

Dr. Will Bulsiewicz

[Instagram](#)

Executive Summary

- Will is a medical director of Zoe, he is different from Tim Spector as Tim is focused on nutrition, Will is focused on gut health
- This interview should focus on the exciting new science around gut health and how it is connected to all parts of our health (especially surprising connections)
- An exciting point of this interview is the adaptability of the gut, and how we can quickly change it or train it like a muscle, and as a result change the entirety of our health

Interview Layout

1. How Will became interested in gut science and how it impacted his own life
2. Explaining what is the gut microbiome and gut microbes
3. How gut health affects all of our health (how poop is an indicator of gut health and health generally - using props)
4. The importance of fibre and Short Chain Fatty Acids
5. Will's guide for the best gut health

Experiments

- For this interview we will have prepared fake poop (NOTE: this was Jem's shit idea)
- This is because your poop is the tell tale sign of the state of your gut health
- Also, everyone is fascinated by poop and it grabs attention
- We will also provide you with the Bristol Stool Chart (the medical chart for judging poop)

TRENDS

YouTube (Dr. Will Bulsiewicz)

- 2.1M - is [Dr. Will on the Rich Roll podcast \(2022\)](#) talking about gut health
 - There is no MRM, but he says that 70% of our immune system is in our gut, so our gut and immune system are in constant communication
 - In one study people who ate a plant-based diet (high in fibre) had a 73% reduced chance of having moderate or severe COVID-19
- 920K - is [Dr. Will doing a live Q&A on The Exam Room podcast](#) about constipation
 - MRM is that prunes, wholegrains, chia seeds and papaya help constipation and that high-fat foods from oil and meats make it worse
 - Sugar from any plant is good for gut health but not added sugar / sweeteners
- 696K - is [Dr. Will on the Rich Roll podcast \(2020\)](#) talking about our microbiome

- MRM is that fibre and FODMAPS (garlic, onion, beans) often cause bloating but they're actually good for you, and people can train their gut to digest these foods better by eating more of them
- 635K - is [Dr. Will on The Exam Room podcast](#) talking about spices and gut health
 - MRM is that peppermint and fennel seeds help IBS and that spices add diversity into our diet and are great for our gut microbes
- 603K - is [Dr. Will on the Zoe podcast](#) talking about the 4 main causes of bloating, which are: swallowed air, constipation, a struggling microbiome and our food choices
 - MRM is that non-fermented dairy (milk) and artificial sweeteners cause gas and bloating

Additional YouTube Videos on Related Topics

Gut Health

- 6.1M - is a [TED-Ed video on how food affects our gut](#)
 - MRM is that fruit, vegetables, tea, coffee, red wine and dark chocolate increase the bacteria diversity in our gut, whereas foods high in dairy-fat and sugary juices do the opposite
- 5.3M - is a [Ted Talk with Ruairi Robertson](#) about the gut-brain relationship
 - MRM is that feeding specific strains of bacteria in our gut can enhance our memory, stress behaviour and stress hormone levels
- 4.8M - is [Dr. Eric Berg debunking the myth](#) that we have 5 to 20 pounds of toxic poop in our colon (someone who goes to the loo once a month would have this amount)
 - MRM is that constipation is definitely related to our diet and signals that we need something more in our diet e.g more stomach acids, more salt
- 2.5M - is [Doctor Mike explaining how the gut works](#) and that probiotics are healthy bacteria as they help us get nutrients from food and support our immune system

Past DOAC Guests for Gut Health

- Tim Spector 1 - MRM is talking about gluten intolerance (and people thinking they are gluten intolerant when they aren't)
- Tim Spector 2 - MRM is an explanation of fermentation

Google Trends

- The topics most associated with gut health are gastrointestinal tract, health, food and probiotic
- The topics most associated with constipation are disease cause, faeces, pain and cure

Statistics on the Gut

- A [2023 report](#) by Holland and Barrett found that 58% of people in the UK have experienced gut health problems and 45% say their issues are chronic
- In 2022, [Crohn's and Colitis Charity](#) found that 1 in every 123 people in the UK are living with Crohn's or Colitis (inflammatory bowel diseases)
- The [Food Standards Agency](#) say that 2 million people in the UK are living with a diagnosed food allergy and 600,000 with Coeliac Disease (a serious intolerance to gluten)
- According to the [Food and Drink Federation](#), only 9% of UK adults are getting the recommended amount of fibre (which is 24-30g per day)

BIOGRAPHY

- 2006-2010: he completed his residency at Northwestern Memorial Hospital and became Chief Medical Resident
- 2010-2014: he got his Gastroenterology Fellow from the University of North Carolina
- It took him 16 years to finish all of his medical training
- The process was "hyper-rigorous" and to save time, he ate lots of junk food
- He was overweight, had high blood pressure and says, "I just wanted to curl up under a blanket in a dark room by myself and be left alone" ([The Plant Centred Podcast](#))
- He then went on a date with his now-wife (Valarie) who was a vegetarian, and realised that it was the food he was eating that was causing harm, so he made healthy eating habits from then on
- Focusing on a gut health diet he lost 22kg
- "I was a celebrated doctor at one of America's elite medical institutions, and I had such little awareness about nutrition that I was completely incapable of advising my patients, let alone myself" (Fibre Fueled, Introduction)
- 2016-2023: he is Gut Health Expert for The Plant Fed Gut, a website where he hosts courses about the microbiome and a 7-week programme on how to heal your gut
- 2022-2023: he is Medical Director of ZOE
- He is an award-winning gastroenterologist (*ga-stro-enter-olo-jist*) with more than 20 articles published in scientific journals

BOOK: 'Fiber Fueled: The Plant-Based Gut Health Program for Losing Weight, Restoring Your Health, and Optimising Your Microbiome' (2020)

Introduction

- Will believes that all health and disease starts in the gut
- "Fibre is the heart and soul of true gut healing, and true gut healing leads to better health in everything from your cardiovascular system to your brain health to your hormonal health" (Introduction)
- "(Fibre) I now legitimately believe that this is the single most important missing piece in the American (and Western) diet" (Introduction)
- At least 70 million Americans suffer from digestive issues
- "Food sensitivity has become a major issue worldwide, with an estimated 20% of the world's population suffering from some form of food intolerance" (Introduction)

- The gut microbiome is unique to each person, which means that people can respond differently to the same foods
- And your diet is the greatest determinant of the health of your microbiome
- “Each of us consumes an average of 1.3kg of food per day. Keeping the maths simple, that’s 475 kilos of food per year, meaning we’ll each consume about 36,300 kilos of food during our lifetime” (Introduction)
- He says this just proves how much more important food is rather than a few milligrams of medicine
- By optimising your gut health it improves your immune system
- 70% of the immune system is in the gut, and there is only a single layer of cells that separates it from the microbiota (gut microbiome)
- Focusing on gut health and having increase fibre is anti-aging
- “This is the only dietary approach shown to lengthen telomeres, which is the part of our cells that cause ageing to get shorter. Longer telomeres have been suggested to indicate slow ageing” (Introduction)
- He disagrees with the philosophy of traditional dieting, as he thinks the elimination of foods can lead to forms of eating disorders

PART 1: Knowledge is Power

Chapter 1: The Engine that Drives Human Health Isn’t Even Human

- Since 2006, research into gut health and the microbiome has exploded
- It is estimated there is up to 36,000 species of bacteria in the gut
- Gut bacteria is a broad community of microorganisms living in balance
- This community is called the ‘gut microbiota’ and when talking about the genetic code of this community it is called the ‘microbiome’
- There are 5 type of microorganisms living within us:
 - Bacteria
 - Yeasts
 - Parasites (steal energy from hosts without giving any benefit)
 - Viruses
 - Archae (we are just starting to learn about them)
- There has been a lot of bad talk about bacteria and people try to eliminate bacteria, however most is good and helps us (we need it to build up tolerance)
- Equally not all viruses are bad for us
- Viruses are small particles made up of DNA, but not all viruses are trying to hurt us and are actually important for a balanced gut microbial community
- We carry 39 trillion microorganisms in our colons
- There are more microbes in us than human cells, so it could be said we are 10% human and 90% bacteria
- “Your gut microbiome is just as much of an ecosystem as the Amazon rainforest. It thrives on balance and harmony” (p6)
- We need diversity in this microbiome for balance, as these microbes work in teams to extract nutrients you need from food
- Each choice of food you make powers up specific groups of microbes, at the expense of others
- Changes happen as quickly as 24 hours in the microbiome

- So if you permanently remove a food from your diet, it will starve and kill the microbes that live off that food - so you actively control the makeup of your microbiome
- Healthy compounds created by microbes from our food are called, **postbiotics**
- Whereas unhealthy foods we eat will power up microbes that cause negative effects like inflammation
- You can breakdown the entirety of human health into 5 parts:
 1. Immunity
 2. Metabolism
 3. Hormonal balance
 4. Cognition
 5. Gene expression
- The gut microbiota is the command centre of all the 5 parts of human health
- **Dysbiosis**, means the loss of harmony and balance in the gut and can lead to inflammation (he believes this is the root of most modern diseases)
- This can lead to 'leaky gut' which spills **bacterial endotoxin** into the bloodstream and can cause inflammation everywhere, and it is linked to obesity, diabetes, Alzheimers, and heart disease
- Faecal treatment is a way to correct this imbalance in the gut microbiota
- This is because 60% of your poop is bacteria, "it's a snapshot of what your gut microbiota looks like" (p11)
- (NOTE: Will is a big supporter of the power of faecal treatments like faecal transplants to help move healthy gut bacteria to an unhealthy gut)
- In the past we might have tried to destroy the bad bacteria in our gut (using things such as antibiotics), instead Will thinks we should focus on empowering the good bacteria
- He says you can see the evidence of the gut-immune relationship (and the power of gut health on the immune system) in the increase of autoimmune and allergies worldwide
- This can also be linked to the spread of the processed Western diet around the world, as when this arrived in new countries you would see the rise in autoimmune problems and allergies that weren't there previously
- In a study they did a faecal transplant from a human baby (with gut bacteria that showed the baby would develop asthma in later life) and put it in a germ-free mouse, this mouse then developed the signs of asthma
- As each of our microbiomes are different, the same food will create different effects in different people and they will get different benefits out of that food (including impacting their glucose levels differently)
- **HVP**: They did another study giving human poop to mice, transferring to germ-free mice the poop of identical human twins (where one twin was lean and the other obese), the mouse that was given the lean poop stayed lean, and the mouse given the obese poop got obese (despite the fact that they were fed them the same calories)
- "Discard all (or most) of what you've ever learned about metabolism, diabetes, and weight loss. It's a loss of diversity in the gut microbiota, increase in pathogenic

bacteria, and low-grade inflammation from bacterial endotoxin that is associated with diabetes, weight gain, and obesity” (p19)

- Gut microbes also control the release of hormones that regulate hunger
- In a study they did a faecal transplant from a lean donor to someone with insulin resistance, this changed their gut microbiota and improved insulin sensitivity and lowered their blood sugar
- If we treat our gut microbiota right, it will extract all we need from our food and nothing that we don't, regulates hunger and means that we don't have to count calories
- The gut microbiome also plays a role in keeping hormones in check
- There is an interesting link between gut health and sex
- **HVP:** Gut health has an impact on our odor and pheromones that play a role in sexual attraction (so a healthy gut creates more sexually attractive pheromones) (p21)
- It has also been theorised that kissing was a way of sampling a potential partners microbiome for compatibility
- “Everything that we do as humans involves our microbiota one way or another, even the way we love one another” (p21)

Gut-Brain Link

- The gut has a separate nervous system and has been called ‘the second brain’
- So brain health actually starts in the gut, as there are 500 million nerves in the intestine sending feedback to the brain
- They can also communicate with the brain via the immune system and release of hormones
- Damage to the gut microbiome has been associated with mental illnesses like Alzheimers, Parkinson's, migraines and ADHD
- There is a link between irritable bowel syndrome (IBS) with depression and anxiety

Gut Health and Genetics

- Initially it was thought that learning about genes was the biggest move in medicine to understanding disease, however it has been proved that less than 20% of genes is based on genes
- But 80% of disease risk is down to environment and exposure
- More than 99% of your DNA comes from microbes
- Microbes control the expression of genes through **epigenetics**, which determines whether to switch genes on or off
- “Rather than worrying about the 0.5% of your DNA that you simply cannot control, lets optimise our microbiome through diet and lifestyle and enjoy the positive effect it has on 99.5% of our DNA plus our epigenetic expression” (p27)

CHAPTER 2: 21st Century Life: Overfed, Undernourished, and Hyper-Medicated

- Will believes that medicine focuses too much on medication (and solving the symptoms rather than the source of the problem)
- 7 of the top 10 causes of death come from lifestyle choices

- This is mainly from diet, as the Western diet is dangerously high in sugar and refined carbohydrates
- Antibiotics destroy gut microbiota (this also includes ibuprofen and oral contraceptives), and microbes can dangerously become antibiotic resistant
- After a single course of antibiotics, our gut takes approximately 4 weeks to return to its pretreatment state.

Dangers of Western Diet for Gut Health

- “A 10% increase in consumption of ultra-processed food is linked to a more than 10% increase risk of developing cancer and a 14% risk of early death” (p42)
- Food additives have been shown to damage the gut microbiota, however 99% of them still haven’t been studied
- Artificial sweeteners are worse than sugar as they create changes in the microbiome that causes inflammation, insulin resistance and liver injury, and it creates less tolerance for sugar
- A high fat diet cause an unhealthy balance in the microbiota and causes inflammation
- Sources of protein, either from plants or animals can have massively different effects on the microbiome (plant being anti-inflammatory and animal protein being inflammatory)
- (NOTE: Will promotes a plant-based diet)
- He says that Keto, Paleo and Carnivore based diets have been shown to have extremely negative impacts on gut health
- “Do you know the average life expectancy of a professional body builder? It’s just 47 years. Weight loss doesn’t always translate into better health” (p47)

CHAPTER 3: The Fibre Solution: Short-Chain Fatty Acids and Postbiotics for the Win

- Thinks people are too obsessed with protein (especially as 97% of people consume excess protein)
- Whereas 97% of Americans don’t get the minimum daily amount of fibre
- Fibre mainly comes from plants (as fibre is a natural part of a plants cell structure)
- We used to think that fibre was all the same, but the source of fibre is extremely important as different fibre will have different impacts on the microbiome
- Carbohydrates in the modern world are bad as they have been refined so much that they are stripped of their fibre (which would previously have balanced out their negative parts)
- We outsource breaking down different fibres to our microbes, as each type of fibre needs a unique source of microbes to break it down
- There are 2 types of fibre:
 1. Soluble
 - This dissolves in water and breaks down easily
 2. Insoluble
 - This is also called ‘roughage’ as it isn’t affected by digestion or microbes

Short-Chain Fatty Acids

- “The breakdown of fibre by gut bacteria unleashes what I believe is the most healing nutrient in all of nature: short-chain fatty acids (SCFAs)” (p54)
- These SCFAs make the colon more acidic and helps to prevent the growth of bad bacteria
- By eating fibre you increase the healthy microbes and SCFAs
- So you are training the microbes to extract more SCFA, as the gut gets better at extracting SCFA's from the same amount of fibre

Prebiotics, Probiotics and Postbiotics

- Healthy bacteria can't survive without fibre, eating fibre increases the diversity of species within the gut
- Fibre is linked to lower body weight, reduced incidence of Type 2 diabetes, lower cholesterol and blood pressure
- A diet without fibre will make the microbe less capable of getting postbiotics from foods (these are the healthy compounds they make from breaking down our food)
- An explainer of prebiotics, probiotics and postbiotics:
 - Prebiotics = food for healthy gut microbes
 - Probiotics = microbes with beneficial qualities
 - Postbiotics = compounds produced by gut microbes
 - Prebiotics + Probiotics = postbiotics
- “Just 2 weeks on a low-fibre diet causes an altered gut microbiota that starts to literally eat away at the intestinal lining, causing breakdown of the protective barrier and susceptibility to disease” (p58)
- The gut wall is a barrier that controls what gets into the bloodstream, SCFAs help keep this barrier strong
- They also work as a link between the microbiome and immune system to make sure the immune system works properly
- “The gut microbes are dependent on gut microbes to support it with SCFAs. The gut microbes are dependent on you to offer fibre fuel that can be transformed into SCFAs” (p63)
- SCFAs have been linked to learning and memory
- “Children on a high-fibre diet demonstrate better cognitive control (multi-tasking, working memory, and maintaining focus) than children who eat a low fibre diet. So SCFAs may help ADHD” (p68)
- There have been studies that the loss of diversity of microbial species in the gut is compounded down the generations
- In a study on mice: “The Western diet induced loss of microbial diversity that could be compounded over a series of generations. If your grandmother has 1200 species of microbes in her gut as a child, but by the time your mother was born she had 900, that's what your mother got. Then if your mother loses 300 species, now you start off at 600 - half of what your grandmother had” (p69)

PART 2: THE FIBRE FUELLED APPROACH

CHAPTER 4: Eat the Rainbow to Find Your Pot of Gold

- “The single greatest predictor of a healthy gut microbiome is the diversity of plants in one’s diet” (p74)
- He considers plant-based diversity to be the ‘golden rule of eating’ (in contrast to this simple golden rule he says we have made health and dieting too complicated)
- This approach to eating diverse plants can be seen in the saying, ‘eat the rainbow’ (eating lots of different colorful vegetables)
- Eating 30 different plants in a week was the greatest predictor of gut microbial diversity
- Will says that there are over 300,000 edible plants on the planet. However, most Americans don’t eat more than 25.
- He thinks we focus too much on superfoods but ignore the importance of diversity of foods
- A diet that has the maximum variety of dietary fibres is good as it supports the diverse microbial community needed to process it and allows us to unlock the healing powers of SCFAs
- “Every single plant type has a community of gut microbes that thrive when that food is present and languish if that food is removed” (p75)
- “More plant based diversity = stronger, healthier microbiota = stronger, healthier you” (p75)
- “In a major study of food-intake patterns from around the world there was one - and only one - food shown to make people live longer, legumes” (p90)
- Legumes and wholegrains are in all the diets of the Blue Zones (where people live to ridiculously old age)
- Legumes are foods such as beans, soybeans, chickpeas, peanuts, and lentils
- The aim is for nutrient density, which is as many nutrients as possible for every calorie we eat

Gluten

- Will says that we should eat more wholegrains as they are very different from refined carbohydrates (so not all carbohydrates are bad)
- In a study they found, “that every daily serving of wholegrains reduces your risk of death by 5% and your risk of death by cardiovascular cause by 9%” (p83)
- Most people have been made to think they are allergic to gluten (however the only people who really are, are those with coeliac diseases)
- They say they feel better when they don’t eat gluten, however Will says that the reasons they feel better is that they have actually removed processed and refined foods
- Going gluten free when you don’t have coeliac disease is dangerous as it starves the levels of healthy bacteria that help process gluten (so you actually become even worse at processing gluten and have more bodily intolerance to it)
- “By depriving ourselves of gluten, we actually lose part of that carbohydrate-processing mechanism. So now the gut is weaker and less adapted to processing and unpacking complex carbs; as a result, when you try to reintroduce complex carbs in the future, you struggle. Hello, food sensitivity” (p87)
- When people eat wheat or other gluten their gut actually appears more healthy
- “When you narrow the spectrum of plants in your diet, you also narrow the diversity of your microbiome. And this is true even with wheat” (p87)

CHAPTER 5: Finding Your Plant Passion with a Sensitive Gut

- “The people who need fibre the most are the ones who will also struggle the most to eat it. You have to fix the gut to reap the reward of better health” (p95)
- If you struggle with fibre it means your gut has been damaged
- It doesn’t mean that plant foods and fibre are naturally inflammatory
- Elimination of fibre doesn’t work as it short-term gain for long term pain of having an unhealthy gut, as elimination diets only increase food sensitivities
- Will says you need to push through and treat your gut like a muscle that you strengthen up
- “If our gut is a muscle, gut fitness means digestive health fuelled by fibre and achieved by training your gut through plant-based diversity” (p99)
- The gut is very adaptable and will soon respond to these
- People struggle with things like carbs as they aren’t eating enough to train their gut
- It creates a vicious cycle, “where complex carbs cause digestive distress, which motivates us to reduce our intake or, worse yet, eliminate them, which weakens the microbiome and makes it less capable of processing carbs so that next time you try them your digestive distress is even worse” (p103)

CHAPTER 6: Fermentation Nation Rising

- In the middle between gut microbiota and food is fermentation
- “What happens inside a jar of fermenting sauerkraut is a microcosm of what’s happening inside our guts” (p117)
- Food preservation works by altering microbes, this can often destroy the plant microbiome and any health benefits we would get from it
- It goes even further in the modern time with chemical preservatives in food
- “Compared to the hyper-sterilised diet in the Western world, the consumption of fermented foods could increase the number of microbes in the diet up to 10,000 fold” (p124)
- (NOTE: this has been mostly covered in other interviews)

CHAPTER 7: Prebiotics, Probiotics, and Postbiotics

- This looks at pre - and probiotic supplements to help create a healthy microbiome
- (NOTE: he mainly says don’t believe the hype around the supplements, and that a diverse diet is better than any supplements)

CHAPTER 8: The Fibre Fuelled Foods

- Breaks down his recommendations for diets into F GOALS:
 - F: fruit and fermented
 - G: greens and grains
 - O: omega-3 Super Seeds
 - A: aromatics (onions, garlic)
 - L: legumes
 - S: sulforaphane (broccoli sprouts and other cruciferous veggies)

- Shouldn't look at foods for their individual components, instead need to look at whole foods
- Its like people saying you should eat fruit because of the fructose, but ignoring the other benefits like vitamins, mineral and fibre
- (NOTE: we have extensively covered the sort of foods you should be eating with Tim Spector, the rest of the chapter just repeats this)

ADDITIONAL INFORMATION

Hangovers and Gut Health

- This was an exciting point that Will actually brought up in our research call
- He says that research is showing that hangovers aren't just dehydration but actually damage to the gut microbiome (explaining why we feel so bad)
- So it could potentially be that a hangover cure is having a probiotic after drinking to balance out the damage (good future investment)

Trauma and Gut Health

- As we have seen, stress impacts the gut microbiome (through the production of the hormone cortisol)
- There is a huge impact of trauma on the gut microbiome, and Will has said that his most challenging patients are those who have been impacted by trauma in their life
- So the solution to their gut is not through actually food but through healing their trauma

Gut Health and Connection

- Following the ideas of past DOAC guest Dr Robert Waldinger, Will discusses the importance of human connection for overall health
- Will discusses how all of us have a 'bacterial cloud' following us around
- "We're each emitting about a million particles into our environment per hour. Close proximity to others has the potential for sharing among our bacterial cloud. Studies show that you're likely to share microbiome similarities with people you live with" (p198)
- As a result of the power of microbes on controlling our genes, the bacterial swapping we get from our relationships has an impact on our genetic expressions