

## What's Your Gut Telling You?

“And God saw everything that He had made, and behold, it was very good.”

The things of nature that we now behold give us but a faint conception of Eden's glory. Sin has marred earth's beauty; on all things may be seen traces of the work of evil. Yet much that is beautiful remains. Nature testifies that One infinite in power, great in goodness, mercy, and love, created the earth, and filled it with life and gladness. Even in their blighted state, all things reveal the handiwork of the great Master Artist. Wherever we turn, we may hear the voice of God, and see evidences of His goodness.

“For the invisible things of Him from the creation of the world are clearly seen, being understood by the things that are made, even His eternal power and Godhead; so that they are without excuse.”

FUN FYI:

- 7,000,000,000 humans on this planet
- 5,000,000,000,000,000,000,000,000,000 bacteria on this planet
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- You are not “all” human...
- You are a walking bacterial colony
- If you look at it in terms of cells, you are outnumbered 10 to 1.

Human Microbiota

- They are normal bacterial flora residents in the body.
- Bacteria compose 10% of body weight (3x that of the brain)
- FLORA/MICROBES/MICROBIOTA- Their number and type/specie depends on location in the body and geographic location and age of the human.
- COMMENSAL BACTERIA- indigenous microflora/microbiota that have a symbiotic relationship with the human host

Human Gut Microbiome

- **MICROBIOME**- is the **ecosystem** composed of various microbiota that have to be balanced with each other in order for the body to be healthy. It is really and truly composed of the collective genes that all the microbiota have. They contain the instructions for life communally.
- Humans have @ 20,000 genes, but the microbiota have @ 2 - 20 Million microbial genes in the microbiome.
- Your flora are your friends. If something goes wrong with the microflora/ microbiota, something goes wrong with you!
  - not only by association but that bad gut microbiota can actually cause disease.
  - Comprises 99.99% of DNA in the body
  - There are a hundred microbial genes to one (100:1) of human genes in the human body

## “Seeded”

### 1) Passage:

- When the infant passes through the birth canal it is inoculated with the microbiome of the mother. If she was given antibiotics, the bacteria may not be there.
- When the infant is delivered by C-section, there is not inoculation of the normal bacteria from mother's birth canal.
- Bathing the baby at birth- erases the bacteria that could have been transferred.
- Giving antibiotics to baby at birth- no bacteria.

### 2) Breastfeeding

- When the baby is put to the breast to suckle, it is again inoculated. If the baby is bottle fed, her/she won't get the inoculations (and other benefits as well).

### 3) Pets in the home- dogs are the best “seeders”

### 4) Environment- sterile spick and span vs. “inhabited” setting

- urban vs rural
- traveling- contact with inoculators

### 5) Source of food- Inorganic vs. organic

“A practice that is laying the foundation of a vast amount of disease and of even more serious evils is the free use of poisonous drugs.” MH 126

“Our artificial civilization is encouraging evils destructive of sound principles.” MH 126

## How the Microbiome Affects Us

- Research suggests that the relationship between gut flora and humans is not merely commensal (a non-harmful coexistence), but rather is a mutualistic, symbiotic relationship.++
- The microbiome is affected by stress, standard American diet, antibiotics, OCPs, hormones or steroids, a lot of pain medications, and bacterial, fungal and/or parasitic infections, and a lot more.
- To say the least, they modulate digestive, metabolic, immune and nervous system functions.
- The microbiota **gene pool** controls a lot of the human functions.

## Microbiome and the Digestive System

- Digestive: produces enzymes that breakdown food to essential nutrients that can be absorbed or used by the gut bacteria for growth, regulate vitamin production and absorption, regulates mineral absorption Minimize or eliminate lactose intolerance
- Manufacture lactic acid and short chained fatty acids- keep the colon healthy
- Manufacture B1, B2, B3, B5, folic acid, biotin and vitamin K
- Increase absorption of minerals (Ca, Fe, Mg)

## Microbiome and the Nervous System

- Nervous system: Commensal bacteria modulate GI neuronal functions:
  - reduced visceral pain reception, reduced excitability of colonic intrinsic primary afferent nerves

- The microbiome sends signals to the brain that dictate thinking, feeling and behavior (personality).

Gut flora influences brain development and behavior- baby mice study

#### Microbiome and the Immune System

- Immune: first line of defense by blocking toxins, breaking allergy-causing proteins, and crowding out harmful bacteria and yeast-
- 70%-80% of immune system resided in the gut.
- Lactobacillus rhamnosus GG, L. casei Shirota, L. johnsonii La1, B. lactis DR10, Bifidobacterium animalis Bb-12, and Saccharomyces cerevisiae boulardii, etc.
- Immunomodulatory effect of Lactococcus lactis JCM5805 on human plasmacytoid dendritic cells.
  - Lactococcus lactis JCM5805 activates plasmacytoid dendritic cells (pDCs) in the intestinal mucosa that play a crucial role in anti-viral immunity through production of large amounts of interferons (IFNs).

#### Microbiome and Metabolism

- The composition and activity of the gut microbiota codevelop with the host from birth and is subject to a complex interplay that depends on the host genome, nutrition, and lifestyle.
- The gut microbiota is involved in the regulation of multiple host metabolic pathways, giving rise to interactive host-microbiota metabolic, signaling, and immune-inflammatory axes that physiologically connect the gut, liver, muscle, and brain.
- A deeper understanding of these axes is a prerequisite for optimizing therapeutic strategies to manipulate the gut microbiota to combat disease and improve health.

Type and ratio of bacteria also matters

Microbes can alter behavior:

- Microbiome affects sexual and mating behaviors
- Microbiome also can determine whether insects will be attracted to you.

#### Dysbiosis

- also called dysbacteriosis; refers to microbial imbalance on or inside the body.
- Dysbiosis is most commonly reported as a condition in the digestive tract.
- It has been associated with illnesses, such as inflammatory bowel disease, chronic fatigue syndrome, obesity, cancer, bacterial vaginosis, and colitis.

Can we develop a restoration ecology of the gut?

#### 1) Reinoculate through probiotics

- Bacteria- strain/specie specific- location specific
  - Firmicutes (Lactobacilli), Bifidobacteria, Actinobacteria (Mycobacterium)

- *Saccharomyces boulardii* (especially if using antibiotics- not killed when on antibiotics because it is a yeast and it feeds the above two)
- Even dead probiotics still talk to our genes and still affect our immune system!

### Infections in IBS

- \*Imbalances of beneficial and dysbiotic microbes were identified in 100% of subjects with IBS-
  - upon administration of probiotics, IBS improved
  - 60-80% of IBS also have depression and anxiety
- \*\*Small intestinal bacterial overgrowth found in 78% of people with IBS; also about 78 % also in fibromyalgia, and a smaller %age in restless leg syndrome
  - if probiotics were given, much of the distresses would go away

“The absence of probiotic bacteria in the gut can have adverse effects not only locally in the gut, but has also been shown to affect the HPA and monoaminergic activity, features that have been implicated in the aetiology of depression.”

### Probiotics for Anxiety and Depression

- Hypothesis: People with MDD have increased inflammatory cytokines, increased oxidative stress, altered GI function, lower nutrient and omega-3 fatty acids.
  - SIBO (Small Intestinal Bowel Overgrowth) is most likely probable.
- Probiotics modulates all the above and thus lowers inflammation, decrease oxidative stress, improve nutritional status and corrects SIBO

### Probiotics and Mental Health

- In baby rats, when given *Bifidobacteria infantis*, normalized immune response, reversed behavioral stress, and normalized adrenalin in the brain.
- It also normalized tryptophan levels.

### Probiotic Rich food

- Miso, natto, tempeh, sauerkraut, kimchee, raw pickles, root and ginger beers
- Kombucha, coconut kefir, raw vinegars, sour dough

## 2) Prebiotics

- Fibers that are food source for probiotic bacteria
- Prebiotic fibers are fermented by *Bifidobacteria* to manufacture SCFA (butyric acid- heal and maintain the gut lining by being an energy source and healing the colon), and by *Lactobacilli* to produce lactic acid which is food for most good bacteria.
- Inulin, FOS (Fructiligosaccharides)/oligofructose, resistant starch, fermented fibers
  - 1-3 grams in our daily diet (Europe 3-10 grams)
  - 2.75 gm/day in adults dramatically increases *Bifidobacteria*.
- Enhance further absorption of minerals (Ca/Mg)
- Antagonistic to at least 8 disease producing microbes including salmonella, listeria, campylobacter, shigella and vibrio.

## Prebiotic food

- Jerusalem artichokes (inulin), Onions, Leeks, Chicory (inulin), Garlic,
- Bananas (Less ripe), Soybeans, Burdock root, Asparagus, Maple sugar
- Chinese chives, peas/legumes, eggplants, homey, yogurt, cottage cheese, kefir
- Biotin

## Supplemental Sources of Prebiotics

- Inulin/Fructooligosaccharides (FOS)
- Larch arabinogalactan
- Resistant starch

## 3) Reinoculate bacteria (Re-“poo”pulate!)

### Dysbiosis

- Candida/other fungal infections
  - Tx: Diet, garlic, pau d’arco, GSE, oregano oil, thyme oil, coconut oil
- Bacterial infections
  - Tx: Berberine, garlic, oregano oil
- Parasitic infections
  - Tx: Wormwood, black walnut, papaya seeds

### SBBO- Small Bowel Bacterial Overgrowth (SIBO)

- Malnutrition from overgrowth of bacteria that uses the food taken in
- Gassiness, bloatedness, diarrhea and pain/cramps
- Damage to the lining
  - Inadequate absorption = loss of essential nutrients
  - Leaky gut and all the havoc that follows (allergies)
- SBBO- Treatment
  - Lifestyle: Address underlying causes: Stasis, slow transit time, low stomach acid, lactose intolerance
  - Diet: Temporarily restrict carbohydrates (esp. lactose), okra, cabbage, GLA, EPA, and modified fasting
  - Probiotics: L. Acidophilus and/or L. casei
  - Botanicals: Broad-spectrum antimicrobial botanicals, enteric coated peppermint oil
  - Pharmaceuticals: Rifaximin

## RESTORE GUT MICROBOME

### 1) Nurture Diet:

- Eliminate gluten/corn/soy/peanuts/sugars/additives/dyes (meat\*, dairy and poultry); eat of the right amounts of good food
- Eat food rich in probiotics (kefir, kimchi, yogurt, etc)
- Feed the good bacteria (prebiotics/fiber)
- Supplement when possible- timing is necessary
- Kill bad bacteria- natural antibiotics (garlic/onions/peppermint oil)
- Remove toxins/dead bacteria (charcoal vs. clay); avoid chlorinated and fluoridated water

- 2) Nurture with Exercise:
- 3) Nurture with Hydration
- 4) Nurture with Vitamin D
- 5) Restore with Rest and Trust
  - Stop focusing on what is off balance and work to restore.
  - REST if often needed- physical and emotional
    - not napping (2 hrs) alone, but doing something that heals the body and soul.
  - Trust that God is true to His word
  - Trust that “All things work together for good...”

FUN FYI:

- “Poo”sition

“Knowing is not enough; We must apply.”

“Willing is not enough; We must do!” Goethe

#### UNDERSTANDING COMES WITH OBEDIENCE

“It will take some time to get a right understanding of the matter, but just as soon as we begin to work in the line of true reform, the Holy Spirit will lead us and guide us, if we are willing to be guided.” PH049 2.4

“The greatest achievement in the Christian experience is not only to have a right experience, but to be so absolutely certain that it is a right experience that no influence can cause you to doubt it or lead you into confusion; then you are sure to go through.” EGW, CE:147