

Topic of the Month **December 2017**

Epigenetic's — I'm Living Proof

I got the results of my DNA testing ... It was not good! After taking 24 hours to feel sorry for myself, I realized I am much healthier than my genes ;) And thank goodness to the study of epigenetics and how we can turn on or off our genes. I have turned off a lot of genes in my lifetime.

There is a lot of debate about the pros and cons of getting your DNA tested, while it is a bit of a head game that challenges you — and it can put you face to face with your karma sometimes, I am glad I did the test. It has been a bit of a challenge to remind myself I am not limited to my genes — that I am NOT going to be fat, sick, and depressed as my genes would lead one to believe.

And we now have the power of epigenetics behind us. "Epi" means 'above' the control of the genes. Epigenetics is the new term given to the knowledge that environment, lifestyle, nutrition, and attitude — and our beliefs are above and beyond the genes we were born with. **YOU ARE NOT LIMITED TO YOUR GENETICS.** Carrying a gene for disease does not doom you to that disease — lifestyle changes how our genes express themselves. For example; 80% of women with breast cancer do NOT carry the breast cancer gene — it is indeed lifetime exposures to toxins that created the cancer.

This new biology of epigenetics is proving that cells are very responsive to the environment that surrounds us, to the foods we eat, and even to our attitudes — and how our beliefs can prevent or create disease — and the impact of each of these reaches deep into the DNA of the cell — in other words what you eat, think, and do has a far greater impact on your health than the genes you were born with.

I would like to briefly explain how food impacts our biology — this is new knowledge and worth spreading:

How does food talk to our DNA? Food is information to our cells. What we used to think was junk DNA is actually microRNAs that are waiting to be programmed, these programmed MicroRNA then talk to our DNA telling them how to express themselves.

What programs these MicroRNA? Food is one of them; foods themselves carry MicroRNAs that talk our MicroRNAs and tells them what to do. For example a piece of broccoli carries information for detoxification and cancer prevention so when we eat the broccoli we are eating something that informs our cells how to behave to prevent cancer. On the other hand a big mac or store bought piece of cake carries information for inflammation and obesity — repeatedly eating these foods will program our cells to become inflamed and fat

I am living proof of the yoga and vegetables lifestyle — and there was a reason I was drawn to this path — it saved my life. I need to eat more vegetables than most people



The chart to the left is *one* of my charts on detoxification, the far right column shows my gene impact — 2 or 3 pink circles means genetically compromised in those areas

So imagine looking at these results ...

I am genetically challenged, and I have risen above it. What I discovered is my body does not detox anything well (except for caffeine and alcohol). It remains vitally important for me to eat lots of vegetables per day, including fermented foods everyday, exercise everyday, and avoid carcinogens, heavy metals, and chemicals, along with any food or supplement that has folic acid added to it (which is pretty much anything processed) to avoid disease.

Gene Name	Genetic Variation	Your Result	Gene Impact
CYP1A1	Msp1 T>C	TT	♀
CYP1A1	A>G Ile462Val	AA	♀
CYP1B1	C>G Val432Leu	GG	♀♀♀
CYP17A	34 T>C	TC	♀♀
MnSOD	47 T>C Ala16Val	CC	♀♀
GSTM1	Insertion/Deletion	Absent	♀♀♀
GSTT1	Insertion/Deletion	Absent	♀♀♀
COMT	472 G>A (Val158Met)	AA	♀♀♀
MTHFR	677 C>T	TT	♀♀♀
SULT1A1	638 G>A Arg213His	GG	♀
NQO1	609 C>T	CC	♀
FACTOR V	G1691A	GG	♀

Before I get into the health implications of my DNA, everyone has been teasing me to see if my genetics have led me to be vegetarian for over 20 years or if it was just the yoga ... Here is what my DNA has to say about my diet:

When I looked at the diet my DNA prefers; it turns out I do have a higher protein need due to the gene that gives me a dysfunction on collagen, HOWEVER due to the high cancer risks my genes carry it turns out plant and fish proteins are better for — I just need to eat more of them than I have been.

The super high fat diet fad is not good for me and will make me fatter. No bullet proof coffee for me, turns out the **Mediterranean diet is best for me** (I'm pretty happy about that), I need a balanced mix of the macro nutrients:

30% fat / 35-37% Protein / 30-35% carbs

My DNA Health report — Breathe deep and remember I am not my genes ...

I have all the “pop-star” gene dysfunctions!

☪ **MTHFR** is the gene name but the word it makes you think of is what you say when you find out you have this genetic SNP ... Which I do, not one but two which is even worse — I am homozygous (two mutations) at C677T — the absolute worst mutation of this



gene. Methylene tetrahydrofolate reductase is the real name of this gene and if you are compromised in this area you are challenged to convert B9 (folate) into its usable form known as methyl-folate. Methyl-folate is critical in a process called methylation, methylation in laymen terms is associated with how well you detox chemicals, heavy metals, and hormones. People challenged with methylation carry a higher risk for autoimmune disease and cancer. I will talk more on this particular gene later but will leave you with this ...

- o **If you carry this genetic SNP it is very important to eat cabbage foods and leafy greens everyday, avoid chemicals, and it is very important to avoid Folic Acid.** Folic acid is the synthetic version of Vitamin B9 or folate, our bodies can not convert this synthetic chemical to a vitamin — so it builds up in our body — and over time your body will get so mad each time you eat it that your stomach becomes inflamed — leading most doctors to do the absolute worst thing they can do ... put you on heartburn medications like PPIs or acid blockers which only worsen your condition.

As I mentioned I am going to talk a lot more about the MTHFR mutations as 50% of the population carries one or more of this gene mutation. Please check for next months topic as it will be on the MTHFR gene and what to do about it.

- 33 COMT is another pop-star gene and can identify you as more of a type A person or type B person, and can determine how well you handle stress and emotions. This gene is also responsible to help you detox hormones (especially estrogen) after you use them — a very important function in our body that is associated with a high risk for several cancers. I am a MET/MET meaning I have a double mutation here too! and I am challenged to handle stress well or detox stress hormones (dopamine, epinephrine, and norepinephrine) which means it takes me a while to calm down after a stressful event.

This gene mutation is also connected to more pre-frontal cortex activity. This leaves me with a higher risk for anxiety and depression. My yoga and meditation practices have served me well over the years and have helped to protect me from the ravages of this gene; while I can feel the stress and emotions I have learned how to relax and breathe through them — and even use them as motivation to take care of the stressor.

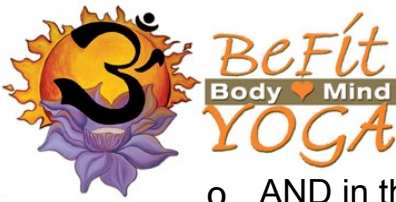
- o People carrying the met/met COMT gene showed a significantly stronger startle reflex. (And funny! I have noticed all my life I startle easy ... just ask anyone I am a passenger with in a car ...)
- o The Met-Met carriers also disclosed greater anxiety on a standard personality test.
- o Earlier studies suggested that the Met variant (and higher cortical dopamine concentrations) provides the advantage of cognitive efficiency, but poor regulation of emotions. The Val variant confers poorer working memory but greater emotional stability.

- 33 **Inflammation!** IL-6 is an inflammatory cytokine that comes to the “rescue” when inflammation is needed. These cytokines, while coming to help heal, leave collateral damage. People with a double mutation at their IL-6 gene (like myself) have been associated with raised IL-6 and CRP concentrations in their blood and



has been associated with inflammation, obesity, insulin resistance, dyslipidaemia and raised systolic blood pressure.

- o I have a very high inflammatory response genetically. My inflammation response goes up quick and stays elevated. I have to be careful with inflammatory foods (processed oils, grains, and sugar) and over exercising or overtraining as too much exercise leads to inflammation.
- 36 Another gene mutation for inflammation I show has been associated with increased IL-1 plasma concentrations, and have been linked with a number of pro-inflammatory chronic diseases, including periodontitis, coronary artery disease, certain autoimmune diseases, and cancers.
 - o I can overcome this by increasing omega 3 fatty acids in my diet, Turmeric, ginger, and phytonutrient rich foods including certain berries that contain compounds such as resveratrol, anthocyanins and Vitamin C.
- 36 I have **Glutathione S Transferase M1 & T1** which is more detoxing challenges!
 - o M1 -my liver does not detox well, M1 is important for phase II detox which means being able to detox xenobiotics, carcinogens, and oxidative stress — my body does not clear these well.
 - o T1 - **I carry an increased risk of lung, larynx, bladder, and skin cancers.** Cruciferous and allium vegetables can help to reverse this gene and are very important for me.
- 36 I carry the gene mutation for **obesity, adiposity, dyslipidaemia, and insulin resistance and weight loss resistance ...** I KNOW THIS! I have struggled with weight loss all my life and have to pretty much be perfect in diet and exercise to be “only chunky”. On the flip side I know I can survive a famine. Turning lead into gold here ... also the fact that my body likes to store fat could actually have some protection here since chemicals are stored in our fat cells until our body can figure out how to get rid of them. While toxic burdens can still accumulate in fat — if I was genetically a thin person with the same detox challenges my body would be more likely to store the toxins in my organs which could have more detriment. Here are a whole slew of obesity genes I carry:
 - o FTO=Fat mass & Obesity gene :(which I have! I am an AA in this mutation which means - The A allele has been associated with higher BMI, body fat percentage and waist circumference, especially in individuals with a sedentary lifestyle.
 - o I carry the gene for increased waist circumference (PPARG - I am CC). An increase in total dietary fat and saturated fat has been associated with increased waist circumference in individuals with this gene. Attention should be paid to the quality of fat intake, increasing MCTs in the diet and decreasing Saturated fats.



- o AND in this same category is TCF7L2 - I have one mutation that has also been associated with less weight loss in response to diet and lifestyle intervention, especially when fat intake is high.
 - o I also have the gene mutation that does not handle the processed vegetables fats — they are more inflammatory in my body than others.
 - o I am a **MEDIUM TASTER**. There is a link with medium tasters and an increased risk for having a higher BMI, and possibly colon cancer. Medium tasters have also been associated with having a decreased intake of vegetables, especially dark green leafy vegetables, and a preference for sweet foods — but NOT ME!
 - I have successfully turned off this gene! I have no desire for sweet foods and love vegetables :)
- ॐ I carry the gene for **high blood pressure as well** — especially salt related ... I successfully managed to turn off this gene as I love salt and use mineral and sea salts lavishly. After seeing this I took my blood pressure every morning for two weeks and discovered my blood pressure is normal.
- ॐ I carry the mutation of the MnSod/SOD2 gene which means I have a higher risk for several cancers **IF** I do not eat adequate fruits and vegetables.
- ॐ I have decreased activity at the CAT gene which means increased oxidative stress for me from smoke, nitrates, pesticides, and pollution. This gene encodes the antioxidant enzyme, catalase, which is most highly expressed in the liver, kidney and erythrocytes and slows some conversions in my body increasing my risk for oxidative damage. More vegetables for me ...
- ॐ I genetically have a Collagen Receptor Dysfunction carrying a higher risk for Bone Density issues and osteoporosis.
 - o Weight bearing exercise, Vitamin D and K2 are good for me (I get my vitamin D from the sun and my K2 from Brie, gouda and fermented foods) ... Just another reason I was drawn to this path. I also eat fresh aloe vera from my own plants in PA and Maui everyday, I did this before I even know I had this mutation (aloe vera provides our body with the precursors it needs for collagen). I love my intuition.

And all this was only the DNA health report ... I still had three more reports to get through. And it didn't get any better when I looked at more reports.

Here is a short overview of my DNA Diet

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cancer risks my genes carry it turns out plant and fish proteins are better for — I just need to eat more of them than I have been.

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The majority of my fat consumption should be Monounsaturated fats, Proteins are better for me from fish and plants, and Carbs from fruit and vegetables — of course. For me, both too much fat or too many carbs will make me fat — and I can't let my protein intake get too high due to the connection of high protein diets and cancer and the fact that I carry several cancer genes ... as my Functional Medicine Doctor stated, my body is finicky.

I have to reduce my saturated fats to help with weight loss, to try to turn off the Adiponectin (increased risk for obesity) gene, and try to get 45-50 minutes steady state cardio 4-5 days per week. Sigh.

I have Fat Metabolism issues ... I have high hunger cues and I don't hear the "I'm Full" signal (I have the MC4R V103I mutation), and like to eat large amounts of food ... I also carry a gene for diminished satiety ...

I also have the tendency toward Insulin Sensitivity.

I don't activate fat for exercise very well ... meaning exercise does not really help me lose weight ... in fact I have Transcription factor 7-like 2 gene which means weight loss is resistant for me in general. It is important for me to use diet as a means of weight control and to mix in some vigorous exercise to stimulate calorie burn.

My body is just finicky ... As I have known ... Lifestyle is still above all this "bad news" (its not really bad news since my body is programmed to survive famine), even with these multiple obesity genes, when positive lifestyles are factored in it equates to about an extra 22 lbs. of body weight. Now 22# on my little torso would not look pretty and I would certainly look much fatter ... but this is pointing out that morbid obesity is not really in the genes but in the lifestyle.

My DNA and exercise, a quick review:

I have a high risk of injury ... I carry the gene for higher risk of tendon/ligament injury coupled with a slow healing rate :(



36 With regards to nutrition and this gene, it is important to **ensure adequate intake of vitamin C, iron, and protein in my diet as these are necessary for collagen turnover.**

I have a slower recovery time from exercise, I do need exercise every day but I should vary intensity

- alternate short intense workouts or practices 2 days per week
- with low intensity longer endurance cardio or circuit type workouts or longer gentler yoga practices.

Coffee is good for me before exercise and will help me mobilize fat for fuel which I am challenged to do — And I metabolize caffeine well.

I have a lot of endurance capacity, which I have felt, but struggle to put on muscle and my genes say I virtually have no power capacity — which surprises me because I have managed to turn that gene off thanks to years of progressive strength training during the 90s when I was a personal trainer.

I can train anytime of day but have a preference for Evening ... I know this too ... Why I struggle to be circadian-ly correct ...

At the end of the consultation I asked what is good about my genes ?? Is there anything?

I have a gene that protects me from Heart Disease :) And I metabolize caffeine well ...
... And I metabolize alcohol well ...

The Functional Medicine Doctor that is helping me interpret these results stated “If I lived the typical american life of working at a desk M-F 8-5 and ate the standard american diet I would be obese, suffer from depression and anxiety, be estrogen dominant, carry a very high cancer risk, and be highly susceptible to auto-immune diseases. Thank you alternative lifestyle! Yoga and Vegetables Forever ;)”