

# Digestion & Gut Health

*The Key To  
Optimal Health!*



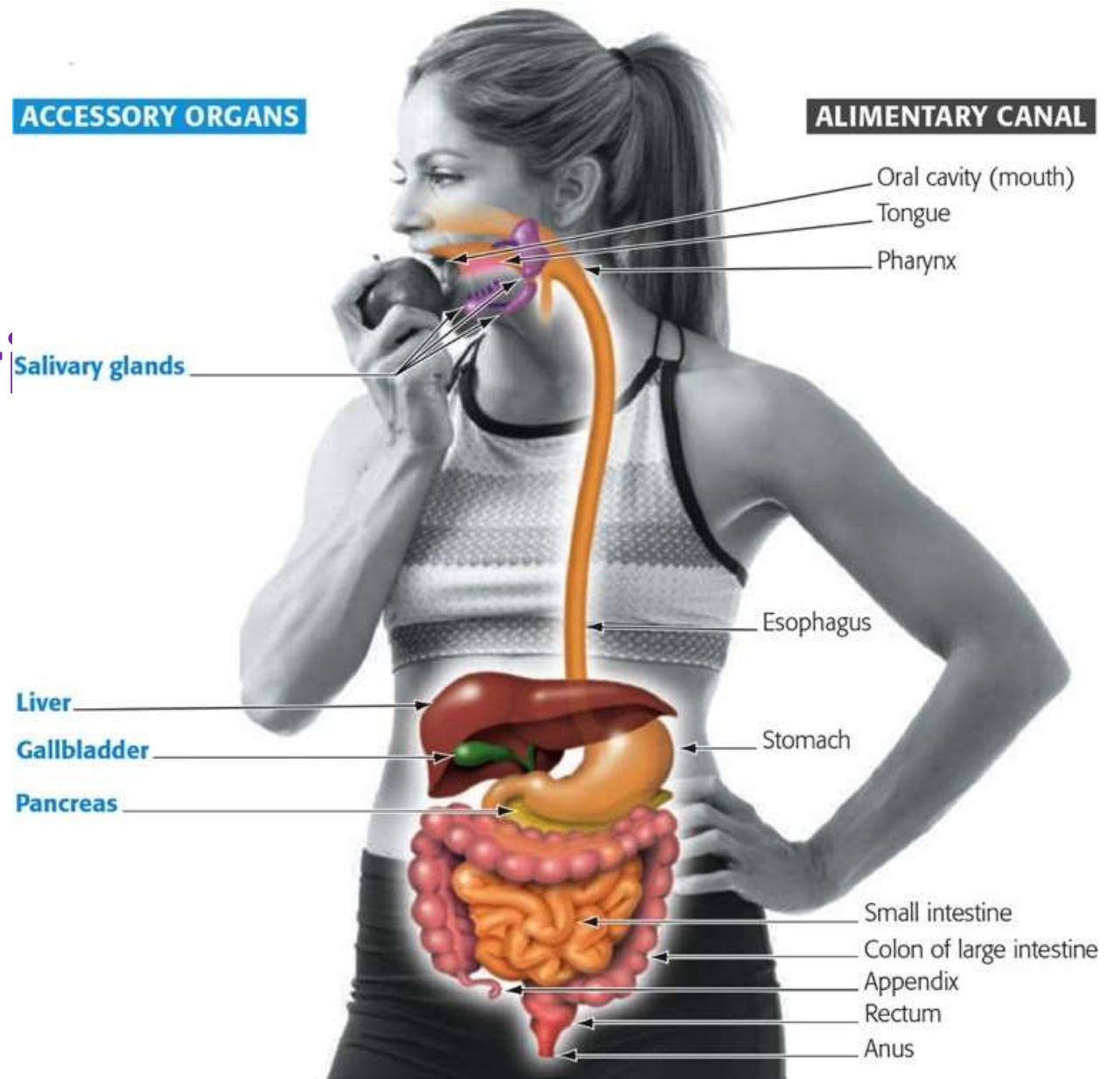
**Karen McElroy**  
Supporting your journey to wellness

# Overview

- Digestive process - up close
  - Phases and processes
- When things go wrong
  - Leaky Gut
  - Food Intolerances
- Herbs and nutrients for gut health



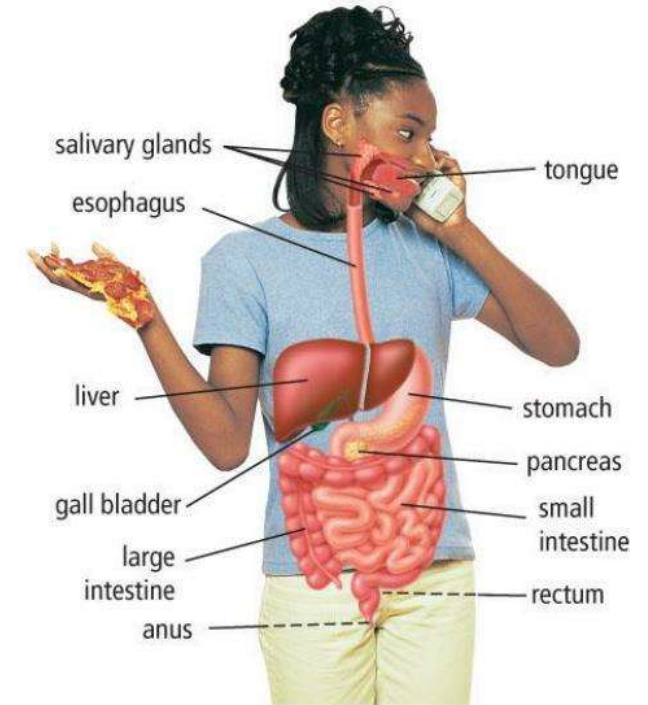
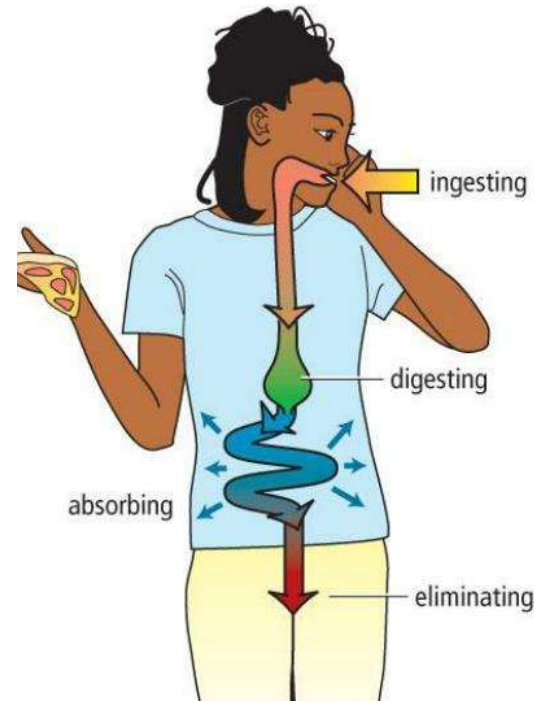
Q: Where does digestion start?



# Stages of Digestion

## Steps of Digestion

1. Cephalic Phase
2. Ingestion
3. Digestion & Absorption
4. Absorption & Dehydration
5. Elimination



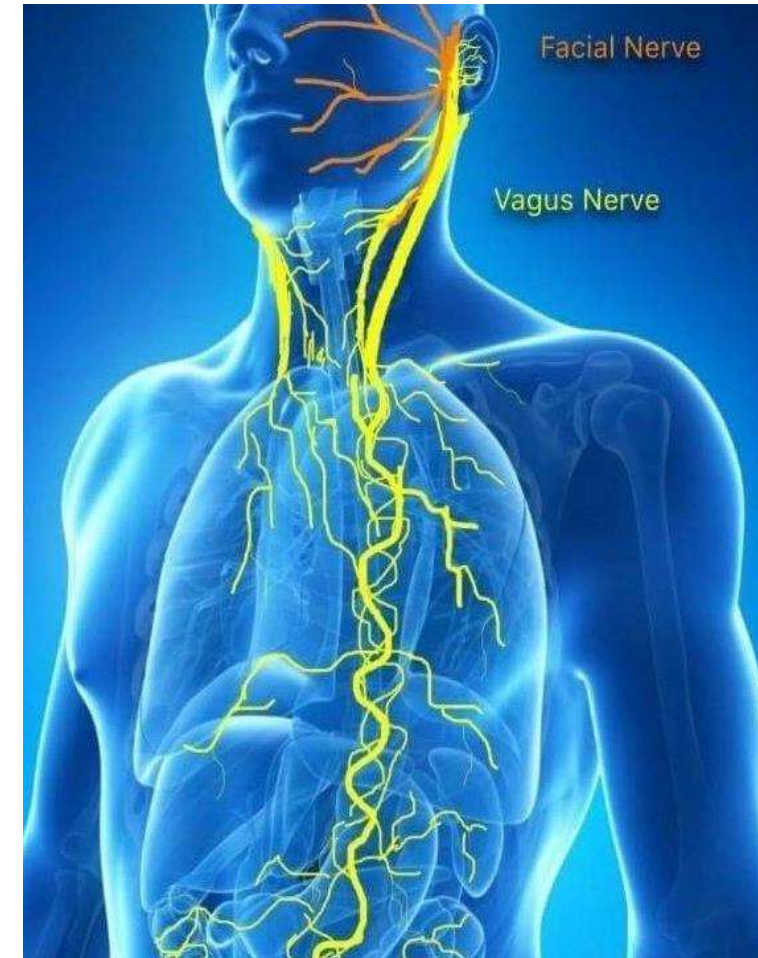


# Cephalic Phase - Pre-Ingestion & Ingestion

- The cephalic phase is the true starting point and commencement of the digestive process.
- It involves food association, visualization and smell (olfaction)
- Includes activation of memory (aversions and desires for food)
- mood, emotions, associations and hedonics (pleasure) all play a part in the beginning of digestion

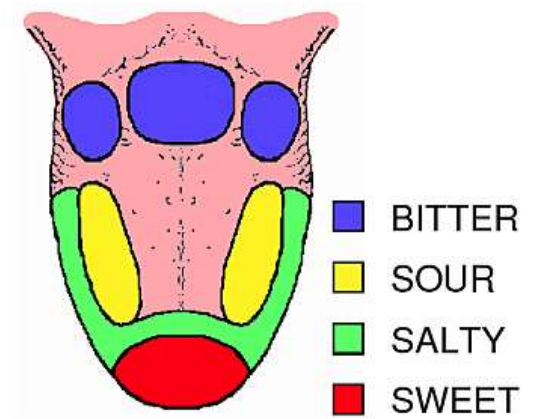
# Cephalic Phase & Vagus Nerve

- Key role involves the vagus nerve - which stimulates nerves in stomach to release acid and enzymes.
- A variety of sensory stimuli including the sight, smell, and taste of food elicits acid secretion in the stomach & pancreas.
- The cephalic phase contributes about 30–50% to the total post-prandial acid production.
- Stress will suppress vagus nerve function in the gut and inhibit healthy digestion

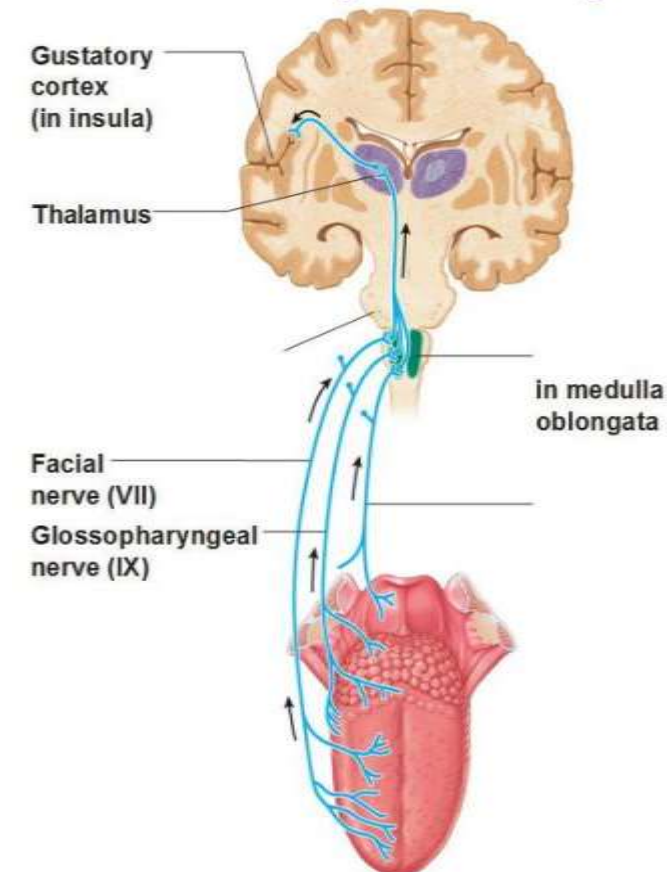


# Gustation & Taste – Ingestion Phase

- Taste is essential for proper function of digestion
- Chemoreceptors in the mouth provide qualitative gustatory information:
  - Enables immediate liberation of nutrients, such as glucose
  - Calibrates the types and quantity of digestive juices required for the food being masticated.
  - Can also generate inhibitory signals when eating is associated unattractive, bad smelling or tasting food.
- Ingestion of food involves mastication – Chewing & Swallowing – also stimulates brain receptors to influence secretion and contraction of muscles



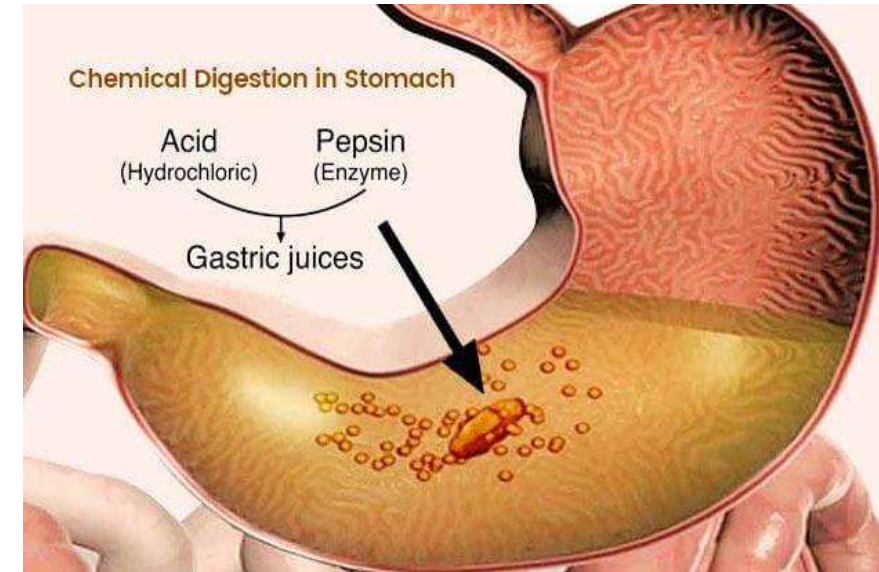
## Gustatory Pathway





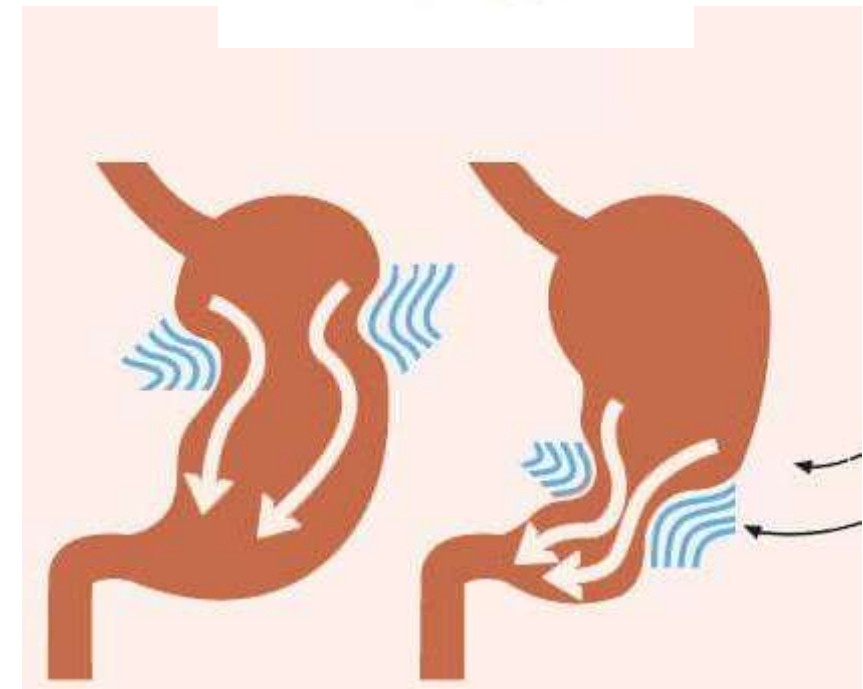
# Chemical Secretion & Digestion

- Cells secrete chemicals (enzymes and acids)
- Enzymes break down chemical bonds in foods into simple molecules for absorption
- Organs involved:
- Salivary glands (amylase for starches)
- Pancreas (pancreatin, lipase – fats, carbs, proteins, plus insulin)
- Liver & gall bladder (bile for fats)
- Stomach (pepsin, trypsin, lipase, HCl)



# Mechanical Digestion

- Physical or mechanical digestion involves the tearing, grinding, chewing, crushing (teeth and mouth) mashing and churning (stomach) food into smaller particles to enable increased surface area and easier digestion and absorption.
- Peristalsis (movement by muscles) is also involved throughout the digestive tract to move contents along to next stage.



# Absorption – Small intestine



- Intestinal villi project into the tube of the small intestine.
- Essential for greater surface area for absorption of digested nutrients – 4500sqm from only 7metres long
- Two types of cells coat the villi -- goblet cells that secrete mucus and epithelial (surface) cells that are responsible for absorption.
- Nutrients pass into blood stream (absorbed) through the gut wall of the intestine through a process of passive diffusion.
- Active transport via intestinal cells of the villi allow the passage of B-12, iron and calcium into the bloodstream.
- Coeliac disease results from damage to villi and loss of surface area.

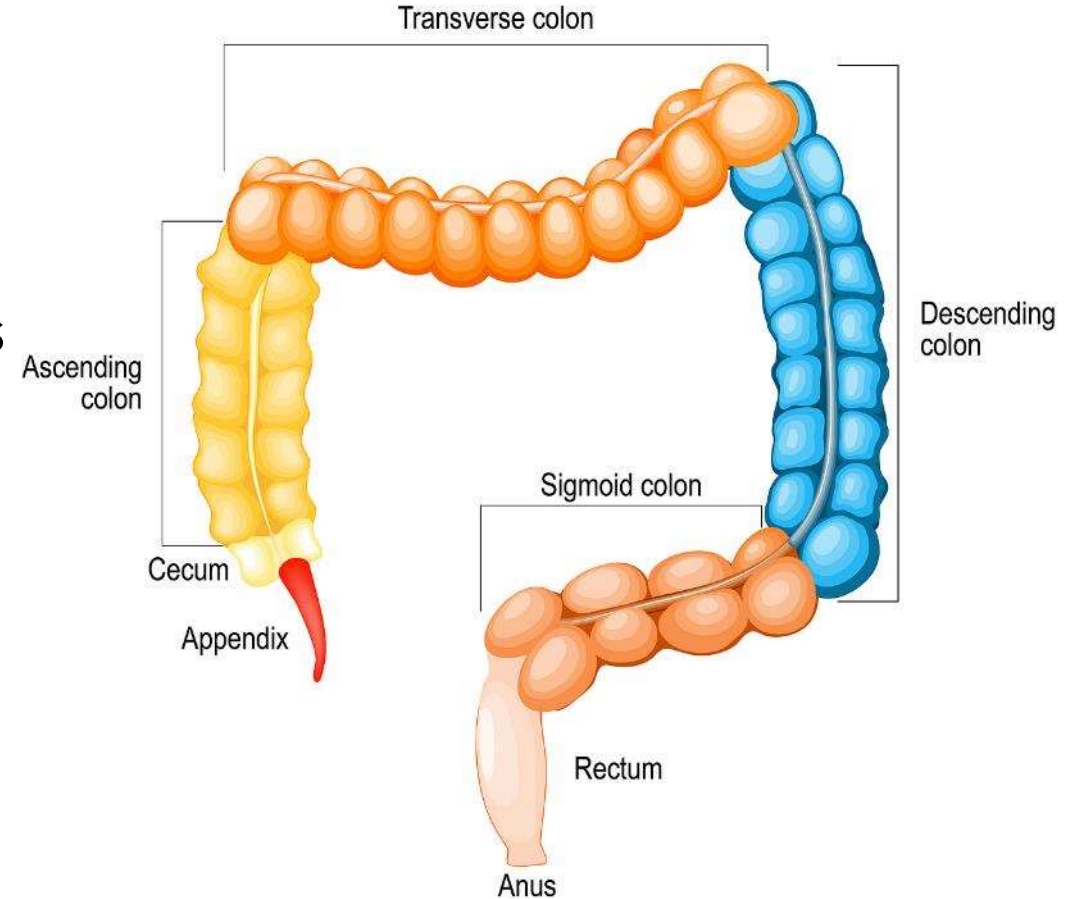
# Absorption – Small intestine



- Movement in small intestine is minimal while nutrients are absorbed and then approximately 2 hours after a meal, the migrating motility complex kicks in to cleanse and move the remains of food on to the large intestine.
- The migrating motor complex is halted when food is eaten...  
(so snacking between meals is bad for digestion)

# Elimination – Large intestine

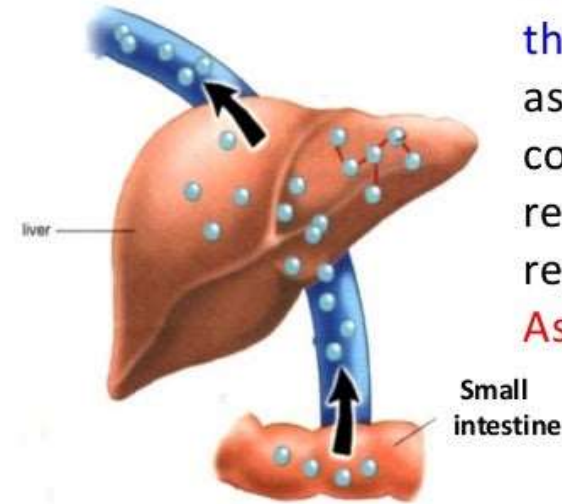
- Large intestine is where our gut microbiome (good bacteria) are predominantly located.
- Water is absorbed here and stool is formed and eliminated through muscular contractions and the release through the sphincter is under voluntary control.
- Microbiome are responsible for many varied jobs, from vitamin synthesis to regulating immune function, mood and energy.



# Assimilation – the whole point of eating!

- From blood stream nutrients are delivered to the liver for assimilating.
- Nutrients serve as both a direct source of energy as well as and synthesizing new compounds needed by the body for repairs and maintenance.

## Assimilation



The distribution and use of the digested food products as an energy source or converted into protoplasm required for growth and repair of worn-out parts -  
**Assimilation**



# TIME FOR DIGESTION

**Cephalic phase – add the time before eating!**

**Mouth 1 minute**

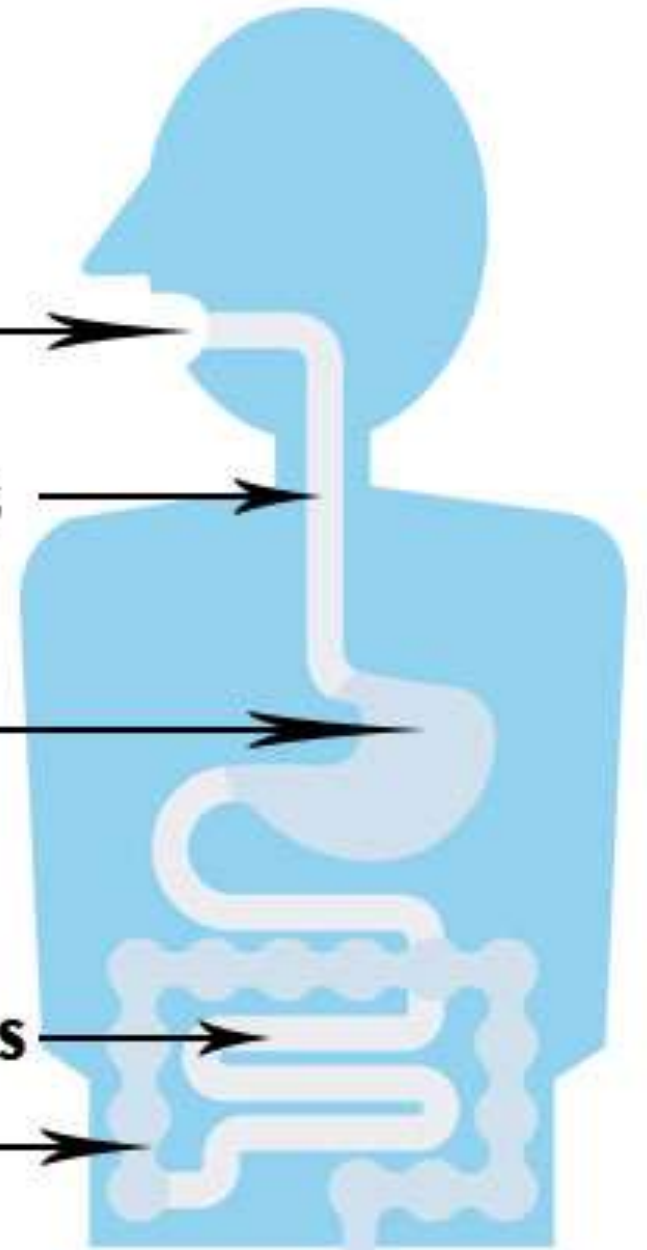
**Esophagus 4-8 seconds**

**Stomach 2-4 hours**

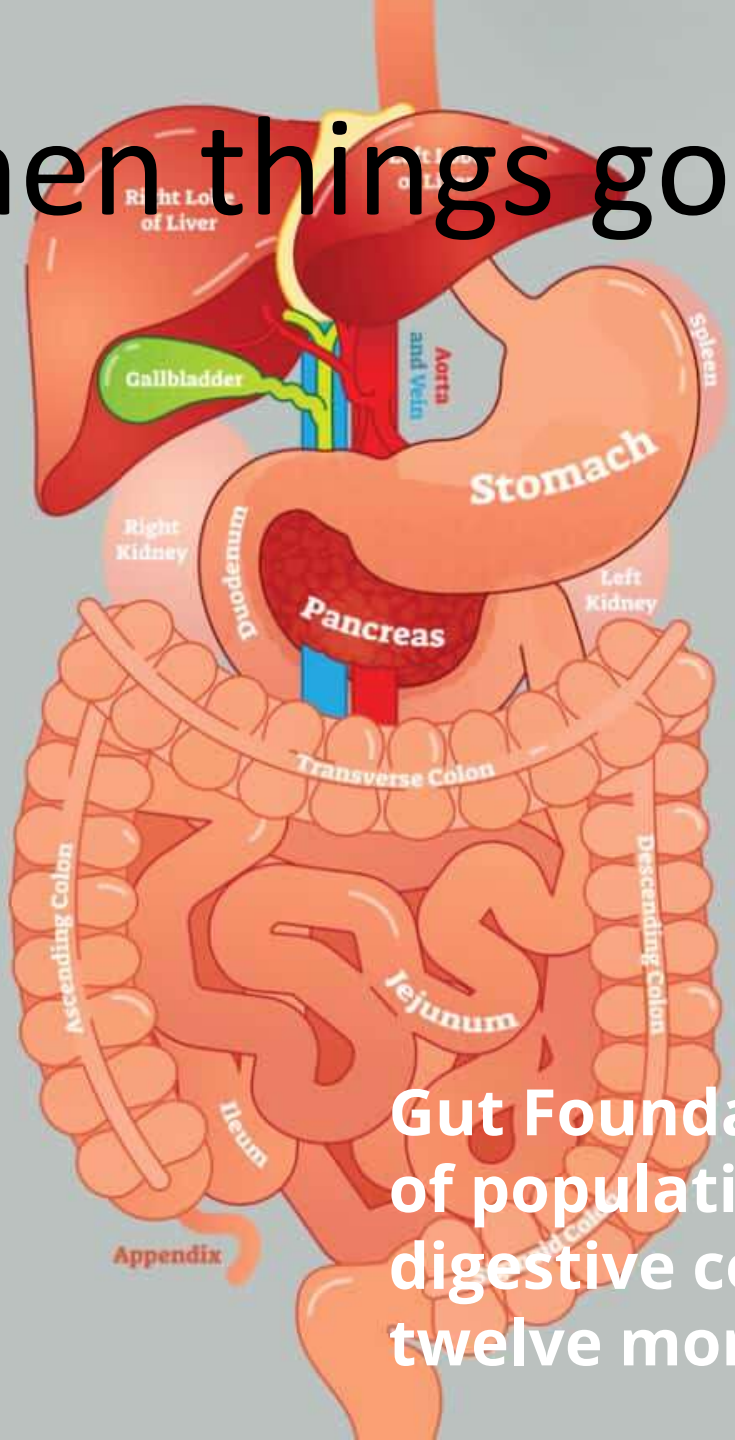
**(40 min – 2 hours)**

**Small Intestine 3-5 hours**

**Colon 10 hours to  
several days**



# When things go wrong...



**Gut Foundation:** at least 50% of population complains of a digestive complaint in any twelve month period.





# Common Digestive Issues & Symptoms

- Constipation
- Diarrhoea
- Nausea
- Irritable Bowel Syndrome – combo of symptoms without pathology
- Reflux
- SIBO
- Inflammatory Bowel Disease (Ulcerative Colitis, Crohn's Disease)
- Parasites

Many of these issues are caused by poor diet choices, antibiotics, stress, food intolerances, etc.

# Stress & Gut Function

Exposure to stress can result in the gastrointestinal disorders including:

- inflammatory bowel disease (IBD)
- irritable bowel syndrome (IBS)
- food antigen-related adverse responses (intolerance/allergies)
- peptic ulcer and gastro-oesophageal reflux disease (GORD).

# How Does Stress Effect the Gut?

Adrenal hormones such as cortisol and vagus nerve interactions can have major effects of stress on gut physiology such as:

- 1) alterations in gastrointestinal motility (slowing gastric emptying & increased colonic motion)
- 2) increase in visceral perception (pain is enhanced)
- 3) changes in gastrointestinal secretion
- 4) increase in intestinal permeability
- 5) Decreased regenerative capacity of gastrointestinal mucosa and mucosal blood flow
- 6) Negative effects on intestinal microbiome
- 7) Mast cells also translate the stress signals and release neurotransmitters and inflammatory cytokines, which profoundly affect the gut physiology.



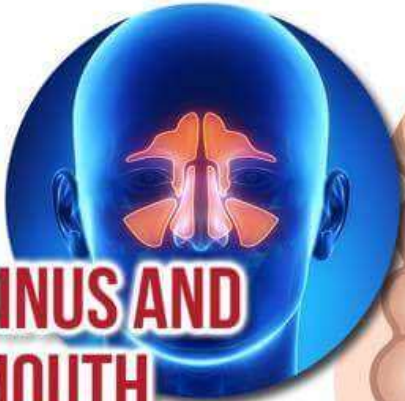
## BRAIN

Depression  
Anxiety  
ADHD



## SKIN

Acne  
Rosacea  
Eczema  
Psoriasis

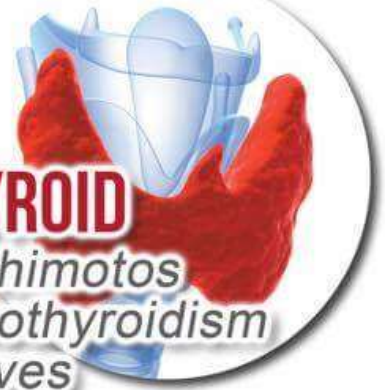


## SINUS AND MOUTH

Frequent Colds  
Food Sensitivities

# LEAKY GUT

Affects the whole body



## THYROID

Hashimotos  
Hypothyroidism  
Graves



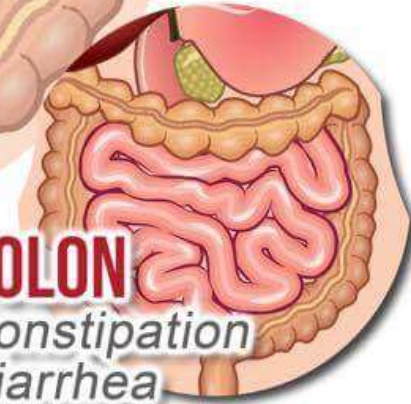
## JOINTS

Rheumatoid Arthritis  
Fibromyalgia  
Headaches



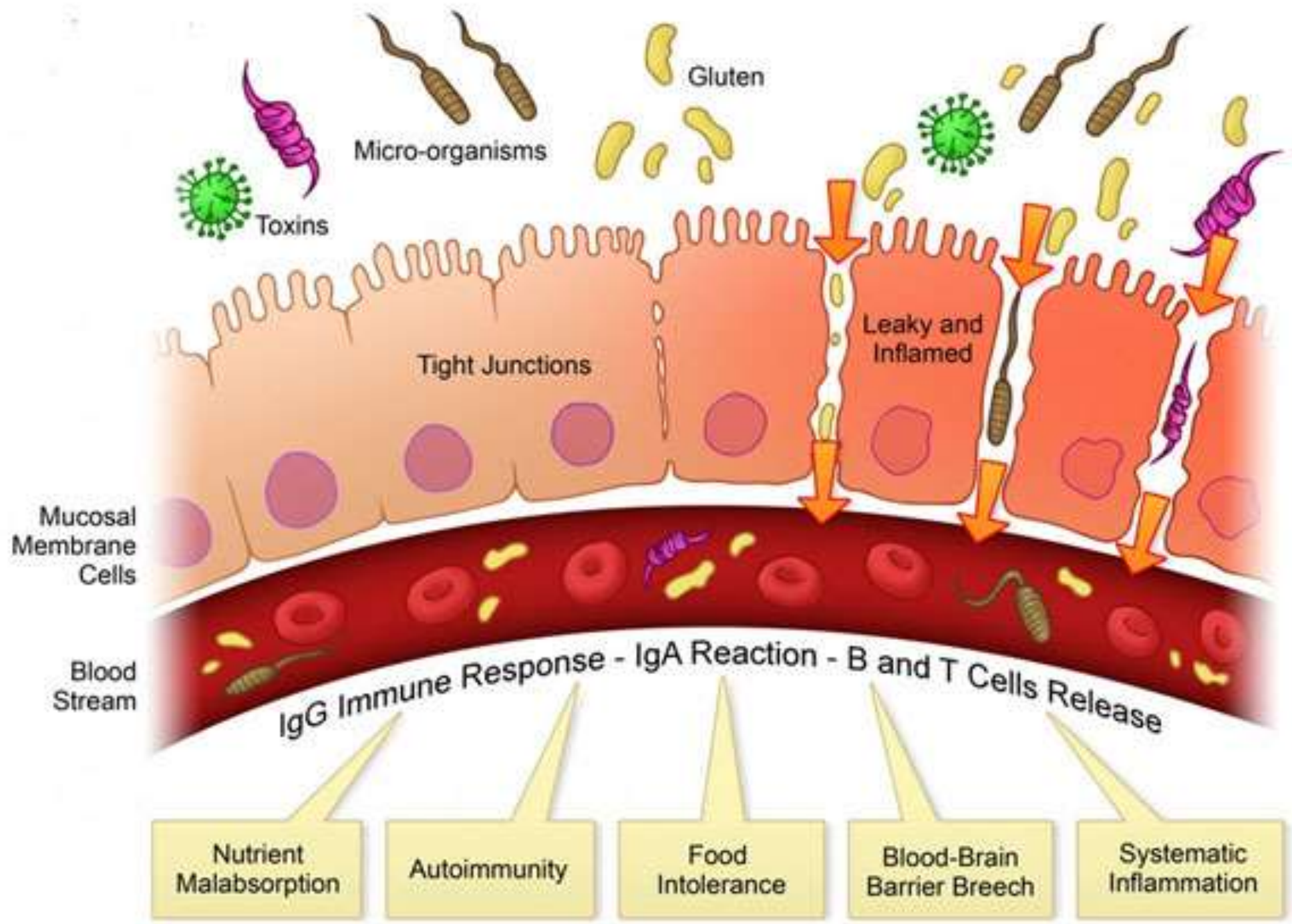
## ADRENALS

Fatigue



## COLON

Constipation  
Diarrhea  
IBD



# Food Intolerance

# V Food Allergy

- Leaky gut gives rise to food intolerances
- Foods have been absorbed intact and are considered a foreign invader and immune system responds
- IgG and IgA antibody class are found with intolerance.
- Common every day staple foods are more often linked to food intolerance due to repetition of eating
- Symptoms can be widespread: gut issues, skin issues, joint pain, asthma, recurrent infections, sinus, etc.
- Treatment – avoid food in short/medium term to allow leaky gut to heal.
- Blood tests can determine antibody levels to problem foods.

# Food Allergy

- **Food Allergy** – is IgE class of antibody and is classic anaphylactic reaction to a food
- immune response is more severe and involves histamine and gives rise to swelling of throat and airways, hives, hayfever symptoms, blood pressure changes, vomiting, shock.

# SIBO – small intestinal bacterial overgrowth

- Small intestinal bacterial overgrowth (SIBO) is a relatively new digestive disorder with increasing prevalence.
- SIBO is a condition with strong links to irritable bowel syndrome (IBS). Estimated that 80% of people with IBS also have SIBO.
- The small intestine has only small amounts of bacteria present. The large intestine has approximately one million times more bacteria than the small intestine,
- So SIBO refers to a condition where the amount of bacteria in the small intestine increases or changes in type and composition.



# Bacteria in Wrong Place...

- The bacteria ferment carbohydrates and produce gases such as hydrogen and methane which causes bloating after meals, burping and wind, constipation or diarrhea, cramping and nausea.
- Less obvious symptoms include allergies, acne rosacea, arthritis, restless legs, liver disease, diabetes, depression and even Parkinson's Disease
- possible causes include antibiotic use, food poisoning, viral or bacterial gut bugs, acute or prolonged stress, the pill, antacid medications, coeliac disease or other autoimmune diseases.
- Treatment involves a combination of dietary change and antimicrobial treatments to starve/reduce the bacteria present.

# Key Nutrients & Food for Health Gut Function

- Glutamine (amino acid)
- Zinc (carnosine is best type for gut repair)
- Vitamin A (mucus membrane support)
- Fibre (prebiotics)
- Papaya, pineapple – natural enzymes
- Apple cider vinegar
- Bone broth – provides collagen and minerals to support gut repair
- Fermented foods (kimchi, sauerkraut, kombucha, yoghurt, kefir etc)



# Herbs for Enhancing Digestion

- Ginger – wonderful digestive stimulant, natural enzymes
- Peppermint (all mints) – dispel wind, stimulates digestion
- Meadowsweet – can help with acidity and inflammation
- Chamomile – soothing, anti-inflammatory, antispasmodic
- Fennel & Aniseed – carminative
- Bitter herbs – gentian, wormwood, mugwort, dandelion, rocket, endive – all stimulate the release of enzymes
- Globe artichoke – especially for gall bladder and fat metabolism



# Take Home Message

- Make sure you are relaxed when you eat!
- Avoid eating on the run or when under stress
- Take time to properly prepare and eat your meals with care and mindfulness to boost your digestion.
- Avoid screens and other distractions while eating and use all your senses to be present: smelling, chewing and tasting your food.
- Enjoy the social aspect of eating – eat with family or friends.
- Choose healthy natural foods, eat lots of vegetables, high fibre foods and include fermented foods in the diet for good microbial diversity.
- Avoid snacking between meals
- Drink plenty of water



# Thank you!!

- Upcoming workshop..

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