

TENSEGRITY #10: THE POWER MATRIX

READERS SUMMARY

1. HOW IS THE SUN AND MITOCHONDRIA SIMILAR?
2. HOW DO THEY DIFFER?
3. WHAT IS SPECIAL ABOUT PROTONS?
4. HOW DOES ELECTRON CAPTURE PLAY A ROLE IN THE STORY?
5. HOW DOES BETA DECAY CHANGE PROTONS TO NEUTRONS AND WHAT ARE THE IMPLICATIONS?

I have been hinting to you for sometime now that a mitochondria and the sun have a lot in common.

Mitochondria release IR light.

The sun releases full spectrum visible light.

So let us examine why they are related and what makes them different.

So why does the sun shine? Most people today believe the sun is a nuclear fusion reactor that burns hydrogen gas to release the heat and visible spectrum of sunlight that supports all forms of life on our pale blue dot. Most people are clueless about the quantum processes at work that allow this to happen. In the sun particles can walk through walls. In fact, in all stars in our universe, they all emit large amounts of energy because hydrogen is a rogue element composed of one proton with a positive charge because its electron got stripped from its proton. Today physicists believe protons become able to fuse under the forces and temperatures within

the stars core. Most physicists believe the major force behind this action is gravity. Gravity acts because it is believed to warp space time geometrically. I happen to believe it happens under the electromagnetic force alone because it is far more powerful. This distinction is not important in this blog or in the story I am unfolding for you, but it will be soon enough when we get to circadian clock timing.



What should you know about protons fundamentally? They are mostly energy, not mass. Einstein's brilliant equation taught us that all matter is essentially energy. In the modern Standard Model of particle physics, the proton is a hadron, and like the neutron, the other particle present in atomic nuclei, is composed of three quarks. Quarks are the fundamental particle of nature for both protons and neutrons. In this way quarks are like the electron. They can't decay into anything further. But quarks, unlike electrons are never found alone in nature. Their stable form is in protons and neutrons.

PHYSICS GEEKS: Although the proton was originally considered a fundamental particle, a proton is now understood to be composed of three smaller fundamental particles called valence quarks: two up quarks and one down quark. Protons are spin- $\frac{1}{2}$ fermions and are composed of three valence quarks, making them baryons (a sub-type of hadrons). The two up quarks and one

down quark of the proton are held together by the strong force, mediated by gluons. The rest masses of the quarks are thought to contribute **only about 1% of the proton's mass**. The remainder of the proton mass is due to the *kinetic energy* of the quarks and to the *energy of the gluon fields* that bind the quarks together. Kinetic energy is energy of motion, such as that possessed by a baseball thrown by a pitcher, a bullet shot from a gun, or a translating H₂ gas molecule. *This kinetic energy reservoir in protons can be unleashed by quantum processes within mitochondria.* Gluons are an elementary particle that act as the exchange particles for the strong force between quarks. This makes the gluon analogous to the exchange of photons in the electromagnetic force between two charged particles.

The free proton (H⁺ acts metal like) is a stable particle that has not been observed to break down spontaneously to other particles. It has a massive half life of 10³⁶ years. **The nucleus of the most common isotope of the hydrogen on Earth is a proton.** Few people seem to realize that. It can exist as a lone proton, and is commonly found in mitochondrial matrix and in the core of the sun.

Free protons are also found naturally in a number of situations in which energies or temperatures are high enough to separate them from electrons, for which they have some affinity. Free protons exist in plasma's in which temperatures are too high to allow them to combine with electrons. Free protons of high energy and velocity make up 90% of cosmic rays, which propagate in vacuum for interstellar distances. They can also exist in large electric and magnetic fields. Both of these are present in the nano environment of the mitochondria. Thermochemistry studies the contribution of chemical processes to thermodynamics, the science of energy transfer. This is critically important in mitochondria.

Magnetism can occur's in two ways: ferromagnetism depending on the material involved, and electromagnetism caused by induced electric currents. Iron is ferromagnetic and is used

in mitochondrial cytochromes where protons tunnel through their channels.

When protons fuse in the sun they release massive amounts of electromagnetic radiation from their kinetic energy stores that we call sunlight. For this process to occur, two hydrogen nuclei have to be able to get very close in order to fuse to overcome a Coulomb repulsive force. The closer they get the more they become an ionic plasma. Plasma is the most abundant form of matter in the universe by far. The closer protons get, the stronger the repulsive force between them becomes. In the sun, in order for protons to fuse they have to scale a subatomic brick wall of energy. It really is an impenetrable energy barrier. Think of being able to throw a baseball through a brick wall without disturbing the wall or the ball. Newton's physics can't explain this because it's ideas are based upon laws of motion and gravity alone. Quantum Electrodynamics does explain it. Protons can fuse and easily pass any energy barrier, like the brick wall it faces, via a process called quantum tunneling. **Most people think tunneling is an 'electron only' process when it is discussed. This is not true. Protons also have a wave-particle duality that enables them to tunnel.**

Since protons are mostly kinetic energy and not mass, this begins to make sense. To visualize this process think about a wave on a river as a boat passes and the waves interaction with rocks and pebbles on the river's edge. Those waves can flow around those objects at the water's edge. Sound waves can go through walls in houses too so you can hear your kid's rock music while your trying to watch TV. The EMF waves from a cell tower pass through your house to get to your mobile phone or your laptop from a wiFi source. The water or air that carries these waves does not penetrate your walls or the rocks on the river's edge, but the vibrations in the air or water do transmit those waves to you to feel or sense it.

If you were the rogue element, the hydrogen ion (H^+), you would be able to pass through any wall like a ghost with ease.

The hydrogen nucleus stripped of its electron in the sun's core does this routinely. It can expand and spread out to cover the energy barriers in the sun's core like a ghost, to be close enough to its partner protons on the other side of the wall to fuse together.

You might recall, in Tensegrity 7, I taught you about the Grotthuss mechanism. It allows hydrogen protons in water to get very close together too. For tunneling to occur things must first get real close. This mechanism works by the like like attraction spoken about in Gerald Pollack's recent book, *The Fourth Phase of Water*. If you place a small negative charge next to a positive charge you begin to see how protons can come together to tunnel. In biology we don't need protons to fuse to make full spectrum light, we just need them to come closer together so that proton tunneling can happen and release some of its light from its kinetic energy stores. Kinetic energy is energy of motion. More relevant to biochemistry is the "potential energy" due to position of atoms in an electric or magnetic field, such as solvated ions, H^+ , or atoms transferring charge when forming compounds or molecules. Another important form of potential energy is that found in a coiled spring like a helix. Helices behave naturally as tensegrity structures. They naturally stabilize themselves through a balance between the forces of attraction (tension) and repulsion (compression). These forces are mediated by the charged electrons and protons and this allows all helical structures to flow charged subatomic particles bidirectionally. Why is this important? In space and in mitochondria, ionized plasma have bidirectional flow. Yet, electric currents inside the ionosphere are unidirectional. Why would most of the important chemicals in life be helical? Bonded atoms exhibit strikingly similar behavior (called vibrational motions) to the action of springs. Potential energy is often thought of as "stored" kinetic energy. This means that as things (cells or mitochondria) can remain stationary in a potential field such as an electric or magnetic field. *This happens in mitochondria when we sleep.* It

does not happen when we are awake. Mitochondria and the sun can hold photons, electrons, and protons stable in place by controlling electrical and magnetic forces. When these forces change or oscillate potential energy is converted to kinetic form of energy.

Scientists current knowledge thinks this process only happens in the sun under the force of gravity. I don't believe this, because I don't think gravity is the major force involved. I think it is the electromagnetic force that matters most in this transition in the sun and in mitochondria. The reason I believe this is that protons carry positive charges. All charge particles are controlled by this force with infinite range and power. That means the electromagnetic force controls proton action in mitochondria and is likely tied to its ability to proton tunnel. All enzymes have been found to use proton tunneling using the kinetic isotope effect to become biologic catalysts.

Watch this video from minute 36.47 onward. How you ask a question in science determines if the experiment is right or wrong. We are missing this today in medicine; what we believe today is based upon experiments guys like Feynman asked, but even he knew today's laws are subject to better ideas yet to come. That time has come in biology. Instead of narrowing our focus with the science we believe today, we should use it to broaden the part of our mind we know we don't connect with. In this way, instead of denying things that don't conform to our beliefs we can begin to discover things to do not fit our current paradigm or beliefs and this is, in my opinion, is the best diving board for scientific discovery.

In mitochondria, we have massive electric and magnetic fields that control not only electron but protons because both are charged particles. The isolated proton, a hydrogen nucleus, is not currently believed by physicists to transmute to a neutron outside of the sun's furnace. Current beliefs don't equate to natural truths. Why do I say this? No one has done the experiment yet to see if mitochondria are incapable of it. The

mitochondria matrix is loaded with other things that alter the viscosity of the medium that the H⁺ are exposed too. When you change the viscosity you alter the dielectric constant of the mitochondrial matrix. What force controls the dielectric values of chemicals? The electromagnetic force does. When you change the dielectric constant of the medium he protons are in strange things happen. Things that you would not expect to happen in the vacuum of a physics experiment all of a sudden manifest.

IDEA BOMB: When light is the moving, just changing of the electro-magnetic field in space won't bend light at all. Physics has proved this; a constant electric or magnetic field wont change its behavior at all. The reason is tied to Maxwell's classical equations on electromagnetic waves. It's like rising the water level and expecting the waves on the surface to deflect.

But here is where things get interesting for biology: changing the viscosity of the liquid at a certain interval will deflect the wave on the surface. Can a mitochondria change their viscosity by altering the chemistry inside their matrix? Yes, they can. Now consider what I told you in Tensegrity 5: Hydrogen bonding networks are very dynamic. *So dynamic that we cannot perceive how fast they adapt.* This should get you thinking about Feynman's video above I linked too. The fast adaptive behavior of these H⁺ networks in water, **alone** determine the dielectric constant of medium they are within. Normal bulk water has a high dielectric value. **Low pH aqueous environments (inflammation) have excessive protons**, and has a lowered dielectric value. Alkaline pH also changes the dielectric constant. The other chemicals in the matrix, like exotic atoms can alter the dielectric values in the mitochondrial matrix. When we alter the dielectric value guess what interaction changes the most? Any change in a dielectric value directly alters the electromagnetic force generation capable between things in the water. *This changes the viscoelastic tensions in mitochondria.* **This means the adaptive changes of the dielectric constant in the matrix can**

directly affect the ability to tunnel protons or electrons well. When you have this ability to control these things you have the ability to control how biochemistry can work at its basic level. *Remember, all enzymatic catalysis is tied to proton tunneling too.* The more viscous something is, the more energy needs to be added to get a tunneling effect to overcome the energy barrier. If you can't overcome this change you lose the ability to tunnel.



Paying attention to food only and not how your mitochondria handle this fuel is a recipe for circular thinking

LET'S CONSIDER LIGHT NOW

In the vacuum of space, physics is correct about light; it can only bend by gravitational force and not the electromagnetic force. So can light be bent by magnetism in a dielectric fluid that varies its strength? Yes it can, and that is what cell biology is all about. Maxwell's equations are all tied to vacuum's in space and they are classical laws. What I am describing to you here are quantum electrodynamic laws, and they are covered by Feynman's rules. Just changing the dielectric value in the medium which the light travels (or its magnetic permeability) deflects light and many experiments in physics have shown this effect. This means that when the dielectric value alters the light is also effected by magnetic permeability too. This means this can be happening in our sun or mitochondria and we don't know it yet because we can't examine it. Here you see Feynman's video coming to life again. Moreover, physics cannot say it definitely does not happen in the sun because they can't prove it. However based upon what we know today, they can't prove it doesn't occur either under the direction of massive electric and magnetic fields. We know that the sun has both large electric and magnetic fields, just as a mitochondria does. They just don't believe it happens today in cells.

The point being made here is that physicists today are quick to tell us that magnetism and electric fields can't bend light because Maxwell's laws say it can't happen, but their beliefs are only valid in vacuum's like space. Physicists don't understand biology as well as space, and life certainly does not happen in a vacuum. It happens in a cell filled with water that has a high dielectric constant. Here, in this context, light acts much differently than classic physics expects it too.

Seeing this perspective is quite important. I believe it is time to rethink those current beliefs or what we call truths today. I believe, this same effect happens in cells and mitochondria because of its self generated large electric fields and associated magnetic fields. Magnets can exert a force at a distance, just like electric charges do. Magnetic fields permeate space and are strongest near a permanent magnet or electromagnet.

A mitochondria, like the sun has massive magnetic fields. Unlike electric field lines, magnetic field lines are always closed – they never have a starting point or stopping point. Even the magnetic field produced by a current-carrying wire must form complete loops. This is why the circular shape of a mitochondria is critical because it contains the H^+ in the matrix to control its charge and energies. Another way to say this is that magnetic monopoles (single poles) do not exist naturally. That is the current belief, but a brilliant physicist named Dirac believed they do exist. We might hold that idea and examine it for its merits with a new eye toward how a mitochondria works.

Electric monopoles, on the other hand, exist in abundance. Examples are an electron, a proton, or any other charged particles. This also results in another interesting phenomena. Faraday's law says that a changing magnetic field produces an electric field. If charges are free to move, the electric field will cause an EMF and a current. That EMF in biology is the DC current in the brain and heart where mitochondria are most densely packed. A traditional recording head for magnetic

data consists of a coil of wires attached to some current-sensitive device. A ferromagnetic material passes under the coil. Such an arrangement can both write magnetic data to the ferromagnetic material and read magnetic data off of the material. This is precisely the atomic relationship we see in the inner mitochondrial membrane in eukaryotes. To write magnetic data, current is sent through the coil in proportion to the desired signal. This current produces a magnetic field proportional to the current. The magnetic field aligns the spins in the ferromagnetic material. As the material moves away from the coil, the magnetic field decreases, and the spins remain aligned until they enter another magnetic field, when they are erased. Putting iron inside a current-carrying coil greatly increases the strength of the electromagnet. This explains why each cytochrome use Fe-sulfur clusters. Changing magnetic fields induce electric currents in copper and other conductors. A charged particle experiences no magnetic force when moving parallel to a magnetic field, but when it is moving perpendicular to the field it experiences a force perpendicular to both the field and the direction of motion. Protons move perpendicularly to the magnetic field in mitochondria. This naturally happens with circadian mismatches because new magnetic fields are generated by the moving current of electrons with different energies from the sun. As atomic physics and chemistry began to explain the periodic table with the help of the Bohr model of the atom in the early 1900s, magnetic properties were arbitrarily assigned to the electrons in atoms. Electrons appeared to exhibit two types of motion in an atom: orbital and spin. Orbital motion referred to the motion of an electron around the nucleus of the atom. Since a charged particle was moving, a magnetic field was created. **Here is the irony though, protons also spin around their axis and induce another magnetic field.** The magnetic field due to the orbital motion and the magnetic field due to the spin could cancel or add. Solids contain incredibly large numbers of electrons, and they will never all completely line up. Instead, a solid generally consists of magnetic domains.

In a domain, the majority of electrons which are unpaired valance electrons, will have their spins aligned. **Mitochondria use signaling molecules that do not do this.**

Moreover, their matrix is filled with H⁺ ions that act like liquid metal plasma. When we entered the 20th century, the concept of magnetism being entirely due to the motion of charges was been modified significantly because of quantum electrodynamics of Feynman. You saw this above in my example of the bending of light. Classic physics could not explain what QED did.

The Bohr model of the atom had to be modified to include uncertainty for both the electron and the proton. Today we still cannot say for sure how much a proton or electron weighs are exactly where it will be in any reaction. This ability is what life takes full advantage of in a mitochondria. This is why the hydrogen proton is used in most biologic reactions inside the mitochondria. Since electrons and protons have intrinsic spin, they create magnetic fields automatically. After considering quantum mechanics, we are once again left with two types of magnetism: intrinsic magnetism due to the "spins" of electrons, and electromagnetism due to the motion of electrons and protons. In computers, CD-ROMs use of electronic storage in RAM, but most data is still stored magnetically. The same is true in mitochondria, we just fail to realize it.

THE SUN

In the sun, hydrogen has one electron surrounding its protons nucleus. This is the negative charge needed to draw the protons close together. Excess protons become neutrons and neutrons can become protons in a process called beta-decay. However, protons are known to transform into neutrons through the process of electron capture (also called inverse beta

decay). Within an atom's nucleus, the beta decay process can change a proton to a neutron. Physics knows this happens, they just don't believe it happens in biology. Today we now know that beta decay rates can be altered dramatically by laser light. Physics has shown that laser exposure of nano-particles accelerates the alpha and beta decays of radionuclides in an **AQUEOUS solution**. The observed effects are accounted for in terms of a mechanism that involves "*resonant enhancement of optical waves by metallic nano-particles.*" Check cite 7 below. All of these elements are present in the mitochondrial matrix. It is dense science I am giving you today, but it shows that an aqueous environment changes the ability to become able to use beta decay to change protons to neutrons using polarized light. My bet is that it will be shown to affect beta plus decay and beta minus decay and electron capture. Beta decay is mediated by the weak force. There are two types of beta decay, known as beta minus and beta plus. Beta minus (β^-) decay produces an electron and electron antineutrino, while beta plus (β^+) decay produces a positron and electron neutrino; β^+ decay is thus also known as positron emission. In this form of decay, the original element becomes a new chemical element in a process known as nuclear transmutation. **In the case of hydrogen it can't decay into another element because hydrogen is element one. So what does it do in this case? It uses QED forces to tap a proton's kinetic energy bank account and it liberates light or it can become a neutron.**

I will remind you now that 8 years ago physicists did not believe plant reaction centers were quantum computers either. That belief has also been shattered today by recent experiments on photosynthesis. An isolated neutron is unstable and will decay with a half-life of 10.5 minutes. A neutron in a nucleus will decay if a more stable nucleus results; the half-life of the decay depends on the isotope created. This process is likely controlled by the redox potential inside the matrix of the mitochondria. I believe the electric and magnetic forces are functionally capable of lending this stability to a mitochondria when the transition occurs because

of the action of the dielectric constant and the electromagnetic forces in our mitochondria.

If we have a lot of inflammation in our body, we have an excess of protons; If we decay excess protons to neutrons what happens? We gain mass while losing energy in the form of light. The relative masses of a neutron = 1 while a proton = 0.99862349. This means a proton has less mass than a neutron. Said another way, protons are only about 99.86% as massive as neutrons. The difference in energy is the amount of light released as energy. This has massive thermodynamic consequences because energy in light formation is created while mass simultaneously increases. This is why we get ill or gain weight when our mitochondria leak light. This is fundamentally why the EMF 2 blog was deduced. Protons and neutrons do not have the same real mass. Their masses are quite close, but they are noticeably different. Small differences in a mitochondria have massive macroscopic effects on life. That small difference is why many diseases exist today. This idea is what leptin resistance really is. When we have too many protons we begin to change them into neutrons and we gain weight and lose light. It is also why no tests are available to check the transition. But we can see the effect of we look at mass and light loss in disease states. Today, we are not doing this in clinical medicine or research. I focus on the biologic parts of nature that do not fit modern theory and I don't worry about the ones that do; that is how you chase nature's recipes, in my opinion.

There is another unit I need to introduce you too, called an electron volt (eV), that scientists use when talking about small things like protons, neutrons and electrons. An electron volt is actually a measurement of energy, but scientists have gotten away with using it to measure mass since mass and energy are related by Einstein's famous equation, $E = mc^2$. Mass and energy are the same things fundamentally. So, in terms of MeV (Megaelectron volts, 1 MeV = 1,000,000 eV), the masses are:

Neutron = 939.56563 MeV

Proton = 938.27231 MeV

Electron = 0.51099906 MeV

If the transition leads to a more stable nucleus, a proton in a nucleus may capture an electron from the atom (called electron capture), and change into a neutron and release a neutrino. **When a proton changes into a neutron, light is lost and mass is gained.** When you do the addition and subtraction it works out that a neutron is heavier than the proton-electron combination by a mass-energy equivalent of about 780 kilo electron volts (keV). The only things in physics known to contain light/energy are strong electric and magnetic fields. Both of these things are present in the sun and mitochondria.

When two protons get close enough, but are not yet fused, they begin to tunnel together to release some of the energy that eventually turns into light. In the sun or a star, the light is sunlight. In a mitochondria it is usually IR light. It should make sense to you why mitochondria are focused on IR light. It is the part of the visible spectrum that can be still available at night when the sun is absent to drive entanglement of electrons. Matter contains IR heat even when the sun is not present. This is why life at sea vents don't need sunlight either to work. Light at the surface provides life with their electromagnetic energy during the day. I believe the bacterial ancestor of the mitochondria was absorbed by a *viral coat particle* at endosymbiosis, because life's redox signaling predicted that the sun was already a given in life's thermodynamic designs.

The story gets more interesting when you study the sun closer. When you look at two protons, in order for them to really fuse, the story becomes complex because the forces between them don't and can't provide a strong enough bonding power to merge them. Atomic nuclei are made up of protons and neutrons. If a nucleus has too many of one type or the other, quantum

rules take over and dictate a balance must exist. Excess protons become neutrons and neutrons can become protons in a process called beta-decay. However, protons are known to transform into neutrons through the process of electron capture (also called inverse beta decay). A free proton cannot normally be changed to a free neutron by this process. It is believed to have to be part of an atom. Inside a mitochondria H^+ acts like an ionic metal plasma because of the surrounding strong electric and magnetic fields. For free protons, this process does not occur spontaneously but only when outside energy is supplied. Mitochondria are massive stores of potential energy. **Potential energy can be changed to kinetic energy when a force is applied to it.** When non native electromagnetic force impact mitochondria allow a quantum mechanism to occur. In the sun, Beta decay is what occurs when two protons actually fuse in this process. I believe the same thing occurs in cells. The merger of two protons can't exist and one of them automatically decays to a neutron.

The remaining proton and the newly evolved neutron form something called a deuteron. The nucleus of an atom of the heavy hydrogen isotope is called deuterium for this reason. We can not build any heavier elements in the periodic table without some deuterium being made. So why did I mention deuterium, and why should it invoke you carefully re-reading OSF 3 now? This was Mother Nature's first quantum step in cosmic creation of evolution.

The key point is that deuteron owes its entire existence to the ability to exist in two states simultaneously. This happens because of quantum superposition. This occurs because a neutron and proton can bind together in two ways that are delineated by *how they both spin!* Quantum spin occurs in protons and neutrons too and is not just a function of electrons. I have not told you that before today. Back in Einstein's heyday, in the 1930's, physicist showed that within deuteron, both particles existed in both states and this is what allows them to bind. This is where evolution, sex, and

DNA replication fundamentally begin in life because of physics.

THE KEY POINT IN THE BLOG

Biology is really applied chemistry, and chemistry is just applied physics at the quantum scale. I believe that both versions of beta decay and electron capture are possible in mitochondria based upon the forces the mitochondria senses. No one has explained how uncoupling occurs. I have an idea how it does. I think electron capture is what allows for I heat release from mitochondria when they uncouple due to cold temperatures. Why? Since a proton is changed to a neutron during electron capture, the number of neutrons in the nucleus or matrix increases by 1, the number of protons decreases by 1, and the atomic mass number remains unchanged. By changing the number of protons, electron capture transforms the nuclide into a new element. *This effect could alter the cytochrome cluster atoms.* The atom, although still neutral in charge, now exists in an excited state with the inner shell missing an electron. An outer shell electron will eventually transition to fill the missing inner electron thereby dropping to a lower ground state. During this process, that electron will emit a photon a type of light or electromagnetic radiation other than IR light. This could cause disease because the light released is no longer in the IR range. Consider the MS blog, as an example.

This unusual merger has been proven to occur thousands of times in physics. Biology just has yet to realize this is might be how life began. It began with the joining of two protons to form light. Most people find it hard to fathom how two things simultaneously can exist simultaneously and join, but it is easy when you consider paint, as an analogous example. If you had blue and yellow paint at the same time and they merged, you get green. You know green is made up of two

colors, but it is not made up of just one color or the other. The new color emerges from this joining. Sounds a lot like evolution or sex doesn't it? When you have different ratios of the blue and yellow in a vat you can also develop shades of green can't you?

If protons did not merge, there would be no light anywhere in the universe. Without light, life could not exist. Without light, everything would be a giant mass of hydrogen gas. I told you hydrogen was the *rogue element* in life for a very deep reason. Maybe you can see why that is the case, when we consider how mitochondria and nucleic acids work. I think hydrogen is a lot more rogue than modern physics or biology does.

The main difference between the sun and the mitochondria is how protons are joined using two different quantum mechanisms. In the sun, the forces act to strip the electrons from the hydrogen proton. This may not be true in mitochondria because its surrounding environment in the matrix calls for new QED mechanism to accomplish the same task. When they are separated the free electron negative charge can be used electromagnetically and with the emergent gravitational force to bring electrons and protons closer together than either force could do alone.

Here is where I depart from modern physics. They believe gravity alone can do this. I don't. That force is not strong enough at these scales. It might be in a star but not in a mitochondria. I do believe the electromagnetic and gravitational force come together, to act in unison in a cell, and are strong enough to cause this interaction to begin. I think the electric attraction is the more fundamental force at play in this interaction. Once both forces act in unison, I believe the combined forces use the electron stripped off the hydrogen nuclei to make them come close together to emit light in the form of an electron. I also believe the 'electron capturing' event is also possible. We will have to wait for a biophysicist to prove my speculation. One thing is clear, when we lose energy we gain mass. No one in obesity research

realizes this and it is why we have runaway disease in this country. And the proton to neutron transition explains both the excessive light release and the gain of mass. VIDEO
HYPERLINK

I believe in a mitochondria the same idea is used but I think the main difference is the amount of gravitational force and electric and magnetic force are not as strong in a mitochondria to emit the full visible spectrum of light. Since it is not as strong, the effect allows for smaller quanta of light to be emitted. This light is predominantly IR and UV light in eukaryotes. Prokaryotes have the ability to make other forms of light because of how they generate energy across their cell membranes carries a radically different geometry that leads to more light leakage than is seen in eukaryotes. This difference was found by Fritz Popp as well.

PHYSICS TRUTH BOMB: Do you want to know why this is a big deal? The experiment that defines quantum weirdness, is called the double slit experiment. It shows that subatomic particles can be in two places at once. To make the double slit experiment work, the beam of light must be monochromatic. If you leak excess light with other frequencies of energy, you can't reproduce quantum tunneling. If you can't tunnel you can't entangle electrons in your mitochondria so you lose the best way for a eukaryote to remain healthy by being able to utilize the quantum mechanisms that come with your mitochondria during sleep. So if a mitochondria tunnels electrons or protons the light associated with the " quantum weirdness" must have a unique wavelength. This is why metabolic syndrome is disease tied to light and not to food fundamentally. When you can't fully utilize sleep you live in the classical world of calories in and calories out and you get ill and you think food and exercise are the 'be all end all' of wellness when they are not.

SUMMARY

Everything on this planet is bound and exists because of the fundamentals of sunlight. Understanding its quantum dance helps you understand how the laws of quantum mechanics joined to organize life and create the metastability used to find some semblance of order for molecules to begin to organize around. The cosmic creator was light.....and remains light. Light is the key signaling metric in cells and in the human brain. This is why new research is published daily that shows us that certain frequencies of light have specific and sensitive effects in cells. Optogenetics research shows how light shown into our retina can alter our hormone panels. The last few blogs have shown you how the light released in mitochondria changes the hydrogen bonding networks and subatomic particles and waves. Protein polymers can take light signals, they can be polarized and to form new frequencies of light to change signaling. The size and shape of the atomic array of the atoms that make up these protein polymers has the ability to change light into something new.....or different and this change can signal a cell to do something different. When light met DHA for the first time, light could be changed to a DC electric current. Prokaryotes cannot do this. Eukaryotes can. This is fundamentally why Prokaryotes release more light than we do. Eukaryotes use this light to their advantage because of their **cell membrane's construction**. The Decemeber 2014 webinar will introduce these aspects to you. This is why how the gut microbiome and your intestines work at a quantum level. They can not convert the light to an electric signal. To make DHA, life needed oxygen to show up in our seas first. To date, no eukaryote has been found to have replaced DHA even one time in evolutionary history in 600 million years.

CITES:

1. Driving Force: The Natural Magic of Magnets, by James D. Livingston, (Havard University Press: Cambridge), 1996
2. The Cartoon Guide to Physics, by Larry Gonick and Art Huffman. (Harper Perennial: New York), 1991.
3. <http://journals.aps.org/pr/abstract/10.1103/PhysRev.89.359>

4 .

<http://journals.aps.org/pr/abstract/10.1103/PhysRev.105.1250>

5. <http://iopscience.iop.org/0022-3700/10/10/020>

6. <http://iopscience.iop.org/1063-7818/41/7/A07>

7. <http://iopscience.iop.org/1063-7818/41/7/A08>

8. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2701283/>