

## Fermentation Fun

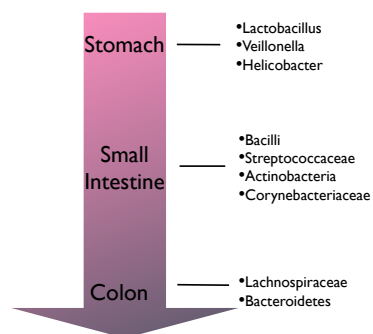
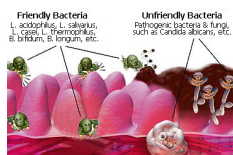
Eddie Brennan  
Betsy Hicks  
John Hicks, MD

## Schedule

- 9-10 am - Probiotics and the medical benefits of fermentation
- 10-12 pm - Fermented foods
- 12-1 pm Lunch
- 1-2 pm Fermented beverages
- 2-3 pm GAPS diet
- 3-4 Picky Eating tips, Q & A

## What are probiotics

- 100's of billions of good bacteria
- 53,000 species
- Yeast, viruses & other organisms
- Commensal organisms



## Diseases created by Dysbiosis

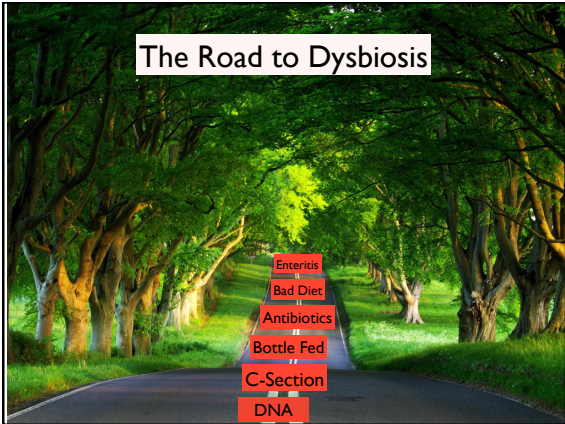
- Diabetes I & II
- Depression
- Anxiety
- IBS
- Crohn's
- Ulcerative colitis
- Asthma

## What Probiotics Produce

- Serotonin
- Gaba
- Digestive Enzymes
- B Vitamins
- Prepare nutrients for easier absorption
- Digest complex carbs and release usable fatty acids

## Bacteria have nutrient requirements

<ul style="list-style-type: none"> <li>• Good Bacteria</li> <li>• FOS</li> <li>• Inulin (selectively fed probiotic strains)</li> <li>• other polysaccharides</li> </ul>	<p><b>Bad Bacteria</b></p> <ul style="list-style-type: none"> <li>• Simple carbs (sugars, breads, and cereals)</li> <li>• Some vinegars</li> <li>• some monosaccharides</li> </ul>
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## Soil based Probiotics

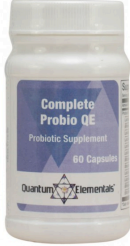
Capacity for survival is far greater than something grown in a petri dish

- Simple Suggestions
- Don't over refrigerate or wash
- Buy organic and utilize local produce



## Oral Probiotics

- Limited strains
- Refrigeration
- Transient




## Fermentation

- Pre-digestion
- Nutrient Augmentation
- Detoxification
- Bacterial Cultures

## Pre-Digestion

- Probiotics begin to digest the foods
- The bacteria in the food provides digestive enzymes



## Nutrient Augmentation

- Bacteria produce B vitamins
- Minerals more absorbable
- Break down protein to its single amino acids
- Produce isothiocyanates (anti-carcinogenics)

**Calcium**  
Essential for strong bones and teeth and needed for normal muscle and nerve functions. May also assist in controlling blood pressure and weight.

**Protein**  
Needed for growth and development, maintenance of muscles, as well as repair of damaged body tissue.

**Magnesium**  
Important for bone structure and for energy transfer in the body.

**Vitamin B2**  
Helps body cells to function properly and release energy from foods.

**Vitamin B12**  
Assists in the formation of cells and helps to keep blood healthy and prevent anemia.

**Carbohydrates**  
Gives the body energy.

**Phosphorus**  
Important part of the mineral structure of bones and teeth. Works with B vitamins to release energy from foods. Also helps with the absorption of calcium.

**Potassium**  
Helps in controlling blood pressure and is important for the nervous system.

**Zinc**  
Helps in wound healing and is essential for bone formation. Also aids in the development of the brain and many other parts of the body.

**Vitamin A**  
Important for growth in children, good eyesight and improved immunity.

## Detoxification

- Removes toxins
- Removes bad bacteria through pH modulation
- Removes phytic acid

## Bacterial Cultures

- Receiving probiotics cultures
- Lactic Acid Bacteria
- Reproduction

## Fermentation Review

- Originally used as a way to preserve food
- Sugars and starches in food are consumed by living microbes and converted into lactic acid
- The bacteria involved in the fermentation process create enzymes and add nutrients
- Promotes a healthy digestive system by supplementing and assisting the good bacteria in our *gut flora*

## Microbe “Starters”

- Microbes are EVERYWHERE AND ON EVERYTHING
- **“Wild” process**—relying on microbes in the environment and in/on the food itself to initiate fermentation
- **“Controlled” culture**—Inoculation with an “army” of hardy microbes to ensure the desired/beneficial probiotic strains are present and do their job
  - Inoculation jump starts the fermenting process—not necessary but is like insurance policy. Also maintains more consistent taste/texture from batch to batch
- **Options include:** whey, freeze dried culture powders, kefir “grains”, S.C.O.B.Y. (a.k.a. “KT mushroom”), Mold/ Yeast spores (natto, miso), Natural/Wild approach (no inoculants)

## Variety IS the Spice of Life

- **Keep your gut guessing!**
  - Rotating beneficial probiotic species (from food and supplements) helps keep your microbiota well balanced and the gut in good working condition
  - More pleasing to your palate to have a myriad of flavors and textures
  - Cost effective to make your own ferments!
  - Bring in essential nutrients from many different food groups (dairy, fruit, vegetable, even meats can be fermented)
  - So...eat a variety of fermented foods and rotate high quality probiotic supplements = “Promoting Life”

### Beverage Fermenting

- An element of ART and SCIENCE—everyone has their own method and preferences; find yours!
- Taste buds are your best guides
- No need to be obsessive about sterilizing materials, etc.
- Choose one beverage to start making, and expand/adapt as you “master” it

### What about Alcohol?

- Naturally occurs in *all* fermentation.
- Minimal - Less than 1% on average
- Alcohol - action of yeasts on sugars
- Lactic acid - action of bacteria on sugars
- Lactic acid is beneficial and is responsible for the characteristic tart taste
- Longer fermentation: lactic acid + alcohol = acetic acid (vinegar)

### Factors in Alcohol Content

- Amount of sugar
- Length of fermentation
- Strength and type of culture
- Oxygen exposure
- Alcoholic fermentation can be minimized by adding a non-yeast starter (such as whey) and a little sea salt.

### Beverage “Starters”

- **“Starter” culture**– Inoculation with an “army” of hardy microbes to ensure the desired/beneficial probiotic strains are present and do their job and to prevent undesirable microbes from growing
- **Options include:**
- Whey
- Freeze dried culture powders
- Water kefir “grains”,
- S.C.O.B.Y. (Symbiotic Colony of Bacteria and Yeast, a.k.a. “KT mushroom”)
- Lambic (a.k.a. “Ginger Bug”)
- “Live” liquid from a previous batch of ferment

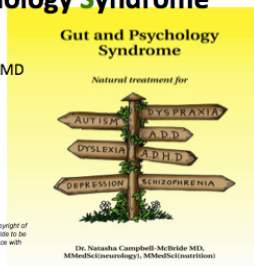
### GAPS™

#### Gut And Psychology Syndrome Gut And Physiology Syndrome

Dr. Natasha Campbell-McBride MD

*Natural recovery for auto-immune disease and other chronic illness*

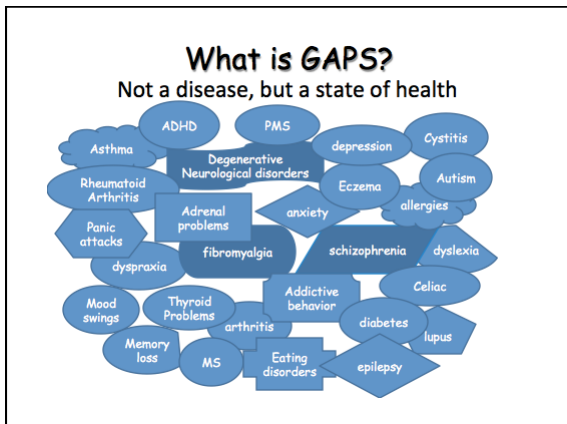
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**All diseases begin in the gut!**

*Hippocrates 460-370 BC  
The Father of Modern Medicine*





### It's not about us, it's about them.

We are walking worlds of micro flora and the make up of these creature in and on us establish our general health and well-being.

- ### Roles of Gut Flora
- Protection from Invaders
  - Health and Integrity of the Gut
  - Appropriate Digestion and Absorption
  - Vitamin Production
  - Detoxification
  - Immune System Modulation

- ### What can damage gut flora?
- Antibiotics
  - Steroid, The Pill
  - Other Drugs
  - Stress
  - Poor Diet
  - Infections
  - Disease
  - Bottle Feeding
  - Old Age
  - Pollution
  - Radiation
  - Alcohol
  - Toxic Chemicals
  - Dental Work

- ### A Typical GAPS Scenario: child
- Mother with gut dysbiosis
  - The baby does not develop normal gut flora
  - Immune system compromised
  - Ear infections & chest infections – antibiotics
  - Further damage to gut flora & immune system
  - Vaccinations
  - Usual weaning diet
  - Gut dysbiosis leads to damaged gut wall
  - Toxins entering the brain cause Gut And Psychology Syndrome
  - Toxins entering other organs cause Gut and Physiology Syndrome

### Damaged Gut Wall

Lack of protection by beneficial gut flora  
 Attach by pathogenic microbes & toxins  
 Enterocytes degenerate, tight junctions open  
 Foods absorb partially digested leading to food allergies & intolerances  
 Damaged gut lets toxins & microbes into the bloodstream  
 General toxicity in the body  
 Immune system reacts adding autoimmunity

## GAPS™ Nutritional Protocol

Dr. Natasha Campbell-McBride, MD

**Purpose:**

- Normalize the gut flora: heal and seal the gut lining
- Restore the gut functions
- Remove nutritional deficiencies
- Restore immunity
- Remove toxicity from the body
- Restore the body's own detoxification system

**Length of Time Dependent**

- on the severity of the condition
- the age of the person
- other factors such as adherence to the diet

*On average Dr Campbell-McBride recommends to plan on sticking to the program for **two years**.*

## GAPS Nutritional Protocol

- GAPS Diet
- Supplementation
- Detoxification

*For more information: visit [www.gaps.me](http://www.gaps.me)  
[www.gapsconnections.com](http://www.gapsconnections.com) for support groups,  
classes, and individualized consultations*

## Places to Hide

- Popsicles
- Chopped or pureed apples
- Cultured vegetable juice in soups
- Rice and mashed potatoes
- Transform condiments: Ketchup, mustard, relish, mayo and BBQ sauce

## More

- Add to dips and dressings
- Make Jello
- Miso soup
- Homemade yogurt
- Cultured fruit
- Add to ice cream and smoothies

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