

# How to Live Longer and Healthier

## The secret to anti-aging and longevity

- Which intracellular organelle is the most important for anti-aging, health, and longevity
- The best vitamins to promote anti-aging, health, and longevity

*“It’s not what you don’t know that will get you in trouble; it’s what you know for sure that just ain’t so.”*

*Mark Twain*

## The secret to anti-aging and longevity

The mitochondria is a unique intracellular structure that produces 95% of the cellular energy and plays a critical role in protecting the cell from oxidative stress. They are the powerhouse of the cell and are the only intracellular organelle that has its own DNA and is able to divide and replicate on its own. The general consensus among researchers is that mitochondrial dysfunction plays a central role in nearly every degenerative disease. The major factors involved in

poor mitochondrial function include deficiencies in critical cellular nutrients, proprioceptive deficiencies, and environmental toxicity. The standard American diet, sedentary lifestyle, and ubiquitous amount of toxins in our society make today's generation far more susceptible for mitochondrial dysfunction than ever before. Mitochondria are tiny organelles, originally thought to be derived from bacteria. Most cells have anywhere from 1 to 2,000 of them. In heart muscle cells about 40% of the cytoplasmic space is taken up by mitochondria. In liver cells the figure is about 20-25% with 1000 to 2000 mitochondria per cell. Your organs need energy to function properly, and that energy is produced by the mitochondria in each cell.

### **Mitochondria: generators of disorders and disease**

In this process of producing energy, mitochondria produce waste products. In mitochondria these are called reactive oxygen species (ROSs) and include 'free radicals.' ROSs can damage Mitochondrial DNA. There is no exception and since it is located so close to

the energy converters it can be heavily attacked, sometimes mutating ten times faster than nuclear DNA in an ordinary cell. These mutations are the source of mitochondrial disease that can affect areas of high energy demand such as brain, muscles, central nervous system and the eye. People suffering from Parkinson's or Alzheimer's disease have a much higher mitochondrial mutation rate than do healthy people and so the functioning of mitochondria may be implicated in these diseases. Recent research indicates that in addition to converting energy mitochondria play quite a large part in determining when a cell will die by ordinary cell death (necrosis) or programmed cell death (apoptosis).

Mitochondria are also thought to influence which eggs in a woman should be released during ovulation and which should be destroyed by programmed cell death (apoptosis). French and Japanese centenarians appear to have advantageous mutations in their mitochondrial DNA. In the French, the variant was found in 14% of

the centenarians compared with 7% of the whole population. 62% of the Japanese centenarians had advantageous mitochondrial DNA compared with 45% of the general population. Mitochondria convert oxygen, and the sugar, fat and protein from foods to useable energy. The body uses that energy for daily function and growth. To understand how they work, think of mitochondria like a furnace. Mitochondrial stability is enhanced through heavy consumption of anti-oxidants and trace minerals. This can be accomplished with the generous use of lemons/limes, pink salts, turmeric, rosemary, ginger, oregano, cinnamon, cloves, & cilantro in meals, soups, salads, and drinks. Great mitochondrial boosting nutrients include Vitamin D, Folic acid, Pyridoxine (B6), Vitamin B12, Zinc, CoQ10, and trace minerals. Vitamin D levels should be between 60-100 ng/ml. Boost Vitamin D naturally with 20-60 minutes of sunlight every day or supplement with an emulsified Vitamin D3. A raw, whole-food multivitamin that

supplies ample amounts of Folic acid, B6, B12, Zinc, trace minerals, & CoQ10 should be consumed daily.

**Three ways you can improve mitochondrial function and enhance energy, wellness, and longevity:**

**Eat less.** Animal studies involving a range of species prove that caloric restriction extends lifespan, and population studies suggest that this holds true for humans as well. When you cut back on food consumption, fewer demands are made on your mitochondria, and production of damaging free radicals declines. This not only enhances mitochondrial efficiency, but also turns on SIRT1 genes, which encode proteins that boost cellular function. The result? Better health and a longer life.

**Exercise more.** The stress of physical exercise tunes up existing mitochondria and activates biochemical pathways that stimulate the production of new ones, a phenomenon known as mitochondrial biogenesis. Studies of endurance athletes reveal that their muscles

have exceptionally high concentrations of mitochondria. Simply engaging in consistent, moderate aerobic activity stimulates your muscle cells to make this adaptation to increased energy demands.

**Take nutritional supplements that mimic the positive effects of exercise and caloric restriction.**

One of them is **resveratrol**, which activates the specific genes that stimulate mitochondrial function and biogenesis. As a result, **resveratrol** has been shown to protect against cardiovascular and neurodegenerative diseases, enhance antioxidant status, reduce inflammation, and, in animals, extend lifespan and retard age-related deterioration. The suggested dose is 100-250 mg per day. Another useful supplement is **L-arginine**, an amino acid that is the primary precursor of nitric oxide (NO)—one of several biochemical pathways that are powered up by exercise. In addition to its protective effects on the mitochondria, NO is a very powerful vasodilator. It relaxes the arteries, enhances vascular health, improves blood

flow, and even boosts sexual function. The suggested dose of **L-arginine** is 1,000–2,000 mg a day.

**Alpha lipoic acid** (also called lipoic acid or ALA) is also important for promoting mitochondrial biogenesis. ALA is useful for general antioxidant support and to treat and prevent neuropathy and other diabetic complications. ALA also helps with blood sugar and weight control because it stimulates glucose uptake and increases the burning of fatty acids. I recommend 600–1,200 mg of ALA daily. Last but certainly not least is **coenzyme Q10 (CoQ10)**, an antioxidant present in all cells and particularly concentrated in the mitochondria. **CoQ10** participates in the production of adenosine triphosphate (ATP)—the high-energy packets that fuel our minds and bodies—as part of the electron transport chain and also protects the mitochondria against free-radical damage. Fluoride in your toothpaste and water disrupts the electron transport system and lowers your energy production. One of the reasons I’m so opposed to cholesterol-lowering statin drugs is that they

interfere with your body's production of **CoQ10** and have disastrous effects on the heart, liver, and brain.

**Magnesium** plays an important role in a wide variety of biochemical processes including optimizing mitochondrial function. The evidence is clear: if you want to optimize your mitochondrial function, metabolism, and reduce your risk for type 2 diabetes and cardiovascular disease, one of the things you need to do is consume adequate magnesium. Magnesium also plays a role in your body's detoxification processes and therefore is important for helping to prevent damage from environmental chemicals, heavy metals, and other toxins. Even glutathione, your body's most powerful antioxidant that has even been called "the master antioxidant," requires magnesium for its synthesis. Eating processed food is a primary risk factor for magnesium deficiency. Magnesium is also lost through stress and lack of sleep. Optimizing mitochondrial metabolism can be an effective cancer treatment. But your mitochondrial function is also



crucial for overall good health, energy, and athletic performance. In addition to not getting sufficient amounts from your diet, magnesium is also lost through stress, lack of sleep, alcohol consumption, and prescription drug use (especially diuretics, statins, fluoride and fluoride-containing drugs such as fluoroquinolone antibiotics (Levoquin), which cause mitochondrial damage and oxidative stress; 20+ million annual prescriptions in America alone. Magnesium levels can also decline in the presence of certain hormones, such as estrogen. If you have elevated insulin levels — which an estimated 80 percent of Americans do — you're quite likely to have low magnesium levels. Digestive problems such as Crohn's disease and leaky gut impair your body's ability to absorb magnesium, which is yet another cause of inadequate magnesium levels. There's no lab test that will give you a truly accurate reading of your magnesium status. The reason for this is that only 1 percent of the magnesium in your body is found in your blood; 50 to 60 percent resides in your bones, and

the remaining is in your soft tissues. Some specialty labs do provide an RBC magnesium test which is reasonably accurate. You could theoretically keep your magnesium levels in the therapeutic range without resorting to supplements simply by eating a varied diet, including plenty of dark-green leafy vegetables (kale, collard greens, celery, cilantro, Bok Choy, etc). One way to really increase your magnesium, as well as many other important plant-based nutrients, is by juicing your greens.

The recommended dietary allowance (RDA) for magnesium ranges from 310 to 420 mg per day, depending on your age and sex. However, as noted by Dr. Dean, some researchers believe we may need anywhere from 600 to 900 mg/ day for optimal health. Early signs of magnesium deficiency may include headaches, loss of appetite, nausea and vomiting, fatigue, or weakness. More chronic magnesium deficiency can lead to far more serious symptoms such as:

- Abnormal heart rhythms and coronary spasms
- Muscle cramps and contractions
- Seizures
- Numbness and tingling
- Personality changes

## **MITOCHONDRIAL DYSFUNCTION IS NOT NECESSARILY INHERITED**

Of the 25 children in this study, only two (8%) had specific mutations in their mitochondrial DNA that are considered pathogenic (disease causing). Mitochondrial DNA is inherited from the mother only. And though mutations in the nuclear DNA (inherited from both parents) can affect mitochondrial function, the authors wrote: “It is possible that there are important environmental or genetic factors in addition to the mtDNA mutation” in the development of autism

in some cases. This finding is not inconsistent with an earlier estimate from the Cleveland Clinic, which says that 75% of mitochondrial disorders are “sporadic” in nature, meaning they were probably triggered by environmental factors. Heavy metals, pesticides, herbicides (glyphosate), formaldehyde, alcohol and some medications can damage mitochondria, especially in developing fetuses, published studies show.

**From Mitochondrial Function to Neuroprotection-an Emerging Role for Methylene Blue.** Tucker D1, Lu Y1, Zhang Q2.

MB can reroute electrons in the mitochondrial electron transfer chain increasing the activity and effectively promoting mitochondrial activity while mitigating oxidative stress. In addition to its beneficial effect on mitochondrial protection, MB is also known to have robust effects in mitigating neuroinflammation. Mitochondrial dysfunction has been identified as a seemingly unifying pathological phenomenon across a

wide range of neurodegenerative disorders, which thus positions methylene blue as a promising therapeutic agent. In both in vitro and in vivo studies, MB has shown impressive efficacy in mitigating neurodegeneration and the accompanying behavioral characteristics in animal models for such conditions as stroke, global cerebral ischemia, Alzheimer's disease, Parkinson's disease, and traumatic brain injury. MB is effective because it's an antifungal, antibacterial and anti-parasitic, antidepressant, neutralizes ammonia poisoning, and nitrate poisoning.

### **Mitochondrial Facts**

- Red blood cells are the only cell type that do not contain mitochondria.
- Mitochondria are the only subcellular organelle that contain DNA outside of the nucleus.
- Muscles contain the highest mitochondrial content of any tissue in your body.
- John Holloszy, a professor at Washington University in St. Louis, MO found that endurance training

induced large increases in muscle mitochondrial content and increased the ability of muscle to uptake glucose during and after exercise.

- Chronic disuse of muscle, sedentary behavior and aging each independently result in a decline in mitochondrial content and function, leading to the production of free radicals and cell death.
- The muscle tissue of people with type 2 diabetes has been extensively studied, revealing gross defects in mitochondrial number and function.
- Studies have also shown that defective mitochondrial biogenesis in the heart can predispose individuals to cardiovascular complications, heart disease and the metabolic syndrome.
- Metabolic syndrome is a group of risk factors -- high blood pressure, high blood sugar, unhealthy cholesterol levels, and abdominal fat.
- These risk factors double your risk of blood vessel and heart disease, which can lead to heart attacks and strokes. They increase your risk of diabetes by five times.

- Regular endurance exercise by itself (independent of changes in diet) can normalize age-related mitochondrial dysfunction simply by activating mitochondrial biogenesis.
- Recent work is linking several severe side effects of treating HIV with the treatment drugs AZT and 3TC. It appears that the drugs damage mitochondria and block the production of mitochondrial DNA.
- Mitochondrial DNA is only inherited through the maternal line. Any mitochondrial DNA contributed by the father is actively destroyed by programmed cell death after a sperm fuses with an egg.
- Distance runners rely mainly on aerobic respiration, which is far more efficient. Anaerobic respiration makes 2 ATP molecules for each molecule of glucose, and aerobic respiration makes up to 38 ATP for each molecule of glucose. This is why distance runners have more mitochondria. Sprinters need more quick energy, so undergo lactic acid fermentation, producing energy without oxygen, but causing that "burn" in your muscles. B-complex

vitamins breakdown the lactic acid preventing the burn.

- T3 acts on the nucleus to influence the expression of genes involved in the regulation of cellular metabolism and mitochondria function.
- Once inside the cells, thyroxine (T4) must be converted to T3 and utilized in the mitochondria. Potassium plays a role in sensitizing the mitochondria to thyroid hormone.
- Fluorides in drinking water and toothpastes, bromine and chlorides found in bleaches used to make white flour are powerful inhibitors of thyroid hormone utilization. They interfere with iodine metabolism.
- Fructose (fruit sugar) impairs the production of cellular energy. Sticking to two portions of fruit per day. Choose 'whole' fruit rather than juices and avoid products with added fructose syrups.
- Substances such as isothiocyanates, in soy and in raw cabbage, cauliflower and broccoli also inhibit thyroid hormone utilization by blocking the enzyme that enables thyroid utilization of iodine.



- Foods that are most detrimental for one's thyroid are soy products and foods made with white flour. Many packaged foods processed with water contain high levels of fluorides that have found their way into water supplies.
- Manganese deficiency can reduce thyroid activity. Manganese is required for T4 production. Manganese deficiency or biounavailability are very common today.
- Adrenal exhaustion causes manganese to become biounavailable.
- Vitamins C and B-complex, for instance, tend to enhance thyroid activity.
- Biounavailable calcium and magnesium stabilize cell membranes. This causes reduced cell membrane permeability that decreases thyroid hormone uptake into the cells. This produces a cellular thyroid hormone deficiency.
- Energy production requires many nutrients and can be blocked by toxic chemicals and heavy metals.

- Cadmium toxicity or zinc deficiency can cause thyroid hormone to be ineffective in stimulating energy production.
- Support your adrenal glands (adaptogenic herbs)
- Take Pure Synergy every day (60 organic/wildcrafted different grasses, herbs, minerals, vitamins): supplies all the raw foods your body needs to repair.

The keys to anti-aging and longevity involve a healthy lifestyle, that is, eating raw organic foods when ever possible, exercise, meditation, and reduced consumption of prescription drugs and processed foods. Living in the fast lane will quickly shorten your life because of increased production of cortisol and dramatically reduce your quality of life. The choice is yours!

Next week I have a returning guest, Patricia Sihlanick, and we will be talking about spirituality, protecting yourself against 5G and EMFs, and how to stimulate

your body's own stem cells. You really do not want to miss this presentation.