TENSEGRITY #14: COMMUNICATION BREAKDOWN IN THE GUT

READERS SUMMARY:

1.During daylight we use electrons to live our observable life. During sleep might the gut microbiome use protons and light to conduct our quantum abilities?

2. Why do people continue to underestimate the role of QED in the microbiome? You likely won't be the first nor the last person to do so, but you will be wrong for doing so.

3. The bathypelagic and the sunless depths below house 85 percent of the ocean's life, the largest living space on the planet. Your gut is also sunless and holds more cells than you do, so how does it handle light in its dark tube?

4. Here is a clue why food macro's fail to give human's optimal: the input to mitochondria is called electron chain transport. There are no carb, fat, or protein transporters; could this be why food is not the main driver of wellness?

5. Is this is a clue from mother nature that macro's are something humans make a big deal about that don't matter? All foods are broken down into electrons. Electrons are stratified by the energy of photons they carry and this is determined by the time of the year they normally grow or thrive not when modern humans make them available.

This is an exciting time for gastrointestinal microbiology. The recognition of Helicobacter pylori and its role in gastrointestinal disease recently earned a Nobel prize; the discovery of bacterial secretion systems and translocated effectors has unlocked numerous mechanisms of pathogenesis; the role of the commensal flora in many disease states, including inflammatory bowel disease, irritable bowel

syndrome, and even obesity, is now accepted and will undoubtedly lead to new therapeutic strategies; the finding that eukaryotic cells perceive and respond to bacteria through the expression of Toll-like receptors and Nods is a major step toward understanding interactions between the host and gut microbiota or microbial pathogens; the discovery of quorum sensing as a means of communication between bacterial populations and even with host cells has provided insight into pathogenic mechanisms; and the recently NIH-initiated Human Microbiome Project will eventually allow better understanding of the role of this complex intestinal community in human health and disease. The key missing clinical questions are how quorum sensing work on a fundamental level. I believe biology won't find that answer because they do not focus in on light frequencies. Bacteria make up the microbiome exclusively and their cell membranes are radically different than our own. They are able to release large amounts of light frequencies in the form of biophotons. The only part of biology that studies light is the biophysics of plants and marine bioluminescence with respect to photosynthesis. Because of this, I expect that the gastroenterology literature will not look or discover truly how the gut microbiome is capable of sculpting our epigenome with light through its interaction with our eukaryotic cell membranes of enterocytes. Today, on the clinical side of medicine, we are witnessing the emergence of more virulent strains of enteric pathogens, and are just beginning to explore the use of probiotics in the treatment of medical disorders. We remain in the dark how these probiotics can alter *light frequencies* we use for communication between the bacterial and eukaryotic kingdom. What links both kingdoms is our mitochondria. Mitochondria were evolved from the bacterial kingdom and even today in humans they carry their own 37 genes (that make a key13 proteins out of 1098) that are completely separate from the 46 chromosomes in our eukaryotic nucleus. Everyday we are being made increasingly aware of the presence of gut pathogens through the widespread outbreaks of foodborne illnesses and

autoimmune conditions. In short, this is the era of the gut, but we will not fully understand our microbiome until we understand how it uses protons and how it uses light frequencies to function! The recent developments in the science of epigenetics shows us that genes do not have discrete jobs at all, as we have believed. Genes have the capability to make lots of different proteins by a "slick cutting and pasting" method to creates diversity that is tied to redox chemistry of the extracellular matrix. Your gut lumen is an extension of the microbiome and gut's extracellular matrix. This diversity is precisely how humans are able to make millions of different antibodies to protect itself from all forms of pathogens in our gut associated lymphoid system (GALT).

You might think a blog on the microbiome should not start talking about light.

So why are we beginning with light? **All food emits biophotons.** The gut is designed to process food, therefore, it must be designed to deal with light. This is why I begin where others end.

There is a lot of discovery to yet be made when you examine what has been forgotten in others used ideas. Innovation starts where the last scientist left off. I never confuse modern 'scientific motion' with evolutionary 'biologic action'. Discovery is seeing what everybody else has seen, and realizing what nobody has yet thought. A collection of atoms ceases to be air, water, and food when somebody contemplates them with the idea of a quantum cell in mind.

This begs the question, why are we all focusing in on the paleolithic dietary template, when the pot of gold maybe before this era, when our guts first were naturally selected for leakiness? This has to beg the question, is the current version of the paleo diet really the most optimal diet for humans? Or might 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 Rx for modern humans that must include a lot of DHA to deal with the light frequencies emitted in our gut lumen by bacteria. Might this be a reason why we can never really heal a leaky gut? Might it be because a leaky gut is a human trait built in by evolution to work with our light emitting microbiome? Could this be why the paleo diet works at times to limit the microbiome light emissions or the gut's ability to be leaky? Might this also limit some from optimal levels of functioning? When you consider our brain has been shrinking since the late paleolithic era, this tells me our environment is moving our species away from what is biologically optimal, so we might want to reconsider what is "*good*" for us today.

Is the microbiome some how tied to a lack of repair or healing of our naturally leaky gut that we spoke about in Brain gut 2? I believe it is. Let us discuss this aspect of the gut more closely. Remember the key point of brain gut 2 is that humans are designed by evolution, to have a loose connections between our enterocytes to absorb viral genes to use in our chromosomes. Older primate branches in evolution did not use this maneuver. A persisting viral genetic parasite like a retroposon in our chromosomes, will superimpose onto its host a possible like a superposition state. It can become new molecular epigenetic identity that compels persistence and precludes competition and displacement. Our loose junctions at gut enterocytes allowed for a rapidly transformation of our endogenous gut bacteria, thereby altering their genomes and their light emissions. This led to assimilation of the non infectious viral genomic elements into our own DNA (especially the X chromosome) using our own gut's immune system to begin and complete the job. This is why humans have evolved a leaky gut to sculpt their DNA with transposons. This inability is why Dr. Barry

Marshall could not use mice as a model in his Nobel Prize winning work on helicobacter. This mode of transmission only works in primates and hominids. I believe, developing this co-evolutionary strategy is simply a molecular stroke of genius allowing for rapid change for a low thermodynamic cost. Because our "hominid tree" does allow for this activity in our gut, how might this ability interact with repair mechanisms and our immune systems regulation that our cells already have?

REPAIR AND LIGHT

Photo-repair is about specific frequency of light causing amazing regeneration and healing. Dr. Robert O. Becker found some amazing things about the neuroepithelial junction. He just never linked it all together. He discovered that certain frequencies of light can stimulate RNA to make proteins to repair all the damage by turning differentiated cells to multipotent cells to rebuild missing parts. Mammals have lost this ability because they can't generate enough DC current in the *proper time frame* of wound healing. They use their excess DC current in the massive brains and not repair and regeneration. This is a trade off salamanders and flatworms do not face. The two places it still works in humans is in finger tips replacement and in bone regeneration. In both cases in humans, RBC's are the key for a reason you may not have realized

There is a deep reason in utero human surgery leaves no scars on the fetus……fetal RBC's have some of their nuclear elements left in their cells and the UV light can activate the photorepair mechanism left in our nucleic acids……..adult RBC's have no nuclei or mitochondria……so they can't use this process…….and scars are the result.
In the adult, you need skin to transform the light signal to a specific voltage to get the proper regenerative effect in fingertips and in bone. This pathway of repair does not allow for massive DC currents to regenerate our parts.

It is well known from biological laboratory experiments that if you blast a cell with UV light so that 99 per cent of the cell, including its DNA, is destroyed. What is not well known, is that you can almost entirely repair the damage in a single day just by illuminating the cell with the same wavelength of light, *but at a much weaker intensity*. To this day, scientists don't understand this phenomenon, which is called photorepair. No one has disputed it exists. Dr. Becker found it in salamanders. Others have found it in most animals. You need the skin to transmute the UV light to affect the injured tissue in most of the animals because you have to develop a neuroepithelial junction close to nucleated RBC's to form a blastema to turn cells into a more immature form so they can replace parts damaged. You simultaneously need the DC electric current outside of axons but, below the myelin layer, to electrify the tissues of the blastema back to health.

Fritz Popp took this science deeper than most. He also knew that patients with xeroderma pigmentosum eventually die of skin cancer because their photorepair system cannot repair sun damage. He was also struck by the fact that photorepair works most efficiently at 380 nm, which is the same frequency that the cancer-causing compounds react to and scramble their atomic messages. That frequency corresponds the a specific voltage that repairs cells found in Becker's work.

Everything is quantum in biology……..we just do not realize it yet in the modern literature.

I spoke about light in electromagnetic coupling in the blog long ago. I even mentioned the names Cosic and Veljkovic. Both of their experiments show light frequencies drive biochemistry by electric processes. We live in an electric universe and no one seems to want to accept it. What their work showed us is that somehow each molecule sends out a unique electromagnetic field. That field is imprinted in cell water and this creates

a quantum sense or memory. The field can begin to “sense” the field of the complimentary molecule in this fashion. It’s as if there is a ” quantum electrochemical dance” in the cellular terroir and the molecules move to the rythmn. The music is supplied by the biophoton or light in the system. Light is the key to this dance.

“Veljkovic and Cosic proposed that molecular interactions are electrical in nature, and they take place over distances that are large compared with the size of molecules. Cosic later introduced the idea of dynamic electromagnetic field interactions, that molecules recognize their particular targets and vice versa by electromagnetic resonance. In other words, the molecules send out specific frequencies of electromagnetic waves which not only enable them to ‘see’ and ‘hear’ each other, as both photon and phonon modes exist for electromagnetic waves, but also to influence each other at a distance and become ineluctably drawn to each other if vibrating out of phase in a complementary way.”

Excessive exposure to the lowest wavelengths of UV light, called UV-C, (180-290 nm) can cause damage to the cornea as well as the lens. These wavelengths are not common in nature, since they are absorbed by the upper atmosphere.

They but are present in in some industrial environments, such as electric arch welding. The mid UV wavelengths, called UV-B, (290-320 nm) can cause damage to the lens as well as cause welders eye (feels like sand in the eye). Mid UV light is present both in sunlight and in some industrial environments. The high UV wavelengths, also called UV-A, (320-380 nm) are present in all outdoor environments and work with specific opsins in the eye. Excessive exposure of UV-A can cause fatigue or snow blindness. The key is 320-379 nm wavelengths, which cause biologic problems, but 380 nm UV light is quite special to biology. It regenerates cell damage using melatonin.

Foods emit biophotons and the emitted light frequency is paid specific attention to by your gut enterocytes cell membranes. Their cell membranes are lined with DHA to face the microbiome like a giant movie screen. DHA turns light into electrical signals. These light signals alter their Vitamin A and D3 sulfates cycles in the gut, brain, and skin. People need to read Popp's work carefully. Quorum sensing by light is quite complicated because it is a fiberoptic/quantum optico-photonics/ condensed matter process, between prokaryotes. In our gut, the microbiome emits light in response to food stimuli and our gut lining absorption of these light signals can change that signal into an electrical response because of the presence of DHA.

Popp also showed in detail in his research that the light emissions of healthy people follow a set biological rhythm for day and night and also by week and month, as though they are connected to biorhythms and oscillations of the earth. **These oscillating emissions are tied to the flora we evolved from the biophotons in foods.** GMO and manufactured foods all have lower biophotons emissions than naturally created foods. People don't seem to realize this. Food is light and we are creature born of light. Man made processed foods also sculpt the gut microbiome by altering the light signal from microbiome bacteria. This is what simplifies the gut flora and in size and species diversity. This process is how FIAF is altered to create adiposity signals in humans. I introduced the process of FIAF here. Gut bacteria make something called FIAF or ANGPTL4 (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. LPL allows us to convert dietary free fatty acids made from beta oxidation of a ketogenic diet and it carries these FFA to mitochondria where massive amounts of protons are spit out from mitochondria. The FFA's undergo beta oxidation to deliver a substantial

amount of electrons to the inner mitochondrial membrane to maintain the redox potential to allow for proton creation. **FIAF needs low energy/light signal to work properly.**

Intermittent fasting increases the gut microbiome's diversity, because FIAF liberates large amounts of electrons; this is key because electrons provide a close to *massless energy signal* with light photons pinned to the backs of these subatomic particles. FIAF is a quantum molecular signal created from the information and energy collected from the electrons and protons from our environment. ***Food is essentially a conduit for carry information and energy to the gut microbiome to the brain by way of the vagus nerve.*** Think of your nerves as rivers, and your brain as a lake, into which all those rivers empty. These rivers are filled with water and with light. When "the rivers" arrive at the brain, it decipher's the quantum light message from the gut, at the leptin receptor. This energy and information then crafts or sculpts the type of gut microbiome diversity based upon the quantum light signal by using quorum frequency sensing. Electrons are how light hitches a ride free of an energy toll in eukaryotes. DHA makes this possible. This is why the photoelectric effect is a key part of healthy eukaryotic life.

This is what causes us to get fat, and can alter the Vitamin A and sulfated Vitamin D3 levels in our skin and brain. They are also altered in gut enterocytes and the GALT right underneath the brush border. Those electrons liberated are what activate or deactivate the T regulator cells that affect both arms of the immune system.

We all need to remember at ground level sunlight is 44% visible light, 3% ultraviolet with the sun at its zenith (highest point in sky), and the remainder is all infrared light. This is why water and infrared light magic is key. The Earth's atmosphere blocks about 77% of the sun's UV, almost

entirely in the shorter UV wavelengths, when the Sun is at its zenith. Of the ultraviolet radiation that reaches the Earth's surface, more than 95% is the longer wavelengths of UVA, with the small remainder UVB. The fraction of UVB which remains in UV light after passing through the atmosphere is heavily dependent on cloud cover and atmospheric conditions. This means it fluctuates huge for the people and animals below. This should also make you realize that life also uses very specific parts of the spectrum of light to work its quantum magic. But UV light in placental mammals has a very bizarre twist. Photolyase absorbs blue light and employs the energy to remove UV-induced DNA damage, cyclobutane pyrimidine dimers, or pyrimidine pyrimidone lesions. These enzymes have been found in many living organisms ranging from bacteria to aplacental mammals, but their photoreactivation effect, such as survival increase of UV-irradiated cells by light-illumination, has not been identified in eutherian placental mammals, including humans.

No one seems to know what makes chemicals carcinogenic and others benign, even when they are chemically similar. In 1970, Fritz-Albert Popp, a German theoretical biophysicist, discovered that benzo(a)pyrene, (a potent carcinogen) , absorbs ultraviolet light at one specific wavelength and emits it at another. Yet, benzo[e]pyrene, a benign polycyclic hydrocarbon known to be one of the most lethal carcinogens to humans, and its twin (save for one small alteration in its atomic molecular makeup). Benzo[e]pyrene is nearly identical twin to benzo[a]pyrene, absorbs and reemits the same light at its original wavelength. *They key to Popp's research was in the atomic lattice and how light was altered by the atoms.*

Small changes in the action of light lead to massive changes in observed reality. Again, we see thermodynamics entering the picture via $E=mc^2$. Popp tested 37 different chemicals in total. The carcinogens "scrambled" light with a wavelength of 380 nanometers. The benign chemicals did not.

Popp later learned that 380 nanometers, the wavelength altered by carcinogens, is also the wavelength that cells prefer to use to photorepair themselves. After exposure to intense UV light, cells quickly self-repair when they are exposed to very weak UV light, particularly that with a wavelength of 380 nanometers. Popp hypothesized that cancer results from a disruption of cells' photorepair system for some atomic reason. His hypothesis raised a very fundamental question: what in the body produced this very weak light that powered the repair system? We still do not know the answer, but I have a hunch it maybe a release of this 380 nm light at night from specific parts of the mitochondrial cytochromes when FFA are broken down to electrons at night. During sleep we liberate CO_2 and make water to surround the mitochondria during autophagy and I think that is the key.

Popp, and his student Bernard Ruth, found that all living systems store light energy (photons) acquired from the sun and from plants consumed as food (photosynthesis), in nucleic acids like DNA. Ironically, he also found that prokaryotes release way more light than eukaryotes but he never tested to see of mitochondrial DNA holds more light than eukaryotic nuclear DNA. I have a big hunch it does and this is why we have two mitochondrial membranes to hold massive electric and magnetic charges to contain that light.

When we consume vegetables, for example, and digest them to electrons in mitochondria, it is metabolized into carbon dioxide (CO_2) and water. On the back of the electrons from the vegetables comes seasonal information of the the light used to make these plants grow. Mitochondria have a way to harvest light very similar to the reaction centers in plants. Electrons are very capable of being excited by the sun's photons and we then store the light photons from the sun while letting the "harvested electrons" pass on to reduce oxygen. During this process we extract the CO_2 and use the water in many ways, but the light, an *ElecroMagnetic wave*, must be

stored by the cell.

Popp chose to work specifically with UV light because of the experiments of a Russian biologist named Alexander Gurwitsch who, while working with onions (loaded with sulfur) in 1923, discovered that roots could stimulate a neighboring plant's roots if the two adjacent plants were in quartz (a piezoelectric crystal) glass pots but not if they were in silicon (not piezoelectric) glass pots. The only difference being that the silicon filtered UV wavelengths of light while the quartz did not. Gurwitsch theorized that onion roots could communicate with each other by ultraviolet light. When I read this I ask myself:

Might we do the same in our mitochondria?

So how does a mitochondria recapitulate the sun?

It uses the photoelectric effect.

The only two things that can contain light is strong electric and magnetic fields.

Electrons taken in by the body by any means, becomes the the energy currency of life. It is on the back of these electrons that photons are carried to mitochondria. The photons are released and dissipated in a very precise way controlled by nucleic conductors and they become distributed over piezoelectric and superconducting cables in cells. They span the entire spectrum of electromagnetic frequencies, from the lowest to the highest in the spectrum of light energies.

Dr. Veljko Veljkovic who heads the Center for Multidisciplinary Research and Engineering, Institute of Nuclear Sciences Vinca thinks we are beings of light, who connect frequencies of light in biologic fiberoptic cables to signal properly. I agree 100% with him. I think this is how the human brain works at a fundamental level. I also believe his is how the gut microbiome signals to the gut lining and to

the brain.

Popp showed in his experiments that these weak light emissions were sufficient to orchestrate the body's repairs. They key metric in his idea is the ability to turn light into an electric signal in the brain that then can be changed to an electrochemical signal and back to light or another signal. DHA is the only lipid known to do it. *I have a sense sulfated D3 and DHA, with Vitamin A select for a specific proteins in our cell membranes that are capable of activating the 380 nm photorepair system*. Without those specific proteins, I believe cancer becomes more likely. What protein chemical in the lipid raft do I think is the main target of UV light communication and photorepair? **Sulfated cholesterol is my bet.** Why?

You need sulfated D3 to make sulfate cholesterol……..and sulfated D3 only comes from UVB sunlight. It also explains why low cholesterol levels are constantly associated with oncogenesis when it is studied. The mitotic spindles cannot work properly without a sulfated cholesterol level over 200. Mitotic spindles are associated with proper expression of nucleic acids.

Now for the next level jump in wisdom; when subatomic particles whiz around in spacetime or within a mitochondria, very close to the speed of light, they live a longer existence both in a particle accelerator and in our cells. This is how time is created biologically, but it must merge with space, to become one. When you separate the idea of space and time it is like watching a Broadway play by only looking at the shadows cast by the spotlights on the stage. The real business of life involves 3-D actors moving around within the light, while shadows only capture the 2-D projection of the play. When you see this vision merge in your mind, you become able to lift your eyes from the shadows of biology to the light of quantum biophysics.

The energy in the mass of one single H^+ proton approaches 1

billion times what is liberated in a biochemical reaction. The problem is it is hard to destroy proton mass to get that energy. In fact, we see Kleiber's law show up in the sun compared to mitochondria. The sun is several thousand times less efficient than the human body at converting mass to energy. One kilogram of the sun generates only 1/5000th of a watt of power on average, whereas your mitochondria typically generates usually more than 1 watt per kilogram. Now let us consider how light and electric current relate the sun and your mitochondria. When a nerve fires an impulse, a significant amount of electricity is produced. According to Oxford University geneticist and author Frances Ashcroft, the electric field through the ion channel is the equivalent of about 100,000 volts per centimeter. If all the electricity in a person's body could be harnessed and converted to light by DHA, the human body would be sixty thousand times brighter than a comparable mass of the sun. Sounds incredible huh? Pound for pound, you could be brighter than the brightest star in the solar system. Most people will find this hard to swallow so let us do the math to prove to you this is not hyperbole. The sun's volume is 1.4×10^{33} cubic centimeters. Each second, each centimeter of the sun emits 2.8 ergs (an erg is a unit of energy). So, the total luminosity of a cubic centimeter of sun is 2.8 ergs per second. The human body has a volume of about 75,000 cubic centimeters. Dividing human luminosity (1.3×10^{10} ergs/ sec) by volume gives you 170,000 ergs per second per cubic centimeter. There you have it. 2.8 erg's per second for he sun and 170,000 ergs per second for your cells. Life requires massive infusions of energy to attain its spark of life.

The sun is much bigger than our mitochondria are, so their density in cells makes up for this inefficiency. This mathematics is the actual basis of Kleiber's law. This is why elephants are bigger than mice, but it is also why bright white/blue hot stars die sooner than cool dull red ones. It is

also why sick mitochondria leak more light than mitochondria that are well. Here, Kleber's law crashes into Dr. Fritz Popp's work

When food is plentiful, circadian rhythms of animals are powerfully entrained by the light-dark cycle. When food is not plentiful, we can handle decoupling from normal light cycles. This is why fasting and ketosis help circadian mismatches. But the flip side is intermittent fasting becomes easy and natural when we live in the sun and ground to the Earth. We need to eat less when this happens. **Food is essentially nothing but a solar signal to our gut enterocytes**. This is why I told you fasting is important in the jetlag Rx. When mammals have access to food only during their normal sleep cycle, they will shift most of their circadian rhythms to match the food availability. The reason for this is the sun's seasonal cycle is still codified in foods and the mitochondria can decipher this light wave circadian message.

In quantum field theory here is a key point: standard quantum mechanical language, says that an electron and proton position in a cell can be "delocalized" or "spread out" over long distances in space or time over the entity of the whole living system. This is hard to accept for classical biologist and chemists to accept, so they ignore it and reject it. Natural truths are not diminished by the number of people who believe it. Just because they reject this idea in unison, does not make their beliefs correct. In fact, it shows their ignorance of how physics really works. Everything is energy and that is all there is to it. Match the frequency to the reality you want and you can not help but getting that reality. It can be no other way. This is how the gut works. This is not biologic philosophy. This is quantum physics. It makes them dinosaurs in an old paradigm that enslaves patients of today's modern world.

Nature is symmetrical, but life is not……It must break nature's symmetry and it does in many ways science has not thought to think of yet. Today's blog is one small example.

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