

UBIQUITINATION 25: UV LIGHT AND POOP PLANTS

READERS SUMMARY

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2. HOW DO SURFACES TRANSMIT THE LIGHT SIGNAL TO CYTOCHROMES
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THE TAKE HOME: UVA LIGHT INTO YOUR EYE EVERY AM IS THE KEY METRIC TO GET OPTIMAL

All living cells on Earth contain coenzymes NAD^+ and NADP . Have you ever wonder why? They both serve serve as major electron/hydrogen proton (H^+) carriers in oxidation and reduction reaction of metabolism. Accompanying substrate catabolism, the oxidized form of the coenzyme called NAD^+ , contains a reactive pyridine ring. It gets reduced in position 4 by a hydride ion to form NADH . NADH is directly involved in ATP generation via oxidative phosphorylation in respiration. ***NADH is tied to UV light assimilation in all living things.***

Through these coupled processes, the reduced NADH is oxidized back to NAD^+ . In all human disease and aging NAD^+ drops. When NAD^+ levels drop in mitochondria, we have altered mitonuclear coaptation and they become pseudo-hypoxic. Since oxygen is the terminal electron acceptor in our mitochondria this slows ECT, it acts to pull other electrons toward it augmented ECT flow and wellness. When ECT slows in mitochondria, the eye, gut, skin, and lung surfaces are unable to absorb and assimilate UV light efficiently from NADH/NAD^+ redox couple in

cytochrome 1. UV light and oxygen are required to make the more stable free radicals in mitochondria to build tissues and to signal.



When this happens our cells and tissues liberate excessive amounts of light, and our tissues lose energy and momentum. Those tissues get larger and they accumulate singlet oxygen free radicals. What happens in mitochondria on a quantum level? This means that all respiratory proteins in the electron chain transporters get larger in size on an Angstrom basis. This slows electron chain transport because anything above 14 Angstroms stops quantum tunneling of electrons. NADH is critical in bacteria and especially in mitochondria which are believed to be derived from mitochondria.



Most people focus in on the biochemistry of NADH. Few people realize that the biochemistry of NADH is determined solely from the amount of UV light absorbed or lost by our surfaces from the environment and delivered to NADH in the mitochondria of all cell lines. NADH is produced in large quantities during the oxidation of carbohydrates like sugar. Glycolysis is used by bacteria and mitochondria to process carbohydrates. Glycolysis yields 2 moles of NADH for each mole of glucose converted. 2 moles of ATP are formed at the same time. This reaction is known as substrate level phosphorylation. ATP can also be formed by electron transport phosphorylation during the oxidation of NADH to NAD^+ . This oxidation event is carried out by large numbers of proteins and enzymes embedded in the eukaryotic cell membrane. Bacteria and eukaryotes are different in how they respire because bacteria can use other terminal electron acceptors. In most mammals enzymes constitute a respiratory chain where oxygen is usually used as the terminal electron acceptor. This is their only effective terminal electron acceptor. Part of the NADH formed during

glycolysis and the TCA cycle is oxidized to NAD^+ . This is catalyzed by the enzymes of the respiratory chain and combined with the production of large amount of ATP from a proton motive force of the 5th cytochrome called the ATPase. This means that NAD^+ can be decreased by alterations in mitochondrial DNA coding for the construction of the mitochondrial membrane. *Accurate mitochondrial DNA replication require triplet oxygen free radical formation and not singlet radical formation.*

NAD^+ will only be produced during glycolysis from the TCA cycle. NADH is present when electrons from carbohydrates that have electrons loaded with UV light frequencies from the seasons in which they grow. *This is why in a Warburg metabolism always contains altered NAD^+ levels, because UV light is the missing ingredient.* When UV light is missing our cells look to glucose metabolism to find electrons containing any amount of UV light within them to maintain optimal signaling. UV light is needed to run the photoelectric effect in mitochondrial proteins to generate energy. We are designed to replenish UV light every morning via our surface tissues in our body.



When NAD^+ is lowered, glucose up-regulation is present, because there is a lack of UV light in cells and tissues. Nora Volkow has shown cell phone causes this situation in brain cells. In this case, our mitochondria are looking to rob Peter to pay Paul due to a lack of UV light in cells and tissues. Glucose has a lot of electrons within it that contain this missing ingredient, namely UV light photons. This is the only way NAD^+ levels can be maintained when a human cell or tissue is missing UV light. When UV light is missing the mitochondrial matrix hydrogen protons are able to easily

escape the matrix because the MINOS around the matrix is required to build the exclusion zone mitochondria to stop protons from leaving the matrix. UV light has the most photon and electron power to form an EZ in cell water. Cell water is a repository for UV light to create a battery and an impenetrable barrier to protons. An EZ excludes proton movements and this is what causes the proton gradient to develop in the mitochondria matrix to set up the proton motive force to generate ATP during wakefulness. When UV light is missing we see altered mitochondrial biogenesis because signaling cannot be properly made when the cell has enlarged respiratory chain proteins due to developing mitonuclear asynchrony. The signal for optimal mitochondrial biogenesis is proper ELF-UV light emission. This is why Sinclair's December 2013 paper is so important.

The large amount of ATP produced by part of the NADH formed during glycolysis can be used to synthesize cell components in all cells. This means UV light is linked to optimal cell growth because NADH is optimized to absorb 340 nm light electrons. Bacteria utilize this step well in nutrients that contain glucose but they have no way to use direct UV light. In fact, UV light is bactericidal to them.

WHERE BACTERIA AND MITOCHONDRIA SPLIT: PHOTOELECTRIC EFFECT OF UV LIGHT

Bacteria can use other oxidants as terminal electron acceptors, but mitochondria cannot. Why? Mitochondria are optimized to use massive amounts of UV light to deliver large amounts of DC electric current to oxygen as their only terminal electron acceptor. The other terminal acceptors in bacteria are nitrate, sulfate, carbonate, and many other organic compounds when oxygen is not available for respiration. Oxygen can be used by bacteria but it is toxic to many forms of bacteria. Mitochondria have lost this ancient ability to flexibly use other terminal electron acceptors as the eukaryotic cell has limited its genome to 13 genes. The

deletion of those genes seems to be related to the formation of oxygen and DHA simultaneously on Earth 600 million years ago. This was close to the Cambrian explosion. It appears that oxygen, DHA, and UV light allowed for optimal harvesting of the power of abundant short wavelength solar spectrum on Earth for the first time. UV light has the most DC current contained in it on a per unit basis precisely because of its specific frequencies between 290nm- 380nm. UV light is the only part of the solar spectrum on Earth capable of enacting the photoelectric effect on metals and proteins. UV light targets the pi-electron cloud of DHA to harvest this energy optimally for eukaryotes on its surfaces. Bacteria and Archea are incapable of using UV light directly affectively, in fact, it is toxic to them even in small amounts. This means UV light must have an intermediary for them to use it. That intermediary is glucose. Carbohydrates contain many electrons that contain UV light. This means that bacteria and archea could not have evolved at Earth's surfaces where direct UV light has always existed. When you consider how bacteria and archea use metals and infrared light it makes sense why they began life at the bottom of oceans away from sunlight. Nick Lane's Vital Question book really shows these concepts well.

NADH absorbs UV light best from electrons at 340 nm. This makes NADH a fluorophore protein. When oxygen levels are lowered in mitochondria since it is the only terminal electron acceptor ECT current slows, ECT current must always be moving from NADH to oxygen for life to work optimally. When surface UV light harvesting from our surfaces are lowered, UV light in food electrons must be higher to keep the flow of electrons at a proper speed in ECT. **This means that the more UV light we harvest at surfaces the less electrons we need from foodstuffs to maintain ECT flow.** When ECT slows or stops illness or death is the result. This maintains the brisk flow of electrons on ECT. This has huge implications for the gut

microbiome and for our mitochondria in different ways when illness is present.

THE EYE CLOCK IS THE KEY SURFACE: It drives excessive flow or DC electric current via DHA to the SCN to run this clock faster than any other clock in the body. Illness = pseudohypoxia and/or UV light is missing. When UV light is missing so is oxygen because UV light forms oxygen in the atmosphere and UV light is required for photosynthesis to make oxygen from plants. This links all these environmental factors link directly to UV light. The quantum yield in both chloroplasts, the RPE, and mitochondria of all life is linked to the presence of UV light to drive the positive forward flow of electrons in these cells.

Why is this a big deal in the gut microbiome?

The microorganism population there do not all have the capability to use oxygen or nitrate as terminal electron acceptors, so a portion of the population does not respond to a shift in the terminal electron acceptor. This quantum shift in the terminal electron acceptor affects output of these microbes and is the basis of quorum sensing in the human gut. Few modern scientists really understand how critical this process is in human biology. The ability to change your terminal electron acceptor is the ideal biomass switch.

Similarly, the ones that do accept this electron acceptor can have a distinct difference in the levels of NADH inside their cell to rapidly increase the NADH level. This increase of NADH acts as a "biomass switch" from aerobic to anoxic to anaerobic metabolism. **NADH concentration is maximal in an anaerobic environment.** This is a pro-growth pro biomass environment. In an anoxic environments, (such as the gut) NADH levels are moderate. In aerobic environments, (gut) NADH are at their lowest levels. This slows growth of bacteria the most. When NADH levels are low, NAD⁺ should be highest. This implies that ketosis or a brisk amount of UV

light are critical to high levels of NAD^+ in our gut. NADH is linked to UV light presence in electrons, and NAD^+ is linked to ketosis. This redox couple built into our mitochondria are the seasonal redox couples or a "biomass switch" because UV light is higher in summer when temperatures are highest and the quantum yield of plants are lowest. This means oxygen release from plants is reduced when UV light is most prominent. **There is an inverse relationship between UV light and oxygen concentrations to optimize ECT speeds in Earth's environments.** It also means that in cold environments, oxygen is found in higher concentrations when UV light is present, but not abundant, but these lower temperatures improving the quantum yield from plants and animals but allowing more UVA light to be absorbed at key surfaces in us to deliver them to NADH in cytochrome 1.

QUANTUM MECHANICS OF THE CYTOCHROMES: FLUORESCENCE

The absorption of the light is due to the fact that electrons in the NADH are excited by powerful UV light and receive a quantum of energy and momentum that correspond precisely to the energy of the photon that was absorbed from the sun when that food electron was originally growing. Those photons, at cytochrome 1 are carried "on the back of electrons" that come from carbohydrates. The energy and momentum of this light is delivered to cytochrome 1 where the NADH/NAD^+ couple exists. The key point, with respect to NADH , it is the duration it remains in this high state. That duration of the high energy state is extremely short (10^{-9} s) and as a result, light is emitted at a lower wavelength to its neighbor cytochrome protein. Its neighbor is FMH in cytochrome 2. **This phenomenon is known as fluorescence in biophysical terms.** This also happens in everyday semiconductors. This implies our cytochrome proteins are all biologic semiconductors, because they all absorb and emit light at specific frequencies. NADH absorbs light energy best in 340 nm range and this is why electrons from carbohydrates enters at cytochrome 1 and

electrons from fats and proteins cannot do the same. They do not contain this wavelength of light because they do not grow in these seasons absorbing electrons with strong UV light. They do not have the power to activate the photoelectric effect built into the quantum yield of NADH protein backbone photoelectrically. The ECT is a series of redox couple proteins, that on its left end, has a very high energy gradient and on its right end has a lower energy gradient. At the end of it on the right side oxygen is present as the terminal electron acceptor. Since oxygen is paramagnetic, it aids in pulling the current of electrons toward it to augment ECT flow. Anything that increases ECT flow creates optimal health and anything that slows it creates disease. **Current always must flow in ECT, from NADH to oxygen to make triplet free radicals or life dies. This is an axiomatic rule of nature.**

In this way, mitochondria use the photonic energy gradient to form a strong current of 30 million volts across the inner mitochondrial membrane because of power of its current compared to the thinness of the inner mitochondrial membrane (6 Angstroms) and its light power added into NADH. The light emitted from NADH after it harvests UV light from electrons from carbohydrates must have less power and therefore has a longer wavelength. Maximum fluorescence of NADH occurs at 460 nm, which is in the visible blue light range. Our retina has mitochondria in it and the most important one is the retinal pigment epithelium (RPE). Why? The RPE mitochondria is responsible for driving the currents present in the SCN that control circadian signaling. This is where the retina reacts maximumly via its eye clock at night with respect to melanopsin in the central retinal pathways. This linkage is critical for the maintenance of hierarchical control of all cells in our body. The (RPE) of the retina is designed to absorb all more powerful UV frequencies from the visible solar spectrum. It has been proven in time lapsed photography of the RPE and of chloroplasts that internal flow speeds of

their hydrated proteins circulate and rotate faster when UV light is added to them. The lower the frequency goes within the visible spectrum the faster and more ordered the speed of rotations was in their hexagonal cells on time lapsed photography. Faster rotations increase the quantum yield in photosynthesis and in our ECT of mitochondria. Slowing it decreases the quantum yield for all things in life.

This should make the hair on the back of your neck stand up if you remember what was said in ubiquitination 7. Today, we now live in a 24/7 microwaved artificial lit blue light toxic world. These things all slow these rotations. Our modern beliefs are now trying to bury the sun, while eating diets high in carbohydrates out of season. This slows SCN speeds while increasing speeds in mitochondria. This ruins the key relationships of light's momentum and energy in General and Special relativity.

If your skin and eyes are constantly bathed in this frequency of light (435-465nm), it constantly makes NADH fluoresce in your mitochondria. This drives NAD^+ to its lowest levels.

This is what happens in blue light stressed humans. What else happens in the RPE of the eye? It destroys melanopsin recycling that occurs in the daylight by destroying ocular melatonin that is needed for rod regeneration during the day. Ocular melatonin is made AM UV light. It drives the current of flow in your retinal pigment epithelium that supports the central retinal pathways where melanopsin photoreceptors reside. Since AM light has more highly powered UVA and the lesser powered IR light and we do not need melanopsin receptors in daytime this is when these receptors that drives melatonin release from the pineal gland to regenerate. Our retina regenerates melanopsin in daylight (its not dark then) and cones at night because we do not need color vision at night. At nighttime the when the sun goes down, the RPE then uses stored UV light is collected and assimilated all day to regenerate the rod and cone photoreceptors in the eye that work for the eye as a camera. Why? Since UV light has a short

wavelength, it carries more electric power punch. It is now well known that pigmented epithelium like the RPE and melanin are both capable of storing light energy for use at night. Modern science clearly has no idea why this happens because they do not understand how UV light is stored and delivered to our tissues at night during autophagy by way of NADH ability to absorb light at 340 nm. Mother Nature is very crafty in how she uses highly powered light in the UV range. We do not need color vision at night time, so it makes perfect sense to build a system that uses UV light in this fashion. These light frequency are what sets the gears of eye clock to work both at night and day. Excessive nighttime 460 nm blue light lowers DHA levels in the retina's RPE and lowers the quantum yield of melanin. When this occurs we cannot harvest UV light in our storage proteins and in water. DHA is need to maintain the electrical abilities of the RPE to regenerate rods and cones and melanopsin daily to make ocular melatonin. Ocular melatonin is the quantum signal that allows the pineal gland to release more melatonin in darkness to make triplet oxygen at night from our mitochondria.

When UV light is absent and/or DHA decreases because of excessive blue light production at night, and this lowers the molecular spinning of the dense cores in the RPE cells to slow their current. This leads to myopia, macular degeneration, muscle and skeleton declines, and most diseases we see today. These environmental situations decreases the ability of the RPE to change UV light to a electrical current that the retina uses to send energy and information to the SCN to set circadian signaling. UV light is the key driver of ALL those gears via our eye because it packs a massive photonic punch because of its shorter wavelengths in the purple band of visible light in the morning. When this occurs, it can slow SCN speeds RELATIVELY to the speeds found in ETC in mitochondria or in the peripheral circadian clocks in cells. This destroys all cellular signaling because it violates the physical laws that govern the GPS like ability of the SCN. Do

you remember those physical laws of the universe that the SCN works by? They are Einstein's Special and General relativity. When these fundamental laws are violated for any reason disease manifests. What else occurs?

UV light has a massive effect on oxygen on Earth. Oxygen is inherently unstable element on Earth. The first two kingdoms of life, archea and bacteria are killed by most forms of UV light. They cannot use UV light as a power source so UV light constrains their growth and is bactericidal. UV light has the opposite effect on virus production in the oceans. I spoke about this in Brain Gut 2 blog. What made oxygen? Photosynthetic algae in the sea that made both DHA and oxygen as by products. As both of these by products grew in quantities life was able to explode. Why? DHA with its pi electron clouds allowed eukaryotes for the first time in history to fully utilize the most powerful part of sun's visible spectrum to grow. DHA turns UV light into a strong DC electric current and can reverse the process as well. The minimum energy required to pull an electron out of DHA is 3 electron volts. Only the UV part of the spectrum has that capability to make use of DHA like a semiconductor in our surfaces like the eye, skin, gut, and lung. Bacteria and Archea were incapable of using the photoelectric effect to harvest the electric power in UV light that was abundantly present for Earth's 4.5 billion years. DHA and oxygen both came on to life's scene 600 million years ago. What does UV light do to oxygen to make it usable to eukaryotes? Oxygen has two unpaired electrons making it very reactive. When it is coupled to UV light in the Earth's magnetic field it can be made into its triplet state instead of its singlet state. Why is this important? Because the triplet state is the most stable form of oxygen on this planet that can be used to build tissues up from UV light alone. Singlet oxygen destroys tissues. Triplet oxygen can build connections and coherence in tissues. We use UV light in our mitochondria in our magnetic field are capable of make sure oxygen is always in the triplet

state. When it is not, for any reason, tissues become destroyed. This is what happens in a disease like myopia, melasma, or Hashimoto's.

When UV light is not present in our eyes, but is present in our food at the same time it also drives NAD⁺ levels down and raises NADH higher. In our cytochromes. This violates time relativity in our cytochromes with respect to our RPE in our eyes. Note, biology does not see this action because they do not realize it is a direct quantum effect of time relativity on the NADH/NAD⁺ couple and its interaction with chronic blue light in our eye and skin with a relative lack of UV light from our skin and eye. This ruins all circadian cycle control fundamentally. The irony to me is, once they realize what my theories are pointing to, that they should be able to measure mitochondrial output (the quantum yield) at cytochrome one using the level of blue light released to FMH to prove I am correct. I am quite confident because this uses two principles that are already established physical universal laws, namely gravitational lensing and Special and General relativity of time. Already, in fact experiments have proven, this emission of light at 460 nm in NAD⁺ can be measured and converted to a 4-20 mA electrical signal for an experiment. Where was this done? In every waste water sewerage treatment plant on this planet.

WHERE I WENT FOR MY PROOF: POOP PLANTS THAT RECYCLE WATER.

Many will find this odd place to look for confirmation, but it is not. Why? You have a poop plant in you also called the gut. It is a giant tube that connects you to the environment at two ends. It too has an indoor and an outdoor and many ways light oxygen and nitrogen can be altered along that pathway through your body.

In poop plants they use NADH fluorescence to monitor the process. It is strongly influenced by the incident UV light that is added to the amount of oxygen and nitrogen

concentrations in the sewage mix. You have to get the recipe correct in order to get the desired result at the end which is clean water. All cells in the human body, release ELF-UV. This has been established for close to 100 years now. This explains why biophoton emission from cells were linked in the Russian literature to ROS and RNS generation in cells. The presence or absence of UV light affects the concentrations of singlet to triplet states of these reactive oxygen species. The mere presence or absence of these reactive species is not the key to their actions, but their physical state is the key; namely were they in their singlet or triplet state. Why does this matter in poop plants? ***Triplet state free radicals draw oxygen toward them to start photochemical changes.*** UV light and cold temperatures have the ability alone to cause the creation of triplet state free radicals. Therefore, UV light frequencies alone, are capable of creating oxygen tensions in tissues just by its mere presence or absence.

If your body cannot or does not absorb and assimilate UV light from its surfaces as you are designed, your tissues become pseudohypoxia. This results in a lowered level of NAD^+ in the mitochondria of your cells. This then causes mito-nuclear coaptation problems in cells. When you lose the ability to make ROS or RNS in its triplet state for any reason, superoxide levels also drop in your mitochondria with accumulation of NADH at cytochrome 1. As NADH rises NAD^+ drop because they are a redox couple. Incident UV light delivery is the BEST way to raise NAD^+ and lower NADH. Ketosis can also do this but this is a temporary fix because it cannot generate triplet state free radicals. In this way ketosis is a bridge to get us past a bad environment or what I call a half truth. The same relationship occurs with a lack of UV AM light in your eye and with daytime exposure of blue light exposure in your eye clock. This is what can ultimately drive cells to disease. Moreover, if the light stress last long enough, it can give way to epi-oncogenesis.

NADH is a known pro-growth stimulus to the cell cycle in all

of biology. It becomes explosive to CONTROLLED growth when UV light spectrum light is the incident type of light in the eye, skin, gut, and lung every morning. When UV LIGHT IS ABSENT, NADH stay elevated and allows for explosive uncontrolled growth. This is where cancer comes from. The key linkage is that UV light is needed photoelectrically to make triplet state oxygen to make sure it stays in its ideal state to build tissues and not destroy them. If UV light stimulus is missing or we have too much long wave blue on our surfaces in the day it destroys tissues. In the eye, this ruins the eye clock and eye camera because it destroys General and Special relativity relationships built into the RPE and SCN to tell circadian time on and in our surfaces with respect to full spectrum sunlight. Light does not effect matter in us, contrary to popular biologic belief. Physics tells us that incident light only effects electrons in our matter photoelectrically. You won't find this mechanism to cancer in the genome because it is buried in the photoelectric de-coupling of the cytochromes in mitochondria. This is why we are losing the war on cancer we began in 1971. We are looking in the wrong place because we think biochemistry is the king when it is the surface interaction of light on electrons that is the real king. When you bury the sun's power in the UV range you lose the ability to build wellness and let disease take over because oxygen becomes our nemesis in its singlet state.

NADH levels are used in mitochondria to control the oxygen set point for mitochondria. Remember oxygen are the terminal electron acceptor on mitochondria. NADH is the entry point of electrons with the strongest photonic energies of food electrons. Each cytochrome is designed to harvest that energy in a quantized manner using quantum yield techniques. NADH ratios will determine the magnetic flux in a mitochondria that allow oxygen to be drawn to it, because oxygen is paramagnetic and by definition drawn to things with a lot of magnetic flux. UV light makes NADH more magnetic because triplet state free radicals result when UV light is delivered to NADH proteins in cytochrome 1. This relationship only is true when UV light is

also delivered to the SCN by way of the RPE in the eye. Why? The SCN must run faster than ETC at cytochrome one because of Special and General relativity. The SCN sits above, in altitude where most of the gut mitochondria are located. Those mitochondria get the electrons from food when we eat. The eye clock gets the photo-electrical signal from the AM UV light as soon as the sun rises to drive its speeds faster than the speeds of ETC in mitochondria in the gut. These are electromagnetic coupling reactions are based upon quantum atomic principles. When the relationship of NADH and oxygen become uncoupled from circadian light signals in the retina, neolithic diseases follows 100% of the time. How? Let's go to the sewage poop plant for details.

This action of blue light allows your mitochondria to yoke and couple nitrification to denitrification simultaneously. This is why I spent so much time in this series teaching you the nitrogen cycle. Today's blog you see it all come together. You must understand it, to understand where diseases really come from. They come from altered or missing light signals from the environment that change signaling in cell membranes and in our cytochrome proteins. These are quantum level environmental events not genetic ones. When ubiquitination rates increase, we lose this ability to couple nitrification to denitrification using UV light and oxygen in mitochondria and this is why NAD^+ drops and NADH rises. This is why NAD^+ has been linked in every disease known to mankind. Sinclair's paper is critical in this story. The coupling is maintained by the proper AM UV light frequencies of photons given off from the sun to our surfaces. Carbohydrate electrons from foodstuffs delivered to cytochrome 1. This is why NADH absorbs light best at 340nm. This wavelength is in the UV range of sunlight.

The goal in wastewater plants is the same as it is in cytochrome 1's respiratory proteins. We need to maintain control over nitrogen cycling and coupling to control growth rates within the cell cycle. When we cannot do this in our

mitochondria acutely, diseases manifest in that tissue. We see this decoupling in diseases like myopia and hypertension first; if it goes on chronically diabetes, obesity and cancer is a likely outcome.

The key to coupling nitrogen to light, is oxygen flow rates. This is why Sinclair's paper in 2013 on pseudohypoxia was the critical missing piece of the story. Few still have realized its significance. You must get it. Why? What happens in the soil of a tree or plant is recreated in our wastewater treatment plants and in our gut microbiome. They handle NADH the same way as bacteria in these treatment plants because MITOCHONDRIA ARE FORMER BACTERIA. This is why ten years ago I went back and looked at how "poop plants" work with UV light and oxygen to clean dirty water filled with bacteria. People have looked past this very fundamental relationship between these environmental elements that were established at the Cambrian explosion. In fact, I believe this is the main reason why endosymbiosis occurred. 600 million years ago eukaryotes became the first Kingdom of life to be able to use the full visible UV light spectrum to build tissues. They did this because UV light is needed to use the photoelectric effect to make energy. It is the only part of the visible spectrum that has the energy needed to access the photoelectric effect. It needed specific new chemicals in life's surfaces to gain this physical ability. When I realized that DHA and the Cambrian explosion happened at the same time in Earth's history, it dawned on me why these things were really coupled in us today. Life took this quantum leap and ran with it to make energy using the momentum built into the most powerful frequency of light in the visible spectrum. UV light and oxygen are coupled in our atmosphere because UV light makes O_2 from ozone. UV light also allows plants to make O_2 . UV light uses oxygen as its partner and water as its repository for energy storage in this evolutionary deal to build complexity. Life uses the DC electric power buried into the UV light frequency to build matter in tissues. Light is fully capable of building matter

by itself. That secret is built into the reversal of $E = mc^2$ equation. That equation is bidirectional. Nuclear physics uses the equation right to left, but biology uses it left to right. $C^2 = UV$ light because it is the most powerful frequency in the visible spectrum.

When you want to understand complex quantum effects, and realize biology does not have a good way to see or resolve this data, you might consider going to the next best source that uses the very same variables to act. Poop plants utilize UV light, oxygen, and nitrogen cycles to clean water. Logic dictates you would look where nitrification and denitrification are designed to be coupled naturally. This occurs in soil chemistry of plants and in wastewater engineering plant systems. I've tried to show you how nitrogen cycles through plants and their roots. This mimics what happens in our guts.

Poop plants specialize in this chemistry as well. Nitrification is an aerobic process performed by small groups of autotrophic bacteria and archaea. This process was discovered by the Russian microbiologist, Sergei Winogradsky. Nitrification is the biological oxidation of ammonia or ammonium to nitrite followed by the oxidation of the nitrite to nitrate. Denitrification is a microbial facilitated process of nitrate reduction (performed by a large group of heterotrophic facultative anaerobic bacteria in our gut) that ultimately produce molecular nitrogen (N_2) through a series of intermediate gaseous nitrogen oxide products. This is how the microbiome and mitochondria signal one another. RNS, specifically, eNOS is their telephone signaling molecule. Mitochondria and your microbiome both share a common ancestor and signaling pathway that eukaryotes do not. Bacteria respire nitrate as a substitute terminal electron acceptor. Due to the high concentration of oxygen in our atmosphere denitrification only takes place in anoxic environments. This is why your gut is designed to exclude O_2 , and why GERD is a real problem for your microbiome. GERD, SIBO, IBD are a great sign for a

competent quantum clinician because of what these disease symptoms reveal.

GERD results from loss of circadian control over your lower esophageal sphincter. It opens the LES at the wrong time or for too long, let too much O_2 into the gut, because your SCN is not working properly to control the level of oxygen. This also points out why diabetes is cured as soon as any bariatric surgery is performed. When a surgeon opens the gut he lets a ton of O_2 in. This one move removes the "NADH thermostat" control mechanism between the microbiome and mitochondria. Nobody has a an answer for this known fact of obesity surgery but I think I do.

Denitrification can also exist undetected in an environment where oxygen consumption exceeds the oxygen supply. This is exactly the condition that exists in your mitochondria. It is also why no one in biology realizes mitochondrial linkage to their common ancestor in us, is the critical evolutionary step in all eukaryotes. To make this work in mitochondria they had to retain RNS and nitrogen gas free radicals. Why? Denitrification requires that sufficient quantities of nitrate are present. Normally denitrification recycling environments include certain soils and groundwater, wetlands, oil reservoirs, and poorly ventilated corners of the ocean, and in seafloor sediments. It turns out no one realized that is why eukaryotes turned a bacteria into a Ferrari engine by deleting genes that allow other terminal electron acceptors.

Mitochondrial genes have been deleted to 13, so that they can only work when using oxygen as a terminal electron acceptor.

This maximizes their power but limits their flexibility when the quantum yield is under attack. UV light controls the quantum yield on Earth. Modern life is lowering the quantum yield and this is why we see a global pandemic in Vitamin D3 and in slow SCN speeds causing huge sleep disorders that all lead to low dopamine states in the brain.

This is why the genes for other terminal electron acceptors

have been extinguished. UV light alone was likely the source of that change. UV light is bactericidal. This ability allows mitochondria to take full advantage of our gut microbiome, by using them to build our own version of a wastewater recycling plant in our gut to work in tandem with our mitochondria exclusively to only use triplet oxygen to build tissues. The evidence for this blueprint is found in cytochrome one where the NAD^+/NADH redox couple is found.

So how might this UV light communication pathway example be shown in a poop plant?

In a wastewater plant, the way you control nitrogen coupling is tied to the rates of oxygen flows in the sludge floc and the outermost regions of the floc where oxygen rates differ. Why? Biophoton research from Russia provided me that answer from an experiment on onions in 1923. You get higher biophoton emission rates when a steady stream of oxygen is present. All living cells have been shown to release bio-photons. Dead cells release no light. Sick cells release too much light. In a waste water treatment plant, NADH fluorescence is monitored within the aeration tanks of wastewater treatment plants to maintain the coupling of simultaneous nitrification and denitrification in a single environment. The cells in their tanks are all exposed to 340nm UV light and are closely monitored for NADH activity. Do you know what type of light living cells ALL release? UV light.

The Russians also found that UV photons were emitted in all living things, including bacteria and mitochondria from 1923-2015. No one seems to read the many Russian experiments completed in this area of biology. I have. Cytochrome 1 main function in human biology, in my opinion, is to be a fluorophore which absorbs UV light which emits a blue light frequency with lower power to make triplet oxygen. Cytochrome 1 biophysics is directly correlated to ubiquitination rates in your cells. When you are uncoupled from UV light you can expect to release more bio-photons from cells in varied

frequencies to make up the difference to maintain optical signaling. When you run out of UV light storage in that tissue it fails. If you run out of it totally you die. The varied frequencies will lead to poor signaling and disease states since this is in flux. Simultaneously, your mitochondria will be chronically pseudohypoxic (low O_2) and you will also not be able to use normal AM UV light cycles and nitrogen (NADH) to control carbon cycling in your cells.

Fluorophores release light, and chromophores absorb it. All flavins absorb in the blue light frequency. Cytochrome 1 is a human fluorophore and cytochrome 2 is the human chromophore. Cytochrome 2's proteins are able to optically sense the high energy blue photons emitted from NADH. When this fluorophore becomes uncoupled from the chromophore we lose control of how we can handle carbon cycling in our cell. The sensitivity and specificity of the frequency interaction between the uncoupled cytochromes is what gives us the neolithic disease a patient gets. In this way, when the cytochromes are uncoupled light goes from signaling force to a powerful drug. The dose of light makes the toxin. The dose is 100% yoked to its frequency. Diabetes, obesity, and cancer are all tied to altered carbon cycling in some way. This is why diabetes, obesity and cancer are exploding in today's world. No other reason, is needed when you understand a little physics.

Light can be the most powerful drug to ruin a mitochondria. It acts like the slowest dose of cyanide does to ruin mitochondrial respiration insidiously, while also uncoupling mitochondria from self repair or biogenesis. It is a quantum effect on nitrogen coupling. Why am I so sure I am right? What does NADH absorb best? 340 nm light. What does NADH emit from in a cytochrome 1? Blue light frequency at 460 nm. What is designed to capture that frequency? Flavins in cytochrome 2, in the form of FMH. This compound is made from riboflavin vitamin B2.

ANALOGY TIME What happens when a WR drops a pass from an QB? Incompletion. What happens when the QB in cytochrome 1 can't

throw its electrons and photons to its WR in cytochrome two? Signaling is lost. We have incomplete coupling of light, nitrogen to carbon cycling. Simple.

Flavin mononucleotide (FMH) is the WR in that analogy above, and acts as a prosthetic group of various oxidoreductases (including NADH dehydrogenase). In NADH dehydrogenase FMN plays the role of electron carrier by being alternatively oxidized to FMH and reduced to FHNH₂. Remember reduction means the addition of electrons in any biochemical reaction. FMH is a stronger oxidizing agent than NAD⁺, due to its participation in both one and 2 electron transfers. It also acts as a cofactor in optical receptors sensitive to blue light (Joosten and van Berkel 2007). This is why flavin proteins are always found next to blue light emitters in biologic systems.

NADH is an absorber of strong UV light electrons at the 340 nm wavelength. Why are proteins hydrated in all living systems? It makes their surfaces more condensed and hence magnetic when UV light hits them anywhere on this planet because of the physical laws of the universe. Modern research rarely studies cells in this state. Within its hydrated protein structure, NADH uses the photoelectric effect to harvest UV light frequency of its energy and momentum, to power it down to blue light frequencies (next to the purple UV bands) while reserving the power step down to in our tissues and in our cells in many unique ways. Did you know flavins (blue) are used in in melanopsin signaling too? Both use blue light frequencies to signal. Surprise! This shows you why the modern belief that UV light is blocked by the cornea and lens in the eye is a falsehood. It must be present for melanopsin to work because you need the higher powered purple light to step down in power by fluorescence. This also implies any reduction of UV light to our eyes has a massive effect on melanopsin function at night for regeneration of the rods and melanopsin receptors during the day when UV light is present. The reason and logic is tied to biophoton emission from cells

and signaling and the quantum yield in light. ELF-UV carries huge amounts of energy and momentum. This is why cells use this frequency of light to signal. Normal solar spectrum contain 290-340nm UV light naturally. It is a quantum optical effect tied directly to the photoelectric effect on the RPE of the retina that supports the central retinal projections to the SCN. The RPE connects to both rods and cones and gives it the photoelectric power from AM light to generate electrical signals in the retina but to also regenerate ocular melatonin. This implies that its neighboring proteins can radically affect its quantum action and quantum yield because they are very sensitive to blue light photons release. To make this happen the photoelectric effect requires that UV light be present in the eyeball at sunrise. It is a simple algebraic extrapolation of what biology already knows is true within retinal physiology. It appears not too many think or observe well. It turns out that the blue light emitter, NAD⁺ is adjacent to FMH, the blue light absorber, in cytochrome 1 and 2 of the RPE mitochondria and in ECT in mitochondria for a photoelectric reason. Both must be linked in time by General and Special relativity to work optimally to generate triplet oxygen free radicals that absorb massive amounts of UV light at every surface on our body. That absorptions is optimized when the surface is cooler just as it is on the leaf of a plant in photosynthesis. When surfaces are cooled quantum yields increase and this is the fundamental reason why cold works with UV light well. Cooler surfaces absorb more UV light.

Light emission and detection must remain coupled in mitochondria in quantized fashion. Any decrease in NAD⁺ will have massive effect's photoelectrically on FMH. Because of flavin's chemical versatility, flavoproteins are ubiquitous and participate in a broad spectrum of biological activities, such as cell apoptosis, detoxification, dehydrogenation of metabolites, oxygen activation, redox reactions, halogenation of aromatic substrates, light-driven DNA repair, and blue-light photoreceptors like melanopsin. Maybe now you can see

why disease manifest when they are not coupled? This is a key point and explains why blue light toxicity, or what I call modern light stress, during the day and night, while simultaneously missing the UV spectrum during the day is the major cause of metabolic syndrome and most neolithic diseases in the world today. This mechanism is counteractive, but fully quantized and is not what you were told to believe by any profession.

1. BIOCHEMISTRY GEEKS: NADH has a molecular weight of 663 and is soluble in water. Why did I mention that detail? Most fluorophores are organic small molecules of 20 – 100 atoms (200 – 1000 Dalton – the molecular weight matter in solid state physics because of mass equivalence. The concentration of NAD^+ in cells is of the order of 10^{-3}M . Under equilibrium conditions NADH concentration is of the order of 10^{-6}M . The ratio of NAD^+ to NADH is about 100 to 1. Thus a ten percent reduction of the concentration of NAD^+ will be reflected in a hundred fold increase of NADH. This NADH is pro-growth and is stimulatory to the biomass production stimulus in ubiquitin rates. Remember ubiquitin rates are tied to the light cycle of visible spectrum of light on Earth that spans 290nm -800nm. NADH , not NAD^+ absorbs light at a wavelength of 340 nm (UV light) and fluoresces (emits) at a wave length of 460 nm (blue).
2. Bacteria and plants really do not like oxygen much at all. Most bacteria find oxygen toxic and plants use it as its exhalation gas. In bacteria and plants, denitrification is achieved in the *anoxic stage* of a decomposing process. Anoxia means oxygen was not present. In bacteria and plants NADH operates very similar to the reduction oxidation cycles of NADH in aerobic respiration and is likely why it was conserved

by mitochondria after endosymbiosis. It is also interesting to note that redox reactions of NADH also exist in anaerobic fermentation. In that case, no externally supplied electron acceptor is even required. The generation of NAD^+ from NADH is coupled with subsequent reductions of oxidized organic compounds like Acetyl CoA or pyruvate. All of these are linked to UV light in plants and animals.

The concentration of NADH in a living cell is determined by the balance between reduction (generation of NADH) and oxidation reactions (consumption of NADH). In plants, paying attention to nitrogen atom cycles tells us about photosynthetic capacity or quantum yield. Photosynthetic capacity is equivalent to the quantum yield of the full solar spectrum of light. It turns out if we pay attention to NADH/ NAD^+ ratios in plants, we get a sense of the quantum yield from them as temperature changes. The same is true in animal.

As UV light levels decline in fall, and carbohydrates remain available during this time mammals normally fatten because of the speeds of the SCN are slowed while the ECT in the gut's organs is made faster. This readies the animal for winter.

Carbohydrates do not make you fat, but the lack of UV light delivered to your eye does. It turns out the same relationship is true in animals as well. In bacteria (either in our gut or soil) the oxidizing power of the organic compounds in the oxidation of the NADH in fermentation is much weaker than those of nitrate and oxygen. For example, the reduction potential for the oxidation reduction pair of pyruvate/lactate is -0.19 volts. For NO_3^-/N_2 and $1/2\text{O}_2/\text{H}_2$ are $+0.74$ and $+0.82$ volts respectively. Consequently, the rate of NADH oxidation is much SLOWER with anaerobic metabolism than with denitrification and aerobic respiration. *This means that the level of NADH at anaerobic states is higher than those at anoxic states or at oxic states.* The idea continues that as the reduction potential for redox pair NO_3^-/N_2 is lower than

that for $1/2O_2/H_2O$; the NADH level is higher under anoxic conditions than under aerobic conditions. This occurs because oxygen has a higher oxidizing power, and is able to oxidize the intracellular NADH to a lower level than nitrate does.

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