IMPROVE YOUR GUT MICROBIOME

YOUR "GUT"

- Entire "tube" of the digestive system with sphincters along the way.
- Contains microbiota that digests food, metabolizes neurotransmitters, & influences brain function.
- Loaded with neurons.
- PH varies from start to end.
- Contains bumps & grooves with all of the above.
- WHAT WE EAT EARLY IN LIFE AFFECTS GUT MICROBIOME & PLASTICITY BUT IS STILL AFFECTED BY 1) GENETICS, 2) THE EVOLUTION OF THE DIGESTIVE SYSTEM, AND 3) USING EITHER A PLANT- OR MEAT-BASED DIET.

SIGNALING FROM THE GUT

1. Chemical: from neurons in the mucus linings:
   -- Signals brain if it is sugar, AAs, or FAs.
   -- Ghrelin – "time to eat" hormone increases when fasting and increases epinephrine levels.
   -- GLP-1 (Glucagon-like Peptide) = decreases appetite.
2. Mechanical: full gut = stop eating.
3. Hormonal: dopamine can signal vomiting if it is too high.
4. Direct: neurons in the gut → brain.
5. Indirect: New microbiota chemicals can make the brain feel good or bad, depending on the levels of dopamine (excited hormone), serotonin (calming hormone), and GABA (gamma-aminobutyric acid: slows brain activity/calming).

GUT HEALTH FACTORS

1. Gastric juices modulate brain activity.
2. Microbiomes are also located in the nose, throat, and mouth.
3. Birth & infancy:
   -- The infant's gut needs variety & diversity for optimal development.

-- Entering the world via a C-section or conventional birth can affect gut health.
-- If one is breastfed or not.
-- Home environment – association with pets & caregivers.

4. Fasting = microbiota do not get flushed because they repopulate quickly.
5. A healthy microbiome needs a balance of pro- and prebiotics & bacterial diversity.

TOOLS FOR A HEALTHY MICROBIOME

- Goal: improve stomach acidity to create an environment where bacteria thrive.
- Probiotics (fermented food) and prebiotics (fiber-rich vegetables and fruit).
  -- Probiotics:
    * Improve digestion.
    * Increase the number of microbiotas.
    * Two to 4 servings/day.
    * Types of fermented foods = plain yogurt, kimchi, REFRIGERATED sauerkraut and pickles, kefir, kombucha, and brine.
    * Benefits:
      -- Decreases in inflammatory markers.
      -- Decrease in autoimmune markers (i.e., Crohn's, Leaky Gut).
      -- Increases brain function.
      -- Decreases sarcopenia.
  -- Prebiotics:
    * Fiber-rich fruit & veggies.
    * Feed existing bacteria to proliferate.
- Consume good carbohydrates:
  -- Plant-based/complex:
    * Their nutrients and fiber are good, but fiber does not increase bacteria.
    * Improves hormone function.
  -- Simple sugars:

    * Low in nutrients.
    * They elevate blood sugar.
    * They increase the potential for diabetes & insulin resistance.
- Minimize processed foods because they contain emulsifiers & other chemicals that:
  -- Decrease microbiota & hormone function.
  -- Disrupt digestion.
  -- Increase inflammation.
- Get quality sleep.
- Fasting – eats microbiota but manufactures new ones.
- Decrease using artificial sweeteners because they disrupt the microbiome, even if they have zero calories. Gut neurons sense them and can cause an increase in calorie intake, which can lead to more fat accumulation.
- Ingest more glutamine. It is an amino acid that promotes gut health by repairing and fortifying the gut lining. Sources: animal protein and beans.

FACTOIDS

- 60% of fecal matter is microbiota.
- The artificial sweetener Saccharine damages the microbiome.
- Vomiting reveals the beautiful relationship between the gut & brain:
  -- The BBB (“Brain Fence”) prevents substances from getting in.
  -- Neurons sit behind it and sense what is in the blood.
  -- Neurons in the Area Postrema of the brain invoke vomiting when the blood is too acidic (i.e., from excessive alcohol consumption).