

Category: Science



The Role of Gut Permeability in MS

Fundamental aspects of our clinical protocol for dealing with multiple sclerosis actually center upon re-building gut wall integrity. Multiple sclerosis, like other

autoimmune conditions is a manifestation of lack of regulation of the immune system. We now understand that the integrity of the gut wall plays a fundamentally important role in keeping balance within the immune system. Loss of integrity, “leaky gut syndrome,” is a situation that is characterized by various proteins and even bacteria within the gut gaining access to the systemic circulation, and as such, challenging the in system and leading to inflammation. And it is this situation that has now been correlated with such autoimmune diseases as type I diabetes, celiac disease, as well as inflammatory conditions of the bowel.

Like these diseases, multiple sclerosis is a condition of increased inflammation with auto immunity. It is known that the blood-brain barrier is broken down in multiple sclerosis. It is now becoming clear however that like other autoimmune conditions, there is evidence to suggest that there is increased intestinal permeability in multiple sclerosis as well.

In this new report, just published, Swedish researchers using an experimental rodent model for multiple sclerosis have now confirmed that immune activation as a consequence of increased intestinal permeability may play a fundamental role in multiple sclerosis. Indeed, when multiple sclerosis was induced in these rodents, there was almost immediate correlation with increased gut permeability, which, in retrospect, was certainly something that was anticipated and now proven.

The integrity of the gut wall is clearly dependent upon healthy gut bacteria. That said, one important early life experience that tends to increase the diversity of the gut bacteria is being breast-fed. We are now seeing literature to suggest that absence of breast-feeding is associated with an increased risk of multiple sclerosis in humans.

So as it relates to MS, again, preventive medicine should focus on creating a healthy gut bacteria by favoring such things as vaginal delivery as opposed to cesarean delivery, minimizing antibiotic exposure, and breast-feeding if at all possible.

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David Perlmutter MD

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ann marie • 4 years ago

GMO"s cause gut permeability... PERIOD...end of story... Until we have GMO labeling like 56 out of 60 developed countries have.. We in the USA will continue to see chronic illness RISE. The FDA is in bed with MONSANTO the pesticide roundup making company .. Who are also in bed with the PHarmeceutical companies... Who are killing us so that they can be RICH financially. STOP the BULLSHIT and quit skating around the REAL issues about this USA COVERUP.... ALL disease starts in the GUT with fungus candida and pathogens getting into the brain and organs...

26 ^ | ▾ • Reply • Share ›



Symin → ann marie • 4 years ago

I totally agree with you. GMOs (along with overuse of antibiotics) do cause gut permeability. My son suffered the consequences only ~3 yrs after GMOs were first introduced in the 90s. Took me longer, but I have auto-immune

disease that started in my gut as well. But labeling is not the answer. GMOs MUST BE BANNED COMPLETELY. If not, it's only a matter of time before all crops are cross-contaminated and Monsanto et al will have sued all farmers for patent violation. Labeling will help us for about 15 years at best.

13 ^ | v • Reply • Share ›



AndyF → ann marie • 4 years ago



This is silly. GMOs do not cause gut permeability. That's like saying all clouds produce rain. Sure, some may be problematic, but all of them? Hardly. It's an ignorant, fear-based notion. It's easy to blame Monsanto, but hardly productive. That's like blaming a gun maker for someone getting shot. If anyone, blame the farmers who plant the seeds that offend you. Ever eat a navel orange? A seedless watermelon? A pink lady apple? Welcome to GMO.

And despite what you think, pharmaceutical companies are not rich. Just ask the many thousands of people who were laid off in the last 12 months. There is no conspiracy here. And it's a brutal business. Pharmaceutical companies simply follow the western medicine-based philosophy of treating symptoms and not causation. Do you have any idea how many life changing and life saving drugs have come on the market in recent years?

6 ^ | v • Reply • Share ›



dani → AndyF • 4 years ago



Andy, pharmaceutical companies are wealthy, especially starting from the top CEOs, COOs, CFOs, etc. They reduce employees to fill their pockets....The elderly are on too many medications. We are on too many medications. Good food, GREAT-REAL-PURE food can heal our bodies.

10 ^ | v • Reply • Share ›



AndyF → dani • 4 years ago



Dani - Do you know anyone who works for a pharmaceutical company? Probably not. Most of us don't. I do. Who are they? They are typically highly educated, hard working people who work for companies just like you and me. Pharmaceutical executives make no more and no less than executives at any other large and successful company, whether they make drugs or furniture or busses. To pick on pharma is missing the point. Setting that aside, I'm totally with you. The elderly likely are on too many meds. I agree that real food is what we need and that diet is the cause of most of our ills. Personally, I've been grain free, sugar free, low carb, and almost entirely organic for a long, long time. I don't take any meds and only go to a Naturopath. So don't consider me a grain brain naysayer; I'm totally bought in. However, I don't blame pharmaceuticals for creating drugs any more than I blame car makers for making

creating drugs any more than I blame car makers for making cars when it comes to air pollution. If you want to blame anyone, blame the doctors who do all the prescribing. But if you blame them, then you need to blame the med schools that taught them. And so on. We can all be thankful for doc's like Perlmutter and Davis for lifting the veil, but we all know they are most certainly the exception. But, to reiterate, blaming pharmaceutical companies for the problem is specious.

9 ^ | v • Reply • Share ›



zcos → AndyF • 4 years ago



If pharmaceutical companies can treat your illness instead of preventing disease they stand to make billions on an ongoing basis. So they actually do have an incentive to be conspiratorial in that way. Tobacco companies put addictive agents in the cigarettes, and oil producers don't like the idea of cheap alternative fuels so they buy up and squelch that type of technology. As for the medical schools training the doctors, pharm companies have a huge investments into medical school curriculums in order to influence the thinking of doctors to treat disease instead of prevention. Preventing disease is a lot more effective, but a lot less lucrative. Repeat customers are better than cured ones.

6 ^ | v • Reply • Share ›



AndyF → zcos • 4 years ago



Hi zcos. But let's take that further... The same logic applies to just about every business everywhere. McDonalds wants you to buy more burgers, so will do whatever they can to get you back - from toys for the kids and play areas that make them nag you to go back, to free Wi-Fi so the parents can get work done while the kids run around, buzzing on HFCS. Chevy is incentivized to have your car peter out in a few years so you buy a new one. I recently replaced the phone sitting next to me because it seemed obsolete - range had decreased, etc. Microsoft has updates every year. Intel makes faster processors. The gas station at the corner wants you to burn more gas. Why, using this same logic, doctors are absolutely incentivized to not cure you, but to have you come back every week for the rest of your life! You said it yourself: "Repeat customers are better than cured ones."

However, most industries are very competitive, and information travels quickly in our time. Take the automotive

[see more](#)

2 ^ | v • Reply • Share ›

mh → AndyF • 10 months ago



Sorry this is a huge generalisation and whilst I agree that we need to be careful not to fearmonger and remain level headed and realistic unfortunately there are some major corruption issues in the parma industry. I know this first hand and yes have experience within the the industry - do you? Its all about making money just like any other business, however there have been documented times and continues to occur where they cover up, hide, lie or provide biased information regarding the health and efficacy of their products. This unfortunately causes further illness and at times death in our population. I dont know of furniture or bus companies that continue time after time to put corporate greed above the health of human beings. Pharmaceutical companies own our medical system and our Drs. They have a strong hold over what gets funding for research and to what level, then if it gets published. Spend some time researching the major companies like Glaxo Smith Kline and Johnson & Johnson to see the lawsuits that have caused death, disability and havoc on our society. Its all about making profits. Also my experience in the industry compared to others is that they generally pay, reward and incentivise their staff and sales/medical reps much more than the average. CEOs and upper management do get very healthy pay checks and bonuses, well at least thats how it is in my developed country.

^ | v • Reply • Share ›



Yvonne Forsman → dani • 4 years ago



Dani, this guy has never heard of the Georgia Guidestones and the plan to minimize the world population by 90%. He has no clue about what's going on. Safe your breath.

3 ^ | v • Reply • Share ›



cathy → Yvonne Forsman • 4 years ago



Hey, I've got this crazy idea! How about, instead of playing the blame game and focusing on the negative, we just take responsibility for our own health? Eat the correct foods and do what you need to for good health. How's about that!

13 ^ | v • Reply • Share ›



zcos → AndyF • 4 years ago



Andy, GMO is more than redder apples and seedless fruit. That is selective breeding and cross breeding. Navel oranges are a mutation from which subsequent generations are all derived from using grafting. GMO on the other hand is crossing unrelated species dna

that would otherwise never interact genetically and producing organisms that would never and could never exist naturally. The biggest use of the technology is to make pest resistant species and herbicide tolerant species. So now instead of spraying so much pesticide on the food, it is integrated into its dna and the plants can be sprayed with vast amounts of herbicides without killing them. The problem is that we don't know everything about what these chemicals are doing to us! Roundup, for example is shown to cause tumors and other maladies including possibly infertility or lower fertility. The new species have dna segments linked together that have never been together in the past and the effects are unknown and untested. Epigenetics has demonstrated that dna effects are not as clear and straight forward as we once thought. I used to think like you too, but once I actually learned something about it I had to change my thinking. It isn't as simple as seedless watermelons and juicier peaches.

6 ^ | v • Reply • Share ›



AndyF → zcos • 4 years ago



Hi zcos. Thanks for the note. Full disclosure: I have worked in genetics for 6 of the last 7 years. Not in the GMO space, but in providing software tools and analytic services for research organizations looking for correlations between genetic variation and phenotype. I never did get my PhD in the field, but I'd consider myself reasonably knowledgeable, including in the area of epigenetics and methylation you mention. Not trying to sound pompous, just want to let you know I'm not totally in the dark.

Yes, what you describe is the certainly the more popular usage of the term "GMO." However, cross breeding various plants to change phenotype most certainly creates a genetically modified organism. Similar outcome (customized genome), very different approach, indeed. Never thought of it this way, but one could argue that Mendel created the first manmade GMO plant.

I might also posit that we have no idea whether that navel

[see more](#)

5 ^ | v • Reply • Share ›



Joanus → AndyF • 4 years ago



When the farmers stop using Monsanto, and GMO are used solely for good causes, will be after the masses refuse to consume those products. So instead of focusing energy on bringing down those companies, we should be focused on enlightening those majority of the population how greatly

whole, organic and hopefully low carb (gluten free) foods will benefit their health.

7 ^ | v • Reply • Share ›



AndyF → Joanus • 4 years ago



Absolutely Joanus!!!

3 ^ | v • Reply • Share ›



RH123 → AndyF • 4 years ago



The farmers you speak of barely exist anymore. In Iowa there are some, going broke fast. And they don't have any choices. If their neighbor planted roundup ready, he ends up with it in his corn too. It's like trying to run from a tsunami.

And the food itself? Eat organic? I have a neighbor raised in the Caribbean who at 60 made soup for the first time in her life TODAY, okay? She thought everything she bought today was organic because she bought it at a "farmer's market." As if every farmer's market is filled with organic food. She thought my tomatoes were "ugly". In my exurban area, 35 miles from the city, most of the farmers markets are actually filled with sellers (not farmers at all) who buy at the Asian/Hispanic/International supermarkets and resell to dumb gringos who don't know the difference. "Is this organic?" "Si, si." No racism here, don't pile on, I'm just saying that they're trying to make a living too. I know a guy who does JUST that, and yeah, I'm sure lots of window washers do too. Nothing against window washers either.

People are now like water, taking the path of least resistance. Go through the drive thru, rip open the package. Disease doesn't hit people as scary as it starts, but when it's almost done. And then like me they'll be on oxygen and everything else like me. Dozens of medical interventions. I'm young by the way.

True, to 95% of America, a single chicken breast the size of a rump roast at Costco is a GOOD thing in their minds. Cheap is better, that way you can order more movies.

1 ^ | v • Reply • Share ›



RH123 → AndyF • 4 years ago



Zcos, thank you for explaining the obvious in your above post. GMOs are NOT like Gregor Mendel figuring out how to breed a plant. Breaking apart the basic atomic parts of organic material in order to guarantee it will slurp glyphosate tinkers with how we function as organisms as well. GMO crops do cross pollinate just like any other and there's no "containment" so labeling while helpful in the short run, is pointless.

I am a research subject at a certain government health agency in Maryland and believe me, they are WELL AWARE that GMOs are not like Mendellian genetics in the least up there. My health was wrecked, as in near death, as in "We're sorry to tell you that your wife is dying."

We were sooo careful with what we ate. But the GMO food was what did it. We didn't even know it was on the plate.

So when I hear people blather on, being so trusting of "science" I haven't got your patience Andy. These people are not angels. They're human, and humans can do things that appear "good" and not particularly "bad," on the surface. Most

[see more](#)

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Yvonne Forsman → AndyF • 4 years ago



Andy, seriously, do you know that 75% of diseases docs treat today are CHRONIC?!!!!!! How do you think the human body gets a chronic illness? Environmental toxins! Monsanto? Why do you think the employees spraying the toxins are always seen wearing protective jump gear??? But consider ignorance a bliss, at least you are not stressed over something you can't affect.

3 ^ | v • Reply • Share ›



AndyF → Yvonne Forsman • 4 years ago



Ignorance? Hardly. I just know that blaming Monsanto for this is folly. Ignorant, in fact, to use your words. They aren't the ones planting the seeds. Those aren't Monsanto people out there spraying those crops. If you want to blame someone, blame the farmer who buys those products strictly to increase yield and profit. Blame the people who buy the food those farmers produce because it looks better and is less expensive. I don't blame McDonalds for creating toxic food, I just don't go there. Do I think McDonalds is a monstrous organization because they create awful pseudo-food? Not at all. (I have a friend who owns three, in fact.) I simply don't agree with their decisions and product strategy. I don't buy foods that have been sprayed with toxins, but I don't think Monsanto is evil incarnate. Monsanto is a large group of people like you and me that cater to a market I'm not a part of. Now, ask the people that buy conventional produce if they want to pay a dollar more for that head of lettuce or bag of frozen peas in order to avoid the sprays, etc.? No chance. They don't buy into it like I do. Like you do, I'd wager. They'll just put that bag of peas on top of their boxes of frozen, prepared foods and move on.

4 ^ | v • Reply • Share ›

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RH123 → AndyF • 4 years ago

My family were farmers and Monsanto twisted arms to get those seeds into every plot of land. They made it economically impossible to do anything else. And then that land is ruined and they're dependent on Monsanto for the fix! Which doesn't work.

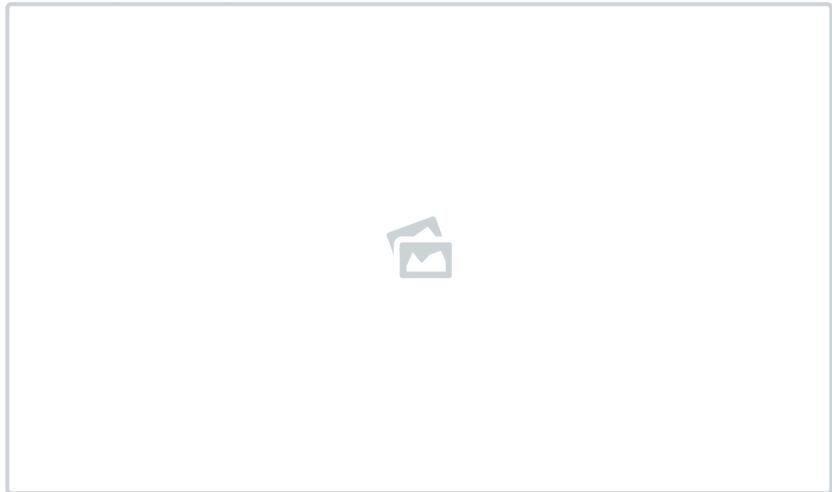
Maybe people from urban areas don't *get it*? Or haven't had the "health Nagasaki" happen to them just yet? I went to college in nutrition and biochemistry and my brother was a research chemist. He died for crying out loud. He thought the GMO kerfuffle was nonsense too. Dead at 40 of a cancer so rare it only got figured out a year after he was in the ground. Lots of "good" people are tacitly involved in bad things that seem okay.

4 ^ | v · Reply · Share ›



JohnInTheOC → RH123 • a year ago

More pay for play political appointees

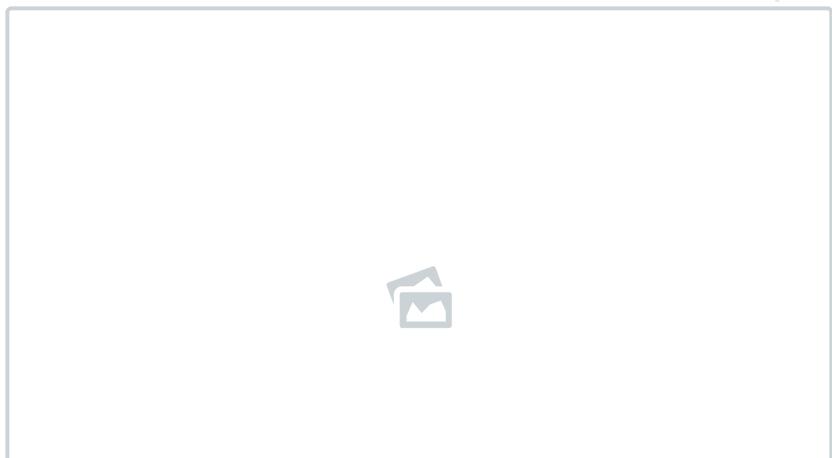


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JohnInTheOC → AndyF • a year ago



OPPS! Someone let the evidence out... >

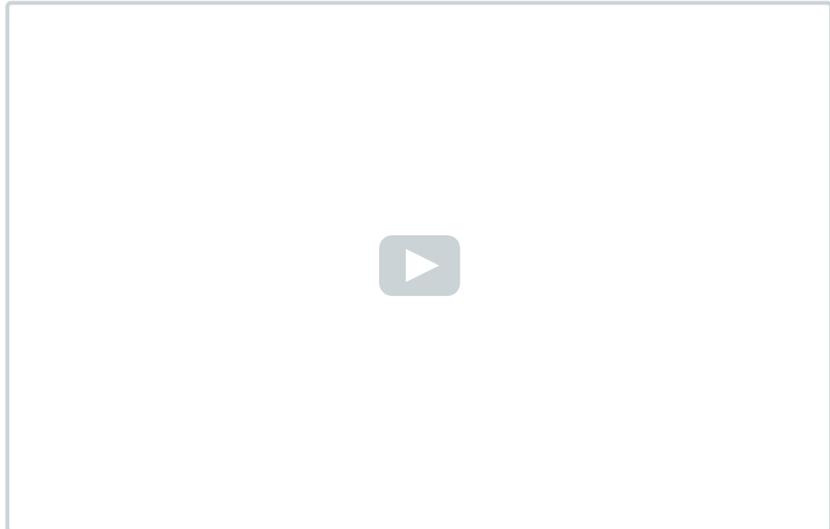
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DarrellIW → Yvonne Forsman • 4 years ago

— | v

That is partly true but Doctor Joel Wallach has proven that we can not get all our 90 essential nutrients from the four main food groups any more because when they are not in the soil the plants will not have them organic or not. Most chronic diseases are caused by a mineral deficiency and can be reversed and or prevented with Doc. Wallach's plant based minerals and the rest of the 90 essential nutrients which I take along with getting off the 10 bad foods including carbonated beverages. If this is not done your stomach cannot absorb them well. You must stop eating wheat, oats, barley and rye and be gluten free in your diet. To understand why we are in such a health mess in our country listen to Doctor Wallach and his attorney here



^ | v • Reply • Share >



RH123 → Yvonne Forsman • 4 years ago

— | v

Yes, Yvonne is right. Because that bit of hypothyroidism, or that heartburn, puts you in the grave when it either is A) Environmental and pulls the genetic trigger on something else, B) Isn't heartburn but stomach cancer C) You drop dead of "lab range creep" pernicious anemia as a result of a decade on PPIs.

^ | v • Reply • Share >



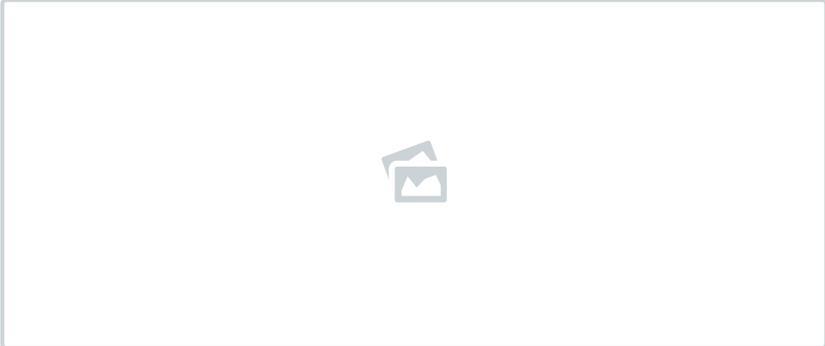
Joanne → AndyF • 4 years ago

— | v

Wake up Andy

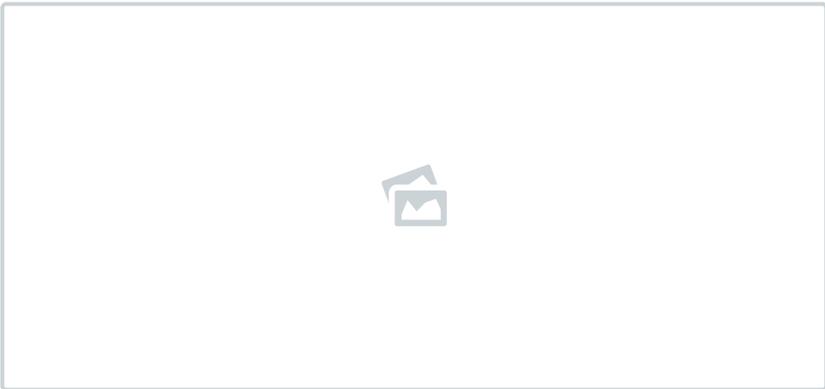
Wake up, Andy.
2 ^ | v • Reply • Share ›

georgi → AndyF • 3 years ago - | v
Andy, it is apparent that you have been drinking the kool-aid.
^ | v • Reply • Share ›

JohnInTheOC → georgi • a year ago - | v

^ | v • Reply • Share ›

Emily Ziegler → AndyF • 3 years ago - | v
Bull *hit...you are either stupid or trying to deceive, or both!
^ | v • Reply • Share ›

Mary → AndyF • 4 years ago - | v
My body is NOT Roundup ready. Is yours?
^ | v • Reply • Share ›

JohnInTheOC → Mary • a year ago - | v

^ | v • Reply • Share ›

SammyJo Wilkinson • 4 years ago - | v
I've been on Terry Wahls diet since 2010, 60 days now on the updated plan incorporating her ketpgenic diet recommendations, big boost in energy, MS symptoms better. Great to see MDs like Perlmutter and Wahls re-investigating the earlier diet work, with new understanding of the importance of gut microbiota. Add in the whole new field of personalized supplement protocols based on one's genetic

4 ^ | v • Reply • Share ›



David Perlmutter Mod → SammyJo Wilkinson • 4 years ago

Dr. Wahls is doing some fantastic work. I'm glad to hear this is working for you SammyJo.

3 ^ | v • Reply • Share ›



Ri • 4 years ago

Dr Perlmutter- could you please also touch on the topic of allergic reactions as they to relate to autoimmunity since soo many millions struggle with chronic reactions. I found out my delayed allergic reactions which result in hives from head to toe and hugely swollen lips and linger for a week or more are a type 2 hypersensitivity to dairy and gluten. Autoimmune diseases resemble Type 2-4 hypersensitivity reactions.

I didn't find this out from an allergist because the wait list to see one is ridiculous and all they do is an inaccurate prick test. I went to an MD with a degree in Homeopathy and over 40 years of experience under his belt and he sent me for additional blood tests- something to do with IgG and my kidney which might I add my family doctor didn't send me for and based on that and my blood type I found out I have food sensitivities to at least 15 different foods-mainly gluten and dairy and casein which is fine by me because ever seen reading Grain Brain and Wheat Belly I have greatly reduced both and my body must have developed an intolerance to both over time so now when I eat either or both I have a terrible reaction (never had issues with either growing up but I was chubby). So Ill need to be extra diligent from now on because I cant afford to take a whole week at a time off work.

Ive also been reading up more on Eat Right 4 your Type and apparently as a blood

[see more](#)

4 ^ | v • Reply • Share ›



Ron • 4 years ago

Andy F,

Strange, you're trying to justify Big Pharm's business activities by simply saying everyone else does it too? What kind of reasoning is that? My mother wouldn't even let me as a five year old get away with that argument, "Well, Bobby was doing it too."... Unlike Chevy, who has generally expected legal levels of ethics and morality, Pharm companies provide drugs to Doctors who have taken an oath to first do no harm. That is a game changer, and that makes your argument one of apples and oranges.

Pharm has no money? WOW! Where have you been? There is a limited free market in pharmaceuticals, and now they are legally pounding the competition with intellectual property claims, all while people are dying because they can't afford to pay! I guess you aren't aware that drug companies have spent 3 billion dollars lobbying their point of view during the last decade in the U.S.?

Back in the 90's in South Africa, when India provided drugs for HIV at a cost of

\$100-\$350 per year, big pharm, who owned them, wanted \$10,000.00 per year for the same prescription. Big pharm in South Africa took action, but lost the case because of a clause that allowed legal exemption in times of public health disasters. There is almost no money spent on therapies for the diseases like malaria, that kill

[see more](#)

3 ^ | v • Reply • Share ›



David Parrish • 4 years ago



Dr. Perlmutter,

As someone who has lived with MS for over 20 years now (and mostly doing well, due to your advice and those of Andrew Weil and most recently Terry Wahls), I believe leaky gut definitely played a role in my development of the disease, as an E. coli infection and bout with IBS preceded my development of MS symptoms. Andrew Weil was on the mark regarding the importance of an anti-inflammatory diet rich in essential fatty acids, and your reporting of the research has taken my dietary habits to a new and higher level. Thank you!

3 ^ | v • Reply • Share ›



David Perlmutter Mod → David Parrish • 4 years ago



You may also be interested in the work of Dr. Terry Wahls.

3 ^ | v • Reply • Share ›



Darrell W → David Perlmutter • 4 years ago



And also Dr. Joel Wallach and his latest book "Epigenetics/The Death of the Genetic Theory of Disease Transmission"

Thank you Dr. Perlmutter for all you do and your great information! I am one of those on Doc. Wallach's Crusade to change health care in our country from sick care to health care!

1 ^ | v • Reply • Share ›



Mary → David Parrish • 4 years ago



I would take d-mannose for a possible E.coli infection before going with any antibiotic. It can work for a UTI or diarrhea if caused by E.coli. Take for a day or two and notice what is happening.

^ | v • Reply • Share ›



Denise Otis • 4 years ago



Breast feeding is more possible than what our society knows. Anyone pregnant can contact La Leche League for information on how to do this; and be sure to not believe that you aren't producing enough milk before contacting them. They know nature's way of increasing milk production. Very few women are unable to breastfeed when it is done in rhythm with the baby's needs. <http://www.llli.org/>

3 ^ | v • Reply • Share ›

Kathleen • 3 years ago

The label GMO needs to be delineated from the Bt toxin that is used in the GE (Genetic Engineering) process.

The Bt toxin, used to make a hole in the cell membrane, to allow the insertion of another species DNA, is THE issue.

Bt toxin is self-population in human guts now.

The Bt toxin is the GMO gut issue.

2 ^ | v • Reply • Share ›



Christina Dowden • 4 years ago

Thanks for the info! I appreciate your articles and I'm an advocate for a healthy brain!

2 ^ | v • Reply • Share ›



David Perlmutter Mod → Christina Dowden • 4 years ago

As we should all be!

^ | v • Reply • Share ›



Ri • 4 years ago

Also DR Perlmutter could you please tell me where I could find a chart to compare what my vitamin/mineral blood test results should be at. I am supplementing with D3 and I don't want to overdo it to the point where it is toxic for my health so I want to compare my results with the optimal level it should be at not normal range because conventional doctors are only about normal and standard and id rather shoot for optimal.

Thanks!

2 ^ | v • Reply • Share ›



Mary → Ri • 4 years ago

Check out the recommendations of the Vitamin D Council regarding Vitamin D levels. There are also youtube videos.

^ | v • Reply • Share ›



Yvonne Forsman • 4 years ago

Dr Perlmutter always to rescue! Thank you doc! You are the best! I always watch you on TV.

2 ^ | v • Reply • Share ›



David Perlmutter Mod → Yvonne Forsman • 4 years ago

Thanks Yvonne. Good to know you're out there.

1 ^ | v • Reply • Share ›



Carolyn • 4 years ago

My daughter's gut issues really ramped up after her c-section and subsequent antibiotics. She (and all of our family) have learned a lot and made major changes in our diets since then. However, we find it frustrating to see all the negative information about c-sections. She and her doctors certainly tried for a vaginal birth, but the safety of both mother and baby were the priority. I'd like to see more information available to women about healing their guts after a c-section (instead of being made to feel guilty). Thank you, Dr. Perlmutter, for all the information you share! Your book was among the first we read when we started making changes.

1 ^ | v • Reply • Share ›



David Perlmutter Mod → Carolyn • 4 years ago



Thanks for that tip Carolyn, I'll keep it in mind.

1 ^ | v • Reply • Share ›