THE CENTER FOR FUNCTIONAL HEALTH

Eating For Your Microbiome

A microbe, or microscopic organism, is a living thing that is too small to be seen with the naked eye. This general term is used to describe bacteria, fungi, yeast, and viruses, to name a few. A microbiome is the collection of the microbes living in a given community, like the intestines in the human body. We also sometimes refer to these communities as "flora" or "microbiota".

As humans, we begin to build our microbiome the moment we are born. How and where we're born play a big role in the types of microbes we acquire. Babies pick up microbes from every person or thing they touch, and continue to pick up microbes throughout their lives.The microbiome isn't fixed; it develops over time and changes in response to its environment.

What Does the Microbiome Do?

Until recently, bacteria in the gut were thought to play a role only in regulating bowel movements. However, it is now known that gut bacteria affect the entire body, including the brain.Among other functions, the beneficial bacteria in the gut synthesize some vitamins, help with digestion, balance mood, reduce anxiety, and protect against infections and some forms of cancer. Strains of good bacteria in the gut are also associated with lower rates of obesity, diabetes, and various gastrointestinal diseases.

If there are too many bad bacteria or too few good bacteria in the microbiome, serious health problems can arise.The population of good bacteria in your body can be inhibited or killed by stress, surgery, illness, trauma, or unhealthy eating habits. Antibiotics can kill bad bacteria that cause disease, but they also kill off many of the beneficial microbes.We can keep our microbiomes healthy by eating foods that feed the good bacteria, and avoiding foods that encourage the growth of bad bacteria.

Feeding the Microbiome

The foods we eat have a big influence on our microbiomes. Many microbes in our guts help us extract nutrients from food we wouldn't otherwise be able to digest. Different microbes thrive on different types of food.You can stimulate the growth of good bacteria (also known as probiotics) in your gut by eating specific foods the bacteria are known to thrive on. These foods are known as prebiotics.

Eat the Colors of the Rainbow

There are amazing and unique compounds found in all different fruits and vegetables from all different colors of the rainbow. Each of these unique compounds provides our cells with the nutrients needed to make our bodies function optimally. Below is a list of fruits and vegetables and the benefits they provide. Please note that different diets may limit certain vegetables/fruits (i.e. Autoimmune Paleo Diet restricts tomatoes). The list is more so for educational purposes.

Color	Compounds	Benefits	Foods
RED	Anthocyanidins Astaxanthin Carotenoids Ellagic Acid Ellagitannins Fisetin Flavones Flavonols Flavan-3-ols Flavanones Luteolin Lycopene Proanthocyanins Quercetin	Anti-cancer Anti-inflammatory Cell protection DNA health Immune health Prostate health Vascular health	Adzuki beans Apples Applesauce Cranberries Cherries Kidney Beans Plums Pomegranate Radishes Raspberries Red grapefruit Red grapes Strawberries Sweet red peppers Rooibos tea Tomato
ORANGE	Alpha carotene Beta-carotene Beta-cryptoxanthin Bioflavonoids Carotenoids Curcuminoids Naringenin	Anti-cancer Anti-bacterial Immune health Cell protection Reduced mortality Reproductive health Skin health Source of vitamin A	Acorn squash Apricots Bell pepper Butternut squash Cantaloupe Carrots Dried Fruit (apricot, mango, papaya) Grapefruit Mango Nectarine Orange Papaya Sweet Potato Tumeric Root Winter squash
YELLOW	Carentoids Lutein Rutin Zeaxanthin	Anti-cancer Anti-inflammatory Cell protection Cognition Eye health Heart health Vascular health	Bell peppers Greens Kale Spinach Succotash

Color	Compounds	Benefits	Foods
GREEN	Catechins Chlorogenic acid Chlorophyll Epigallocatechin gallate Flavolignans Folates Glucosinolates Hydroxytyrosol Indole-3-carbinol Isoflavones Isothiocyanate Oleocanthal Oleuropein Phenolic diterpenes Phytosterols Phenols Phenylethylisothiocyanate Silymain Suldoraphane Tannins Theaflavins Thearubigins Tyrosol	Anti-cancer Anti-inflammatory Brain health Cell protection Skin health Hormone balance Heart health Liver health	Artichoke Asparagus Avocado Bamboo sprouts Bean sprouts Bok choy Broccoli Brussels sprouts Cabbage Celery Chard/Swiss chard Cucumbers Green beans Green peas Green tea Greens (Beet, dandelion, collard, mustard, turnip) Lettuce Okra Olives Rosemary Spinach Snowpeas Watercress
WHITE/TAN	Allicin Allyl sulfides Cellulose (fiber) Lignans Lignins Sesamin Sesamol Tannins Terpenoids Theobromine	Anti-cancer Anti-microbal Cell protection Gastrointestinal health Heart health Hormone balance Liver health	Cinnamon Clove Dark Choclate Flaxseed meal Garlic Ginger Nuts Onions Sesame seeds Shallots Tahini Whole flaxseed
BLUE/PURPLE	Anthocyanidins Hydroxystilbenes Procyanidins Pterostilbene Resveratrol	Anti-cancer Anti-inflammatory Cell protection Cognitive health Heart health	Berries (blue or black) Cabbage (purple) Carrots (purple) Cauliflower (purple) Dates Eggplant Figs Grapes (purple) Kale (purple) Plums Potatoes Prunes Raisins

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Tips for Maintaining a Healthy Microbiome

- Stay hydrated. Every day, drink approximately half your body weight in ounces of water and other non-caffeinated beverages free of added sugars.
- Be sure to include both prebiotic and probiotic foods in your diet. For more information, ask your Functional Medicine practitioner for IFM's Probiotic and Prebiotic Foods document.
- Eat plenty of high-fiber vegetables, which help maintain a healthy digestive system.
- Limit or avoid processed foods, foods high in added sugar, artificial sweeteners, and trans fats.
- Limit or avoid any foods to which you are sensitive, intolerant, or allergic. Some common examples are corn, dairy, eggs, fish and shellfish, peanuts, soy, tree nuts, and wheat (gluten).
- Take antibiotics only when medically necessary. During and after completing a course of antibiotics, eat probiotic foods and take a probiotic supplement.This can help rebuild the population of healthy bacteria in your gut.

References

- Feeding the Microbiome: New ways that Diet affects your Health. Linus Pauling Institute. http://blogs.oregonstate.edu/linuspaulinginstitute/2015/08/14/ microbiome-and-diet/. Published May 13, 2016. Accessed March 3, 2017.
- The Human Microbiome.The Human Microbiome. http://learn.genetics.utah.edu/content/microbiome/.Accessed March 3, 2017