Brain Gut 9: What Really Killed Michael Jackson

Readers Summary

1. Who really controls our fat mass?
2. How do hormones control our flora?
3. How should doctors translate health or illness?
4. What is an example of modern life that exemplifies this?
5. What killed the King of Pop

Today, we are going to dive into the gut flora story a bit deeper than we did in our first gut flora post to help you understand how a a change in gut flora might lead to changes in your health by altering your hormone panel. Obesity is an inflammatory brain condition. Where does the infection come from? The gut flora actually is what causes humans to become fat. It has to due with shear numbers and the species of bacteria in our gut. There is a particular flora that produces adiposity and obesity in humans. These bacteria make something called FIAF (Fasting induced adipose factor) that control this process. This factor blocks lipoprotein lipase (LPL) in fat cells. LPL allows us to convert dietary Free Fatty Acids carried in lipoproteins into neutral fats that are stored in adipocytes.

Non Geeks: Our gut bacteria makes humans fat.

Geek Alert: The FIAF is made by our liver, muscles, and our small bowel wall when food sources are in short supply. This is the signal to stop storing fat in our fat cells when food is scarce. What is not well appreciated by many is that the FIAF in our intestinal wall is controlled 100{a7b724a0454d92c70890dedf5ec22a026af4df067c7b55aa6009b4d34d5da3c6} by our gut flora. When we have a simplified gut flora it favors fat cell creation. When our gut flora is complex and healthy, it has 100 trillion cells with 250 species. We tend not to make fat in this instance either! Moreover, when the bacteria are active metabolically due to the presence of simple sugars, production of FIAF ceases, and fat creation is signaled. **This implies that our gut flora is directly tied to fat creation in humans**. The gut flora's action is directly signaled to the brain via the afferent nerve fibers in the vagus nerve. In those newly created fat cells, a protein called **leptin** is also produced, and acts as a score keeper for the brain of how much fat is stored in the body. This messenger is sent to the brain around midnight when we are sleeping allowing the brain to assess total energy balance in the body. This maybe a good time and go back and re-read the following Leptin posts:

- Leptin: Chapter One
- Central Leptin Dominance for Health Part 1
- Leptin Part Deux: Liver
- Why is Oprah still obese? Leptin Part 3

The Colonic Sperm Bank

Our colon is the anaerobic reactor that reproduces our gut flora. The appendix is the "sperm bank" that keeps a nice sample of our current gut flora in case we get a nasty bought of gastritis that cleans our microfilms and our flora out into the toilet. We eat things under conditions with NO oxygen present in our gut. This type of environment stimulates the gut flora to extract a lot of energy from food because of scarcity. The chemical reaction basically is to extract as much oxygen from the food and leave behind carbon and hydrogen. This is essential what a 'turd' is in its basic form. In an anaerobic environment bacteria have an amazing capability to extract energy from food for its host, namely us. Bacteria have little ability to save any of this energy for them. The human body usurps their ability to be great energy extractors and uses it for itself. Your gut flora is what makes you fat and your gut flora is under control of hormones!

Since the human colon is anaerobic when we feed these bacteria a diet high in simple carbohydrates they extract the oxygen and and leave us with bowel gas and **lower levels of FIAF**. This actually allows us then to store fat that we can use later on for our own needs. This fat is loaded with long chain fatty acids, but to gain the energy in its bonds we have to have oxygen to access it. The bacteria don't have that luxury, so they are inept at using the fat they created! We, however, can use it at our inner mitochondrial membrane to create energy via ATP using electron chain transport. In fact, long chain fatty acids have huge energy potential for the host. One molecule of glucose has only six carbons. Glucose can make 28-30 ATP. One molecule of an 18 carbon stearic acid, a FFA, has three times as many carbons as glucose but makes **five times** the amount of ATP (147 ATP) while only having two times the caloric density of glucose. This shows you precisely why a calorie is not a calorie and why CICO makes little sense. In the distal colon we make large amounts of long chain fatty acids under normal healthy conditions.

So when the human host turns around and eats a **fat laden ketogenic diet** it creates a huge hormetic issue for our gut flora. They can not access the energy in these fats because there is no molecular oxygen present and the human host is not hungry at all because the presence of the fat in the gut is signaled to the brain via the vagus nerve. This is the perfect storm for the human and really bad news for the gut bacteria. This is why one has to question the validity of any safe starch theory in my view. The molecular biology of the gut just does not support it.

Let us review this again

Geeks and Non Geeks Unite: The gut bacteria become starved, FIAF rises, and this makes the human host burn its own fat for fuel and fat stores are depleted. This is precisely how the dance between our gut bacteria and our own adipose tissues is supposed to work in normal conditions. As amazing as this sounds it gets more bizarre. Since our gut flora controls our ability to make and store fat what if I told you they also might control our desires for the foods that they really want, namely fiber and carbohydrates? Well, this is precisely what happens. The gut flora control the levels of

neurotransmitters, agouti, ghrelin, and NPY in the peripheral and central nervous system and this drives us to want to eat things. I have covered this numerous times already in many past blogs. The type of gut flora we employ actually is tied to the appetite, desires, and to the reward of the food with respect to the brain's frontal lobes. (central dopamine levels)

Radical Thought: Food reward should not be thought of a concept intrinsic to foods, but of the type of gut flora we have living in our own gut!

These signals from the gut flora eventually get hard wired into the brain over time by Hebbian learning. This is a very dynamic process, and nothing in the gut or the brain is fixed in this process. This is why it is so hard to get a handle on clinically. I think is where modern medicine will be revolutionized in the next 100 years. The knowledge we are unaware of might just change everything we think is true today. The key factor for humans maybe that the human gut flora seems to be very susceptible to the environment it finds itself in before puberty and before total brain maturation occurs at 25 years old. It appears that the local environment we live in in our early life is quite critical to this dynamic duo. This implies that where we live, the sources of food we eat, and the light conditions required to grow the food are provided under are all encoded in our food and this is directly transmitted to our brain via our vagus nerve by these neurotransmitters in the gut.

How might the brain account for these things? Well, the brain looks at micronutrients coming in through the gut and translates these chemical signals into neurotransmitters that the brain circuits can understand and decipher. For example, when we eat a diet high in fructose (found at the equator) the gut and body respond in kind by causing an increase in absorption of iron, while causing a relative copper deficiency in cells. A copper deficiency is handled differently in both sexes. Women need more copper than men do. The reason is simple. Copper is required for the production of the enzymes which convert progesterone into estrogen. However, in men, more zinc is required to form the enzymatic machinery needed to convert progesterone into testosterone.

When we eat a diet high in fructose, this will also lower zinc levels in cells. This lowers testosterone in men. Higher fructose levels also cause a transient magnesium deficiency in all cells in both sexes when this occurs chronically. Acutely, it changes it at the intestinal brush border. I mentioned here in this blog that is precisely how diabetes actually begins. This lowers the magnesium available to make ATP(energy) if it goes on too long. This is why magnesium deficiency is so common in people who eat carbohydrates in a mismatched environment (T2D). This is also why most diabetics suffer from low magnesium stores and over time this will destroy their sleep and cause peripheral neuropathy too.

The reason these things happen is because in a high light environments (think tropics or equator) humans can compensate for the higher fructose loads in their diet because higher levels of sunshine simultaneously increase Vitamin D levels in our body. The higher sugar consumption in this diet, will drive up LDL levels and the free T3 levels in the thyroid which

allows the LDL to convert to pregnenolone, DHEA, and testosterone because of the higher than normal environmental exposures to the sun. We can compensate for these dietary fructose changes because our immune systems are simultaneously up regulated by the higher levels of DHEA and Vitamin D levels. We can tolerate more inflammation from this type of diet because our immune system is in better shape! This is the giant circle of life I laid out in the Hormone 101 blog post over a year ago.

What happens in a mismatched enviroment? (Light or Carbs)

When we live in a mismatched environment to light or carbs, we can not compensate well, so what happens? We begin to lose estrogen and progesterone in our brain and it begins to collect in our gut, our fat cells and in testes and breasts. The excessive estrogens can't be cleared by the liver and the excesses lead to neolithic diseases when this occurs chronically. Light levels correspond to food sources everywhere on this planet. This also implies we are not well adapted for traveling long distances and seeing different food sources. Our gut was not designed for intercontinental travel it appears. Maybe this is why jet lag is not well tolerated? Moreover, it ruins the cortisol/DHEA/melatonin axis where light is a major player in the brain circuitry and this alters our gut flora. This maybe why the environment we grew up in has such fond memories for us and why we seem to adapt awfully fast when we return to it? The information in the food sources are transmitted to our brain by the gut flora's action. There is a transaction of micronutrients that happens at our gut and our immune system sits right there to check the score. The brain is also paying attention to this accounting too, even if modern science is not. This dance is very complex, but fascinating to me.

So how is this signal transmitted in the brain?

Simple, it is the hormone response of the epigenetic signal given to us from the gut flora.

Our brain has more neurons in our gut than any other place in the body. We often call it our second brain. Moreover, the brain does not have a hard wired circuit to every single cell in the gut, or every bacteria in the gut, so it transduces the signal of these 100 trillion cells using a hormone response to modulate this signal. This is how the environmental signal of food is transmitted to the neural signal of the brain's alphabet. This is why in Brain Gut 5, I told you hormones are the Rosetta Stone for deciphering what is best for the brain. I told you there to **think of food as hormone information, not as a metabolic fuel.**

We can decipher the message once we understand the language of the gut flora to the brain. This is why understanding hormones is critical to obtaining health.

Becoming an Epi-Paleo Rx Translator of Heath

When we see an altered hormone panel in clinical practice it might signal something small now, but it could morph into something you mind might not even comprehend. If this continues long enough you will wind up with some major health changes that become very complex and very difficult to treat. These diseases are treated only when they become firmly entrenched and obvious to most clinicians but the majority of patient suffering from them have the problem persist for years undetected until things worsen.

Today's analogy to bring this home

Non Geek Alert: Today, we are going to use a candida infection (fungus) of the gut to illustrate for you how it can radically alter your healthy gut flora. We generally ingest candida from foods and organic matter from the environment but our immune system does a rather good job of keeping this yeast under control when allostasis is maintained between our environment and our hormones. When this balance is tilted out of our favor, we wind up favoring the situation that supports colonization from the yeast, and if the situation is allowed to persist long enough, it could become a frank sub clinical infection of the gut. If left longer still, it could become a systemic problem that could cause major diseases like breast cancer or prostate cancer. That might seem like a pretty big jump in disease risk to some people, but understanding how it all happens is important. It shows you how important great gut health is to a modern human's physiology. **The most common way the gut flora is altered in our modern world is via indiscriminate carbohydrate and antibiotic use.** These create opportunities for candida grab some real estate on the gut flora's monopoly board.

When a candida infection begins, it is because there are too many simplified carbohydrates being eaten at the same time as the inoculation of the yeast. This favors its growth because candida metabolizes sugars. If the diet is truly seasonal in carbohydrate exposure this is not a usually a problem, but in our modern world, carbohydrates are now available 24/7 and they are quite bio available and cheap. Modern medicine also uses antibiotics in many clinical situations which might be over kill. I have personally tried to curb my own use of prophylactic antibiotics before and after surgery now because of this issue. I have personally found the most effective way to stop infections is to re-engineer my patients gut flora about three weeks before surgery using a special protocol and cocktail that I developed. I follow this up with a strict Epi-Paleo Rx, I call the EPCOTx Protocol that is designed to limit inflammation. Check this link out to get a good idea of how complex things can get.

This is done to dramatically lower inflammation and leptin levels. Candida is known to flourish in high leptin level states (inflammed). These people also tend to be leptin resistant. When leptin levels are high it activates the inflammatory cascade via cytokines. This is all mediated through poor intracellular signaling of NF kappa beta, which is the '911' number in a cell.

So who suffers from Candida?

This availability causes the gut flora to simplify, in both species of bacteria, and in shear numbers. We normally have 100 trillion gut bacteria and about 150-250 species of bacteria/yeasts/parasites in a normal gut. When the mix simplifies it decreases and changes the bacterial microfilms that the gut bacteria grow on. This is the perfect opportunity for candida to take over a gut. There are many ways this can happen, but I am just explaining to you the two most common ways it happens in our modern world. Diabetics have the largest battles with candida. This is why T2D, candida, and an obesity type flora tend to occur together. The situation for T1D or a Moby/LADA diabetic is quite different.

And what symptoms do they have?

We already mentioned T2D are a big portion of the sufferers. But what are the symptoms of a candida infection and altered gut micro-biome? Symptoms vary wildly between people because their gut flora does as well, and this makes it a tough diagnosis for many physicians. Most MD's are taught to look for the low hanging fruit symptoms, like a white patch on mucous membranes that can be scrapped off to show a red map-like covering of the surface. We see this is in the aero-digestive tract and in the genitourinary system often. The more "**zebra like**" symptoms can be chronic fatigue and loss of energy. They can be related to depression and progress to regular or migraine headaches, bloating, excessive gas as well. One of the more interesting ones I see often as a neurosurgeon is pain or tightness in and between the shoulder blade area. This is commonly seen in degenerative disc disease (or herniation) of the neck and in gallbladder disease. An astute clinician must be aware of the unusual presentation of this yeast infection. That ability was more adept in the days before evidence based medicine. A cookbook approach, like evidence based medicine, won't find these things often in my view. Candida can also contribute to brain fog, mood swings, memory loss, itching, multiple region joint pain with normal X-rays, chronic indigestion, ulcers, many sinus conditions and cancer generation as well.

Who else is at risk?

When the situation becomes entrenched by a western diet, modern antibiotics or any chronic stressor, we might see the development of many diseases we see in modern man. Chronic candida can also contribute to irritable bowel syndrome, ulcerative colitis, Crohn's disease, multiple food intolerances, chronic heartburn and gastric acid reflux disease (GERD). This can get so bad that a form of candida can become invasive and burrow into organs and be deadly. I have taken care of many brain abscesses from candida in those people. Since candida albicans produces alcohol and acetaldehyde in its normal life cycle, it may also contribute to many other subtle dysfunctions, including general toxicity, liver dysfunction, nutrient deficiencies (Cu, Mg, Zn,I, Se) and more as I mentioned above.

Any production of alcohol means that it will cause the formation of higher

levels of estrogens like estrone and estradiol in many tissues of the body. These hormones continue to collect and overwhelm the normal detox pathways in the liver called phase 1 and 2 detoxification pathways. You can think of phase 1 as being responsible for breaking things down and then sending the raw materials to phase 2, which builds new substances from the raw material by adding molecules to them (this is called conjugation).

Phase one detox is carried out by the P450 enzyme system in the liver. A diet low in protein-all too common in women who are trying to lose weight with a low-fat diet can dramatically slow phase II detoxification. Aspirin and other non-steroidal anti-inflammatory drugs (NSAIDs), including ibuprofen, also slow phase II detoxification.

Want some easy clinical symptoms to pay attention too to fix your inner guru? Does garlic make you sick to your stomach? Does your urine have a strong smell after you eat asparagus? Did you suffer from toxemia during your pregnancy? Did your Vitamin D level drop quickly? Any of these symptoms might indicate problems with phase II estrogen clearance. (Phase 1 depletes methyl donors (low B12 and betaine) and phase 2 has defective conjugation) When these pathways do not work well it can cause many radical changes in the remainder of the flora to continue to co evolve and create the perfect storm to cause cancer in the thyroid, pancreas, ovary, colon, prostate, breast, and in the uterus. These tissues are all epithelial based tissues. This is why cancer is exploding in all these organs. The recent explosion of thyroid and pancreatic cancer has caught my profession off guard. It makes complete sense to me because I understand how circadian mismatches can kill us. (Channel Steve Jobs, Walter Payton, Gilda Radner, Joe Piscopo)

Candida infections often are linked to insulin resistance and epithelial cancers with massive depletion in fat soluble vitamins (A,D. K, E) and micronutrients in foods. You might be seeing why now why all these cancer types have risen dramatically in the last 112 years. **We now live in that perfect storm.** Colon cancer and breast cancer rates have been growing at exponential rates over the last 50 years in particular. Curcumin, the compound that gives turmeric its yellow color, is interesting because it inhibits phase I while stimulating phase II. This effect can be very useful in preventing certain types of epithelial cancers. This is also why it is a vital part of my EPCOTx PROTOCOL Rx for the gut. Many of you have done educational consults with me have already heard about it. Soon the rest of you will too, in a future blog.

Special shout out to modern small people

In kids, learning and behavior disorders are often due in part to candida infection, who eat a lot of simple sugars or who have exposed to a ton of antibiotics for any reason. This allows a rapid conversion of the flora to a simplified one that allows inflammation to begin in the gut and then assault the portal circulation (liver), overwhelm it and then get to the blood brain barrier to cause major brain specific diseases. Any parent of a child with ADHD or spectrum disorders know full well what this can do to their child’s brain and behavior immediately. Nothing will depress a brain faster than

sugars. Depression is tied to anxiety too. Sugar is also tied to aggressive behavior and to violent crime. See it is easy to think badly when your brain cant work well because your gut flora has been stolen by your diet. Now think back to Brain Gut 8, and why I made the comment to one of the ladies, that she maybe showing signs of brain damage. See this is no laughing matter people. It is the giant circle of life coming back to destroy our brain biology.

Hormones and Cancer

Geek Alert: Many researchers are now linking Candida albicans and a simplified gut flora to illnesses associated with hormonal imbalance. As mentioned above, candida produces ethanol, which produces an intoxicating effect in the blood if the count level is too high. I have actually seen uncontrolled diabetics go to jail for impaired driving because of this effect when I was a resident! Ethanol grows quickly when candida has a nutrient source like simple sugars from grains or HFCS. In severe cases it produces much more than the liver handle and eliminate. The liver's job is to take the excess estrogen from its fat soluble form and turn it in to a water soluble form to be eliminated in the urine or in the bile (estrogen detox pathways mentioned above). If the gut flora is simplified simultaneously, as it often is, the person will develop hard stools like one would see on a Bristol Stool chart level one or two. This means that the fecal elimination time is increased and because of this the water based estrogens are reabsorbed and the levels in the body grow. This radically affects the progesterone to estradiol balance in women and in men it can be the cause of man boobs, decrease libido, premature ejaculation, lowered testosterone, a lowered vitamin D level, higher LDL cholesterol from alteration of the LDL receptor in the liver. There is even evidence now that estrogen and testosterone receptors are radically altered in their signaling by these chronic elevations to cause cell signaling problems that lead to cancer. Look at this infographic on cancer from AHS 2012 again. Sometimes the signaling can be so bad that it can produce enough estrogen from reabsorption of estrogen the is makes the cells think they enough estrogens, which signals the body to cease endogenous production. This can cause major hypothalamic signaling changes between the gut and brain that are commonly seen in binging, eating disorders, and infertility cases. When this happens abnormal signals are sent to the thyroid gland (CRH), making it think it has enough stopping the production of T3. This stops the normal hormone pathways from the conversion of LDL cholesterol to pregnenolone that we outlined in the Hormone 101 blog post.

This is why we can see dramatic changes in fecundity, in menstrual problems, fibroid production, excessive bleeding, excessive cramping and bloating and in serious hypothyroid situations where reverse T3 is through the roof on labs. Obesity, infertility, hypothyroidism and eating disorders are merely 'train stops' before the ultimate stop, Cancer. Watch this video on iodine and hypothyroidism and where it leads too.

Cancer is not caused by genetic changes in our genome as most believe today. The genetic change we see in oncogenesis are the direct result of cancer

formation to begin with by an altered cellular signaling gone awry. Once cancerous change occurs, cancers use glucose as their fuel source and alter the cells biochemistry to hijack the pathways. This hijacking then increases the leakiness of the first cytochrome in the mitochondria to ROS and mitochondria then die under the direction of glycolysis (carbs). This is why we should be advocating staying away from carbs in cancer cases. This was the source of my beef in the safe starches debate that broke out earlier this year, but was of course totally taken out of context by the paleo meme. Examine the poster from AHS 2012 I linked to earlier, done by a clinical oncologist (Caveman Doctor), which makes this point crystal clear. Dr. Otto Warburg wrote about this in 1928 and no one has proven him wrong as yet. The problem is cancer clinicians and researchers seem to have forgotten about this link to glucose and lactate. All of these things destroy normal cellular signaling and this can lead to cancer eventually if it left to continue.

More Geekiness: Another byproduct is acetaldehyde and it is related to formaldehyde this disrupts collagen production, fatty acid oxidation and blocks normal nerve functions. I see this problem as a spine surgeon because of the acceleration of disc degeneration in the spine. Orthopedic surgeons see it in the major joints. We are taught to replace those joints instead of fixing the real problem: the altered gut. I got this message about 7 years ago and began to change the way I managed the diseases of the spine and brain. The ethanol and acetaldehyde will also help hasten the brain by allowing more inflammation into through the blood brain barrier and into the brain. When this occurs we see depression, the loss of DHA (fish oil fat), phospholipids, ceremides and sphingolipids in the brain and function slowly diminishes overtime. Protein folding becomes abnormal and things like Alzheimer's, and Parkinson's, and cerebral strokes become very common. When we lose DHA we tend to replace it with other PUFA's that don't have the "magic built" into its chemistry that DHA does. We outlined that briefly in Brain Gut 5. That was a pretty important blog post in retrospect. We also lose total body and brain iodine that protects our DHA from any oxidative attack. This diminishes the production of pro-resolution chemicals in the brain. They are called resolvins, lipoxins, and protectins. I mentioned these briefly in Brain Gut 5. They were discovered by an opthalmic researcher at LSU (Dr. Bazan) and this is where I first heard about them. Their job is to protect the most sensitive part of DHA's PUFA structure from the oxidation of inflammation. They work in concert with iodine to protect the integrity in the areas of the synapse where nerve connections are made. This is where neural connections occur to control all the processes in our body. **This allows us to control proper signaling. This is the source of all cancers. When inflammation is high signaling is lost in all types of neolithic diseases. Most diseases have an inflammatory brain component to them.**

The King of Pop: Was it his doctor, his family, or his choices?

In reality his death was caused by all of them. When this fundamental

chemistry is destroyed, brain function is dramatically altered clinically. When we lose the fundamentals of neural chemistry we begin to de-evolve and see more primitive neurologic state of function. This is a 'small example' of the brain damage comment I made to Mrs. MJ Friedman in the guest blog, Brain Gut 8. They thought it was funny then, but when you understand the real life implications of it, I can not laugh about these things any longer. There are biologic consequences to all our decisions. In a surgical or a clinical situation when someone has this "**slight brain damage**" any new stressor pushes them over the edge. Think of getting a test done under a general anesthetic like an MRI or an ankle fracture set with ketamine. This stress can cause you to decompensate neurologically. Some of my patients have much bigger risks for post anesthetic issues than others. Those with significant alterations in their gut flora carry the highest risks in my view, as a neurosurgeon. I do things peri-operatively different in them than those who do not exhibit these symptoms. Delirium under the stress of life or an ICU become more common things these days because altered gut flora are now the primordial condition of our species in the western world.

You might see the way Michael Jackson died in a different light now. Was he a creative genius and talented to the max? Sure he was. But why did his career peak in 1984 and fall off a cliff? **Thriller** was when he was at his apex of ability. Ironically, it was also when the human brain fully matures and myelinates using ketosis biochemistry in the brain. Yes, safe starch folks, the brain myelinates via ketosis not using the Krebs cycle. Once again, Dr. Cunnane's data comes back to teach you something paleo has not. He spent his entire young life in a studio surrounded by man-made EMF's that altered his blood brain barrier and increased his brain's sensitivity to glucose that also easily changed his gut flora. His primordial environment on this planet was a sea of man-made EMF's from electrified music and performances. In 25 years, he went from supremely talented to total destruction. 25 years. Now think about when we electrified the planet and began to use EMF and think about when neolithic disease began. Yes, their is a fly in the ointment. EMF's destroy your gut flora quickly.

I believe this is when Mr. Jackson's altered pathologic gut flora caught up to his brain and destroyed it over the last 25 years of his life. As result of this mismatch, he found he could not sleep at all, and it he had to rely on powerful anesthetic drugs to put him down, so powerful they killed him. Was it irresponsible medicine that killed him? Sure that played a role, but the question no one seems to asks what was the pre existing state that got Mr. Jackson to that point? How did he get to a point where he needed a drug like Diprivan and Ketamine to sleep? I think this blog opens that rabbit hole for you to think about now. Think about his life, the stressors, his family dynamic, the vitiligo, the veganism, the bizarre behavior and his strange choices from childhood to adulthood. All of these things are linked to a lower dopamine level in his retina and frontal lobes. **Where they a pop star's eccentric coincidences or modern epigenetics of a bad gut flora being simplified to slowly destroy his brain and his ability to sleep?**

Read this hyper link that just got posted today on 6/21/2013 from CNN: This really proves that my insights one year ago were spot on.

Read my last cite and see if things are not adding up. In my opinion, he was the poster boy of what a bad gut could do to wonderful brain. It is the giant circle of evolutionary life in my opinion. His rise was meteoric and his de-evolution was just as dramatic. No one sees the evolutionary biology in his story, but I do. It is a brain gut story to be sure and why it make this series now.

What we believe heavily influences how we see the world. Most of us are unaware of that bias in ourselves or in others. When we hear the King of Pop, it immediately brings up memories of him that we all have. I destroyed mine and now think it was just sad no one saved him from himself. Memes are powerful forces. Once a concept is drilled into society's beliefs, it's becomes difficult to change whether it is wrong or right. Maybe what killed Mr. Jackson was massive environmental mismatches from EMF and light? You think about it and decide. I would imagine you will drop some comments about this here on the blog.

Summary

Your gut can easily destroy your brain overtime, if you allow it to with your diet or to artificial light. The science is complex for sure. This blog open your mind to these possibilities now, and the science behind this is incredibly fascinating. I decided to leave the mind bending science out of this post. I just wanted you to see a birds eye view of how one small change in gut ecology might and can change the local micro-biome, the local microfilms of the gut and eventually give you things you just could not fathom in diseases. The people who have done educational consults with me can fully attest how these principles can be directly applied to their own situations. Today, I used the combination of examples of candida, antibiotics, and simple sugars like wheat bread, coke, fruits, and apple pie to be our examples of how this might happen. If you found this provocative you might be blown away about how artificial light, chronic stress, heavy metal toxicity, BPA, synthetic hormones, perfumes, cosmetics, and other 'luxuries' of modern life can destroy a body. Just ask those who have decided to come visit me in the rabbit hole of evolutionary medicine.

And remember, no army can stop an idea whose time has come and I think things are changing for us all now. **Mediocre health is self-inflicted by our actions and imprinted by the health care complex but your healthy genius is self-bestowed by your new thoughts. Own them and you own your life and control your health.**

Leave a Comment

More Support: Webinars by Dr. Kruse

- EPCOTx Protocol (September 2012)

Additional Resources

- Leptin: Chapter One
- Central Leptin Dominance for Health Part 1
- Leptin Part Deux: Liver
- Why is Oprah still obese? Leptin Part 3
- Your Gut, Neurotransmitters, and Hormones
- Gnolls.org Open The Door To Obesity Fight
- Why Sleep and Leptin are Yoked
- What is Peripheral Neuropathy?
- Vitamin D: The Sunshine of Your Life?
- Hormones 101: Clinical thoughts revealed
- Brain Gut 5: Paradigm Drifts Paradigm Shifts: Epi-Paleo
- Brain Gut 6: Epi-Paleo Rx
- Brain Gut 8: Their Trip Down the Rabbit Hole
- The EPCOTx Rx
- Can't Remember? Is Your Protein Bent?

Cities

- Atkins, R., Dr. Atkins Diet Revolution.
- Crook, W. MD, The Yeast Connection.
- Trowbridge, J., The Yeast Syndrome.
- Truss, O., The Missing Diagnosis.
- http://www.ncbi.nlm.nih.gov/pubmed/12851125
- http://forum.jackkruse.com/showthread.php?1084-Autoimmune-and-the-VDR-vitamin-d-receptor/page3&highlight=vitamin+receptor
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- http://www.medpagetoday.com/Cardiology/MetabolicSyndrome/34220 (gut flora of obesity)
- http://articles.mercola.com/sites/articles/archive/2012/08/15/gut-flora-microscopic-organisms.aspx?np=true
- http://gordonlab.wustl.edu/PublicationPDFs/344_BackhedPNAS04.pdf (how the gut bacteria makes us fat)
- Effects of gut microbiota on the brain: implications for psychiatry
- Karen-Anne Neufeld, BSc and Jane A. Foster, PhD
- http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2674977/ (Why the King of POP went nuts)