

Cold Thermogenesis 6: The Ancient Pathway

Readers Summary

1. How would you describe the “Ancient Pathway” to a warm adapted human?
2. What are the steps in activating the Ancient Pathway?
3. Do you need high hormone levels to have big muscles and great power?
4. Can we eat small, exercise small, lift ridiculously large, live longer, and feel like Superman?
5. Has our modern life kept optimal in our blind spot?

The best way to describe this pathway to the lay public is to explain this is how evolution allows for the ideal form to meet function in a tough environment. This environment is likely the primordial environment for life on our planet. This makes astrophysicists excited because life might also be evolving in places like Titan. After all 5 extinction events on this planet geologists have told us they were followed by an extended cold climate. In cold, mammals live longer because their mitochondria release heat to alter water chemistry.

When it is cold, insulin does not work as it does when the temperature is higher. Temperature affects the hydrogen bonding networks in cell water. When it is cold, the sympathetic nervous system dominates. You will find out more about why this happens in Energy and Epigenetics 4 and 5 blog posts.

The pathway uses very little energy from ATP and gives a whole lot to the organism who uses it. Fat burning is required and it is tied to a biochemical pathway that paleo forgot to speak about. Why? Because they know nothing about water chemistry or hydrogen. They believe this is a story of food. It is

not. Water acts differently in cold than it does in warm. And your cells, and mine, are filled to the brim with water. But it requires the cold temperature to be present and used commonly. In the pathway, the less effort you give, the faster and more powerful you will be when this pathway is active. People who live in this pathway can run a marathon with no training. They can lift unreal amounts of weight with little training. Their reserve and recovery are just incredible. You have to see it to believe it. Many will say cold thermogenesis a hormetic process when in reality it is created using a coherent energy source due to something called the Hall effect. The Hall effect is a quantum spin effect.

It turns out spin-polarized currents can be used to apply torques to magnetic moments by direct transfer of spin angular momentum. This Hall effect enables manipulation of nanoscale magnetic atoms in mitochondria using currents that are orders of magnitude lower than required for magnetic-field-base control. So far the only way to generate spin currents strong enough for spin-torque manipulation of magnets in practical technology applications has been to send an electron current through a magnetic polarizing layer. I believe nature found a way using the quantum spin in the matrix to do this 600 million years ago.

When we have had extinction events on Earth before, the events usually affect the evaporation of water in some fashion from the surface of lakes and oceans. It also affects the transpiration of the forest trees, plants, and flowers and this change cool the air. You must understand how climatology works here; liquid water needs to absorb a lot of latent heat to in order to evaporate, so it sucks energy from the atmosphere to make this energy transfer. This loss of energy from the atmosphere directly cools the planet and this preserves the charge on life's inner mitochondrial membrane and in the nanotubes present in our cells that contain water.

This is how life lives long in the cold.

Those people don't realize this because they do not live in this pathway for the majority of their life, and few studies have been done to say otherwise. The link above is recently added to this blog post. It seems science is now proving me correct in my theories of extinction events.

Few live in it commonly. And for those who do not live in it, well, no one believes it is possible. Everything about this pathway in the human brain is about optimal mammalian functioning. It is as good, as good gets. My entire life now consists of living within the confines of this pathway. Not everyone will choose too, but when they do get a taste of it, they are just bowled over. The more we induce it, the more beneficial it will be to our health and to our longevity especially when our environment is altered.

Welcome to the leptin-melanocortin pathway of eutherian mammals. Modern life allows us to live outside your biology and this pathway and this pathway brings you inside your optimal self. It is that simple. Optimal is for everyone who wants it. From today on, optimal is now a choice and not a mystery to humans.

I know this sounds too good to be true. You might be wondering how this all occurs biochemically in our brain?

Non-scientists and geeks unite

Step 1. The metabolic trap door to the ancient pathway is found in our eye. The first step in the process is the normal high dietary carbohydrate intakes in summer months when the SCN is entrained to high light levels. During this time many mammals will mate and begin the process of getting ready for winter. So carbohydrates are very good for us in the season with high light cycles. This is when they are quite safe. When do they hurt us?

The fact that **eNOS entrains the SCN** to react to **cold**, and not light cycles has major implications for autophagy which occurs

in sleep in humans, The major function of the leptin receptor in humans is to couple sleep and metabolism, When they are not coupled, due to environmental mismatches, it has major implications for human biology. This is where safe starch theory dies slowly on the vine. Take a look at this link to see how a fetus/newborn is maternally entrained by the cold!

The Optimal temperature is around 10 degrees Celsius which is around 50 degrees F. This is exactly where my cold thermogenesis protocol should put you.

eNOS directly inactivates the function of hypothalamic NPY! NPY is stimulated by carbohydrates in the hypothalamus and it drives carbohydrates cravings and food seeking behaviors. Why would mammals and humans have this hardwired into their DNA and in their brains? Evolution says it is biologically impossible to find carbohydrates in chronic freezing cold conditions because these foods require serious amounts of photons and electrons from sunlight. When it is chronically cold this is not possible in nature, unless an extinction event is ongoing. That is the short answer. This implies that our food is codified somehow by the photoelectric effect. There are massive benefits to cell membrane signaling when carbs are excluded in a cold environment. Cell membranes have to exclude carbohydrates in cold to function well. This is one part of the reason why diabetics get neuropathy and many other illnesses from glycation.

My job as an Epi-paleo blogger is to point the facts out to you. I'll let you be the judge of who is correct about the science of what is safe or not. For the **skeptics** who said I had no proof, more is coming to demolish the safe carb starch dogma in this blog. For those warning of high protein intakes and mTOR signaling, wake up.

Evolutionary thinking is always the king of the mountain. The literature, in my view, takes a back seat to Mother Nature in the new paradigm of healthcare. Nothing trumps the laws of nature.

In my view, Mother Nature always is right, no matter what the modern research says. Most of the research never took this pathway into consideration. The textbooks were written in the 1950's and the cold-adapted pathways of mammals are still not studied even today. Since modern scientists do not know mammals have two major biochemical pathways in which they seasonally operate their data is at best incomplete. Moreover, the research is useless when it is based on a flawed assumption. (see the cholesterol data as a great example)

What is the major flaw in the modern literature? No one realizes mammals have two metabolic pathways that they live within normally on our planet by evolutionary design. In fact, this is how all mammals evolved 67 million years ago. One pathway dominates spring and summer, and the other dominates fall and winter. It is the mammalian version of Yin and Yang. Moreover, both function in unison on a continuum to make biochemistry work for us over a wide variety of environments we are adapted to. **The metabolic pathways governing cold are the bastard child of the modern world, and it has lead to major health care issues for the modern man.**

If you fight Mother Nature's rules for mammals, by eating outside normal circadian biology she will bite you in the "ass" every time. There is always a biologic toll to pay for this behavior. You need to be very aware of this biologic fact at all times. My point is clear. Modern man is not aware of this, and in fact, his thoughts, feelings, and beliefs have kept these facts, in his blind spot since the agricultural revolution. I think the American Indians were the last group of modern hominids who really understood these natural laws best. Let us look to the Arctic now for a prime example of how carbs can destroy a cold-adapted group by creating a mismatch.

Let us examine the modern Inuits experience in how that experiment has worked out over the last 50 years for their culture. I happen to have a modern Inuit citizen in Nashville, who is quite famous, so I get his insights all the

time. The modern Inuit drive warm cars, eat carbs 24/7, have warm houses, and do not have to battle the cold to live any longer in the Arctic. They have conquered their environment. The results of this are seen in their health today. It has vanished in 60 short years.

Modern humans are the only mammals that can create their own environment to subjugate their paleolithic genes to get mismatch because they can alter their diet and environment because of their thoughts and their feelings of well being or sickness. An arctic fox, seal, or polar bear cannot do this. For humans, this can work well if your thoughts and feelings are congruent with how our mammalian biochemistry works.

There is one big problem; few people and most of the published science have no clue how it does really work to begin with. This blind spot creates major health issues that we see today in modern civilization. This is why we perceive diabetes and cancer as diseases today when they may represent mismatches in modern human biochemistry.

We must become mindful that those mismatches, may well, kill you. If you eat carbs in a warm adapted world, as modern man does today, you create a huge biologic mismatch. This, in essence, becomes a "reverse leptin Rx experiment". The same is true of using lights after the sun set in ipad, iphones, and LED TV's. These mismatches speed up our circadian clocks in a pro-growth mode constantly, while we are young.

You do many things that are pro-growth, that for a time seem to help you, until things falter. Longer term, you pay dearly for this in disease and trashed hormone panels, and terrible energy and a lack of well being. When you are blinded to all this, your feelings of short term gratification keeps these biologic dangers out of your sight and present reality.

To you, they just do not exist.

We essentially become blind to these inherent risks. These results present as a neolithic diseases of aging while you simultaneously lose your stem cells population. This enables you to look like a rock star on the outside while your labs crash and burn (assuming you are smart enough to look) and your slowly die within. This is modern Paleo man's ultimate paradox.

Check the health records on the native Inuit to see if I am right about this. They are living proof of this mismatch. What has happened to them, is happening constantly to us in the western world now. This is why modern man is mediocre. Thoughts and feelings of a lack of well being on a low carb template today, allows us to falsely believe that carbohydrates maybe "safe starches." because we examine that data in warm adapted hominids only!

It appears on the surface, that this might improve our feelings of well being. In the short term it does make a modern warm adapted hominid feel better, but the biologic toll is that it speeds up your chemical clocks and it depletes your of your stems cells as you feel better. We can grossly measure this today with the rudimentary telomere tests.

In the Arctic, when these carbs were provided to Inuit by modern transportation, out of the normal circadian cycle of their environment, they were devastated by disease in two generations. You must live congruent to your biology at all times for optimal health. Since 1940 the Inuit have been decimated by neolithic disease. They are very mediocre group today. Albert Schweitzer's papers on them from 1913, paint a far different view of their culture and phenotypes of what they were like when they ate they way Mother Nature intended them too. There is a huge lesson here for us all.

Step 2. Geek alert: Mammals send their tissue omega 6 to their cell membranes during late summer and all through the fall when the temperature begins to fall and light levels

drop. Amazingly, the amount of so-called “n-6” polyunsaturated fatty acids (those with the final double bond at the sixth position) in the membranes was found to increase dramatically before the start of hibernation in marmots recently, apparently to prepare the body, and particularly the heart, for operation at very low temperatures.

Consistent with this idea, the transition to a higher content of n-6 fatty acids in membranes takes place extremely rapidly just before the animals enter their hibernation chambers. The changes are reversed, again over a short time, around the termination of hibernation in spring, when the animals return to a life at **high body temperatures**. As the temperature falls further as winter solstice comes, the mammal will then have constructed their cell membranes to further increase flexibility (more omega 3) as the cold increases as the winter deepens. Cell membranes loaded with AGE's do not work well in the cold. This is a biologic fact.

So evolution makes sure we do not use carbs in the winter. I think some of my cell membrane biology friends at Johns Hopkins University might drop their two cents here in the comments, soon enough. Dr. Patricia Kane's life long work confirms what I am saying here. In fact, there is a neural pathway that shuts off all carbohydrate cravings to bolster this evolutionary dictum. Moreover, Mother

Nature has selected for a special taste receptor to flourish in cold called CD36. In cold, we need fat not carbs. In fact, we saw in CT five blog that it requires a more fluid membrane to get proper signaling to work. When signaling is broken disruptions continue further in the chemical clocks of organs. This is why diabetics have so many unusual organ diseases (eye, nerve, kidney, brain) tied to their diagnosis as the process worsens.

This process is controlled by surface skin cold receptors and wiring from the mouth, gut, Peripheral Nervous System and to

the Central Nervous System via the spinal cord and then to the brain. The brain gets inputs of this tract from the vagus nerve, and from a CD 36 receptor in the mouth which relays sensory inputs to the spinal cord and from the surface cold receptors.

What does CD 36 do for mammals? CD36 is an oral receptor in the lingual papillae of taste buds that mediated perception of long-chain fatty acids. It involves the gustatory neural pathways in cranial nerve 9 and 10 (glossopharyngeal nerve and the vagus nerve). These inputs head to the floor of the fourth ventricle (area postrema) of the hind brain to synapse in the nucleus of the solitary tract. Here they interact with the somatic sensory cold receptor system of the face and of the body.

The mere presence of the CD36 receptor in all mammals suggests that mammals are built by evolutionary design to have a "taste" for fatty foods in cold. the fact that the SCN also wires to the hypothalamus to **turn off NPY** is another big clue why we should not eat carbs in the winter. This evolutionary designed system constitutes a physiological advantage under conditions of food scarcity (in winter's cold environments) by leading the mammal to select and absorb fatty foods when cold is the predominate sensory afferent delivered to the area postrema.

This sensory neural processing is far more efficient in water based mammals because water transmits cold afferents more effectively. These mammals, also have a huge dietary source of omega three's in the deep polar seas to allow for them to do this. Land based mammals use **more omega 6's** in their tissues to increase flexibility and fluidity for signal transduction because the thermal barriers they face are not as steep as water based mammals. This is why I cautioned people early on, that Omega 6 fats are not always bad for humans here. Mammalian neural circuitry is the key to understanding where optimal really lies. If you do not understand the

essence of what we are, you remain blinded to what may harm us too.

HCG dieting alert: Eating MCT, in winter is probably not the best choice for a cold adapted mammal, because they do not help fluidity of cell membranes. This is why we see so many problems in the literature with saturated fats in humans. The results did not make sense and researchers attributed them to disease generation. They did not make sense because they were studying animals at different stages of their mammalian biochemistry.

These fats also can make a cold adapted mammal gain weight when eaten off season because of this mismatch. This is a reverse analogy to the one I used in the Paleo Summit with the banana in Canada. If you want to see proof of this fat reversal ask any person who uses the HCG diet how coconut oil or palm oil work for them on protocol. In short it sucks. Why? those oils protect warm adapted mammals eating tons of carbs. This is why coconut oil and Palm oil are tropical oils and not found in our polar regions.

When you ask a human who uses HCG for dieting, you will find they do not do well with MCT's during their HCG protocol use for this reason. In winter, mammals prefer animal fats like ghee, tallow, lard, bacon grease, and pastured butter as the best choices. This is wired into our brain by the CD 36 receptor and the floor of the fourth ventricle in humans too. Seafood is always a good choice no matter what season we are in. Pastured meats and offal are ideal too. Fatty meat cuts are best. Evolution is dictating what we should eat not Dr. Kruse. I am merely pointing out what many in our community are blind too today. I hope to change your reality tonight with this knowledge.

Human Obesity Caveat: MCT however, will help the obese human however to reverse weight loss in winter because they are a far better choice than any carbohydrate at this time. It was

my number one diesel fuel I used for my own weight loss. It will also make the obese person radiate heat if they use it in fall and winter which is a good sign that they are fat burning and not sugar burning. Coconut oil and palm oil are the ideal fats for spring and summer uses for humans. This works only for reversal of a disease and not for optimal living. I have a plan for optimal living once you reverse your disease here.

Step 3. The suprachiasmatic nucleus (SCN) is the circadian pacemaker that monitors this dance between darkness and light and the seasonal cold and hot temperatures in our environment. Cold temperatures reverses all the normal biology that is used when the SCN is entrained to light. This metabolic trap door is huge for mammalian biochemistry. **This is the only way to naturally way to enter this brain pathway now that we know of.** When temperature becomes the dominant environmental trigger and not light cycles, the leptin receptor induces endothelial nitric oxide synthetase (eNOS) formation.

EDIT 5/12/2012: it appears science has already beginning to find out what I knew was true 6 years ago. This really should a dagger to any safe starch belief you still hold. Mother Nature is telling you this, and not me. Are we clear on that?

NS: There is no safe starches in winter period because Mother Nature said so, not Dr. Kruse.

Geek alert: Expression of VEGF is high in proliferating and mature brown adipocytes and the VEGF receptors, FLK-1 and FLK-4, are expressed in BAT. Irisin is stimulated by cold from muscle as well. The expression of VEGF in BAT may promote and maintain the high level of vascularization in this tissue so that the it can counter balance the development of frostbite. Chronic norepinephrine stimulation and cold stress both result in increased levels of VEGF expression in BAT.

Both of these pathways cause expression of inducible nitric

oxide synthase (iNOS) and eNOS which then shuts down the photic effects of VIP on the SCN. Leptin forces the SCN to be blinded to light to yoke circadian cycles and use temperature! Remember, endothelial NOS (eNOS) are expressed in BAT. **Remember, step one, activation of eNOS by cold actually blocks the SCN from reacting to photic stimuli to entrain our circadian rhythms!**

So the cold turns off control of all circadian rhythms to light and uses temperature instead! This is another shocking surprise of cold thermogenesis! Can you say bye bye to safe starches now? If you are scientist, yes you can, and you will say no if you are a paleo dogmatist that enjoys your feelings, more than your health. The activation of eNOS seems to be tied to the cold environment and replace light as the entrainment molecule for biological rhythms in cold.

STEP 4: When cold is perceived by skin cold receptors over two weeks leptin is liberated from fat cells in massive quantities. Cold empties fats stores like like a fire empties a movie theater. It can occur even faster if the method of adaptation is controlled with metal. The modern Zeltiq procedure does this in 45 minutes in a medical office.

The cold liberates leptin directly from white adipose tissue (WAT). Cold environments induce a long buried epigenetic program in all mammals that allows for WAT to convert to brown adipose tissues (BAT) to burn calories as free heat and not generate ATP or to increase ROS simultaneously. This allows us to age more slowly, while increasing our metabolism and ability to work on less calories all while burning fat to make heat to stay warm.

We also lower our body fat while improving our body composition too! The cold temperatures also raises IGF-1 mRNA to increase Growth Hormone release tremendously. This increases autophagic efficiency and improves muscular and cardiac function quickly. **It does this all without exercise!**

The cold also increases GnRH and selects for reproductive fitness too. This is important in cold, because most mammals are pregnant during winter months. This is where the HCG link comes in for mammals. They use HCG as a turbo boost to burn fat stores from the summer months as they fattened on carbohydrates. This is where Gary Taubes was partially correct, but he failed miserably on how we are designed to get rid of the fat because he did not know anything about leptin. Ditto for Dr. Lustig. They both came late to the leptin party. This fat fuel feeds their growing fetus. Leptin controls all oocyte and placental function in all mammals. The lower leptin levels are, the more "safe and sound" the pregnancy will be.

Anorexic / ED / Obese People Caveats: The corollary here is that the more LR a mammals is the more problems they have getting pregnant or staying pregnant. In cold, leptin is at its lowest levels and the mammals is leptin sensitive because of increased receptor binding affinity.

Infertile modern humans take note: So this means that cold environments may also improve fecundity, because cold lowers leptin in number while its receptor become supra sensitive. It is too bad conventional wisdom of modern medicine does not use this to help LR couples who are infertile. I in 7 couples in this country can not have kids because of a leptin receptor problem. The main reasons are cytokine elevations that inhibit leptin function of oocyte maturation and placental development and function.

Progesterone is a major foot soldier of leptin here to support a pregnancy. The older the mammal mom, the more critical the leptin status becomes. This is why older mothers have higher risk pregnancies. Their progesterone levels suck. And this puts the baby at higher risk for epigenetic failures. Epigenetic failures are failures of cell membrane signaling. If you are glycated you epigenetic switches do not work well. This is how transgenerational epigenetics

functions. This is where the environment meets the cell. This is why modern children are born with a disadvantages because modern life has pushed pregnancy back in a womans life cycle. Cold thermogenesis can help your fertility in a big way.

So how does the Leptin receptor flip its function in cold doc? Since cold acutely raises the serum leptin levels as it is liberated from fat, it confirmationally alters the leptin receptor to become more sensitive to the hormone level as it is liberate from the WAT. This process is a function of physics, (quantum) as all steroid receptors have higher affinities for their receptor molecule. This implies that even if a person has low hormone levels in a warm adapted state once they become cold adapted it does not matter!

Non scientist alert: Cold is your optimal hormone maker and you don't need a doctor to do it! Cold Thermogenesis can be done in your home! Your inner masterpiece is literally inside of you right now, if you learn how to tap it. This was my Michelangelo moment.

STEP 5: As leptin rises in the serum, It gains much easier access to the brain because Triglyceride levels are low when its cold and you're not supposed to eating carbs! Wild mammals have no problems with this rule but mammals who can control their environment always seem to. This mismatch cause inflamamtion at our gut lining and raises IL-6 , TNF alpha, and NF kappa beta.

All three block leptin from getting in to the brain! So if it can't get in, it does not matter if the leptin receptor is set to hold on to the leptin hormone tightly in a love lock. Here is another reason "starches" are not safe in winter period. This is also why diabetics why are told to eat carbs year round never get better! Diabetics need winter and cold more than they know. Diabetes is not a disease. It is normal physiology missing winter. Cold is what reverses their

metabolic syndrome completely. Eating carbs in autumn or winter can alter leptin entering the brain at the hypothalamus to derail the ancient pathway before it ever has a chance to work.

NS moment of clarity: This is why diabetics die early. The ACCORD Trial data just showed this. No matter the treatment diabetics get they die 6 years earlier. Change the channel in your head now. If you live within the cold of winter the ancient pathway reverses your metabolic derangement and it confers health and longevity. This is 180 degrees opposite, what a diabetic faces. If you want an optimal life you must live within the confines of this pathway at all times. This process is a life saver for a diabetic.

Reunite: When Leptin enters the brain it binds to the leptin receptor tightly. It hugs that receptor like a baby latches to a boob when hungry. It then shuts off all hunger signals rather abruptly in the brain. I am talking like lightning fast. **People in cold have no hunger cravings.**

STEP 6: Simultaneously, The cold also raises IGF-1 (Growth Hormone) levels. When IGF-1 is raised by cold it allows us another shocking benefit. It blocks the action of TNF alpha apoptosis of brown fat. Leptin, is also now indicted as a co murder too. (it causes fat apoptosis) See below.

Non scientist alert: Leptin and IGF-1 are the mafia hit men of your fat cells in cold. They just melt your fat cells from your body, by killing them **permanently!**

Geeks are up: The cold decreases our WAT but it also favors formation of BAT. Paracrine factors synthesized by BAT include nerve growth factor (NGF), vascular endothelial cell growth factor (VEGF), angiotensinogen, and NO. The secretion of NGF occurs primarily from proliferating brown pre-adipocytes and in this capacity is believed to promote sympathetic innervation of the tissue which in turn permits

increased norepinephrine stimulation of the cells in BAT to allow the mammal to liberate calories as free heat and not ATP to generate energy.

Irisin from muscle, stimulates the formation of BAT from pre adipocytes in WAT, in the face of extreme low leptin levels with low cortisol levels. **The leptin levels get rid of the extra adipocytes via cell suicide.** Told ya' leptin was the Quilt's bad ass hormone. There is no need to store fat when you need free heat to survive.

This is precisely why Sherpa's exhibit unreal REE, RER and V02 max measurements compared to the climbers they help reach Everest's summit. Their metabolisms are so fast that they have to eat pure butter and lard for the last 2000 feet of the climb to Everest's peak to maintain weight!

WIM HOF Alert: This is why you are a rockstar, Wim it is not the Tummo!. Do not let anyone else tell you otherwise. You remain the best example of the Ancient pathway on this planet today.

PALEO 1.0 and 2.0 dogmatists: Warm adapted mammals wrongly believe that you must increase muscle burning to get rid of fat. That biochemistry is only operational in warm light entrained metabolisms. It does not work that way in cold adapted mammals!

Geeks and Non Scientists unite: Do we have more proof of this in humans. Yes, I do. It comes the frost bite data on young children. When they get frostbite on their faces plastic surgeons realized that they could never repair the fat losses because the fat cells just vanished permanently. This was reported in the literature in 2008. Guess where? MGH at Harvard is the correct answer. Right under the noses of Paleo dogmatists too. Guess what those plastic surgeons did with that observation. They made a company called Zeltiq and became millionaires on the backs of fat humans. You can now go to any

plastic surgeon and ask for cool sculpting or Zeltiq and have your fat frozen away in 45 minutes with a metal plate. It cause apoptosis (for the GEEKS) and is called permanent fat loss for NON SCIENTISTS. For the dogmatists, it's called a biologic reality check.

Immunity too, loves it's alpha mSH from POMC. Evolution's Leaky Gut Rx is right here folks

NS: Say good bye to adrenal fatigue and adrenal issues.

How? Remember POMC proteins we talked about earlier?

Reunite: POMC cleaves into alpha MSH and ACTH! Both rise huge! Clarity moment for all you afraid of the cold! Your brain is wired to raise ACTH and optimize cortisol in cold. Can I hear a Hallelujah from the followers!

The activation of these programs in BAT has another more clever evolutionary role. It allows for activation and repair of the immune system to protect us maximally when we are facing a chronic caloric deficits to survive chronic seasonal cold temperatures. Cold thermogenesis actually strengthens adrenal function by increasing alpha MSH levels across the entire genome and really is the key to the biochemical pathway. These are the ancient leptin- melancortical pathways. Normally low dietary calorie densities lead to a failing immune system in new born mammals. In cold we do not see this. Polar bear cubs are born in the dead of the winter and live 3-4 months before they emerge from the Den the first time and rarely die from immunity. They die because of starvation once they are out in the environment. Momma is their main food source, not the polar arctic's food chain.

Thyroid too?

All reunite: The warm adapted story of metabolism and biochemistry you hear regurgitated everywhere on the net

Once leptin enters and binds to its receptors, it effects the lateral hypothalamic tracts to immediately send a second messenger signal to the thyroid to signal it to up-regulate thyroid function and efficiency. See when we are warm adapted it requires help to partially access this pathway from T3 hormone. If you are LR you never can access this pathway. This specifically is how we can raise our basal metabolic rate when we are leptin sensitive. These coupled events, matched with leptin's actions peripherally in muscles, occur at the UCP3 sites to burn fat as we sleep at a higher basal metabolic rate. This means electron chain transport does not make ATP as usual. Something unusual occurs in the matrix to alter the metabolic rate during sleep. When leptin allows this uncoupling to occur we make heat and not energy from normal metabolism. This means we will burn off our excess calories as pure heat. This is one reason why calories in and calories out argument makes no biologic sense once you understand how leptin works. Humans are built to burn fat at night as we sleep to lose excess weight we don't need. This is our modern day equivalent of hibernation. Our big fat amazing human brain got rid of winter sleep and took over a two hour window during sleep to replace it. CT-7 covers the gorgeous symphony of human circadian biology. Since it shrunk our risk of mismatches has risen exponentially. This is how your brain or feelings, can undercut you, when you are unaware of what a sped up epigenetics meant to human mammalian biochemistry.

Skeptics: You wanted data, and now I am killing you with it.

The cold adapted human thyroid FXN: does not bother with T3 at all. Why? When you are supremely LS by cold you go straight to the source, the hypothalamus and make TRH from the brain. The brain controls all thyroid function in cold. Forget the Moose thyroid.

Skeptic Bomb: You bypass all hormones and TSH too. TRH drives the whole show. The brain is completely in control and it up regulates fat burning everywhere. This is how the Ancient

Pathway lights your pilot light. The warm adapted human always complains about the cold and always feels cold. The cold adapted one is always pink to cherry in cold radiating heat like a furnace. You can thank TRH for this. This does not even require a thyroid gland either. Is not life grand in the cold, folks?

Sleep is better too, Doc?

During sleep however when our temperatures are lowest, there is autophagic repair constantly ongoing to help repair the immune system. This phenomena is not seen in mammals in warmer environments. Our metabolic and immune functions actually increase because of better autophagy due to calorie restriction and heightened DHEA levels from the cold. Better autophagy also favors deep sleep because it severely lowers IL-6 levels. Remember IL-6 is a structural relative to leptin too. This is why it is easy for mammals to sleep deeply in winter months under ground. In the warm adapted mammals the biochemistry books say the opposite is true. They report those mammals have high levels of inflammatory cytokines increase temperature to allow macrophages work better for immune surveillance. That is true in warm adapted but not in cold adapted ones.

Sutherland Simpson has shown that during deep anesthesia a warm-blooded animal tends to take the same temperature as that of its environment. He demonstrated that when a monkey is kept deeply anesthetized with ether and is placed in a cold chamber, its temperature gradually falls, and that when it has reached a sufficiently low point (about 25°C in the monkey), the employment of an anesthetic is no longer necessary to maintain anesthesia. Pretty nifty trick for a surgeon to know. The animal becomes insensible to pain and incapable of being roused by any form of stimulus; it is, in fact, narcotized by cold, and is in a state of what may be called "artificial hibernation."

Once again this is explained by the fact that the heat-regulating mechanism has been interfered with. Similar results have been obtained from experiments on cats. I believe the same is true in humans as well because I tested this on me.

NS: Isn't temperature just amazing? Flip it on, and we become superman. Who knew? Who would have thought this? Still thinking all that published research is really worth something to ya' now?

Implications of the ancient pathway:

Non scientists: No, you do not need exercise to induce fat loss. Major myth propagated by warm adapted modern hominids. They really buy it because they don't walk on the wild side of our biochemistry. Wil Hof does and so do I. In the cold adapted, the rules of engagement change. In fact, you can lose weight with no exercise at all! Yes, I went there. Remember mammals don't do WOD while they are hibernating!

Geeks: This means that a cold environment (skin temps 50-55 degrees) selects for heat production no matter what the light cycles or the thyroid status says it is on any hormone panel. Anyone who thinks you need carbs to up regulate your thyroid to get you to burn fat just does not understand how we are designed to work in a cold environment. It appears long light cycles and warm temperatures allow for apoptosis for BAT and the growth of WAT in all mammals.

This is why we do not see much BAT in animals that live in the tropics or in humans as they grow into a warm adapted habitat. This includes modern day hominids. This is why many modern day doctors and consultants believe that carbs are needed for thyroid function. Not true if you know about the cold. They don't and now you do.

Non Scientists: Cold eliminates appetite and hunger period. This makes calorie restriction an easy thing to

complete. This means we live longer. Really Doc? Yes, and here is why: anytime we increase REE in mammals in cold it calls for reduced calorie diet; because of this we generate less ROS at the inner mitochondrial membrane. This means that cold thermogenesis will likely extend survival because it selects for **longer telomere lengths!** To me this information is the most shocking revelation of the evolutionary biology of the leptin receptor.

Are you now starting to see why you feel so good since you trusted me and jumped in the cold water and did not listen to the elitist Paleo 1.0 or 2.0 bloggers? See, I am on your team, and I have been looking out for you because I know something very few do. Now you do too. And I am cashing the check I promised you all, right here and now. Considering the great adaptations this pathway holds, it amazes me why the rest of us are not using it routinely, or why the unhealthy skeptic would not at least try it, as Robb Wolf might say, for 30 days.

Geeks: When leptin is liberated by any biochemical method is generally reduces appetite and all feeding behaviors. Cold environments not only liberate leptin but they also liberate adiponectin while creating an increased production of alpha MSH and ACTH from the POMC protein made in the hypothalamus. Ok, time to hurt your head with some brain biochemistry. Sorry in advance.

The first key was the SCN modulation switch that killed the theory of safe starches, the second shocker is what happens in the hypothalamus with cold because of leptin.

The cold receptors of the skin signal the brain two ways. One is through the brain gut axis (in the mouth, CD36) and the second is via the spinal cord directly from the cold receptors. The chronic stimulation of the cold receptor turns on the production of alpha MSH and ACTH. When ACTH acutely rises your sense of well being rockets northward. We are not

talking a small amount either, we are talking a large amount. Real large. If you have been an estrogen collector as a warm adapted hominid (most are too) you will notice some bumps as you adapt. Fear not. It soon shall pass.

Just up your B12, B6, and your betaine HCL acid as you induce CT protocols. So large the increase of alpha MSH and ACTH, that cold adapted mammals tend to have darker skins and the best attitudes even under constant assault. (Think Inuit, Sherpa's or Monk dark)

The Hypothalamic Cold switch of the Ancient Pathway:

Non Scientists and Geeks unite: This large surge in α MSH acts as a "switch" for our neural biochemistry; it triggers immediate oxytocin release centrally. The high oxytocin levels stimulate the endocannabinoid production from the PVN as well. When both of these hormones are raised simultaneously, it inhibits the release of oxytocin peripherally in tissues. All these hormones are made from POMC which is created by AM sunlight in the retina.

It was recently showed that central injections of α -melanocyte-stimulating hormone (α MSH) also inhibits oxytocin cells, and reduces peripheral release of oxytocin, but induces oxytocin release from dendrites. Dendritic oxytocin release can be triggered by agents that mobilize intracellular calcium. Mammals all have cold receptor systems that use calcium gated receptors. This is why Cold thermogenesis only requires the skin temperature modulation to gain entrance to the pathway.

It also makes evolutionary sense because the skin and gut are far more exposed to the elements than the core cold receptors are so it makes the system far more sensitive to the environment as it slowly changes.

The mammalian skin's cold receptors are calcium gated the TRMP8 cold receptors. Once this receptor is activated it

increases mRNA increases in MSH neurons and increases mRNA of UCP 1 and 3 within 4 hours of exposure in the brain and in our muscles. This is a very fast adapting system. When UCP 1 and 3 are raised this signal is transduced over our fluid filled cell membranes (high O_2 and O_3 content) to increase the numbers of our mitochondria in our FAT. White fat becomes brown fat and the first fat out is visceral fat! Say goodbye to diabetes.

Non Scientists: this means we just invited a fat burning specialist where our big fat stores are so we can get skinny real fast and live longer too.

Reunite: In a warm adapted mammals to be able to do this we would need to be LS and have adequate T3 hormone. We don't need any T3 in cold. Mitochondrial biogenesis is increased dramatically and WAT turns immediately to BAT and fat is obliterated. This is how evolution cures diabetes. If your a diabetic you better start embracing the cold and loving the winter. It is the key for reversing most of your big issues. No CARBS while doing it either! Modern medicine has this **ass backwards** and it is the reason no one is "**cured**".

More implications of the Ancient pathway, it is designed for optimal human longevity. Yep, I went there too. This data implies all that we currently believe about modern neolithic aging may have to be re tested in cold environments. I am pretty confident I am correct. For the last 18 months I have been running two simultaneous N-1 evolutionary directed experiments to disprove this pathway exists. Neither failed. The currency that drives this pathway is Factor X. So you may be asking now, how in the hell is this possible from the biochemistry angle? Here is another sharp turn in the road.

The ability to extend life is due to a cold confirmational change in the leptin receptor! If researchers just alter their testing environments they could use the natural power of

leptin to shut hunger off completely and allow humans to make life long calorie restriction an easy task. But what that really means is more important. All neolithic disease of aging can effectively be reversed, if we work within this pathway constantly, and not outside it constantly as modern life has dictated.

What is clear is that this ancient pathway is hardwired into all of our DNA and our brains and has not been extinguished. I think I know why too. That is also tied to Factor X. I believe that cold is a game changer for longevity and the reversal of many neolithic diseases of aging too. I think if we just change the environmental factor when we study longevity we can activate this ancient mammalian program for improved survival. It also means that humans might be best adapted for longevity to a certain environment for survival as well. These insights floored me when I was studying leptin and how I might use it to reverse my own obesity.

1.0 and 2.0 skeptics here: This theory is backed up by these findings in 2006. In November 2006, a team of scientists from the Scripps Research Institute reported that transgenic mice which had body temperature 0.3-0.5 C lower than normal mice (due to overexpressing the uncoupling protein 2 in hypocretin neurons (Hcrt-UCP2), which elevated hypothalamic temperature, thus forcing the hypothalamus to lower body temperature) indeed lived longer than normal mice. The lifespan was 12{a7b724a0454d92c70890dedf5ec22a026af4df067c7b55aa6009b4d34d5da3c6} longer for males and 20{a7b724a0454d92c70890dedf5ec22a026af4df067c7b55aa6009b4d34d5da3c6} longer for females. Mice were allowed to eat as much as they wanted. The effects of such a genetic change in body temperature on longevity is harder to study in humans, but now in the age of telomere biology I think this is soon to change too. The UCP2 genetic alleles seen in humans so far are associated with obesity so I think this link is biological plausible and very likely too. Having fun yet?

Non Scientists: The ancient pathway confers optimal living but also longevity for humans. The leptin receptor becomes super sensitive and turns on Alpha MSH and ACTH production in every neural circuit in our brain to allow us to have total metabolic efficiency. It basically lights our pilot lights of our internal furnaces. Isn't fat burning grand in cold!

1.0 and 2.0 skeptics here: Why temperature is a bigger deal for longevity than most think: [Quantum biology/Kitavins link](#)

H.M. Vernon has done work on the death temperature and paralysis temperature (temperature of heat rigor) of various animals. He found that species of the same class showed very similar temperature values, those from the Amphibia examined being 38.5°C, Fish 39°C, Reptilia 45°C, and various Molluscs 46°C. Also, in the case of Pelagic animals, he showed a relation between death temperature and the quantity of solid constituents of the body.

In higher animals, however, his experiments tend to show that there is greater variation in both the chemical and physical characteristics of the protoplasm, and hence greater variation in the extreme temperature compatible with life. This means that clinicians who base their beliefs on longevity data on lower animals might be making a big error in judgement about the effects of cold on mTOR and IGF-1 pathways.

Until the effects of thermal coefficient of the environment is studied with calorie restriction in humans and primates we may never have this answer. Understanding the evolutionary reasons for how the system evolved how might give us better insight what really is best for longevity.

Moreover, we do have some very serious data from biology and physics that show us that in polar animals their enzymes and proteins work very differently in cold then they do in warm environmental animals who have the same proteins. This implies that quantum biology is at play. We have known this

data since the mid 90's but the two fields of science do not mingle often. Psychrophilic organisms are capable of growth and reproduction in cold temperatures, ranging from $\sim 15^{\circ}\text{C}$ to $+10^{\circ}\text{C}$. Temperatures as low as $\sim 15^{\circ}\text{C}$ are found in pockets of very salty water surrounded by sea ice in our polar seas. Psychrophilic organisms have successfully colonized polar and alpine regions and are able to grow efficiently at sub-zero temperatures. At the enzymatic level, such organisms have to cope with the reduction of chemical reaction rates induced by low temperatures in order to maintain adequate metabolic fluxes for biochemical reactions. Thermal compensation in cold-adapted enzymes is reached through improved turnover number and catalytic efficiency of their biochemical reactions.

The environments they inhabit are ubiquitous on Earth, as a large fraction of our planetary surface experiences temperatures lower than 15°C . They are present in alpine and arctic soils, high-latitude and deep ocean waters, polar ice, glaciers, and snowfields. They are of particular interest to astrobiology, the field dedicated to the formulation of theory about the possibility of extraterrestrial life, and to geomicrobiology, the study of microbes active in geochemical processes.

In experimental work at University of Alaska Fairbanks, a 1000 liter biogas digester using psychrophiles harvested from "mud from a frozen lake in Alaska" has produced 200-300 liters of methane gas per day, about 20-30 {a7b724a0454d92c70890dedf5ec22a026af4df067c7b55aa6009b4d34d5da3c6} of the output from digesters in warmer climates. This implies that the same organisms in different parts of our planet with one environmental change can produce more work and energy than those in others? Sound familiar? HCG diet? Calorie restriction? Michael Phelps? Lance Armstrong? Anyone?

All unite: The point is if life can do this people! Become aware of it now! I am fine with you not believing this, but

honestly, science does not care if you believe it or not. It remains true, despite your dogma. The reality I am giving you here is a new world order for biology. It means evolution has had to face this in our past.

It also means that our biochemistry changes drastically when the environment changes. **What happens to Kitavans and Masai do not equal Inuits, Sherpa's or Emperor penguins.** It means comparing these groups are like comparing apples to oranges, but we see many in the blogosphere make that error all the time.

This is why the macronutrient arguments are a pure waste of time. **The environment is what controls epigenetics and epigenetics controls how biochemistry works.** And biochemistry principles have to follow laws of quantum mechanics. Biology is not immune from them. Quantum mechanics is built in to all organic chemistry and biochemistry equations, but we remain unaware of how the effects of quantum biology alters proteins, their bonds and their atoms when extreme situations exist. So what happens in biochemistry at extremes at a sub-cellular levels to proteins, enzymes and leptin you ask?

What does cold do to subatomic biochemistry?

Geeks and Skeptics: Here comes the organic biochemistry answer that will hurt your head. As a biologic rule, all cold-active enzymes display a very high catalytic efficiency, associated simultaneously however, with a very low thermal stability. This means that as the environment cools the physical properties with proteins and their bonds radically change even though their chemical formula does not.

This is due to the quantum effects inherit in their stored energies. In most cases in biology, the adaptation to cold is achieved through a reduction in the activation energy that

possibly originates from an increased flexibility of either a selected area or of the overall protein structure. So with a thermal phase change proteins can “rewire” just as an organ can.

This is an ancient evolutionary fractal design plan, where the biology of the organism at a macro organ level, parallels the plasticity in the biochemistry at a subatomic level. This also implies that all organic biochemical levels in between where most biochemical reactions occur have to follow the laws of quantum mechanics as well. The implications here are pretty large because this means that life and enzymes and hormones (leptin) can change their function and chemistry dramatically when faced with just one single variable change the thermal coefficient of the environment they are in.

It is true for many variables found on earth but human lineage has not been affected by some of these through evolution it appears. This enhanced plasticity seems in turn to be induced by the weak thermal stability of psychrophilic enzymes in cells. These evolutionary adaptation strategies are beginning to be understood today by recent advances in the elucidation of the molecular characteristics of cold- adapted enzymes derived from X-ray crystallography, protein engineering and biophysical study methods.

So how long does it take to get into this pathway? Thought you'd never ask.

It requires 2 weeks of cold to get full adaption in humans. Cold is the most potent stimulator of alpha MSH and ACTH production. Oxytocin, like α MSH, mobilizes intracellular calcium stores in oxytocin cells and triggers presynaptic inhibition of afferent inputs that is mediated by endocannabinoids.

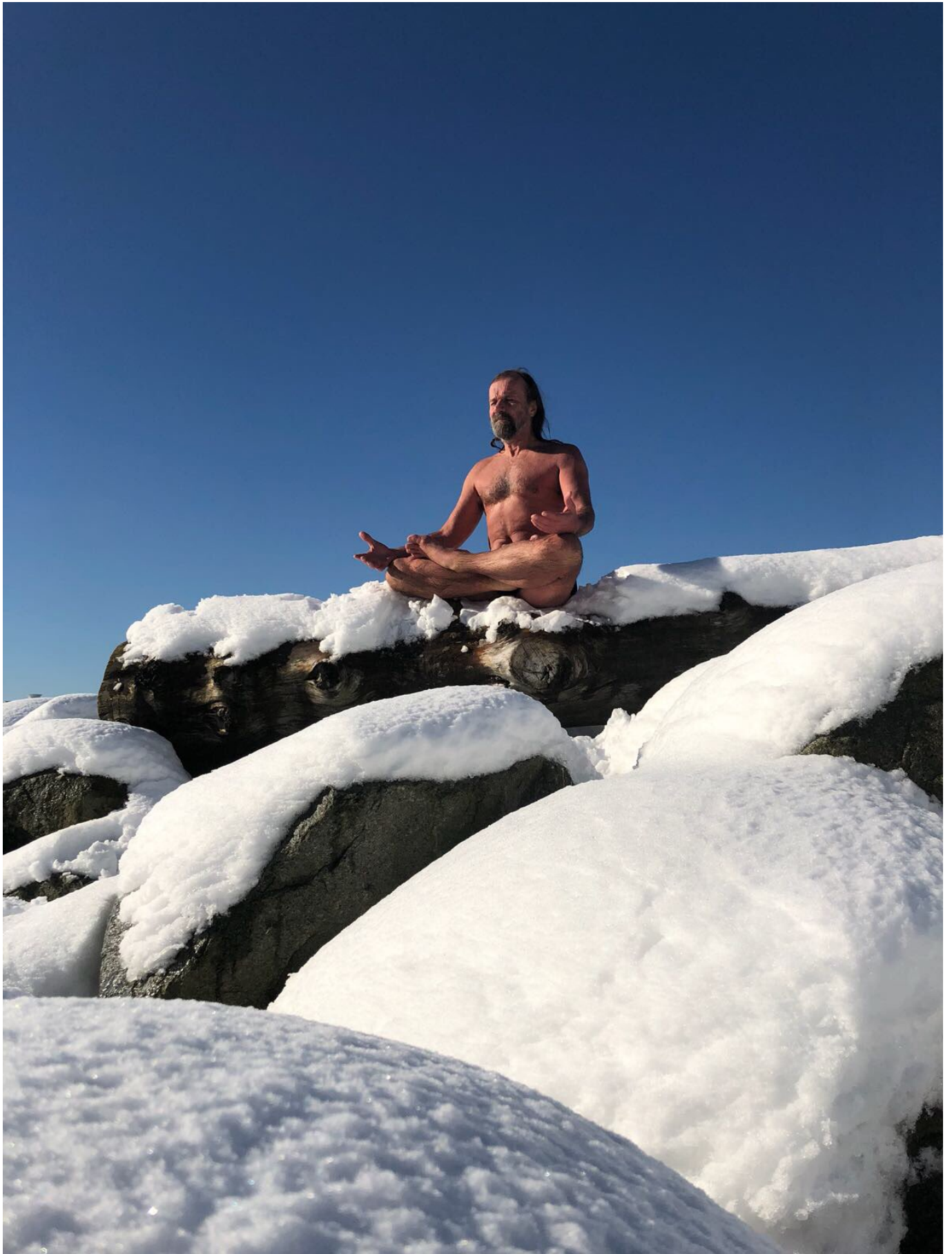
More geeky but let's reunite for learning: Normally hunger would be stimulated by this because it raises agouti levels.

But since Agouti uses calcium to be activated, and since calcium is driven down in cold as I mentioned earlier, you have no hunger even though you have low calories and low leptin levels. All of these things should be which should be highly stimulative to hunger, IF IT WAS WARM. That is what the biochemistry books say. This is where the Holy Trinity comes in. It takes the best of CRON and the BEST of HCG and allows us to eat hardly any food at all and not be hungry while our body is burn all our fat to make us this and it increases our body composition because our growth hormone and sex steroid hormones are tightly bound to our receptors firing on all cylinders.

To prevent the natural decline in fat mobilization with a calorie restricted diet, cold thermogenesis is the only permanent alternative way to stimulate leptin release to decrease muscular malonyl-CoA. There is another non permanent way do to it with the fat burning hormone called HCG. The problem with HCG it's effects on this system do not invoke the epigenetic programing changes in the liver or brain because the hormone is only active in human pregnancy.

It is not designed by evolution to work full time, just for nine months in the placenta to liberate fats for fuel. It appears to also work on the muscles and on the endogenous opioid system to gain some of its effects. This is why it works clinically, and it has little to do with the restricted caloric diet. Anyone who is warm adapted and employs a calorie restricted diet of 500 calories immediately raises their cortisol which turns off their thyroid by turning all T3 and T4 to rev T3. This is basic warm adapted biochemistry 101. This does not happen on the HCG diet. But its effects are short lived for the reasons previously mentioned and that is why people have to remain on protocol for it to work. Not a good long term strategy, if you ask me. But it does work, so I hope all the bloggers and paleo hackers out there can stop name calling the HCGers. Moving to Fairbanks and beginning to

swim in the Arctic Circle , maybe be a better long term move for a couple of years until the fat is gone! Wil Hof supports this message.



Cold thermogenesis allows for a constant supply of fatty acids to continuously enter the mitochondria where fat is turned to

free heat to allow the mammal to tolerate the cold and where the brain is rewired to allow the liver, heart and skeletal muscle to survive on a ketogenic diet indefinitely for long-term survival.

This evolutionary adaptation provides substantial fuel for the body while not depleting blood glucose. This is how mammals naturally adapted over time and why they were naturally selected for by evolution in their environments. This adaptation optimized fat utilization to prevent the need for the body to use lean tissue reserves during extreme caloric deficits. This is why mammals were ideally adapted for hibernation too until they got too smart for their own genes sake.

Non Scientists: This means we get big ass muscles, lose our fat, and our ability to perform tasks rises beyond belief, while we do no exercise! Got it! This is the road to Optimal we all want that no one thinks exists. It does. I found it, and live in it a lot these days.

Reunite: Our biochemistry changes when temperature changes at the hypothalamic level. This implies that biochemistry also “rewires” as the organ rewires. Cold is very thermoplastic in all mammals. Thank god, our ancestors were all mammals, huh! I know you’re all saying it can’t be true doc, can it? If it were, wouldn’t everyone would be doing it?

Clarity Moment: Yes, if they knew about it. They do not. It has been in the human blind spot for millions of years because we do not live in these areas of cold and we evolved in the middle of Africa just 2.5 million years ago. the other problem is that since no one knew it existed the smart humans (Paleo 1.0 and 2.0 folks and their researcher’s buds and all those trainers.nutritionists and dieticians) never studied it.

NASA found it in the 1960’s and then tested the Sherpas. Albert Schweitzer and Weston Price saw it in the

Inuits in the 1900-30's before they were polluted with the SAD. Then their biochemistry vanished. Most modern biochemistry books were done in the 1950's until today. That is why they do not know. **And because they do not know even today, it has become a neolithic thought that has subjugated your paleolithic genes. It is time you are aware of this fact.** It is the biggest game changer for modern humans. Now you know it too.

I am proud to finally bring it to your attention for you to discuss and try. I tested the pathway out on my entire family and hundreds of patients. I know the truth. It's now your turn to find out if I am nuts or perceptive. It's your choice what to do with it. If you want to eat safe starches year round and slowly deplete your stem cells and shorten your telomeres as you do your WOD, be my guest. I think I would rather roll with Mother Nature, on the path to Optimal health. I have for a long time now, so have my patients.

Radical Rule Number 9: Biochemistry is dictated by this ancient pathway. Warm adapted biochemistry does not apply to a cold adapted brain

Skeptic Alert: If you still doubt this you will pay a huge biologic toll.

All biochemical reactions are thermoplastic in life. This means that many of our assumptions are based on what we know to be true in our current environment and not the ideal environment that sculpted out genome. These are all unexpected results when you consider the content of any modern day conventional biochemistry textbook you read. Why is that? It's coming at the end of this monster series, I promise. I can't give it all away.

Neglected geeks: So let's review this again from another biochemical perspective. Simulation of cold in studies have shown administration of a fatty acid synthase (FAS) inhibitor

(leptin) to the central nervous system in obese mice, dramatically reduces feeding behavior, with the increase in hypothalamic malonyl-CoA concentrations.

These findings show that during very-low-calorie diets (think HCG use in humans), a stimulant of a FAS inhibitor like leptin or alpha MSH, would raise malonyl-CoA levels, and decrease the expression of NPY and AgRP to destroy hunger to allow you to actually exist on 500 calories. The reason so many Paleo's pound HCGer's is because they are clueless about how cold thermogenesis pathways work.

Clinically this would sustain satiation for longer periods of time with less food. So what could fully induce this program? Cold environments with low light levels are the evolutionary medicine response I give now. This is where the Holy Trinity meets Optimal. I am inclined to believe this is precisely how the injectable form of HCG allows people to subsist on 500 calories without hunger.

I think the reason the injectable HCGers find they need to continue with the protocol to maintain their weight loss is that they are not controlling for the thermal coefficient of their environment while on HCG. Ironically, most of those patients do report feeling cold, too, on the HCG protocol. This is no mystery. It has to do with the activation of the cold receptors in the CNS/spinal cord by the HCG itself. The pathway does not activate fully because of the lack of action on the cold receptors of the skin.

The brain is expecting the signal so it appears as a sensation to the women who use HCG from the unopposed spinal cord receptors in the CNS. **HCG, in my opinion, is a partial agonist to this ancient pathway.** My bet is if HCG was tested in colder climates, in a human adult, it would be might be beneficial for weight loss because it would use leptin and alpha MSH as its tailwind hormones to induce more permanent fat burning while increasing TRH in the brain. In my opinion,

using CT is a far better option, period.

Okay, I did not get the brain stuff. Tell me that again, Doc.

Non Scientists: All these proteins and hormones allow for some amazing adaptations and behaviors in humans because of the cold.

Reunite: These signals should dramatically reduce feeding behavior in cold. They all do. The peripheral cold receptors also send signals to the brain's higher cortex signaling that something has dramatically changed in the peripheral environment. The cold releases large amounts of leptin from all stores. This increase in serum leptin is very steep and sustained over weeks to months, and is simultaneously registered in the human hypothalamus by forcing NPY and AgRP (agouti) to very low levels.

When NPY is low the dietary needs for carbohydrates diminish and should be eliminated. IE: biology does not expect to see a banana in your mouth in the winter at any point and if you see it there you will pay. (**NS:bye bye safe starch theory**) NPY is also known by neuroscientists to drive carbohydrate cravings in all humans. NPY is high in high light levels and low in cold environments. This makes sense because carbohydrates do not grow in low light or cold environments, so evolution is acting in a congruent fashion with the normally expected biology correlates. Evolutionary biology has no built-in answer for carbs in winter period. So, if you eat them you will pay a huge biologic price.

NS: Fig 1 is modern man of this axiom. See our modern mediocre diabetic species loaded with neolithic disease and lots of little fat humans to follow for generations because of our sped up epigenetics. Still with me, nonscientists (NS)?

Geek Fest: The fall in agouti related peptide completely destroys our appetite. This also makes evolutionary sense if you think about it. If one was in a winter polar hellhole, it

would be wise to control hunger since food is quite sparse in a short growth season. This would allow the animal to exist on a low to no calorie diet for an extended period time to survive. This is precisely how present-day eutherian mammals survive the polar winters.

Since we are descended from them this program is built into to our DNA too, even though we rarely use it. **But guess what, .its there and I found it in my neurosurgery books.** this pathway completely explains the modern Sherpa's ability, it explains Wil Hof, Phelps, Armstrong, NASA's astronauts and Schweitzer's 1913 reports on the Inuit.

Reunite: In the summer, polar mammals become IR eating many seasonal fruits and tubers and they develop IR which signals their hypothalamus that it is time to den and hibernate. The carbohydrate gut signal causes sped up circadian clocks of the gut ATPase. Carbs are very stimulatory to the chemical clocks in our cells. This acute large dietary load of carbs then causes an inefficiency at the Mg/ATPase. This means that Magnesium levels drop and we do not make ATP well. We become metabolically inefficient.

Our DHEA levels fall and we get the sense of lost energy. We also lose autophagy efficiency of sleep. This is all seen in modern diabetics worldwide. See, diabetes is not a disease. It is how mammals signal for the coming winter. It how evolution told us we are too account for seasonal time. We just created a perennial summer with 24/7 access to carbs and negated winter entirely with warm clothes, warming seats in Escalades, LED TV's and iPhones, and heating systems in our houses. See evolution has no plan for that either. If you avoid winter you pay for it in disease. Our brains rapid development caused this major mismatch. It's time to pull your head from your hindquarters and realize it too. You control all the cards here.

Just in the last three years, were learned that all mammals

have the ability to alter their cell membrane fatty acid content to improve fluidity in cold temperatures. This signal is then sent to the stromal cells where omega 6's levels are higher and there is a rapid replacement of omega 6's fats into cell membranes prior to hibernation. Amazingly, recent studies showed, the amount of so-called "n-6" polyunsaturated fatty acids (those with the final double bond at the sixth position) in the membranes was found to increase dramatically before the start of hibernation, apparently to prepare the body, and particularly the heart, for operation at very low temperatures.

Consistent with this idea, the transition to a higher content of n-6 fatty acids in membranes takes place extremely rapidly just before the animals enter their hibernation chambers. The changes are reversed, again over a short time, around the termination of hibernation in spring, when the animals return to a life at high body temperatures and circadian biology is entrained to photic signals and they get as carbohydrates reappear in longer light cycles. This carbohydrate presence increases NPY in the brain and the leptin-melanocortin pathway is closed until it is induced by cold in a cyclic fashion.

These adaptations allow mammals huge advantages at the polar regions. These animals are then able to go 4-6 months in a deep sleep without eating or drinking and survive with no problem at all. They are also resistant to the pain of cold too. This is why diabetics also have chronic pain so often and neuropathy. It is reversible too. Why do I know that? I have done it and I ran some interesting experiments to prove it. That will be in the book.

Why can mammals who are cold adapted resist pain? Chronic cold lowers IL-6 and leptin levels, which signal the brain through the skin, mouth, and gut. This signal results in elevated hypothalamic alpha MSH and ACTH secretion by the POMC neurons. POMC is a hypothalamic protein. Elevations of POMC also explain why the native Inuit and Sherpa's have tinted skin.

Tinted skin also is protective against the cold. I love when a story comes together, don't you?

Reunite and hold hands. We're going on the rollercoaster one more time. Take a breath. Alpha MSH and ACTH cleavage from POMC is activated when this set of circumstances is called for by the environmental triggers. High levels of alpha MSH also raises DHEA levels while reducing IL-6 levels so that sleep is naturally selected for as well with this epigenetic program. When DHEA raises it increases the efficiency of autophagy.

This makes low caloric density possible because the requirements for nutrients drop as the mammals become more metabolically efficient. The reason this system exists is that mammalian evolution called for it at one time because all life depended upon it. Was it life's origin, who knows, but it works this way

100{a7b724a0454d92c70890dedf5ec22a026af4df067c7b55aa6009b4d34d5da3c6} of the time.

90{a7b724a0454d92c70890dedf5ec22a026af4df067c7b55aa6009b4d34d5da3c6} of all life on this planet still lives in these climates in our ocean depths and in the polar seas. This is also true in the alpine and deep tundra regions of our planet today. It used to be the normal program of all mammalian life on our planet, but in modern times that has changed radically. Today, we make up part of the 10{a7b724a0454d92c70890dedf5ec22a026af4df067c7b55aa6009b4d34d5da3c6} who have naturally adapted away from this program. But we think somehow we are so special.

(Neolithic thought cutting your knees out from under you) But be very aware that this program is hardwired into our DNA in every mammal on this planet, including us. If you eat outside its cycle you pay a huge price. I know because I take care of those prices in surgeries and disease statistics and you all see what Disney and Walmart visits have become in modern times. Both places littered with obese humans who use

motorized carts to get around. The proof is everywhere you look when plug in what I am sharing with you.

Radical Rule #9: It appears modern humans have found that partial activation of this system is possible with injectable HCG, CRON, metformin, turmeric, resveratrol, the modern paleo diet, and low leptin levels. None of these work well individually unless they are all coupled together simultaneously. The Ancient pathway shows its power when all are present together.

Today's beliefs about the paleo diet are just partial truths. They are true, but the benefits are greater when you marry the optimal diet with the Ancient Pathway. The modern paleo diet is just a part of this gorgeous pathway in our human brain. It will not work unless all conditions are met in unison. This implies anyone who uses a part of the pathway is only tapping a small part of optimal living. Add them all up, and well you probably won't believe some of the things you might be able to do from this night forward. I know I still can't fathom it all, after 6.5 years.

So how does biochemistry work in us normally when we are warm adapted?

Geek Alert: In the normal thermic environment most humans are in today we see dramatic increase's in skeletal muscle leptin sensitivity while simultaneously decreasing muscle malonyl-CoA needs. When this process occurs it triggers a metabolic pathway that determines whether or not fat is used for energy by the mammal or not. Muscle malonyl-CoA is a potent allosteric inhibitor of a muscle enzyme called carnitine palmitoyltransferase (CPT-1). CPT-1 opens a "door" on the inner mitochondrial membrane. It allows for the entrance of fatty acids to enter the mitochondria and be converted into energy. When CPT-1 is deactivated by muscle malonyl-CoA, entry of fatty acids into mitochondria for β -oxidation is

inhibited. This means no fat burning is possible.

AMPK is deactivated and it activates the enzyme Acetyl-CoA carboxylase (ACC). ACC creates malonyl-CoA, which inhibits CPT-1, and thus reduces fatty acid oxidation. It allows human to adapt by burning other sources of fuels in the muscles layers and saving the fat for long term survival. After eating, when blood glucose and blood leptin levels increase, the activation of AMPK deactivates ACC, which decreases muscular malonyl-CoA. As muscle malonyl-CoA declines, CPT-1 activates and opens access for fat into the mitochondria, where energy can be supplied through β^2 -oxidation. This explains how eating food, that is not yet in a form that can be captured as energy, can stimulate the use of stored fuel for immediate use.

Non Scientists: When you eat a warm adapted safe starch diet you can follow the research in today's books and all the conventional wisdom of modern man. You can also find these proofs in most paleo 1.0 and 2.0 books. You will likely die earlier than normal, and you will get diseases you don't want either. The more you work out to avoid a bad body, the faster your life force depletes. But you will have a good looking body for a time before it falls apart too. Think Arnold Schwarzenegger or Grete Waitz. If you chose to limit your carbs, and not work out like a nut at a WOD, you won't die early, but some bloggers will make fun of your skinny fat and other body parts. Both groups will have lots of fertility problems too. Think hypothalamic amenorrhea, eating disorders, hypogonadal failures, the need for in vitro fertilization and expensive doctoring, etc. It is called the world you live in today.

Cold Thermogenesis is the primordial mammalian biochemistry. Let's see optimal now.

Geek Fest: Cold has more effects on cardiac and skeletal muscle. Cold thermogenesis activates a program in the brain

that stimulates the skeletal muscle to increase fatty acid oxidation (fat burning) and this chronic exposure increases resting energy expenditure (REE). REE controls precisely how many calories are required for us to eat in a given day. If you look at most calculators of REE or RER they never include the most important variable,

Temperature, pure and simple. They are assuming you are 98.6 F. Cold exposure reduces the need for calories tremendously in this equation but allows us to increase our metabolic function (increases $\dot{V}O_2$ max) to thrive and improve survival. Stop for a minute and think what this means. It means you can eat less and survive while increasing your metabolic rate as you do it! This set of circumstances seems impossible.

But it is not. In fact, the Russian Federation used it to kill us in the winter Olympic games for close to 100 years. The ante was raised in 1957 when Russia beat us to space. NASA was formed and they found out about cold thermogenesis in the most improbable of places where it was cold, high and closer to space. They met the Sherpa's of Mount Everest. NASA astronauts were sent to train with Sherpa's and Sherpa's were studied by our scientists to see what "magic powers" they had that our astronauts needed for spacewalks in its extreme cold. They learned quickly that cold is a game changer for human physiology.

It created a superhuman physiology. A pathway, who does not require the human to eat or drink often and yet could sleep like a baby. One who had superhuman immunity and superfecundity. It also showed that a Sherpa had super strength and an incredible metabolic rate. Sometimes it was 400-500% above the people they were leading up the mountain.

There is a guy right now in the Arctic named Wil Hof, who does all this stuff now but has no clue why he can do it. Ray

Cronise is working with him too now. He believes his mind is special and confers to him these amazing abilities. I am here to tell you he is no different than you or I. That ability is built into each and every human who wants to access it. Optimal is no longer a mystery to humans, it has now become a choice for you today. I have been living in and out of it for 6.5 years.

I have done something things that would blow your mind. I expect to share some of them at Paleo fx and the remainder of this year before my book comes out. The Ancient pathway existence is why they can do this stuff, folks. It is conferred to us amazing abilities that few of us ever tap, let alone think of. It is in modern man's blind spot, but it has been partially seen in many aspects of human history. Most biochemistry books that smart organic chemists read have been published from 1950. None of them have used the Sherpa's or any cold adapted mammal to test this. this is why we don't know about it. It is hard to study something you remain blind too.

My 2012 goal was to allow sunshine to hit this pathway for the entire world to see.

It was how I how brought myself back to health. I used it on my family as soon as it worked on me and then my patients asked for help soon thereafter too. In my encore podcast with Jimmy Moore, I told you I was onto something big. Here it is.

NASA found that Sherpa's had to eat pure lard and butter to maintain their weight when they left base camp for the climb to the top and yet they still shredded weight! In the years after these discoveries, new discoveries added more drama to the story. In 1994 leptin was found, and completely explained why their metabolic rates were so amazing. It appears as the cold continues chronically, leptin leeches out from human fat rapidly and WAT undergoes apoptosis while BAT is naturally selected for.

Simultaneously, the leptin receptor becomes ultra-sensitive to any level of leptin by quickly lowering cortisol levels while dramatically increasing alpha MSH and ACTH. It is like the brain gets jolted into a new realm and immediately rewires, its abilities. Cold temperatures also sensitize muscles to leptin function and there is a quick adaptation by the hypothalamus and we see a dramatic fall in reverse T3 levels in those who are LR. The increase in muscular performance is the most dramatic in human biology. **It can create a super athlete if it used properly overtime during adaptation.**

Moreover, it appears the Sherpa's are great athletes for climbing Everest because they are naturally adapted to cold and pressure. They remain the last humans who live most of their lives in this environment, but their current diet is not optimal to use this ancient pathway because the mountains block them from the sea. This means there is more performance available to us if we optimize the diet of the ancient pathway.

Its close but its not optimal because they have no access to the sea like the Inuits do. Modern Inuits have been ruined by modern man's diet and warm conveniences, just as we have been. Our biology is built to need winter to offset the damages done in summer. This is why our species is mediocre today. It appears evolution used it before for other reasons and that is why we keep it in our brains tightly locked away for a rainy day. The Sherpa's performance, even on a suboptimal diet, still exceeds most warm adapted humans to a great degree. This should make every crossfitter stop and think. This tells you that the Cold is a big factor in all exercise platforms. Another thing a crossfitter should consider as they kill themselves at a WOD, is how come polar bears and sherpas can kill their performance when they do not eat carbs all day and do WOD in the winter months? In fact, polar bears become elite athletes by sleeping and being cold. I remember distinctly hearing Robb Wolf's podcasts saying how

important sleep really is but we don't know why.

Well, I do.

When I learned about the SCN ability to change biochemical teams, about how leptin controls the metabolic gate of the Ancient pathway's function, and how all steroid receptors increase their binding affinities in cold, it was on like Donkey Kong. I stopped settling for a D or a C when I realized an A was available to me. This amazing performance ability is what makes Sherpa's excellent guides to lead climbers to the Himalaya's summits with no problem. It also makes polar bears apex predators in the Arctic.

Non Scientists: Just get cold adapted using my protocol and eat a ketogenic paleo diet and watch your entire life change in a year like mine did.

New science has shown that this epigenetic program is hardwired in us and can be instantly implemented by anyone who understands how the system is designed to work. It can be used to counterbalance the symptoms of starvation whilst improving metabolic rates to help body composition and increase muscular strength and output while eating 40-60% less than non adapted humans.

When leptin signaling is supra-sensitized in the brain, muscle and liver levels by cold thermogenesis alone, some truly counterintuitive things occur. Biochemistry at extremes works by different rules. These rules are NEVER used in modern research on human physiology. This implies, caveat emptor on every bit of CW, or new paleo dogma, you are hearing these days.

Geeks: In cold environments in earth evolutionary history (ice ages), food scarcity explains the adaptations to thirst, appetite, and increased immunity. They also exhibit a rapid increase in the expression of skeletal muscle peroxisome

proliferator-activated receptor- α (PPAR α). This is a transcriptional activator of fatty acid oxidizing enzymes which mobilize fat for immediate use. PPAR α also up-regulates uncoupling protein 3 (UCP3) we spoke about in the post Why is Oprah Still Obese?. UCP 3 requires T3 and leptin or heightened receptor sensitivity to be working optimally for full functioning in normal environments. In cold environments, it appears the need for optimal T3 levels are provided by the immediate transformation of reversing reverse T3 back to T3 and T4 to stimulate thermogenesis peripherally.

Once this is exhausted, TRH from the brain takes over and drives our body to NIRVANA. Leptin levels no longer drive reverse T3 higher as it does in normal physiologic conditions we see today in humans. UCP3 allows skeletal muscle to turn ATP into pure heat by uncoupling oxidation phosphorylation in the mitochondria. This means per unit calorie burned, less ROS occurs at the inner mitochondrial membrane at cytochrome one (NADH). This implies that our mitochondria are "less leaky" and more efficient burners of energy.

The most efficient fuel for this pathway is a ketogenic paleolithic diet. The colder a mammal goes the more O_3 it needs for optimal cell membrane signaling. It uses O_6 's first in fall as temperatures gradually fall. See, O_6 's are not always bad. You need context. Your ideal O_6/O_3 ratio for optimal life needs to be around the 4:1 level for optimal functioning in this pathway.

It also implies that any mammal can raise its own RER and V_{O2} max easily in cold, increasing their ability to work effectively using less energy! This caught NASA attention in the late 1960's and they went to the Himalaya's to check the Sherpa's abilities. The results of this research were recently just licensed to a company in California called VASPER. One of my colleagues is an investor in this company. The data on VASPER is all NASA generated in space.

This is the best cold adapted human data on this planet because it was not done on this planet. It was done on the space shuttle and on the International Space Station. NASA has measured this in its astronauts and Sherpa's and found this all to be true. The Russian's have known about this way before we have. They have used this technology to destroy other countries athletes at the Olympic games since the 1940's when their scientists first found it.

This information is why NASA was able to reduce food and water payloads in subsequent space expeditions on the shuttle to save fuel and reduce risks of explosion. They also shared this information with the US Olympic committee. I suspect this is how Phelps and Armstrong found this out as well and it likely has much to do with their accomplishments. This is the best of all worlds to the athlete and to the mammal who needs to perform and or live optimally. (Hey Don L are you listening?)

If evolution faced the dilemma in our past, it has a plan for life to survive. I believe all life began in a frozen world at the bottom of our ocean. **Cold is the primordial condition everywhere in the universe, not just here on earth.** I think it is amazing to me that we have not realized this before now. It appears our current reality of life on land is generalized to all other places. This is another neolithic thought that keeps the Ancient pathway in your blind spot. I hope I just put some Windex on your glass eyes tonight.

Evolution's modus operandi makes order from chaos. We need to learn how to embrace the biochemistry of chaos in order to understand what we are ideally adapted to and what we are ideally adapted to eat. There are some deep biologic implications in these lessons for humans. Biology, chemistry, and physics all exhibit unusual processes at extremes. Modern life is not lived at these extremes any longer but our metabolic engines are designed to live there. This is a biologic mismatch of evolutionary design caused by Factor X.

Let's review this again. Let's all reunite and hold hands while singing kumbaya!

1. Considering that 90{a7b724a0454d92c70890dedf5ec22a026af4df067c7b55aa6009b4d34d5da3c6} of the earth's current biome lives in extreme conditions on our own planet today still, we might need to consider that what we think is "our normal environment" is not so normal for most of life on our planet or our evolutionary history.

2. **Human cold receptors:** (Geeks) Cold adaptation takes 2 weeks in humans. It is mediated by surface skin receptors and not the deeper core cold receptors. This is the cold sensory afferent loop The cold receptor is called TRMP8 (transient receptor potential melastatin-8 channel) and is a menthol receptor that is a calcium/sodium voltage-gated channel. These cold receptors wire directly to the dorsal root ganglion in the spinal roots and go to the thalamus and to the spinal cord. This organization is unusual and suggest that humans have a reason for this adaptation and an endogenous cold neurotransmitter system built into their CNS.

TRPM8 activated by cold exhibits steep temperature dependence [temperature coefficient ($Q(10)$) of $\hat{a}^{\frac{1}{4}40}$], and the channel openings are accompanied by large changes in entropy and enthalpy, suggesting a substantial conformation change. Relatively little is known about the processing of information from the skin or mucous membrane cold receptors within the central nervous system. But we do know from Dr. Jiango Gu (Univ. Of Florida) research that there are cold receptors in the human spinal cord. There are numerous nerve cells in the thalamus as well that respond only to cooling. Responses to cooling the tongue have been recorded from a single nerve cell of the brain's thalamus in monkeys and cats (Auen et al., 1980; Lende and Poulos, 1970).

Recently researchers have found how to induce cold in mammals

without being exposed to cold temperatures. The research, led by Andrej Romanovsky, MD, Ph.D., Director of the Fever Lab at St. Joseph's Hospital in Arizona have recently found an antagonist of TMRP8 to induce hypothermia in humans who are awake. Take a guess who is a co-collaborator in this research? None other than Amgen! Remember who buried the synthetic leptin trials? This link to me is very suspicious.

This is being studied at Barrow Neurologic Institute (top neurosurgery program in the USA). Neurosurgery tends to use hypothermia more than any other specialty in medicine because of the protective effects of cold on neurons. I have my eye on this research constantly. I think Amgen knows that cold is the key to many diseases and they want to corner the market on it.

3. Metabolic Trap Door: What most people do not know is how leptin plays a **massive role** in regulating the entrance to the pathway. Research has revealed that leptin can induce expression of a neuropeptide gene called vasoactive intestinal peptide (VIP) through the VIP cytokine response element. VIP actually is what sets the circadian pacemaker to light. Leptin yokes metabolism and sleep to the light and dark cycle. When the temperature becomes the dominant environmental trigger and not light cycles, **leptin induces** endothelial nitric oxide synthetase (eNOS) that shuts down the photic effects of VIP on the SCN. **THIS MEANS LEPTIN IS THE ULTIMATE GATEKEEPER OF THE ANCIENT PATHWAY!**

It also means that leptin forces the SCN not to be able to use light any longer to yoke our circadian cycles! This is what opens the leptin-melanocortin pathway in mammals. Eating carbohydrates seem to close the gate because of the neural wiring to hypothalamic NPY. **This is the main evolutionary biologic reason there are no safe starches in humans.**

4. Cold liberates leptin from WAT: If the cold is applied chronically, leptin is naturally released from our WAT and

this provides our body with an ample serum level to drive hunger and appetite to the ground. This is why cold will stop many eating disorder behaviors and it is also why those on HCG appear to get the same effect on a 500 calorie diet. It is no surprise to me any longer why HCG works partially in warm adapted humans at all.

It is a placental hormone that burns fat in pregnancy in mammals. It is part of this ancient pathway. It is just not sustainable as a long-term weight loss diet without the cold environment. This makes the HCG diet limited in its use for 99{a7b724a0454d92c70890dedf5ec22a026af4df067c7b55aa6009b4d34d5da3c6} of us, but ideal for the cold-adapted. It is like the seed in a nutrient depleted soil it grows but not all the way because of missing elements. That is the magic recipe of the Ancient Pathway. It needs all players to be present to show its power.

5. The gut control of the sensation of circadian biology is shut down by cold with increased receptor affinity binding becoming dominant body wide: The chronic exposure to cold daily increases the number of mitochondria in white and red skeletal muscle by mitochondrial biogenesis. It also causes the hypothalamus to rewire naturally the lower leptin levels by making the leptin receptor quite sensitive to leptin. This is due to the level dropping but also to the quantum effects that occur to the receptor as the cold becomes chronic because of the peripheral skin receptors.

It appears the leptin receptor is no longer acting in concert with the vagus nerve (as it does normally) but it is driven by the cold receptors in the skin's surface which are far more accurate as sensing the environment. So this shuts VIP and the gut down gut down as a sensory entrainment organ for circadian biology in mammals. This coupled with the cold and negative leptin levels make us exquisitely sensitive to leptin effects in our hypothalamus.

6. Extreme lowered leptin levels: This immediately drops our appetite while allowing us to eat very few calories. The cold has another surprise for us. It decreases CRH and adrenal cortisol production too while sensitizing its receptor to its function. This means cold can reverse adrenal fatigue by strengthening the receptor without raising the cortisol level! It is, in fact, the best way to improve your stress hormone response by ASI testing. What else can cold do? It increases our endogenous immunity too by sensitizing our receptor to Vitamin D action body wide for survival!

Observed Clinical effects of Cold:

This explains why NASA studies consistently show increases in metabolisms (RER) tested through indirect calorimeters and increased V02 max testing. This expansion occurs slowly over 36 months. Most modern athletes won't wait five minutes for the result. Hence why the modern trainers and Exercise physiologist never see it. It also completely explains how a world-class athlete can eat tremendous amounts of calories while not gaining any excess weight while increasing performance.

They become adapted to burning fuels as free heat. This is precisely how Lance Armstrong and Michael Phelps were able to increase their V02 max, REE, and RER's while increasing their muscle's ability to efficiently to move loads. After a recent CT training session, I was able to increase my bench press by 150 pounds with no training! In a recent personal conversation, I found out Wil Hof ran a marathon of 26.2 miles with no training. He also climbed to Mount Everest's base camp from ground zero with shorts, a T-shirt and a light jacket with no water or supplemental O2. I want to see any warm adapted hominid duplicate this feat. It sounds crazy until you understand the power of this Ancient Pathway.

The athlete athletes of modern times have finally discovered the benefit of cold training. The Russians have been using

the same techniques for close to 100 years now. We now know why all the Russian Hockey leagues are located in freezing cold areas. Might this be the Canadians advantage in ice hockey as well compared to US players? Physical exercise, in cold water, such as swimming causes the body to lose heat at a much faster rate than remaining still in the water.

Cold water robs the body's heat 32 times faster than cold air. Swimming or treading water will greatly increase heat loss by more than 50{a7b724a0454d92c70890dedf5ec22a026af4df067c7b55aa6009b4d34d5da3c6}. This is good for cold adaptation for sports training, but a bad deal if you fall into the Bearing Sea without training. The leptin-melanocortin pathway uses surface skin receptors to work and it does not use the deeper core receptors. This means we can induce this pathway form skin temps between 50-55 degrees safely.

If you cool too fast or drop your core temperatures you can die quickly. Evolution is about the survival of the fittest. Not vice versa. Why would one die? Blood is pumped to the extremities and quickly cooled there. Few people can swim a mile in fifty-degree water because they are not properly cold adapted. Should you find yourself in cold water and are not able to get out, you will be faced with a critical choice; to adopt a defensive posture in the water to conserve heat and wait for rescue, or attempt to swim to safety.

Swimming to safety decreases survival time by 50{a7b724a0454d92c70890dedf5ec22a026af4df067c7b55aa6009b4d34d5da3c6} due to heat loss. The loss of heat increases so fast that it induces core hypothermia faster than the brain can rewire to adapt. Studies on Sherpa's show it takes them 5 days to cold adapt in the cold air of base camp at Everest. In the people they help climb to the Summit, it take them 2-3 weeks to cold adapt at base camp. Elevation and decreased pressures also cause leptin sensitivity too. It appears that deep pressures also have the same effect. I now believe that

life has another circadian cycle that it accounts for in barometric pressures. I am now looking for that “metabolic trap door.” I know it causes an entrance to this pathway too. There is a clear pressure effect on the leptin receptor as well for a reason.

Cold adaptation occurs faster in water. In cold adaptation, this can also be turned into an advantage when one swims because it causes massive calorie burn to free heat allowing the person to eat enormous calories to offset the heat losses. NASA and high-performance athletes use cold water or ice training to complete unreal feats that most cold adapted humans think are impossible. They are impossible to imagine when you do not know how to access them.

Okay, hit me again with the biochemistry.

This material is dense, so let's review it again from a new angle. Becoming chronically leptin sensitive by cold results in a higher caloric-burning capacity because you become able to increase mitochondria biogenesis dramatically. It also sensitizes the leptin receptor affinity to bind leptin tightly. This increased affinity allows for leptin to induce apoptosis of WAT while Irisin rises and endothelial NOS increase the formation of brown fat to burn more fat as free heat. This is an inducible program that activates just from the chronic cold exposure and has ZERO to do with food or calories.

Surprise! Calories do not matter in this pathway. In fact, they are accounted for completely differently in the cold then they are on the Savana using the exact same pathways! Are you beginning to see a trend here folks? Being cold adapted confers huge advantages to mammals. You can live perfectly fine and be very healthy at the equator but no one can do what cold-adapted humans can do in cold. So living at the equator while eating tight to your circadian biology can give you a B+, but it will never give you an A+. Modern humans routinely

think this B⁺ is an A. Sorry to break the news to you, modern humans. It is not even close.

Remember the name of my website. It is Optimize Life. I don't settle for anything less than what is out there for me. 6.5 years ago I found what optimal really was about. It is now time you discover it for yourselves.

Radical Rule #9: It should be crystal clear to you now why thinking affects your DNA directly? Thinking errors are the currency of telomere biology. They create the circadian mismatches I have mentioned here and everywhere I talk. The more of these, you make the shorter they become. The toll for bad thinking is paid telomere length and not in money. Telomere length is time. Nothing is more valuable in time. If you do not believe that than you must die by your dogma.

Modern hominids do not use these cold adaptations because our brains rapid evolution has extinguished the need for hibernation from our own mammalian physiology. This keeps it in our blind spot.

When one is not using cold to prime supreme Leptin sensitivity, we expect to see patients who use the same food restriction to see a slowed loss in fat. They also undergo an increased loss of lean tissue reserves and a resulting decline in resting energy expenditure. This occurs because the cold environment is the signal that leptin and T3 use to determines which program is epigenetically expressed. When people try caloric restriction in normal environments the results are dramatically different than they are in cold.

This single issue has hamstrung longevity researchers for quite some time. They have found it extremely difficult to maintain primates and humans on these diets because the subjects are driven to eat more due to increased hunger. It appears longevity research will be changed and their results dramatically altered, just by adding chronic cold exposure to

their environments. This means what aging researchers believe today will be demolished by newer studies that employ this evolutionary magic. The results of cold thermogenesis predict that aging will be radically different when it happens in a normal warm adapted environment and a warm adapted diet. The reason is simple. Less ROS from the inner membrane of the mitochondria at cytochrome 1 means longevity is no longer limited by mTOR or IGF-1 as most research today shows in warmly adapted animals or in worms who do not use leptin as we do.

Non Scientists: IF you want to live and live well, become cold adapted ASAP, and stop listening to CW, Paleo Dogma, or anyone from cross fit. What they believe is not true in cold-adapted humans. I hope this gives you, your family, and your friends much to think about. I think I might take a break for awhile before Paleo fx and let you all “stew in these tomatoes” for a while. The implications are huge for our species. This post has transfixed my being for 6.5 years but took me forty years to put together in one place. It changed my life, and the life of those I love, and I hope it changes yours now, too.

Geeks: Thanks for hanging with me through this all.

Skeptics: Dogmatism and skepticism are both, in a sense, absolute philosophies; one is certain of knowing, the other of not knowing. What philosophy should dissipate is a certainty, whether of knowledge or ignorance. (Bertrand Russell)

I hope you enjoyed this. This was foundational work for my entire Quilt. In fact, this is my entire life's work into one massive blog post. It may be the most important blog I will ever write. I suggest you tattoo it, to the inside of your eyelids and remember it when you need it most. Time is our most valuable asset. As you age that reality will set into each and every one of you. That, I can promise.

I released the e-cookbook on my site today. I hope you like

that too. My wife was the brains behind it. I just ate all the meat and protein and let her add the rest of the stuff. LOL, That is a garnish, but she says it tasted really good.

Now let's all begin to Chase Change together!

Next up CT 7, the Circadian Biology of Humans you need to pay attention too on the road to Optimal.

Leave a Comment

More Support: Webinars by Dr. Kruse

- Factor X (May 2012)

Your Shopping List for this Post

	
U.S. Wellness Meats	Optimized Cooking (eBook)

	
Nutiva Organic Extra Virgin Coconut Oil	Nutiva Organic Red Palm Oil

- [View All Recommended Products from Cold Thermogenesis Store](#)
- [View The Epi-Paleo Store](#)

Additional Resources

- [EMF 4: Why Might You Need Carbs for Performance?](#)
- [The Cold Thermogenesis Protocol](#)
- [Cold Thermogenesis 4: The Holy Trinity](#)
- [Cold Thermogenesis 5](#)
- [Cold Thermogenesis 7](#)
- [Is Fish Oil Good Or Bad?](#)
- [So You Completed The Leptin Rx? What's Next?](#)
- [Leptin Reset Easy Start Guide](#)
- [Why is Oprah Still Obese? Leptin Part 3](#)
- [What Powers Life and Death](#)
- [How to Change Your Doctor and Your Life](#)

Cites

- Kalsbeek A, Fliers E, Romijn JA, la Fleur SE, Wortel J, Bakker O, et al. The suprachiasmatic nucleus generates the diurnal changes in plasma leptin levels. *Endocrinology* 2001;142:2677-85.
- FACTOR X hint:
<http://www.sciencedaily.com/releases/2012/02/120229091844.htm>
- Auen EL DA Poulos H Hirata and JT Molt, Location and organization of thalamic thermosensitive neurons responding to cooling the cat oral-facial regions, *Brain Res.* 191: 26-264, 1980.
- Blix M, Experimentela bidrag till losning av fragan om hudnervernas specifika energi, *Uppsala LakFor Forh* 18: 87-102, 1882-83.
- Eccles R DH Griffiths CH Newton and NS Tolley, The effects of menthol isomers on nasal sensation of airflow, *Clin. Otolaryngol.* 13: 25-29, 1988.
- Hensel H and Y Zotterman, The effect of menthol on the thermoreceptors, *Acta Physiol. Scand.* 24: 27-34, 1951.
- Hensel H and K Schafer, Effects of calcium on warm and cold receptors, *Pfluegers Arch.* 352: 87-90, 1974.
- Kenshalo DR and EA Brearley, Electrophysiological measurements of the sensitivity of cat's upper lip to warm and cold stimuli, *J. Comp. Physiol. Psych.* 70(1): 5-14, 1970.
- LaMotte RH and JG Thalhammer, Response properties of high-threshold cutaneous cold receptors in the primates, *Brain Res.* 244(2): 279-281, 1982.
- Lende RA and DA Poulos, Functional localization in the trigeminal ganglion in the monkey, *J. Neurosurg.* 32: 336-343, 1970.
- Pierau FK J Ullrich and RD Wurster, Effect of calcium and EDTA on the bursting pattern of lingual cold receptors in cats (abstract), *Proc. Int. Congr. Physiol.*

Sci. 27th 13: 1771, 1977.

- Poulos DA, Central processing of cutaneous temperature information, Fed Proc. 40(14): 2825-2829, 1981.
- Schafer K HA Braun and H Hensel, Static and dynamic activity of cold receptors at various calcium levels, J. Neurophysiol. 47(6): 1017-1028, 1982.
- Schafer K HA Braun and C Isenberg, Effect of menthol on cold receptor activity (analysis of receptor processes), J. Gen. Physiol. 88: 757-776, 1986.
- Schafer K HA Braun and L Rempe, Discharge pattern analysis suggests existence of a low-threshold calcium channel in cold receptors, Experientia 47: 47-50, 1991.
- Swandulla D E Carbone K Schafer and HD Lux, Menthol modulates calcium inactivation in neurons, Pflugers Archiv. 405: R39, 1985.
- Swandulla D K Schafer and HD Lux, Calcium channel current inactivation is selectively modulated by menthol, Neuroscience Letters 68: 23028, 1986.
- <http://www.ncbi.nlm.nih.gov/pubmed/19363131>
- <http://www.ncbi.nlm.nih.gov/pubmed/20844147>
- <http://sciencenetlinks.com/science-news/science-updates/cold-sensors/>
- Feurer I and Mullen JL. Beside measurement of resting energy expenditure and respiratory quotient via indirect calorimetry. Nutr Clin Prac. February 1986;1:43-49.
- Frankenfield DC, et al. The Harris-Benedict studies of human basal metabolism: history and limitations. J Am Diet Assoc. 1998;98:439-445.
- Garrel DR, et al. Should we still use the Harris and Benedict equations? Nutr Clin Prac. June 1996;11:99-103.
- Matarese L. Indirect calorimetry: technical aspect. J Am Diet Assoc. 1997;97(suppl 2):S154-S160.

- McClave SA and Snider HL. Use of indirect calorimetry in clinical nutrition. Nutr Clin Prac. October 1992;7:207-221.
- Position of The American Dietetic Association: weight management. J Am Diet Assoc. 1997;97:71-74.
- Schwartz DB: Pulmonary failure. IN Matarese LE and Gottschlich MM: Contemporary Nutrition Support Practice. Philadelphia, W. B. Saunders, Co. (In press)
- Shick SM, et al. Persons successful at long-term weight loss and maintenance continue to consume a low-energy, low-fat diet. J Am Diet Assoc. 1998;98:408-413.
- <http://themedicalbiochemistrypage.org/adipose-tissue.html>
- <http://www.sciencedirect.com/science/article/pii/S0167483896000957> Cold Antarctic fish
- <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1692995/pdf/12171655.pdf> Molecular adaptation to cold
- <http://orbi.ulg.ac.be/handle/2268/16252> how does protein change in cold.....
- <http://www.springerlink.com/content/f4ne8tecenrn2vl2/looking-at-changes-in-artic-life>
- <http://www.springerlink.com/content/f4ne8tecenrn2vl2/fulltext.pdf>
- <http://ajpregu.physiology.org/content/290/3/R577.full>