Brain Gut 2: Viral Marketing

READERS SUMMARY:

1. To discover the unknown we must use the known to guide our thoughts to see the future.

2. How should we think about evolution and health now? Counterintuitive is an axiomatic cognitive ability required for neurosurgical residency training and that is why I chose to tackle this problem in this fashion.

3. If we want to explore the mystery of our clade we need to go back to the things that separate us from them that we know to be true today. The knowns are that our EQ (encephalization quotient) exploded rapidly. WHY?

4. Is our past really our new prologue?

Todays blog is to show you how Factor X was made actionable in bring man from ape. Most of you know, I believe it was due to a faster epigenetic plan that altered the mammalian body plan. What most do not know it was the result of viral marketing. This is not the viral marketing of today's social media platform. This is where viral marketing was truly invented. First created in our oceans, and eventually incorporated into the DNA of life. Do you think this hyperbole? One drop of sea water has a million bacteria and 10 million viruses. Link

When it hit the primate group in the East Africa Rift Zone, the world of biology changed suddenly. Moreover, when the world the apes found themselves in changed, it seems the primates were ready to take full advantage of it. Their previous circumstances of acquiring the ability to absorb

viruses into their DNA without getting sick was the prerequisite for making a human. It appears Lucy and Ardi (transitional apes) did not triumph over their adversity then when they lived, but their ancestors found adversity turned into opportunity when the world finally adapted to them with climate change that happened in the East African Rift Zone 2.5 million years ago.

Hominids used a virus to leave Africa. Hyperlink

WHAT ARE THE BIOLOGIC KNOWNS OR VIRAL MARKETING IN SPECIATION AS OF TODAY: (SLIGHT GEEK ALERT)

Embrace the paradox that what at first glance looks like a disease…..a viral infection, might also an essential method of communication. It is the human version of UPS or the postal service for genes, in my view. Here are the ten concepts of how to make a human brain from a primate brain.

VIRAL MARKETING MADE A HUMAN BRAIN FROM A LEAKY GUT USING THESE 10 THINGS:

1. With the completion of the human genome project now behind us we can really examine the real differences in our molecular biology. At our gene level there is no clarity of what separates us because we share 99.5{a7b724a0454d92c70890dedf5ec22a026af4df067c7b55aa6009b4d34d5da3c6} of the same coding DNA between primates and humans. This implied that our differences would not be found in our DNA.

2. There is radical changes in the X and Y chromosomes of humans. The Y chromosome genes code for few new things yet have a massive expansion of retroposons on it, and there is one in particular, that made the primate clade more

susceptible to latent or persistent infections that were innocuous to our immune systems. This was called the HERV K virus. The acronym HERV, stands for human endogenous retrovirus. Make sure you really look at those highlighted links just posted. It maybe the most important links in this entire series. You might be asking, what do HERV do for us?

Why did Mother Nature conserve them to stay in our genome? HERV was related to modern day HIV. HIV seems like a bad disease to have these days doesn't it? Since evolution made the decision to tote this virus in primate and human genome now for 30 million years ask yourself this instead, how might HERV be actually good for us?

This is where thinking like a neurosurgeon paid off for me. I began to accept their presence and explain it. So I went to the library back then because google was not so good back then, and I found out some remarkable things about HERV K. HERV K remnants in humans are expressed in bold amounts in pregnant women! They are specifically tied to the placenta's energy production and leptin. They seem to allow women to produce defective viral particles apparently incapable of passing to another human host for some reason. This implied they did not cause any disease but were 'taxi'd' through time in our genome for some reason. I thought this was an odd trick of evolution, so I dug deeper. HERV seemed to be something queer, something that was awfully slick and completely counter-intuitive, yet it was somehow connected with HIV, a species-crossing retrovirus that had become one of the major health scourges on the planet in my training period as a resident.

I found out some more information that connected some bigger dots that challenged Darwin's Theories on how we evolved. His big ideas like natural selection and random variation are intact, but the neo-Darwinian dogma of random mutation as a cause of all variation, without exception, has been proven **dead wrong** by the molecular gymnastics found in HERV elements

in primates and humans genomes. The funny thing is few people know this even today. I decided to examine that further.

Then I found that HERV K is particularly conserved in all OldWorld primates that eventually became the forefathers of hominids and not in New World primates who stayed true to their primate lineage. In fact, a genome-wide comparison of the human mouse and marsupial mammalian genomes establishes that these non-genetic sequences not only are more distinguishing amongst these organisms, but, paradoxically, are also more conserved than are the coding sequences. You have to love paradox in biology to really understand her. We must welcome this paradox, because now we have some hope of making progress in evolutionary dogma destruction.

3. Viruses such as HIV and influenza A can evolve so quickly, evolutionary genetic changes are observed during the short duration of individual infections. Viruses clearly represent the leading edge of all evolving biological entities. It would stand to reason than since the fossil record established our presence from ape in record time, that maybe we co-apted this leading edge technology from these retrovirus's and we used the gut microbiota as our agent in the cause. After all in life, a baby co apts its life form two organisms doesn't it? Bacteria gain antibiotic resistants very quickly from epigenetic data and bacteriophage reconstruction of their own genome, so why couldn't apes do the same? They had the capability because New World monkeys were chronically infected with HERV K, I thought.

4. Virus are highly related biologically to their host. This is by definition in all of biology. No radicalism here.
5. Viruses of bacteria, archaea, algae, fungi, aquatic invertebrates, insects, plants, amphibians, and mammals all have distinct patterns and relationships with their host. For example, in bacteria, the great majority of viruses are large double stranded DNA (dsDNA) viruses. Similar dsDNA viruses are also found in algae, but absent from fungi and plants.

Instead, fungi harbor dsRNA viruses, whereas flowering plants mostly harbor ssRNA viruses. In contrast, mammals show a strong tendency to infection with endogenous retroviruses as well. This difference really intrigued me because evolutionary biologists still have never figured out how flowering plants came to life. It appears they too are the result of viral marketing.

6. Hosts that are species diverse tend also to support diverse viruses, whereas hosts that are not diverse, but successful, tend to support few viruses. However, as will be developed below, viruses that are highly species-specific tend to be persistent viruses. **Humans happen to favor species VERY specific viruses**. This is why HIV has been particularly dominant in infecting humans world wide.

7. A selfish gene simply seeks its own maintenance. 'Selfish genes' have no phenotype or strategy associated with them and hence no direct consequence to host competition or evolution. Our genome does not operate this way from a molecular biologic standpoint. Dawkins is not a molecular biologist by the way either. We know this now, and did not know it when Dawkins proposed his selfish gene hypothesis years ago. (Yes, I believe Dawkins is wrong too!)

8. **An assimilated retroviral viral gene requires the need to establish a strategy to assure its own maintenance**. The best way to do it is to lose its virulence and become incorporated into the life cycle of the host in some innocuous way. It has to defend its King of the Hill dominance in the genome at all times. This feature is the **crucial difference** between the concept of persistence and the concept of selfish genes, which Dawkins has previously proposed to explain defective genetic parasites in the literature (transposons).

A persisting genetic parasite like a retroposon, must superimpose onto its host a new molecular genetic identity that compels persistence and precludes competition and displacement. How did we do this? I believe we did it by first transforming the **endogenous gut bacteria genomes and**

then assimilating the non infectious genomic elements into our own DNA using our own gut immune system. This is why we have evolved a leaky gut and primates do not. I believe, developing this strategy is simply a molecular stroke of genius of precisely how a leaky gut and retrovirus work in human DNA today. As hard as this may be to swallow, viruses are precisely what made it easy for us to become human from ape!

9. Viral persistence is then often transmitted from old to young through the placenta, often during coitus or during childbirth. This explains why the human placenta is also loaded with retroviruses. Persistent genomic infections are usually life long events and generally show little if any disease in colonized host. This is commonly seen in humans today because they are colonized with Epstein Barr virus, Cytomegalovirus, And Herpes viruses one and two, like those that cause chicken pox. Other examples in our DNA are adenovirus, human polyomaviruses (JCV, BKV), human papillomaviruses, and the small TT virus. There is a very interesting part of this persistent viral marketing found in primates and humans. These viruses are all highly human-specific and often distributed in congruence with human racial and geographical patterns too. This explains why we see races and geographic differences in apes and humans. All of them also show some degree of co-evolution with human and other primate host as well.

10. Both viruses and transposable elements can be activated by stress-related chemistry, either in their capacity as selfish pathogens or as a stressed organism may be a weakened organism. These HERV's may be as a beneficial regulator of gene expression as we see in epigenetics too. A stressed organism may often need to adapt its nature and behavior and HERV's are it's built in advantage to do so very well.

These ten points led me to this conclusion of how we become

human, so fast, without using bone collectors data to slow me down and confuse the issues. Factor X was the driver to this viral marketing.

Viruses represent the ultimate genetic creators, inventing new genes in large numbers, some of which find their way into host lineages following stable viral colonization. Once they are assimilated into the genome they become jumping genes that affect the host hard DNA code to create better adaptations for survival. Dr. McClintock said in her Nobel Prize winning speech in 1983 that she believed that the **jumping genes knew precisely where to go in the hosts genome** to improve upon it as the environment changed. She had no idea how it worked but she observed that in times of stress of hormesis the jumping genes seemed to go to chromosomal loci that were not working well for the host organism. In other words, **Mother Nature rolls the dice constantly until she rolls the winning combination.** This is how natural selection works on a molecular basis. This is precisely what Werner Heisenberg predicted in his uncertainity principle in 1925, that I mentioned in Brain Gut 1. If you do not believe this is actually how molecular biology works in life, consider that one gene of the fruit fly is capable of producing 40,000 different proteins. Are you beginning to understand why modern medicine will never cure cancer given their current lines of thinking?

NON GEEK EXPLANANTION of the top 10 points above:

So what do all these ten keys to viral marketing mean to human evolution?

It means that means we have the same blueprint for the most

part, in those mammals located close to use on our ‘phylogenetic tree of life’, but **our genes are not that important at all as we have been led to believe!** It means that what **we do to those genes (epigenetics) is by far the most important factor in our evolution.** In humans, nothing creates genes like a retrovirus. The proof is all over our genome when you look at it. The bone collectors spent too much time looking at bones and not enough on what really separates man from ape, their genome and epigenome.

That was my take home message from the human genome project and the chimp and gorilla genomes recently mapped. That viewpoint is very different from other view points in the blogosphere. Watson and Crick gave us genetic determinism theory. What I have shown you here blows that concept up completely.

The recent science of epigentics shows us that **genes do not have discrete jobs at all as we have believed.** Genes have the capability to make lots of diferent proteins by a “*slick cutting and pasting*” method to creates diversity. This diversity is precisely how humans can make millions of different antibodies to protect itself from all forms of pathogens. It is also precisly how we used our viral DNA to dramatically alter our skeletons to walk upright on two feet and change our pelvis to make headroom for our immature large brained infants. Our central nervous system genes were altered by this roll of the dice with an unusual and precise mix of dietary nutrients that caused the humans versions of brains to come to fruition. Looking at bones and social cultures all day long is not going to solve this puzzle. Looking at what we know to be true to today, and reconstructing things using this new perspective, however will paint you are far different picture than what Darwin or Raymond Dart had in mind for hominids. (humans)

The bone collectors were good people with bad data and the wrong perspective, and their methods hindered them in finding the real truth. Instead of using bones to reconstruct the history of life we needed to look at the difference in life using their own DNA today.

T**he retroposons in humans are like having our genome shuffled constantly by a casino dealer until we get the results we want.** Once we have a winning hand based upon our current circumstance, we conserve it via natural selection and genomic permanence. This is why hemochromatosis, T1D, T2D, and perhaps obesity today are looked at as diseases when they may not be! Perhaps when we rolled the dice earlier in our evolution they were the answers to that days dilemas but our todays problems? Maybe they only became diseases when the situation in the environment changed?

I have mentioned elsewhere in the blog that in our modern world, humans are us losing black box radiation to the environment, meaning we are losing energy because of non native EMF. Using the science in this blog, this implies the epigenetic response would be obesity. Ironically, this is precisely the disease that is exploding in the world today, and no one seems to know why. I think I do. My belief's are based upon Kleiber's law, which evolution has used time and time again conserve energy, by fractal design, by becoming more energy efficient in an inefficient field. It does this by increasing our mass when energy drops for any reason at all. This is why an elephant has become so large living off nutrient poor grasses in Africa. It is also why a star gets larger when it begins to burn through all of its fuel. This is basic law of physics that biology also conserves using epigenetic modifications. Energy can change the structure of matter.

In my opinion, when the environment moves away from the factors that brought it on, modern humans look at the processes as a disease state. This is why I no longer look at

diseases as many of my colleagues do. I also think about how to treat them a lot differently than I used to and how I was trained to think as well. That dealer, in this example, today is located on our Y chromosome. The large deck of cards we cut and splice is the retroposons of the viral RNA/DNA we stole from the oceanic environment via our gut flora. They easily become part of us because we are designed to have leaky guts to collect as many cards as we can because we evolved in a place that had ridiculously fast rapid changes epigenetically.

Are you with me now? Lets talk about the cradle of humanity now to bring it on home to your central nervous system to consider.

We evolved in the East African Rift Zone and it sits on three tectonic plates who have moved quite a bit since we first evolved. This rapid change has hidden our ascents secrets. The rapidity of the climate change also fueled the massive changes. Our guts became leaky because we began to assimilate virus's from shellfish that were closely related to vibrio species who make a zonulin like toxin. The RNA from these genetic golden nuggets means that hominids are the result of "**epigentic viral marketing**".

This area was very active during our evolution and cause massive environmental changes that Australopithecus afarensis would have had to deal with. 150 million years of mammalian spine evolution was given up in a couple of hundred thousand years so we could walk up right. There has to be a damn good evolutionary reason for this. To date, this question is avoided in most theories with one exception. That exception is the aquatic ape theory. Much of the morphologic changes espoused in this aquatic ape theory, I think are hogwash, but the major point it brings to the table is that water was a vital part of our evolution. Our foramen magnum (hole where our spinal cord leaves the brain to enter the spine) moved a massive amount from the posterior occipital bone of the skull to the undercarriage of our skull to facilitate bipedalism.

Moroever, we know without a doubt from the fossil record, that bipedalism occurred before our massive encephalization occurred. In other words, bipedalism was a signal of what was to come because of the epigenetic signals the apes were facing in the Rift Zone 2.5-2 million years ago. What signaled that change? In my view it was the Epi-Paleo diet that became these apes main source of protein and fats. We will cover that aspect of this theory in future brain gut blogs as the series progresses.

Another one of my thought experiments comes into focus:

This begs the question, why are we all focusing in on the paleolithic template when the pot of gold maybe before this era when our guts first were naturally selected for leakiness? This made me wonder, was the current version of the paleo diet really the most Optimal diet for humans or do we just merely function better on it when we compare it to a post agricultural diet of today?. In my view, there is an **Epi Paleo solution** for modern humans where we may even do better than subsisting on a modern paleolithic diet? The reason for this is that we can never heal a leaky gut because a leaky gut is a human trait built in by evolution. This is why the paleo diet works because it limits its leakiness to reasonable levels but I don't think it does for Optimal levels of functioning. Why? **Our brain has been shrinking since the late paleolithic. This tells me we are moving away from optimal**.

I look at this issue as an astrophysicist looks at the red and blue shift of a far away star. It is a major clue that what nutrient mix formed our brains is moving further from us. I mentioned this during my talks at Paleo-Fx in Austin, but no one asked me about it there. There are sometimes new foods lead to an expansion of a species dominance, but I think it is clear from Cordain's work, we have been a species in decline for the last 13,000 years since the Younger Dryas. Many

scientist believe the Young Dryas caused humans to innovate mastery over plants and usher in agriculture. Maybe eating an Epi-paleo template could offer us some benefits that today's modern paleo diet is missing?

Are we a species of mediocrity now? The short answer I gave in the Paleo Summit was, yes we are. This series will expand on why I believe this is the case.

I think the current paleo diet is a great option for modern humans when you compare it to today's standard western diet, but I do not think it is the best current option for hominids with a brain like ours. Why is that? It is because the epigenetic forces that carved our DNA and genome used specific nutrients at a specific time in ape evolution to sculpt some amazing changes to their biology that were forged from viral changes in the primate DNA template. To find out what the **Epi Paleo Rx** might be for modern man I looked at all the major difference that distinguished our species (homo) from the primates. When I did this thought exercise, I was left with several conclusions that I could not explain by the knowledge we knew in 2005.

The first big difference on my list was that hominids all had a leaky guts and not one other primate does. I learned about this in 1995 when Dr. Barry Marshall could not use primates to study H. pylori because the ultra stucture of the human gut and the primate gut is radically different. I wondered for ten years why this was the case since they were closely related to us on the tree of life.

HOW WE BECAME HUMAN IN LAYMAN ENGLISH:

The answer dawned on me one day, when I was reading about the immunology of autoimmune diseases. The difference was that the leaky gut was an adaptation that sculpted us from primates, by using rapid gene transfer from our gut flora to our own genome to cause a massive genetic assimilation of these retroviruses,

while the food source became very nutrient dense simultaneously. It is my contention that the leaky gut set the table to get us from great ape to a bipedal mammal first, because of how the mammalian body blueprint is constructed by evolution. We went rapidly from Australopithecus afarensis (Lucy) to the encephalized Homo Habilis. From there the encephalization quotient rose based upon energy requirements of the brain, and this was provided by this new found 'leaky gut' and our deep source of nutrients in the Rift Zone. Initially, what limited our species was the narrow width of the pelvic girdle and the birth canal of females. Evolutionary development continued in the homo species by selecting for progeny born in a more primitive form compared to primates.

Chimps are born cognitively more mature but looking like starving anorexics, while human babies require maximum infant care and have rolls of abundant fat. The reason is simple. **Humans need that subcutaneous fat to finish the myelin covering of brain tracts developing in the toddler using ketosis as its currency to do so**. This also put selection bias on us to become even more social than our chimp ancestors because our offspring required more parenting because they infantile a lot longer postnatally. Our brain grows far more after we are born than any other mammal known and it also comes packaged with several unique adaptations to facilitate that brain growth from birth to maturity.

Our brain does not stop maturing until the 25th postnatal year when our orbital frontal bases become fully myelinated. This is the real reason why a 25 year old is not able to rent a car or hotel room until their 26th year. Prior to this year the orbital frontal lobes are immature and subject young humans to impulsive behavior. Once the area myelinates the young mammal's behavior usually moderates.

How this process occurred is going to be fun to explore and the point of some conflict, I am sure. **Optimal human brain energy dynamics is best in a ketogenic state in a cooler**

environment because of the unique characteristics of human cerebral metabolic oxygen demands in neurons. This is an area that neurosurgeons are experts in treating current humans. We use cold and ketosis to repair human brains every day.

Another Radical Idea: **COLD AND KETOSIS ARE PRIMORDIAL FOR HOMINIDS. Neither one is hormetic…….they are primordial to Humans. this includes all humans because of how we evolved!**

What we live in today, I believe is an hormetic environment of warmth caused by our own ability to control our environment, and it has caused our de-evolution so to speak over the last 13,000 years. Think that is radical? Consider that Cro-magnon man (also considered a *homo sapien like us,* for you bone collectors), our nearest homo ancestor had 130 grams more brain tissue than us! This marked the first, and only time, the brain got smaller in homo. Why? You need to ask yourself that now.

Now you can step into the Paleolithic. WHERE THE PALEO SOLUTION WAS BORN: Was it really a solution, or a survival strategy?

MY ANSWER IS WAS A SURVIVAL MOVE!!!!

WE LEFT OUR FORMATIVE ERA, AND OUR BEST EVOLUTIONARY SOLUTION, CALLED "EPI PALEO" DURING MASSIVE ENCEPHALIZATION BECAUSE OF CLIMATE CHANGE LIMITED OUR NUTRIENT RESOURCES TO RUN A BRAIN.

Examine the Younger Dryas where many scientists believe man moved away from the Hunter Gathering life style and to agriculture based system of food production. It was an

environmental event that occurred that forced rapid climate change (extremely cold) and caused the extinction of all the great megafauna present on our continent in a snap of the fingers in geologic time and wpied out the Clovis. With a return to a sudden cold environment this would have selected for low appetite and low calorie consumption very similar to what we saw described in the CT -6 blog on the Ancient Pathway. How did humans survive it if their main source of food left them suddenly? They relied on the cold to destroy their hunger and leptin levels and they started eating plants and grasses like wheat. I believe this is when we began our de-evolution from Optimal, as we embraced an agrarian existence. We have continued that march to oblivion ever since. In other words, overnight, they became farmers over Hunter Gathers because they had too for survival. The Ancient Pathway allowed for them to survive because it is highly conserved in all eutherian mammals due to the K-T event that selected for placental based mammals.

They went to the most stable food source just not the best one they were adapted to. The megafauna never recovered either based upon the fossil records. Because of this, I think animal and ruminant meat is very good for humans, but seafood is far more nutritious for a large brained mammal. In fact this is precisely why our brain formed to begin with! Our brains, however, led us away from coastal plains to explore our world because of another viral mutation related to a retrovirus. This mutation seems to be tied to people with modern day ADHD! Here is another example of a good adaptation then gone bad today because the environment that selected for it has changed. I believe our species best food source still remains on the coastal plains of the East African Rift we left behind when we migrated out of Africa and away from the oceans.

Eventually when the story plays out, you might start realizing why cold thermogenesis is a lot more than just hormetic adaptation in the homo species as some have claimed

it is. The presence of cold and marine seafood simultaneously was the major epigenetic signals that helped sculpt encephalization. The factors transmitted the biologic ability to our cranial cavities to facilitate growth, by way of the diets and temperatures, that altered our gut flora to induce genetic changes to facilitate epigenomic changes that favored the use a a group of nutrients and a large amount of one mineral to drive the “unintelligent design” of viral sculpting of our genome. It was the proverbial perfect storm to form a Hominid in Earth’s history at the precise right time in geologic terms.

That might be a neolithic thought that could subjugate your paleolithic genes since you are part of that species.

Thoughts to Ponder: The task of a genetic regulator (retrovirus) is to eliminate “environmental variation” as it comes at life to regain life’s stability, but this variation is the ultimate source of information that sustains life and determines that species survival. Therefore, the better the job a genetic regulator does, the less information it gets about how to improve itself further, and as such, it creates its own demise as change occurs again. **This is precisely how an adaptation becomes a disease, in my opinion.**

This is how aging also occurs in a biologic system. Planned obsolescence is built into the system of evolution. It seems to me, the next step is to evolve to find a regulator that operates in total environmental chaos and self selects its future based upon what is most likely to happen……..could diabetes, cancer, or HIV be that regulator for Homo? I’ll let you ponder that now.

I believe viruses may well be the unseen creator that most likely contributed greatly to making us human from transitional ape. Radical idea, you bet it is. But the

science is there if you choose to look under the rock. The bone collectors and Darwin decided not to look here, and where has that gotten us? They still argue about bones and theories of who we are, when the answers have been sitting on our chromosomes now for 2.5 million years.

Our past, and homo's prologue is fossilized in our modern genome…….not in our bones.

CITES:

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