

UBIQUITINATION 1: Bio-hacking altitude, suicide, and loss of muscle mass

READERS SUMMARY:

1. HOW DOES ALTITUDE CAUSE MUSCLE LOSS AND PERFORMANCE LOSS IRRESPECTIVE OF DIET?
2. HOW DOES LOW O₂, CALCIUM HOMEOSTASIS AND PROTEIN MODIFICATION COUPLE?
3. WHAT IS UBIQUITINATION?
4. WHY DOES CIRCADIAN BIOLOGY CONTROL UBIQUITINATION?
5. WHAT MATTERS MOST, CIRCADIAN BIOLOGY OR FOOD?
6. HOW MIGHT ALTITUDE, EXERCISE, LOCATION, AND LOW O₂ LEAD TO MENTAL ILLNESS AND SUICIDE?

Today we embark on new series. This series will begin to tie a lot of things together. Today's blog is on a topic that has rarely been broached in the '*paleosphere*', because few understand how it relates to our biochemistry or the medical physics in our mitochondria. Do you know what ubiquitination is? Have a look here: [Link](#) It is, in my opinion, the most important thing that we do after our nucleic acids are expressed. It links to every known human disease.

Most people believe that maintaining muscle mass is somewhat important when we age, but most people are quite unsure of how to do it properly. Ubiquitination controls this process. Most will point to diet and exercise to maintain that muscle mass. That would be an error on their part. Where you live,

and what exercise you do chronically, and how your current beliefs structure your dietary template, might be the most significant part of that answer.

The most frequently reported symptom of exposure to high altitude is loss of body mass, ***specifically lean muscle mass***, and this results in decreased performance. I have often found it ironic, that performance athletes are sold the bill of goods by many experts, that chronic training at elevation is a good idea. It is one of the poorest decisions one could make. So why do lean muscle mass and performance shrink at elevations?

Where there is matter, there is geometry. Where geometry ceases to exist we find the light. Where there are light and matter we see time manifest.

High up in the atmosphere is there is more UV light and this is one-way oxygen is made, but the level of oxygen made there is lower than it is at the surface where trees and plants make a lot more oxygen with less UV light from the sun. So what happens when living things go up in altitude? The higher we go, the less O_2 is present, and the less pull there is in our mitochondrial ECT. As a result, the ATPase of the mitochondria spins less and less ATP is made and these biophysical changes in our cells lead to increases protein turnover in living things. This increases ubiquitination rates in cells a lot. What is ubiquitination again? This is how we mark our proteins for replacement in our cells. Remember, DNA only codes for proteins. This means that as we increase ubiquitination, our proliferation rates in cells and tissues also increase. This is a pro-growth signal that depletes our stem cell supply. Cancer and altered ubiquitination are linked bio-physically for this reason. It also leads to many other changes in our cells. Atrophy occurs both in muscles and brain tissue too.

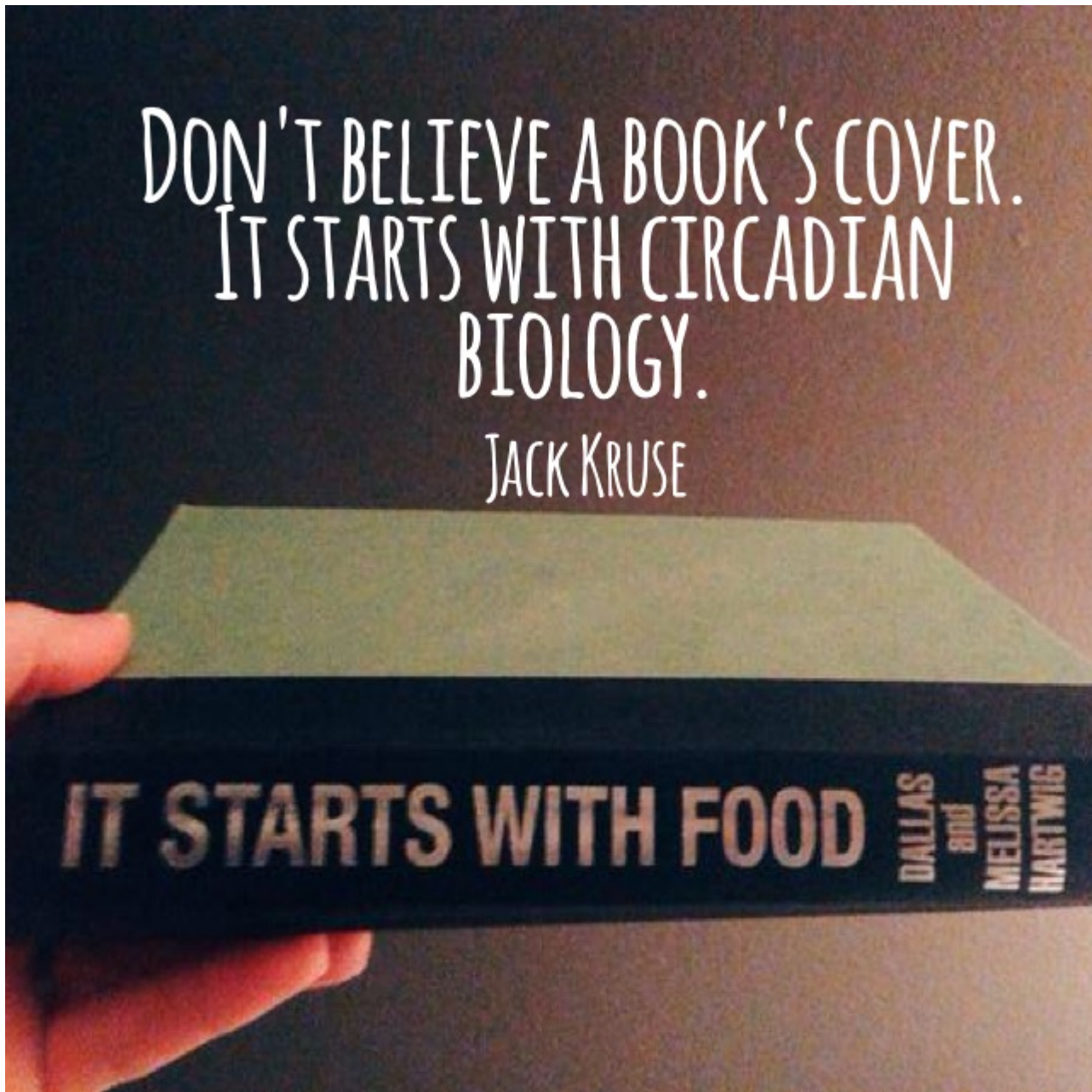
It turns out that protein synthesis from our nucleic acids is the most energy costly activity for a eukaryotic life form;

Moreover, this protein turnover relies heavily on proper circadian signaling to remain optimized. **Ubiquitination rates are 100% linked to proper calcium homeostasis in the cell.**

Ubiquitination rates happen to soar when we live at an altitude chronically. It increases by 3-5 fold. In the literature, increased ubiquitination rates are attributed to many neolithic disease states, just because of altered protein metabolism in cells; This ultimately, affects our ability to maintain skeletal muscles mass, and it declines rapidly regardless of what exercise we do, or what we eat. You might recall, this is what astronauts face in space, too. Their diets are excellent and crafted for them specifically based upon their metabolism and tasks, and they are required to exercise a lot in space, yet they all lose lean muscle mass, a lot of bone, and they age faster. You might also remember this tidbit: they also face 19 sunrises and sunsets every day they are in orbit. That seriously alters their circadian biology.

For the average mammal, cycles of daylight, protein synthesis, and hormone release are set to the pace of their environment, and evolution has been selected for organisms that can anticipate their environments. Thus, circadian rhythms are highly conserved across the eukaryotic kingdoms. Although circadian regulation occurs at each level of gene expression, it all begins with transcription. Transcription of genes leads to protein synthesis via the process called translation. Ubiquitin is a small regulatory protein that has been found in almost all tissues (ubiquitously) of eukaryotic organisms. Ubiquitination is a **post-translational modification** (in addition to a protein after it has been made) where ubiquitin is attached to a substrate protein. The addition of ubiquitin can affect proteins in many ways: It can signal for their degradation via the proteasome, alter their cellular location, affect their activity, and promote or prevent protein interactions.

Why have I always said that circadian biology controls optimal health? Post-translational modifications, like ubiquitination, are 100% dependent upon circadian signaling, and not food, exercise, or hormones. The result, from proper circadian signaling.



BIOLOGY GEEKS: The transcriptional circadian cycle can be attributed to transcription factors (CLOCK and CYCLE/BMAL) which bind to E-box elements and promote downstream gene expression. Of these genes, two of them (PERIOD and

TIMELESS/CRYPTOCHROME) return to the nucleus to inhibit CLOCK and CYCLE activity and their own transcription. This negative feedback loop takes approximately 24 hours and defines the circadian period. One of the most important regulatory mechanism underlying this cycle is that of post-translational modifications (PTM), like ubiquitination, which establish the timing of PERIOD and TIMELESS inhibitory activity.

PTM regulation has been well defined in terms of phosphorylation in biochemistry, but the field of PTM regulatory mechanisms has barely scratched the surface because ubiquitination is the major factor in all of the biology for a cell. **That is why this series is important for anyone interested in optimal health. You will soon realize food is not as critical as we all have been lead to believe.**

It plays a role, just not the leading role.

Most people know that brain health is tied to active movement or exercise in natural environments. But what few know is what happens when you perform natural movement outside at an elevation from sea level? How does a change in pressure affect biology? ***It turns out, you lose more muscle mass, you get more depressed, and you have higher suicide rates, irrespective of your diet.*** Surprised? If you have been following the blog for the last two years, the quantum scale of understanding often leads to unconventional truths. Today's blog is going to discuss a study about another example of a paradox, tied to altered quantum mechanics operating below our perceptions:

Have a look here at the [HYPERLINK](#)

Why would people be killing themselves in the most healthy states in the USA? Most people believe **Utah** is one of the most healthy places to live. It turns out that may not be true.

When you leave the sea level surface of Earth, the thermodynamic variables for life radically change, and your ability to tap quantum mechanisms in mitochondria decreases rapidly. Your choice of diet won't help this set of circumstances either, regardless of your current beliefs.

So why might this happen?

The higher altitude you go the more hypoxic you get. The more chronic hypoxia becomes, the more your mitochondria swell and its size increases. When mitochondria size increases, we become energy inefficient. All of this is tied to the cytoarchitecture of a cell and mitochondria.....those who have a tight tensegrity system can handle this hypoxia. Tensegrity usually is tied to strong lean muscle mass, but above we mentioned that chronic altitudes lead to faster muscle losses.

The only way to maintain it is to eat higher protein amounts and do more exercise, while you slowly deplete your tissues of stem cells because ubiquitination rates increase 5 fold. Here is the real thought provoking idea that this *Utah study* should make you wonder about: Why would states that have the "highest health metrics" have the highest suicide rates?

These states populated areas are all at elevations pushing humans higher into the ionosphere; moreover, all these people tend to exercise more than the rest of the USA. We know exercise in air causes increase heart rate and blood pressure; it increases BDNF proteins in your brain to act as a mood enhancer. This should really make you stop and wonder why these results are happening because they are not illusions.

Whether professionals have a chance to develop intuitive expertise depends essentially on the quality and speed of feedback received from the observations we make, or the experiments we run. Moreover, our understanding of these observations might depend on sufficient opportunity to practice what we learned. Sadly, I don't think modern man has learned much about how elevation and non-native EMF are coupled to calcium metabolism and to higher ubiquitination rates in proteins in cells.

This study points to an environmental trigger that many in the '*paleosphere*' will want to avoid talking about. This study is a huge problem for a high exercising, cross fitting, ancestral eating folks, who loves using technology at all hours of the day. Many of them develop exercise-induced adrenal fatigue, and don't seem to know why?. Instead, their "so-called experts", advocate for them to use things like low dose naltrexone (LDN). Ironically, in these cases, they rarely get told or have a real idea why it works. LDN can affect circadian transcription and ubiquitination rates.

Brain-derived nerve growth factor (BDNF) is markedly altered when ubiquitination is off kilter. BDNF increases new neuron sprouting and new growth in our brain, but the newly created circuits have to be pruned by the action of melatonin at night, during autophagy. If you have a circadian mismatch, you do not release melatonin properly at night, so you never optimally prune these new arborizations. As a result, your brain does not work well. This especially can affect the paraventricular nucleus (PVN). The PVN is where adrenal fatigue begins. The effects of BDNF are similar to drug addiction in several studies you can read on PubMed. So when you start exercising, the feeling of euphoria is the highest at the beginning, and it goes down from there. BDNF and endorphins are supposed to be yoked by our circadian cycle in their release, but when you have calcium efflux present, they are no longer yoked properly. What protein controls

this timing in all eukaryotic cells? Calcium/calmodulin-dependent protein kinase type II. You'll hear more about this in the series.

Today neurologic research shows the release of endorphins has an addictive effect, and more exercise is needed, to achieve the same level of euphoria over time. This is why LDN is successful in some cases adrenal fatigue, poor sleep, and in autoimmunity because endorphins are missing from the neuronal sprouting effects of BDNF.

So this means, if you have never exercised before, or at least not for a long time, your happiness gains will be the highest when you begin, or when your circadian signaling gets back to normal. This is why the Leptin Rx tells you to hold off exercise until your redox state improves; *if you don't pay attention to this detail, you might be a good looking hard body cross-fitter who kills themselves someday.*

This shocks people when I explain it because they are missing the key point of how cells are organized. There have been several recent high profile paleo suicides, and no one wants to talk about how the "lifestyle" might have contributed to the situation. That conversation needs to occur. It is not just about food, people. **Mitochondria are electromechanical heat sensors that pay attention to vibrations they get from the environment.** They can't pay attention to these oscillations when calcium is being chronically effluxed from cells because you are doing things improperly to your quantum design.

When you live in elevation the oscillations are of higher energy and frequencies and this one thing can cause massive instability in cell membranes and in mitochondrial membranes and nuclear membranes. When this happens DNA and RNA helices may be affected by these oscillations. Another important form of potential energy is that cells use is found in a coiled spring like a helix. This is a 'tensegrity idea" used by evolution to amplify normally weak environmental

electromagnetic oscillations. When we go higher we have higher non EMF energies in the ionosphere. Helixes behave naturally as tensegrity structures to store kinetic energy, as potential energy. They naturally stabilize themselves through a balance between the forces of attraction (tension) and repulsion (compression). They can release piezoelectric or flexoelectric signals in both tension and repulsion. These forces are mediated by the charged electrons and protons in these helical structures, to alter the flow of these charged subatomic particles bidirectionally. Why is this important?

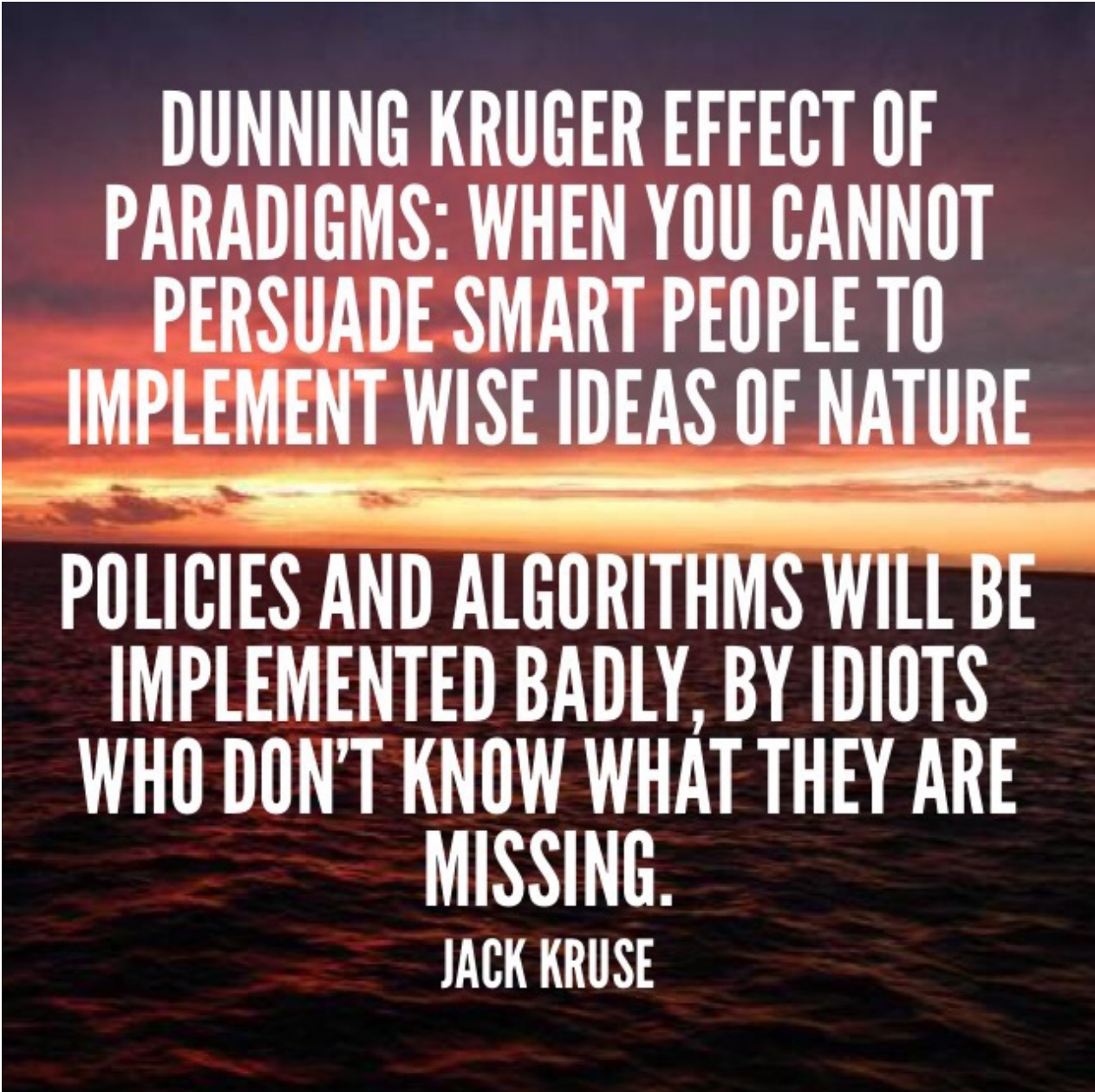
In the space above our heads, at altitude, and in the mitochondria of our cells, ionized plasma's also exhibit bidirectional flow. This is a huge clue why healthy fit people are committing suicide in record numbers, in places like Utah. There is a lesson here, no one seems to be learning because they believe optimal health is a "food only" story. That belief must evolve.

More anomalies to consider: electric currents inside the Earth's ionosphere, at sea-level are unidirectional. Why would most of the important chemicals in life, be helical, like collagen and nucleic acids? Bonded atoms exhibit strikingly similar behavior, called vibrational motions, that enable things to adapt to the action of springs. Potential energy is often thought of as "stored" kinetic energy. This means that as things (cells or mitochondria) can remain stationary in a potential field such as an electric or magnetic field. At elevations, you can't do this well, especially during sleep.

Your mitochondria can actually move locations within a cell at elevations. **Did you know that?** They move away from the nucleus of the cell. This is why people who live in cities in apartment buildings have poorer health and much more sleep problems. This stillness of motion of mitochondria only happens when we sleep, and it helps when this sleep is at sea level, **or in water.** It does not happen when we are awake, because the sun's oscillations, from light waves, vibrate our cell membranes too much during the daylight. Excessive

vibrations is exactly what our mitochondria face when we live at elevations 24 hours a/7 days a week. It is compounded by excessive exercise, and warmer temperatures, if we live indoors. Most modern humans in these "healthy states" live indoors, where it is artificially made warmer.

Mitochondria can normally hold the vibrations of photons, electrons, and protons stable in place, by controlling electrical and magnetic forces they generate. At elevations or altitude, you have less control over electrical and magnetic fields generated within cells, because of the increased energies of the electromagnetic force our mitochondria chronically faces. If you cannot control these forces, calcium is released from cells, and all voltage-gated channels in cell membrane no longer function properly, and you could get depressed if this continues, and you might kill yourself. Suicide rates are skyrocketing in all states with populations who live at high altitudes now. It has got to make you ask, why is this happening? No?

A sunset over the ocean with white text overlaid. The sky is a mix of orange, red, and purple, and the water is dark with some ripples.

**DUNNING KRUGER EFFECT OF
PARADIGMS: WHEN YOU CANNOT
PERSUADE SMART PEOPLE TO
IMPLEMENT WISE IDEAS OF NATURE**

**POLICIES AND ALGORITHMS WILL BE
IMPLEMENTED BADLY, BY IDIOTS
WHO DON'T KNOW WHAT THEY ARE
MISSING.**

JACK KRUSE

Dogma can hurt you even if you don't see it at first because it fuels the Dunning Kruger effect.

This study points out something else about exercise, coupled to excessive non-EMF, that runs counter to modern ancestral dogma. This exercise link in the healthy states should really point out why you need to understand the relationships to exercise, circadian biology, and the redox potential, at a quantum level. It is counterintuitive to people who live in the classical world of beliefs and yet makes perfect sense to me. This is why I have warned some of these groups about their beliefs. This is why cross fitter's and marathoners can drop dead, from what most consider normal exercise. This

exercise, these “experts” advise should be done with regularity, even if you live in cities or at elevations, maybe a bad idea. Most have no idea that exercise also has a context. The dose makes the toxin when you live in a city or at an elevation. Be careful with the advice you get from these so-called, experts.

REALITY CHECK:

Tensegrity controls the size and shape of mitochondria during autophagy for those of you who don't know. It is maintained by actin filaments and integrins proteins in the cell connecting the cell membrane to the mitochondria and to the nucleus of every cell. Those actin filaments and integrins are also piezoelectric. Mitochondria recycle or die off using two programs that use size and shape to signal these changes to the rest of the cell to activate or deactivate quantum processes that occur in your mitochondria during REM sleep. We also should remember that mitochondria are subject to evolutionary selection pressures due to excessive elevation or altered circadian signaling within the brain and body clocks. This simple fact is why most researchers' have been surprised that mitochondrial defects do not accumulate at high rates in tissues in a disease state or in mental illness. Instead, defective mitochondria are removed by the mitochondrial recycling programs that respond only to size and shape changes, mediated by infrared light release from mitochondria to condense and constrict water around your mitochondria as it is heated. All of these things are altered at elevation and altitude. This is why people at altitude suffer from chronic pseudo-hypoxia. I would remind you, O_2 is paramagnetic. It means it is drawn to things with large electric and magnetic fields. It can't be drawn to tissues with mitochondria if it chronically low because of high altitudes. **Since the mitochondria move away from the nucleus at elevations this means the nucleus becomes pseudo-hypoxic at chronic**

elevations. This radically alters genetic expression.

Colder temperatures are naturally linked to most high elevations locations. The cold environment at high altitudes helps offset hypoxia, by increasing magnetic flux in mitochondria, but it is not a great enough effect, even with healthy mitochondria, as this study reveals. Remember, cold temperatures and strong electric currents are the only two things in the universe that increase magnetic flux. This loss of magnetic flux in mitochondria is compounded when you *over exercise* and you live inside, at an elevation in an artificially warmed house or car. This reveals more aspects of why this ancestral paradox exists in the healthiest states. Most of the so-called, "experts" do not get how mitochondria fundamentally work. I spoke about this paradox in Tensegrity 5.

So why does environmental cold thermogenesis work to help offset hypoxia? Why are polar vortices and temperatures something we should benefit from? You do not stress a body with the cold environment; with cold, you are stimulating its quantum heat machines (mitochondria) to work better by releasing heat. *Heat is infrared light.* When you say cold is a stressor or hormetic you are announcing to the world you clearly do not understand how mitochondria use cold to control water's density that surrounds your mitochondria.

In liquid water, inside your cells, and surrounding the mitochondria, water volume shrinks when it is heated by infrared light released from mitochondria. This is why ice floats on liquid water. I cannot stress how critical these relationships are to one another. This shrinks cell volumes and mitochondrial volumes just using heat and water's natural quantum interactions. It also points out why cold thermogenesis works fundamentally because cold environments increase heat release from mitochondria naturally. This makes you more energy efficient because it shrinks the mitochondrial size. It also limits the movement of mitochondria in a cell

and keeps them closer to the nucleus. These actions increase the chances that our mitochondria can electron and proton tunnel. This makes liquid water the ideal substance for life, because of Einstein's mass equivalence equation. When you say stressor or hormesis with respect to cold it sounds like you've been listening to the paleo's so-called, "experts", too long. Most of them have shown a blatant disregard for the physics of how water works with our mitochondria. It is not a hormetic stress; it is honed evolutionary design at work, perfectly balanced, and coupled to nature's environmental signals.

Ancestral health, alternative health, and conventional medical knowledge are firmly entrenched operating in a Newtonian/observation driven world; however, life is built in a cell using quantum metastability of the second law of thermodynamics. This law is not absolute; it is statistical and this is why it marries perfectly to the quantum world.

QED is based upon the statistics of probabilities. The more metastable life remains, the more chances it has to innovate a solution to the environmental challenge it faces. Life works at this edge between thermodynamics and the subatomic world. Below this edge, is all the quantum mechanisms that I speak about here, on my blog.

Every last one of these processes is built into your mitochondria by evolutionary design, just as chlorophyll is built into the 39 steps of photosynthesis which are also quantized and well accepted by science now. Trees are made from the thin air of carbon dioxide and the sun's ability to knock one oxygen out of CO₂. It may be hard for you to believe, but none the less, it is a reality. Photosynthesis is not controversial, but few in healthcare or ancestral health know the quantum details, as well as I do.

The more disconnected your mind is from the natural environmental light and magnetic effects that are formalized in circadian signaling, the more altered your perceptions of reality become. If you're well connected to nature,

inflammation levels are low and your body acts in a coherent fashion. In this state, you create thoughts and intuitions of what life looks like and feels like is acceptable for you. Conversely, in sickness, the opposite happens. Within this framework, the minds' thoughts become disconnected from the circadian operations in your cells. When this happens chronically, your thinking goes awry, and you begin to become depressed. It continues, you might contemplate suicide. This is what this study at elevation is showing us. Are we listening to the lesson?

The irony most are unaware of is that the body doesn't give a hoot what you think about this process; it goes on about the business of survival. All of our goals's in life should be to learn what we need to know to coherently link our thoughts to how our mitochondria fundamentally work in quantum fashion.

When we do, we begin to realize that our body conforms to what our mind thinks is optimal based upon the conditions we allow. Once we learn who the master of our body really is, then and only then will we come to know how the quantum world manifests in everyday life. This is why mental illness shows up in these states, in my humble opinion.

The 3 layers of how life organizes that parallel the 3 legged stool, light, magnetism, and water chemistry.

THE LESSON: the higher you go on Earth, the worse the calcium efflux effect.....the higher you go, the colder it gets.....cold can thermodynamically shrink mitochondria until the effects of the electromagnetic force take over. This is why astronauts in space get more ill and age faster than humans on Earth too. The higher one goes, the stronger the electromagnetic force becomes. The stronger this force becomes, the harder mitochondria must work to offset this force. This pulls apart the tensegrity of a cell steadily, resulting in illness, a lower redox potential, and increased aging. People often forget the lesson I taught long ago, on the blog about the forces of nature. The electromagnetic force

has infinite range and power, and it is trillions of times stronger than gravitational effects; so guess why the higher you go, might be deadly, compared to the good benefits that cold thermogenesis provides? It is because, at altitudes, the electromagnetic force is stronger and it begins to use higher electromagnetic energies to tear apart the processes in our mitochondria to signal properly and move electrons and protons around properly. It turns out at an altitude, your mitochondria is no match for the electromagnetic force. Altitude overcomes the orderly process in our mitochondria, using the strongest force in nature, to alter the tensegrity of our cells, causing them to face massive oscillations and vibrations chronically, that stimulates calcium release to depress cell membrane function everywhere in us. This is why you should opt to be close to sea level and embrace cold as much as possible, in a modern world that now causes calcium efflux everywhere.

Become aware, calcium efflux goes higher as you go higher and it causes problems with neurotransmitter (NT) release; all NT's need calcium ions in proper doses to release from synapses and work in neurons.....and when they don't this is why suicide can happen in the healthiest states in the USA. It is the quantum physics at play in your mitochondria, and not what you thought or believe, nor is it what biology thinks is at play. QED explains what biology cannot, and that is why much of my early blogs, made me appear off-kilter, to many others who had a limited understanding of medical physics at play in mitochondria. You can't visualize what you don't understand; because if you have no idea about the scale of this science at work in mitochondria, or how it couples the thermodynamic and quantum world in cells, it would seem far-fetched at a biochemical level of understanding. Most critics are just are at the wrong scale of science, to help anyone reverse anything. Modern medicine and ancestral health are on a level of understanding today, equivalent to classical physics, chemistry, biology. Level 2 understanding, is

getting the message that the 3 laws of thermodynamics are at the quantum ledge of medical physics to help organize life's processes. Read this book, and its fabulous bibliography and cites, if you think the science is not already there. Surprise, it is!!! Time to get up to speed.

Level 3 is where the subatomic processes, that begin in mitochondria, begin to use all the 'queerness of the quantum world', to do the things they do; quantum tunneling and entanglement being just a few examples. Life uses what most of us cannot fathom.....that bad thought has to change the world of medicine to improve.

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