TIME #6: IS BIOLOGIC TIME LINKED TO DOPAMINE LEVELS?

BLOG TAKE HOME: Two things I carry with me daily: Death is certain, but life is not.
You pay the price of both, with your choices made daily. You pay a biologic toll because of choice, or you gain a biologic benefit because of your choice. At the outset, the dopamine levels are the same. After you decide and the results are in you will see that the environment will add or subtract from your dopamine bank account. The result determines the reality you get. In this way, it should be clear how the environment dictates results we get.

When our eyes get stabbed by the flash of neon lights, that we ironically create, that "progress", as we call it, splits "our nights" into more alien lit days. This action changes our ways of dealing with life and we ruin the sounds of silence that nature has tuned us too.

We don't simply create probabilities, nature does, with her dealing of light frequencies to our surfaces. What she deals with our surfaces is rarely constant on a daily or seasonal basis. We are designed to *spot her trends* to guide us in each cell. When powerful trends are found we stop living based on probabilities and we begin living life with certainties. **Nature favors the dynamics of correlated novelties.** In this way, relationships of things to others things in nature becomes more important than how each was are fundamentally created.

Not everybody can assimilate light in the optimal fashion. We have various surfaces that react to a combination of light frequencies. Depending on the light spectrum light that penetrates into our surfaces between 0.1 mm to a great depth and the magic of light happens in the top layers. If your top

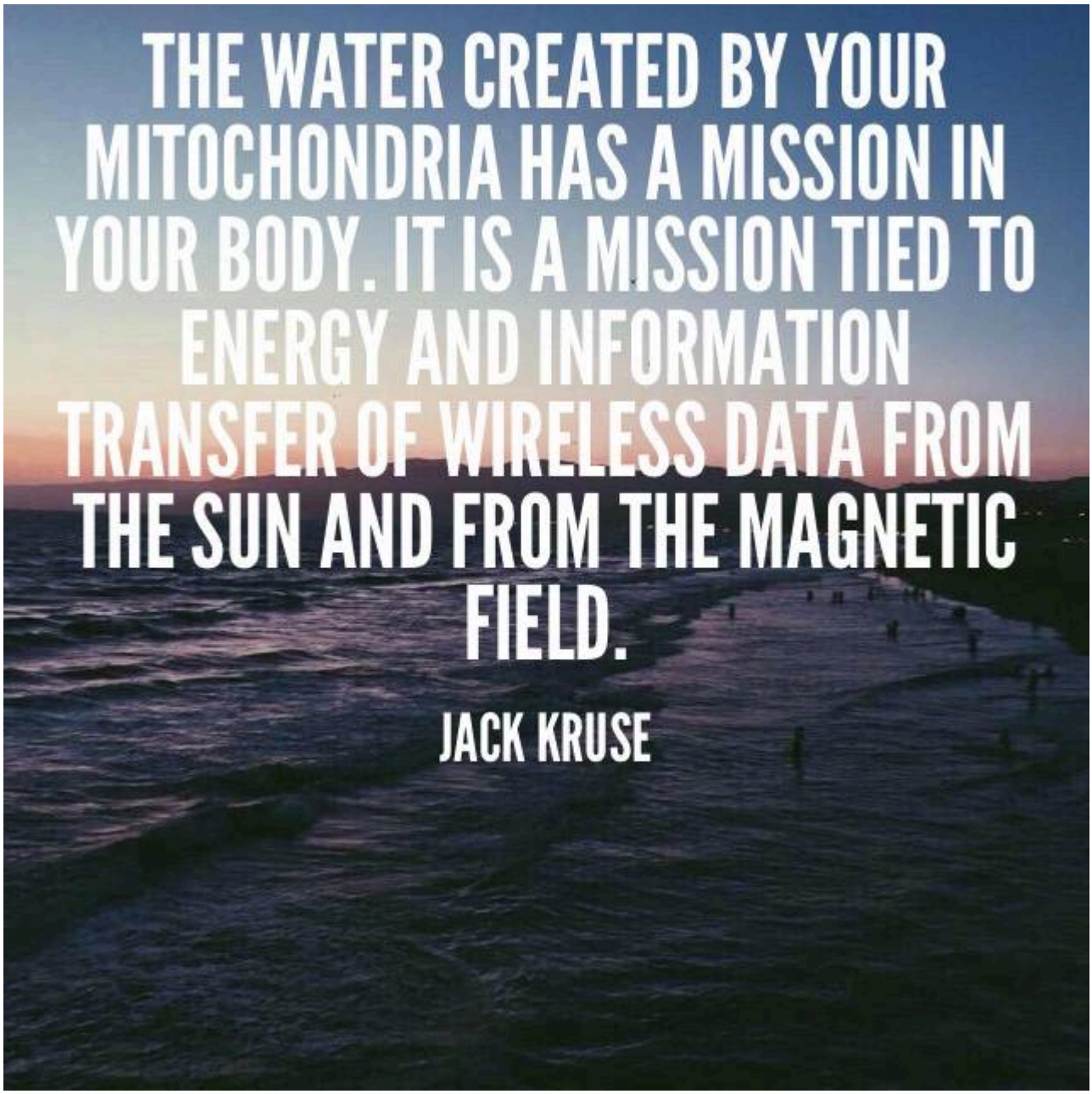
layers cannot convert this energy well due to badly composed cell membranes, *lack of melanin*, or faulty tunneling in your respiratory chain, bad photochemical reactions happen fast because of how the *photoelectric works fundamentally.* Most people forget that the gut is highly sensitive to light information because of how the microbiome releases light. The gut takes its lead from the RPE in the eye. The connection to both is the vagus nerve between the brain and gut. Bacteria release 5000 times more light than our cells do. They release this light when we eat. All thing emit light, but when and how much light they emit is the optical signals life uses to create her threads.

On a relative basis are gut sees massive amounts of light frequencies as soon as we eat something. In this way, with any problem that develops in the gut, your reaction to light will be different. There could be tons of reasons why alternative reactions to light occur in this fashion. Light always plays a role and how light works and when is not well understood. When frequencies are altered for any reason, disruptions of clock genes can happen in no time by tiny things most people are not aware of. When bad reactions occur while living an outdoor life in the perfect light, you know something is wrong in your environment for your particular cellular costume. That is your cells talking to you! The key is, do you pay attention to these trends properly? If you miss it, it is likely because your dopamine levels in your eye and brain are sub-optimal for some reason and you need to be aware of it.

Red light slows time. Cold slows time. UV light rebuilds and replenishes time in a complex dance that begins in your eye. Blue light speeds up time and your life is lived like a blue straggler star. Quick and bright. ***Over supplemented comes from being undereducated about light.*** Light has weight. As it falls to anything with the gravity it gets heavier because light has momentum. Light moving away from mass allows light to “get lighter” because it loses its purple power and shifts to red.

Gravitational lensing is a redshift effect. Red light is capable of neuro-photobiologic regeneration via heme protein changes in mitochondria. These proteins have specific absorption spectra for sunlight in the UV/IR

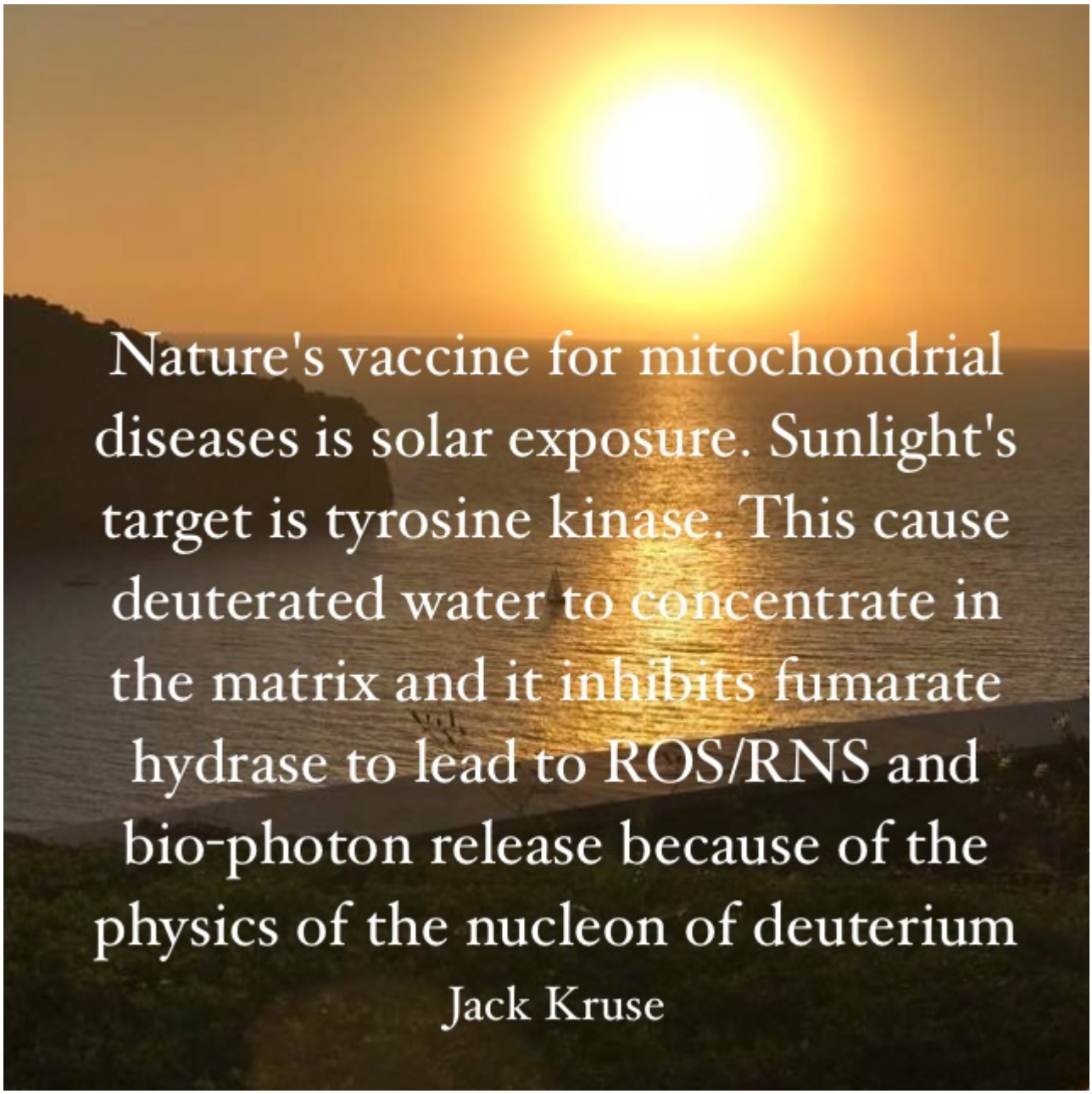
When I talk light to people that know nothing about the photoelectric effect or electromagnetic interactions, I use the analogy of a kiss. We all have been kissed many many times. When you get kissed think about the surface interactions a kiss can give you. A kiss can just be a touch of your lips without any effect. It could even make you cringe if kissed by the wrong person or in a way that you did not want it to happen. But some kisses just blow your head off and you feel a tingle in every cell down to your toes. Time stands still and all sorts of magic happen! That is precisely how light works in a nutshell. Light’s kiss can be a bullet or it can be a wave. Time #7 kicks those tires.



NATURAL DOPAMINE CREATION

Making dopamine begins with the interaction of UV light and tyrosine for humans. There is another key link also tied to UV light I mentioned in Ubi 24 blog. Bright full spectrum outdoor light stimulates the release of the retinal transmitter dopamine, which is known to be able to block the axial growth of the eye, which can also lead to eye elongation. Bright full spectrum light contains UVA light. When UV light is missing dopamine levels are lower in the eye. Anytime dopamine is

lowered, it also changes the size and shape of the globe and the ciliary muscles in our eye that controls our lens shape. Anything that affects the lens affects the wavelengths that enter the retina. This changes the circadian entrainment mechanism and alters the amount of sleep needed to regenerate the SCN. Lack of dopamine causes an elongated eye. Barreto et al. have shown that in the presence of Fe(NO3)3 two broad bands of dopamine absorbance appear, with a minimum of 270 nm and maxima at 437 and 740 nm. 437 nm is in the blue/purple range just below melanopsin's key frequency window's. **The UV range is completely missing in all artificial lights today.** *It is also missing IR-A light too. Shorter wavelength light (260-400nm), that is present can also penetrate into the orbit, eye, and eventually into the deep brain structures of the frontal lobes to regulate dopamine levels because of the tyrosinase enzyme. It is the rate-limiting enzyme in the creation of dopamine and melanin.* ***Dopamine is a fundamental controller of the hormone cycle of all things alive.*** *Tyrosinase acts upon the amino acid tyrosine. Tyrosinase is an oxidase (enzyme) that is the rate-limiting enzyme for controlling the production of pigmented proteins like dopamine and melanin. Dopamine, in the presence of tyrosinase, covalently modifies and inactivates tyrosine hydroxylase in a classic feedback loop.* ***Tyrosine kinases are now targets of Big Pharma for cancer drugs.***



Tyrosine is one of 3 aromatic amino acids. All aromatic amino acids are relatively nonpolar. To different degrees, all aromatic amino acids absorb ultraviolet light. Tyrosine and tryptophan absorb more than do phenylalanine; tryptophan is responsible for most of the absorbance of ultraviolet light (280 nm = UV) by proteins. Tyrosine is the only one of the aromatic amino acids with a photo-ionizable side chain. Tyrosine is one of three hydroxyl-containing amino acids. When dopamine is made any other way chemically or substrate substituted the brain and cells cannot control its concentration properly and many side effects result. *It turns*

out other chemicals with disulfide bonds are critical in working properly with dopamine. When it is made by the interaction between UV light and tyrosine as designed by nature the perfect balance occurs photo-chemically. This is why taking exogenous glutathione is risky. The amount of light released has to be quantized with other chemicals in the local cell environment to signal properly. The initial light signal activates glutathione into action to properly signal within the cell. When this process is not specific and not quantized, many of the common side effects one reads about dopamine agonists occurs. This is why oral supplementation with L-dopa is fraught with many side effects. It is also why supplements active in the dopamine pathways can lead to many addictive behaviors. **This is one reason I am wary of supplements.** What happens in the human eye and frontal lobes can have far-reaching effects on the human organism because of how dopamine drives our biology. Dopamine levels separate us from the rest of the primate tree. There is another thing that separates us from our primate cousins, our frontal lobes. Chimps do not have fully developed frontal lobes and therefore, they do not have as much dopamine present in their brains. As such, chimps need to sleep more than humans do. On average they sleep 12 hours a day. Humans only need 7.5 to 8.5 hours a sleep to regenerate. The reason for this is because our eyes have become dopamine factories for our frontal lobes because they have evolved a unique way to use UV light and tyrosine to make more dopamine. <u>This is how dopamine relates to time.</u> The more dopamine we have the less sleep we need to regenerate. The less we have the more sleep we need. As we age, we lose dopamine because the lens of the human eye does not allow UV free passage as it did in youth. When this occurs, less dopamine is made. As a result, less ocular melatonin is made and older humans cannot sleep long enough to regenerate and diseases of aging manifest. Younger humans can activate or de-activate the same bio-physical pathway with their use of glasses, contacts, sunglasses, or intra-ocular lenses. Another way this pathway is disrupted is

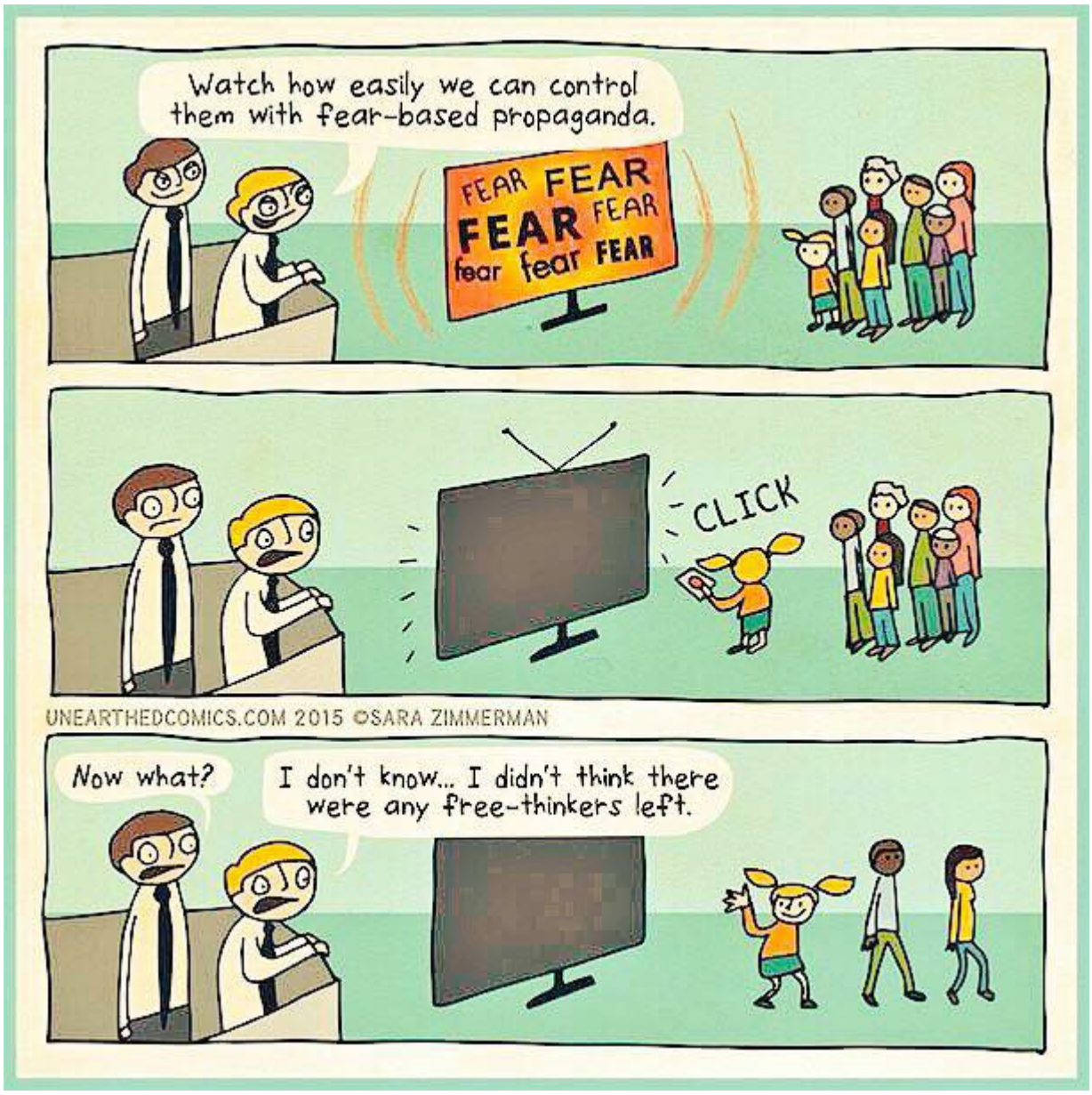
by excessive chronic blue light. Why? Blue light activates an enzyme that is designed to lower dopamine called MOA-B.

DOPAMINE AND LEPTIN LINK

By increasing dopamine levels, scientists in Sweden between 2007 -2011 have shown we increase the motivation to act/move without having to block leptin. This occurs via the ghrelin hormone in the stomach. Ghrelin is the "hunger hormone" released by the stomach. This hormone is under tight circadian control of the light frequencies in the eye. This is also why just the sight of food can affect hormones in the body without any eating of food. The University of Gothenburg research has shown clearly that ghrelin directly raises dopamine levels. The researchers also found that ghrelin antagonist drugs curtail overeating. People who get strong UV light signals via the RPE also curtail their eating easily. The more connected people are to light and to the magnetic flux of the Earth, the fewer food electrons they need and this controls hunger and appetite easily. Ghrelin, leptin, and dopamine all work in unison to control these behaviors. Leptin has been fundamentally completely misunderstood by obesity researchers because they look at biochemical signaling alone, and miss the connection to electrons, photons, and protons in this cycle. Leptin, dopamine, and ghrelin are fundamentally light-mediated hormones that sculpted our behaviors in different ways. Dopamine helps to reinforce behaviors by creating a sense of euphoria. By using light to increase dopamine levels via the eye, my biohacks have shown me how to increase the motivation to do things without having to block the action of leptin. A lack of UV light exposure via the eye causes severe cyclic changes in these hormones simultaneously. A lack of normal UV light exposure is a common tie in obesity. It also explains why obesity is always linked to low Vitamin D_3 status. Increasing cold exposure works as an Rx for this deficiency because of cold increases proton tunneling by condensing matter and it raises pH. In

this way, leptin works through the dopamine system in the eye and brain, so targeting the dopamine system with light, rather than leptin directly with a synthetic drug is the optimal way of helping people get off the couch to act and to think better about their choices, while simultaneously limiting their hunger and appetite. This is where the Leptin Rx was born. In the January 2016 webinar, you heard low levels of dopamine in the brain imply we have fewer quibits, less energy, less information being filtered through our eyes and frontal lobes. Our brain is a quantum computing platform that is designed to *spot trends*. Poor trend sensation = not making sense of chaos well = we think less well and make poor decisions = is my current perception of reality for all observers or just our altered mind?

Under normal light conditions within the eye and skin, leptin and insulin act upon dopamine when we overeat. When we overeat in full spectrum sunlight, they both suppress the release of dopamine. By reducing dopamine it reduces the sense of pleasure as eating continues. This discourages overeating. The recent studies suggest that the brain stops responding to these hormone signals as adiposity grows. ***Hormone inactivation is coupled to proton tunneling and pH levels and the light the retina senses day and night.*** Under blue light conditions, dopamine is not made in sufficient quantities at all in the eye or brain, so the effect in both leptin and insulin is magnified in the hypothalamus leading to obesity and other neolithic diseases. Can we use things like methylene blue to mito-hack our deficits? Yep.



MODERN KIDS AND DOPAMINE

Managing dopamine is a **huge issue** with the latest generation, they have grown up with blue light and nnEMF everywhere. It's in their schools, it's on their phones where they get their porn, video games, and the internet. It follows them home on their laptops, LED TV's, and light is illuminating their homes. Both destroy dopamine levels in the retina and brain. The collateral damage of a low dopamine level is a low ocular melatonin level in the eye. This generalizes to the frontal lobes as mentioned in Ubiquitination 24. This low level in the frontal lobes is capable of spreading like a prion disease to deeper levels in the brain. It spreads like a wildfire

into the ventral tegmental areas of the brain to cause many diseases. Dopamine is the neurohormone made from UV/IR light exposure that supports the development of the DC electric current in the retina. It is a neurohormone that is released by the hypothalamus under the direction of light exposure. Its action is as a hormone that is an inhibitor of prolactin release from the anterior lobe of the pituitary. Its level can dramatically affect enzymes at deeper levels in the brain to change function just from a spectral change of light at the retina. It does this by affecting several physical abilities in the local environment of cells and EZ water using "proton tunneling" to control our enzyme systems which modulate complex feedback controls on our hormone levels.

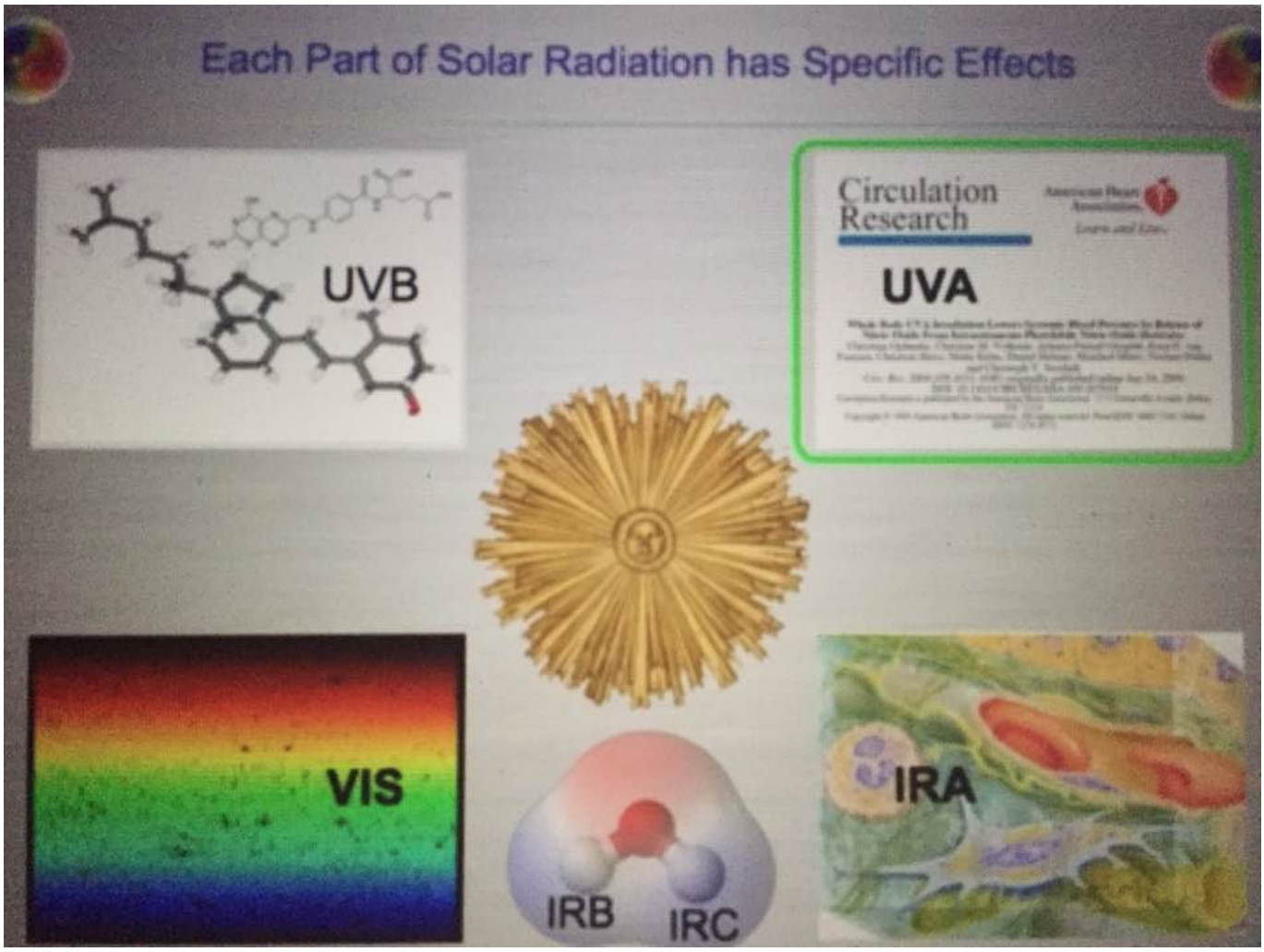
Long ago I wrote the **Dopamine Rx** while I retreated to a cold dark hole in the ground for biohack. I wanted to see if cold and a lack of blue light could boost my enzyme function during a season where the UV light was poor. I wanted to see if I could augment dopamine with cold alone. It turns out using cold in this way, is like a big reset button. It is akin to using ketosis for a neuroimmune jump. Dopamine can augment and detract from many actions in our cells to improve or destroy our redox potential. The key is the stimulus to its release and what part of the day and season it occurs in. When yoked properly, we can assimilate more light in cells when they are lacking it to build health and regenerate our degenerate tissues. Today clinicians can use other forms of "cold therapy" to raise dopamine levels. Control of protons, quantum gases like H_2S, and magnetic fields have also shown the ability to increase dopamine in humans. The two predominant means of non-invasively stimulating the brain are transcranial magnetic stimulation (TMS) and transcranial direct current stimulation (tDCS). UV light makes large amounts of direct current with the help of DHA in the retina.

Light sculpts our proteins to give us the life we get. Light truly is one of the greatest mysteries of the universe. Modern

medicine is almost completely blind to the power of light on biology. Life has its enigmatic events, that can create a mystery, or slowly evolve our misery. It all depends on the perspective we use and what kind of light enters our retina to build our frontal lobes where dopamine is housed. This is why we must approach our life's scientifically and not poetically.

Disruptors don't discover new things; they usually use their minds to innovate a practical use for old or new discoveries and connect them to our world to make a difference in people's lives.

It is impossible to rehearse life or foretell the future but medicine keeps the genomic fairy tail alive. A secure future comes from controlling your surroundings. The environment's random messages is a thermodynamic given, in life's design. Because of this peculiar relationship, the time has to be created from the interaction of light and proteins. This is why no two people can have the exact same results. Genetic identical twins even show this variation. Their environments are never equivalent, even though their genomes are, but their lives always vary. Medicine keeps looking at the genome for answers, while it is our altered light spectrum that has sucked since 1885, and we just keep glossing over it. ***Cells cannot prevent what they cannot predict. We use light frequencies to make accurate decisions. Full spectrum sunlight is how we predict the future accurately. Artificial light is how we ruin our future time.***



This is why circadian biology is the key to the cellular regeneration of the somatic line of cells and why time had to be created to use quantum physics to create the ability for living things to repair themselves. In physics, there is no regeneration, things fall to equilibrium because entropy rises as time elapses. Regeneration is a way to slow time, by making things act as far from equilibrium as possible. The only time that multicellular life is at equilibrium is 18 hours after rigor mortis. Rigor mortis is a process when muscles become lead pipe stiff with a serious reduction of dopamine present. It is associated with the massive release of ELF-UV from cells. This process is dynamic and does not happen acutely. As it progress rigor mortis eventually signals no more ATP is being made by the ATP_{ase} to assist muscle contraction. It first affects the small muscle in the eye,

which is why pupils enlarge in death first, and then the face become rigid and expressionless, then other skeletal muscles become atonic and rock hard. Ask any funeral director and you will find that this biologic effect maintains itself for 18 hours, then chemical autolysis begins. The process lasts this long until all the disulfide bonds of glutathione are used up to offset the massive release of ELF-UV light from the dying cells. It turns out water made in mitochondria can restore endogenous glutathione levels. This is when biology truly falls to an equilibrium state and the bacteria in us and in our environment get to recycle our whole carcass.

By looking inside the genome and not outside it we will continue to get results in medicine like we have over the last 50 years, until we adapt and look at our current lighting environment. Our cells are designed to disrupt electron, proton, and water plasma's in our tissues using full spectrum sunlight as its wand to do so. Once you open any plasma, you have the ability to stabilize cell membranes and intracellular water to lower future entropy in your environment. This is how life is able to maintain its design in our future. **Control of biologic plasma is a quantum tool kept at our cells disposal to innovate solutions as the environment changes seasonally.** This "cosmic wand" uses proton and electron tunneling to work its magic. At night, we are able to condense proteins, because all light except IR, should be missing. Just as a person will never give a message that everybody will agree with, so the receiver proteins have to be able to decipher the code buried in light's spectrum.

The sensor and receiver mechanism is called resonant energy transfer between light and proteins. I know that even my most faithful readers will never agree 100% with what I say. Nor should they because their environmental canvas is not the same as my own. The principle with respect to light, in how biology operates, however, is identical.

The easiest way to control people to be passive and obedient

is to strictly limit the spectrum of acceptable opinion, but allow very lively debate within that spectrum. When we are missing UV light from our spectrum, we develop unacceptably low dopamine levels; we become docile and easy to control. I have a sense this is why nature specifically controls the light spectrum daily and seasonally in us to maintain "fluorescent order" built into the proteins DNA uses.

"Spectrum" is the key concept across disciplines. With light, "spectrum" has a precise meaning. that meaning is quantized for light energy; prevailing opinions of people are germane to the time they are formulated in, but they not as precise as the time scales of which our environment, culture, or society's change. These changes can alter us faster than we imagine, by changing the time we have remaining. This change in time can be a very dynamic change. It can vary in both directions; hence why life is metastable.

This is why light's spectrum changes as the seasons change, in my opinion. When the light spectrum changes daily and seasonally, proteins are naturally designed to remain relatively stable. Their content and use of subatomic particles from light and mitochondria give them the ability to regenerate a degenerate situation. The key metric that can and does change in life, is the amount of ELF-UV light a cell releases as it is stressed. That type of light tells us a lot about the redox changes in a tissue. That variable is measured and observed in the ubiquitin marking rates in proteins. Proteins lacking UV light have to be replaced faster and time is lost. We regain time when we add back UV light to the protein lattice. The more turnover we have in proteins, the more copying errors we should expect to observe. The more errors we get the more variation we see provided that the time scale of interaction allows the change to manifest. If these changes occur too quickly, death may be the result of extinction. We have to be able to replace and repair the lattice to interact with light. In physics, there is no

regeneration possible, but in biology, processes have been built to regenerate using light as the regenerator. These processes always revolve around UV and IR light. This is how evolution creates time and uses its arrow of time to drive adaptive change in the human brain.

ENZYMES AND DOPAMINE:

All neurotransmitters link to hormones in the pituitary which link to enzymes at some level. Dopamine is the main neuroendocrine inhibitor of the secretion of prolactin from the anterior pituitary gland. Blue light from the AM sun stimulates pituitary hormone release and dopamine in the eye and UV light on our skin act to limit its release. This makes UV light a braking mechanism for hormone production. Dopamine produced by neurons in the arcuate nucleus of the hypothalamus is released in the hypothalamo-hypophysial blood vessels of the median eminence, which supply the pituitary gland. These places have no blood-brain barrier so water in the form of CSF can alter its function using proton tunneling. This acts on the lactotrope cells that produce prolactin to regulate its function.

How do enzymes work? Proton tunneling is the short answer. All one has to do to prove this, is to read Jim Al Khalili's latest book, "Life at the Edge". In this new book, it is clear to see that protons that come closer together tunnel better to improve functioning. I wrote about these quantum effects in my blogs in the OSF and Tensegrity blog series. So what is one of the ways we can bring protons closer together

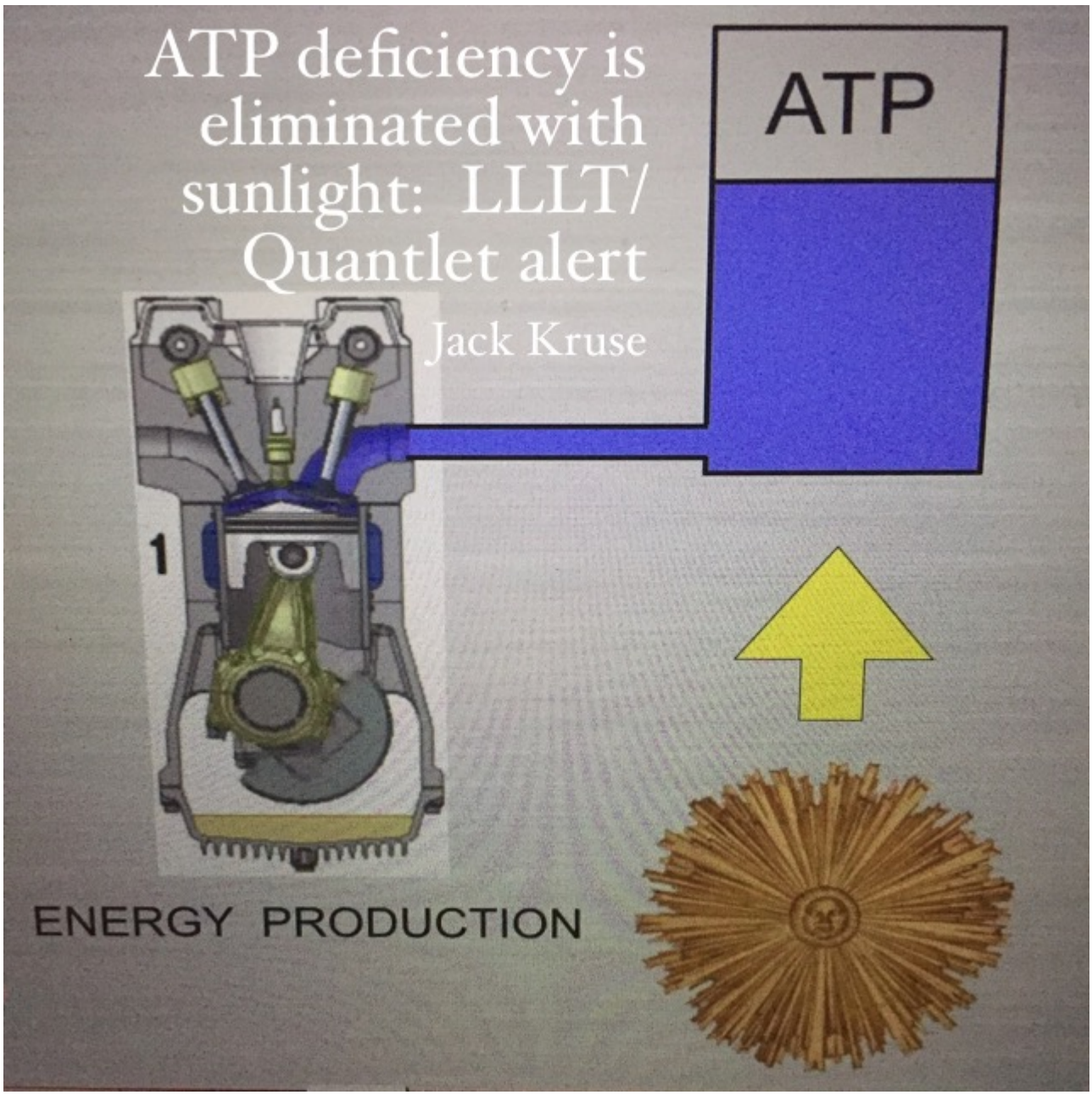
to accomplish this task? **COLD and/or cooling.** When we cool our surfaces we improve the quantum tunneling of protons and electrons. We can augment cold by yawning, meditating, and breathing because all affect the pH. pH is a function of the number of protons present. This is a universal ability found in all living things. ***This is why Wim Hof focuses in on breathing when he uses cold.*** Is his technique accurate? He does not really care how the science works, so long as it does, but you should.

COLD improves proton tunneling by bringing protons closer together, to lowering the energy barrier need to complete the process of quantum tunneling. This process happens at timescales you are not equipped to sense. It is ultrafast below even our unconscious perceptual abilities. Many still think the use of cold is just hormetic because they have uninformed opinions on how biophysics works in cells. Khalili's book should put that nonsense to rest for you. Read it!

Today people who are focusing solely on biochemistry alone need to be ignored; they do not realize all that biochemical flux relies 100% on the tunneling of protons and electrons to operate a cell. *It is time we look in the right places to find the truth and reject the precepts of a paradigm built without all the data. This will help clinicians and patient build wellness using natural truths not old beliefs.*

Methylene blue shrinks cytochrome 3 to do the same thing as cold. It also restores anions to the TCA cycle while allowing the matrix to assimilate $^{H^+}$ cations. Mito-hack it when you use red light frequencies that hemoglobin absorbs optimally up to 600nm. It also also works with 4 red light chromophore sites within cytochrome c oxidase when UVA light is present to turn off/slow food electron flow from NADH/NAD^+ because sunlight is providing all the ATP we need. This is big news because all cancer cells need a brisk flow of electron flow to become

cancerous. Here is direct evidence why UVA light cannot possibly cause cancer. Why isn't anyone making these connections?



Enzymes are proteins that use proton tunneling to serve as biological catalysts, speeding up the rate of metabolic reactions in cells. Most modern biochemistry books used to train clinicians do not even talk about this very fundamental quantum mechanism in all cells. Conventional medicine and cell physiology often tend to ignore the biophysical part of organic existence in cells despite the fact that biochemical reactions without regulative and controlling information would

end up in metabolical chaos. **Each cell orchestrates 100,000 biochemical reactions per second and proton tunneling is critical in this.**

Enzymes harness the massive amount of energy buried in a proton to accomplish there physiologic jobs by reducing the activation energy required for a reaction to occur. Enzymes are able "to borrow" from Peter to pay Paul back before reality measures the transfer of energy. I talked about this ability in the blog on "the matrix" in the Tensegrity series.

Enzymes are never consumed up by the reaction, which makes these reactions very interesting to an inquiring biophysical mind. Moreover, they are incapable of change the basic nature (or equilibrium of a reaction). This equilibrium idea is where biochemistry went off the rails. Chemical reactions have to equilibrate individually, but cellular life takes the full collection of these 100,000 reactions simultaneously, and keep cells and tissues far from equilibrium by controlling the tunneling of protons and electrons. This is when the classic less equals more story occurs for life because time dilation is possible.

Enzymes cannot convert an exergonic reaction into an endergonic reaction, or vice versa. The activation energy is reduced when the substrate attaches (by attractions) to the active site of the enzyme during the formation of the transition state. The transition state is the enzyme-substrate complex, and this is when proton tunneling is inaction. Proton tunneling is maximized when the light at 1538.5 nm is being absorbed into the water to become an EZ. This is when water is able to maximize its works function from its kinetic energy state.

In the transition state, internal bonds of the substrate molecule become distorted and strained, making it very easy (i.e. requiring little energy) to break the internal bonds that hold the substrate together. The physical dimensions of

the substrate have to match the shape and configuration of the active site in order for the reaction to occur. Size and shape changes are all tied back to thermodynamics. Therefore, anything that changes the shape of the enzyme may interfer with the reaction. Proton tunneling is massively effective at changing size and shapes of the protein lattices in things life uses by altering its hydration shell. In this way, the infrared spectrum of cell water is a mirror for the energy stored in a cells water plasma that is capable to do work.

THE COLD EFFECT:

Biogenic amines like dopamine, have been demonstrated to protect cells from apoptotic cell damage. Amines work in cell membranes with DHA to *add electrons* to the lipid raft. **Dopamine is an amine.** When we add electrons to our cell membranes they become better antenna's for sunlight. This is one of the ways dopamine increases our sensitivity to UV light on our surfaces. When dopamine and DHA interact there is another photo-electronic change. Dopamine's electrons make DHA change the configuration. DHA has 22 allylic double bonds that normally bend DHA. When dopamine is added the DHA molecule becomes more planar which also helps transfer the photonic power in UV light to the electronic effect (DC current) in the retina and brain. Photonics is an ancient meme in biology (600 million years) that we are just waking up to. In essence, DHA facilitates the "photo-electric optical transmission" of energy and information in the CNS because the pi electron cloud becomes a giant wire of electrons for UV light. UV light is most capable of moving that current in our body. People need to gear up on 3D atomic chemistry to get why these PUFA's work so well in a blue lit world to prevent aging and cancerization. Aging and cancer = low dopamine/DHA states = low DC electric current = poor electronic flow across the cell membranes.

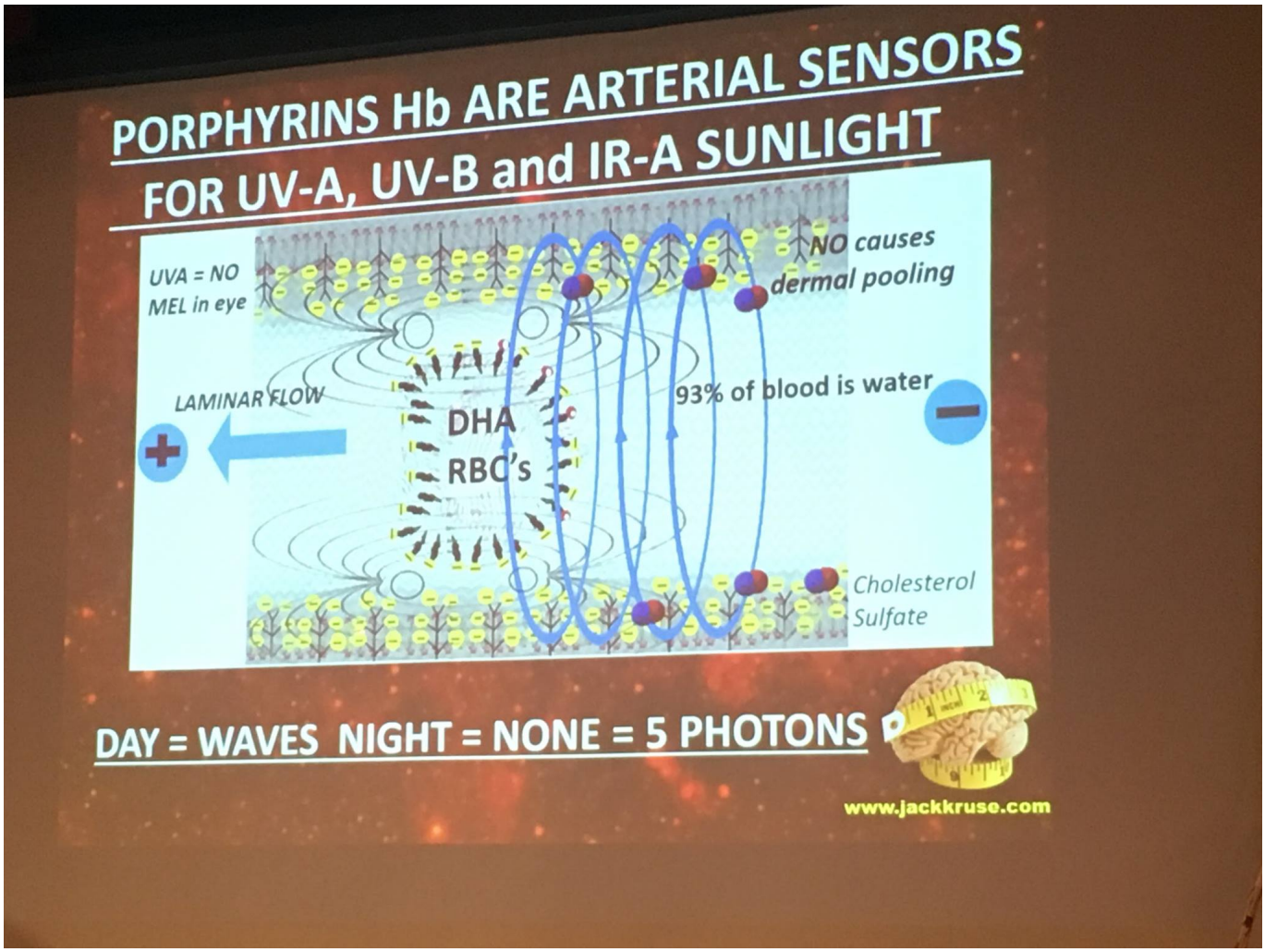
UV light excitation of the aromatic residues is well known to trigger electron ejection from their side chains to affect di-

sulfide bonds. Dopamine is made from tyrosine. Aromatic residues are the nano-sized antennas in the protein world that can capture UV light (from ~250-298nm). Once excited by UV light they can enter photochemical pathways likely to have harmful effects on protein structures. If they are not present, ubiquitination rates of the protein increases. **So how does aromatic residues in dopamine help us save time?** Disulfide bridges in proteins are excellent quenchers of the excited state of aromatic residues, contributing in this way to protein stability and activity and lowered ubiquitination. *This is how we fundamentally gain time from UV light interaction with aromatic amino acids.*

These ejected electrons from UV excitation can be captured by disulfide bridges, leading to the formation of a transient disulfide electron adduct radicals like H_2S. H_2S is fully capable of dissociating the power in light to protect proteins leading to the formation of free thiol groups in the protein.

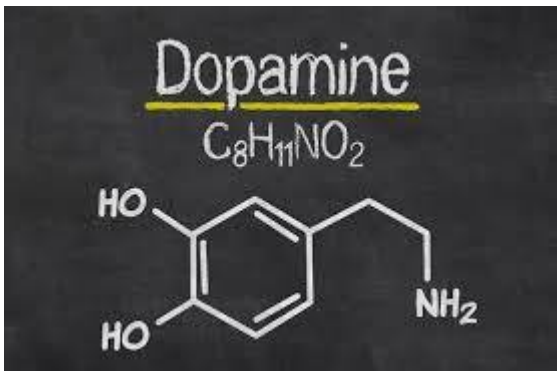
So how does UV light stimulate this protection? Dopamine is well known in the literature to stimulate endogenous H_2S production by allosteric activation and up-regulation of the CBS enzyme. The cystathionine-β-synthase (CBS) enzyme is part of how our cells naturally lower the quantum yield of sunlight. Strong light can overpower our system so we need to have a way to down regulate that power. At surfaces, the *amine neurotransmitters*, serotonin and dopamine, increase H_2S gas production by the endogenous enzyme cystathionine-β-synthase (CBS). H_2S production occurs when pseudohypoxia/hypoxia is present. It acts to protect cells against severe hypothermia and/or rewarming induced by reactive oxygen species (ROS) formation and apoptosis. Lack of UV/IR light with excessive blue light at night with high color temperatures causes a massive increase **in ocular ROS**. This lowers dopamine. Methylene blue is an electron donor to cytochrome 3 that can help when your RPE is trashed. **Many**

times my patients who have had eye surgery get told about this bio-hack.



Treatment with exogenous dopamine has been shown to double CBS expression through mammalian target of rapamycin (mTOR) to increased endogenous H_2S production when surfaces are cooled then rewarmed by light energy. Where does the disulfide bridges come to play in this complex dance? Glutathione cycling becomes critical. Tylenol decreases sulfation pathways by decreasing cysteine in tissues. Matrix water production can restore this source of glutathione. Glutathione is the source of the S-S bonds to quench this reaction. **This is why glutathione levels have to be linked with precision (quantized is a better term) to the incident light frequency that excites the side chains on tyrosine to operate.** *Taking exogenous glutathione when UV excitation is not present will*

lead to more apoptosis of dopaminergic damage. You could actually cause Parkinsonian changes if you block UV light in this process.



This is one of the main reasons taking exogenous glutathione maybe more dangerous than we realize. This is not something a supplement seller wants you to know. The stressed cell releases a quantized amount of light in the ELF-UV range this addition of things like glutathione can offset wither side of the feedback loops that control the stimulus needs to begin the regeneration process. We also know when water temperature is raised water undergoes a blue shifted effect. This is very important with dopamine because the enzyme that feeds back on it is activated in the blue range specifically. When water is cooled it undergoes a red shifted effect. Cooled water has more electrons in it and this makes it more sensitive to light photons in a cell. I mentioned this for the first time in a recent podcast with Tristan Haggard of Primal Edge.

Cool water is also more dense crystalline hydrogen-bonded network and this leads to a change in the molecular geometry in a cell. Things become more condensed when cooled. When IR light (red) is added to this water it actually shrinks further. This is why ice expands and floats on top of liquid water. Red light shrinks cytochrome oxidase (Cox) in mitochondria too. Cytochrome oxidase c has a key role in neuron physiology. It serves as an interface between oxidative energy metabolism and cell survival signaling pathways. NASA would be wise to use this information to help

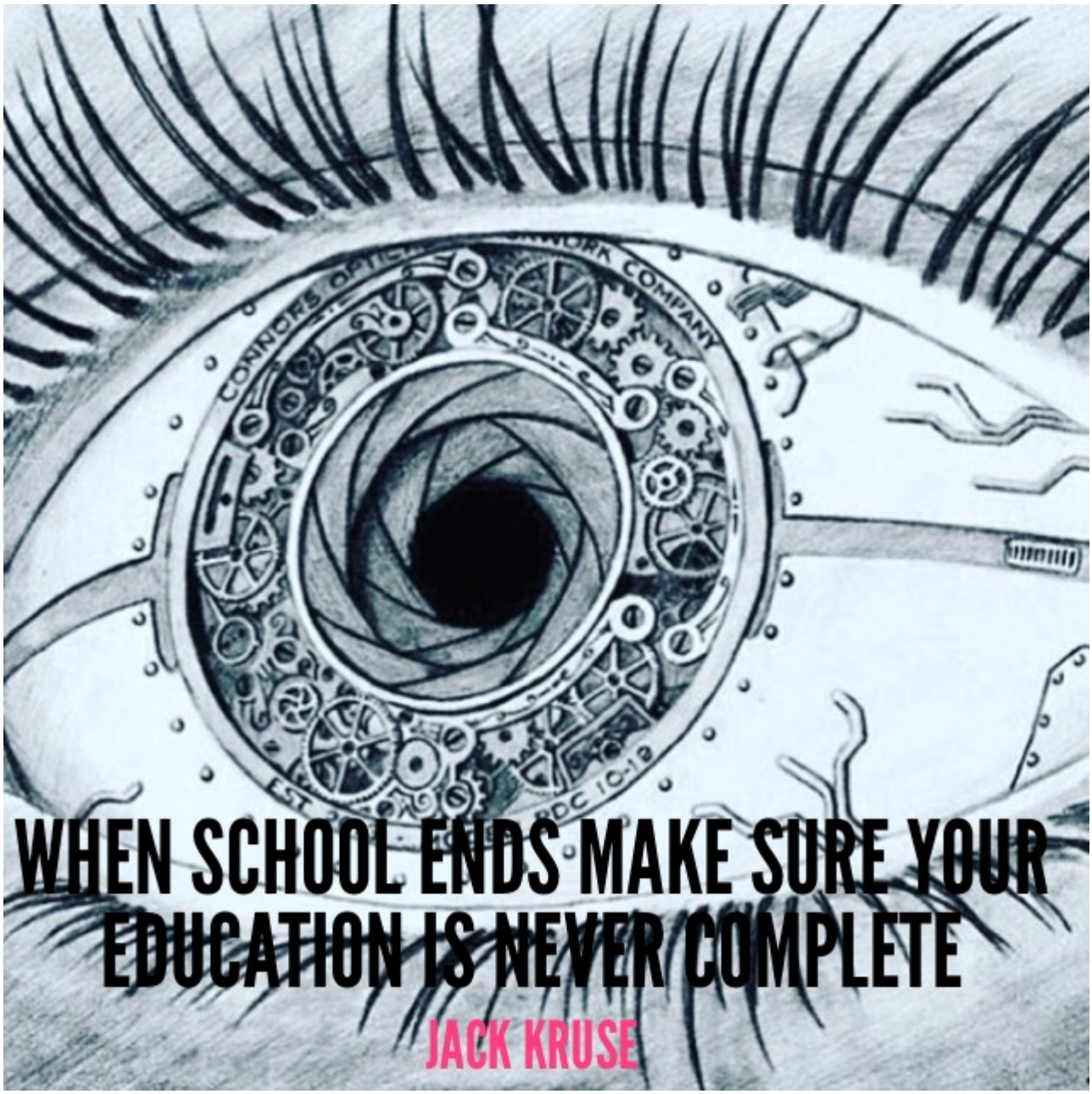
repair all the astronauts ruined RPE's from space and the Van Allen belts radiations. Cytochrome oxidase is an ideal target for, RPE repair and eventual cognitive enhancement from neuro-degeneration. Its expression by red light reflects the changes in metabolic capacity underlying higher-order brain functions. This is why red light is the antidote for blue light ROS in AM sunlight. It is also why nature has balanced built a receptor in the eye clock to take advantage of both frequencies ability.

In addition, serotonin and dopamine treatment has been shown to significantly reduced ROS formation in most tissues where this has been studied. This ROS can be from many photo-chemical sources. **Blue light increases ROS because it destroys DHA concentrations in the RPE and ganglion cells where melanopsin receptors in the retina.** This destroys circadian signaling in the central retinal pathways. Normally dopamine is also made by the RPE when it is stimulated by UV light because of its interaction with tyrosine specifically. ROS tends to increase the temperatures in the RPE tremendously an this leads to apoptosis and damage and neuronal loss and thinning of tissues in the eye. Macular degeneration has these specific findings and they are often found in neurons deeper in the brain when neuro-degeneration is present. This also explains why there is a large physical distance between the RPE and the neurons that actually carry the light message from the retina to neurons. That gap distance between RPE and neurons are bridged by water. This water cools the RPE while also increasing the EZ in this water to signal. Water is the ideal chromophore for heat or red light. The retina has a built in light-mediated feedback system; melatonin mediates darkness-related (cold) adaptive changes, and dopamine mediates light-related changes. (warmer).

Effects of temperature on enzyme function is critical when the retina sees an altered spectrum of light; this is where cold

thermogenesis comes into the story of life: small changes in temperature, especially at surfaces like the retina, where water is present, can radically influence enzyme function in deeper tissue levels by altering the geometry of the enzyme. This leads to a size and shape change that we spoke in detail in the OSF series, (especially OSF 3-5).

Once the geometry of the enzyme changes, the dimensions of the active site in an enzyme changes and they no longer can work optimally. This slows enzymatic flux in biochemical cascades. This changes timing in cells and in your life. When time is changed, their is a simultaneous geometric change inside the cell that no longer matches the dimensions of the substrate chemical. This can physically occur in cells because the photoelectric effect occurs instantaneously in physics when a light of sufficient power interacts with electrons on a surface. This is how time can be altered in this complex gear mechanism in the RPE of the eye. With cooling, proteins condense and electrons become more densely packed to allow more photon electron interactions to occur. The more that occurs the more transfer or energy, information, and momentum occurs within the RPE from the environment's light source. The light can increase the local temperature in the RPE. When the temperature gets warmer at a surface and changes it physically to either open or unfold it. Cooling tightens it and light loosens the protein by uncondenses the protein. At very high temperatures, the bonds of the protein are irretreivably broken and completely disrupted, leading to irreversible denaturation of the enzyme. This is often what we see in macular degeneration of the central retina and in neurodegeneration of the brain. Anyone spotting trends yet?



PROTONS = pH: ARE ALL PROTONS ON EARTH THE SAME?

Effects of pH: pH is a measure of the concentration of positively charged particles (called protons) in solution. A higher pH (basic) increases the exclusion zone around proteins. Every protein in a living cell is surrounded by exclusion zone (EZ) of water. What does the EZ exclude? **Anything larger than a proton.** The more electrons in a proteins' lattice, the larger the EZ is present around a protein as its hydration shell. This increases the battery power around the protein. *The EZ stores light energy and becomes a repository for electromagnetic radiation.* This increases the redox potential of the protein, and lowers the

ubiquitin rate for this protein. It means it will not be replaced quickly. This leads to cellular stability and better biochemical functioning. This implies inflammation has two pathways it can be tied too. One is having too many protons leads to a lower pH decreasing the EZ. The other possibility is having too few electrons from having not enough light stored in the hydration shell of proteins.

The lower the pH is (acid), the SMALLER the EZ battery becomes and less biologic time that tissue will have to exist. As the pH drops, the ratio of the concentration of positive charges to the electrons in our protein lattices increases, and the more acidic the solution around the protein becomes. At high pH (alkaline), the proton concentration is low, and the solution is basic. Large EZ are always associated with a higher pH.

SIZE AND SHAPE: changes in enzymes, therefore, are directly tied to pH and the EZ around proteins in cells. Changes in the acidity of cell water will interfere with the bonds that contribute to the geometry of the enzyme. The key point here is that too many protons = inflammation. The corollary is that too few electrons in proteins from too little light also = inflammation. If both states exist at the same time ubiquitination rates will rise tremendously and this stresses the cell tremendously. If it exists over time chronically, this will limit the time a cell can exist, and cellular programs try to innovate a solution to these biophysical effects by becoming immortal. This is where epi-oncogenesis comes from. This is how biologic time is lost, fundamentally.

As with temperature, any change in geometry will alter the dimensions of the active site and ultimately catalytic capacity too. This means that enzymes are designed to function in specific pH environments—when that environment changes, the enzyme no longer works as the biochemistry books say it should. Conventional medicine and physiology often tend to ignore the biophysical part of organic existence in cells despite the fact that biochemical reactions without regulative and controlling information would end up in metabolical chaos.

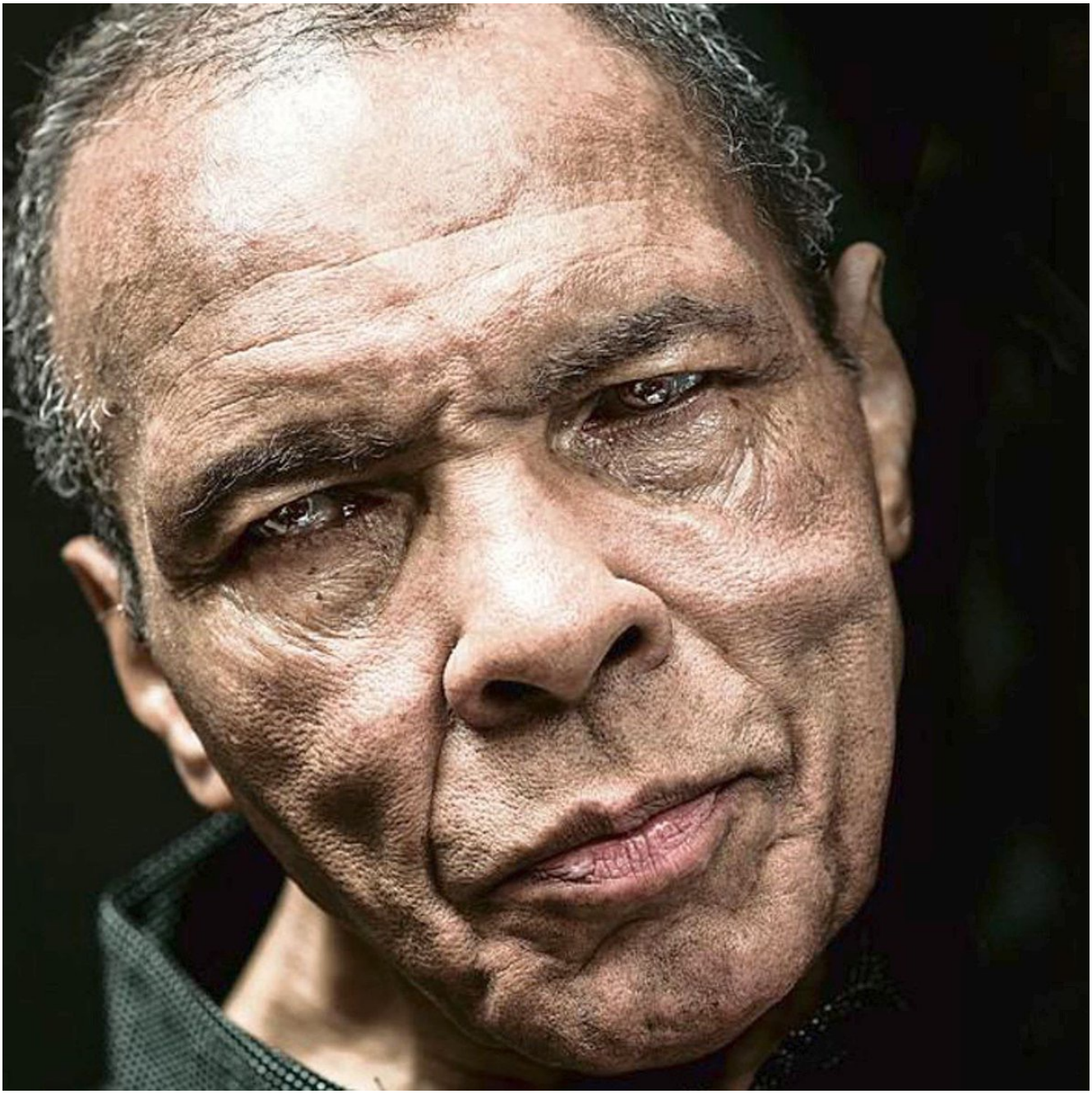
Red light in the IR-A range increases HSP70 which stabilizes the 3D protein confirmation structure. But we need mitochondrial redox to sustain the redox potential of the liquid crystalline state of our endogenous semiconductors.

Chaos = swelling = a small EZ = low pH = low DC electric current = low dopamine levels = destroyed hormone signaling = epi-oncogenesis = a loss of biologic time. ***This is why our genome's nucleic acids are designed to respond to environmental signals, not to control them.*** *The DNA make those proteins that need to be hydrated to work with sunlight properly.*

DNA and RNA signaling both work by proton tunneling as well. In nature, atoms are coupled to specific light frequencies to control specific biochemical responses. To believe in the omnipontent power of genes supports lazy comfort and ignorance in people of science today. When the message from outside in the environment to inside our cells is jumbled, inflammation and poor redox results and diseases manifest. Enzymes in our stomach, for example, are designed to work under very acidic conditions, while the enzymes in our blood are designed to work under pH levels that are very close to neutral.

Control of enzyme activity: If enzymes speed up the rate of a reaction, what is it that prevents metabolic reactions from proceeding at a high and uncontrolled rate? One important control mechanism is negative feedback inhibition. In the simplest example, the product of a reaction acts as an inhibitor of enzyme activity. The inhibition occurs when the product attaches to the allosteric site on the enzyme, causing a change in the dimensions of the active site. When the active site changes, it no longer matches the substrate and the enzyme is inactivated. Thus, when there is an abundance of product around the enzyme, the reaction is shut down, but when little or no product is around, the reaction proceeds very rapidly in the presence of the fully activated enzyme. Enzyme activity can also be affected by other molecules, including

hormones and other chemical messengers. Inhibitors are molecules that decrease enzyme activity; activators are molecules that increase activity. Many drugs and poisons are enzyme inhibitors because they block proton tunneling by altering size and shape or the temperature around a local cellular environment.



What a lack of dopamine looks like

SUMMARY:

With respect to dopamine, you have to stay up with your reading here. Most people have no idea that cold is one of the better ways to raise dopamine in the brain. Cooling increases the DC electric current photoelectrically. Cooling increases electron density and light interacts with matter via electrons exclusively. This is why hypothermia can increase our time on this planet when illness or trauma afflict us. Note the date of the linked paper in my cites; it was written 15 years ago 2000. For 1o years, I've been telling people about Cold Thermogenesis in my practice and how it affects dopamine levels in the human brain. Cold increases dopamine because it allows our surfaces to absorb more UV/IR light. Cold works optimally in unison with UV/IR light to allow us to tap the compound pharmacy in our anterior pituitary gland where most of our hormone cascade begins. Red light stimulates the pituitary to release anterior pituitary hormones. Dopamine is built by UV light stored in carotenoids and melanin in different tissues to act as a battery in proteins to do work. Dopamine also has control over the release of these hormones in the photoptic eye because UV light limits their half life in blood plasma. This is why mid day most anterior pituitary hormones are declining. **Dopamine has a different effect on growth hormone when the eye is scotopic**. Light can change what biochemical effects dopamine can have just by the presence or absence of light on the retina. Maybe now you can see why it does what it does on different surfaces in our body. In summer, UV light drives dopamine levels and in winter cold is capable of doing the same because a light is driving its action.

The cooler your surfaces in biology remain, the more favorable the redox potential of cells become below that surface. As this occurs, the biochemistry changes at deeper tissues levels. Because light is added to our protein lattice in tissues. Any human surface that is cooled, allows us to absorb and assimilate more UV light. This frequency of light carries massive amounts of the DC electric current. To go

from the light signal to the electrons that make up the DC electric current we need to make sure DHA is present on our cell membranes to take advantage of of this band of light to add more electrons to our protein lattices.

The paleo solution is really a fitness solution because its idea is built around grass fed meat that does not have a deep source of DHA while we live in an alien blue lit world. Therefore it is not a Rx designed to reverse medical problems in an optimal way. The Epi-paleo Rx is a biophysical plan to innovate optimal wellness even in a blue lit world. Why? The highest density of electrons are buried in the pi electron clouds of DHA on Earth. DHA density is found in cold water shellfish, and pelagic fishes.
When you are ill you have a duty as a clinician to choose the right plan for the right problem. An Rx for a half truth gets you a mediocre response. Therefore, we should not place a "fitness solution" when we are trying to reverse a medical problem. That would be what unwise and uncovers a lack of biophysical wisdom. I am sad to say, fitness solutions are what trainers and an indoor gym owner would want you to believe.

Sleep is how we regenerate. The path to sleep is via the eye where light enters the brain to make dopamine. Medicine and alternative doctors believe sleep starts at the pineal gland and melatonin with darkness. A few even know about the storage shed of serotonin/melatonin in the gut, but very few of them talk about how sleep begins in the eye. It is the key surface most ignore. I don't ignore this surface. UV and IR light in combination is what starts the eye clock gears ticking to make ocular melatonin. This is how Mother Nature winds your circadian mechanisms to give you the current life you are living. If you want to change that life, you must change how you allow light interact with your eye clock mechanism. The dopamine level in your frontal lobes is directly linked to how well oiled your eye clock mechanism is working. The

utilization of full spectrum sun containing UV and IR light with simultaneous cooling at your surfaces is a medical solution for the most medical problem to help direct a reversal. At the minimum, they are ideal at buying the clinician time to help get a patient to change the environment they got ill within. One will never find wellness in the same environment that got you ill.
In this paper from 2000, cold water immersion at 14°C increased metabolic rate by 350%, norepinephrine by 530% & dopamine by 250%. How could anyone call this hormesis?

Full spectrum sunlight = whole food. Blue light (iPads, phones and computers) = Funyuns. We need less food guru's and more light guru's. What are you feeding your body today? Light or paleo snacks? You'd be wise to get some sun while cooling your surfaces before considering a diet to gain optimal!

When you focus on the correct things, reversals of difficult things become easy. Light not food is where your focus should be. So instead of "You are what you eat", it's more like, "You are what you absorb, repel and emit.

The best way to avoid procrastinating is, to begin with, some action. People with lower dopamine levels are chronic procrastinators. They also tend to be creatures of habit. If you're stuck in your past, you go forward in reverse and nothing changes. Your past should never touch your future when dopamine is optimized. Ironically, as we age past 45 years old, dopamine levels drop because of an enzyme MOA-B. Enzyme MAO-B exhibits fluorescence emissions when it is excited at 412 nm. This is in the blue range of light. Surprise. Blue light not only destroys DHA but it also simultaneously destroys dopamine levels in our eye, frontal lobe, and brainstem if we allow it. **We may delay, but time never does, it marches on as light continues to interact with our lattice in our eyes.** As we age we know dopamine levels drop, but few people understand why. You need DHA's electrons and the sun's UV light to make optimal dopamine levels from tyrosine. When

you lose dopamine in your eye clock you begin to lose biologic time; you get sick quicker and your age quickly and you die sooner. The best clinicians among us cannot stop time, but we figure out how to slow it.

Purple light builds dopamine. How can I prove that to you? ***Deprenyl and berberine*** inhibit the MOA-B enzyme. What would happen to dopamine levels if you use both in the bottom of a dark hole where no light could exist? Sounds like a bio-hack doesn't it? If you search the Cold Thermogenesis threads from years ago you'll see I mentioned these drugs long ago. I also did this bio-hack and spoke about it in the Dopamine Rx blog. Deprenyl and berberine induces the development of brown fat from white adipose tissue and increases UCP1, SIRT1, AMPK and other thermogenic pathways. **The eye is not just a camera for vision but it is the governor of the sympathetic nervous system (SNS).** Both drugs mimic the effects on the SNS of cold thermogenesis and help raise NAD^+. Both drugs are fully capable of effecting the black box radiator in our eye clock that is the gate keeper for the sympathetic system in the eye clock. They both increase dopamine levels in cold environments in our eye. Why? Cooling water induces a red shift in the spectra of water and this inactivates and quenches MOA-B enzyme, thereby increasing dopamine levels. Yes, dopamine is a deep CT story too. *Life moves in mysterious ways you do not understand light. It is magical when you do.*

Making cooling part of your life is elevating dopamine in your CNS so you can make meteoric choices in your life. Mediocrity limits the time we have on the planet. Dopamine reverses a Rx for mediocrity. Action allows us to step out of the crowd of average people and dopamine moves to action. Nothing changes a human brain faster. Purple light is the key to making dopamine and blue light destroys it quicker than most imagine. The most pernicious aspect of procrastination is that it can become a habit. A habit institutionalizes us to

mediocrity in the game of life. Enter that game, and alter the numbers on the dopamine scoreboard and you'll begin to soar.

Mediocrity is what's left when the vision for light is absent. Biologic time is absent when sunlight cannot wind your eye clock's gears.

CITES:

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Running away from fat

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