phase

- Digestion begins with first thought about eating, not the first bite!
- Thinking about eating and smelling the aromas from food fire up your digestive system
  - **Secretion**: water, acid, enzymes
  - **Propulsion**: the digestive tract wakes up

Digestive Process - Mouth

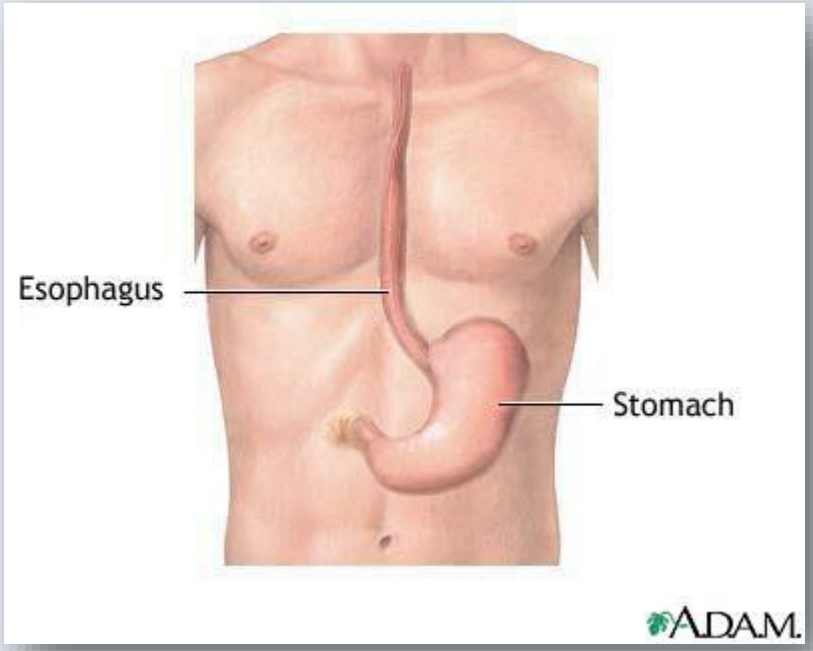
- Apple with nut butter taken in mouth: **ingestion**
- Teeth pulverize it in to small pieces: **mechanical digestion**
- Taste buds detect carbohydrates, fats, and proteins, activating salivary glands

Digestive Process – Mouth

- Salivary glands produce saliva: **secretion**
- Saliva contains enzymes that begin breaking food down in to single nutrients: **chemical digestion**
- Tongue muscles push food in to the throat to be swallowed: **propulsion**

Digestive Process - Esophagus

- Pushes mashed up apple and nut butter towards the stomach: **propulsion**



Digestive Process - Stomach

- Major role is **secretion**
  - Hydrochloric acid: kills potential microbes, breaks down proteins
  - Also enzymes and mucus
- **Chemical Digestion**: enzymes break down mainly fats and proteins
- **Mechanical Digestion**: stomach churns to produce a semi-digested liquid (chyme)
- **Propulsion**: lower stomach sphincter (pyloric) relaxes and passes the chyme in to the small intestine

Digestive Process – Small Intestine

- Liver/Gallbladder: **secretion** and storage of bile to breakup (emulsify) fat
- Pancreas: **secretion** of enzymes to **chemically digest** carbohydrates, fats, and proteins in to individual components
- Individual nutrients and 90% of water enter the blood: **absorption**

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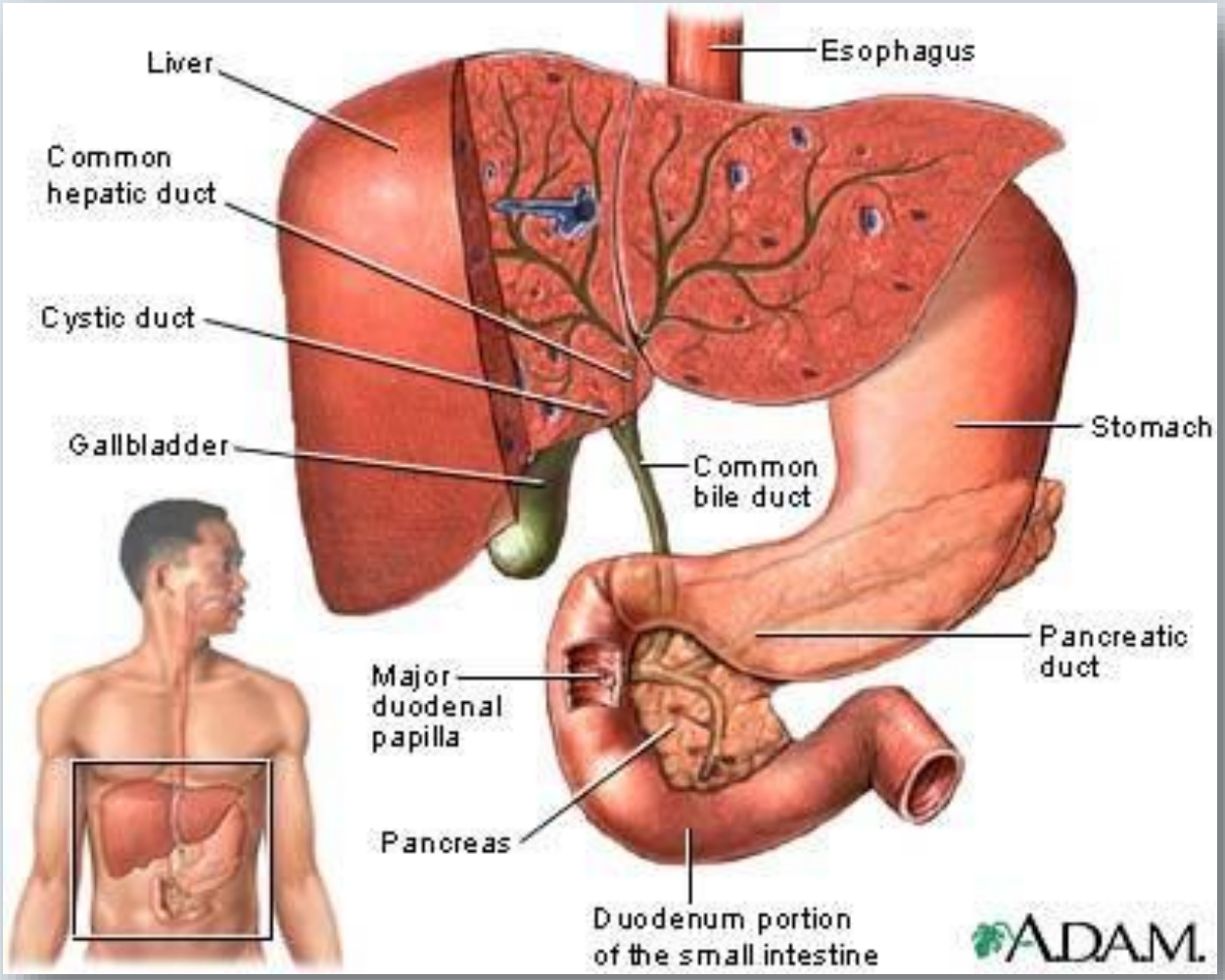
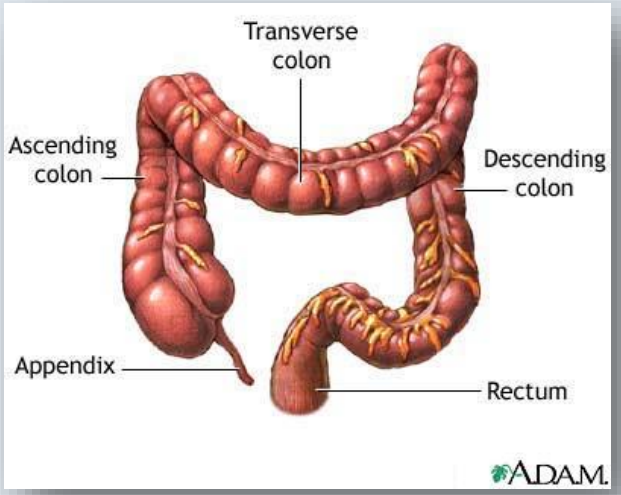

Liver
Esophagus
Common hepatic duct
Cystic duct
Gallbladder
Stomach
Common bile duct
Pancreatic duct
Major duodenal papilla
Pancreas
Duodenum portion of the small intestine
A.D.A.M.

Digestive Process – Large Intestine

- Mass peristalsis forward: **propulsion**
- Some water and nutrients absorbed
- Bacteria continue breakdown process
- Undigested and unabsorbed food components are eliminated: **defecation**
  - Breakdown of bilirubin by bacteria gives the brown color of stool



Changes with Aging

- Common digestive complaints often occur due to physiologic changes in normal digestive function with aging
- Decreased acuity is scent and taste → less production of saliva → indigestion
- Dentures → poor mechanical digestion → malnutrition
- Decreased bowel motility → hemorrhoids and diverticula

Changes with Aging

- Weakening bowel tone → atonic constipation
- Poor nutrient and water absorption → diarrhea
- ***Lower*** acid production → bacterial overgrowth in the stomach → weakened lower esophageal sphincter → acid reflux
- Low stomach acid → poor liberation of nutrients → nutrient deficiencies (especially B12!)
- Antibiotic use → dysbiosis of gut bacteria

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Section II

COMMON DIGESTIVE COMPLAINTS

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Gas, Bloating & Indigestion

- Eliminate food sensitivities
- Digestive enzymes
- Fennel, Peppermint *or* Ginger Tea
- Probiotics

Dysbiosis

- Probiotics
  - Specifically *Saccharomyces boulardii* PLUS a comprehensive bacterial blend
- Fish oils

GERD

- Bitters
  - 20 minutes before meals
- Digestive Enzymes
- Small frequent meals
- Anti-inflammatory diet
- Fish oils
- B12 injections*

** Especially if taking proton pump inhibiting drugs*

Constipation

- Exercise
- Fibre
- Increase Fluid Intake
- Eliminate Food Sensitivities
- Probiotics
- Fish Oils
- L-Glutamine
- Digestive Enzymes
- Anti-inflammatory Herbs

Diarrhea

Acute Treatment

- Simple Foods
  - *Bananas*
  - *Rice (white)*
  - *Apple Sauce*
  - *Toast*
  - *Broth soups*
- Hydration, Hydration, HYDRATION!!

Long-Term Treatment

- Probiotics
- Fish Oils
- Fibre
- L-Glutamine
- Digestive Enzymes
- Eliminate Food Sensitivities

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Diverticulosis/Diverticulitis

Preventative Treatment (Diverticulosis)

- Exercise
- Probiotics
- Fish Oils
- Fibre
- Small frequent meals

Acute Treatment (Diverticulitis)

- Liquid diet
  - Broths
  - Smoothies
  - Puréed cooked food
- Water
- Probiotics
- Antibiotics (if necessary)

Hemorrhoids

- Witch hazel
- Fibre
- Water

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Upcoming Lectures/Appearances:

- *Monday Oct 6th 10am – Getting a Great Night Sleep*
- *Friday Nov 11th 1pm – Optimizing Nutrition*
- *Monday Dec 1st 10am – Beating the Winter Blues*

Today's lecture is available for download on our website.

Thank You!