

A large, stylized white DNA double helix graphic is positioned on the left side of the slide, extending from the top to the bottom. The background is a solid blue color with a white wavy line at the bottom.

# Biogenetix

Nutritional  
Supplements

*“The Secret Mechanism”*



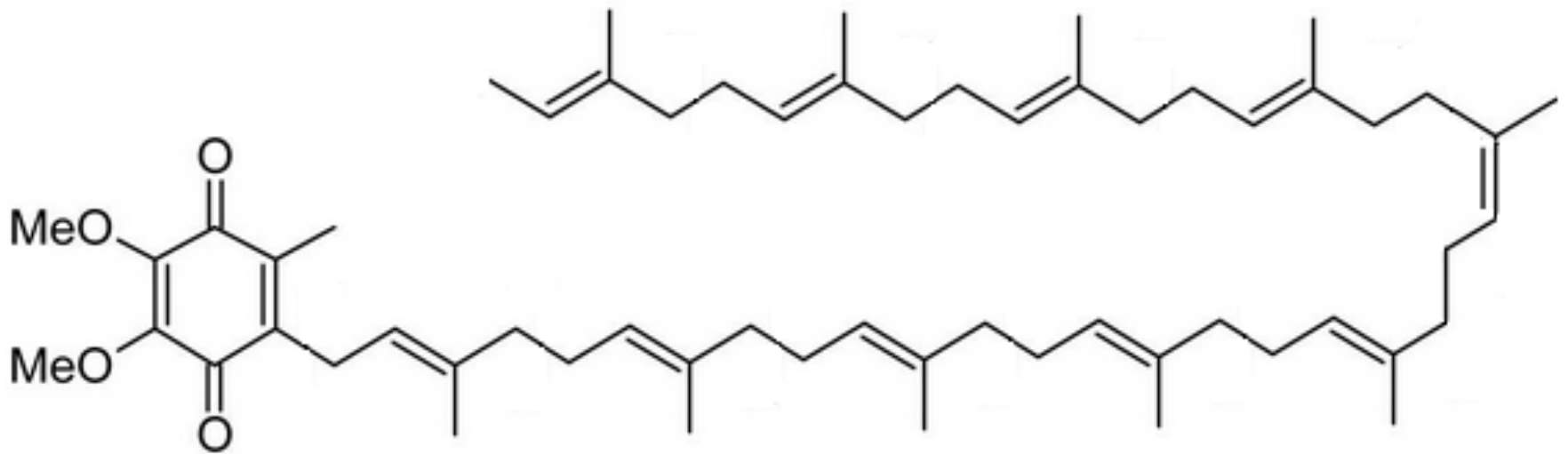
Biogenetix

# Disclaimer

- \* Biogenetix products are not intended to diagnose, treat, reverse, cure, or prevent any disease. They are intended to be used as dietary supplements for the sole purpose of supporting patients. The following statements have not been evaluated by the FDA.*
- \* The information provided in this presentation is for your consideration only as a practicing health care provider. Ultimately you are responsible for exercising professional judgment in the care of your own patients.*



# Co Enzyme Q10



**Co Enzyme Q10 (CoQ10)**



# Who, What, Where...

- \* Ubiquitous in human tissue.
- \* Highest concentrations in organs with high rates of metabolism (heart, kidney, liver).
- \* Primary action is as a cofactor in ETC.
- \* Prevents generation of ROS and subsequent protein, lipid, and DNA damage.
- \* Decreased COQ10 leads to decreased cellular respiration.



# Continued...

- \* Doses in 30-200 mg per day have been shown to be effective at supporting the body's adaptation response to a myriad of conditions.
- \* Fat soluble and most utilized in: heart, lungs, liver, kidneys, spleen, pancreas, and adrenals.
- \* Entire body content is ONLY 500-1500mg!

J Pharm Bioallied Sci. 2011 Jul-Sep; 3(3): 466-467.

doi: [10.4103/0975-7406.84471](https://doi.org/10.4103/0975-7406.84471)

PMCID: [PMC3178961](https://pubmed.ncbi.nlm.nih.gov/PMC3178961/)

PMID: [21966175](https://pubmed.ncbi.nlm.nih.gov/21966175/)

Coenzyme Q10: The essential nutrient

[Rajiv Saini](#)



# Dynamic Role in Cardiovascular Health

Roles in: hypertension, ischemic heart disease, myocardial infarction, heart failure, viral myocarditis, cardiomyopathies, cardiac toxicity, dyslipidemia, obesity, type 2 diabetes mellitus, metabolic syndrome, cardiac procedures and resuscitation

Curr Cardiol Rev. 2018 Apr 15. doi:

10.2174/1573403X14666180416115428. [Epub ahead of print]

**Coenzyme Q10 in Cardiovascular and Metabolic Diseases: Current State of the Problem.**

Zozina V11, Covantev S2, Goroshko OA3, Krasnykh LM3, Kukes VG4.



# Cardiovascular Mortality Rates

PLoS One. 2018 Apr 11;13(4):e0193120. doi: 10.1371/journal.pone.0193120. eCollection 2018.

**Still reduced cardiovascular mortality 12 years after supplementation with selenium and coenzyme Q10 for four years: A validation of previous 10-year follow-up results of a prospective randomized double-blind placebo-controlled trial in elderly.**

[Alehagen U1, Aaseth J2, Alexander J3, Johansson P4,5.](#)

“Even after twelve years we observed a significantly reduced risk for CV mortality in this group, as well as in subgroups of patients with diabetes, hypertension, ischemic heart disease or impaired functional capacity.”



# Triglyceride Killer

Curr Pharm Des. 2018 Apr 5. doi: 10.2174/1381612824666180406104516.  
[Epub ahead of print]

**The effects of coenzyme Q10 supplementation on lipid profiles among patients with metabolic diseases: a systematic review and meta-analysis of randomized controlled trials.**

Sharifi N1, Tabrizi R2, Moosazadeh M3, Mirhosseini N4, Lankarani KB5, Akbari M2, Chamani M6, Kolahdooz F7, Asemi Z1.

CoQ10 supplementation may significantly reduce serum triglycerides levels, and help to improve lipid profiles in patients with metabolic disorders. Additional prospective studies are recommended using higher supplementation doses and longer intervention period.





# Heart Energetics

Curr Heart Fail Rep. 2018 Apr 30. doi: 10.1007/s11897-018-0386-8.  
[Epub ahead of print]

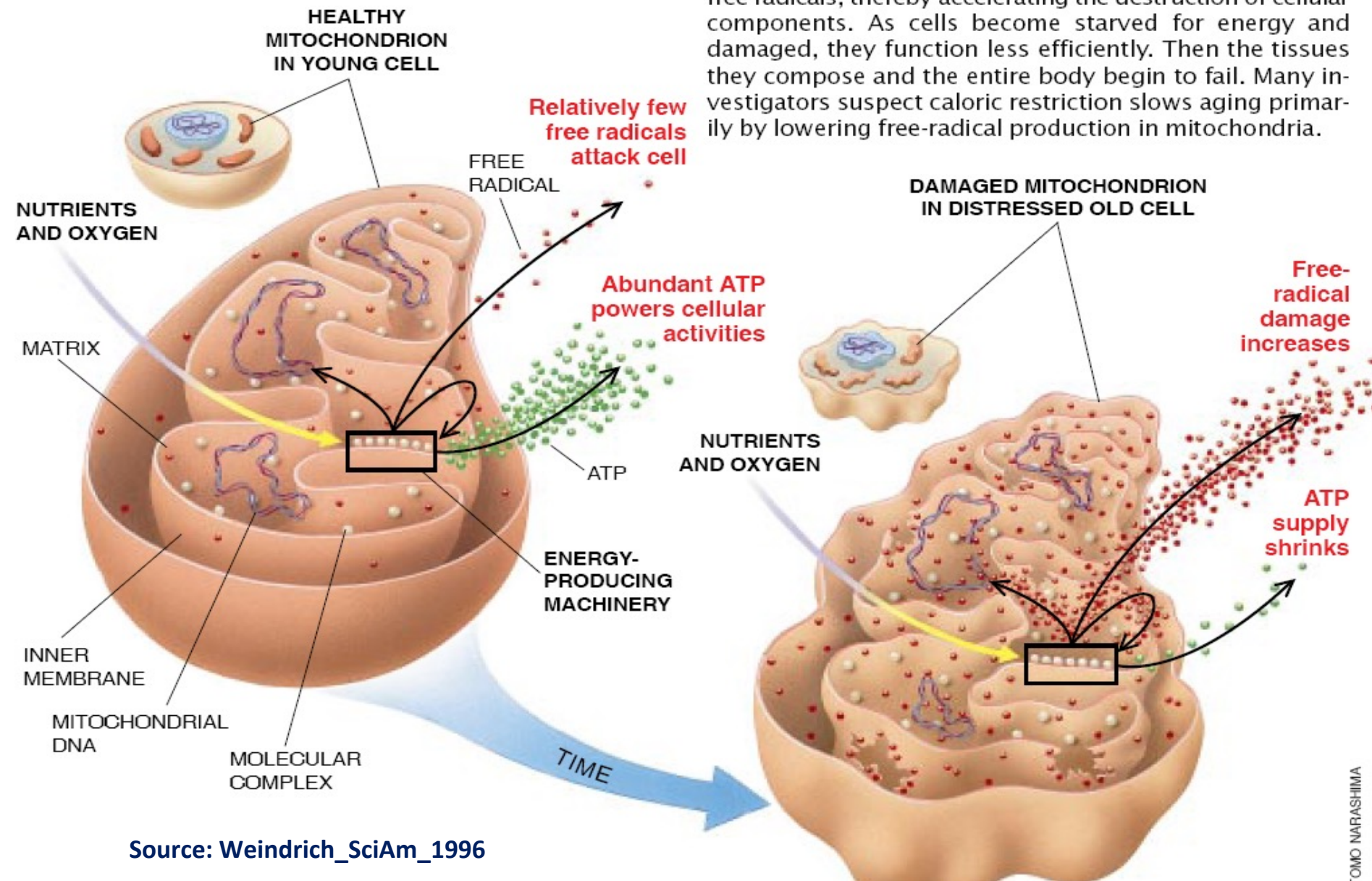
**Myocardial Energetics and Heart Failure: a Review of Recent  
Therapeutic Trials.**

[Bhatt KN1, Butler J2.](#)

“Myocardial energetics-based therapeutics are groundbreaking in that they utilize novel mechanisms of action to improve heart failure symptoms, without causing the adverse neurohormonal side effects associated with current guideline-based therapies.”



free radicals, thereby accelerating the destruction of cellular components. As cells become starved for energy and damaged, they function less efficiently. Then the tissues they compose and the entire body begin to fail. Many investigators suspect caloric restriction slows aging primarily by lowering free-radical production in mitochondria.



Source: Weindrich\_SciAm\_1996

# Epilepsy and Cognitive Decline

Pharmacol Rep. 2016 Dec;68(6):1301-1311. doi: 10.1016/j.pharep.2016.07.005. Epub 2016 Jul 22.

**Neuroprotective mechanism of Coenzyme Q10 (CoQ10) against PTZ induced kindling and associated cognitive dysfunction: Possible role of microglia inhibition.**

[Bhardwaj M1, Kumar A2.](#)



# Cognitive Decline

Front Pharmacol. 2015 Nov 9;6:268. doi: 10.3389/fphar.2015.00268. eCollection 2015.

**Microglial Inhibitory Mechanism of Coenzyme Q10 Against A $\beta$  (1-42) Induced Cognitive Dysfunctions: Possible Behavioral, Biochemical, Cellular, and Histopathological Alterations.**

[Singh A1, Kumar A1.](#)

Continued



# Attenuating Microglia Cells

- \* the brain's macrophage
- \* COQ10 is inhibitory.

$A\beta$  (1-42) administration significantly impaired cognitive performance in Morris water maze (MWM) performance test, causes oxidative stress, raised AChE level, caused neuroinflammation, mitochondrial dysfunction and histopathological alterations as compared to sham treatment. Treatment with CoQ10 (20 and 40 mg/kg) and minocycline (50 and 100 mg/kg) alone for 21 days significantly improved cognitive performance as evidenced by reduced transfer latency and increased time spent in target quadrant (TSTQ), reduced AChE activity, oxidative damage (reduced LPO, nitrite level and restored SOD, catalase and GSH levels), TNF- $\alpha$  level, restored mitochondrial respiratory enzyme complex (I, II, III, IV) activities and histopathological alterations as compared to  $A\beta$  (1-42) treated animals. Further, combinations of minocycline (50 and 100 mg/kg) with CoQ10 (20 and 40 mg/kg) significantly modulates the protective effect of CoQ10 dose dependently as compared to their effect alone.



# Parkinson's

Eur Neurol. 2015;73(3-4):205-11. doi: 10.1159/000377676. Epub 2015 Mar 10.

**The effect of creatine and coenzyme q10 combination therapy on mild cognitive impairment in Parkinson's disease.**

[Li Z1, Wang P, Yu Z, Cong Y, Sun H, Zhang J, Zhang J, Sun C, Zhang Y, Ju X.](#)

c/ creatine demonstrated neuroprotective mechanisms  
in associated with attenuating cognitive decline



# Autism Spectrum Disorders

Psychiatry Res. 2018 Apr 4;265:62-69. doi: 10.1016/j.psychres.2018.03.061.  
[Epub ahead of print]

**Coenzyme Q10 supplementation reduces oxidative stress and decreases antioxidant enzyme activity in children with autism spectrum disorders.**

Mousavinejad E1, Ghaffari MA2, Riahi F3, Hajmohammadi M4, Tiznobeyk Z5, Mousavinejad M6.

“Based on the results, high doses of CoQ10 can improve gastrointestinal problems (P=0.004) and sleep disorders (P=0.005) in children with ASDs with an increase in the CoQ10 of the serum. We concluded that the serum concentration of CoQ10 and oxidative stress could be used as relevant biomarkers in helping the improvement of ASDs.”

**90 days: 30mg 2x daily**



# Migraines

BMC Complement Altern Med. 2017 Aug 30;17(1):433. doi: 10.1186/s12906-017-1933-7.

**A combination of coenzyme Q10, feverfew and magnesium for migraine prophylaxis: a prospective observational study.**

Guilbot A1, Bangratz M2, Ait Abdellah S2, Lucas C3.





# “Glaucoma [tx] Option”

Klin Monbl Augenheilkd. 2018 Feb;235(2):157-162. doi: 10.1055/s-0044-101618. Epub 2018 Feb 15.

**[Mitochondrial Dysfunctions and Role of Coenzyme Q10 in Patients with Glaucoma].**

[Article in German; Abstract available in German from the publisher]  
[Erb C1, Konieczka K2.](#)

“...evidence that mitochondrial dysfunctions play an important role in many common eye diseases, such as glaucoma, dry eye, diabetic retinopathy, cataract and age-related macular degeneration (AMD).”

**potentially: glaucoma, cataracts, retinopathy, degeneration, etc.**



# Nephropathy

Iran J Kidney Dis. 2018 Jan;12(1):14-21.

**Effects of Coenzyme Q10 Supplementation on Gene Expressions Related to Insulin, Lipid, and Inflammation Pathways in Patients With Diabetic Nephropathy.**

Heidari A, Hamidi G, Soleimani A, Aghadavod E, Asemi ZI.



# Repeat Pregnancy Loss

Am J Reprod Immunol. 2015 Aug;74(2):169-80. doi: 10.1111/aji.12376. Epub 2015 Mar 20.

**Effect of Coenzyme Q10 on Th1/Th2 Paradigm in Females with Idiopathic Recurrent Pregnancy Loss.**

Talukdar A1, Sharma KA2, Rai R1, Deka D2, Rao DN1.

**TH1 bias has been identified as contributing factor to RPL. COQ10 was shown to cause significant decrease in TH1 cells as compared to the untreated group.**

# Oligozoospermia and Asthenozoospermia

Arab J Urol. 2018 Mar; 16(1): 113–124.

Published online 2018 Jan 2. doi: [10.1016/j.aju.2017.11.013](https://doi.org/10.1016/j.aju.2017.11.013)

PMCID: PMC5922223

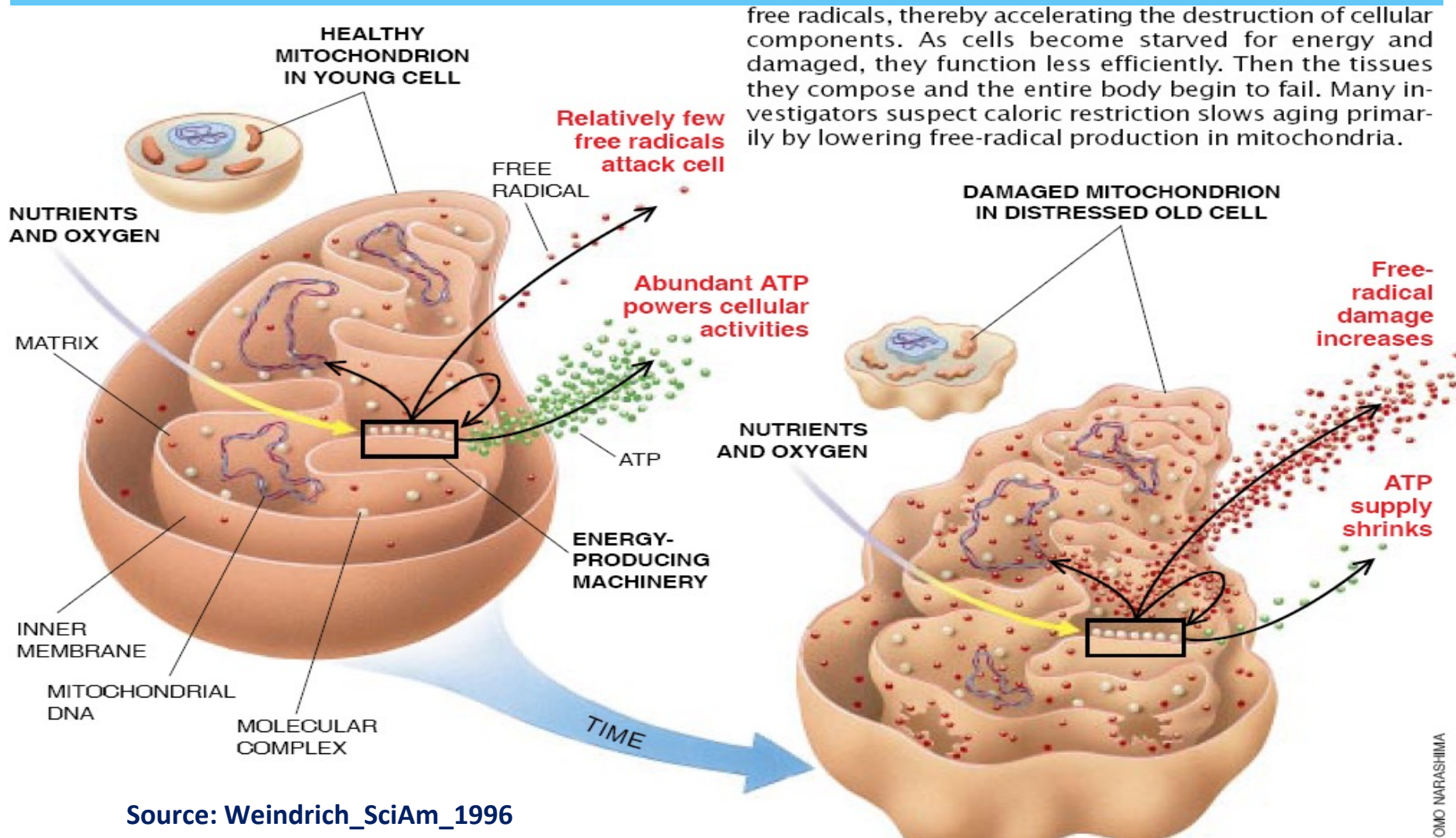
PMID: [29713542](https://pubmed.ncbi.nlm.nih.gov/29713542/)

Systematic review of antioxidant types and doses in male infertility: Benefits on semen parameters, advanced sperm function, assisted reproduction and live-birth rate

[Ahmad Majzouba,\\* and Ashok Agarwalb](#)



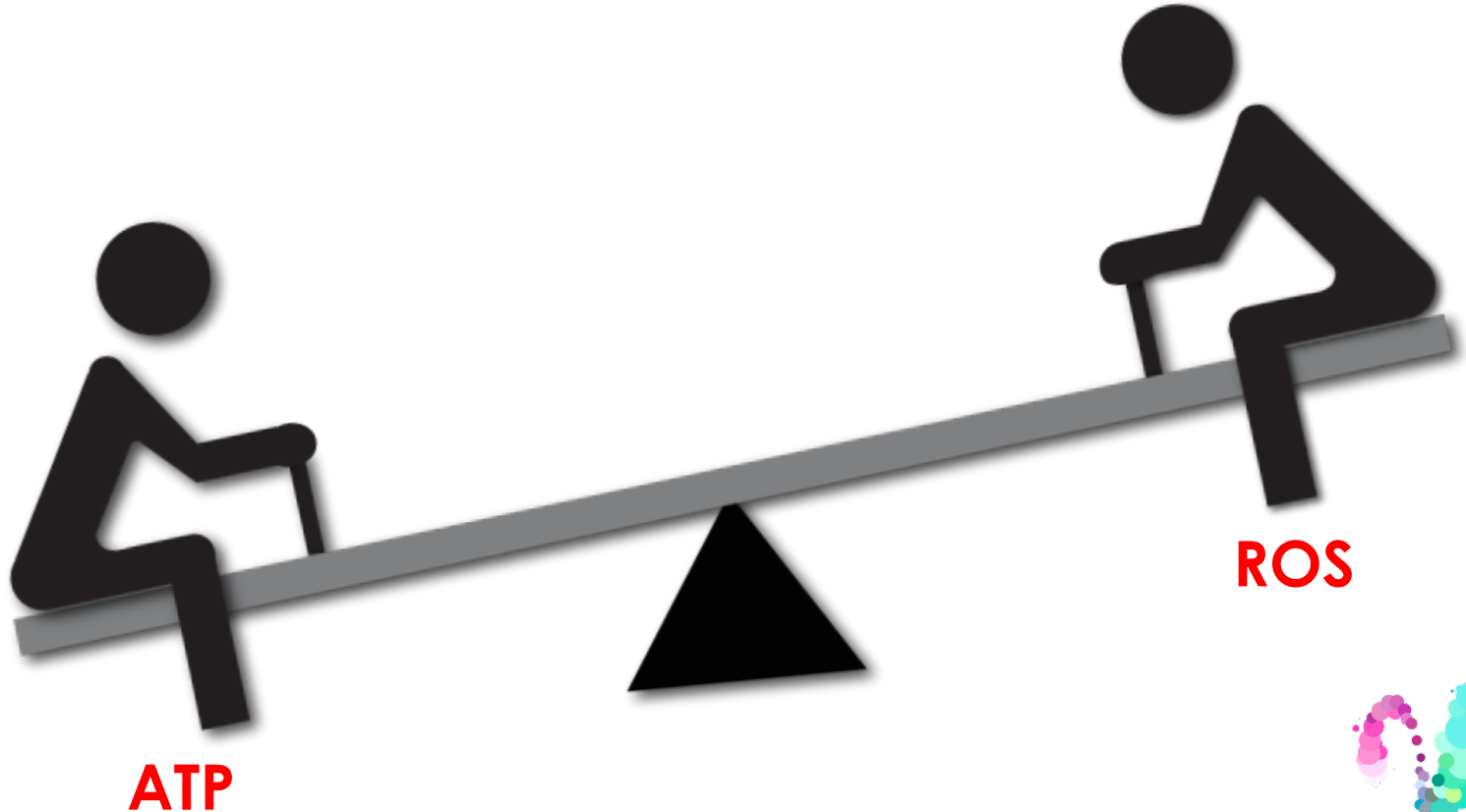
# Mitochondria Deteriorate with Stress



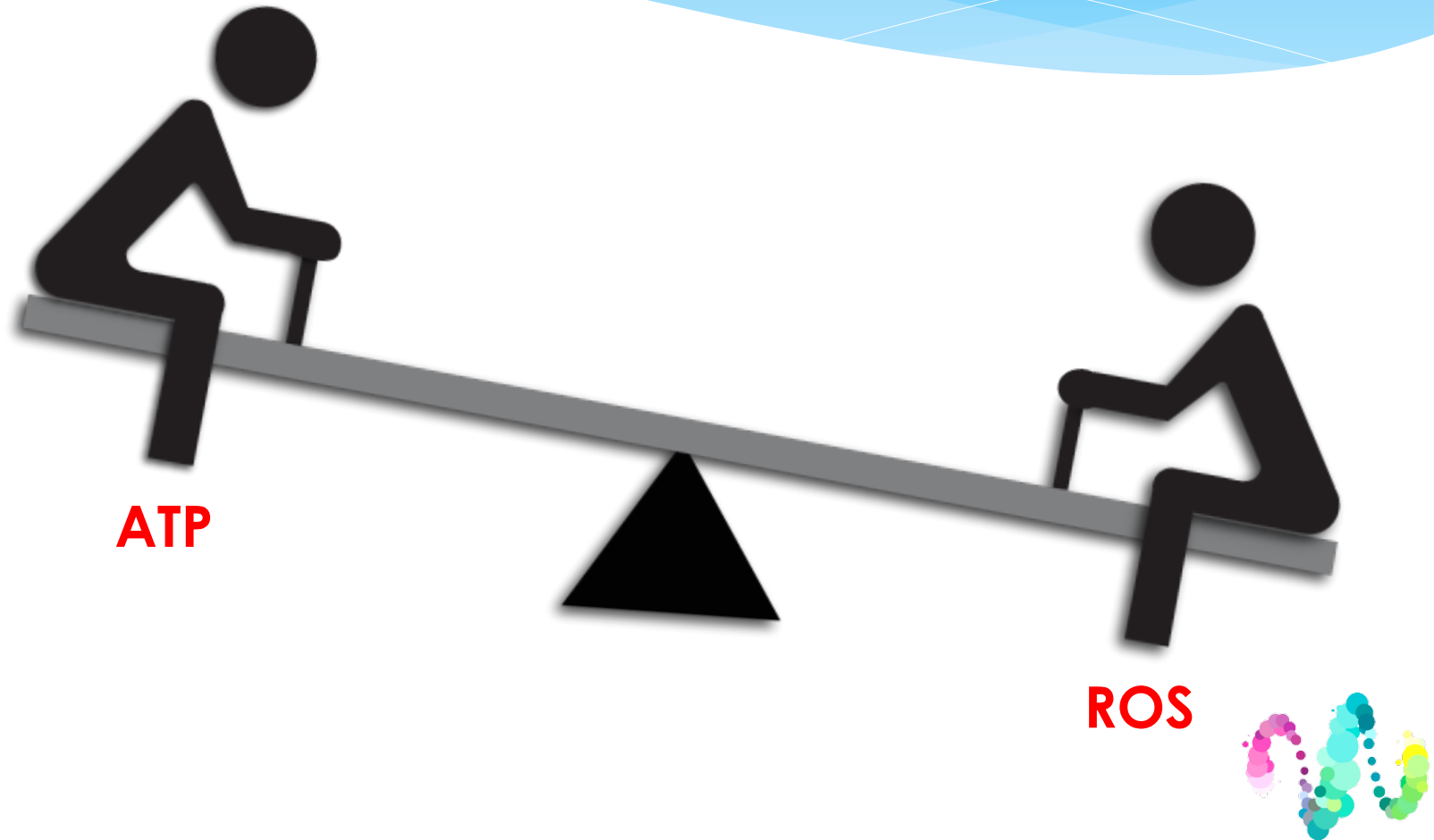
free radicals, thereby accelerating the destruction of cellular components. As cells become starved for energy and damaged, they function less efficiently. Then the tissues they compose and the entire body begin to fail. Many investigators suspect caloric restriction slows aging primarily by lowering free-radical production in mitochondria.

Source: Weindrich\_SciAm\_1996

# Output Balance



# Output Balance



# Bioavailability is KEY

Mol Nutr Food Res. 2010 Jun;54(6):805-15. doi: 10.1002/mnfr.200900155.  
**Supplementation with the reduced form of Coenzyme Q10 decelerates phenotypic characteristics of senescence and induces a peroxisome proliferator-activated receptor-alpha gene expression signature in SAMP1 mice.**

Schmelzer C1, Kubo H, Mori M, Sawashita J, Kitano M, Hosoe K, Boomgaarden I, Döring F, Higuchi K.

**In general, the reduced form of COQ10, Ubiquinol is more bioavailable.**





# Bioavailability is KEY

Curr Drug Deliv. 2016;13(8):1184-1204.

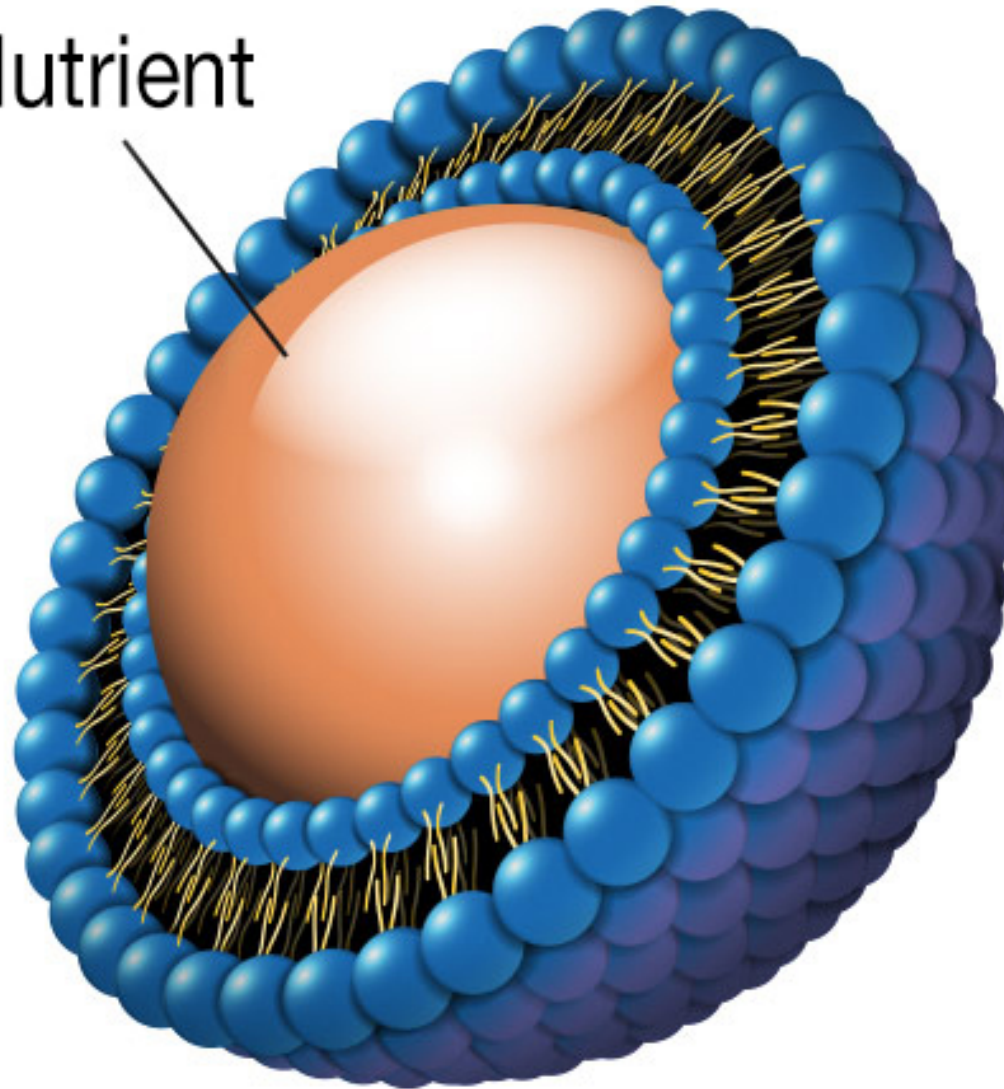
**Novel Carriers for Coenzyme Q10 Delivery.**

Kumar S, Rao R1, Kumar A, Mahant S, Nanda S.

**Because of some genetic predisposition and the generally poor absorption rates COQ10 has, nanotechnology becomes KEY.**

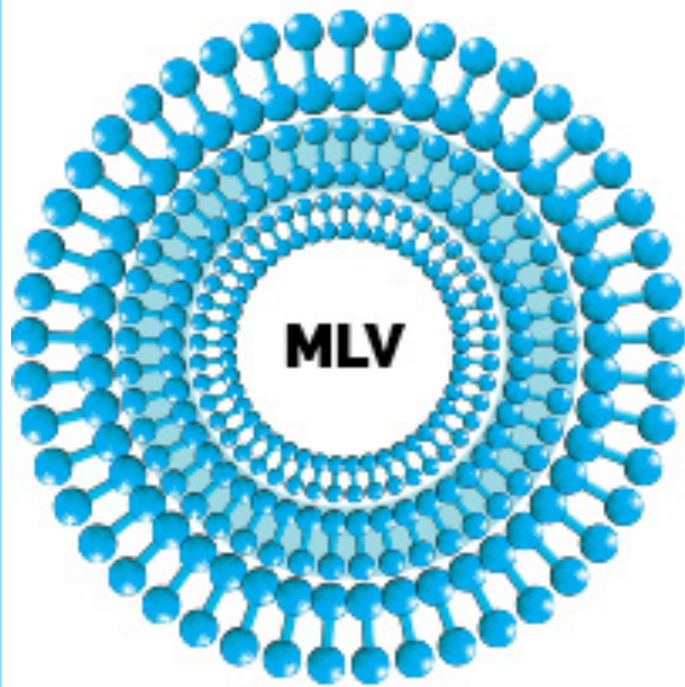


Nutrient

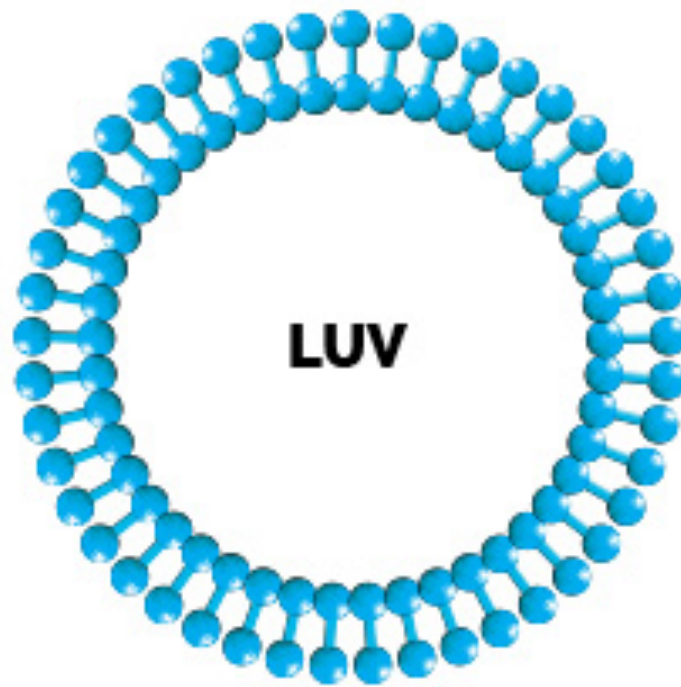


**Biogenetix Premium Liposomal Technology.**

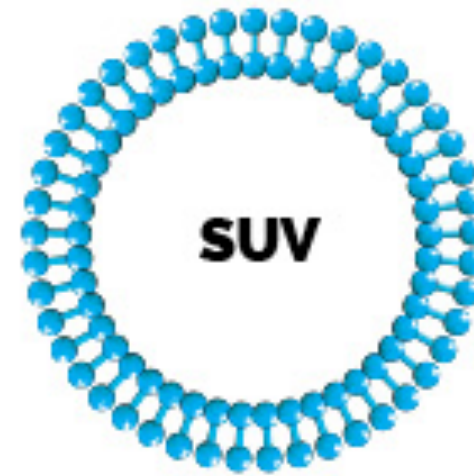




**300-5,000nm**



**100-300nm**



**20-100nm**



# BioG-Max CoQ10

