TIME #22: THE BASICS OF HOW CIRCADIAN TIMING TUNES LIFE

THE BLOG TAKE HOME: To make large collections of proteins coherent you need to link them together electrically. This idea implies that cells have some electric tuning ability built into their protein structure. This tuning appears to be linked to the timing of day and night because collagen needs incident sunlight to collect the energy of sunlight to store for lateral electro-mechanical wave generation. How does this occur? What are its implications?

My members have been learning a lot about the non-linear effects of light in my last 5 webinars. Today's blog is more of the same. I want to discuss another unique non-linear aspect of light that is used to create the basic functioning of all circadian oscillators in humans. Our cells use light in multitudes of unconventional ways that just continue to confound physics and stun biologic orthodoxy at its core. For more than 100 years, scientists have debated the question: when light travels through a medium such as oil or water, does it pull or push on the medium as it travels by Fermat's law?

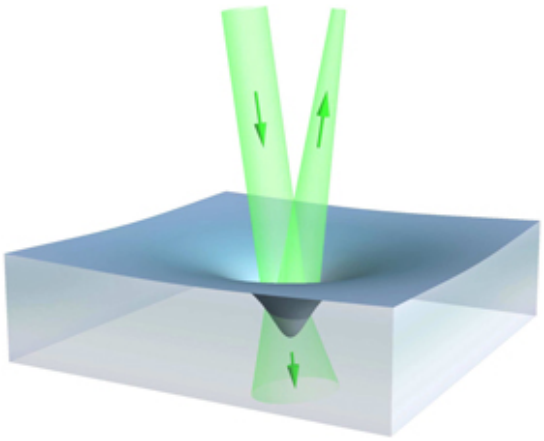
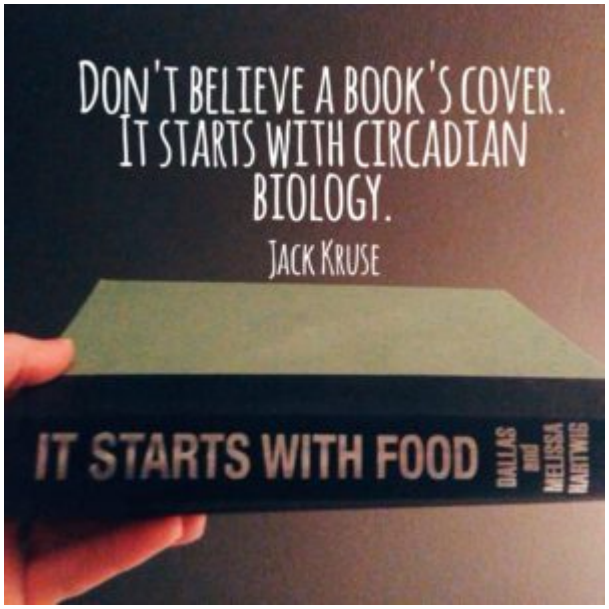


Figure 1. The principal idea of the experiment in Cite 2. Light incident from the top impinges on

the surface of a liquid, part of the light is reflected and the remaining fraction is transmitted. The length of the green arrows indicates the Abraham momentum of light, equation (2). The net momentum difference of equation (4) is negative, causing an inward pressure on the surface that, in mechanical equilibrium, is balanced by the surface tension of the liquid. The figure shows the resulting shape of the deformed surface with depth exaggerated by a factor of 10^5. The actual depth lies in the order of 10 nm for a spot of about 1 mm diameter. The angle between incident and the reflected light is also exaggerated: in the experiment, it is 3 degrees. The figure suggests that the reflected light is focused by the deformed surface acting as a spherical mirror. My Oct 2016 webinar gets into the mirror aspects of cells.

While most experiments have found that light exerts a “pulling

pressure”, a recent paper published by physicists have shown for the first time, found evidence that light exerts a “***pushing pressure***.” Is this another aspect of light’s duality showing up yet again? Hermann Minkowski predicted a pulling force in 1908. In 1909, Max Abraham predicted the exact opposite, that light exerts a pushing force. Could they both be right? Is this the basis of circadian biology and time for all chemical reactions in cells?



The scientists in this paper suggest that this apparent contradiction is not a fundamental one, but can be explained by the interplay between the light and the fluid medium: if the light can put the fluid in motion, it exerts a pushing force; if not, it exerts a pulling force. The implications for cell biology are massive and not well known. The central message of my blog is that if you don’t understand how light and water dynamically interact with other components of the cell, you cannot hope to claim you have a clue of how any cell really works in nature. The ordering of water under solar light can actually move a significant amount from a few layers at night time into a few million molecular layers during noon. The pushing or pulling on the EZ layers in a cell would immediately transmit the energy and information of the collision to the tensegrity cytoarchitecture, to the mitochondria, and the nuclear DNA. Since collagen is the most

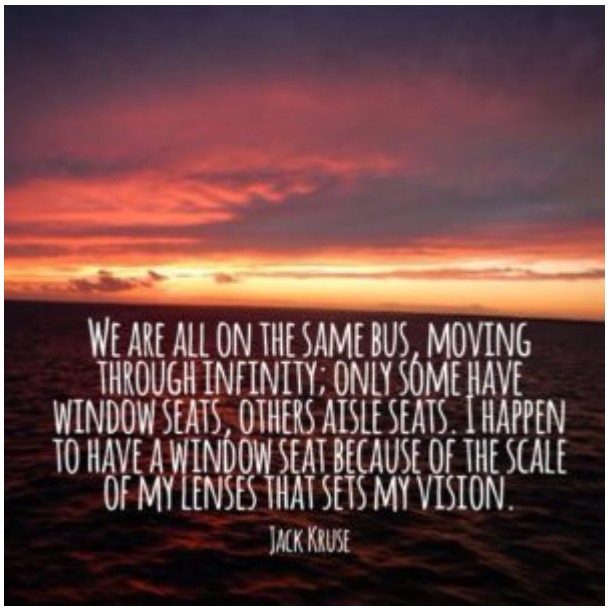
common protein in mammalian cells, this interaction between light and water would *change the tension* in the EZ of a cell. Moreover, we know anything that can change the tension in a cell is capable of altering epigenetic expression of proteins in a cell. Is this why protein synthesis varies from day to night? Is this why artificial light at night causes the diseases we see today? Yes, it does.

The problem for food gurus who follow a solution biochemistry is that they believe that all chemical interactions occur by random events in a cell. A solid-state biochemist (a mitochondriac) knows that substrate biochemistry is controlled by changes in electric, mechanical, and magnetic wave within a cell. The fact the light can push or pull within the media of a cell now gives us data and a hint of how nature uses the direction of that light travels in a cell. It is clear that direction of incident light must matter in some deep ways we have yet to discover. Future topics will resolve this for you as well. We already know that cells polarize light using the Faraday effect (optic-magnetic effect) and this is linked to the bends that occur in the tertiary and quaternary bends of proteins. The momentum of light frequencies now can be directly linked to causing movements in hydrated proteins. This explains why low quantum yield environments with a spectral deficiency of light might be problematic for

circadian signaling. Since UV light has more power than IR light, we would expect a large difference in pulling and pushing effects in cells during night and day cycles. Is this one of the many ways a cell might be able to tell night from day without having eyes to see it? You bet you it is. This is why even blind people with non-24 circadian mismatches still have an inherent circadian rhythm in their cells. The presence and absence of light via the retina and skin act to refine the rhythm for cells and that information is transmitted body wide by a wireless communication system that uses the molecular resonant effects on the chemical bonds of substrates cells use in biochemistry. You won't get this level of insight from a food guru because their ideas manifest from a **Lucretian solution based biochemistry** that set for the idea that no interactions can take place between molecules without their ability to touch one another. The Lucreatian solution to biochemistry does not appear to realize Mother Nature uses light waves, many of which our retinae cannot see by design, to touch all chemical substrates inside a cell to control biochemistry. Her version of control of biochemistry is precise, called solid-state biochemistry, using quantum processing of light in nonlinear fashion to control what occurs in cells day and night.

Today's lesson: when Nature puts two things together she

always produces something new which cannot be expressed in terms of the deductive abilities or qualities of the two components by themselves. Whenever, reductive scientists break apart a cell from its whole, as solution biochemists and nutrition science have done, we lose some of nature's translation of life. The thing or idea we lose is often the essential feature that our experiments are usually looking for. This is one of the gravest errors of modern biology. When these things are whole, inside a cell, a collective frequency of oscillation from the pushing or pulling is capable of regulating other coupled non-linear systems, like mitosis and epigenetic expression. Normally, under daytime or during the night these transient features will be stable because they are controlled by the absence and presence of light from the sun. The system is built to measure small quantum changes. In this way, if light changes for any reason, a cell shifts its frequency or vibration. If a significant number of cells get out of sync in this fashion, say from artificial light at night, entraining signals from surrounding cells in our tissues have a backup mechanism to re-tune "***the pushing or pulling effect***" in the EZ. This assumes that there is no man-made light waves pushing or pulling the system out of tune, to begin with. Today, that is no longer true.

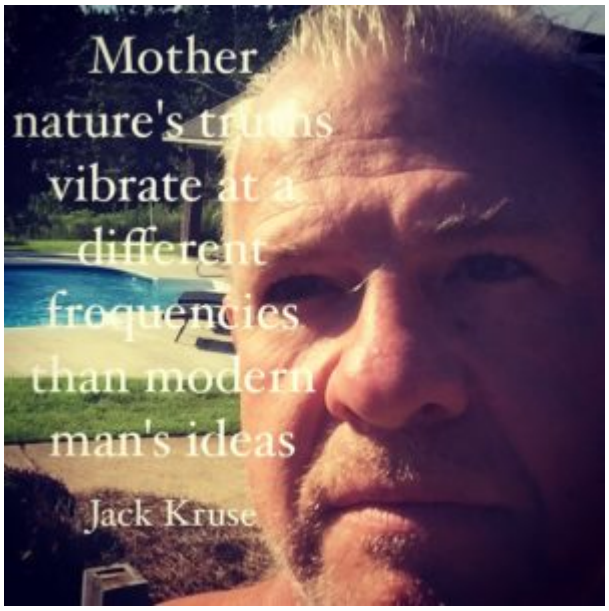


The strength of the collective vibrations in cells in a tissue

can be lost in this way to cause a circadian mismatch even in a person with sight or exposure to fake light at the wrong time. A loss of the pushing or pulling mechanism in light will always lead to a disease or disorder in that tissue. Timing with light leads to tuning cells in tissues. Once one tissue is tuned it can be used to tune far distant tissues electronically using impedance matching in the structure of water. Since the EZ of water is build to change dynamically as the color temperature and spectral density of light changes throughout the day it impedance matching can be used to efficiently transmit energy and information wirelessly in biologic systems. Stated another way, incident light rays impacting our mitochondria can develop oscillations in the mitochondria to condition the exclusion zone of water in cells diurnally to electronically control biochemical substrates in a cell. **This implies that exclusion zone water in cells is conditioned by changing light frequencies and the surrounding proteins in cells can reflexively condition the exclusion zone in cells electronic changes in the side groups of amino acids at protein bends to make precise changes in tissues to allow life to work.**

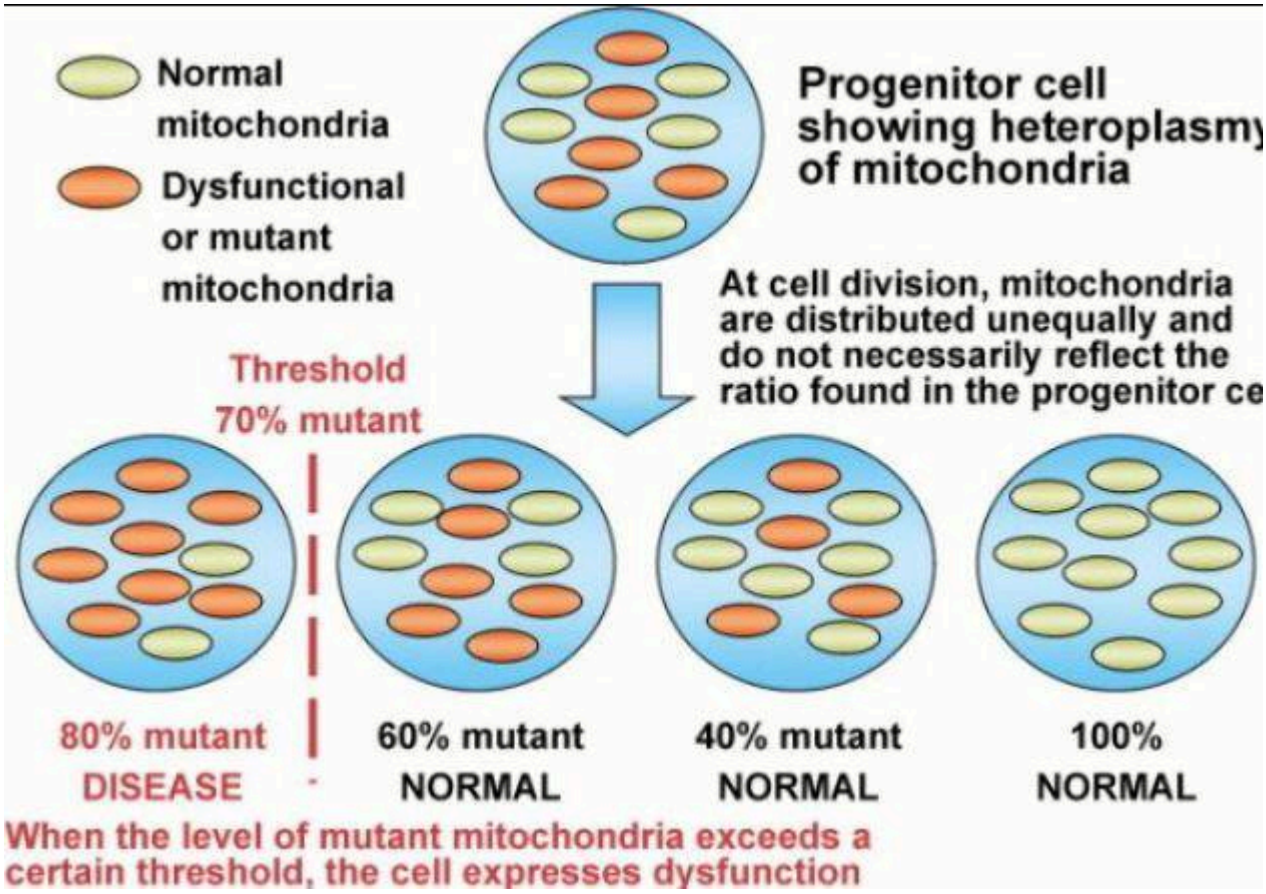
These aspects of nature are simple to understand when you lose your solution based biochemical idea of how life works that are printed in textbooks. It amazes me how many scientists and

clinicians find these concepts difficult to grasp because this action at a distance is an accepted part of Newtonian mechanics that accounts for the movements of celestial bodies in space and it is a core tenet of quantum electrodynamic theory which tells us that photons are the force carrier for all charged particles in the universe. This is why amino acid side chains work as antennae with light. None of the work on electromagnetic interactions described in this blog violates any known laws of physics, optics, chemistry, or biology. This implies that we might be able to fundamentally change the paradigm in medicine without the need for any scientific revolution. All of the pieces to the puzzle are already published in the literature of all the basic sciences and all it will take is for people to understand how an innovator can put these disparate parts of knowledge together to create a new perspective on how life works. The irony is that we, as a species, have known for over 120 years that atoms and chemical molecules vibrate and move when they absorb or emit electromagnetic waves. The resultant electromagnetic footprint has been used by spectroscopists to determine the molecular structure of drugs and molecules. In fact, most of what man's current knowledge base is built to understand drugs and antibiotics come directly from spectroscopic data.



More irony for you to consider: Astrophysicists use radio

telescopes to detect characteristic molecular signals at distances of billions of light years yet, biology and physicist alike think that cells have not evolved the same level of sophistication in communication. This recent paper (cite 2) is telegraphing us that the work of Wallace in mitochondria is likely wirelessly transmitted to and fro to the nuclear genome to exchange energy and electronic signatures loaded with information related to a tissue can respond to these energy changes epigenetically. This change in tension, brought about the change in energy flows, changes that information in both mitochondria and the nuclear genome to allow life to alter its path. In this way, it should now be clear the environment controls substrate biochemistry via heteroplasmy rates in mitochondrial DNA all through the master circadian controllers.



SUMMARY:

Sunlight programs bio-molecules using light frequency to energize electrons and protons in many ways. What are the implications for life? The molecular signals emitted from chemicals acquires an electromagnetic meaning when light pushes or pulls through a tissue. Power in light is coded by frequency so this is where the pulling and pushing force comes from. When light hits the water it also changes its lattice and structure to make an exclusion zone the excludes all things including the sub-atomic sized proton. This makes cell water from a mitochondrion a liquid crystal that has a higher viscosity to work with light's ability to push and pull to do things inside a cell we do not visualize well. In essence, the molecules suspended and inside this liquid crystalline ocean inside us interact by co-resonance just like a radio transmitter and receiver do in your car. If you tune a radio receiver in your car to 106 FM (MHz), you are tuning into 'biochemical station A', that contains a special programming information.

This situation operates this way because electrons in the antennae of the receiver and the transmitter are oscillating at the same frequency as the radio waves traveling to and fro. People forget radio waves are a form of light. If your cells decided to change the tension pattern in the cell, by altering the size or quality of the EZ, this is akin to changing the dial on your radio to 88 FM (MHz). This information on this channel would not be the same as it was on 106 FM. On this station, the programming will give us new information about the systems in question in other parts of the cell. This idea clearly shows us that long-range electromagnetic fields are fully capable of transmitting very complex messages between distant molecules or to molecules or organelles in the same cell with HIGH FIDELITY as long as their emission and absorption spectra match. Why do nnEMF and blue light harm/kill us if we live under its power chronically? It ruins the high fidelity connection in cells to perform the physiologic tasks required to live optimally. This is why

energy and information are lost in a cell with high heteroplasmy rates. Being a “solid state mitochondriac” is not that revolutionary when you have nature’s playbook to decipher the Rosetta Stone of life.

CITES:

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