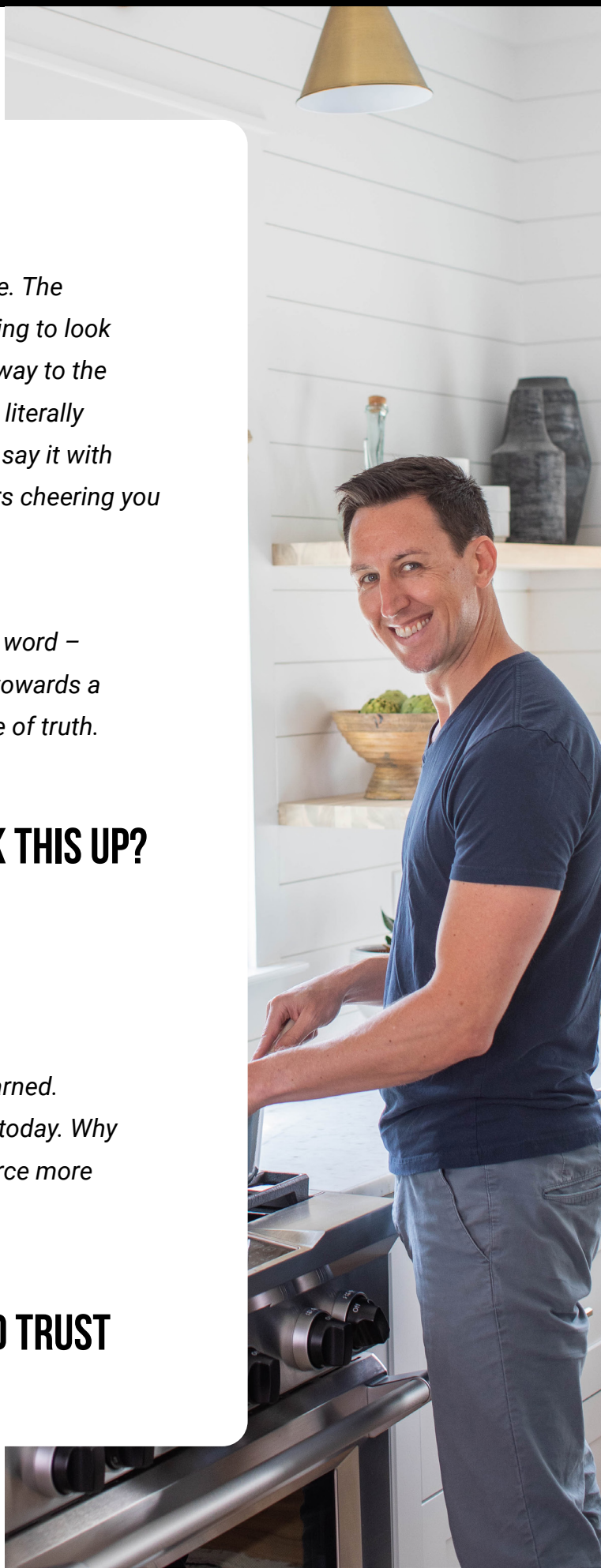
THE RICH ROLL PODCAST

BONUS RESOURCES + REFERENCES

EPISODES 680 + 538



Hi Friends!

Thank you for your interest in my work and in science. The information age (which was glorious, I loved not having to look everything up in Encyclopedia Britannica) has given way to the misinformation age. On today's internet, you can say literally anything, even if it defies rational thought, and if you say it with enough gusto you will find a group of loyal supporters cheering you on as you fulfill their confirmation bias.

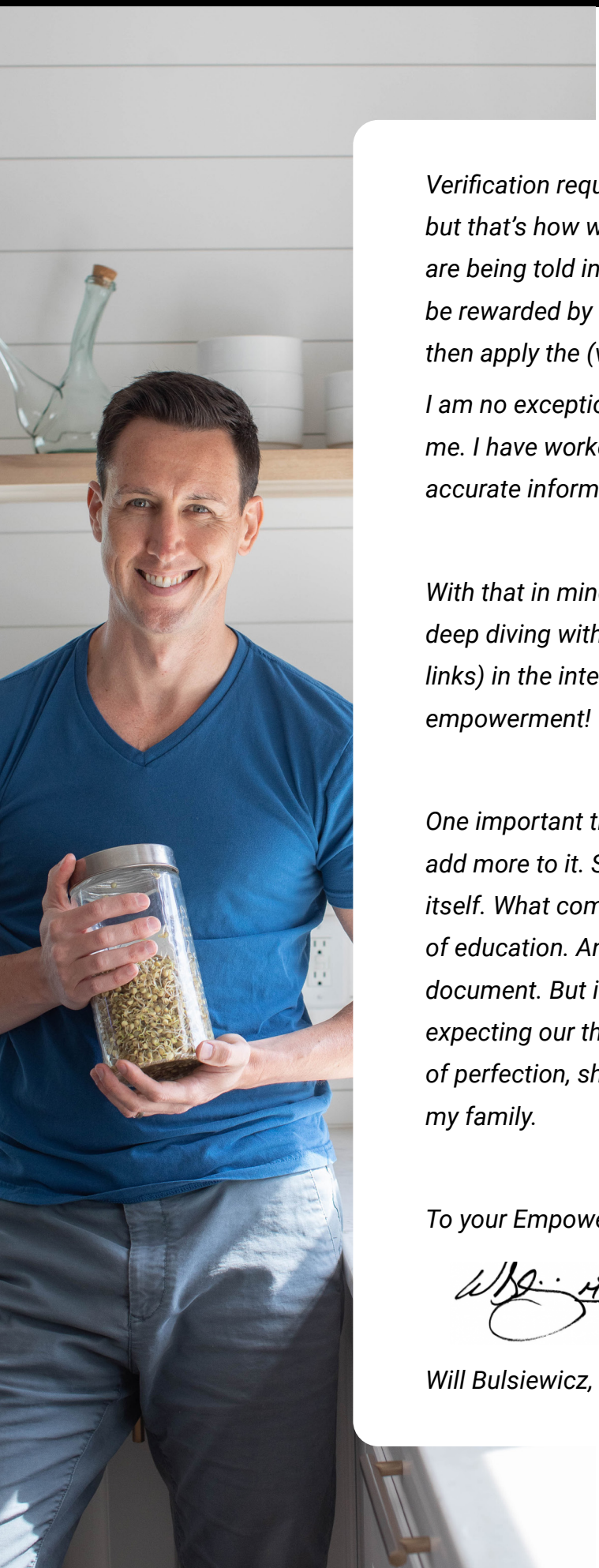
How can we separate the facts from the fibs? In one word – science. It is our compass guiding us (imperfectly) towards a better understanding of this world. This is our source of truth.

WHAT EVIDENCE DO YOU HAVE TO BACK THIS UP?

SHOW ME YOUR SOURCES.

We must learn to verify first, trust second. Trust is earned. Unfortunately, it's shockingly implicit on the internet today. Why does the number of followers somehow make a source more trustworthy? We all do it, but it's wildly flawed.

I CHALLENGE YOU TO VERIFY FIRST AND TRUST SECOND.



Verification requires effort. It's easier to jump straight to trusting, but that's how we step in it. Instead, we should challenge what we are being told in the interest of verifying to build trust. Our effort will be rewarded by establishing a legit, trustworthy source that we can then apply the (verifiable) information that they share to our life.

I am no exception to this! I want your trust. I want you to challenge me. I have worked extremely hard to be a verifiable source of accurate information for you.

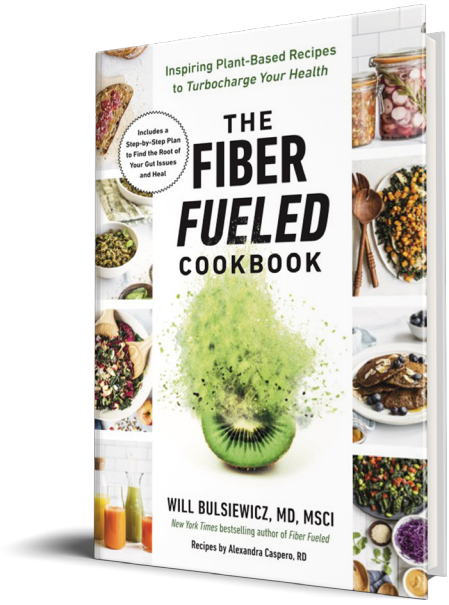
With that in mind, I'm sharing my sources. After five hours of deep diving with Rich Roll, I'm handing over 270+ sources (with links) in the interest of transparency, confidence building, and your empowerment!

One important thing. I may update this document in the future and add more to it. Science is complicated and it constantly revises itself. What comes out of my mouth isn't one study, it's a lifetime of education. And it evolves. I do my best to reflect that in this document. But it's April 2022, and my wife and I are imminently expecting our third child. I'd love to add more but it's time to let go of perfection, share what I have so far, and spend some time with my family.

To your Empowered Gut!

Will Bulsiewicz, MD, MSCI

RESOURCES + TOOLS TO EMPOWER YOU ON YOUR GUT HEALTH JOURNEY

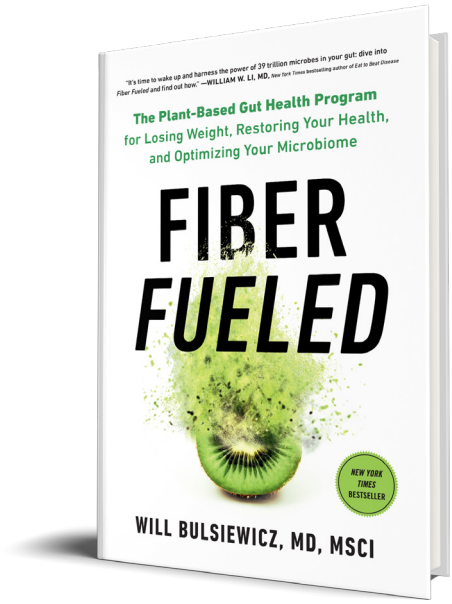


The Fiber Fueled Cookbook: Inspiring Plant-Based Recipes to Turbocharge Your Health

This must-have cookbook will inspire you with deeply flavorful, satisfying plant-based recipes that make the Fiber Fueled lifestyle delicious and inviting. But The Fiber Fueled Cookbook is also a revolutionary treatment program for food sensitivity sufferers who have struggled to get a handle on their symptoms. In it you will learn the GROWTH strategy, a groundbreaking approach that helps readers break down what's causing their GI problems, and discover real solutions that are personalized to their individual needs.

Whether you are well on your plant-based path, or excited to get started, the 100+ irresistible recipes in this book, including Lemon Lentil Salad, Cheezy Broccoli Potato Soup, Maple Peanut Granola, and Chocolate Cookie Milk, will get you ready to embrace the power of being Fiber Fueled!

ORDER NOW



Fiber Fueled: The Plant-Based Gut Health Program for Losing Weight, Restoring Your Health, and Optimizing Your Microbiome

The New York Times bestselling book that started it all! Fiber Fueled explains the importance of plant diversity in your diet, and provides a science-backed framework for optimal gut health. With a 28-day jumpstart program including menus and more than 65 recipes, along with essential advice on food sensitivities, Fiber Fueled offers the blueprint to start turbocharging your gut for lifelong health today.

ORDER NOW

The Plant Fed Gut Masterclass

My Plant Fed Gut Masterclass is a 7-week course teaching you everything you need for optimal gut health and healing. The Masterclass will open for the only class of 2022 on June 20, 2022!

LEARN MORE

ZOE

If you're interested in personalizing your health and learning more about how specific foods affect your body, check out ZOE. ZOE is an at-home test that analyzes your unique gut, blood fat and blood sugar responses. Once you send it in to be analyzed, you'll receive recommendations for overall health and healing based on your unique results. Plus, you can use WILLB10 to save on your kit!

GET STARTED

BONUS RESOURCES + REFERENCES

EPISODE 680

MAY 16, 2022

“We discovered that cancer has a microbiome.”

References 1,2 | 3rd minute

The human tumor microbiome is composed of tumor type-specific intracellular bacteria

Science. 2020 May 29;368(6494):973-980.

Characterization of the human tumor microbiome reveals tumor-type specific intra-cellular bacteria

Oncoimmunology. 2020 Jul 29;9(1):1800957.

“A person who has a low diversity within the tumor microbiome has worse survival than a tumor that has high diversity.”

Reference 3 | 5th minute

Tumor Microbiome Diversity and Composition Influence Pancreatic Cancer Outcomes

Cell 2019 Aug 8;178(4):795-806.

“In acute myeloid leukemia, a person with high diversity in their personal gut microbiome has better survival after a stem cell transplant compared to the person with low diversity in their gut microbiome.”

Reference 4 | 7th minute

The effects of intestinal tract bacterial diversity on mortality following allogeneic hematopoietic stem cell transplantation

Blood. 2014 Aug 14;124(7):1174-82.

“Antibiotics given prior to immunotherapy for melanoma were reducing the effectiveness of the cancer treatment.”

References 5-7 | 9th minute

Gut microbiome influences efficacy of PD-1-based immunotherapy against epithelial tumors

Science. 2018 Jan 5;359(6371):91-97.

Association of Prior Antibiotic Treatment With Survival and Response to Immune Checkpoint Inhibitor Therapy in Patients With Cancer

JAMA Oncol. 2019 Dec 1;5(12):1774-1778.

Antibiotic use and the efficacy of immune checkpoint inhibitors in cancer patients: a pooled analysis of 2740 cancer patients

Oncoimmunology. 2019 Sep 23;8(12):e1665973.

"In melanoma, if you have a higher diversity within your gut microbiome you are more likely to have a beneficial response to immunotherapy."

Reference 8-10 | 9th minute

Gut microbiome modulates response to anti-PD-1 immunotherapy in melanoma patients

Science. 2018 Jan 5;359(6371):97-103.

The commensal microbiome is associated with anti-PD-1 efficacy in metastatic melanoma patients

Science. 2018 Jan 5;359(6371):104-108.

Gut microbiome influences efficacy of PD-1-based immunotherapy against epithelial tumors

Science. 2018 Jan 5;359(6371):91-97.

"When you receive a fecal transplant to boost your gut microbiome temporarily, people had a better response to immunotherapy for melanoma."

References 11,12 | 9th minute

Fecal microbiota transplant promotes response in immunotherapy-refractory melanoma patients

Science. 2021 Feb 5;371(6529):602-609.

Fecal microbiota transplant overcomes resistance to anti-PD-1 therapy in melanoma patients

Science. 2021 Feb 5;371(6529):595-602.

"They've identified specific species which are beneficial in the fight against melanoma. You have improved survival with melanoma if you have these microbes. It turns out that these are the same species that help us to process our fiber and produce short chain fatty acids."

References 13-15 | 10th minute

Gut microbiome modulates response to anti-PD-1 immunotherapy in melanoma patients

Science. 2018 Jan 5;359(6371):97-103.

Colonic Butyrate-Producing Communities in Humans: an Overview Using Omics Data

mSystems. 2017 Nov-Dec; 2(6): e00130-17.

Butyrate mediates anti-inflammatory effects of Faecalibacterium prausnitzii in intestinal epithelial cells through Dact3

Gut Microbes. 2020 Nov 9;12(1):1-16.

"Fiber is the prebiotic, the bacteria are the probiotics, and the short chain fatty acids are the postbiotics."

References 16-19 | 10th minute

From Dietary Fiber to Host Physiology: Short-Chain Fatty Acids as Key Bacterial Metabolites

Cell. 2016 Jun 2;165(6):1332-1345.

The Impact of Dietary Fiber on Gut Microbiota in Host Health and Disease

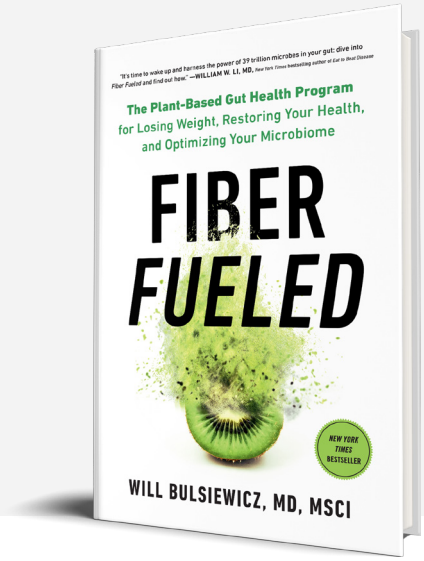
Cell Host Microbe. 2018 Jun 13;23(6):705-715.

Benefits of short-chain fatty acids and their receptors in inflammation and carcinogenesis

Pharmacol Ther. 2016 Aug;164:144-51.

The role of short-chain fatty acids in microbiota-gut-brain communication

Nat Rev Gastroenterol Hepatol. 2019 Aug;16(8):461-478.



My book *Fiber Fueled: The Plant-Based Gut Health Program for Losing Weight, Restoring your Health, and Optimizing Your Microbiome* provides detailed information on the role of fiber, bacteria, and short chain fatty acids in restoring and maintaining a healthy gut microbiome.

ORDER NOW

"Those consuming a higher fiber diet (20 grams of fiber per day or more) had a significantly improved response to therapy and survival after immunotherapy for melanoma."

"For every 5 grams that you increase your fiber consumption, you increase your survival by 30%."

Reference 20 | 12th minute

Dietary fiber and probiotics influence the gut microbiome and melanoma immunotherapy response

Science. 2021 Dec 24;374(6575):1632-1640.

"For every 5 grams that you increase your fiber intake after you were diagnosed with non-metastatic colon cancer, you saw an 18% increased likelihood of survival."

Reference 21 | 13th minute

Fiber intake and survival after colorectal cancer diagnosis

JAMA Oncol. 2018 Jan 1; 4(1): 71–79.

"The gut microbes consume the fiber and release the short chain fatty acids, which enter the bloodstream, travel to the lungs and manipulate the immune system in the fight against the respiratory virus. In this study, the mice fed a high fiber diet lived longer, with better lung function, and less severe disease. It was the opposite of what the scientists expected to happen."

Reference 22 | 24th minute

Dietary Fiber Confers Protection against Flu by Shaping Ly6c - Patrolling Monocyte Hematopoiesis and CD8 + T Cell Metabolism

Immunity. 2018 May 15;48(5):992-1005.e8.

"There were clear disturbances of the gut microbiome if you had COVID-19. There was a signature pattern that was more pronounced in those with severe COVID-19 associated with the loss of microbes that produce short chain fatty acids."

Reference 23 | 25th minute

Gut microbiota composition reflects disease severity and dysfunctional immune responses in patients with COVID-19

Gut. 2021 Apr;70(4):698-706.

"In a study of frontline healthcare workers, they found that those eating a plant-based diet had a 73% lower risk of moderate to severe COVID-19. There was a 59% reduction in the pescatarian diet. The people who ate a low carbohydrate diet were 3.8 times higher likelihood of developing moderate to severe COVID-19."

Reference 24 | 26th minute

Plant-based diets, pescatarian diets and COVID-19 severity: a population-based case-control study in six countries

BMJ Nutr Prev Health. 2021 Jun 7;4(1):257-266.

"We know that people do better, in terms of their gut health, when they are close to other people."

References 25,26 | 31st minute

Close social relationships correlate with human gut microbiota composition

Sci Rep. 2019 Jan 24;9(1):703

Social networks predict gut microbiome composition in wild baboons

Elife. 2015 Mar 16;4:e05224.

"We know that people have a healthier gut microbiome when they are under less stress."

References 27-30 | 31st minute

Steroids, stress and the gut microbiome-brain axis

J Neuroendocrinol. 2018 Feb;30(2):10.

Stress & the gut-brain axis: Regulation by the microbiome

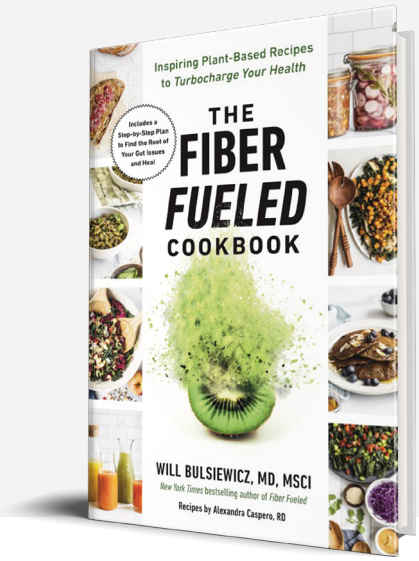
Neurobiol Stress. 2017 Mar 19;7:124-136.

Pathophysiological mechanisms of stress-induced intestinal damage

Curr Mol Med. 2008 Jun;8(4):274-81.

Influence of Early Life, Diet, and the Environment on the Microbiome

Clin Gastroenterol Hepatol. 2019 Jan;17(2):231-242.



In my book *The Fiber Fueled Cookbook: Inspiring Plant-Based Recipes to Turbocharge Your Health*, I have a chapter dedicated to holistic healing, why it's important for a healthy gut, and actions you can take to reduce stress.

ORDER NOW

"We know that people have a healthier gut microbiome when they are spending more time outdoors."

References 31-33 | 31st minute

Impact of outdoor nature-related activities on gut microbiota, fecal serotonin, and perceived stress in preschool children: the Play&Grow randomized controlled trial

Sci Rep. 2020 Dec 15;10(1):21993.

Nature-derived microbiota exposure as a novel immunomodulatory approach

Future Microbiol. 2018 Jun 1;13:737-744.

Recent urbanization in China is correlated with a Westernized microbiome encoding increased virulence and antibiotic resistance genes

Microbiome. 2017 Sep 15;5(1):121.

"There was a study where adults stuck their hands into the dirt for two weeks, and had a healthier gut microbiome at the end of it."

Reference 34 | 31st minute

Nature-derived microbiota exposure as a novel immunomodulatory approach

Future Microbiol. 2018 Jun 1;13:737-744.

"There's data on the increase in mood disorders and substance abuse during the COVID-19 pandemic."

References 34-37 | 32nd minute

Impact of COVID-19 pandemic on mental health in the general population: A systematic review

J Affect Disord. 2020 Dec 1;277:55-64.

Increased mood disorder symptoms, perceived stress, and alcohol use among college students during the COVID-19 pandemic

Psychiatry Res. 2021 Feb;296:113706.

Substance abuse in times of COVID-19 pandemic: a "perfect storm" for substance use disorder and mental health?

Clin Ter. 2021 Nov 22;172(6):525-526.

Alcohol and other substance use during the COVID-19 pandemic: A systematic review

Drug Alcohol Depend. 2021 Dec 1;229(Pt A):109150.

"If you compare our microbiome to the Hadza, you will see a loss of diversity in a Westernized population."

References 38-40 | 32nd minute

Gut microbiome of the Hadza hunter-gatherers

Nat Commun. 2014 Apr 15;5:3654.

Human gut microbiome viewed across age and geography

Nature. 2012 May 9;486(7402):222-7.

Impact of diet in shaping gut microbiota revealed by a comparative study in children from Europe and rural Africa

Proc Natl Acad Sci U S A. 2010 Aug 17;107(33):14691-6.

"Immigration to the United States is associated with an immediate loss of gut microbial diversity."

Reference 41 | 33rd minute

U.S. immigration westernizes the human gut microbiome

Cell. 2018 Nov 1; 175(4): 962–972.e10.

"New research indicates that in people suffering with long COVID, the gut microbiome is disturbed, and specifically there is a loss of the short chain fatty acid producing microbes."

Reference 42 | 35th minute

Gut microbiota dynamics in a prospective cohort of patients with post-acute COVID-19 syndrome

Gut. 2022 Mar;71(3):544-552.

"Metabolic issues such as obesity, high blood pressure, and diabetes are associated with worse outcomes from COVID-19."

References 43-45 | 36 minutes

Impact of Metabolic Syndrome on Severity of COVID-19 Illness

Metab Syndr Relat Disord. 2022 Jan 6.

Metabolic Syndrome and COVID-19 Mortality Among Adult Black Patients in New Orleans

Diabetes Care. 2020 Aug 25;44(1):188-193.

Metabolic Syndrome and COVID-19

Cardiol Res. 2020 Dec; 11(6): 360–365.

"Each of the conditions I just mentioned – obesity, high blood pressure, and diabetes – are associated with alterations or disturbances of the gut microbiome."

References 46-51 | 37 minutes

The Gut Microbiome and Obesity

Curr Oncol Rep. 2016 Jul;18(7):45.

The Influence of the Gut Microbiome on Obesity in Adults and the Role of Probiotics, Prebiotics, and Synbiotics for Weight Loss

Prev Nutr Food Sci. 2020 Jun 30;25(2):113-123.

Gut microbiota in hypertension

Curr Opin Nephrol Hypertens. 2015 Sep;24(5):403-9.

Alterations of the Gut Microbiome in Hypertension

Front Cell Infect Microbiol. 2017 Aug 24;7:381.

Gut microbiome and type 2 diabetes: where we are and where to go?

J Nutr Biochem. 2019 Jan;63:101-108.

Obesity, diabetes, and the gut microbiome: an updated review

Expert Rev Gastroenterol Hepatol. 2019 Jan;13(1):3-15.

"The microbiome is involved in digestion, immunity, metabolism, hormones, brain health, and even the expression of our genetic code."

References 52-54 | 41 minutes

The role of the microbiome in human health and disease: an introduction for clinicians

BMJ. 2017 Mar 15;356:j831.

The impact of the gut microbiota on human health: an integrative view

Cell. 2012 Mar 16;148(6):1258-70.

The gut microbiome in health and in disease

Curr Opin Gastroenterol. 2015 Jan; 31(1): 69–75.

"Our gut microbes are able to control our genetic expression through epigenetics."

References 55-57 | 42 minutes

Epigenetic regulation by gut microbiota

Gut Microbes. Jan-Dec 2022;14(1):2022407.

The Epigenetic Connection Between the Gut Microbiome in Obesity and Diabetes

Front Genet. 2019; 10: 1329.

Diet, the Gut Microbiome, and Epigenetics

Cancer J. 2014 May-Jun; 20(3): 170–175.

"The microbes in our colon could be turning over a new generation every 20 minutes."

Reference 58 | 44 minutes

The distribution of bacterial doubling times in the wild

Proc Biol Sci. 2018 Jun 13; 285(1880): 20180789.

"99.5% of our genetic code comes from our microbes."

Reference 59 | 45 minutes

A human gut microbial gene catalog established by metagenomic sequencing

Nature. 2010 Mar 4; 464(7285): 59–65.

"Identical twins only share about 35% of the same gut microbes."

Reference 60 | 49 minutes

A Study on Twins Offers Proof That We All Need Personalized Diets

Time. June 10, 2019.

"Using microbiome specimens they could predict a person's blood sugar response to individual foods."

Reference 61 | 51 minutes

Personalized Nutrition by Prediction of Glycemic Responses

Cell. 2015 Nov 19;163(5):1079-1094.

"ZOE's research shows us that they can predict our blood glucose and our blood lipids after a meal, which are cardiac risk factors that can be integrated into a model that allows us to predict obesity and cardiac risk scores."

Reference 62 | 52 minutes

Human Postprandial Responses to Food and Potential for Precision Nutrition

Nat Med. 2020 Jun; 26(6): 964–973.

"ZOE has now published their results for personalized nutrition in many of the top medical journals on the planet – Nature Medicine, Nature Metabolism, Gut."

References 63-72 | 55 minutes

Human Postprandial Responses to Food and Potential for Precision Nutrition

Nat Med. 2020 Jun; 26(6): 964–973.

Microbiome connections with host metabolism and habitual diet from 1,098 deeply phenotyped individuals

Nat Med. 2021 Feb;27(2):321-332.

High intake of vegetables is linked to lower white blood cell profile and the effect is mediated by the gut microbiome

BMC Med. 2021 Feb 11;19(1):37.

Blue poo: impact of gut transit time on the gut microbiome using a novel marker

Gut. 2021 Sep;70(9):1665-1674.

Postprandial glycaemic dips predict appetite and energy intake in healthy individuals

Nat Metab. 2021 Apr;3(4):523-529.

Gut microbiome diversity and composition is associated with hypertension in women

J Hypertens. 2021 Sep 1;39(9):1810-1816.

Meal-induced inflammation: postprandial insights from the Personalised REsponses to DIetary Composition Trial (PREDICT) study in 1000 participants

Am J Clin Nutr. 2021 Sep 1;114(3):1028-1038.

Modest effects of dietary supplements during the COVID-19 pandemic: insights from 445 850 users of the COVID-19 Symptom Study app

BMJ Nutr Prev Health. 2021 Apr 19;4(1):149-157.

Impact of insufficient sleep on dysregulated blood glucose control under standardised meal conditions

Diabetologia. 2022 Feb;65(2):356-365.

Validity of continuous glucose monitoring for categorizing glycemic responses to diet: implications for use in personalized nutrition

Am J Clin Nutr. 2022 Feb 4;nqac026.

“If you take a people who are obese, you will discover that there are changes in their gut microbiome.”

References 73-75 | 57 minutes

The Gut Microbiome and Obesity

Curr Oncol Rep. 2016 Jul;18(7):45.

The Influence of the Gut Microbiome on Obesity in Adults and the Role of Probiotics, Prebiotics, and Synbiotics for Weight Loss

Prev Nutr Food Sci. 2020 Jun 30;25(2):113-123.

Obesity, diabetes, and the gut microbiome: an updated review

Expert Rev Gastroenterol Hepatol. 2019 Jan;13(1):3-15.

“They have studies where they will take identical human twins where one is obese and one is skinny, take a stool specimen from each and transfer it into germ-free mice, and see that the

mice will end up with the resulting body phenotype even though they are being fed the exact same food, the exact same amount of food."

References 76,77 | 58 minutes

Gut microbiota from twins discordant for obesity modulate metabolism in mice

Science. 2013 Sep 6;341(6150):1241214.

Minireview: Gut microbiota: the neglected endocrine organ

Mol Endocrinol. 2014 Aug;28(8):1221-38.

"Research from Dr. Kevin Hall at the NIH shows that on an ultra-processed diet, people overeat."

Reference 78 | 59 minutes

Ultra-Processed Diets Cause Excess Calorie Intake and Weight Gain: An Inpatient Randomized Controlled Trial of Ad Libitum Food Intake

Cell Metab. 2019 Jul 2;30(1):67-77.

"There are a number of different hormones produced by the gut microbes that will go to the brain and tell us that we feel full. Fiber plays a critical role in this pathway."

Reference 79-83 | 1 hour

Effect of Butyrate and Inulin Supplementation on Glycemic Status, Lipid Profile and Glucagon-Like Peptide 1 Level in Patients with Type 2 Diabetes: A Randomized Double-Blind, Placebo-Controlled Trial

Horm Metab Res. 2017 Nov;49(11):886-891.

The fermentable fibre inulin increases postprandial serum short-chain fatty acids and reduces free-fatty acids and ghrelin in healthy subjects

Appl Physiol Nutr Metab. 2010 Feb;35(1):9-16.

Inulin-type fructans and whey protein both modulate appetite but only fructans alter gut microbiota in adults with overweight/obesity: A randomized controlled trial

Mol Nutr Food Res. 2017 Nov;61(11).

Prebiotic supplementation improves appetite control in children with overweight and obesity: a randomized controlled trial

Am J Clin Nutr. 2017 Apr;105(4):790-799.

Minireview: Gut microbiota: the neglected endocrine organ

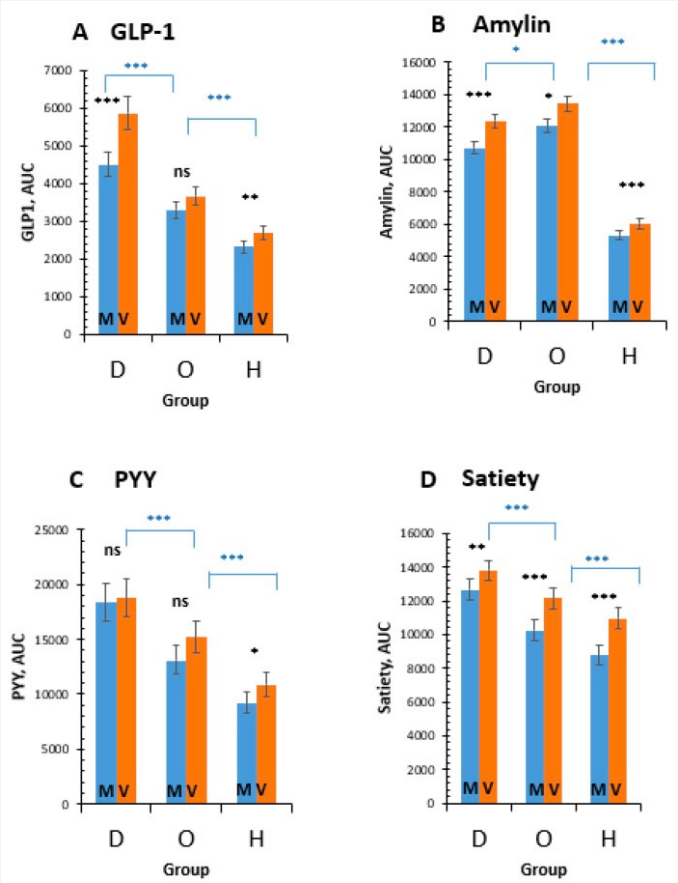
Mol Endocrinol. 2014 Aug;28(8):1221-38.

"In a study where participants were fed a tofu burger versus a pork and cheese burger that was matched for macronutrients and calories, they found that people felt more full when they were eating the tofu burger. The difference was the fiber."

Reference 84 | 1 hour

A Plant-Based Meal Increases Gastrointestinal Hormones and Satiety More Than an Energy- and Macronutrient-Matched Processed-Meat Meal in T2D, Obese, and Healthy Men: A Three-Group Randomized Crossover Study

Nutrients. 2019 Jan; 11(1): 157.



See the figure from the study above and note that GLP-1 and Peptide YY (PYY) are both satiety hormones. When they increase, we feel more full. The orange bars are the response to the plant-based meal, the blue bars are for the meat-based meal. There were three groups studied: patients with diabetes (D), obese subjects (O), and healthy controls (H). You'll note the consistently higher GLP-1 and PYY hormones with the plant-based (orange) meal. You'll also note that all three groups experienced higher satiety scores with the plant-based meal. In all three cases, this was statistically significant.

"Based upon our ZOE research, we found that you can predict a person's visceral fat deposits (a measure of obesity) more reliably by knowing their microbiome than you can their body mass index (BMI)."

Reference 85 | 1 hour 1 minute

Microbiome connections with host metabolism and habitual diet from 1,098 deeply phenotyped individuals

Nat Med. 2021 Feb;27(2):321-332.

"ZOE research has identified 15 specific microbes beneficial for our metabolism and 15 specific microbes that are disadvantageous for our metabolism. Knowing your balance of these microbes helps you to understand how to optimize your metabolism."

Reference 86 | 1 hour 2 minutes

Microbiome connections with host metabolism and habitual diet from 1,098 deeply phenotyped individuals

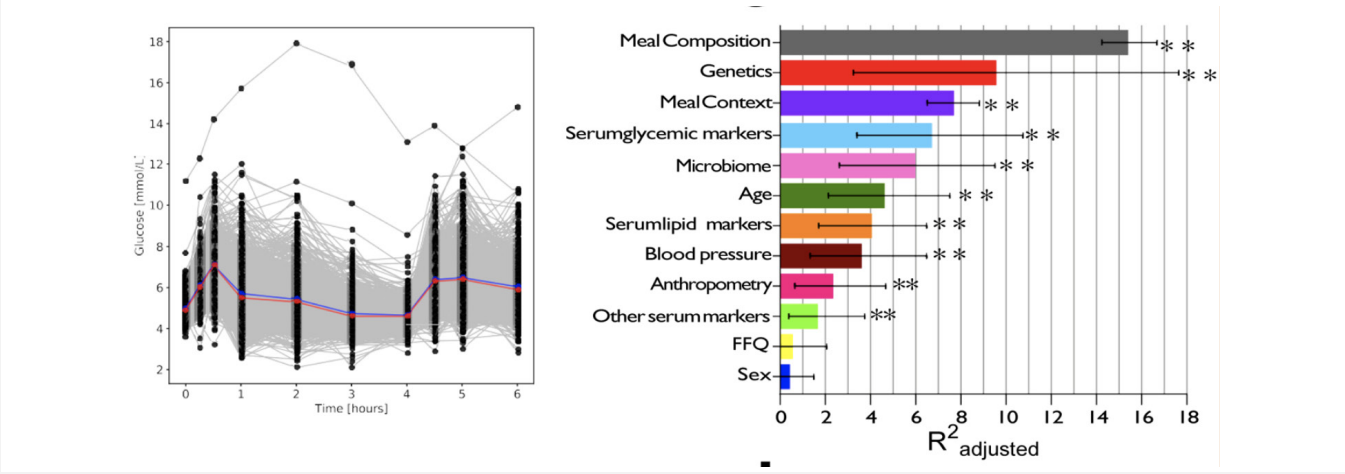
Nat Med. 2021 Feb;27(2):321-332.

"In our ZOE research, we showed that your dietary choices (what foods) more powerfully predict your blood sugar after a meal, but that the gut microbiome is a relevant and important part of predicting blood sugar."

Reference 87 | 1 hour 5 minutes

Human Postprandial Responses to Food and Potential for Precision Nutrition

Nat Med. 2020 Jun; 26(6): 964–973.



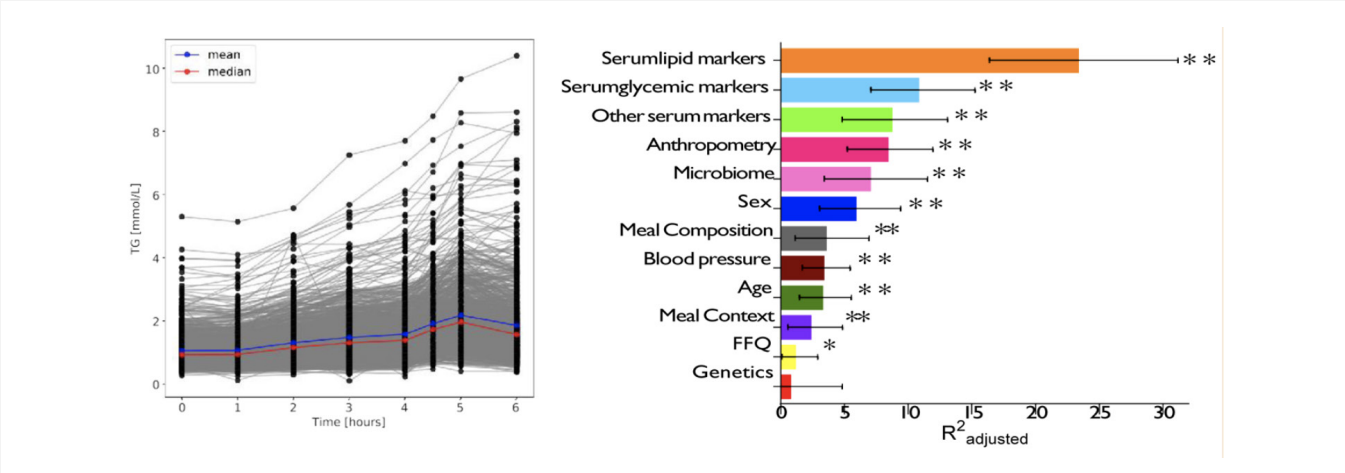
In the figure on the left, you can see the tremendous variability that exists for a blood sugar response after eating a standardized meal. Same food, different (personalized) results in terms of blood sugar. In predicting the blood sugar response (figure on the right), we found meal composition and genetics to be the top two predictive factors. But your gut microbiome was more powerful than your age, your body habitus (weight, BMI), and your gender.

"On the flip side, we found in our ZOE research that your triglyceride after a meal was more powerfully predicted by your gut microbiome composition than even the dietary choice (foods) that you were consuming."

Reference 88 | 1 hour 5 minutes

Human Postprandial Responses to Food and Potential for Precision Nutrition

Nat Med. 2020 Jun; 26(6): 964–973.



In the figure on the left, you once again see tremendous variability for triglyceride response after a meal even though everyone was consuming the same meal. Again, same food, different (personalized) responses in terms of triglycerides. In predicting your triglyceride response after a meal (figure on the right), the most powerful factor was your blood lipid markers at baseline, meaning that those who have high lipids were most likely to have higher triglycerides after a meal. That said, your gut microbiome composition was more powerful than your gender, the foods you were eating, your age, or even your genetics.

If you're interested in personalizing your health and learning more about how specific foods affect your body, click here to check out ZOE. ZOE is an at-home test that analyzes your unique gut, blood fat and blood sugar responses. You receive recommendations for overall health and healing based on your unique results.

GET STARTED

"The choices that you make today could alter your gut microbiome by tomorrow."

Reference 89 | 1 hour 6 minutes

Diet rapidly and reproducibly alters the human gut microbiome

Nature. 2014 Jan 23;505(7484):559-63.

"Permanent results in the gut microbiome come from consistency and sustaining your dietary pattern."

Reference 90 | 1 hour 7 minutes

Enterotypes in the landscape of gut microbial community composition

Nat Microbiol. 2018 Jan; 3(1): 8–16.

"Inflammatory bowel diseases (Crohn's disease or ulcerative colitis) are not autoimmune diseases. They are your immune system being activated and attacking as a result of your gut microbiome."

Reference 91 | 1 hour 9 minutes

The microbiome in inflammatory bowel diseases: from pathogenesis to therapy

Protein Cell. 2021 May; 12(5): 331–345.

“There’s a genetic predisposition to inflammatory bowel disease (Crohn’s disease or ulcerative colitis.)”

Reference 92 | 1 hour 9 minutes

Familial and ethnic risk in inflammatory bowel disease

Ann Gastroenterol. 2018 Jan-Feb; 31(1): 14–23.

“There’s a number of ways that the gut will communicate with the brain upstairs.”

Reference 93 | 1 hour 13 minutes

The gut-brain axis: interactions between enteric microbiota, central and enteric nervous systems

Ann Gastroenterol. 2015 Apr-Jun; 28(2): 203–209.

“The gut is able to affect mood, cognition, and memory.”

References 94-96 | 1 hour 14 minutes

Current Understanding of Gut Microbiota in Mood Disorders: An Update of Human Studies

Front Genet. 2019; 10: 98.

Effects of the Human Gut Microbiota on Cognitive Performance, Brain Structure and Function: A Narrative Review

Nutrients. 2020 Sep 30;12(10):3009

Gut Microbiota Composition Is Related to AD Pathology

Front Immunol. 2022 Jan 31;12:794519.

“You may crave sugar in the evening, and it may be the microbes inside you motivating you to pursue this maladaptive behavior.”

Reference 97 | 1 hour 17 minutes

Decoding the Role of Gut-Microbiome in the Food Addiction Paradigm

Int J Environ Res Public Health. 2021 Jul; 18(13): 6825.

"Our microbes can influence our taste buds."

Reference 98 | 1 hour 17 minutes

Do Gut Microbes Taste?

Nutrients. 2021 Aug; 13(8): 2581.

"What mom eats during pregnancy may influence the infant's taste preferences."

Reference 99 | 1 hour 20 minutes

Prenatal and postnatal flavor learning by human infants

Pediatrics. 2001 Jun;107(6):E88.

"We have interventional data where increased fiber intake improves mood disorders, such as depression."

Reference 100 | 1 hour 22 minutes

The Effects of Dietary Improvement on Symptoms of Depression and Anxiety: A Meta-Analysis of Randomized Controlled Trials

Psychosom Med. 2019 Apr; 81(3): 265–280.

"We can see a specific pattern in the microbes among those with mood disorders, including anxiety and major depression. There are more inflammatory microbes and less short chain fatty acid producing microbes. "

References 101-103 | 1 hour 22 minutes

The role of inflammation and the gut microbiome in depression and anxiety

J Neurosci Res. 2019 Oct;97(10):1223-1241.

The gut microbiota in anxiety and depression - A systematic review

Clin Psychol Rev. 2021 Feb;83:101943.

Landscapes of bacterial and metabolic signatures and their interaction in major depressive disorders

Sci Adv. 2020 Dec 2;6(49):eaba8555.

“Depression is an inflammatory disorder. Inflammation underpins coronary artery disease, cancer, and mood disorders.”

References 104-108 | 1 hour 25 minutes

Inflamed moods: a review of the interactions between inflammation and mood disorders

Prog Neuropsychopharmacol Biol Psychiatry. 2014 Aug 4;53:23-34.

Inflammation in psychiatric disorders: what comes first?

Ann N Y Acad Sci. 2019 Feb;1437(1):57-67.

Mood disorders and circulating levels of inflammatory markers in a longitudinal population-based study

Psychol Med. 2018 Apr;48(6):961-973.

Inflammation and cardiovascular disease: from pathogenesis to therapeutic target

Curr Atheroscler Rep. 2014 Sep;16(9):435.

Inflammation and Cancer: Triggers, Mechanisms, and Consequences

Immunity. 2019 Jul 16;51(1):27-41.

"With ZOE, we published a sleep study recently using our data from the PREDICT trial."

Reference 109 | 1 hour 27 minutes

Impact of insufficient sleep on dysregulated blood glucose control under standardised meal conditions

Diabetologia. 2022 Feb;65(2):356-365.

"All life on earth has a circadian rhythm. We all evolved with one common condition in place – the sun rose and fell on a daily basis."

Reference 110 | 1 hour 28 minutes

Light at Night and Disrupted Circadian Rhythms Alter Physiology and Behavior

Integr Comp Biol. 2021 Oct 4;61(3):1160-1169.

"We are more insulin sensitive in the morning and become more insulin resistant later in the day."

Reference 111 | 1 hour 29 minutes

Circadian Regulation of Glucose, Lipid, and Energy Metabolism in Humans

Metabolism. 2018 Jul; 84: 11–27.

"The benefits of polyphenols come from the fact that they are activated by our gut microbiome."

Reference 112 | 1 hour 32 minutes

Role of dietary polyphenols on gut microbiota, their metabolites and health benefits

Food Res Int. 2021 Apr;142:110189.

"19 out of 20 people in the US are deficient in fiber right now."

Reference 113 | 1 hour 34 minutes

Usual Nutrient Intakes From Food and Beverages, by Gender and Age

What We Eat in America, NHANES, USDA, published January 2021

"In The American Gut Project, when they performed their analysis they found that the single most powerful predictor of a healthy gut microbiome was the diversity of plants in their diet. Specifically, those consuming 30 or more plants per week had the healthiest guts."

Reference 114 | 1 hour 35 minutes

American Gut: an Open Platform for Citizen Science Microbiome Research

mSystems. 2018 May 15;3(3):e00031-18.

Crank up your Plant Points to take your gut health game to a whole new level.

A biodiverse diet starts with a biodiverse plate or bowl. Every meal is an opportunity to feed our gut bugs the variety they crave. That's why I devised the Plant Points game, which I first introduced in Fiber Fueled and I'm taking it to a whole new level in The Fiber Fueled Cookbook. To play, you assign one Plant Point for every unique plant in your meal and add up your points. By collecting Plant Points, you have a fun way to be motivated to ratchet up your plant diversity with every meal. Challenge yourself, your family and friends. It's so simple! Hang a sheet of paper somewhere with some names on it, and let the games begin! And if you're ready to get more serious about this game, download the app Nibble to keep track of your Plant Points, monitor your progress, move up the international leaderboard and connect with a community of like minded people.

"Ultra-processed foods may be disruptive to our gut microbiome."

References 115-116 | 1 hour 40 minutes

Gut Microbiota: An Important Link between Western Diet and Chronic Diseases

Nutrients. 2019 Oct; 11(10): 2287.

The Western Diet–Microbiome-Host Interaction and Its Role in Metabolic Disease

Nutrients. 2018 Mar; 10(3): 365.

"Over the course of 10 weeks, by increasing their consumption of fermented foods they were able to increase the diversity within their gut microbiome and reduce measures of inflammation."

Reference 117 | 1 hour 41 minutes

Gut-microbiota-targeted diets modulate human immune status

Cell. 2021 Aug 5;184(16):4137-4153.e14.

Rich recommends checking out Professor Justin Sonnenburg on The Huberman Podcast and The Proof Podcast.

"Many dietary emulsifiers disturb the gut microbiome."

References 118-120 | 1 hour 44 minutes

Direct impact of commonly used dietary emulsifiers on human gut microbiota

Microbiome. 2021 Mar 22;9(1):66.

Dietary emulsifiers directly alter human microbiota composition and gene expression ex vivo potentiating intestinal inflammation

Gut. 2017 Aug;66(8):1414-1427.

Food Additive Emulsifiers and Their Impact on Gut Microbiome, Permeability, and Inflammation: Mechanistic Insights in Inflammatory Bowel Disease

J Crohns Colitis. 2021 Jun 22;15(6):1068-1079.

> **"THERE ARE MANY FORMS OF A HEALTHFUL DIET, BUT THEY ARE ALL PLANT-PREDOMINANT DIETS AND WE HAVE POWERFUL RESEARCH STUDIES TO BACK THAT UP."**

References 121-130 | 1 hour 47 minutes

Note: There are simply way too many studies to include here. I'm limiting this to 10 studies looking at dietary patterns and life expectancy. In these studies, you will find common sense advice that has been scientifically proven to extend life expectancy. You have a choice! There are many patterns that are considered healthful. But there's a common thread that emerges in the research – the most healthful dietary patterns consist of mostly (if not exclusively) plants. We have overwhelming, consistent research to say this. Where is the research saying that people live longer on a low carb (READ THIS), ketogenic (READ THIS), or carnivore diet (no data on carnivore specifically but plenty of studies like this)? Just something to ponder.

Evaluation of Dietary Patterns and All-Cause Mortality: A Systematic Review

JAMA Netw Open. 2021 Aug 2;4(8):e2122277.

Plant-based diets and risk of disease mortality: a systematic review and meta-analysis of cohort studies

Crit Rev Food Sci Nutr. 2021 May 6;1-13.

Healthy Plant-Based Diets Are Associated with Lower Risk of All-Cause Mortality in US Adults

J Nutr. 2018 Apr 1;148(4):624-631.

Vegetarian, vegan diets and multiple health outcomes: A systematic review with meta-analysis of observational studies

Crit Rev Food Sci Nutr. 2017 Nov 22;57(17):3640-3649.

Plant-Based Diets Are Associated With a Lower Risk of Incident Cardiovascular Disease, Cardiovascular Disease Mortality, and All-Cause Mortality in a General Population of Middle-Aged Adults

J Am Heart Assoc. 2019 Aug 20;8(16):e012865.

Vegetarian dietary patterns and mortality in Adventist Health Study 2

JAMA Intern Med. 2013 Jul 8;173(13):1230-8.

Mediterranean diet and its components in relation to all-cause mortality: meta-analysis

Br J Nutr. 2018 Nov;120(10):1081-1097.

Mediterranean Dietary Pattern and Prediction of All-Cause Mortality in a US Population

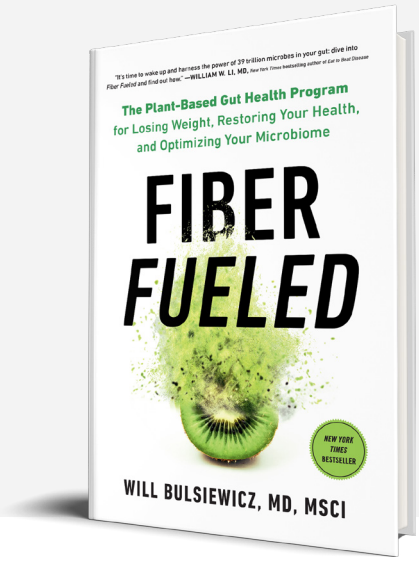
Arch Intern Med. 2007;167(22):2461-2468.

Blue Zones

Am J Lifestyle Med. 2016 Sep-Oct; 10(5): 318–321.

Mortality in vegetarians and nonvegetarians: detailed findings from a collaborative analysis of 5 prospective studies

Am J Clin Nutr. 1999 Sep;70(3 Suppl):516S-524S.



My book *Fiber Fueled: The Plant-Based Gut Health Program for Losing Weight, Restoring your Health, and Optimizing Your Microbiome is a great resource for learning more about the power of a plant-predominant diet.*

ORDER NOW

"There are no long term studies with the carnivore diet. There's very close to no short term studies either. But many of these people will claim that they healed themselves with a carnivore diet."

Reference 131 | 1 hour 48 minutes

Here's the only study I could find as of April 2022.

Behavioral Characteristics and Self-Reported Health Status among 2029 Adults Consuming a "Carnivore Diet"

Current Developments in Nutrition, Volume 5, Issue 12, December 2021, nzab133

"I have concerns that an exclusively animal product based diet is bad for the gut microbiome."

Reference 132 | 1 hour 49 minutes

Again, very limited data. But here is a study I often refer to.

Diet rapidly and reproducibly alters the human gut microbiome

Nature volume 505, pages 559–563 (2014)

“There is value to removing ultra-processed foods.”

References 133-152 | 1 hour 49 minutes

Ultra-Processed Foods and Health Outcomes: A Narrative Review

Nutrients. 2020 Jul; 12(7): 1955.

Ultra-Processed Food Intake and Risk of Cardiovascular Disease: Prospective Cohort Study (NutriNet-Santé)

BMJ 365 (May 29, 2019): l1451

Ultra-Processed Foods and Incident Cardiovascular Disease in the Framingham Offspring Study

Journal of the American College of Cardiology 77, no. 12 (March 30, 2021): 1520–31

Consumption of Ultra-Processed Foods and Cancer Risk: Results from NutriNet-Santé Prospective Cohort

BMJ (Clinical Research Ed.) 360 (14 2018): k322

Ultra-Processed Diets Cause Excess Calorie Intake and Weight Gain: An Inpatient Randomized Controlled Trial of Ad Libitum Food Intake

Cell Metabolism 30, no. 1 (July 2, 2019): 67-77.e3

Ultra-Processed Food Consumption Is Associated with Increased Risk of All-Cause and Cardiovascular Mortality in the Moli-Sani Study

The American Journal of Clinical Nutrition 113, no. 2 (February 2, 2021): 446–55

Association of Ultra-Processed Food Consumption with Cardiovascular Mortality in the US Population: Long-Term Results from a Large Prospective Multicenter Study

International Journal of Behavioral Nutrition and Physical Activity 18, no. 1 (February 3, 2021): 21

Consumption of Ultra-Processed Foods and Health Outcomes: A Systematic Review of Epidemiological Studies

Nutrition Journal 19, no. 1 (August 20, 2020): 86

Ultra-Processed Food Intake in Association with BMI Change and Risk of Overweight and Obesity: A Prospective Analysis of the French NutriNet-Santé Cohort

PLOS Medicine 17, no. 8 (August 27, 2020): e1003256

Ultra-Processed Food Intake and Obesity: What Really Matters for Health – Processing or Nutrient Content?

Current Obesity Reports 6, no. 4 (December 2017): 420–31

Ultra-Processed Food Consumption and Obesity in the Australian Adult Population

Nutrition & Diabetes 10, no. 1 (December 5, 2020): 1–11

Ultra-Processed Food and the Risk of Overweight and Obesity: A Systematic Review and Meta-Analysis of Observational Studies

International Journal of Obesity 44, no. 10 (October 2020): 2080–91

Ultra-Processed Food Consumption and Obesity Among US Children

Current Developments in Nutrition 4, no. Supplement_2 (June 1, 2020): 1656–1656

Ultraprocessed Food Consumption and Risk of Type 2 Diabetes Among Participants of the NutriNet-Santé Prospective Cohort

JAMA Internal Medicine 180, no. 2 (February 1, 2020): 283–91

Ultra-Processed Food Consumption and Type 2 Diabetes Incidence: A Prospective Cohort Study

Clinical Nutrition, December 28, 2020

Ultra-Processed Foods and Excess Heart Age Among U.S. Adults

American Journal of Preventive Medicine 59, no. 5 (November 2020): e197–206

Effect of Ultra-Processed Diet on Gut Microbiota and Thus Its Role in Neurodegenerative Diseases

Nutrition 71 (March 1, 2020): 110609

Processed and Ultra-Processed Food Consumption Are Related to Metabolic Markers in Hemodialysis Subjects

Revista de Nutrição 33 (2020)

Elderly Patients on Hemodialysis Have Worse Dietary Quality and Higher Consumption of Ultraprocessed Food than Elderly without Chronic Kidney Disease

Nutrition (Burbank, Los Angeles County, Calif.) 41 (September 2017): 73–79

Ultra-Processed Food Consumption Is Associated with Renal Function Decline in Older Adults: A Prospective Cohort Study

Nutrients 13, no. 2 (January 28, 2021)

“When people say that they do the carnivore diet and it improves their autoimmune disease, I attribute that to the fact that they have removed ultra-processed foods from their diet. It’s not that the meat heals.”

References 153-158 | 1 hour 50 minutes

Role of “Western Diet” in Inflammatory Autoimmune Diseases

Curr Allergy Asthma Rep. 2014 Jan; 14(1): 404.

Association of ultra-processed food intake with risk of inflammatory bowel disease: prospective cohort study

BMJ 2021; 374

Red meat intake is associated with early onset of rheumatoid arthritis: a cross-sectional study

Sci Rep. 2021; 11: 5681.

Consumption of red meat, genetic susceptibility, and risk of LADA and type 2 diabetes

Eur J Nutr. 2021 Mar;60(2):769-779.

Meat intake is associated with a higher risk of ulcerative colitis in a large European prospective cohort study

J Crohns Colitis. 2022 Apr 9;jjac054

Meat intake and risk of inflammatory bowel disease: A meta-analysis

Turk J Gastroenterol. 2015 Nov;26(6):492-7.

“Saturated fat has negative effects on the gut microbiome.”

References 159-163 | 1 hour 51 minutes

Impact of Individual Traits, Saturated Fat, and Protein Source on the Gut Microbiome

mBio. 2018 Dec 11;9(6):e01604-18.

Dietary fat, the gut microbiota, and metabolic health - A systematic review conducted within the MyNewGut project

Clin Nutr. 2019 Dec;38(6):2504-2520

Saturated fat stimulates obesity and hepatic steatosis and affects gut microbiota composition by an enhanced overflow of dietary fat to the distal intestine

Am J Physiol Gastrointest Liver Physiol. 2012 Sep 1;303(5):G589-99.

Impact of short-term overfeeding of saturated or unsaturated fat or sugars on the gut microbiota in relation to liver fat in obese and overweight adults

Clin Nutr. 2021 Jan;40(1):207-216.

Effects of dietary fat profile on gut permeability and microbiota and their relationships with metabolic changes in mice

Obesity (Silver Spring). 2015 Jul;23(7):1429-39

“Saturated fat contributes to insulin resistance through lipotoxicity. The fruit is not the problem. It’s that the saturated fat is causing you to be insulin resistant, and then you spike your sugar when you eat the fruit. You’re not fixing the problem by avoiding the fruit.”

References 164-167 | 1 hour 52 minutes

Dietary fat, insulin sensitivity and the metabolic syndrome

Clin Nutr. 2004 Aug;23(4):447-56.

A high-fat, high-saturated fat diet decreases insulin sensitivity without changing intra-abdominal fat in weight-stable overweight and obese adults

Eur J Nutr. 2017 Feb;56(1):431-443

Saturated fatty acid-mediated inflammation and insulin resistance in adipose tissue: mechanisms of action and implications

J Nutr. 2009 Jan;139(1):1-4.

Effect of a plant-based, low-fat diet versus an animal-based, ketogenic diet on ad libitum energy intake

Nat Med. 2021 Feb;27(2):344-353.

"Saturated fat drives up LDL cholesterol."

References 168-171 | 1 hour 54 minutes

Behavioral Characteristics and Self-Reported Health Status among 2029 Adults Consuming a "Carnivore Diet"

Current Developments in Nutrition, Volume 5, Issue 12, December 2021, nzab133

Effects of a very high saturated fat diet on LDL particles in adults with atherogenic dyslipidemia: A randomized controlled trial

PLoS One. 2017 Feb 6;12(2):e0170664

Effects of red meat, white meat, and nonmeat protein sources on atherogenic lipoprotein measures in the context of low compared with high saturated fat intake: a randomized controlled trial

Am J Clin Nutr. 2019 Jul 1;110(1):24-33.

Effects of reducing dietary saturated fatty acids on plasma lipids and lipoproteins in healthy subjects: the DELTA Study, protocol 1

Arterioscler Thromb Vasc Biol. 1998 Mar;18(3):441-9.

"LDL CHOLESTEROL IS A WIDELY ACCEPTED RISK FACTOR FOR CORONARY ARTERY DISEASE."

"There are multiple different drugs that use different mechanisms to lower LDL cholesterol (statins, ezetimibe, PCSK-9 inhibitors), and in large scale clinical trials when you lower LDL cholesterol you consistently reduce your likelihood of having a heart attack and in many cases of dying of heart disease."

References 172-180 | 1 hour 54 minutes

Efficacy and safety of cholesterol-lowering treatment: prospective meta-analysis of data from 90,056 participants in 14 randomised trials of statins

Lancet. 2005 Oct 8;366(9493):1267-78.

Association Between Lowering LDL-C and Cardiovascular Risk Reduction Among Different Therapeutic Interventions

JAMA. 2016;316(12):1289-1297

Relation of different measures of low-density lipoprotein cholesterol to risk of coronary artery disease and death in a meta-regression analysis of large-scale trials of statin therapy

Am J Cardiol. 2010 May 1;105(9):1289-96

Association of Statin Use With All-Cause and Cardiovascular Mortality in US Veterans 75 Years and Older

JAMA. 2020 Jul 7;324(1):68-78

Legacy effects of statins on cardiovascular and all-cause mortality: a meta-analysis

BMJ Open. 2018 Oct 4;8(9):e020584

Cardiovascular Outcomes and Mortality Associated With Discontinuing Statins in Older Patients Receiving Polypharmacy

JAMA Netw Open. 2021 Jun 1;4(6):e2113186

Ezetimibe Lipid-Lowering Trial on Prevention of Atherosclerotic Cardiovascular Disease in 75 or Older (EWTOPIA 75): A Randomized, Controlled Trial

Circulation. 2019 Sep 17;140(12):992-1003.

Ezetimibe for the prevention of cardiovascular disease and all-cause mortality events

Cochrane Database Syst Rev. 2018 Nov 19;11(11):CD012502.

Cardiovascular events with PCSK9 inhibitors: an updated meta-analysis of randomised controlled trials

Pharmacol Res. 2019 May;143:143-150

"This may explain why reducing saturated fat intake has been associated with a reduction of cardiovascular diseases (our number 1 killer) in randomized controlled trials, as evidenced in a recent Cochrane review on the topic."

Reference 181 | 1 hour 54 minutes

Reduction in saturated fat intake for cardiovascular disease

Cochrane Database Syst Rev. 2020 May 19;5(5):CD011737.

"There are specific foods that account for the vast majority of food allergies – dairy, eggs, fish, shellfish, soy, wheat, peanuts, nuts, and corn."

Reference 182 | 2 hours 1 minute

Differentiating food allergies from food intolerances

Curr Gastroenterol Rep. 2011 Oct;13(5):426-34

"There's developing data suggesting that food allergies may be in association with the developing infant microbiome."

Reference 183 | 2 hours 2 minutes

The Infant Microbiome and Its Impact on Development of Food Allergy

Immunol Allergy Clin North Am. 2021 May;41(2):285-299.

"Food allergies involve activation of the immune system. Food intolerances, by definition, do not involve activation of the immune system. Food intolerances are not inflammation, they are sloppy digestion"

Reference 184 | 2 hours 4 minutes

Food Intolerances

Nutrients. 2019 Jul 22;11(7):1684

"Food intolerance tests are unreliable for understanding what's causing your food intolerance."

References 185-186 | 2 hours 6 minutes

Unreliability of IgE/IgG4 antibody testing as a diagnostic tool in food intolerance

Clin Exp Allergy. 1998 Dec;28(12):1526-9

Evaluating the clinical relevance of food sensitivity tests: a single subject experiment

Altern Med Rev. 2004 Jun;9(2):198-207.

"Histamine intolerance is a potential game changer for people suffering with unexplained symptoms, both digestive and outside the digestive system (like headaches, runny nose, sinus congestion, rash, hives and flushing."

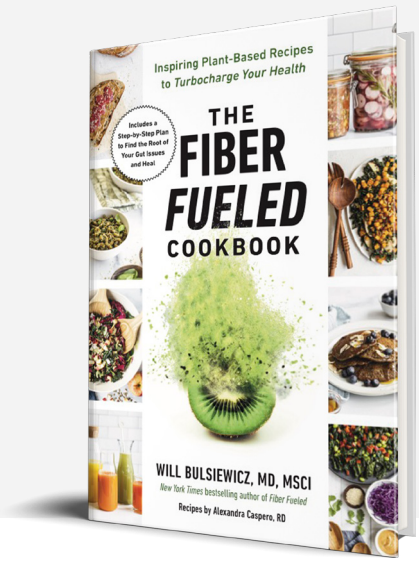
References 187-188 | 2 hours 14 minutes

Histamine Intolerance: The Current State of the Art

Biomolecules. 2020 Aug; 10(8): 1181.

Histamine and histamine intolerance

Am J Clin Nutr. 2007 May;85(5):1185-96



In my book *The Fiber Fueled Cookbook: Inspiring Plant-Based Recipes to Turbocharge Your Health*, includes a step-by-step plan to find the root of your gut health issues and heal, including histamine intolerance.

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"Our stool is predominantly made up of gut microbes."

Reference 189 | 2 hours 23 minutes

The microbial contribution to human faecal mass

J Med Microbiol. 1980 Feb;13(1):45-56.

"When you move, your intestines move. Movement stimulates intestinal motility."

References 190-193 | 2 hours 27 minutes

'Runner's trots'. Gastrointestinal disturbances in runners

JAMA. 1980 May 2;243(17):1743-4

Runner's diarrhea: what is it, what causes it, and how can it be prevented?

Curr Opin Gastroenterol. 2017 Jan;33(1):41-46.

Effects of Regular Physical Activity on Defecation Pattern in Middle-Aged Patients Complaining of Chronic Constipation

Scandinavian Journal of Gastroenterology 40, no. 4 (April 2005): 422–29

Aerobic exercise improves gastrointestinal motility in psychiatric inpatients

World J Gastroenterol. 2014 Aug 14; 20(30): 10577–10584.

"Fiber is not always the solution to constipation. In some cases, such as moderate or severe constipation, it actually can be problematic."

Reference 194 | 2 hours 29 minutes

Stopping or Reducing Dietary Fiber Intake Reduces Constipation and Its Associated Symptoms

World Journal of Gastroenterology : WJG 18, no. 33 (September 7, 2012): 4593–96

"People who are constipated produce more gas."

Reference 195 | 2 hours 30 minutes

Methanogenic Flora Is Associated with Altered Colonic Transit but Not Stool Characteristics in Constipation without IBS

The American Journal of Gastroenterology 105, no. 6 (June 2010): 1407–11

"Methane gas actually slows bowel motility."

Reference 196 | 2 hours 31 minutes

Methane, a Gas Produced by Enteric Bacteria, Slows Intestinal Transit and Augments Small Intestinal Contractile Activity

American Journal of Physiology. Gastrointestinal and Liver Physiology 290, no. 6 (June 2006): G1089-1095

"Magnesium is often the first thing I will try in the treatment of magnesium. Magnesium oxide has randomized controlled trials to support its use."

References 197-199 | 2 hours 33 minutes

Magnesium Oxide in Constipation

Nutrients. 2021 Feb; 13(2): 421.

A Randomized Double-blind Placebo-controlled Trial on the Effect of Magnesium Oxide in Patients With Chronic Constipation

J Neurogastroenterol Motil. 2019 Oct; 25(4): 563–575.

Senna Versus Magnesium Oxide for the Treatment of Chronic Constipation: A Randomized, Placebo-Controlled Trial

Am J Gastroenterol. 2021 Jan 1;116(1):152-161.

"In recent research that I published along with Drs. Ana Valdes and Amrita Vijay from University of Nottingham, we found that 15 minutes of exercise has the ability to change the gut microbiome in a way that enhances the butyrate producing microbes."

Reference 200 | 2 hours 37 minutes

The anti-inflammatory effect of bacterial short chain fatty acids is partially mediated by endocannabinoids

Gut Microbes. Jan-Dec 2021;13(1):1997559

"People who get more restful sleep have more diversity within their gut microbiome."

Reference 201 | 2 hours 40 minutes

Gut Microbiome Diversity Is Associated with Sleep Physiology in Humans

PLoS ONE 14, no. 10 (October 7, 2019)

"Spouses share microbes more so than siblings, that the sharing was not due to dietary factors, and that this only occurred in those who reported feeling connected to their spouse."

Reference 202 | 2 hours 41 minutes

Close Social Relationships Correlate with Human Gut Microbiota Composition

Scientific Reports 9, no. 1 (January 24, 2019): 703

BONUS RESOURCES + REFERENCES

EPISODE 538

AUGUST 10, 2020

“70% of your immune system is in your gut.”

Reference 1 | 6 minutes

The role of gut microbiota in immune homeostasis and autoimmunity

Gut Microbes. 2012 Jan 1; 3(1): 4–14.

“Diabetes, heart disease, high blood pressure are connected to an increased likelihood of severe COVID-19.”

Reference 2 | 7 minutes

Severity and mortality of COVID 19 in patients with diabetes, hypertension and cardiovascular disease: a meta-analysis

Diabetology & Metabolic Syndrome volume 12, Article number: 75 (2020)

“When things affect the microbiome, they affect the immune system, and vice versa.”

References 3-6 | 9 minutes

The microbiome in autoimmune diseases

Clin Exp Immunol. 2019 Jan;195(1):74-85.

The Gut Microbiota: Emerging Evidence in Autoimmune Diseases

Trends Mol Med. 2020 Sep;26(9):862-873.

The Dynamic Interplay between the Gut Microbiota and Autoimmune Diseases

J Immunol Res. 2019 Oct 27;2019:7546047

The microbiome in systemic autoimmune disease: mechanistic insights from recent studies

Curr Opin Rheumatol. 2019 Mar;31(2):201-207.

“Look at celiac disease up 500%. Look at inflammatory bowel disease exploding. There are conditions like eosinophilic esophagitis that I’m diagnosing routinely that didn’t exist when I was a kid, and they indicate a confused immune system.”

Reference 7-9 | 13 minutes

Gut microbes and adverse food reactions: Focus on gluten related disorders

Gut Microbes. 2014;5(5):594-605

Increasing incidence and prevalence of the inflammatory bowel diseases with time, based on systematic review

Gastroenterology. 2012 Jan;142(1):46-54.e42

Epidemiology and Natural History of Eosinophilic Esophagitis

Gastroenterology. 2018 Jan;154(2):319-332.e3.

“We have 38 trillion microbes living in our gut.”

Reference 10 | 16 minutes

Revised Estimates for the Number of Human and Bacteria Cells in the Body

PLoS Biol. 2016 Aug; 14(8): e1002533.

“Our gut microbes are connected to our digestion, metabolism, immune system, hormones, mood and brain function.”

References 11-12 | 17 minutes

The impact of the gut microbiota on human health: an integrative view

Cell. 2012 Mar 16;148(6):1258-70.

The gut microbiome in health and in disease

Curr Opin Gastroenterol. 2015 Jan; 31(1): 69–75.

“Living inside us are bacteria, fungi, archaea, parasites and viruses.”

References 13-14 | 18 minutes

Gut Microbiota beyond Bacteria—Mycobiome, Virome, Archaeome, and Eukaryotic Parasites in IBD

Int J Mol Sci. 2020 Apr; 21(8): 2668.

Archaeal symbionts and parasites

Curr Opin Microbiol. 2011 Jun;14(3):364-70

“The period of time between birth and age 2-3 is a critical time in both gut microbiome development and immune development.”

Reference 15 | 36 minutes

Temporal development of the infant gut microbiome

Open Biol. 2019 Sep 27;9(9):190128

“At 36 weeks pregancy, mom’s vaginal microbiome starts to change to prepare for delivery of the child.”

References 16-17 | 37 minutes

Ecological succession in the vaginal microbiota during pregnancy and birth

ISME J. 2020 Sep;14(9):2325-2335.

Diversity of vaginal microbiota increases by the time of labor onset

Sci Rep. 2017; 7: 17558.

"Human breast milk contains human milk oligosaccharides, which have literally zero nutritional value to the child. They are food for the developing gut microbiome. They are prebiotics."

Reference 18 | 38 minutes

Human milk and related oligosaccharides as prebiotics

Curr Opin Biotechnol. 2013 Apr;24(2):214-9

"Children who are bottle fed, born by cesarean section or receive antibiotics are more likely to have immune mediated or metabolic disorders than those who are breast fed, born by vaginal delivery or do not receive antibiotics."

References 19-21 | 39 minutes

Cesarean Section, Formula Feeding, and Infant Antibiotic Exposure: Separate and Combined Impacts on Gut Microbial Changes in Later Infancy

Front Pediatr. 2017; 5: 200.

Antibiotics, birth mode, and diet shape microbiome maturation during early life

Sci Transl Med. 2016 Jun 15;8(343):343ra82

Impact of maternal intrapartum antibiotics, method of birth and breastfeeding on gut microbiota during the first year of life: a prospective cohort study

BJOG. 2016 May;123(6):983-93

"Soluble fiber feeds the microbiome (prebiotic), they (the probiotics) grow stronger, and they reward us by releasing (postbiotic) short chain fatty acids.

Reference 22 | 41 minutes

Dietary Fibers and Their Fermented Short-Chain Fatty Acids in Prevention of Human Diseases

Mech Ageing Dev. 2018 Oct 15;S0047-6374(18)30013-7.

"The health benefits of short chain fatty acids include the gut, the immune system, the metabolism, they have healing effects throughout the entire body."

References 23-28 | 42 minutes

The role of short-chain fatty acids in health and disease

Adv Immunol. 2014;121:91-119.

Review article: short chain fatty acids as potential therapeutic agents in human gastrointestinal and inflammatory disorders

Aliment Pharmacol Ther. 2018 Jul;48(1):15-34

Benefits of short-chain fatty acids and their receptors in inflammation and carcinogenesis

Pharmacol Ther. 2016 Aug;164:144-51

Short chain fatty acids in human gut and metabolic health

Benef Microbes. 2020 Sep 1;11(5):411-455

Role of Gut Microbiota-Generated Short-Chain Fatty Acids in Metabolic and Cardiovascular Health

Curr Nutr Rep. 2018 Dec;7(4):198-206

The role of short-chain fatty acids in microbiota-gut-brain communication

Nat Rev Gastroenterol Hepatol. 2019 Aug;16(8):461-478.

"The Hadza consume a biodiverse, high fiber diet and have benefits as a result in their gut microbiome."

Reference 29 | 44 minutes

Seasonal Cycling in the Gut Microbiome of the Hadza Hunter-Gatherers of Tanzania

Science. 2017 Aug 25; 357(6353): 802–806.

“Biodiversity is a measure of health in any ecosystem.”

References 30-32 | 46 minutes

Biodiversity and human health: mechanisms and evidence of the positive health effects of diversity in nature and green spaces

Br Med Bull. 2018 Sep 1;127(1):5-22

Biodiversity and human well-being: an essential link for sustainable development

Proc Biol Sci. 2016 Dec 14; 283(1844): 20162091.

Measuring the shape of the biodiversity-disease relationship across systems reveals new findings and key gaps

Nat Commun. 2019; 10: 5032.

“In The American Gut Project, when they performed their analysis they found that the single most powerful predictor of a healthy gut microbiome was the diversity of plants in their diet. Specifically, those consuming 30 or more plants per week had the healthiest guts. Diversity of plants was more important than being vegan.”

Reference 33 | 49 minutes

American Gut: an Open Platform for Citizen Science Microbiome Research

mSystems. 2018 May 15;3(3):e00031-18.

“There are at least 8000 phytochemicals.”

Reference 34 | 53 minutes

Health benefits of fruit and vegetables are from additive and synergistic combinations of phytochemicals

Am J Clin Nutr. 2003 Sep;78(3 Suppl):517S-520S

“The apple has a microbiome that helps it to mature from seed to flower to fruit.”

Reference 35 | 54 minutes

An Apple a Day: Which Bacteria Do We Eat With Organic and Conventional Apples?

Front Microbiol. 2019 Jul 24;10:1629.

“Eubiosis is a broad, diverse microbiome where the good guys outweigh the bad guys so much they can’t hurt you. It’s harmony and balance. When we lose that harmony and balance, it’s dysbiosis. The bad guys become more prominent, there’s a loss of diversity. It affects the epithelial layer causing increased intestinal permeability (leaky gut).”

Reference 36 | 58 minutes

Eubiosis and dysbiosis: the two sides of the microbiota

New Microbiol. 2016 Jan;39(1):1-12.

“Bacterial endotoxin activates the immune system. This is inflammation. Chronic low levels cause chronic inflammatory disorders. Acute, sudden surges cause sepsis.”

References 37-39 | 59 minutes

Causes and consequences of low grade endotoxemia and inflammatory diseases

Front Biosci (Schol Ed). 2013 Jan 1;5(2):754-65

The level of endotoxemia in sepsis varies in relation to the underlying infection: Impact on final outcome

Immunol Lett. 2013 May;152(2):167-72

Endotoxin in the pathogenesis of sepsis

Contrib Nephrol. 2010;167:1-13.

"There are around 10,000 food additives in our food supply. Very few of them have been studied in humans at all. Almost none of them have been studied in terms of their effects on human health in the long term or their effects on the gut microbiome."

Reference 40-41 | 1 hour 3 minutes

The Western Diet–Microbiome-Host Interaction and Its Role in Metabolic Disease

Nutrients. 2018 Mar; 10(3): 365.

Gut Microbiota: An Important Link between Western Diet and Chronic Diseases

Nutrients. 2019 Oct; 11(10): 2287.

"During 5 days of an animal-based versus plant-based diet, in both cases the microbiome started to change in less than 24 hours.On a plant-based diet you generate microbes that are really good at breaking down fiber and producing short chain fatty acids. On an animal-based diet you generate microbes that are inflammatory and predispose to inflammatory bowel disease, secondary bile salts that are carcinogenic, and in this study antibiotic resistance."

Reference 42 | 1 hour 9 minutes

Diet rapidly and reproducibly alters the human gut microbiome

Nature. 2014 Jan 23;505(7484):559-63

"Colorectal cancer is connected to red meat consumption and processed meat consumption."

References 43-45 | 1 hour 13 minutes

Pattern of DNA Damage Links Colorectal Cancer and Diet High in Red Meat

Cancer.gov

Red Meat and Colorectal Cancer

Oncol Rev. 2015 Feb 10; 9(1): 288.

Influence of Bile Acids on Colorectal Cancer Risk: Potential Mechanisms Mediated by Diet - Gut Microbiota Interactions

Curr Nutr Rep. 2017 Dec; 6(4): 315–322.

"80% of antibiotics are given to animals as a part of animal agriculture."

Reference 46 | 1 hour 14 minutes

Antibiotics in Our Food System

"TMAO has been connected to coronary artery disease, stroke, chronic kidney disease."

References 47-49 | 1 hour 17 minutes

Trimethylamine N-Oxide and Risk of Cardiovascular Disease and Mortality

Curr Nutr Rep. 2018 Dec;7(4):207-213

Gut Microbiota and Ischemic Stroke: The Role of Trimethylamine N-Oxide

J Stroke. 2019 May;21(2):151-159.

Gut microbiota-dependent trimethylamine N-oxide (TMAO) pathway contributes to both development of renal insufficiency and mortality risk in chronic kidney disease

Circ Res. 2015 Jan 30;116(3):448-55

"When they fed a steak to a vegan, that vegan was not capable of producing TMAO. But when they fed a similar steak to an omnivore, they spiked their TMAO by 600%."

Reference 50 | 1 hour 17 minutes

Intestinal microbiota metabolism of L-carnitine, a nutrient in red meat, promotes atherosclerosis

Nat Med. 2013 May; 19(5): 576–585.

"If you start feeding red meat to a vegan, in about 4 weeks they will start to produce TMAO."

Reference 51 | 1 hour 18 minutes

Impact of chronic dietary red meat, white meat, or non-meat protein on trimethylamine N-oxide metabolism and renal excretion in healthy men and women

Eur Heart J. 2019 Feb 14;40(7):583-594.

"An exclusively plant-based diet was actually the most nutritionally complete diet in a 2014 research study, with the exception of vitamin B12."

Reference 52 | 1 hour 22 minutes

Comparison of nutritional quality of the vegan, vegetarian, semi-vegetarian, pesco-vegetarian and omnivorous diet

Nutrients. 2014 Mar 24;6(3):1318-32

"The gut produces over 30 neurotransmitters."

Reference 53 | 1 hour 25 minutes

Neurotransmitter modulation by the gut microbiota

Brain Res. 2018 Aug 15; 1693(Pt B): 128–133.

"Short chain fatty acids cross the blood brain barrier and alter brain function."

References 54-55 | 1 hour 26 minutes

The Role of Short-Chain Fatty Acids From Gut Microbiota in Gut-Brain Communication

Front Endocrinol (Lausanne). 2020; 11: 25.

The role of short-chain fatty acids in microbiota-gut-brain communication

Nat Rev Gastroenterol Hepatol. 2019 Aug;16(8):461-478.

“The gut microbiome appears to be involved in our food cravings.”

Reference 56 | 1 hour 28 minutes

Brain-gut-microbiome interactions in obesity and food addiction

Nat Rev Gastroenterol Hepatol. 2020 Nov;17(11):655-672.

“FODMAPs are prebiotic.”

Reference 57 | 1 hour 31 minutes

Effects of Prebiotics vs a Diet Low in FODMAPs in Patients With Functional Gut Disorders

Gastroenterology. 2018 Oct;155(4):1004-1007.

“There was an incident in Japan where people got sick after they ground up dry beans. There was another incident on health day in a hospital with undercooked beans. In both cases, people were better within 24 hours. No one was seriously hurt.”

References 58-59 | 1 hour 40 minutes

The “white kidney bean incident” in Japan

Methods Mol Biol. 2014;1200:39-45.

Do dietary lectins cause disease?

BMJ. 1999 Apr 17; 318(7190): 1023–1024.

“When a real person eats beans, they live longer, with less heart disease, with less cancer.”

References 60-64 | 1 hour 42 minutes

Legumes: Health Benefits and Culinary Approaches to Increase Intake

Clin Diabetes. 2015 Oct; 33(4): 198–205.

Legume consumption and CVD risk: a systematic review and meta-analysis

Public Health Nutr. 2017 Feb;20(2):245-254

Legume Consumption and All-Cause and Cardiovascular Disease Mortality

Biomed Res Int. 2017; 2017: 8450618.

Legumes: the most important dietary predictor of survival in older people of different ethnicities

Asia Pac J Clin Nutr. 2004;13(2):217-20.

Dietary legume consumption reduces risk of colorectal cancer: evidence from a meta-analysis of cohort studies

Sci Rep. 2015 Mar 5;5:8797.

"We have a study in Chapter 1 of the book where they gave them a fecal transplant, and their peripheral insulin resistance improved but over the course of 4 weeks those benefits resolved."

Reference 65 | 1 hour 52 minutes

Improvement of Insulin Sensitivity after Lean Donor Feces in Metabolic Syndrome Is Driven by Baseline Intestinal Microbiota Composition

Cell Metab. 2017 Oct 3;26(4):611-619.e6.

"Sulforaphane is the most powerful cancer crusher that I have ever come across."

References 66-70 | 1 hour 56 minutes

Sulforaphane in broccoli: The green chemoprevention!! Role in cancer prevention and therapy

J Oral Maxillofac Pathol. 2020 May-Aug; 24(2): 405.

Sulforaphane as a promising molecule for fighting cancer

Mutat Res. May-Jun 2007;635(2-3):90-104

The role of Sulforaphane in cancer chemoprevention and health benefits: a mini-review

J Cell Commun Signal. 2018 Mar;12(1):91-101

Sulforaphane as an anticancer molecule: mechanisms of action, synergistic effects, enhancement of drug safety, and delivery systems

Arch Pharm Res. 2020 Apr;43(4):371-384

Broccoli sprouts in cancer prevention

Nutr Rev. 1998 Apr;56(4 Pt 1):127-30