

BIOHACKERS

MAGAZINE

EXCLUSIVE
INTERVIEW

with ENERGYbits CEO,
Algae Nutrition Expert &
Health Coach
**CATHARINE
ARNSTON**

Also In Our **'WOMEN-POWER'** Special Edition:

- SERRAPEPTASE: THE SUPER SUPPLEMENT
- KETO AND FASTING - FOR WOMEN
- BIOHACKING WOMEN'S HEALTH
- AND MORE!



HER ULTIMATE MISSION

HER EXPERIENCE WITH
THE MIRACLE FOOD, ALGAE

THE SCIENCE & COUNTLESS
BENEFITS BEHIND ALGAE

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SEPTEMBER 2021



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Our New Categories

We've revamped our categories to bring you the same great content in a new swift order, based off pure simplicity and experience.

Outer - This branch contains concise and 'to the point' articles that just touch the surface of what biohacking is as a subject while relating to everyday life and how biohacking fits in.

Inner - This category takes a deeper and more scientific approach to biohacking. These articles focus on a more scientific and analytical theme of biohacking, breaking down more of the whys and hows behind it all.

Core - Within this sphere lie many specific and perhaps relatively new biohacking articles, all backed by science and studies, many of which are written by experts in their relative field. These articles bring it all back to the big WHY behind biohacking while connecting it to all the facts.

A LETTER FROM THE EDITOR

The importance of continual self-improvement and development cannot be understated, especially in the world of biohacking. But there is also something that cannot be overstated in this same realm of personal health and growth, and that is the vital role that women play. Often argued (and affirmed as) the more intuitive of the 2 sexes, women have and continue to push themselves and their community towards their health, wellness, and wisdom goals. In a lot of ways, men have it easy. Our bodies' instruction manual is comparable to a generic IKEA coffee table's guided instructions; not a lot to decipher. But some could compare women bodies' manuals to NASA's rocket construction directions; a lot of steps, and A LOT to understand.

Granted, the woman's body is easily the more attractive of the two in my opinion and I want it to be clear that although this statement is bias, I mean this as a more aesthetic, art-like manner. The symmetry, the intricacy, the mysteriousness, the gracefulness, just the way everything connects. Perhaps its because of this clear advantage in the beauty category, that it takes a lot to master all the processes within it. It once was said that in the beginning God first made man, but then afterwards he took a long

look at him and then told himself, "I can do better than that", and then made woman.

Women are at the forefront of biohacking and its clear that the industry would not be where it is today without them. Due to women having to figure out all of their complexities, but also having the tenacity and courage to do so, they have stood side by side with men and helped to share the helpful and needed knowledge of health optimization with the world. It is with great pleasure and respect that we dedicate this issue to all of the women in the world striving to promote good health, strong lives, and clearer minds. Although we have had and will continue to have female authors and subject matter in past and future issues, every article contained inside this particular issue is either written by a female author or purely feminine in subject matter. This is our way to take a moment to highlight and thank all those women out there doing their thing. At Biohackers Magazine, we believe, - no, we know that every woman's thought and word is just as important as every man's. And we are here to provide this magazine as the ontic evidence to that. Without further ado, enjoy your new 'woman-ful' issue!

ABOUT DALLAS MCCLAIN



Born in the USA, Dallas is a passionate reader of personal development books and a tennis enthusiast. He is the Chief Financial Officer and Editor of Biohackers Update Magazine and the co-founder. He holds a bachelor's degree in Biological Sciences, as well as a TEFL level 5 certificate in teaching

English. He is currently living in Orlando, Florida with his wife and daughter where he enjoys writing, sports, and nature hikes in his free time. Dallas can best be reached at his email:
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A MESSAGE FROM COO JEAN FALLACARA

I'm very happy we dedicated a full issue to Women! If you ever questioned yourself how different are men and women's brains? The question has been explored for decades!

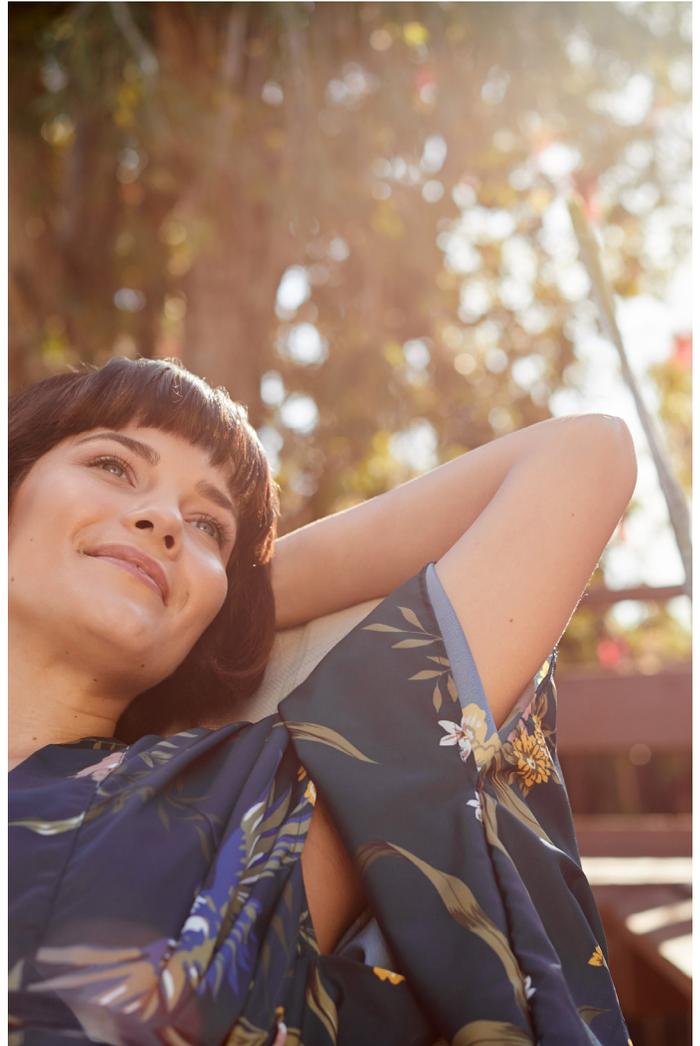
The point is that stating sex differences is equivalent to being sexist and retrograde, because there is no such a thing as a 'male brain' and a 'female brain' or a neuronal difference in "Brain body connection".

The Scientific Fact is that there are no universal, species-wide brain features that differ between the sexes! I think that statements about women being different in Biohacking have had huge impact on how we treat boys and girls, men and women.

The reality is that there is today no evidence of any type of substantial influence on human cognitive functions, including emotion, memory, perception, etc, the sole exception is made that women appear to have different ways to encode memories, sense emotions, recognize faces, solve certain problems, and make decisions.

Time for a change, One Unique World for Biohacking - Science First!

--[Jean Fallacara](#)



ABOUT JEAN FALLACARA



Born in France, Jean is an athlete, entrepreneur, scientist, public speaker and an Art collector. He is the founder and CEO of Z-SC1 Corp and Cyborggainz and the COO of Biohackers Update Magazine. He is also the author of "Neuroscience Calisthenics: Hijack your Body Clock." Jean holds a bachelor's degree in biochemistry, a master's degree in immunology and genetics, and an

engineering degree in biotechnology. He has also studied neurosciences and brain functionalities, and law and finances. He is currently living in Montreal, Quebec with his family where he uses his 20+ years of experience as a business executive.

Website: cyborggainz.com

— OUTER

***“We are all connected;
To each other,
biologically. To the
earth, chemically. To
the rest of the universe
atomically.”***

— Neil DeGrasse Tyson



BIOHACKERS
UPDATE MAGAZINE



BRAIN BIOHACKS

Biohacking is changing the environment internally and externally to “upgrade your biology.” Here are a few biohacks that can improve cognition, decrease brain fog, slow aging in the brain, and more.

Eat a Brain Healthy Diet

Food is the most essential component of a healthy brain. The brain is made from the foods we feed it. It’s critical to eat clean, whole foods. Dump the junk and processed foods, and reduce or eliminate sugar, which is a cause of inflammation. I always recommend organic!

Six standout foods for optimal brain health:

Green, leafy vegetables. Leafy greens such as kale, spinach, collards, and broccoli are rich in brain-healthy nutrients like vitamin K, lutein, folate, and beta carotene. Research suggests these plant-based foods may help slow cognitive decline.

Wild-caught fish. Fatty fish are abundant sources of omega-3 fatty acids, healthy unsaturated fats that have been linked to lower blood levels of beta-amyloid, the protein that forms damaging clumps in the brains of people with Alzheimer’s disease. Try to eat fish at least twice a week.



Organic nuts and seeds. Nuts are excellent sources of protein and healthy fats, and one type of nut, in particular, might also improve memory. Walnuts are high in a type of omega-3 fatty acid called alpha-linolenic acid (ALA), which helps lower blood pressure and protects arteries. That's good for both the heart and brain.

Organic healthy fats. EVOO is loaded with anti-aging nutrients like omega-3's, and vitamin E. Extra-virgin olive oil is also rich in monounsaturated fat, a kind of fat that is good for the heart as well as for the brain.

Cacao. Rich in theobromine, a powerful antioxidant known to support cellular aging and reduce the risk of heart disease and insulin resistance.

Berries. Flavonoids, the natural plant pigments that give berries their brilliant hues, also help improve memory, research shows. In a 2012 study published in *Annals of Neurology*, researchers at Harvard's Brigham and Women's Hospital found that women who consumed two or more servings of strawberries and blueberries each week delayed memory decline by up to two and a half years.

Deep Sleep

This is extremely important. Prioritize sleep and ensure you are getting proper deep and REM sleep. Adults need 7-9 hours of quality rest each night. During sleep, your brain's glymphatic system is activated. This is the system that clears waste and cellular garbage from your brain. Lack of sleep decreases blood flow to the brain.

Tips to optimize sleep: Keep your room cool (65-68 degrees F, keep your room pitch black, wear blue light blockers before bed/turn off screens 60 minutes before bed), stop eating 3 hours before bed, ensure your magnesium levels are optimal, if you supplement, I recommend magnesium threonate, this form can pass the blood-brain barrier the easiest.

Meditation

Meditation has been proven to increase gray matter in the brain and allows your brain to rest. Meditation can be more effective than napping in terms of the restfulness that it provides the brain.

Ozone

I love to drink ozonated water weekly or do few HOCATT sessions weekly. Ozone can reduce inflammation. Reducing systemic inflammation in the body and the brain and gut is incredibly beneficial to overall health. Chronic inflammation often leads to chronic diseases, and by managing systemic inflammation, you are reducing your risk. Inflammation in the brain can lead to brain fog, ADD, ADHD, and other cognitive disorders. Ozone also boosts blood flow to the brain, helps to reduce senescent or zombie cells, can kill bacteria, viruses, pathogens, and more.

HBOT

One of my favorite brain biohacks is Hyperbaric Oxygen Therapy or HBOT. HBOT involves breathing almost pure oxygen. The body's tissues need oxygen to function, and additional oxygen can help damaged tissue heal. Oxygen at high pressure can enhance tissue function. The ambient pressure inside the chamber is three times higher than the air pressure that we typically breathe. Breathing almost pure oxygen at this pressure can increase the oxygen concentration available to the lungs by up to three times. HBOT is often used to treat TBI's or Traumatic Brain Injuries but provides impressive improvements for general cognition, can lower anxiety, increases blood flow to the brain, and more. A new study from Tel Aviv University (TAU) and the Shamir Medical Center in Israel indicates that hyperbaric oxygen treatments (HBOT) in healthy aging adults can stop the aging of blood cells and reverse the aging process. The study discovered a lengthening of up to 38% of the telomeres, as well as a decrease of up to 37% in the presence of senescent cells. In order to explore HBOT you'll need to find a location with a chamber near you. I've found that they are more common than you would imagine.

Vagal Nerve Toning & Toning Devices

The vagus nerve is the largest nerve in your body and runs from your brain to your ears, tongue, lungs, and gut. It is the backbone of your parasympathetic nervous system, and its health goes hand and hand with your emotional health. Multiple studies have shown that stimulating the vagus nerve strengthens the blood-brain barrier (BBB). The BBB is the barrier that protects your brain from toxins. You can stimulate the vagus nerve through massages, singing, chanting, meditation, and cold showers.

Cold Thermogenesis

Cold therapy is not the most comfortable thing, but it offers many benefits to the body and the brain, and from personal experience, it gets easier with time. Cold therapy can: boost your mood by boosting noradrenaline (noradrenaline is used in many anti-depressants), increase focus by boosting your neurotransmitters, and can also help repair the BBB by boosting nitric oxide in the blood vessels. You can begin incorporating cold therapy into your daily shower routine by turning on the cold for the last minute, going outside in cold temperatures, or you can make an at-home ice bath.

Please consult your doctor before trying any new biohacks at home. This is not medical advice.

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ESSENTIAL HACKS TO WOMEN'S RESTROOMS

If you have ever been out, you would probably have noticed that women take more time for their restroom trip than men. Now most men would rationalize it with the argument that they are busy chatting or “powdering their noses”. But that is not the case, there is a much deeper and mathematical explanation that, once you realize, will make you more sympathetic towards women.

On average, women have to wait 34 times more than men to visit the restroom. So let's understand the math of it. Let's divide the entire process into 3 parts.

1) Approach

There are a number of reasons why women have to visit the restroom more than men. Some of the primary reasons include,

- They have to take their kids
- Anatomical differences, such as females having a smaller bladder, and she might use the restroom for her hygienic needs.

2) In transit

While in the restroom, there are a number of factors that delays or prolong the visit. On average, women spend 2 times more time than men in the restroom. Men generally just have to head

to the urinal, do their business and leave. Women have a bit more to do such as

- Removing layers of clothing.
- Sanitizing the toilet seat.

Something that does not sound that complicated but if you have ever done, you know it takes up a lot of time. Take into account the additional responsibility of a kid, the process becomes even longer.

3) Availability

Now that we have established a baseline for frequency and duration of each visit, we can finally move on to the main reason why women's restroom lines are much longer? It's simple if you think about it, because there are more urinals to stalls ratio. While the discussion of gender equality and equal resources might stir up some controversy, it is the equality that is the root of the problem. In a 50/50 partition, a women's restroom can have 10 stalls, compared to a men's restroom that can have 10 urinals and 2 stalls. Overall, an average toilet area can accommodate 20 to 30 per cent more toilets for men including urinals and cabins than for women.

Solution

The problem is hardly restricted to just one country or area and most likely affects people around the world. While we can respect the initiatives such as the Potty-parity legislation in the US or the Unisex restrooms, more steps are needed to improve the situation. In many cases, women would rather not go or hold it in for the fear of waiting. In some extreme cases, women might be forced to use the men's restroom.

This problem presents a very good case study about how rather than argue about equality, we should focus more on functionality and optimizing the resources to better the society. We as humans should analyze the problem and customize the solution rather than using the "One

size fits all" approach that we use on most of our problems.

This is where biohacking comes in. Until such solutions are implemented, how can women utilize the current system to the best of their ability? Some quick tips might just help reveal some things to keep in the back of your mind, the next time you find yourself out in public.

1. Always make it your priority.

When you first feel the urge, act on it. You don't know how long the wait could be. Better to get the wait out of the way now, instead of waiting until that urge gets absolutely unbearable. Be kind to your bladder.

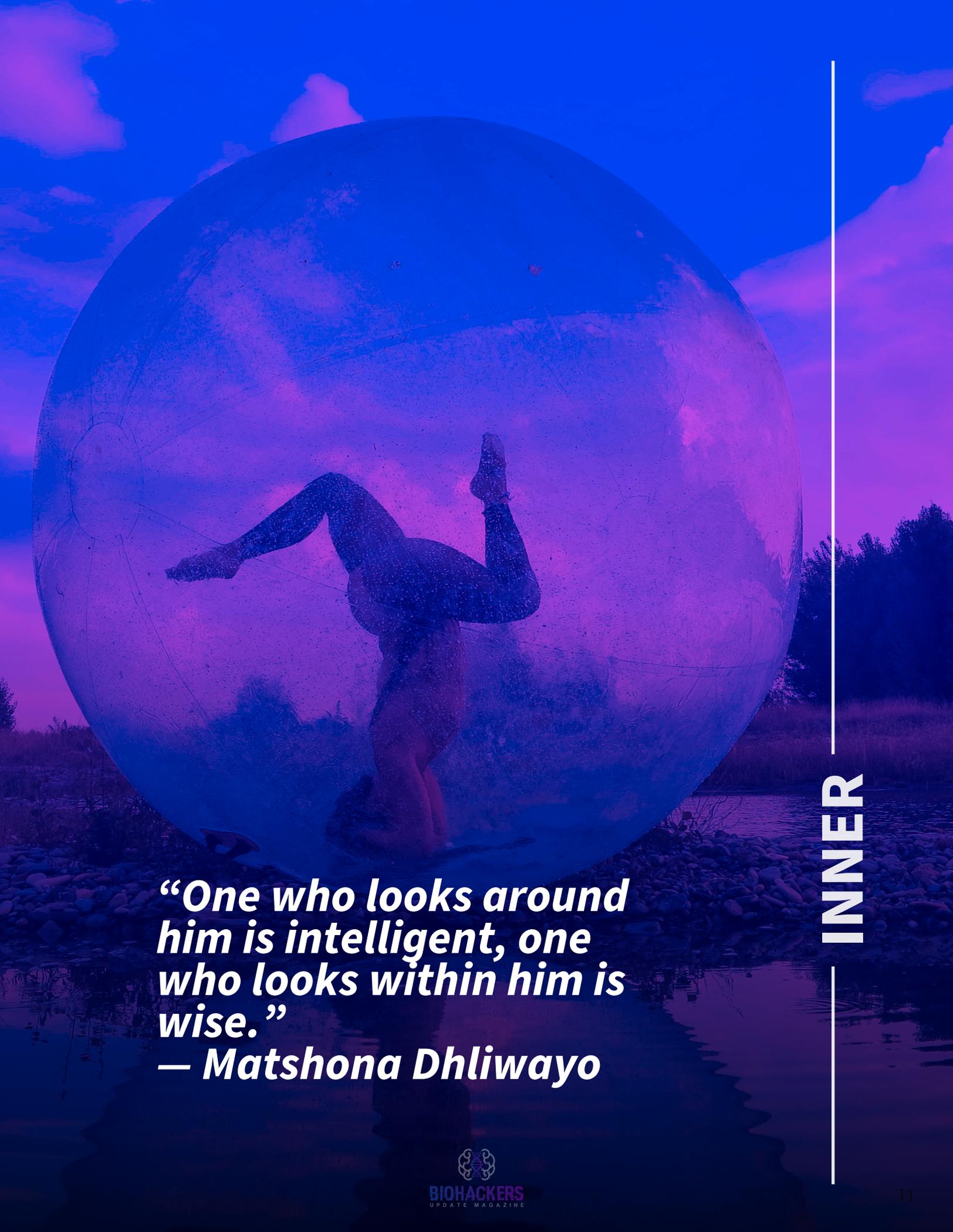
2. Carry a quick-essentials kit

Sometimes, you never know what shape a public restroom will be like. That's why it's always good to carry a small pouch of essentials in your purse or pocket. Soap, hygienic pads, hand sanitizer, and don't forget the toilet paper! We've all had the nightmare of walking into a restroom and later realizing there was no paper.

3. Eat foods and drink fluids that will assist in your restroom time.

Eat foods high in fiber so your body can naturally work and use peristalsis to take the load off you. (pun intended). Drinking plenty of water and healthy fluids will also help keep enough moisture in your system to keep things moving. Also, you might try eating foods that help to detox your body and capitalize on your excretions. Asparagus is the most famous example here.

These may seem like obvious things, but it's tough to remember and keep them in mind in the moment. That's why we aim to help prepare the woman in advance so she can keep her focus and attention in the moment and live her life in health and in peace knowing she's prepared to go just about anywhere.



***“One who looks around
him is intelligent, one
who looks within him is
wise.”***

— Matshona Dhliwayo

INNER





KETO & FASTING FOR WOMEN

Let's be honest; we're all striving to achieve some sort of health goal, whether it's to gain muscle, lose weight, be more mindful or simply slow down the aging process – we're doing everything we can to get there! Women in particular are jumping onto the bandwagon of the latest trends like intermittent fasting, strict keto, one meal a day (OMAD) and even extended fasts and all too often, they're following right in the footsteps of their male counterparts.

What some thought to be a passing fad, the ketogenic diet and fasting are a little different to your average weight-loss diet - they may stick around for a while longer.

I say this is because both the ketogenic diet, or 'keto', and fasting aren't actually diets. Instead, they're a lifestyle that you choose to live. Far from being new or extreme – they've been around for thousands of years! Our ancestors thrived eating mainly meat or fish and berries in the summer, fasting until the next hunt or scavenge for food – they would've naturally been in a state of ketosis as a result. Nowadays,

having continuous access to highly processed, carb-heavy food prevents us from entering a state where our body looks to stored fat for energy. It makes evolutionary sense that we should be able to access our fat stores for energy when we need to!

The keto diet represents the metabolic state, ketosis, where restricting carbohydrates, usually below 20-50 grams per day, stimulates the breakdown of stored body fat and the production of ketones which, just like glucose from carbohydrates, can be used by our cells to produce energy. Ketones are a cleaner, more efficient source of fuel compared to glucose as they utilise less oxygen per molecule, and produce less metabolic 'waste' when metabolised.

Fasting is a tool often used in conjunction with the keto diet for its ability to quickly put one into a fat burning state. There are many forms of fasting, also known as caloric restriction, with the most popular being intermittent fasting where, typically, a 16/8 approach is used daily, which means fasting for 16

hours and eating within an 8 hour window. Extended fasting protocols like 24-72 hours of just water are also commonly used, but less frequently.

Simply put, the ketogenic diet and fasting are both lifestyles we can follow to reduce our dependence on carbs, and train our metabolic systems to use fat to power our cells.

When fat becomes the primary source of fuel, a whole host of benefits arise such as cognitive clarity, reduced inflammation, weight-loss and better blood sugar control to name a few. You see, the human body is designed to be a hybrid machine running off of both fat (ketones) and carbohydrates (glucose). By eating too frequently and too many carbohydrates, our body 'forgets' how to burn fat for fuel and we get stuck in a glycolytic (carb-burning) state.

Now that we understand the hype around these practices, we still need to ask the question: are they for me?

The answer is: It depends.

Many of us biohacking ladies tend to be hard-charging with driven personalities. When there's something that could help us achieve our goal, we delve deep into the scientific research and mechanisms behind it, and hoping they'll get us the results we seek, we give them our all, but often fail. While we're eager to put what we learn to practice, we have to zoom out and understand the bigger picture.

Limiting processed carbs and reducing the amount of time we're eating will undoubtedly make us healthier, but we don't realise that caloric restriction and carbohydrate limitation are stressors on their own. That's why they work. They force the body to enter survival mode where it looks for an alternative fuel source; fat, so we can function optimally and increase our odds of finding the next meal.

In fact keto and fasting are a form of hormesis – a type of stress that triggers an adaptive response, improving the body's overall resilience to that stressor in the future. Other types of hormesis you might know about are cold exposure,

sauna and exercise which are all known to make us healthier! It's the 'what doesn't kill you makes you stronger' kind of stress.

This sounds good, right? Yes! But, it's the dose that matters! When done for too long or too frequently, hormesis becomes a negative stress that can cause damage, or even death! Importantly, the dose is relative: what's hormetic for one person may be a real stress to someone else.

Keto or fasting are not the problem, it's the fact that those who practise them are often stacking them with other stressors. These may be hormetic stressors where the dose can be controlled, or general life stressors over which we have little control, like financial stress, broken relationships, and work stress! No matter the stress, they all add to what is called the allostatic load – the accumulation of all physiological and emotional stress on our lives.

Women in particular should pay special attention to their allostatic load. We love to take on a little more than we need – being a mom, working full-time and pitching up to the 5AM spinning class every day. We're also more sensitive to dietary changes than men, and energy imbalances are known to wreak havoc on our endocrine systems, disrupting hormones and causing adrenal, thyroid or reproductive dysfunction.

It is hard to identify these imbalances before damage is done, but menstrual cycle dysfunction is a clear warning sign. The reproductive system is extremely sensitive to energy availability and fasting or long-term keto sends a signal of scarcity to the hypothalamus in our brain – the control centre for all our hormones. Reproduction is not essential for survival, and when the body perceives a stressful environment too often, it's the first to shut down, conserving energy for more important bodily functions.

To the hard-charging women out there still intrigued and wanting to try keto or fasting, here are three types of fasting that are likely to place the least amount of metabolic stress on women:

1. Intermittent Fast (16/8): Two to three days of



“Keto or fasting are not the problem, it’s the fact that those who practise them are often stacking them with other stressors. These may be hormetic stressors where the dose can be controlled, or general life stressors over which we have little control, like financial stress, broken relationships, and work stress!”

intermittent fasting – preferably on low-activity days, with regular eating on high-activity days

2. ‘Eat-stop-eat’: Perhaps 1-2x per month, practice a 24-hour water-fast
3. Caloric-liquid fast: Practice a longer two to three day fast while consuming beverages like bulletproof coffee, bone broth, low-sugar green juices or teas (perhaps 1-2x per year)

A few points women should remember while fasting for the first time:

- Avoid HIIT, prolonged exercise, especially in the morning
 - Ensure you take in adequate nutrients, protein and overall calories during the refeeding period
- Replenish electrolytes: sip on salt water, or supplement with unsweetened, calorie-free electrolytes
- Assess overall stress load and make sure to have time for rest and recovery
 - If you’re struggling to fast for more than a few hours,

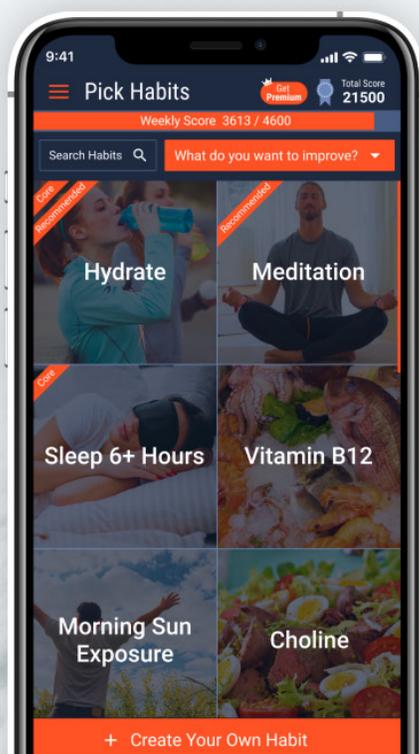
consume high-fat, zero sugar beverages such as high fat coffee/bone broth

We see men fasting, restricting carbohydrates, exercising and performing better than ever, but we find ourselves fatigued, moody, having low libido or even gaining weight, and think we're failing. To fix this, we continue to add more by fasting for longer, exercising harder, pushing for those same results. As well-known women's health advocate Stacy Sims says, "Women are not small men" – we're different.



So, before you jump into keto and implement fasting into your daily routine, take a look at your allostatic load – what stress are you currently enduring? You're in control and you have the permission to experiment. If you try something and it doesn't work, that's ok. Take a step back, reassess and try a different approach and you're bound to find what's optimal for you.

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BIOHACKING WOMEN'S HEALTH

Tired of being told everything is “normal” even though you have so many weird symptoms?

This is what got me into biohacking. For over 10 years now... weird things popping up... migraines, skin rashes, back pain... just to list a few. You go from doctor to doctor and they really don't have any answers for you. You try different drugs, procedures, even surgeries which may or may not provide temporary relief, but eventually you get worse or pick up even more symptoms.

As you are getting into your 40s, now you have hot flashes, GI issues, brain-fog, joint pain and start thinking... darn it, is this what menopause feels like... or am I just getting older?

You soon realize that traditional allopathic medicine is not the answer and that there is a deeper underlying issue that needs to be uprooted to fix your chronic health issues. This journey can be very discouraging. At this point many

women then start going down the rabbit hole of functional medicine and start looking at alternative treatment options...

Here comes bioidentical hormones, spending thousands on different tests with different Naturopathic doctors. You have a giant batch of expensive new supplements, getting IV treatments and soon have to decide between paying rent or paying for your new holistic medical treatments that cost thousands, and not covered by insurance and often still just a shot in the dark.

This was my story and hundreds of my female clients. I spent over a decade in the fitness industry working with thousands of people on fitness and nutrition. I owned several fitness facilities in Southern California where in addition to our High Intensity Interval Training program we provided body transformation challenges 3 times a year.

Here's what I witnessed through facilitating over 30 different body transformation challenges with groups of between

30 to 50 people each. Each challenge was 4 to 6 weeks long and included a customized nutrition plan, nutrition education, a fitness program and some simple lifestyle changes. The majority of our clients were in their 40s, 50s and 60s.

- Male clients had approx 90% success rate in losing body fat fairly quickly and responded very well to fasting and other types of more restrictive dietary disciplines.
- Women had only about a 50% success rate. Even when they did everything right! The “lucky” 50% that responded well to the challenge by losing substantial amounts of body fat, most predictably regained the weight within a few months and were back to where they started or worse had now even more weight to lose.

Women’s bodies were responding very differently to nutrition and exercise than men and I realized that I didn’t have the answers as to how to help. This was very discouraging. As I was going down the rabbit hole of biohacking my own health, I realized that body fat loss was such an incredibly complex health issue that it really had to be customized for a female cohort. I suspected that the answer lies by each person taking charge of their own biology, learning, researching and conducting their own n of 1 experiments. Incorporating technology, tracking data and hopefully connecting the dots on what works for each individual.

While the number one thing most women are seeking is weight loss, one of the underlying issue was that women have suffered from energy depletion, mysterious autoimmune like symptoms, and hormone imbalances for ages with no help. These complaints are always dismissed as symptoms of “getting older.”

“Believe it or not, the NIH didn’t mandate that women be included in research studies until 1994.

In our modern society, we have a major energy crisis! We are all stressed out and tired! In a recent study, 15% of women reported that they felt very tired or exhausted compared to 10% of men. And, women between the ages of 18 and 44 were almost twice as likely as men to feel very tired or exhausted (15.7 vs 8.7 %) . What’s worse, throughout medical history, women and their medical issues have been neglected by medical research. ”

Even in the past decade as biohacking became popular, in general the movement is dominated by men and primarily focused on solving issues that are important to men. Granted there are a lot of commonalities, but there are also gaping differences, especially when it comes to maintaining energy. Women’s bodies are more fragile when it comes to stress resilience because so much of our energy goes toward maintaining reproductive health and fertility.

My goal for launching [‘Biohacker Chick’](#) as a platform is to find the answer to these questions and fill in the current women’s health knowledge gap and help women find a way to step into their most powerful self!

I’ve been talking to some amazing female biohackers that



are joining our first ever [Women's Biohacking Conference](#) on January 26 - 30 2022. We'll be tapping into the brains of world-renowned experts at the top of their fields. We'll be discussing every aspect of health optimization through the lens of women's health and focus on topics important to women:

- Alleviating the female hormonal roller coaster. This free virtual event will teach women how to get in sync with their infradian rhythm, improve their fertility, find smooth sailing through perimenopause and find balance postmenopause.
 - Mitigating chronic stress and anxiety, which tend to be the root cause of so many health challenges women are dealing with today, and applying hermetic stressors in small doses to strengthen our bodies and mind to become more resilient.
 - Finding the best strategies for a better body composition, body fat loss, increased muscle mass, and so much more.
 - Alleviating brain-fog and nurturing a sharper, more powerful brain.
 - Reverse aging & finding holistic beauty solutions.
- We are currently looking for kick-ass female athletes,

scientists, doctors, nutritionists, fitness, beauty and [health experts](#) so we can invite them to the discussion so we can expand the body of knowledge on women's health optimization, finding the best protocols and biohacking practices customized for women.

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[Women's Biohacking Conference](#)
Social Media [@biohackerchick](#)



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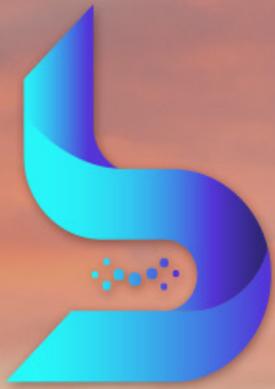
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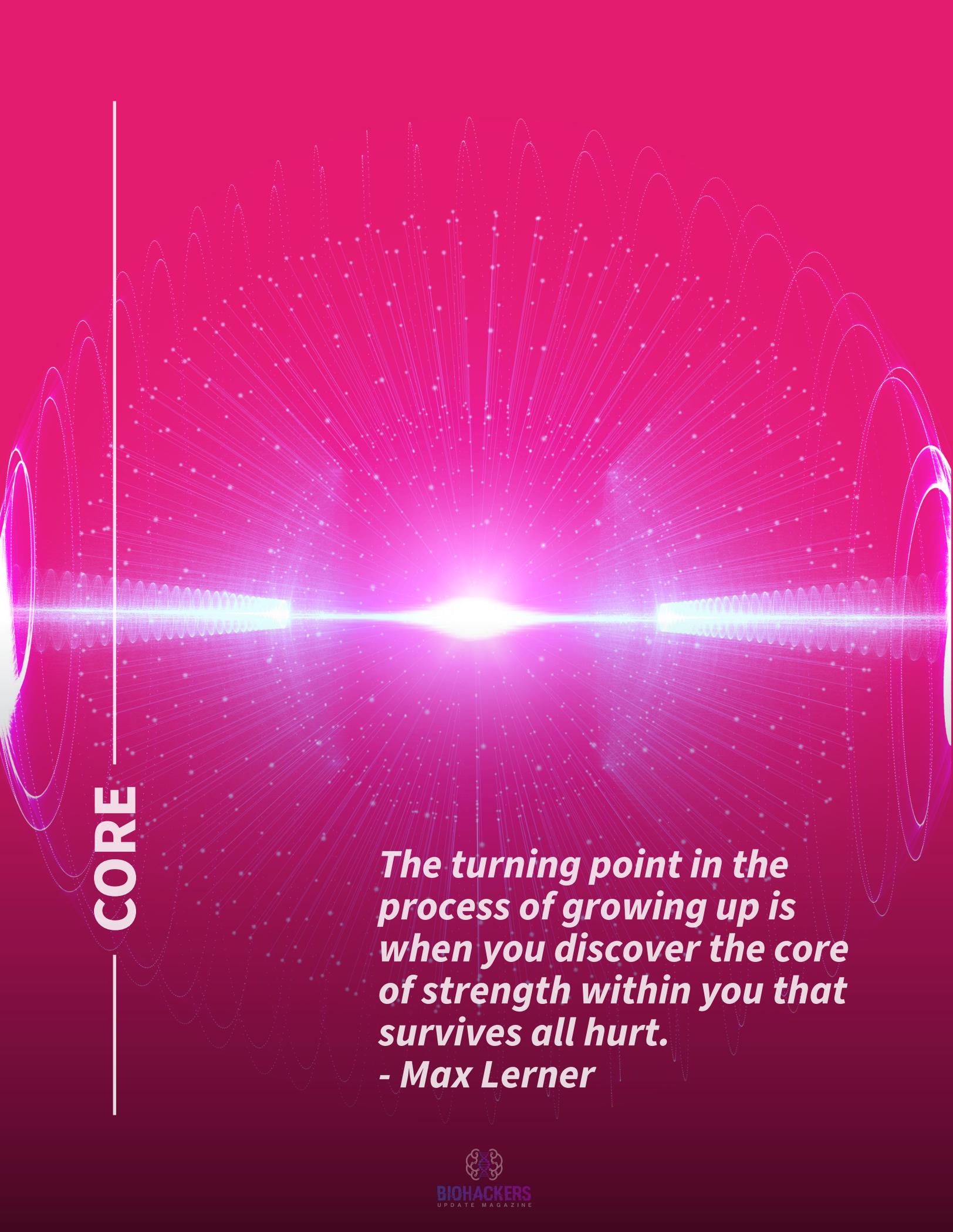
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CORE

The turning point in the process of growing up is when you discover the core of strength within you that survives all hurt.
- Max Lerner



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**with ENERGYbits CEO,
Algae Nutrition Expert
& Health Coach**
**CATHARINE
ARNSTON**



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Dallas:

Hello everyone. Thank you again for joining us Biohackers magazine. My name is Dallas McClain and we have a very special guest with us this episode. Her name is Catherine Arnston. She is the founder and CEO of Energy Bits and an expert in algae nutrition, a wellness thought leader, an experienced entrepreneur and a professional speaker. She holds an MBA and is a board certified health coach. So we're very excited to learn more about her. Catherine, Welcome.

Catharine:

Thanks for having me. I'm just the spokesperson for algae.

Dallas:

We're very excited to have you in and learn more about this thing that you call algae. Well, first we wanted to get a little background about you, Catherine, and your mission and

your vision and where you see yourself going. Why do you do what you do?

Catharine:

Well, I wasn't planning on doing what I'm doing, but I'm very grateful that I am. And for those who aren't familiar with my company, Energy Bits, we sell algae in tiny tablet form that we call bits because they're bits of nutrition. So, I'm actually Canadian, I've lived in Boston 33 years, but I mentioned the Canada thing cause that's kind of what got me going with this whole algae thing. I did all my education up there, including an international MBA. So I had a career in international business and had no intention of ever getting into nutrition. And then my younger sister up in Canada developed breast cancer. She's fine now, by the way, she's 11 years cancer-free and her oncologist recommended that as she prepared for chemo, she

change her diet to an alkaline diet.

Catharine:

Now this was about 13 years ago and nobody was talking about alkaline diets or plant based nutrition or anything then. So she didn't know what it was and they didn't tell her. So when she got home, she, she called me because of course I'm her big sister who loves her. And I'm also a very good researcher. I can find out just about anything. I said, I have no idea what this alkaline business is, but I'll find out. And I did. And it was primarily a plant-based diet because of the phytonutrients and the chlorophyll and all the enzymes and all that sort of stuff, which has been proven to build your immune system. So she did go through chemo. She did change her diet and she did heal. And as I said, she's 11 years cancer-free and in the process of helping her, I started learning about plant-based nutrition.

Catharine:

Now, once again, I mentioned, this was 13 years ago and it was not mainstream as it is now. So as I read the science I thought man, this is pretty powerful stuff. Why doesn't anybody else know about it? So I thought, you know, I'm just a person who is a very action-oriented. And when I see a problem, I can't sleep until I come up with a solution. So I saw this as an issue. I had no idea what the solution was going to be, but I thought somebody needs to tell the world. So I stepped up and decided I would make it my mission to help people be healthier with plant-based nutrition. So then I thought, well, heck, I have to get some sort of certification. So I enrolled myself at the Institute for Integrative Nutrition in New York, got a certificate in health coaching in 2009.

Catharine:

And then I thought, okay, well I guess next step is to teach plant-based nutrition. So I put a curriculum together and I taught plant-based nutrition at hospitals and corporations, basically anybody who would let me in. And this was when I had my epiphany, that led me to algae. And my epiphany was this: As I was teaching people about the importance

of eating more vegetables and more plants, they said, Hey, you know, you're not telling me anything that I don't already know. My mother has been trying to get me to eat more vegetables since I was a kid. So I realized, okay, I'm not telling them anything new. So why are they doing it? They weren't doing it because I found out there were too many obstacles and I'm sure your listeners will appreciate this. Some people just didn't live near a grocery store and they were too heavy to carry home.

Catharine:

Or a lot of people with COVID right now, don't want to go to a grocery store. Some people found they took too much room in their fridge, or they took too too long to clean, to cook, to eat. Their kids wouldn't eat them. Their husbands wouldn't eat them. The bottom line is people knew what they should do, but they had too many obstacles so oaky, I thought, I'm going to find something that's green that gives them the nutrition of vegetables that is fast and easy. Again. I had no idea what I would look for, but I decided, because I'm an action person, I'm going to jump in and see what I can find. So I did a deeper dive at everything I'd looked for my sister a couple of years ago, previously, nothing was working out, nothing was working out. It was just for variety of reasons.

Catharine:

And then I got to algae, Boom. That's when the magic happened, because it turns out that algae is the first of all, the most scientifically documented food in the world, ladies and gentlemen, it is a food. It's a crop. A lot of people think algae is a supplement. It's not. It's no different than kale or broccoli. It's grown in fresh water. And we're lucky because we press it into tiny tablets. So I'm going to show people who are watching an algae farm. This is proof that algae is food and you can't grow supplements, right? But you can grow algae and it's grown in fresh water. It's not from the ocean. So anyways, algae turned out to be the most scientifically documented food in the world. It's been endorsed by international agencies for decades.

Catharine:

The United nation says algae is the answer to world hunger because it has the highest concentration of protein in the world. It has three times the amount of protein as steak. . NASA has endorsed it for 50 years because they say it's the most nutritionally dense food in the world. We have a quote from them that says "One gram of algae has the same nutrition as a thousand grams of fruits and vegetables." And, we sell our algae in tiny tablets, as I said, that we call bits, and each one of these tiny tablets, is about the size of a baby aspirin but has the same nutrition as an entire plate of vegetables that you didn't have to cook, clean or eat. Problem solved, Right? So here's an example of one of these teeny little tablets for those who are watching. So every time you have that, it's like having a plate of vegetables.

Catharine:

So it's endorsed by international agencies. It's a food. It comes in tiny tablets. It makes it easy to travel with or take in seconds instead of taking hours to cook and clean. It's been used around the world for centuries, most notably in Japan and Asia, where in Japan, they take it every single day. And by the way, they have the lowest cancer rates, lowest obesity rates, longest longevity and great skin and hair. And it has 40 vitamins and minerals on top of all the rich chlorophyll, phytonutrients, antioxidants. It is truly the perfect food. In fact, it was the first life on earth, almost 4 billion years ago. So when I realized how big an industry it was in other parts of the world, nobody in America seemed to know about it, that it was internationally endorsed, used safely, had all the benefits of nutrients, times a thousand of vegetables.

Catharine:

And you could get the nutrients instantly. I thought, that's it. Oh, and it's a sustainable crop. So it's saves just about everybody and everything. I decided 11 years ago, I was going to devote the rest of my life to getting algae into the mainstream. And so I'm 11 years in, I probably have at least another 11 years to go, but the word is getting out. Think about it; five years ago, you didn't know anything about collagen and 10 years ago, you didn't know about Matcha

or Quinoa or CBD. And those are all fabulous nutrients that make differences in people's lives naturally, not with drugs, not with injections, not with surgery. So algae is the next big thing. And I'm not just saying that because I sell it, (although I sell it because of that) other countries in the world are recognizing it.

Catharine:

And it's being used for material fabrics, feed for agriculture. It's already in lots of foods, but you're going to see so much more about algae. And I'm very proud of what we do because we make sure ours is the cleanest, safest, purest that you can buy, which is why we're the only algae sold by doctors. Then we pack it in a way that's safe, pure and fun, very attractive packaging. Actually, I design it. But we want people to start taking this, because the reason why you're getting sick and tired or fat or all of the above is because your body does not have the nutrients it needs and it has too many toxins. And algae plugs both those holes and in seconds. So that's how I got into algae.

Dallas:

That's a great story, a great summary of so much information. Thank you for sharing that. We'll have an interview 11 years from now to get rest of the story. I had a follow up question to what you were saying. So algae has been around for 4 billion years essentially, and humans have been evolving for much less time. But when we are talking about taking allergy in the current day as to fulfill those nutrient deficiencies, those nutrient needs, what did people used to do? Or do you know what people did back in the day where it wasn't a thing that you could make, manufacturer or grow? How did people get the source of algae?

Catharine:

It's been growing and used for protein in Africa and Mexico for hundreds and hundreds of years. And there's a sad but interesting story. When the Spaniards took over and conquered Mexico, the Aztecs, they found all this swampy land and they thought it was just a swamp, so they drained. It turns out that's where they were growing algae for their

sustenance and they were the healthiest, hardest community. And then when the Spaniards came in and drained all the algae (it turned out to be algae ponds), and started feeding them all the European sugars and processed things, they all got sick and it was a disaster. But that was what they used to do in the old days, and they still do this in some of these lesser developed countries; they just grow it in swamp area.

Catharine:

And then they haul it as you would any other sort of sea weed and dry it under the sun and they make it into patties. And it's pretty gross looking, but it's nutrient dense. When you think of something, having a thousand times more nutrition than anything else, and something that has three times the amount of protein as any other animal source, whether it's fish, eggs, chicken, I mean, you're talking about nutrient density that's just almost unbelievable. Even when algae when it dries on the rocks the light will pull the chlorophyll out of the algae, so it becomes like

a white sort of crusty looking surface, but it leaves all the polysaccharides and all the protein.

Catharine:

And there are some people that think the passages in the Bible where they talk about Jesus feeding the masses mana from heaven, they think maybe he might've been scraping up the dried algae from the rocks and feeding it and using that because it was so protein rich. But let me step back because I just want to clarify what algae is. So algae, as I mentioned, was the first life on earth, not just plant life, life period. Before algae earth was just gas and water. I have no idea why algae started growing, but it did. It started in the water and it started as a bacteria. And algae is responsible even now for 80% of the oxygen on earth. So algae releases oxygen. So after about a billion years of algae growing, for whatever reason, there was enough oxygen on earth that other life forms could start growing.

Catharine:

Ultimately hundreds years later, humans showed up. But



it's as ancestral of food as your paleo foods that you're ever gonna get. There is nowhere lower on the food chain than algae. It is it. So number one, it was here way before we were. Number two, it's everywhere. So let's fast forward to now. Algae is in the rivers, the lakes, the streams, the soil, your swimming pool, your aquarium. And there are two main categories of algae. One is called macro algae, and the other one is called micro algae. We're going to be talking about micro algae, but what's macro LG? So it's that big stringy stuff that washes up on shore, also known as seaweed, kelp. It has a lot of fiber and iodine because it comes from the ocean, but virtually no nutrition. You can buy kelp noodles now as a replacement for maybe pasta.

Catharine:

And I chuckle because I use them and there's virtually zero nutrition. An entire bag has maybe five calories in it because it's just fiber right? But it holds a great sauce. So anyways, that's macro algae, the big stringy stuff from the ocean. Micro algae is also everywhere, including the ocean, but it's called micro algae because something like a million cells can fit on the head of a pin. That's pretty tiny. And this is what feeds the whales, the fish. This is why in the movie *Seaspiracy*, the Netflix movie, they recommended algae as an alternative and a more sustainable source of omega-3 because of people over fishing the fish to get fish oil, which contains the omega-3s. And in the movie, they point out, as I do, where do you think the fish get the omega-3 from?

Catharine:

They get it from algae. So save yourself the rancid fish oil, save the oceans, just go to the original source for your omega-3s, which is the same place everybody else gets it. So anyways, algae, as I said, is everywhere. And there's different strains of micro-algae; there's blue, green, there's red, there's green. The two main ones are blue and green. The algae we're going to be discussing is spirulina, which is a blue-green algae and chlorella, which is a green algae. Our algae and 99.999999% of the algae that you buy in stores, whether it's target or whole foods, is either spirulina

or chlorella. And these are harvested as fresh water vegetables. They do not come from the ocean. Any blue-green algae, that's out there in the ocean, and there are tens and tens of thousands of them, of which spirulina is one tens of thousands of them, they are the toxic ones.

Catharine:

And by the way, when there is an algae bloom, people get mad at algae. Well, it's not algae's fault. In fact, algae only shows up when there is bacteria, because algae kills bacteria. So algae is the cleanup crew, okay. The runoff and the bacteria has already showed up and so algae is there to get rid of it. But it's the one that that you see. And so you see this big algae bloom. In fact, you probably don't know this, but almost every single water treatment in north America uses algae at the water treatment because drum roll... It kills bacteria. And it also kills bacteria by the way, when you consume it. So algae is its own food category. There's two: macro and micro. Within micro, you have blue green, and green and one blue green algae is spirulina and one green algae is chlorella; and they are completely different. They do completely different things in your body and you need both of them for different reasons.

Dallas:

This is all fascinating to me. I knew algae as a life form on earth and everything, and a little bit of its history, but just the amount of things that it affects is quite astounding. I wanted to ask about the diet, bringing it back to what we can do in biohacking when taking this algae. You mentioned how it contains so many nutrients and so much protein and everything. Could people sustainably just eat algae and live, all right? Or is there stuff that they also need to substitute and accompany along with algae?

Catharine:

Well, technically you probably could. Although there's not much D-3 and there's not much vitamin C, but it has virtually every other nutrient, all the electrolytes, magnesium potassium, calcium, 18 of the 20 aminos, chlorophyll, all the key vitamins B. I mean, it's almost

unbelievable. And just as another interesting side note, years ago, I noticed a chart that showed the nutrients and particularly the amino acids in mother's breast milk. And I was like, gosh, that chart looks awfully familiar. And sure enough, I flipped back over to look at spirulina and they were virtually identical; not just the same nutrients, not just the same aminos, but in the same proportion and anybody who knows either fitness or nutrition knows that it's the proportions of aminos that are critical because you can say something as loaded with protein, but maybe it's heavy on one and not a lot in the other.

Catharine:

So it's important to have the correct balance. We all know mother's breast milk is the perfect food, right? But you can't very well get any after the age of two. So, since algae was the first life on earth, and since it's virtually identical in its nutritional profile and it gives a gift to us from mother nature. I consider it mother nature's breast milk, and you could live on breast milk forever, and you could virtually live on spirulina and chlorella forever. It's that perfect of a food. It stuns me even now, when I think about it. And just one more nutrient that I'll pull out that's in the spirulina in particular that resembles mother's breast milk, there's an omega-6 called GLA. Now normally omega-6's, are dangerous and to be shied away from, and that's primarily because they are processed with heat, which causes the molecular changes to occur, which makes them acidic and oxidative, but omega-6 unprocessed like it is in mother's breast milk like GLA, has the same antioxidant and same anti-inflammatory benefits as an omega-3.

Catharine:

The only place that has more GLA in it, than spirulina is mother's breast milk. The reason why it's such high concentration mother's breast milk is because the baby's brain doubles and triples in size in the first couple of years. So it's a very important nutrient, and it's a very important nutrient for adults too. Mental Health is finally getting attention and it's not just the biome that's getting

attention these days, partially due to the stresses from COVID. So anything that can contribute to brain health should be at the top of anyone's list and spirulina should be right up there.

Dallas:

Wow. Super interesting. I mean, spirulina and chlorella sound like they should be a part of everyone's diet, especially when we're talking about the pandemic and everything that's happening now with people unfortunately getting affected by it. It seems like we need to shift the focus almost more towards preventative medicine, or maybe that's happening in a lot of cases now. But preventative versus just treating with drugs and all this artificial things that humans make instead, we should just go to the source, or go to the algae.

Catharine:

Well there's a small group of us and I'll admit I was late to the party too because I didn't really get into this until my sister got sick and you lift the hood on anybody who is in the health and wellness space, not the traditional medical, but whether you're keto or vegan or podcaster, influencer or vendor, almost everybody had a personal experience which led them either unsatisfied or unhealed from the traditional medical world and sought out alternatives; which ironically, I hate the fact that we call them alternative medicine because it's actually the original medicine. It's what societies and cultures did forever until the pharmaceutical industry showed up 50 or 60 years ago. So we're kind of getting back our roots and learning to trust our own intuition and learning how our bodies function. Knowledge is power.

Catharine:

If you start making your body more of a priority yourself, self worth, mental health, more of a priority, then hopefully you'll be curious about how to make that work better for you and the nutrition is at the top of the food chain when it comes to finding ways to facilitate better mental health, physical health and treating your yourself better. Well, there's a number of issues. There's exercise obviously, and sleep and fresh air. But the problem that I've found, however,



is that even though people want sometimes to work on their nutrition, they run out of time. It's difficult. It's time consuming to shop for your food all the time and clean it and cook it and eat it. And that's why I love the algae so much because it gives you all of those benefits and all of those nutrients.

Catharine:

And it's effortless. When I say effortless, I truly mean effortless. If you can swallow water, you can get the nutrients you need instantly. And the spirulina is the one we strongly recommend for nutritional gaps because it has that extra protein. It has that extra omega-3 and it has two pigments in it, a blue one and a green one, which work synergistically and that blue one has all kinds of healing benefits. That's why I love algae, because it gives you everything your body needs effortlessly, and we're in a society. We need to face the fact that people want instant things. They want it to be simple and fast, and it doesn't get any simpler and faster than these tablets.

Dallas:

Right. It combines the best of both worlds, having it instantaneously and having the effects be momentous. It's great. Catharine, I wanted to talk a little bit about you just because it's really cool that you've taken on this mission and you've devoted your life to getting algae out there and getting it to the masses and making it mainstream. So you're obviously very driven and I think your mission is a really well-proven example with really good intentions. And I'd like to ask more about that because I feel like people, especially in the bio-hacking realm, are on the verge of discovering new things, bringing new things to the attention, and it takes a lot of persistence. So I'd like to ask a little bit about your history with what inspired you and how did it inspire you to go do this. Besides just your sister, was there any other thing that came to you? Maybe a book you read or an encounter you had with someone from the health and medicine field that said you have to do this, this is your mission.

Catharine:

No, interestingly, I don't know, Like I said in the very

beginning, I'm someone who likes to solve problems and I also feel a heavy weight of responsibility when I have an answer, to share it and it's as simple as, if I find a great restaurant, I just can't wait to tell somebody about it. But when I saw 13 years ago, when I dug through and saw the science, like I said, I just wanted to help my sister. That's all I was planning to do. She needed help. I love her. I have the ability. This is maybe one of the little messages to people who are listening, that when you have a skill and I had a skill that I was in denial of for the longest time. It's not selfish to show that off to people. In fact, if you have a gift, it's your responsibility to share that gift with people. But very often your gifts are buried inside your soul and maybe your friends notice your gift and you always brush it off. No, no, I can't do that. Maybe you step back and take a look at that because those gifts are where are going to propel our world into a better place. But they don't come with loud noises and fanfare. They're usually a small whisper that says, what if? It's not a BUY ME, it's a, what if? So when I learned this stuff about plant-based nutrition and chlorophyll and enzymes, etc., I had knew nothing about it previously.

Catharine:

I had to teach myself bio chemistry and physiology because I didn't know how the body worked either. I was just your average person, intelligent, but still uninformed about my body and nutrition. So when I learned about it, I instantly felt a responsibility to share it. And the best analogy I can give is that, if you walk by a lake or somebody or a swimming pool and someone is drowning, do you jump in to save them or not? It came down to that. And I thought, I know I've learned this valuable information. I can't keep it to myself. And I know how much work it's going to take, but I can't not do it. And so what I did for the first four years, I was by myself, I just chained myself to the, my computer and for four years, literally, I just read and read and dug through reports about the different allergies, how the body operated, the biochemical activities.

Catharine:

I'd had a certificate which was on health coaching, but it was no deep dive. It was no PhD to teach me how things were working. I didn't know the difference really between a macronutrient and a micronutrient. I had to be sure that what I was reading, if I was going to commit my life to this, that it had to be real because I thought, why me? There's so many scientists out there. So many nutritionists out there, surely one of them is better to do this. And I was sort of like fighting the universe or fighting my soul. I don't know any of this stuff. Why me? But finally, between year two and year three, as I continued to read this stuff, I thought, okay, I guess it's right.

Catharine:

I guess the science is right because after thousands of scientific documents that I had to teach myself how to read, the scientific documents, which by the way, if anyone's never read a scientific paper before, let me tell you it's in its own language. So after two or three years of reading all of this, I came to the conclusion that everything I was seeing and reading about algae was correct, except that it had never been explained properly to consumers. It was all in scientific jargon. And I've been to scientific algae conferences where all these scientists are and scientists just like to talk to other scientists. They have PhD jargon. They do not know how to speak to consumers. So I was probably ultimately the perfect person to do this because I had no background. So as I learned these different nuggets through these scientific reports, I would write a short version of it in a way that would make it easy for people to understand.

Catharine:

I've now written about 500. So I've, you know, and these are now the answers that might my customer care team gives out to people when they have a question. So I was ultimately the right person, I guess, to translate very complex scientific concepts and translate them into simple, but not demeaning explanations for consumers. That was number one. Number two, I realized algae has been sold in America for 50 years. So

I was not the first person to introduce it into America. And you can go on Amazon now and there's probably at least 50 or 60 vendors selling spirulina and chlorella tablets. But I was different because I'm a perfectionist. So I made sure our quality was way better than anybody else's because if I'm putting stuff in people's bodies, I have to be 110% sure that it's safe for everybody in the family.

Catharine:

So number one, because I'm such a perfectionist, I guess I was the right person. And the third thing is I love beautiful things, whether it's interior design, clothing, packages, it doesn't really matter. And I used to be interior design magazine publisher. So all my friends know that I've always been like this. I just love things that look beautiful. And all the packaging in America for the last 50 years, in addition to being crappy, low grade quality junky stuff, full of toxins and fillers from China, the packaging was weird. It just looked weird. It looked like it had worm guts in it. So it's taken me 12 years and 20 different versions, but I designed everything. I designed our packaging to be consumer friendly and very welcoming and to make it easy for people.

Catharine:

So for example, spirulina, which is the energizing algae, we call it energy bits because it makes it really easy. And because it was the first life on earth that came from water, it's in a blue package because it's also a blue, green algae. I want people to feel comfortable. We make them as beautiful as possible and spirulina also build your skin and hair health. Women didn't like my blue packaging, so I made a pink version and called it beauty bits with a gorgeous pink flower. All our packaging is a nod to mother nature because of course algae comes from mother nature. Chlorella is a wellness algae and helps you recover your health, recover from sports because it pulls out lactic acid. It helps you recover from any disease. It pulls out toxins, heavy metals. It helps you recover from drinking and pulls out alcohol.

Catharine:

So we call our chlorella, recovery bits and it's in a green

package because guess what? It's a green algae. So in retrospect, now that I'm finally out of the dark years of struggle, I turned out to be the right person. I self-taught myself, physiology, biochemistry, and algae. I taught myself how to do package design. I taught myself how to be a leader. I taught myself supply chain. I taught myself social media, finance. And so here I am but nothing has changed. My goal continues to be and will be forever to help people be healthy naturally and effortlessly.

Catharine:

And some of it will come from algae, but there's other things like sleep and exercise and other wonderful things there's other fabulous vendors and fabulous biohackers who either have products currently out there in the market or are about to launch. And if you are in that stage again, please listen to that little voice that says, what if, because if I didn't listen to that, I wouldn't have believed that I could teach myself all the science, that I could do all this stuff. And I hope to make a big difference in the world, both in the health of our children, our health of our parents, our health for ourselves and the health of the earth. My family thought I was crazy. My friends all abandoned me. I've become a bit of a hermit, although I'm quite normally a social beast. I didn't ask to be like this.

Catharine:

But it took a lot of convincing and I use another analogy and anyone who is an entrepreneur will certainly relate to this. Think back the last time you bought a puzzle, right? So you, the purchaser of the puzzle, you see the box. So you know exactly what's inside the box and the puzzle that you're about to make. So when you get home and you dumped that puzzle with all the 500 pieces on your table, and it's a mess, and then you ask someone to come and help you. All they can see is the mess. Now you have seen the puzzle lid, so you know what you're doing, but they don't, they just see the mess. So as an entrepreneur, it is our responsibility. And you go through these stages cause you get mad.

Catharine:

Either you're not getting the money you need, you don't get the customers you need, you can't get the staff you need. Don't get mad. What's happening is that whatever your direction you're going in or the way that you're doing it, isn't quite working. So you need to step back and say, it's my responsibility to help people see my vision. So your responsibility as the owner of the puzzle box is to start putting the puzzle together. As the picture starts to fill in, it will get a lot easier to recruit people to come and finish the puzzle with you. And when you get to those final, last moments, there's that sense of accomplishment and excitement and satisfaction because you've all built something together. But as the entrepreneur, we have to slug it out nine tenths of the way before that image becomes visible to what other people see. Now along that long way, it could take you two years.

Catharine:

It could take you 11 like it took me. There are moments when you just want to give up, don't give up, don't give

up. There's a reason why this vision has come to you because you have the ability, but you have to trust yourself and nurture that ability. And even though you don't have the answers, just keep going. And so I just slugged it out day in, day out, day in, day out. For four years, I was by myself. Then I had a couple of people. Then we got some visibility. We weren't ready and tanked. And we had to start again. I have redesigned my packaging, probably 12 times, redesigned the website 20 times, redesigned my market strategy 80 times. I've had over a hundred interns go through a year, but I am the person who's jumping into the lake to save that drowning person.

Catharine:

We do not have to be sick. We do not have to die at 80. We don't have to die in pain at 80. Dave Asprey wants to be 120, me too. And I want you to live at 122 and you will, if you treat your body more respectfully and give it what it needs. And even if you don't make a lot of other changes, if you just add the algae, don't change anything else if you want to, just start taking spirulina for the nutrition and chlorella to pull out the



toxins. And I'll just tell you one quick thing. We all know about toxins, they're in the air, they're in the water, they're in our clothing. They're there, you can't avoid toxins. And the few that they actually test, they test them in isolation.

Catharine:

You don't live in isolation. So you're layering toxin on top of toxin on top of toxin and your immune system can't sustain that kind of toxic load. So the wheels slowly start coming off. Your mitochondria stop working very effectively and that contributes to your fatigue and anxiety. Your brain synapses begin not to work as well and that contributes to brain fog. Your brain accumulates, aluminum, and other metals that contribute to Alzheimer's. Your stomach lining gets punctured with glyphosate and lectins and oxalates, and that contributes to auto-immune. If you just add the algae, especially the chlorella that pulls out toxins, you will start to unwind this process and start to feel better. I read in a book recently, which I was not aware of, that every single day you have up to between 20 and 40 billion cells that die. 40 billion cells.

Catharine:

Dead cells are toxic. This is written by a naturopath. So it's not just the outside toxins that you have to be worried about. It's the inside ones, too. You've got to clear out those toxins. And when you get rid of those toxins, all of your body functions just work better. Synapses snap faster, mitochondria reproduce better. Your DNA and RNA don't get damaged. Your cellular lining and your cell walls allow nutrients in and toxins out. Your homeostasis, your pH of your blood and your cells all function properly. Disease cannot form in an alkaline state. Otto Heinrich Warburg got a Nobel prize back in the thirties and forties in Germany for discovering that cancer only exists in an acidic environment.

Catharine:

All disease is in acidic environment and that acidic environment develops when you cannot get rid of toxins at the cellular level, so they fill up and damage the mitochondria. There's more ROS, more oxidative stress.

They don't reproduce and they often stop communicating and turn into rogue cells, also known as cancer cells. This is a slippery slope, and it can all be stopped and reversed if you give your body the nutrients that it needs, mostly that comes from vegetables. But if you don't have time and don't have the flavor, the kids won't eat them, then there algae. That's why I love algae so much. It gives you all of the benefits of the green nutrition without any effort.

Catharine:

One of my favorite books is called The Plant Paradox written by Dr. Steven Gundry. I was on his podcast recently. He's endorsed algae for a long time because it is not technically a plant. So it never developed oxalates or lectins, which are dangerous proteins that can cause damage to your stomach lining and cause auto-immune. Because algae started in the water it didn't have to develop these things to protect itself from predators like bugs and animals. So again, algae is the shining student in terms of the food category of giving you all the nutrients that you need without any of the downsides. So, my journey is really only beginning because I'm just finishing the puzzle. And now I want to show people that puzzle and help them learn about how they can make either their own puzzle, other entrepreneurs, other biohackers, other people who asked the question, what if. That is the question.

Catharine:

Someone once asked me why I was qualified to do what I'm doing. I said because I was curious. Curiosity and imagination are far more important than any degree you'll get from university. I'm not putting anybody down. I'm just saying, don't deny yourself. Automatically you brush it off and say it's not important because I've always been a very creative person and I didn't think that that was very important. I already had a sister in my family who was an artist and that I thought she's the creative one, I guess I'm something else. But you know, you are what you are, like lady Gaga sings, right?

Catharine:

And I will say I'm probably coming into my own because I'm finally recognizing I do have talents that I can contribute to the world and to myself. I'm finally getting to be in my happy place. It was very difficult for a very long period. People just didn't know what I was doing, didn't believe me, didn't trust me, but they are now because I'm telling the same story I've told for 12 years, except now it's that health is more of a priority. People are now lifting the hood and checking people's credentials or checking their science. And because I'm building everything based on my own personal credibility, I'm very buttoned up and making sure I don't say anything that I can't defend with science. So that's getting me some attention from other highly recognized individuals in the community. I want to be part of a community. I'm not just interested in building a company. I want to help make change in the world. If I'm successful, we can sponsor other great organizations who want to make change or other small vendors. It's, hard being a passionate entrepreneur and just trying to keep going day to day until something kicks in.

Dallas:

Right. But from everything that you've said, it's a very worthy mission. And it's very clear that you're acting more out of service and not out of self-interest. There's a lot of companies out there, especially in the biohacking initiative, that you have to be a little wary of because there's some things where I think some people would just want to make a profit and want to maybe sell you something that has very small benefits, although it claims to have amazing life healing properties. But there's others, like you, where it seems like they are just acting out of wanting to be of service and everything else that you need will come through that service in order to sustain you. You're just wanting to act out of helping others, which is, I think, a beautiful mission.

Catharine:

Well, thank you for saying that. That was very kind of you. I've turned down venture capital. I was actually on shark

tank, and they didn't invest, but I didn't want their money. I just wanted to get the word out. And that was like three years ago, but we turned down venture capital. We're getting to a point where I still don't want venture capital, but we could use probably an investment partner. It's so complicated now. Unfortunately, a lot of investors get really enamored with technology, and if it's got some fancy buzzword, they'll throw money at it or whatever, and, you know, algae is not sexy. So, we've tried to dress it up, so it doesn't look weird, but people need to become better informed about it from a nutritional and sustainability point of view, which is happening now.

Catharine:

I wasn't interested in trying to defend my choices. I know algae is going to make the biggest difference in our world in the 21st century, in so many ways, both on an environmental and a nutritional perspective. So I'm in it for the long haul. I'd like to be part of the solution, not part of the problem, and when people inform themselves about it and the potential that it could make and the difference it can make in the world, then if they want to work with me and support my vision, then we'll be open to having that kind of partner. I was not about to bring on an investor who, as you mentioned, is just profit driven because then, I would have to cut corners and I'm very big on education and making sure people can understand what this is.

Catharine:

We hope to be big enough one day to donate it to schools for lunches and nursing homes and disaster areas. And maybe we'll have a foundation that does that part of it. And we want to grow our own here in America because 99% of it's growing in Asia. But it's a very complicated crop. And the company that grows it for us has been doing it for 50 years. And it's not just getting a bunch of land and just growing, by throwing some corn at it. It's complicated. Anyways it'll be quite a journey, but I feel a little better now, people are starting to learn a little bit about it. It's only gonna get bigger and bigger because as I mentioned, just think about how nobody knew about collagen five years ago.



Catharine:

And there's a company called Vital Proteins, based in Chicago. The founders started it because they learned that as you get older, you don't produce as much collagen in your joints. So you have more joint pain, which is a big issue as you get older or arthritis. So he discovered this, and you could buy collagen and you could take it as a powder. And so that's why he started the company. It got acquired by Nestle by the way, last year for a billion dollars. So he took an idea and ran with it. Now I want to point out that collagen is not sustainable. It's made from crushed animal bones, and algae gives you all the same protein as collagen plus 40 other vitamins and minerals, plus chlorophyll, plus it's sustainable. So if you are currently using collagen, that's great, but if you want to level up, algae is where you go.

Dallas:

Right. It covers everything. I just wanted to leave off with one final question, Catherine. You're obviously very involved in bringing this to light in the mainstream and you've made a lot of sacrifices. And it sounds like when

you're talking about your family, your friends and your time, obviously, how do you keep yourself going? I imagine you take the algae, but how do you keep yourself going with other habits that you might incorporate into your daily routine that just keep you focused or keep you at the best possible version of yourself?

Catharine:

Well, I start and end my day very similarly. So I start it with always a glass of water, filtered water with lemon, which is really cleansing for the liver. And then I have my spirulina and chlorella tablets and I drink a tea called yerba mate, which is like a green tea, except it has even more antioxidants. Then I will meditate, outside if it's warm, for a good half hour. Sometimes I'll read a couple of passages of a book, either nutritional or spiritual. Then I jump into my day. For fitness, I'll either do a three mile walk, um, a yoga class, or high intensity muscle training.

Catharine:

And as often as I can as well, I also do some red light therapy. I have about a couple of big machines and I'll do some stretches either in the morning or the night time. Obviously

I have my meals, I do still eat eggs and seafood, but mostly plant-based food and a lot of algae. And then the evening, it's the same thing. I wind down with candles and quiet music and some passages to read, either spiritual or nutritional. I sleep on my bed. I have a earth mat with grounding sheets, so you're grounded to the earth to get the natural vibration. I am also a Reiki healer, so I'm very big on energy. So I start it quiet, I end it quiet and I try to get some fitness in. I bought a stand-up desk because I was working so long and I don't currently have a social life. I hadn't for 11 years; hoping that it'll come back one day.

Catharine:

So I'm still single, never married, no children, no pets. Algae is probably my family.

Dallas:

Little algae growing up so fast.

Catharine:

Yeah Mama algae, haha.

Dallas:

Wow. You cover a lot of ground there with the different bio-hacks and everything. And I think you're very well versed in what goes on in the community and based off your habits and everything. So I think that's awesome.

Catharine:

Yeah. And there's some more, but I think biohacking is really just the curiosity thing; again, trying to find how to be your optimal self and not to be competitive with anyone, just to feel your best, think the best, and contribute the most. And you don't want to live long. You want to live well and lon. Don't wait until you're sick because illness creeps up on you and then we panic when it happens and we want to get better right away. Well, it doesn't happen right away. It took a while to get there and it takes a while to unwind. Even with the detox, the chlorella, it take a bit. Everyone in the world should be taking this. Definitely take it at night. You can take it during the day as well. But when you sleep, your body goes through a repairing and detox cycle. So if you have some chlorella tablets in your body while you're

doing your sleeping that detox repair cycle will be much more efficient.

Catharine:

Chlorella also has the highest amount of tryptophan in the world, five times more than Turkey. So it will facilitate a deeper sleep. Tryptophan is a precursor to melatonin, which helps with your sleeping. Now it won't make you sleepy, but it will facilitate a deeper sleep. Also it stimulates peristalsis, also known as bowel movements, and elimination is a very important part of good health. So, that all gets happening while you're sleeping. So I couldn't imagine going to bed without chlorella. As I briefly alluded to it pulls out all toxins; aluminum from your brain, heavy metals, mercury from fillings, lead from pipes.

Catharine:

Also athletes love it because it pulls out lactic acid after a workout, so your muscles aren't sore and it pulls out alcohol. So wine, beer spirits, anytime you take it after, it'll pull those toxins out. Don't take it before you start drinking, because you'll never get a buzz. It's like a Roomba; it just cleans out your blood. You will clean out your blood of all alcohol in an hour and a half and you will never have a hangover. And just think about it, while you're doing that, you're getting all these other benefits. You're getting all the chlorophyll, you're getting all the antioxidants, you're getting all the minerals, you're getting all that protein. So it's really a one-stop shop. We sell them in single servings on our website or on Amazon.

Catharine:

Our website is energybits.com by the way. But back to these two, spirulina, the blue-green algae and chlorella, which is the green algae. So spirulina, we call it energy bits or beauty bits and chlorella, which we call recovery bits. Those two are called superfoods for some, I call them a super-duper food. They're called that way because they are so amazing. They are unaltered by us, raw, vegan, low Cal, low carb, zero carb, ketogenic, great for intermittent fasting, loaded with protein, B's. You'll never have to worry



about eating again to get proper nutrition. You can eat for entertainment and hanging out with your friends, but you will never have to worry about getting the nutrients you need to ensure health and longevity.

Catharine:

By the way, there's so much in them. They also especially, spirulina, replace your multi-vitamin, your fish oil co-Q 10, magnesium, potassium. So you can stroke off five, six, maybe more; Biotin, and other different supplements. that you do not need to take, which your body is probably not absorbing anyways because they don't exist like that in nature. Algae is food. Remember I showed you the picture, right? So algae is food that you will absorb. So it absorbs the nutrients from the algae, where it doesn't with the supplements. And I'll finish with this. As I mentioned, spirulina has the highest protein in the world and chlorella has the highest chlorophyll in the world. Why is chlorophyll important? Well, here's the picture of the cellular structure of chlorophyll. Here's a picture of the cellular structure of your hemoglobin. Notice that they are virtually identical. They are. Your hemoglobin only has iron in the middle, which is what carries oxygen and there's magnesium in the middle of the chlorophyll.

Catharine:

This is why chlorophyll has been used for centuries for the sick. This is why your dog goes and eats grass. When he's sick, chlorophyll is cleansing. It cleanses your blood. It creates blood. When you have healthy blood, you have a healthy body. You have a healthier immune system, a healthier brain. Everything works better with chlorophyll, but you can eat a room full of a arugula and not get the same amount of chlorophyll that you would get in a single serving of chlorella recovery. That's why it's not just efficient nutrition, but I also call it intelligent food because you have to be intelligent to take it and it knows what to do in your body.

Dallas:

Right? Well, I feel like I've just gotten a fast course on

everything to know about algae and this has been great.

Catharine:

I'm glad you feel that you've received that much because it's just the tip of the iceberg. Sometimes I have a hard time deciding what to tell people, because I don't want to overload you, but it's so amazing. And the thing I love the most is you can track this. It's all science-based. I have access to those 2000 articles and you can go on and NIH library or go on our website. There's science coming. The problem is not that there's not enough science about algae; there's almost too much. So you don't know where to start. So that's why I tried to start; to make it easier for people and leave cookie crumbs along the way or algae tablets instead. haha

Dallas:

There you go. Well Catharine, I know I've learned a lot and like you said, there's still a lot to learn and I'm sure everyone listening or watching has learned a lot. I really hope we can do this again in the future. It's been a great

investment of time for sure and I'm excited to learn more.

Catharine:

Yeah, I'd have people come to our website, energybits.com. We have a promo code, CYBORG that biohackers can use to get 20% off.

Dallas:

Yes of course. Thank you again, Catherine. It's been an absolute pleasure and I want to talk more about algae in the future, for sure. Everyone, please go check out her website, energybits.com and go get your algae people!

Catharine:

Yeah, it's never too late to feel great. That's what I say.

Dallas:

There you go. Well, it's been a pleasure. I'm Dallas McClain again with Biohackers Update Magazine here with Catharine Arnston, the founder of energy bits. We had a great talk and we hope to converse again in the future. All right, signing off. Everyone have a great day. Bye bye.





SERRAPEPTASE: THE SUPER SUPPLEMENT

Supplements. Are they magical capsules capable of eradicating nutritional gaps and supercharging the human body, or sham pills yielding expensive urine, only as powerful as their placebo? (Although, of course, the power of such should not be underestimated.) Self-proclaimed “biohackers” often laud the praises of supplements on one hand and scrutinize their efficacy on the other, all the while contemplating the ideal forms and routes to go.

The goal of biohacking supplements often encompasses a broad if vague target of supporting immunity, wellness, or “the mitochondria.” Take for example NMN or NR, purported to boost the body’s NAD levels. Yes, I take these daily. Do I know if they’re actually boosting my NAD levels? It’s hard to know, so I’m just hoping for the best. Or take spermidine. Does it grant more years to your life? I suppose you can report back on your deathbed. (Unless, of course, such a concept becomes not applicable, if longevity technology has its way with immortality.) More concrete conclusions of cost/benefit can be made about

supplements that affect a specific biomarker. Did that grass-fed spleen raise your iron? Did that berberine lower your blood glucose or HbA1c? Did that probiotic resolve your constipation or diarrhea?

Rare is the supplement which boasts those broad-ranging effects of wellness, yet also very specifically address acute conditions, with evident results. I’m talking about that magic supplement which seems to do almost everything, and which people can point a finger to as being the cause. With scientific support to boot!

Enter serrapeptase.

While relatively few have heard of serrapeptase (yet), when you meet someone who has taken it, they tend to light up with a knowingness of having found some hidden secret from a faraway Oriental land. (The supplement has, after all, been used in Japan for decades.) I first started taking serrapeptase years ago for allergies: I’m worthless in a field of grass,

and was shocked at how it almost instantly removed my congestion and runny nose like they were never a thing. Who needs Claritin? When I met my Intermittent Fasting Podcast co-host, Gin Stephens (NYT best-selling author of Fast Feast Repeat), she quickly identified as a non-supplement person (which I completely respect). We were therefore a bit shocked when we realized there was, in fact, one supplement we both took, and swore by! As it turned out, serrapeptase was not only great for my allergies and inflammation, but it also could eradicate fibroids – Gin’s successful serrapeptase experience.

And it doesn’t end there.

THE HISTORY

Serrapeptase (also known as serratiopeptidase) is an enzyme created by the Japanese silkworm, which it uses to break down the walls of its cocoon. Despite being relatively unknown in the US, Japan and Europe have implemented serrapeptase for a myriad of therapeutic uses for decades. The compound is now conventionally manufactured, cultivated from a gram-negative strain of bacteria. Serrapeptase’s proteolytic (protein-digesting) and fibrinolytic (blood clot-thinning) potential grant it an extraordinary number of benefits in the body, rivaling many pharmaceuticals, yet without their notorious side effects. Interestingly, while the majority of serrapeptase’s benefits are often ascribed to its epic proteolytic effects, mutant forms bred to not contain its protein-digesting potential still show powerful effects – like preventing biofilm formation – indicating multiple factors may be synergistically at play in its therapeutic potential.

THE HEALTH BENEFITS

PAIN, INFLAMMATION, AND HEALING

The powerful anti-inflammatory golden child of modern medicine, non-steroidal anti-inflammatory drugs (NSAIDs) are known for their notorious side effects wreaking havoc

on the gut, including indigestion and stomach ulcers. Clinical studies have shown serrapeptase produces better anti-inflammatory effects in rats compared to aspirin, and comparable effects to diclofenac sodium, without the side effects. In trials, serrapeptase can relieve pain in patients with root canals, toothaches, molar extractions, breast engorgement, carpal tunnel syndrome, and more.

Serrapeptase’s pain-relieving effects may be thanks in part to its ability to modulate and break down inflammatory compounds (such as histamine, serotonin, and bradykinin) and preventing chronic inflammation in injuries. It affects cell adhesion molecules which are responsible for guiding the inflammatory response, controls temperature, and encourages healing and wound repair. Serrapeptase can drain excess fluid in wounded tissue, consequently reducing pain and swelling, and catalyzing tissue repair. In a study of 544 patients treated for peri-implantitis (inflammation in the connective tissue which leads to bone loss), serrapeptase helped repair bone lesions and accelerated the bones’ healing. Serrapeptase has also been shown to reduce C-reactive protein and myeloperoxidase, markers of inflammation. When looked at for its effect on the inflammatory bowel disease, ulcerative colitis, in rats, serrapeptase was found to reduce glutathione depletion, lipid peroxidation, and nitrous oxide production.

Interestingly, some studies have found serrapeptase works synergistically with NSAIDs, since it does not affect lipoxygenase enzymes, a primary target of NSAIDs, which are responsible for many of NSAIDs’ negative side effects. Yet other studies have found serrapeptase does not work in conjunction with some NSAIDs, indicating a conflicting mechanism of action. For this reason, I suggest replacing NSAIDs with serrapeptase, rather than adding them to it.

HEART DISEASE AND ALZHEIMER’S

With its fibrinolytic potential, serrapeptase has been shown to break down damaged and dead tissue, dissolve

blood clots, and even remove arteriosclerotic plaques, cholesterol, and other fatty deposits from the arteries. That dissolving power even extends to amyloid plaque! In clinical trials, serrapeptase has been shown to rival the go-to anti-amyloid compound nattokinase's ability to break down amyloid plaque and treat Alzheimer's. This is likely thanks to serrapeptase's proteolytic, antioxidant, and ultimately anti-amyloidogenic effects. Importantly, serrapeptase can dissolve amyloid plaques both in vitro (in a cell dish outside of the human body), and in vivo (taken as a supplement within the body).

CANCER

Serrapeptase has even been used in immunotherapy to treat cancer, which it may combat in part by removing dead cells from cancer sites, increasing the rate of target therapy. One study found combining serrapeptase with ashwagandha and vitamin C treated thyroid cancer, while another study found complete remission of a thyroid tumor after a year and a half of combination therapy involving serrapeptase.

THE NEW FRONTIER OF ANTIBIOTICS

A promising new frontier for serrapeptase is the war of antibiotic resistance. While many antibiotics can become defunct or lose potency with their increasing use, numerous studies have revealed that pairing serrapeptase with antibiotics increases their effectiveness. Serrapeptase can affect numerous mechanisms of bacterial virulence, including their ability to invade and adhere to cell walls. Serrapeptase may break down biofilms – protective matrixes which bacteria produce, and which can form a barrier to traditional antibiotics. Serrapeptase may eradicate and prevent future formation of biofilms, rendering bacteria more susceptible to antibiotics. In a rodent study, serrapeptase eradicated staph infection. In another study, 37.5% of rats became infected when treated with only antibiotics, while adding serrapeptase to the mix reduced infection rate to 5.6%.

THE INGENUITY OF SELECTIVITY

One of serrapeptase's most fascinating characteristics is its ability to "know." It has a unique ability to dissolve dead tissue in injured areas, while not harming living cells. Like how the process of autophagy during fasting selectively targets damaged, old proteins to remove and recycle, serrapeptase holds a similar selective power. Studies have shown that serrapeptase specifically accumulates in damaged tissue rather than the blood stream. Once absorbed, it is directly distributed to inflammatory sites, perhaps by binding with plasma protease inhibitor alpha-1 macroglobulin.

SIDE EFFECTS?

Does serrapeptase have a dark side? When it comes to side effects, they are largely absent, and only minimal if so. A natural compound that has been in use for decades, serrapeptase is generally considered safe. Most studies show no adverse effects, and those which do are relatively minor, often occurring when using high dosing to evaluate mechanisms of action and potential. Side effects may therefore be dose dependent, or when used in combination with other drugs. Most of my audience reports no side effects, only benefits. Those that do, report GI distress, which may be due to the specific brand or dosing. I encourage everyone to experiment for themselves, and lower the dose, switch brands, or cease use, if any side effects arise.

FINAL THOUGHTS

I don't like to think of myself as a supplement girl. In my dream world, we receive all the nourishment and support we need from ancestral whole foods and an active lifestyle, full of light and love. That said, I'm all for supporting our body's vitality from the inside out, and serrapeptase fits the bill for supercharging the body in a myriad of shocking avenues. I started it for mere allergies, and have kept it in my life for so much more. From inflammation to brain fog to cardiovascular disease and Alzheimer's prevention,

serrapeptase seems to have something for everyone. In fact, a June 2021 study even proposed serrapeptase as a therapeutic potential for a certain virus making its way around the world. Oh my! Next time you fall into some silk sheets, or see a cocoon, maybe take a moment of gratitude for this powerful enzyme.



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“In clinical trials, serrapeptase has been shown to rival the go-to anti-amyloid compound nattokinase’s ability to break down amyloid plaque and treat Alzheimer’s. This is likely thanks to serrapeptase’s proteolytic, antioxidant, and ultimately anti-amyloidogenic effects.”

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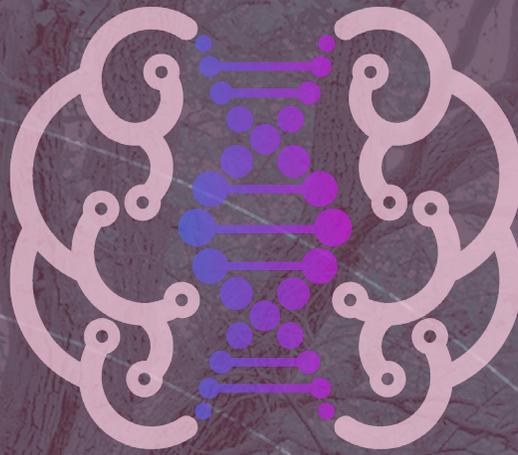
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