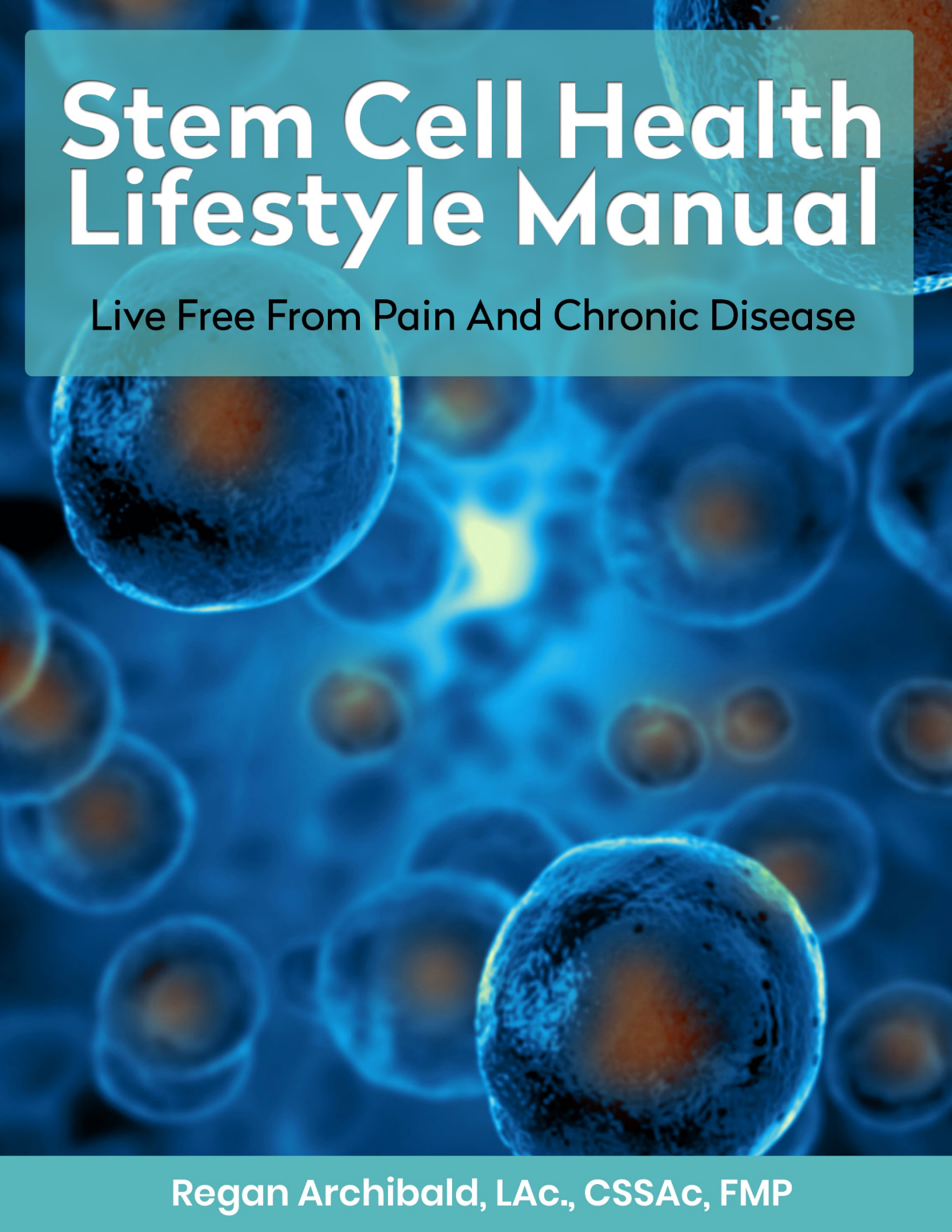


# Stem Cell Health Lifestyle Manual

## Live Free From Pain And Chronic Disease

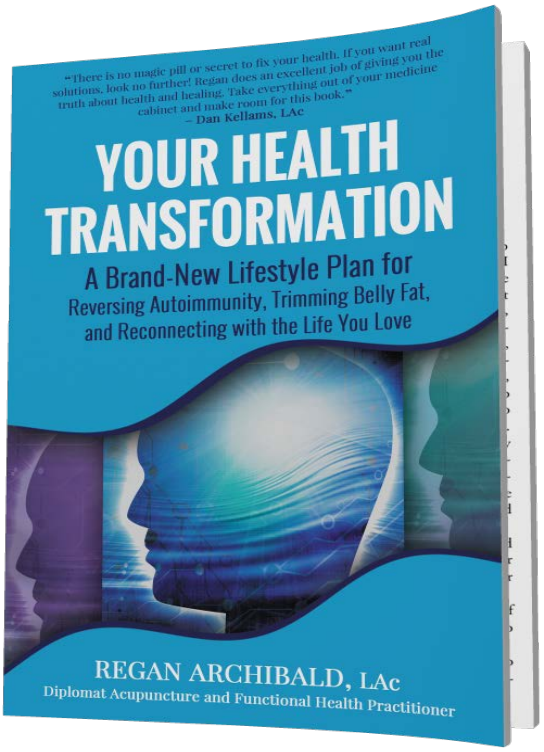
Regan Archibald, LAc., CSSAc, FMP

# CONTENTS

# "STEM CELL BREAKTHROUGH COURSE"

By Regan Archibald, Lac, CSSAc.,

Functional Medicine Practitioner




# STAY ENGAGED-ITUNES

# AGING-THE #1 CAUSE OF DEATH IS.....AGING.

- 150,000 people die everyday.
- 100,000 of those die from Aging, making aging the LEADING CAUSE OF DEATH.
- Definition of Aging: Poor regeneration or degeneration of organs and tissues.
- Is it Possible to Delay Aging?

# WHAT AGE WILL YOU LIVE TO BE?

- What age are you comfortable dying at? 80 or 100? Maybe 120?
- What if you were healthy and mentally fit?
- What if you had the financial resources?
- What if you had great relationships and a purpose to fulfill?

# YOU LOSE OVER 300 MILLION CELLS PER MINUTE!

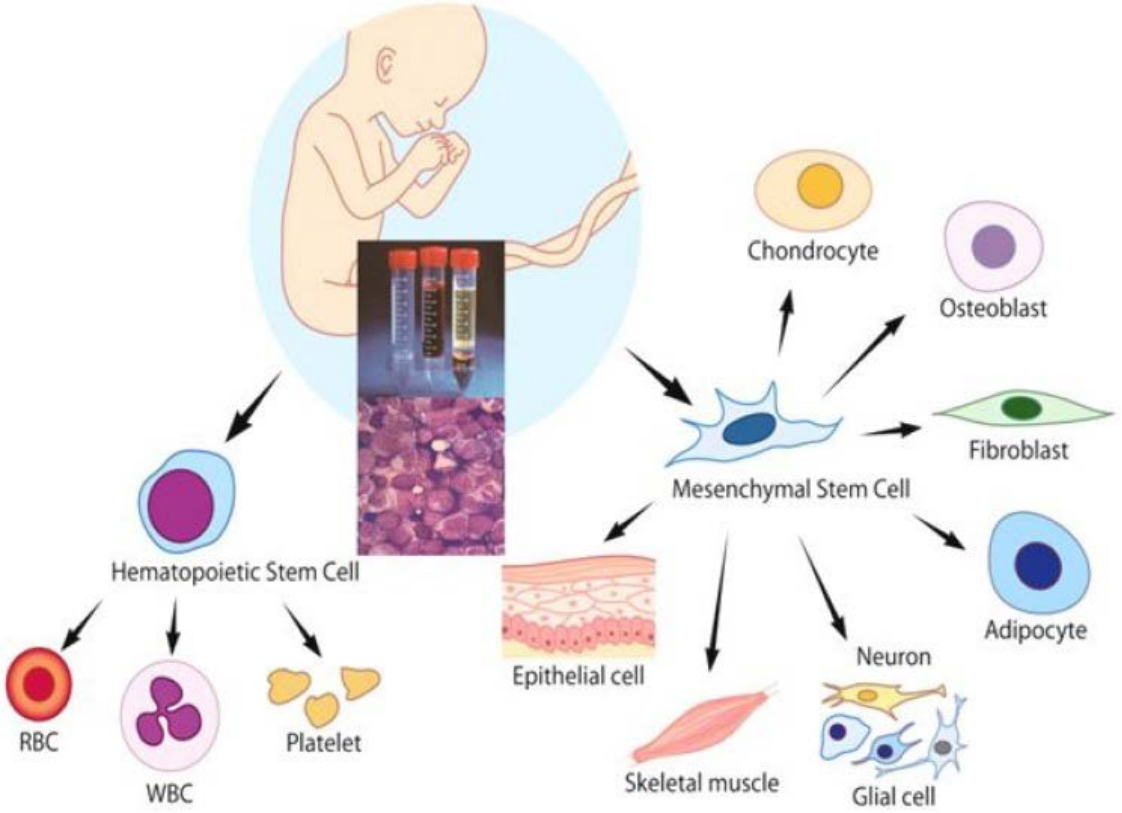
1 new born stem cell doubles every 24 hours and after 30 days = 1 Billion cells!

1 stem cell from 35 year old doubles every 48 hours and after 30 days = 32,000 cells.

1 stem cell from a 65 year old doubles every 60 hours and after 30 days = there is only 200 cells.

| HEALTH INDEPENDENCE | Name: | Date: |
|---|---|---|
| **Allows me to:** | **Is knowing how to:** | |
| | | |
| **Means experiencing life with:** | **Creates a future for:** | |
| | | |

# HEALTHY MOTHER DONORS




**Amniotic/Umbilical Cord**

Tissue graft is taken from the placenta of a donor who is concerned with the welfare of others.

From the uterus of legally performed C-section child births. (pre-screened, pre-tested).

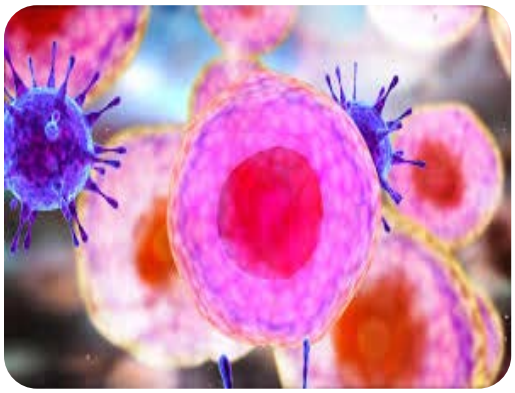
**No Harm to Mother or Baby**

# WHY INTRANASAL STEM CELLS WITH BIRTH TISSUE?

No-Immune Rejection, the birth tissue is an immune privileged environment.

Surrogate mothers can carry babies full term and give the baby to parents.

No genetic matching required.




**By Regan Archibald, Lac., cssac., functional medicine practitioner**

**LEVEL 5 Training**

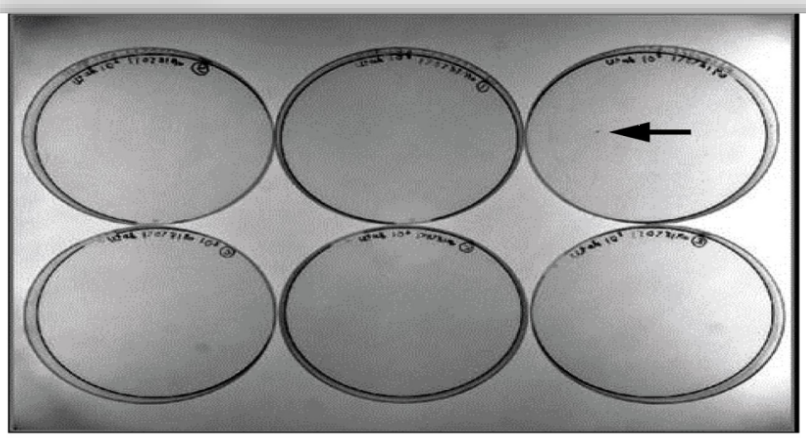
# WHERE DOES THE TISSUE COME FROM?

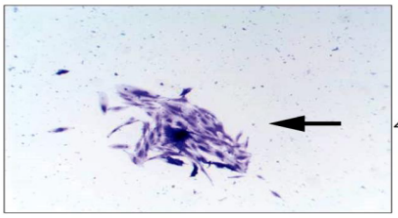
# THE SAFEST AND MOST EFFECTIVE SOURCE

**Utah Cord Bank**

Overview of work performed:

A colony forming unit (CFU) also known in the stem cell sector as a limiting dilution assay was performed on Utah Cord Bank's regenerative medicine product. Briefly, frozen product was thawed using a passive thaw technique until the product contained no more ice. The product was then transferred to a 15 ml conical tube and resuspended in mesenchymal stem cell (MSC) media. We then quantified the amount of cells in the product by staining with acridine orange (AO) and propidium iodide (PI) and used the Nexcelom Auto 2000 cell counter. For performing the CFU assay, we plated 100,000 cells onto a 10 cm dish as a control and had 4 experimental dishes which were plated at 10,000 cells or 1000 cells/cm$^2$. Results are illustrated below:



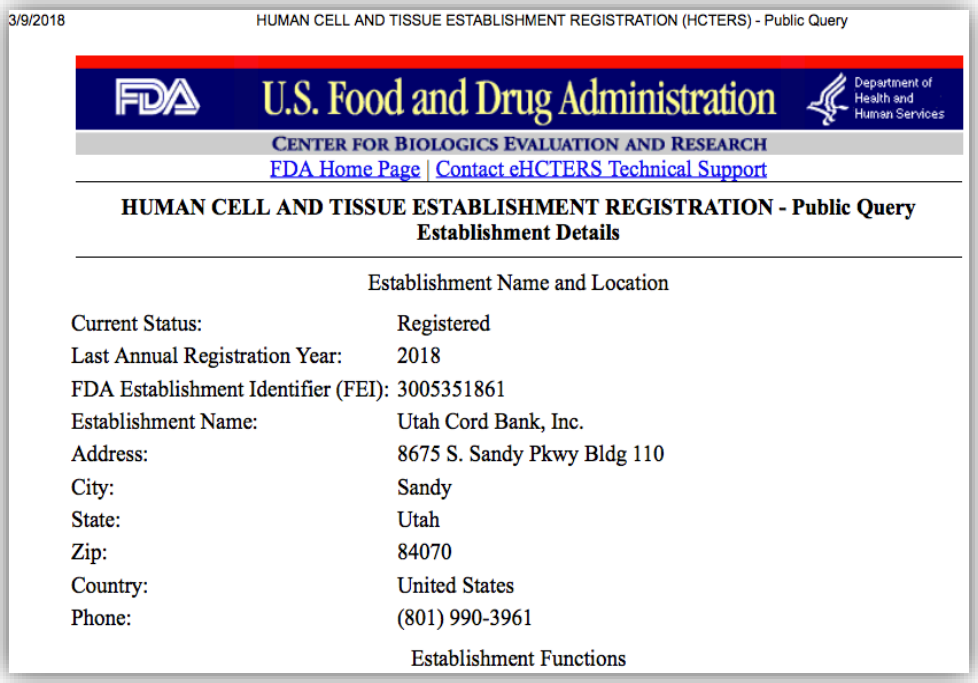


4x view

The CFU frequency of the Utah Cord bank green sample is 1e-05, with a 95 % confidence interval of 1.8e-06 to 5.7e-05, as calculated from 1 CFU in the 1e+05 cell/dish control dish and 0 CFU in none of the five 1e+03 cell/dish test dishes. 4x crystal violet blue stained colony

DaVinci Biosciences | 22667 Old Canal Rd | Yorba Linda, CA 92887
T: 949.515.2828 | E: info@dvbiosciences.com

# UTAH CORD BANK MAKES 361 PRODUCTS



3/9/2018 HUMAN CELL AND TISSUE ESTABLISHMENT REGISTRATION (HCTERS) - Public Query

U.S. Food and Drug Administration — Department of Health and Human Services

CENTER FOR BIOLOGICS EVALUATION AND RESEARCH

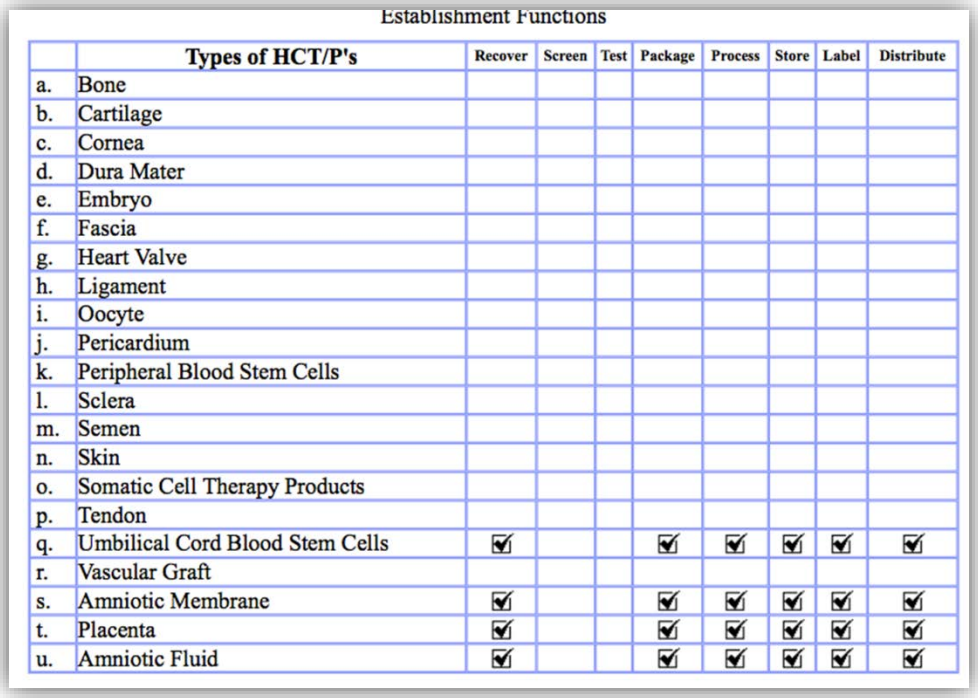
FDA Home Page | Contact eHCTERS Technical Support

**HUMAN CELL AND TISSUE ESTABLISHMENT REGISTRATION - Public Query**
**Establishment Details**

Establishment Name and Location

| | |
|---|---|
| Current Status: | Registered |
| Last Annual Registration Year: | 2018 |
| FDA Establishment Identifier (FEI): | 3005351861 |
| Establishment Name: | Utah Cord Bank, Inc. |
| Address: | 8675 S. Sandy Pkwy Bldg 110 |
| City: | Sandy |
| State: | Utah |
| Zip: | 84070 |
| Country: | United States |
| Phone: | (801) 990-3961 |

Establishment Functions



Establishment Functions

| | Types of HCT/P's | Recover | Screen | Test | Package | Process | Store | Label | Distribute |
|---|---|---|---|---|---|---|---|---|---|
| a. | Bone | | | | | | | | |
| b. | Cartilage | | | | | | | | |
| c. | Cornea | | | | | | | | |
| d. | Dura Mater | | | | | | | | |
| e. | Embryo | | | | | | | | |
| f. | Fascia | | | | | | | | |
| g. | Heart Valve | | | | | | | | |
| h. | Ligament | | | | | | | | |
| i. | Oocyte | | | | | | | | |
| j. | Pericardium | | | | | | | | |
| k. | Peripheral Blood Stem Cells | | | | | | | | |
| l. | Sclera | | | | | | | | |
| m. | Semen | | | | | | | | |
| n. | Skin | | | | | | | | |
| o. | Somatic Cell Therapy Products | | | | | | | | |
| p. | Tendon | | | | | | | | |
| q. | Umbilical Cord Blood Stem Cells | ☑ | | | ☑ | ☑ | ☑ | ☑ | ☑ |
| r. | Vascular Graft | | | | | | | | |
| s. | Amniotic Membrane | ☑ | | | ☑ | ☑ | ☑ | ☑ | ☑ |
| t. | Placenta | ☑ | | | ☑ | ☑ | ☑ | ☑ | ☑ |
| u. | Amniotic Fluid | ☑ | | | ☑ | ☑ | ☑ | ☑ | ☑ |

## UMBILICAL CORD STEM CELLS VS. BONE MARROW

Important functions:

In UCB we can find two different types of SCs, i.e. hematopoietic (UC-HS) and mesenchymal (UC-MS). Although UCB SCs are biologically analogous to their adult counterpart, it has been pointed out that UCB cells are characterized by a higher immunological tolerance than their adult counterpart [79]. Indeed UC-MS can produce cytokines which facilitate grafting in the donor, in vitro *Stem Cell survival and it is more efficient than Bone Marrow MSC graft.*

## WHAT IS THE BEST SOURCE FOR STEM CELLS?

"*Umbilical Cord* tissue yields the highest concentration of allogeneic mesenchymal stem cells:

Yields for bone marrow ranged from 1 to 317,400 cells/mL of tissue.

Yields for adipose tissue ranged from 4,737 to 1,550,000 cells/mL of tissue.

Yields for umbilical cord tissue ranged from 1,000,000 to 4,700,000 cells/ml of umbilical cord."

Díaz-Prado, S., Muiños-López, E., Hermida-Gómez, T., Rendal-Vázquez, M.E., Fuentes-Boquete, I., de Toro, F.J. et al, Multilineage differentiation potential of cells isolated from the human amniotic membrane. J Cell Biochem. 2010

## STEM CELLS DERIVED FROM PLACENTA, AF, AT, UC

"The tissue, intended as stromal cells, extracellular matrix, circulating growth and differentiating factors, determines a gene activation and a functional reaction on SCs, such as moving in a specific district, differentiating in a particular cell type or resting in specific niches. These factors can alter the gene expression pattern in SCs when they reside in a new tissue."

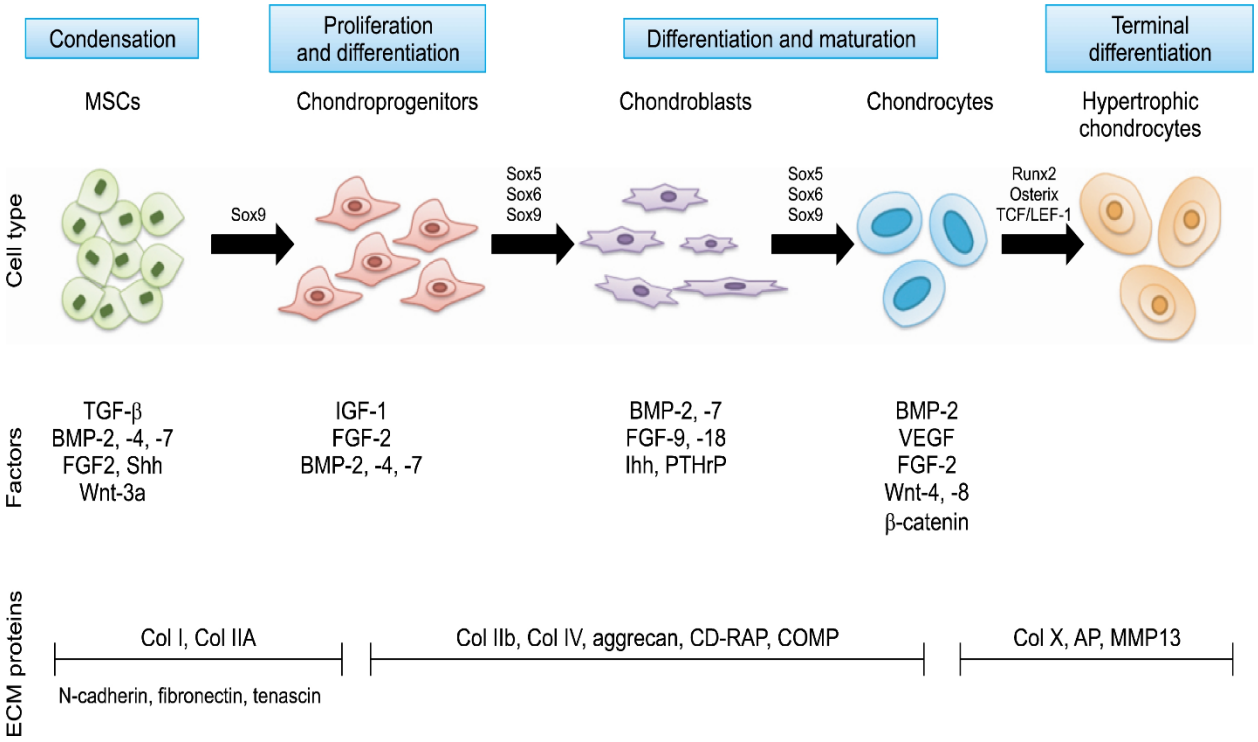
Gucciardo L, Lories R, Ochsenbein-Kolble N, Done E, Zwijsen A, Deprest J: Fetal mesenchymal stem cells: isolation, properties and potential use in perinatology and regenerative medicine. Journal of Obstetrics and Gyneocology. 2009, 116 (2): 166-172. 10.1111/j.1471-0528.2008.02005.x.

## UMBILICAL CORD STEM CELLS

Three important functions:

1. Plasticity: Potential to change into other cell types like nerve cells
2. Homing: To travel to the site of tissue damage
3. Engraftment: To unite with other tissues

## STEM CELL TREATMENT APPLICATION



## ARTHROSCOPIC PARTIAL MENISCECTOMY VERSUS SHAM SURGERY FOR A DEGENERATIVE MENISCAL TEAR.

A randomized, double-blind, sham-controlled trial in 146 patients 35 to 65 years of age who had knee symptoms consistent with a degenerative medial meniscus tear.

## MENISCAL REPAIR-#1 MOST COMMON SURGERY IN US

In this trial involving patients without knee osteoarthritis but with symptoms of a degenerative medial meniscus tear, the outcomes after arthroscopic partial meniscectomy were no better than those after a sham surgical procedure.

## STEM CELL TREATMENT APPLICATION

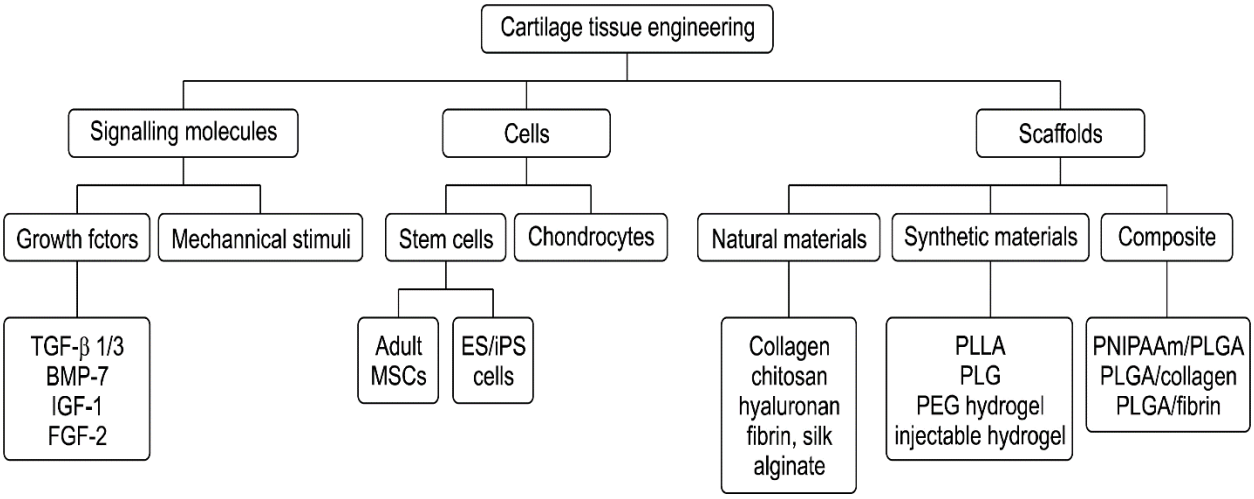
- Cartilage repair
- Osteoarthritis (OA) is a degenerative joint disease, characterized by accumulated mechanical stresses to joints and leading to the destruction of articular cartilage. A synovial fluid decrease has also been observed.
- OA and peripheral joint injuries are commonly treated with interventional pain practice, exercise therapy, ultrasound or electromagnetic device after surgery, although these therapies have not proven to be a definitive solution.
- SCs seem to be a promising solution to overcome OA cartilage destruction. The first autologous mesenchymal SC and injection into a knee with symptomatic and radiographic degenerative joint disease has been reported and it has resulted in significant cartilage growth, decreased pain and increased joint mobility.
- Factors affecting cellular behavior of chondrocytes
- Successful repair of cartilage defects by tissue engineering requires several factors including growth factors, cell sources, and mechanical stimuli other than scaffolds. These factors work together to generate artificially engineered cartilage.
- The ultimate goal of cartilage tissue engineering is to replace the cartilage defect with new tissue engineered from chondrocytes seeded into pre-formed scaffolds or hydrogels. StemShot provides functional characteristics of cartilage, and growth factors and functionality for differentiation and maintenance of chondrocytes.

## STEM CELL SEEDING WITH GROWTH FACTORS

- The proliferation and differentiation of both chondrocytes and MSC's are controlled primarily by nearby signaling molecules such as hormones, cytokines, and growth factors which direct the specific signaling pathways and maintenance of the chondrocyte phenotype (2, 3). Several factors related to growth and differentiation of MSCs and chondrocytes for cartilage regeneration have been identified.
- The successful regeneration of cartilage demands an improved understanding of the complex molecular events involved in the different pathways where each factors contribute. The key issue for chondrocyte tissue engineering is the growth factor delivery to exert the maximal effect on the cells.
- StemShot has over 400 Growth Factors to "seed" the MSC's.

## STEM CELL TREATMENT APPLICATION

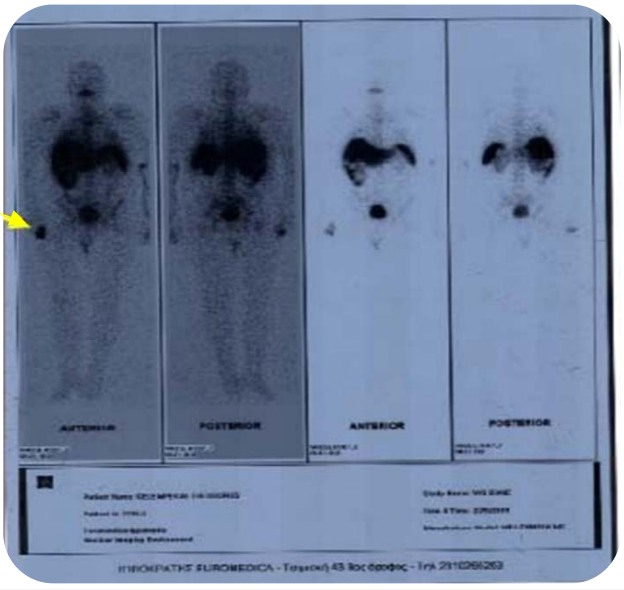
Mesenchymal stem cells are a reliable alternative cell source. Therefore, control in differentiation from MSCs to chondrocytes may be the key factor to produce high quality cartilages (Fig. 2). Although multiple cell sources are available, adult MSCs are highly preferred for cartilage tissue engineering



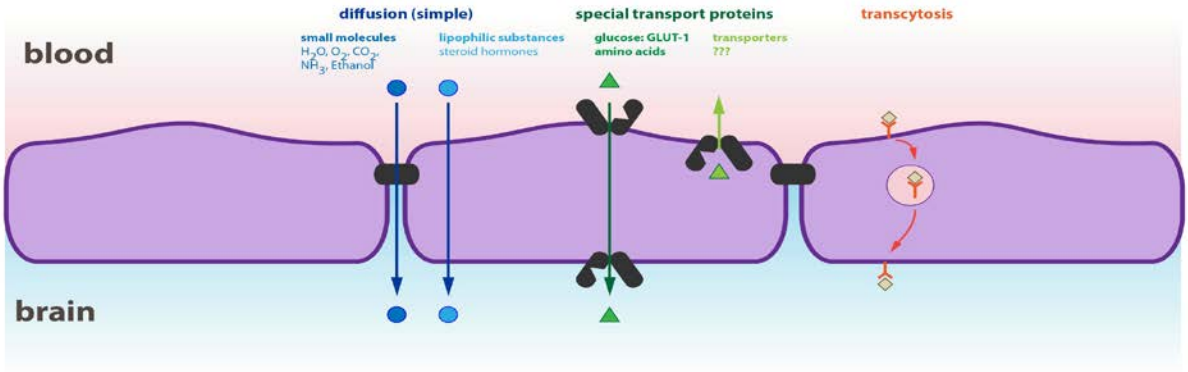
# BRAIN HEALTH


## HOW CAN WE CROSS THE BLOOD BRAIN BARRIER WITH STEM CELL THERAPY?

FDA Approved 99mTC-HMPAO labeled ADSCx administered to hand by IV



## HOW CAN WE SAFELY ACCESS THE BRAIN?




"The best technique for getting MSC's into the brain is intranasal. The sensory nerves that allow you to taste and smell are in the sinuses and there's a river that runs across the top of your head that can be accessed. This empties into the back of your head."

Arnold Caplan, Phd. Perinatal Stem Conference, 2018

## INTRANASAL MESENCHYMAL STEM CELL TREATMENT FOR NEONATAL BRAIN DAMAGE: LONG-TERM COGNITIVE AND SENSORIMOTOR IMPROVEMENT

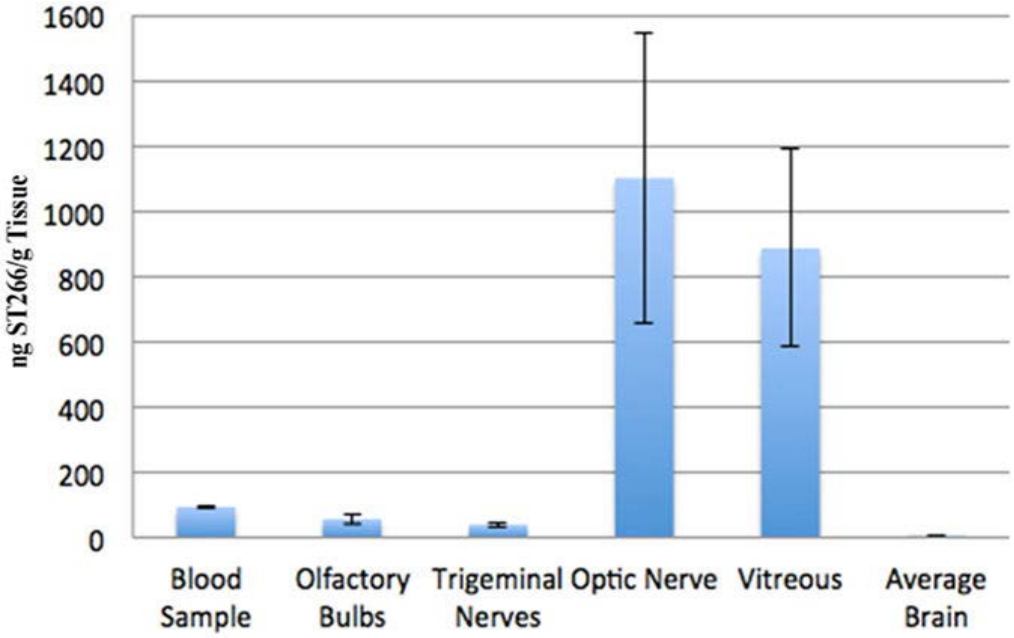
Vanessa Donega, Cindy T. J. van Velthoven, Cora H. Nijboer, Frank van Bel, Martien J. H. Kas, Annemieke Kavelaars, Cobi J. Heijnen

## BREACHING THE BBB INTRANASAL FOR BRAIN HEALTH

This method] results in rapid delivery—within 10 minutes—to the brain and upper spinal cord," Dr. Frey said

Our study showed highly significant improvement, compared with placebo, in motor function or movement," Dr. Frey said

## INTRANASAL AMNION CELL ACCUMULATION IN OPTIC NERVE DAMAGE IN MS




## STEM CELL TREATMENT APPLICATION: BRAIN REGENERATION

Stem Cell transplant mice had significantly improved spatial learning and memory decline, as tested by the Morris water maze, escape latency, and crossing platform test (Lee et al., 2012). Interestingly, they attributed this to reversal of disease associated microglial inflammation.

They found reduced levels of pro-inflammatory cytokines, increased levels of anti--inflammatory cytokines and higher numbers of alternatively activated microglia, thought to be neuroprotective (Lee et al., 2012). This provides an alternate mechanism of action to the release of neurotrophins.

## STEM CELL TREATMENT APPLICATION

The endothelium is the thin layer of simple squamous cells that lines the interior surface of blood vessels and lymphatic vessels, cells that form the endothelium are called endothelial cells. The main function of endothelial cells is to provide a barrier between the blood and the rest of the body tissues. The endothelial cells act like a sieve, restricting the passage of large molecules, toxic substances and bacteria into the brain tissue while allowing necessary molecules like oxygen, enzymes and hormones.

## REFERENCES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- http://www.stemcellresearch.org
- http://www.stemcells.nig.gov/info/nasics/nasics7.asp
- http://www.stemcells.nig.gov/info/scireport/2006report.htm
- http://www.whitehouse.gov/news/re;eases/2001/08/20010809-2.html
- Stem cells in class; Badran, Shahira; Bunker Hill Community College, 2007, Boston Museum of Science Biotechnology Symposium
- Harvard Stem Cell Institute

# STEM CELLS AND HERBAL REMEDIES

## PLACENTA-STEM CELLS IN HERBAL REMEDIES

Zi he che (Human Placenta) or “Purple Liver Vehicle”

Tonifies the Liver and Kidneys, and augments the essence.

Augments the Qi and nourishes the blood.

Tonifies the Lung qi and augments Kidney essence. It is widely used for debilitating chronic diseases.

## STEM CELLS IN HERBAL REMEDIES

- Ming Dynasty (1368-1644) said placenta – which lines the uterus and is key to the survival of the fetus – was "heavily nutritious" and "if taken for the longer term… longevity will be achieved".
- China's last dynasty, the dowager empress Cixi was said to have eaten it to stay young.
- Last year, authorities investigated a hospital in the southern city of Guangzhou for selling placentas for 20 yuan ($2) apiece.
- "They (nurses) take the money and use it to buy breakfast," a source told a the local Xin Kuai newspaper.
- "They fetch a higher price in other parts of China like the eastern city of Jinan, where dealers ask as much as 300 yuan per placenta."

## NEUROGENESIS, DEPRESSION AND THE HIPPOCAMPUS

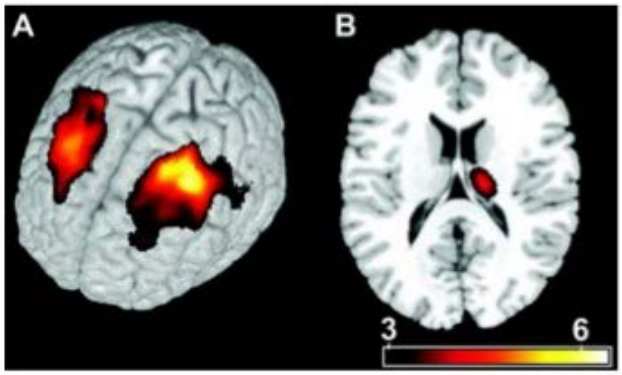
The hippocampus was examined in 20 untreated patients with their first episode of depression, 17 depressed patients with multiple episodes of depression, and 37 healthy individuals.

The researchers found that both groups of depressed patients had hippocampal dysfunction, and that there was a relationship between reduced hippocampus volume and duration of depression. They proposed that reduced hippocampal neurogenesis may be one of the culprits.

"Hippocampus dysfunction, as reflected in hippocampus-dependent recollection memory impairment, was apparent in patients with first or multiple episodes of depression and thus seems to affect patients **before** the emergence of significant HC volume reductions."

## Chronic Pain Changes Brain Function and Chemistry

- Chronic Back Pain Impacts the Cortex and Thalamus
- Gray Matter Atrophy Caused by CBP is 5-11% per Year Compared to 0.5% in the Normal Aging Process
- CBP Atrophy is Equivalent to 10-20 Years of Aging*




The Journal of Neuroscience



* Apkarian AV et al. J Neurosci. 2004;24:10410-10415

www.tmedpharma.com 7

# MY FAVORITE NOOTROPICS!

## HOU TOU GU/LION'S MANE-THE LOBSTER OF THE FOREST

"The edible mushroom Hericium erinaceus, popularly known as Lion's Mane, may boost neurogenesis by increasing the production of neural growth factor (NGF).[36]NGF is a biomolecule that promotes neuron growth and survival, and has been shown to directly promote neurogenesis in the adult hippocampus of mice.[37] "via Wikimedia Commons

Heart, Liver, Spleen, Lungs, Kidneys (All 5)

Anit-Cancer, Promotes Digestion

## BACOPA (WATER HYSSOP)

- Bacopa Leaf – stimulates GABA Neurotransmitter and calms the mind and filters out distractions. It is anxiety reducing cognitive enhancer that enhances memory
- Warms Kidneys, Stimulates Yang
- A natural herbcalled bacopa monnieri is used an indian cooking spice, but it also provides neural cell support.

## BACOPA RESEARCH

- Research has found bacopa is able to:
- Prevent drug induced amnesia in animal models.
- Normalize neurotransmitter levels in various animal disease models.
- Increase antioxidant levels (glutathione, catalase, SOD) in rodent brains.
- Bacopa significantly improved memory acquisition and retention in healthy older Australians. Effective for all ages.
- Reduces Anxiety.
- Increase work capacity in patients with anxiety.
- Reduce error rate and enhance performance time in various cognitive tasks.

## GLUTATHIONE-THE MASTER ANTIOXIDANT

- Check MTHFR first for methylation
- Glutathione reduces negative exposures from UV light and radiation which stem cells are very sensitive to.
- Found naturally in Broccoli, Cauliflower, Cabbage, Brussels sprouts, Garlic, Parsley, Spinach, Beets.
- Exposure to mercury can speed up mental decline. The heavy metal, mercury, is recognized as a potent and widely distributed toxin having the ability to accumulate at various levels of food chain besides possessing ability to cross placental and blood-brain barrier.
- Liposomal glutathione has been coated with a membrane that ensures that it doesn't get broken down in the body until it reaches the cells where it is needed.

## NOOTROPICS AND EXERCISE

- Exercise is your best nootrophic because of the increase of BDNF.
- Exercise when you use Racetams for optimal effect and better sleep.
- I don't sleep as well if I don't workout.

## NOOPEPT

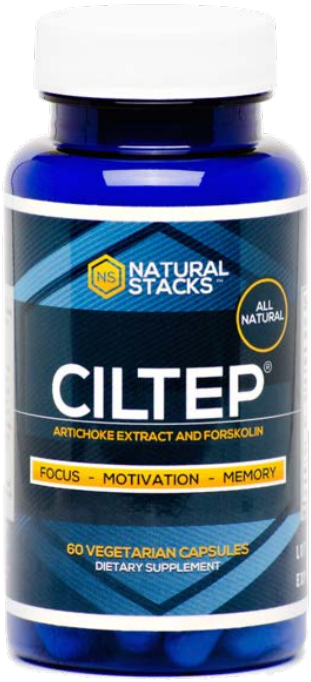
- NOOPEPT COMMON BENEFITS:
- Better Overall Cognitive Performance
- Increased Learning Ability
- Enhanced Memory
- Improved Reflexes & Perception
- Advanced Logical Thinking
- Improved Mood (Reduced Anxiety & Depression Symptoms)
- Noopept works as a strong cholinergic nootropic that acts as an acetylcholine positive signal of the acetylcholine neurotransmitter at the receptor. Acetylcholine is responsible for a host of cognitive functions. Modulates acetylcholine and stimulates neuronal stem cell proliferation.
- Recommended Dosage: 10-40mg

## L-THEANINE

- The ability to reduce mental stress
- The ability to reduce physical stress
- Improvement of cognition and cognitive performance
- Improvement of mood
- Recommended Dosage: 150-250mg

Has the ability to lower anxiety has led to the notion that it could be an aid in combating schizophrenia or schizoaffective disorder. Other studies have led to the notion that L-Theanine could be useful in the prevention of ischemic neuronal damage that may occur due to stroke, and Alzheimer's.

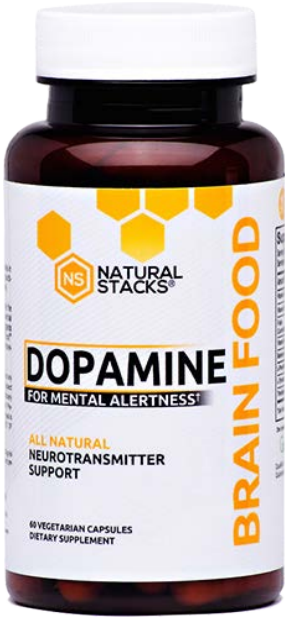
## CILTEP




- **Boost Focus**
- **Potentiate LTP**
- **Improve memory**
- **Increase Motivation & Productivity**
- US Patent # 9,149,457
- Currently in 2 University trials
- QEEG Brain Scans reveal a single dose reduces alpha brain waves - attenuating inattention
- Ingredients: Artichoke extract, Forskolin, Vitamin B-6, ALCAR, L-Phenylalanine

## DOPAMINE BRAIN FOOD

Dopamine: neurotransmitter responsible for motivation, memory, and creativity, alertness and assertiveness.




- Brain Food = vitamins, amino acids, and minerals that support optimal neurotransmitter metabolism
- Ingredients: L-phenylalanine, L-Tyrosine, vitamins B-6, B-12, and C, Selenium, Folate, and TMG (trimethyglycine)
- DBF = the jumpstart many people need to increase drive, desire, and productivity

## BRAIN ENHANCEMENT WITH NOOTROPHICS


## BRAIN ENHANCEMENT WITH NOOTROPHICS

# Supplement Facts

Serving Size: 3 Veggie Capsules
Servings Per Container: 5

| Amount Per Serving | | % DV |
|---|---|---|
| Vitamin B12 (Methylcobalamin) | 1,000 mcg | 16667% |
| Artichoke Leaf Extract (5% Cynarin) | 500 mg | ** |
| Rhodiola Rosea Root Extract (3% Rosavins & 1% Salidrosides) | 300 mg | ** |
| DL-Phenylalanine | 300 mg | ** |
| Centrophenoxine | 250 mg | ** |
| N-Acetyl Tyrosine | 250 mg | ** |
| Purenergy™ (Caffeine and pTeroPure™ pterostilbene co-crystal) | 209 mg | ** |
| L-Theanine | 200 mg | ** |
| Noopept | 30 mg | ** |
| DHEA | 20 mg | ** |
| Coleus Forskohlii (20% Forskolin) | 10 mg | ** |
| BioPQQ™ | 10 mg | ** |

** Daily Value (DV) not established

## BRAIN ENHANCEMENT WITH NOOTROPHICS

**Supplement Facts**

Serving Size: 5 Tablets
Servings Per Container: 5

| Amount Per Serving | | % DV |
|---|---|---|
| Vitamin B5 (as Calcium Pantothenate) | 850 mg | 500% |
| Vitamin B6 (as Pyridoxal 5 Phosphate) | 20 mg | 1000% |
| Vitamin D3 (as Cholecalciferol) | 2,000 IU | 500% |
| Vitamin C (as Ascorbic Acid) | 250 mg | 417% |
| Benfotiamine | 100 mg | 6666% |
| Niacinimide | 50 mg | 250% |
| Zinc (as Zinc Picolonate) | 15 mg | 100% |
| Magnesium (as Magnesium Threonate) | 75 mg | 18% |
| Bacopa Leaf Extract Monnieri (45% Bacosides) | 300 mg | ** |
| Citicoline (CDP Choline) | 75 mg | ** |
| Ginkgo Biloba Leaf Extract (24% Glycosides) | 50 mg | ** |
| Hordenine HCL | 20 mg | ** |
| Huperzine A 1% | 5 mg | ** |
| Mucuna Pruriens Seed Extract (98% L-Dopa) | 100 mg | ** |
| Phenylethylamine HCL | 500 mg | ** |

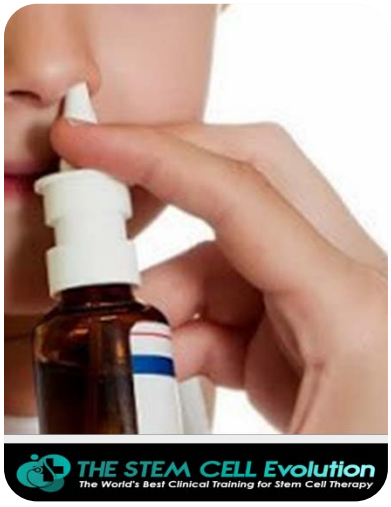
** Daily Value (DV) not established

| Amount Per Serving | | % DV |
|---|---|---|
| Bioperine™ | 10 mg | ** |
| Theobromine | 150 mg | ** |
| Vinpocetine | 30 mg | ** |
| Alpha GPC | 100 mg | ** |
| Phosphatidylserine | 200 mg | ** |
| Curcumin Root Extract 95% | 500 mg | ** |
| Green Tea Leaf Extract (98% Polyphenol & 45% EGCG) | 500 mg | ** |
| Lithium (as Lithium Orotate) | 3 mg | ** |
| Quercetin | 200 mg | ** |
| Algal DHA | 200 mg | ** |
| Taurine | 500 mg | ** |
| Uridine Monophosphate | 500 mg | ** |
| Lion's Mane Extract (30% Polysaccharide) | 500 mg | ** |
| Gynostemma Pentaphyllum Herb extract | 150 mg | ** |

** Daily Value (DV) not established

## INTRANASAL INSULIN AS A NOOTROPHIC

- **Intranasal Insulin Improves Age-Related Cognitive Deficits and Reverses Electrophysiological Correlates of Brain Aging**
- The Journals of Gerontology: Series A, Volume 71, Issue 1, 1 January 2016



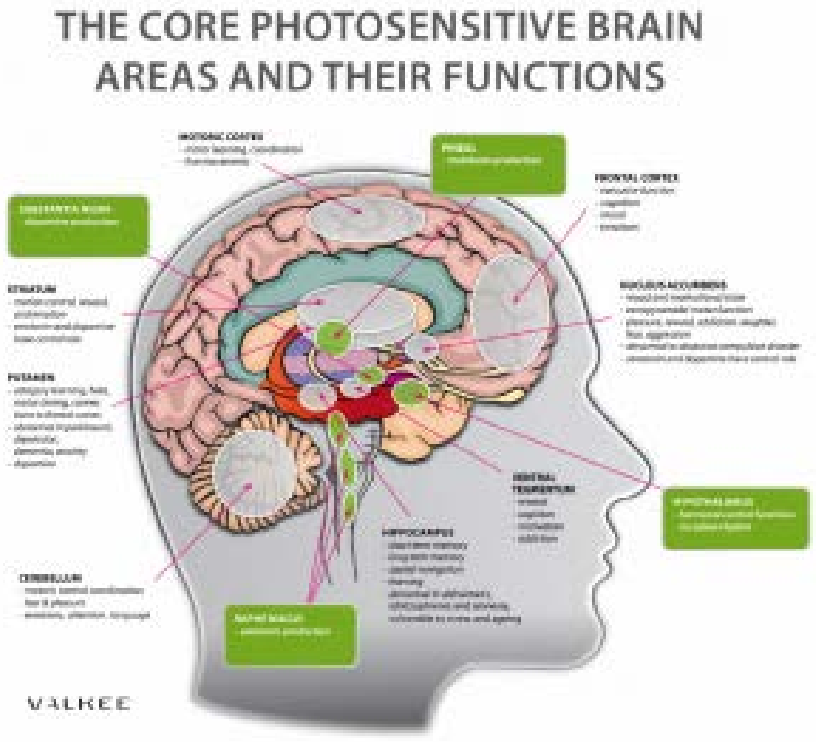

## HEALTH BENEFITS OF INTRANASAL INSULIN

- Insulin receptors are located in the olfactory bulb, hypothalamus, hippocampus, cerebral cortex, and cerebellum.
- Insulin signaling makes new synapses, and it can improve spatial memory.

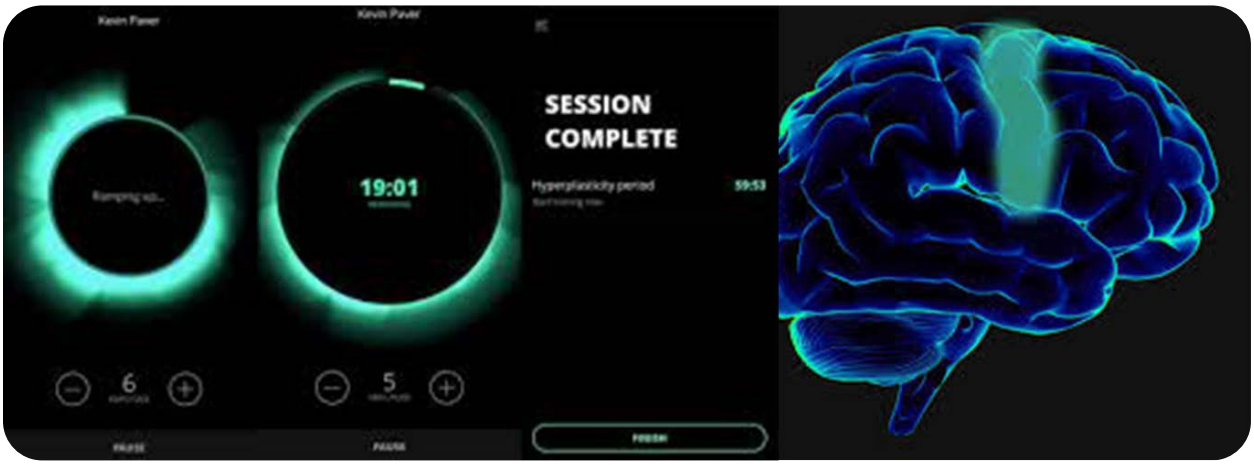
- Other pros include: it does not affect blood glucose levels, it prevents dopaminergic neuron loss, decreases hippocampal neuroinflammation and improves memory in young, healthy humans.
- Insulin receptors are located in the olfactory bulb, hypothalamus, hippocampus, cerebral cortex, and cerebellum.
- Insulin signaling makes new synapses, and it can improve spatial memory.
- Other pros include: it does not affect blood glucose levels, it prevents dopaminergic neuron loss, decreases hippocampal neuroinflammation and improves memory in young, healthy humans.
- Intranasal insulin affects the hypothalamus, which is the central regulator of metabolism.
- The brain can rapidly influence whole-body (liver, muscle, and fat tissue) insulin sensitivity through the autonomic nervous system.
- The insulin-treated men lost 1.28 kg body weight and 1.38 kg of body fat, and their waist circumference decreased by 1.63 cm. Plasma leptin levels dropped by an average of 27%
- Intranasal insulin increases insulin activity in the brain, which can stop overeating and obesity.
- Insulin and cortisol regulate energy homeostasis and appetite. Intranasal insulin application to men affects blood flow in the brain and helps regulate eating behavior.
- Brain insulin deficiency and insulin resistance can contribute to Alzheimer's disease.
- Intranasal insulin can directly deliver insulin to the brain and help treat Alzheimer's while avoiding side effects.

- In adults with dementia or Alzheimer's disease, intranasal insulin improved delayed memory. It also helped preserve general brain function.
- Daily insulin treatment also increases verbal memory and improves attention.
- Short term intranasal insulin improves motor activities, brain function, and education levels in children. On the other hand, positive long-term effects also included improvements in motor activity, nonverbal communication, brain function, and autonomy.
- Intranasal insulin administration also improves mood. After insulin treatment, the subjects reported signs of enhanced self-confidence and reduced anger.

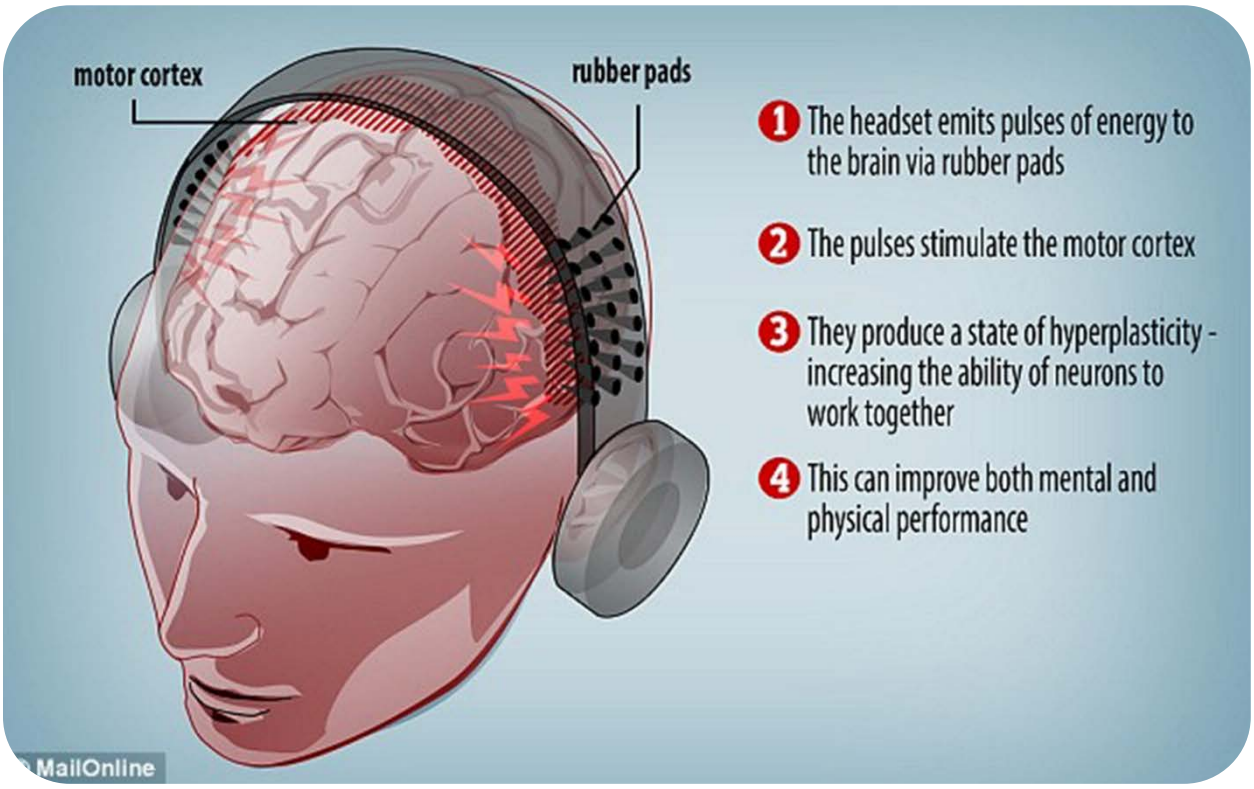
# BRAIN ENHANCEMENT WITH THE VALKEE

# BRAIN ENHANCEMENT WITH THE HALO SPORT




## HOW IT WORKS



## BRAIN HEALTH

Name: Date:

| Memory | Learning | Emotions |
|---|---|---|
| | | |

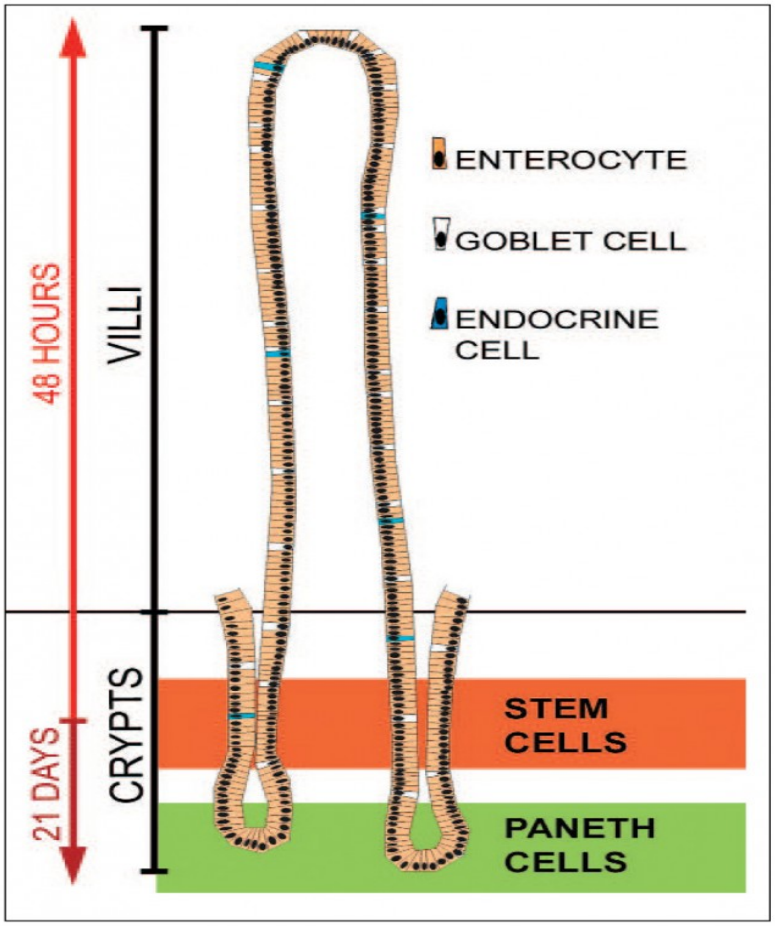
| Food / Nootropics / Supplements |
|---|
| |

## NUTRITION PLAN

Name: Date:

| | When to Eat | Best Foods | Worst Foods | Energy Results |
|---|---|---|---|---|
| Past | | | | |
| Present | | | | |
| Future | | | | |

| Strategy | Breakfast | Lunch | Dinner |
|---|---|---|---|
| | | | |




**Schematic of intestinal villus and crypts taken from Godlewski MM et. a. "Into the Unknown--The Death Pathways in the Neonatal Gut Epithelium" Current Pediatric Reviews. 2011. 7(4):337-345**

*Fig. 3.* Scheme of intestinal villus and crypts, with stem-cell region marked in orange and Panneth-cell region in green. The fate of the gut epithelial cell depends on the direction of their movement. Cells that migrate to the villi differentiate into enterocytes, goblet cells (~5%) or endocrine cells (~1%) and are characterized by quick turnover, with a life-span seldom exceeding 48 hours. Cells directed downwards into the depth of the crypts differentiate into Paneth cells. These cells with life-span reaching 21 days produce lysozyme and defensins and are involved in protection of the gut.

## GLUTEN

Gluten is a protein complex composed of gliadins and glutenins that is responsible for the baking properties of wheat. Analysis of gliadin has identified more than one hundred components that can be grouped into four main types (omega5-, omega1, 2-, alpha/beta- and gamma-gliadins)

Gluten peptides can be transported across the intestinal epithelium especially in presence of an impaired gut barrier, this significantly diminishes stem cell growth and cultures.

## STEM CELLS AND GLUTEN

- Activated gluten-reactive $CD4^+$ T cells produce high levels of pro-inflammatory cytokines, thus inducing a Th1-pattern dominated by interferon (IFN)-γ. Th-1 cytokines promote extracellular matrix degradation and increase cytotoxicity, and decrease stem cell proliferation.
- Gliadin peptides have been shown to bind to the chemokine receptor CXCR3 on the surface of epithelial cells and induce tight junction permeability and zonulin release.

## STEM CELLS FOR DIGESTION

Enterocytes are constantly regenerating themselves (a pool or resident stem cells supplies the new enterocytes). As the cells age, they migrate higher up the villi and are eventually shed into the gut to be redigested (yes, we are constantly cannibalizing ourselves). This is called the "turnover" of the gut epithelium. In the normal healthy gut, the enterocytes migrate to the top of the villi in in 1-4 days, meaning that all of the villi cells are replaced with new cells every 3-5 days (this gets slower as we age) [1,2,3]. The cells that migrate toward the bottom of the crypts have a longer lifespan of 2-3 weeks. *What does this mean? A healthy person has an entirely new intestinal lining every 2-3 weeks.*

## MYCOTOXINS LIKE OCHRATOXIN-A WILL DESTROY STEM CELLS

- Ochratoxin Aadministered to 8-1 0-week-old Swiss mice at 5 mg/kg bw per day showed a decreased number of haematopoietic stem cells and a significant decrease in immunity and development.
- High levels of mycotoxin exposure have been shown to decrease stem cell differentiation and proliferation.

**Table 1. Examples of Ochratoxin-A in Food and Beverages***

| Food | Beverages |
|---|---|
| Cereal grains, including corn, wheat, barley, flour, oats, rye, rice, bran and semolina | Wine: red, white and rose |
| Beans: coffee, cocoa, soy and others | Coffee |
| Malt | Beer and other malt beverages |
| Cheese and other dairy products | Milk |
| Dried fruit | Fruit juices |
| Pork and pork products | |
| Poultry and poultry products, including eggs | |
| Spices | |
| Nuts | |
| Peas and other legumes | |

**Includes representative examples. This list is not comprehensive and does not include all raw or processed food products in which OTA may be found.*

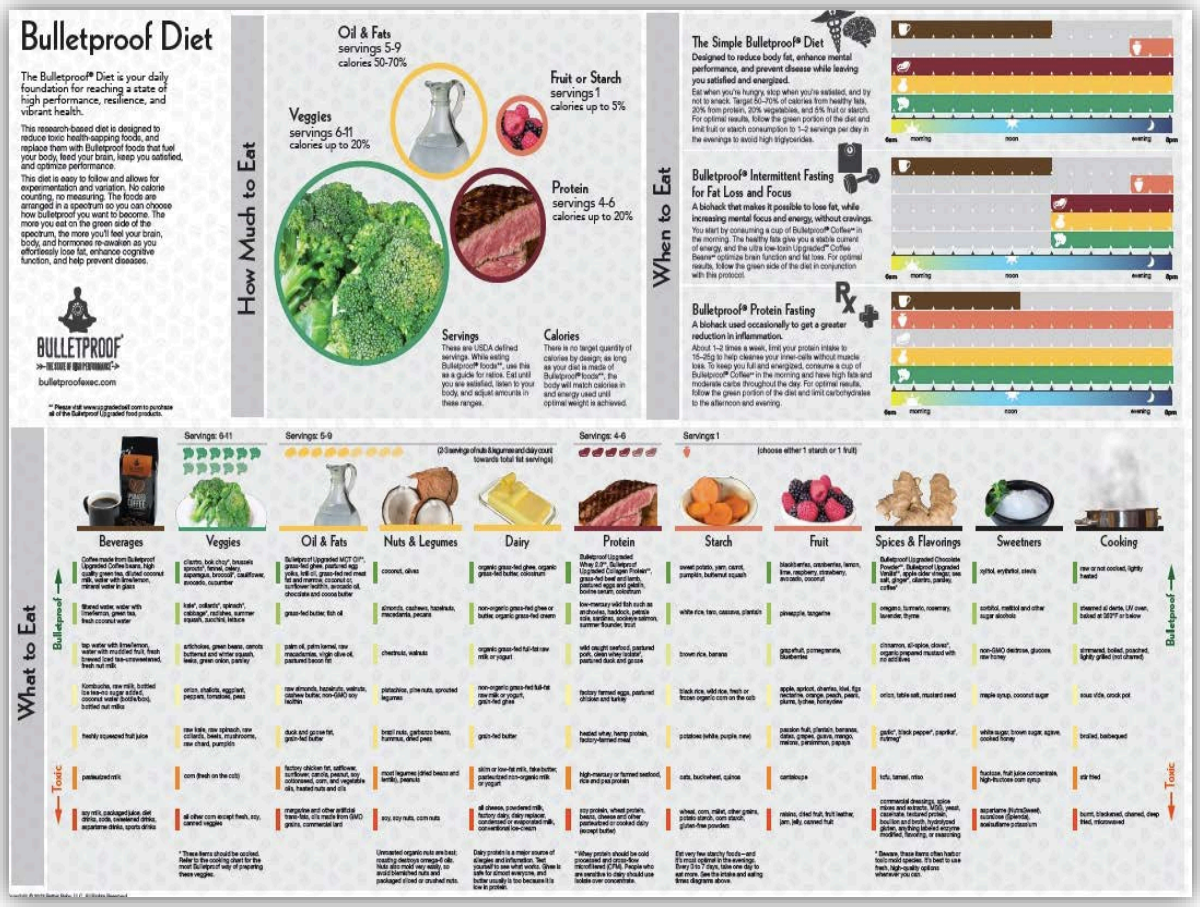
## AVOID THESE 5 FOODS

Avoiding foods that can provoke oxidative stress and inflammation like:

1. Refined and added sugars
2. Bleached, refined flour
3. Industrial plant oils
4. Any artificial ingredients.
5. The big '"5": Gluten, diary, soy, corn, peanuts.

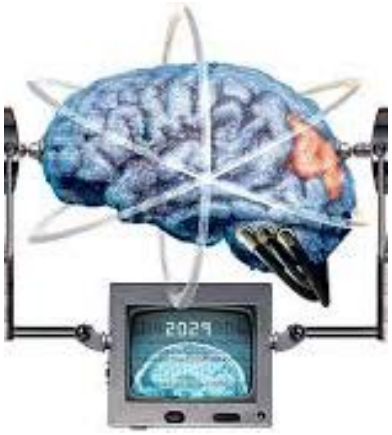
## THE MACRO-NUTRIENT RATIOS

- Get a Nutrient-dense diet. 130-150 grams per day of healthy fats, 20-100 healthy grams of carbs, 100-150 healthy grams of healthy proteins.
- (There's no need to count each category out, just be aware of how much of each you are eating.)

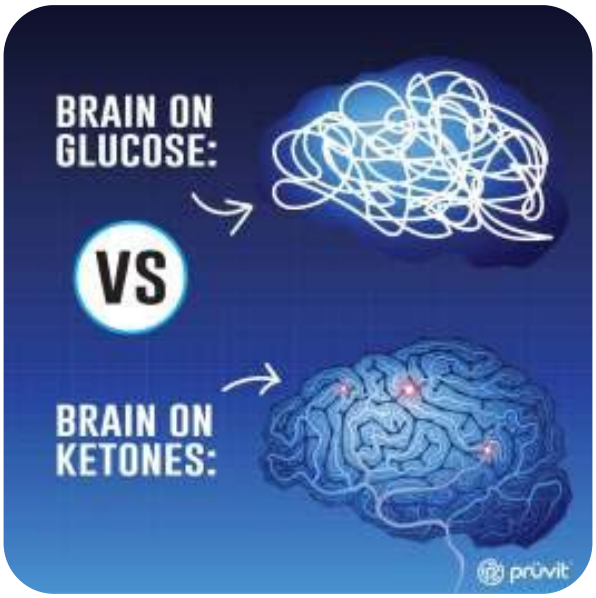



## SATISFY THE BRAIN FIRST!

The brain is made almost entirely of fat (57%) and protein (38%), and contains very little carbohydrate (5%). Our modern brains grew up in a low glycemic index environment.

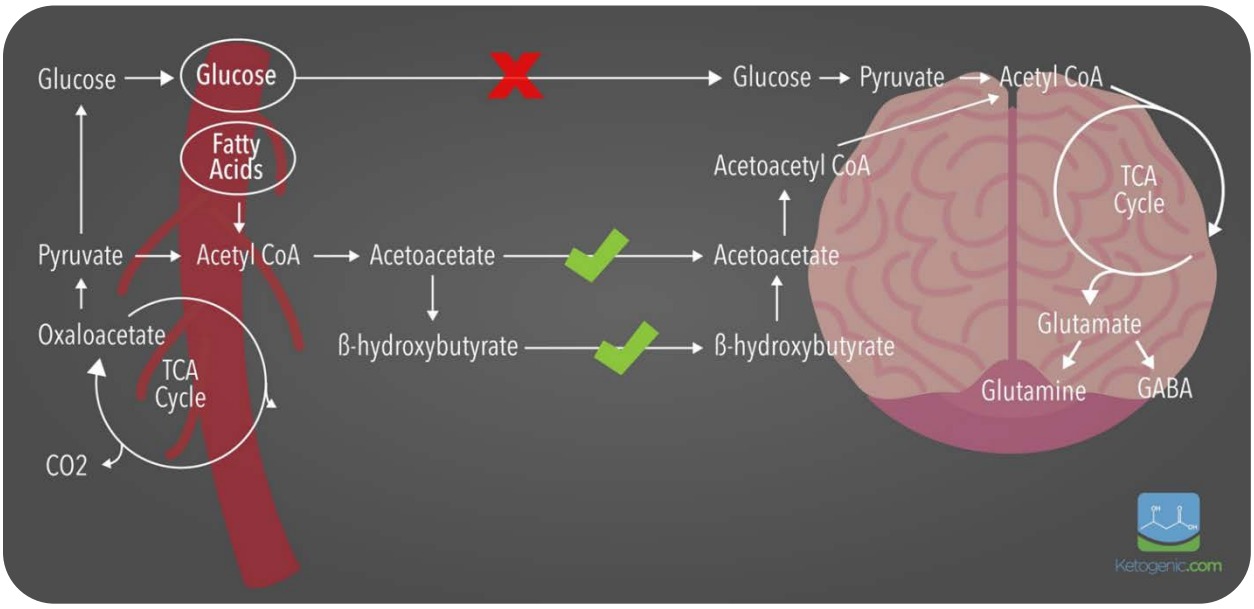


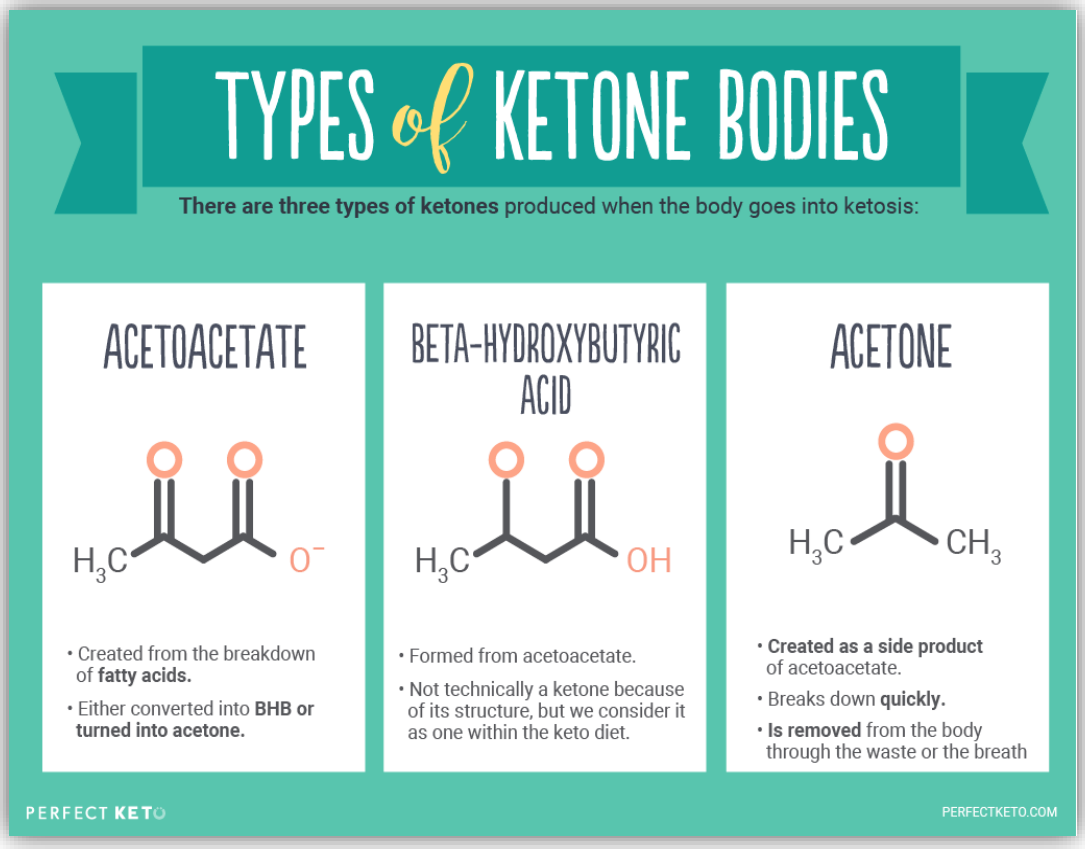
## FASTING AND KETOSIS

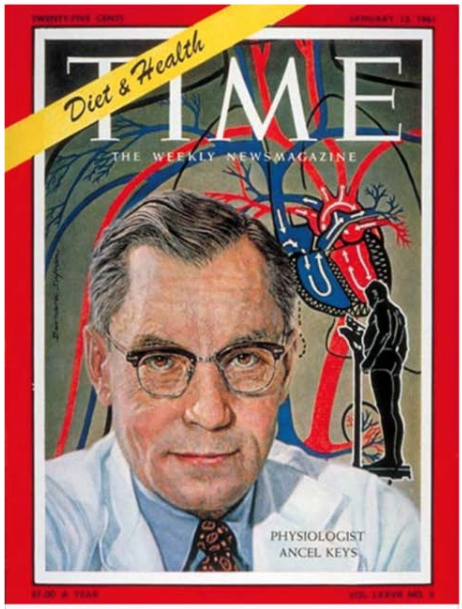



**Fasting** on a **ketogenic** diet has more benefits: since our body is depleted from glycogen, we use fat and ketones for energy instead of glucose. As your body gets used to fat and ketones as main sources of energy, you will naturally eat less amounts and less frequently.

## YOUR BRAIN LOVES KETONES

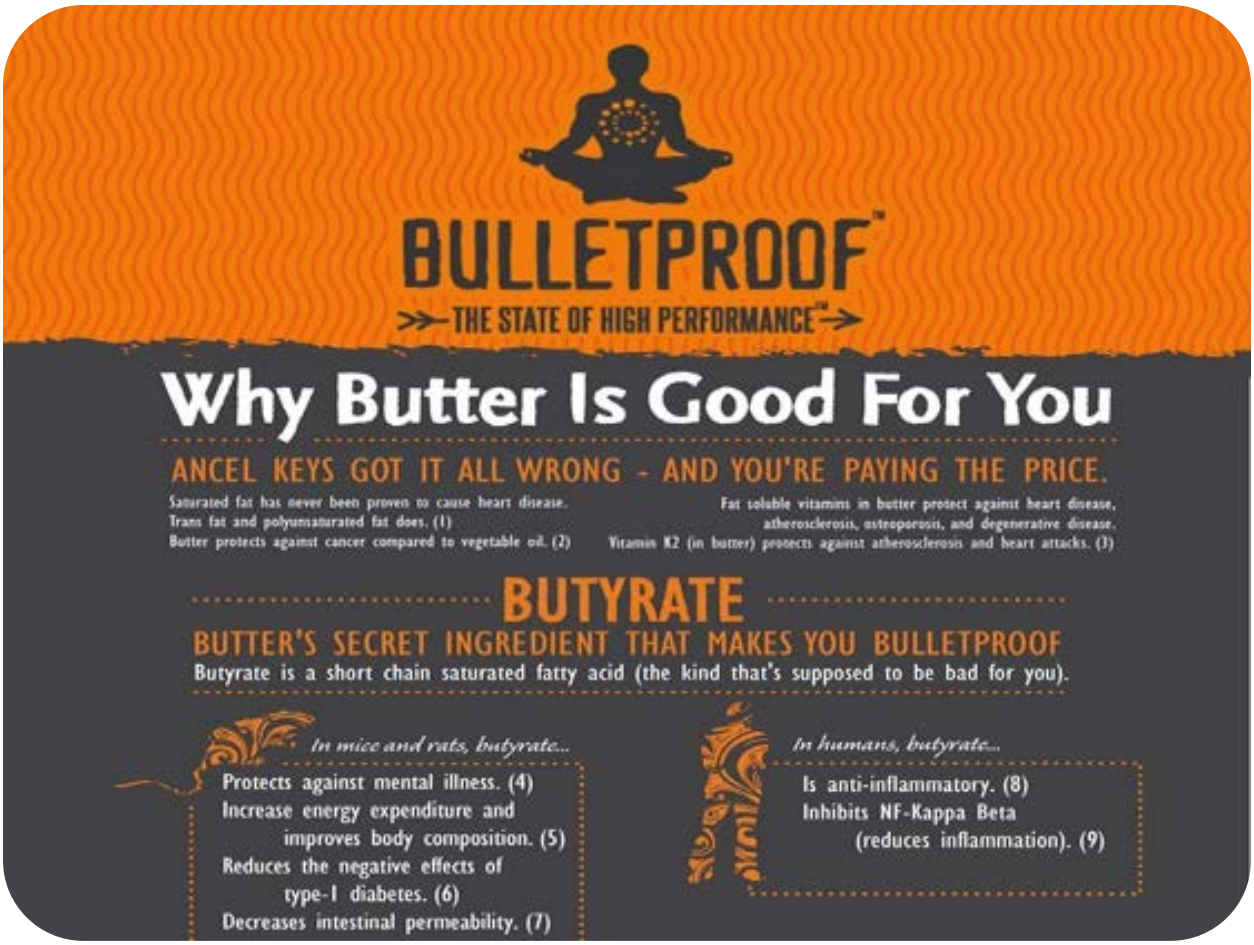


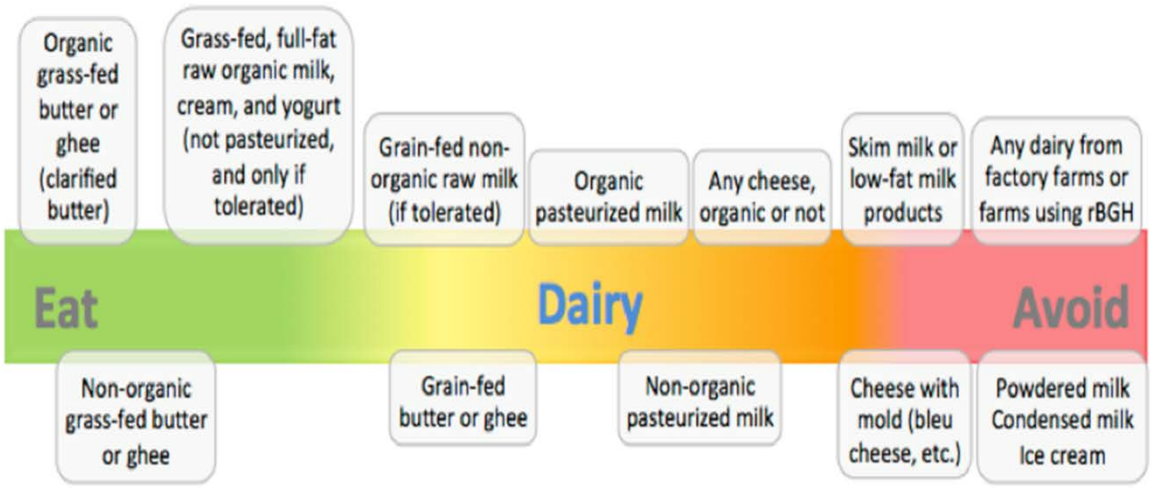


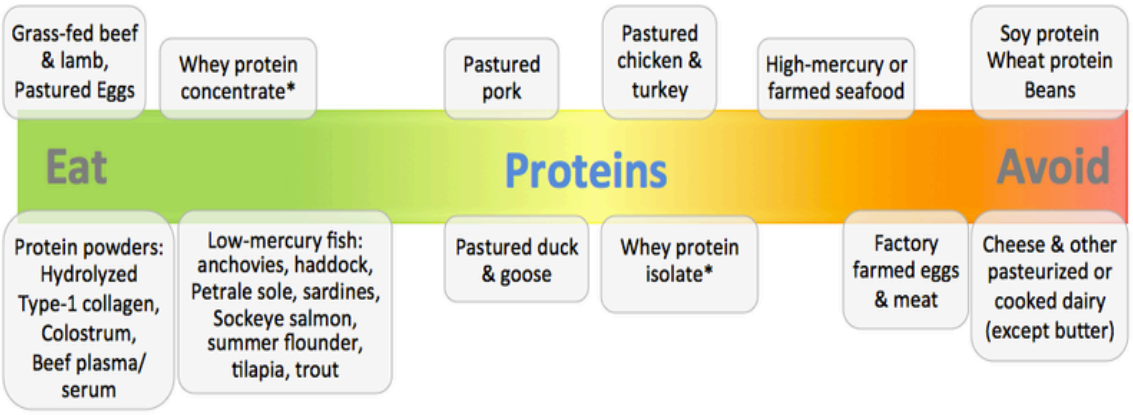




Ancel Keys on the cover of Time Magazine in 1961. He claimed that saturated fats in the diet clogged arteries and caused heart disease.


Time Magazine cover story in 2014. Scientists were wrong about saturated fats. They don't cause heart disease after all.

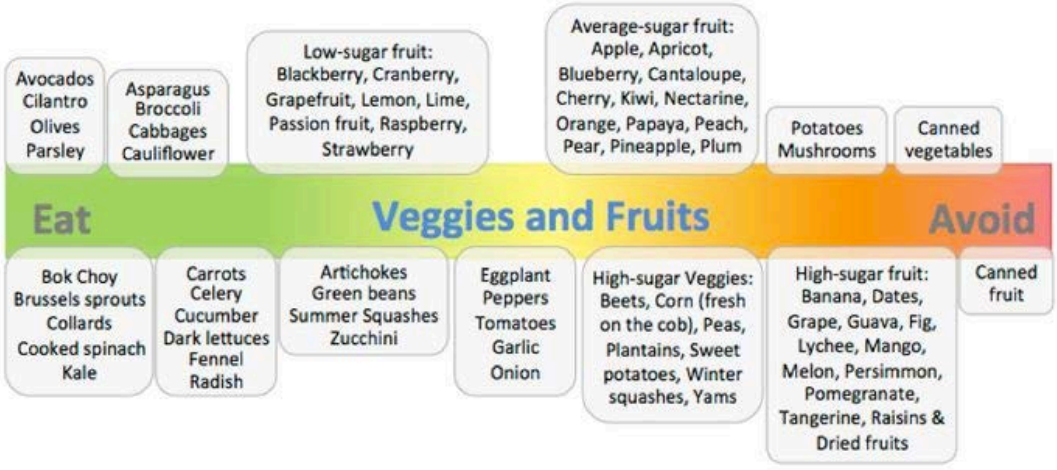

BULLETPROOF
THE STATE OF HIGH PERFORMANCE
Why Butter Is Good For You
ANCEL KEYS GOT IT ALL WRONG - AND YOU'RE PAYING THE PRICE.
Saturated fat has never been proven to cause heart disease.
Trans fat and polyunsaturated fat does. (1)
Butter protects against cancer compared to vegetable oil. (2)
Fat soluble vitamins in butter protect against heart disease, atherosclerosis, osteoporosis, and degenerative disease.
Vitamin K2 (in butter) protects against atherosclerosis and heart attacks. (3)
BUTYRATE
BUTTER'S SECRET INGREDIENT THAT MAKES YOU BULLETPROOF
Butyrate is a short chain saturated fatty acid (the kind that's supposed to be bad for you).
In mice and rats, butyrate...
Protects against mental illness. (4)
Increase energy expenditure and improves body composition. (5)
Reduces the negative effects of type-1 diabetes. (6)
Decreases intestinal permeability. (7)
In humans, butyrate...
Is anti-inflammatory. (8)
Inhibits NF-Kappa Beta (reduces inflammation). (9)

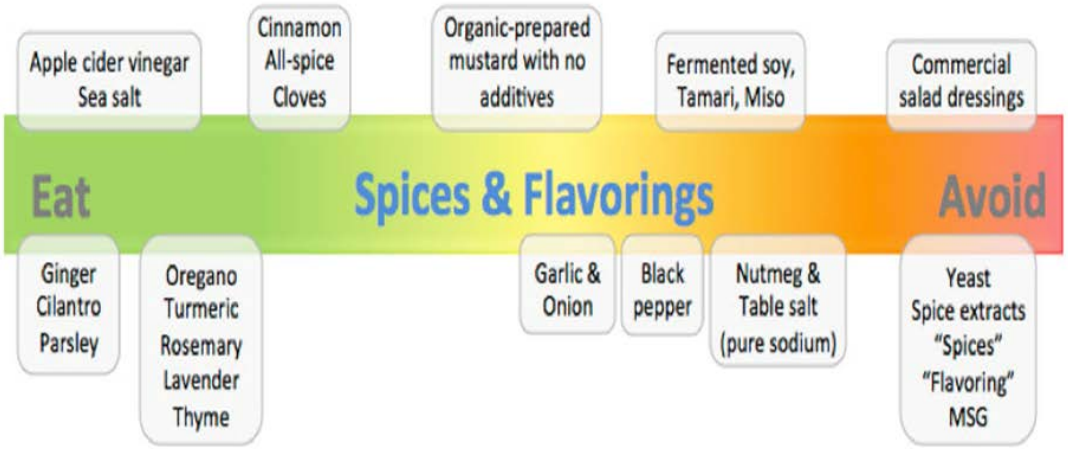

Organic grass-fed butter or ghee (clarified butter)
Grass-fed, full-fat raw organic milk, cream, and yogurt (not pasteurized, and only if tolerated)
Grain-fed non-organic raw milk (if tolerated)
Organic pasteurized milk
Any cheese, organic or not
Skim milk or low-fat milk products
Any dairy from factory farms or farms using rBGH
Eat
Dairy
Avoid
Non-organic grass-fed butter or ghee
Grain-fed butter or ghee
Non-organic pasteurized milk
Cheese with mold (bleu cheese, etc.)
Powdered milk
Condensed milk
Ice cream

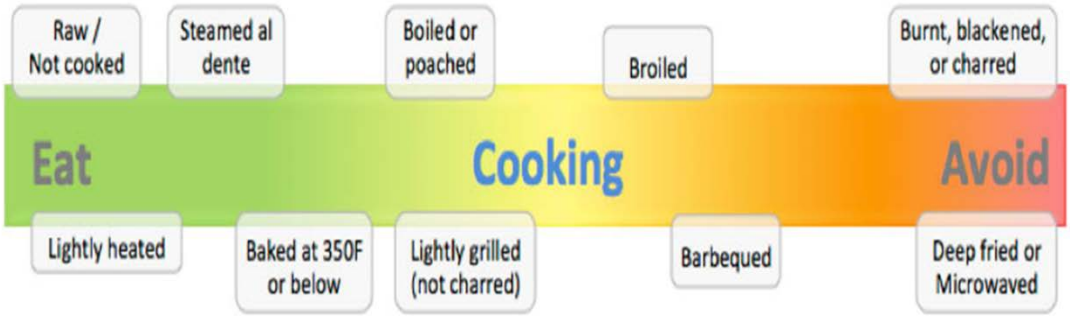



*All forms of whey protein must be cold-processed to be healthy. Whey protein isolate should be CFM (cross-flow micro-filtered). People who are sensitive to dairy should use isolate.


*Total grams of sugar should not exceed 15-25 grams per day with fructose being less than 15 grams per day.






## FOOD PREP

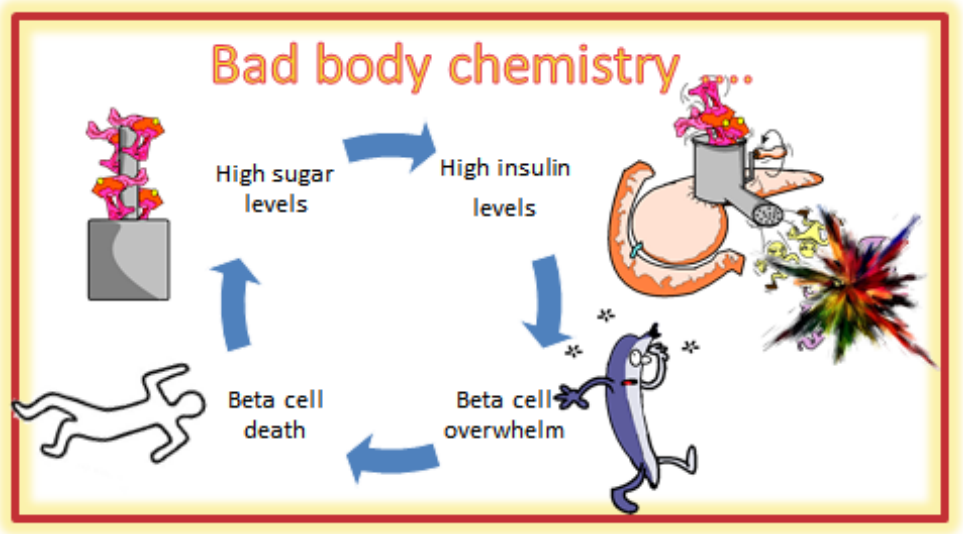
- Studies have shown that cooking denatures proteins and makes them more bioavailable.
- Researchers have shown that digestibility goes from 51% to 90% when cooked vs. raw.
- The energetic benefit of cooking increases bioavailability by approximately 78%


## GET RID OF SUGAR...DUCT TAPE IF NECESSARY

"Glycolytic Metabolism Plays a Functional Role in Regulating Human Pluripotent Stem Cell State" Journal of Stem Cells

"A negative consequence of this improper die t and increasing blood sugar levels is the weakening of the stem cells."

# WHY IS BLOOD SUGAR RELEVANT TO HEALTH?



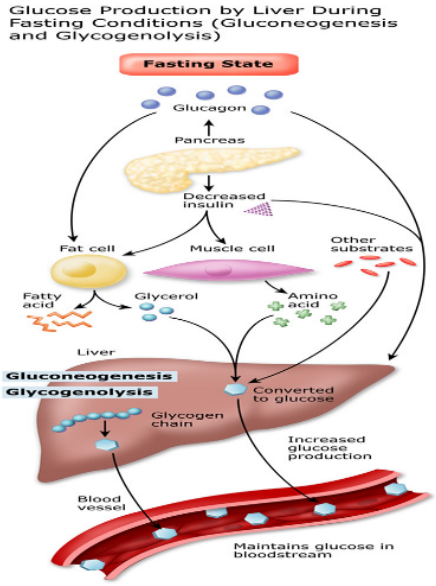

- Why eating sugar and then taking insulin is toxic?
- High glucose is toxic to beta cells and destroys them. This is why diabetics who just eat whatever they want and take insulin for the high glucose are getting worse-they are killing off more and more beta cells on their pancreas.
- Higher fasting blood glucose and hyperinsulinemia (constantly elevated insulin levels) have links to most chronic diseases;
- Individuals who have the highest serum concentration of insulin have a 62% increased risk of cancer mortality.
- Hyperinsulinemia has links to increased cancer mortality independently of diabetes. In other words, high fasting blood sugar and insulin levels are damaging to everyone — whether diabetic or not.
- A large number of studies support the association between type 2 diabetes with cancer risk and mortality.

> "Hyperinsulinemia may be "a unifying theory of chronic disease" as it is involved in the pathways of most modern disease."

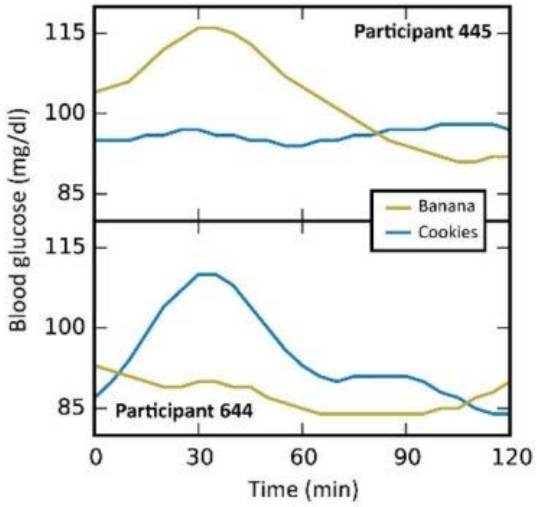
Diabesity 2015; 1 (4): 34-43 doi: 10.15562/diabesity.2015.19 www.diabesity.ejournals.ca

## THE PANCREAS DOES BEST WITH BREAKS IN EATING

- Are you Restricting the times you eat to a 8 to 12 hour window?
- Are you staying hydrated by consuming plenty of spring water with 1-2 grams of sea salt and other minerals like Magnesium first thing in the morning?
- Are you Relaxing?



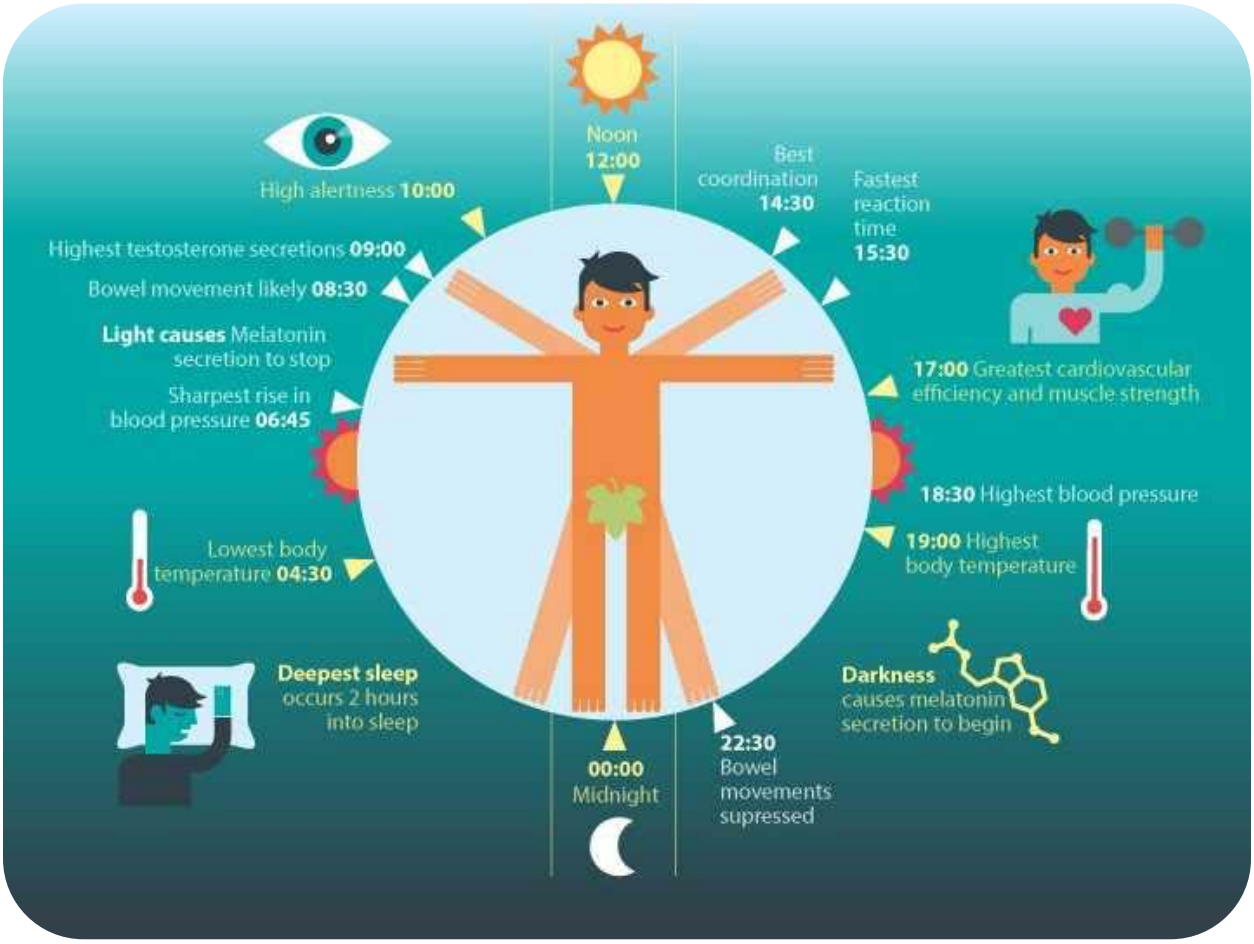

## OR....PERSONALIZED NUTRITION




Weizmann Institute of Science, November 19, 2015

> "Scientists have released new results underscoring the importance of a personalized diet, prepared based on complex factors such as your gut microbes and lifestyle. Surprisingly, the foods that raise blood sugar levels differ dramatically from person to person."

# PERSONALIZED NUTRITION




## MELANOPSIN AND CIRCADIAN CYCLES

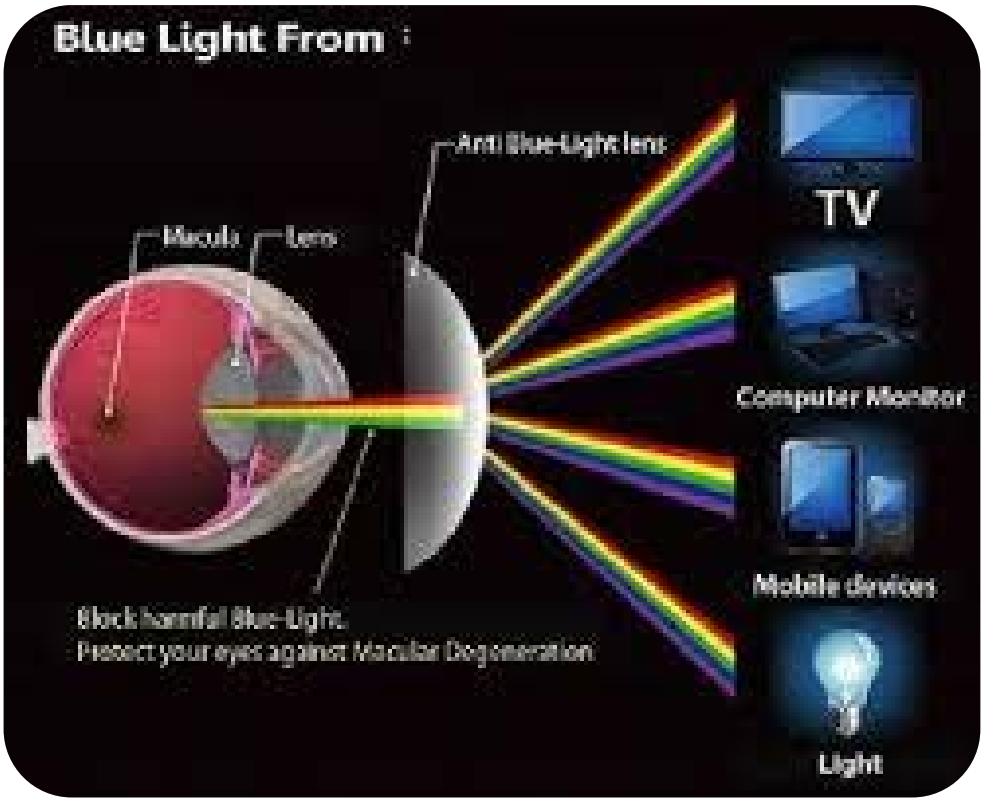
- Melanopsin regulates sleep and our mood.
- It suppresses melatonin, a sleeping hormone.
- Melatonin they builds up during the day as the light decreases, making us sleepy when night comes.
- When the sky is gray/there's no light it can cause sessional depression.
- We need more light in the first half of the day and less after noon.
- Melanopsin promotes cortisol, an hormone that makes us more alert (stress hormone)

- Cortisol spikes early in the morning and decreases throughout the day.
- Leading a stressful life maintains our level of cortisol high, which can lead to health issues.

## CORRECTING BLOOD SUGAR WITH LIGHT

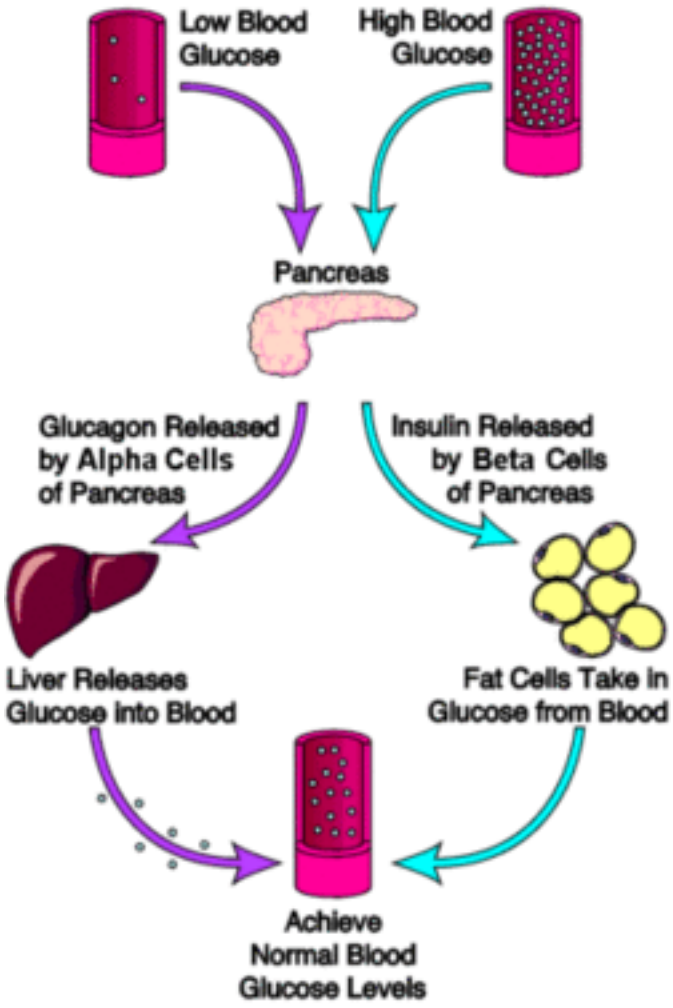

- Blue light from screens and lighting send the wrong signal to the SCN.
- Melatonin can't build up.
  - So, someone would have trouble sleep or would wake up tired.

# CORRECTING BLOOD SUGAR WITH TIME RESTRICTED EATING



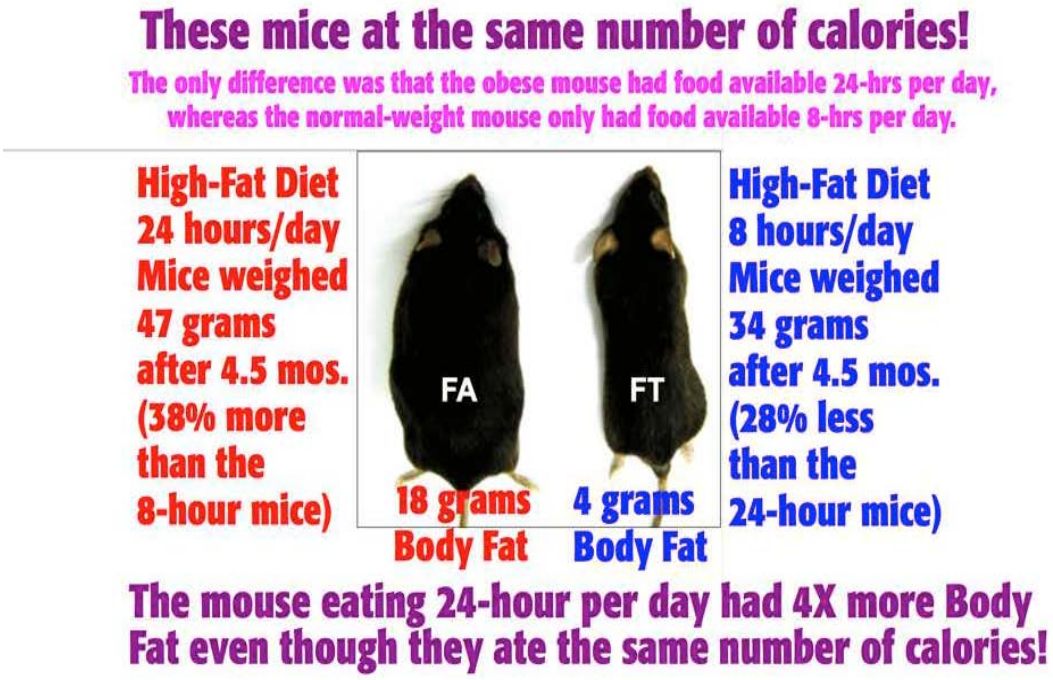

- Internal clocks are like traffic lights: without the right timing, it creates accidents and traffic jams.
- There's a specific time for every metabolic activity.
- If not properly adjusted:
  - There's build up of undesired by-products.
  - It puts stress on our cells.
  - It can lead to many chronic diseases.
- Our organ's clocks respond to when we eat.
  - The act of eating turns on the genes responsible for digestion.
  - Light has little impact in that case.

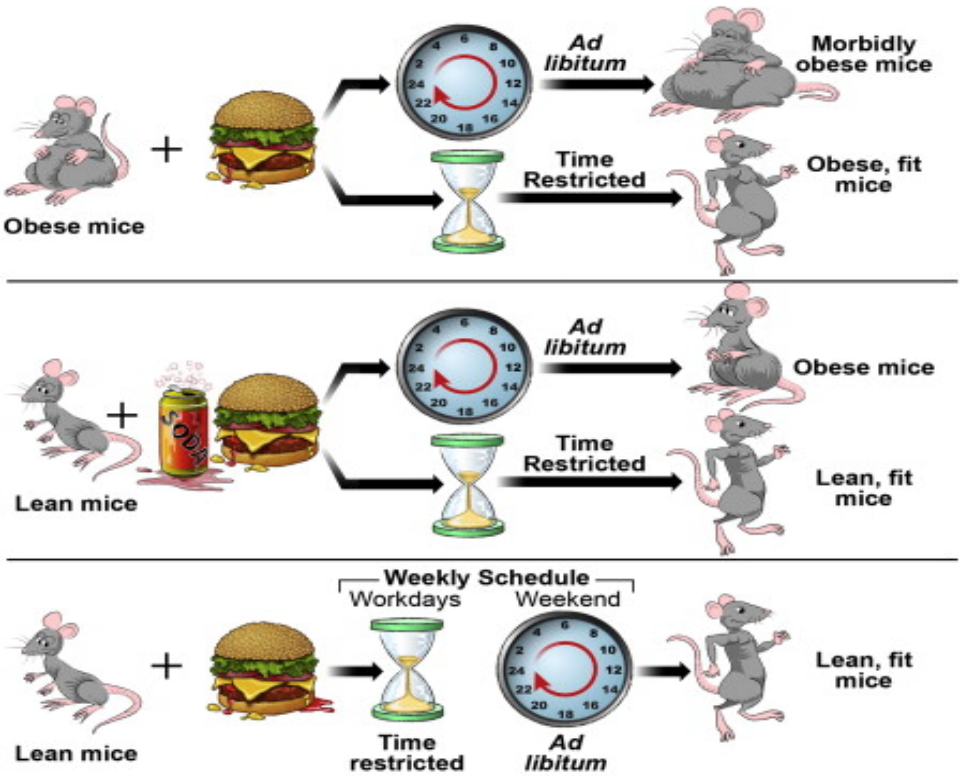
# CORRECTING BLOOD SUGAR WITH TIME RESTRICTED EATING

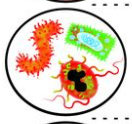
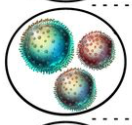
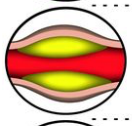
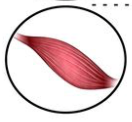



- High fat diet and high sugar diet were tested with time-restriction.
  - Did not matter WHAT or HOW MUCH you eat but WHEN you eat is crucial.
  - Mice ate the same food but the ones on time-restriction had 28% less body mass and 70% less fat.

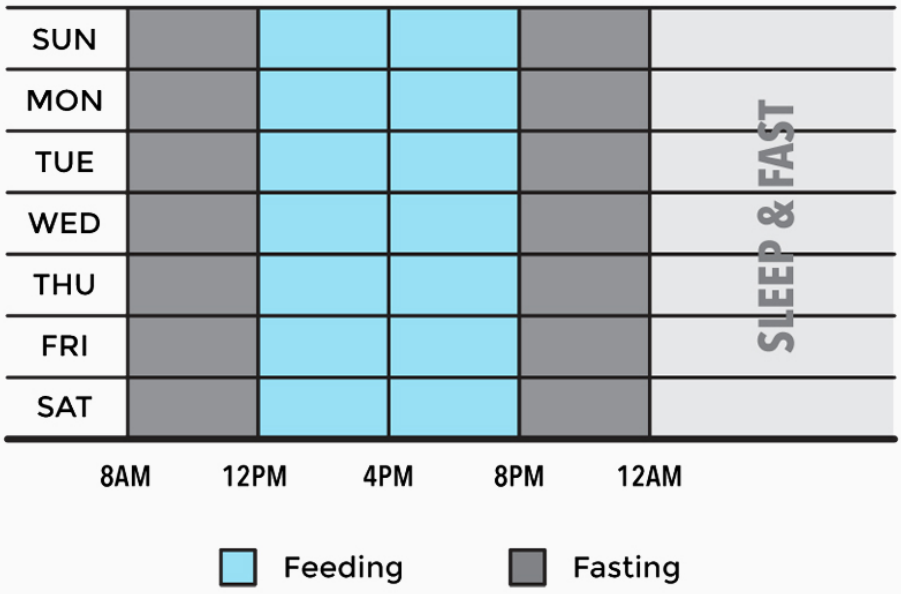
# DISEASE PREVENTION WITH FASTING



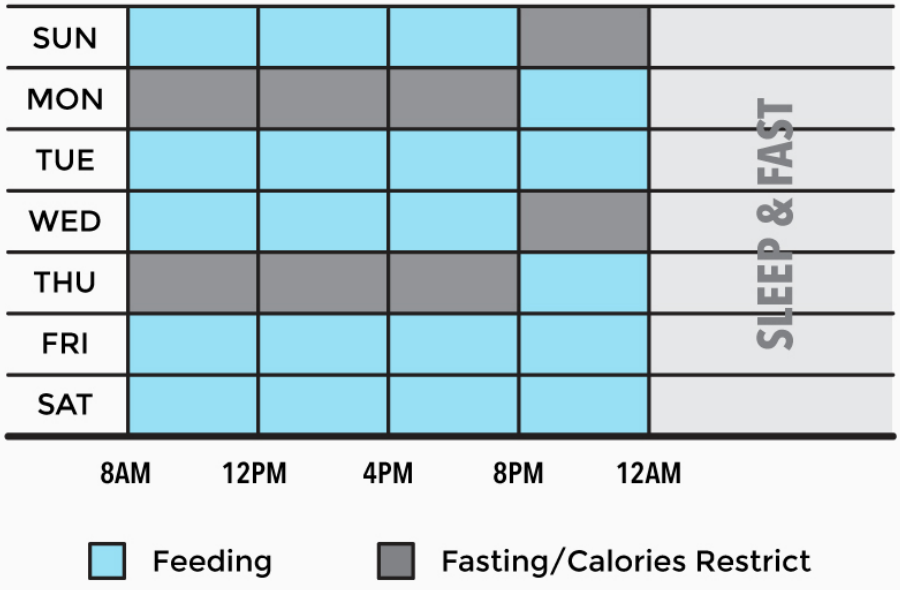



| | Circadian rhythm disruption or DIO | Time-restricted feeding | Potential mechanism |
|---|---|---|---|
|  | Obesity | ↓Fat, ↑lean mass | ↓Plasma- and ↓liver-triglycerides |
|  | Glucose intolerance/ insulin resistance | Improved glucose homeostasis | ↓Gluconeogenesis<br>↑PPP and ↑TCA cycle |
|  | Gut dysbiosis | Diverse and dynamic | Altered digestion, absorption, and excretion of nutrients and bile acids |
|  | Cardiovascular diseases | Arrhythmia and improved ↓cardiac function* | ATP-dependent chaperone and improved mitochondria function |
|  | Chronic inflammation | ↓Tissue inflammation | ↓Macrophage infiltration of WAT<br>↓IL6 TNFα |
|  | Liver diseases | ↓Fibrosis and ↓hepatic fat deposit | Fatty acid synthesis, ↑β oxidation mitochondrian volume |
|  | Increased cancer risk | ↓Risk for breast cancer# and ↑breast cancer prognosis | Improved metabolic homeostasis, reduced inflammation |
|  | Hypercholesterolemia | ↓Cholesterol | Cholesterol metabolism to bile acids |
|  | Sleep disorders | ↑Sleep quality# and ↑quantity* | Consolidation of activity and rest |
|  | Compromised muscle function | ↑Endurance and ↑flight index* | Ketone bodies, creatine metabolism |

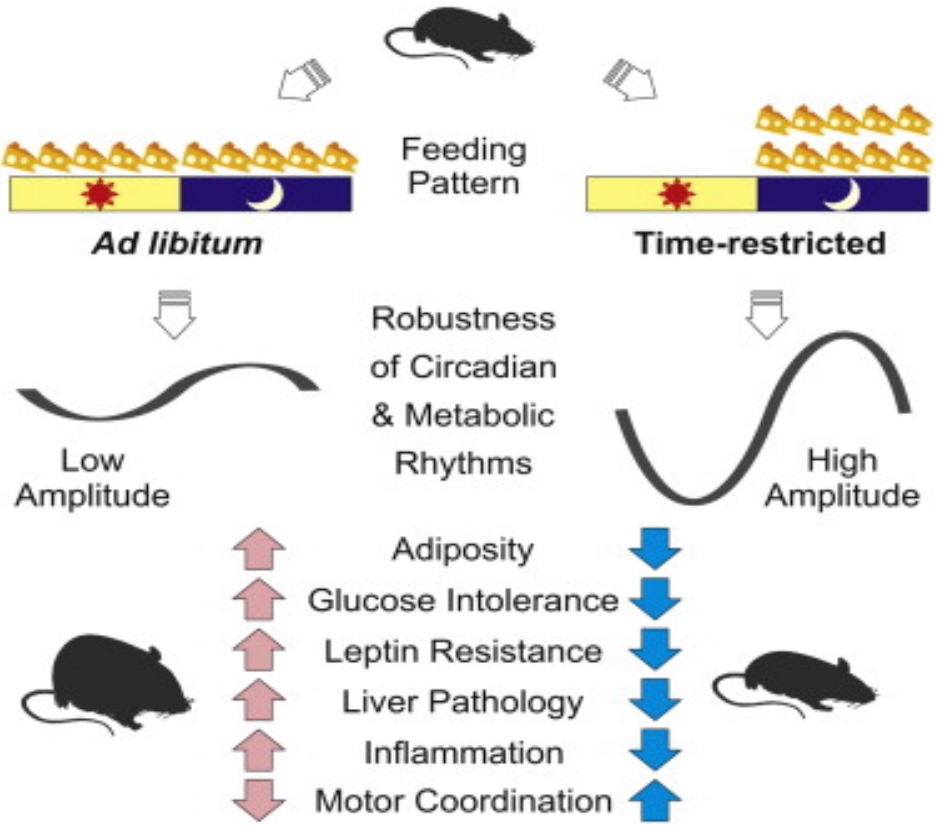
## 16:8 DAILY INTERMITTENT FASTING




## 5/2 WEEKLY INTERMITTENT FASTING

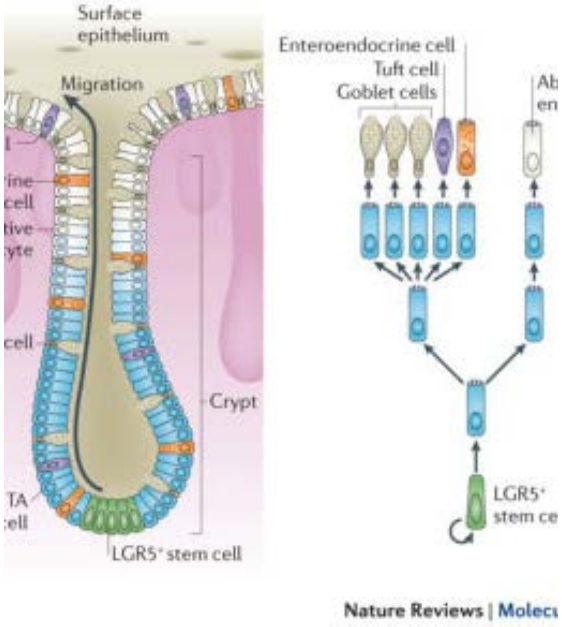


## FASTING BENEFITS

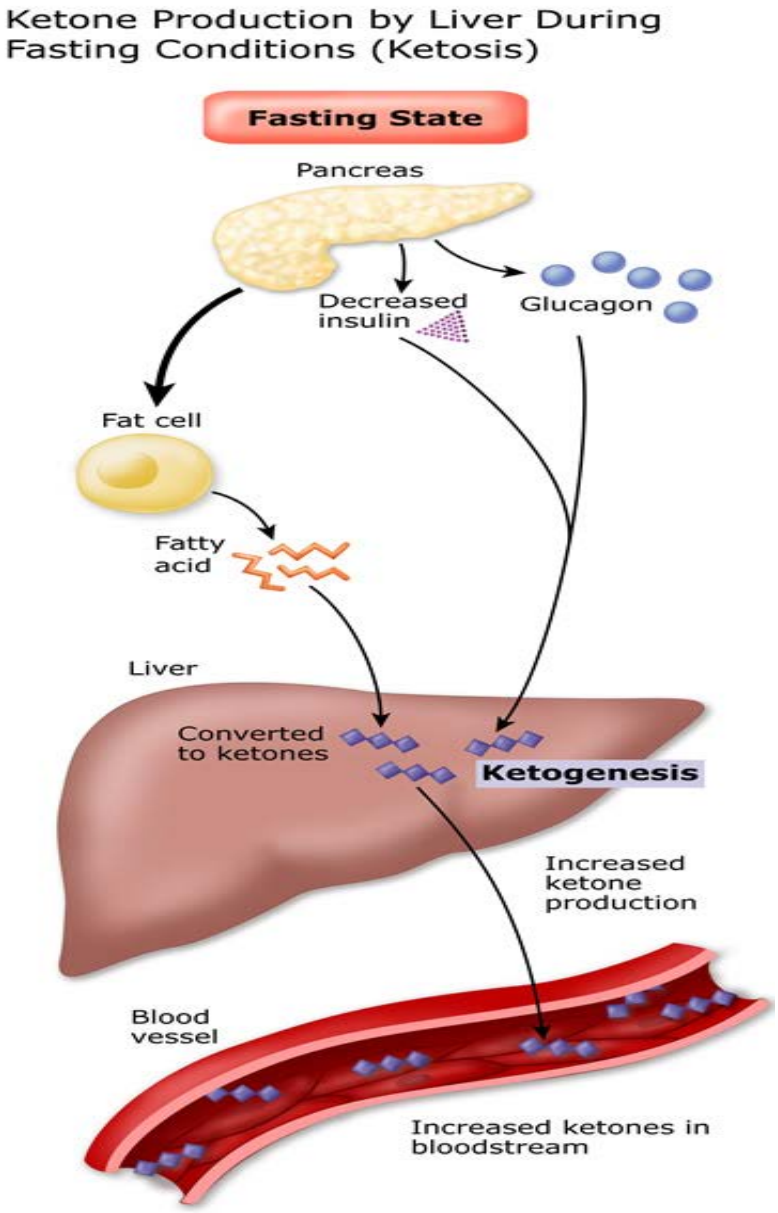



## CAN YOU LIVE LONGER WITHOUT FOOD OR SLEEP?

A Fasting state to feeding state triggers stem cell regeneration and growth, and has been shown to generate new brain cells.

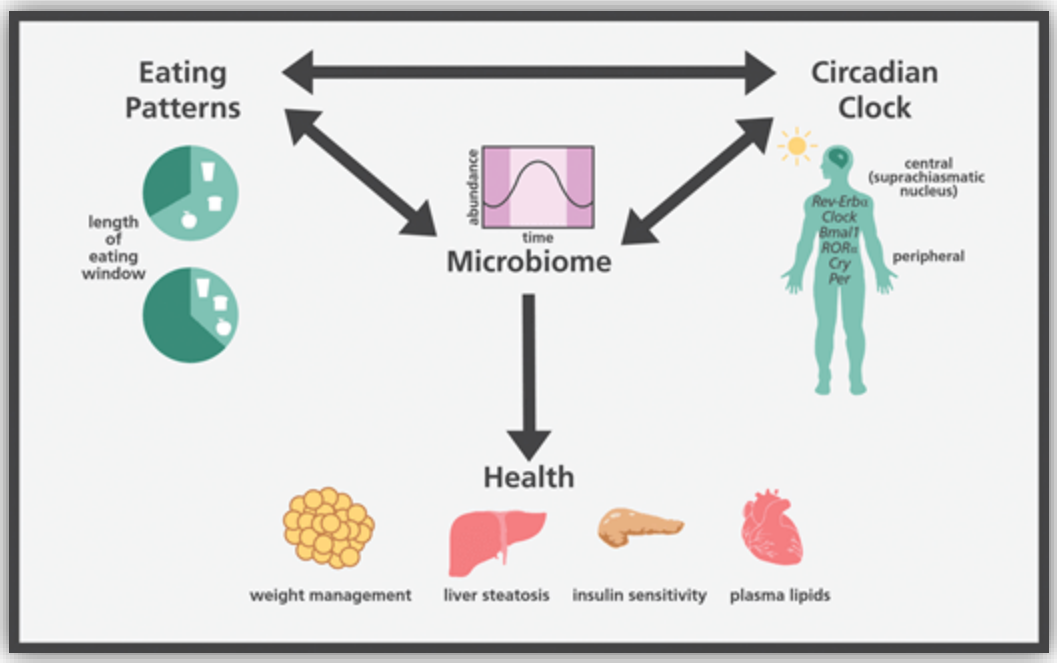


# FASTING AND KETONES

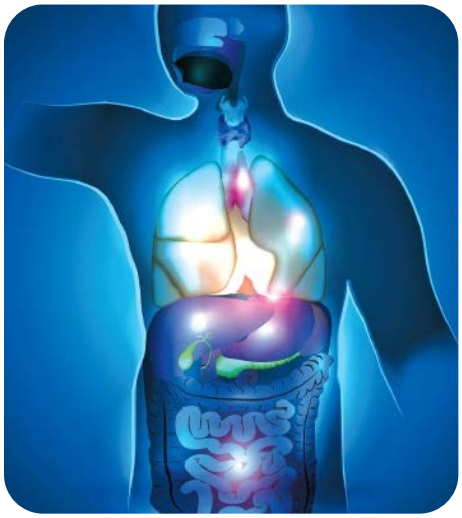



- Ketogenesis happens when you restrict carb intake to a maximum of around 50 grams per day.
- A healthy Liver and Pancreas will allow you to produce more ketones.
- The brain is able to use ketone bodies as a replacement fuel for glucose.
- Hydration and Plenty of Vegetables.

## DISEASE PREVENTION WITH TIMED EATING



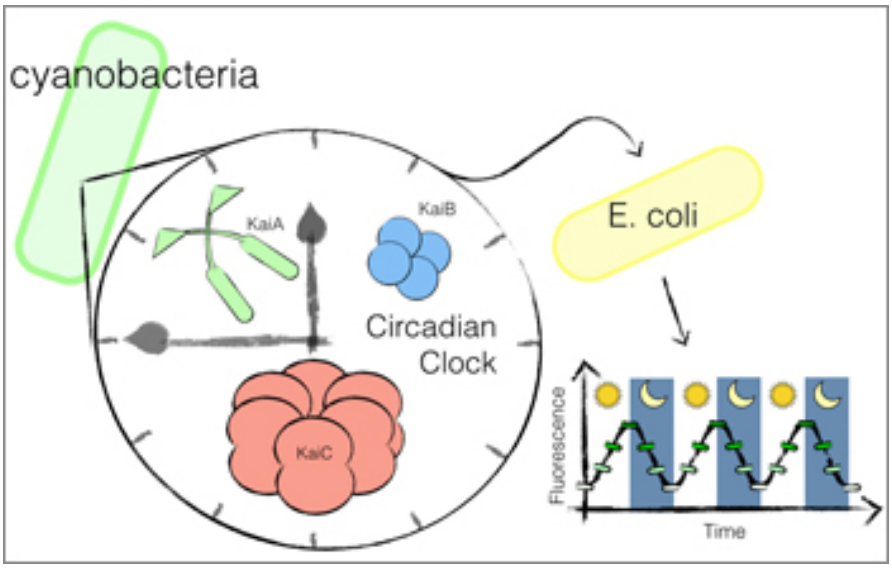

## CIRCADIAN RHYTHMS AND GUT MICROBES



"Gut microbe movements regulate host circadian rhythms"

Cell Press, December 1, 2016

# PERSONALIZED NUTRITION WITH GUT MICROBES

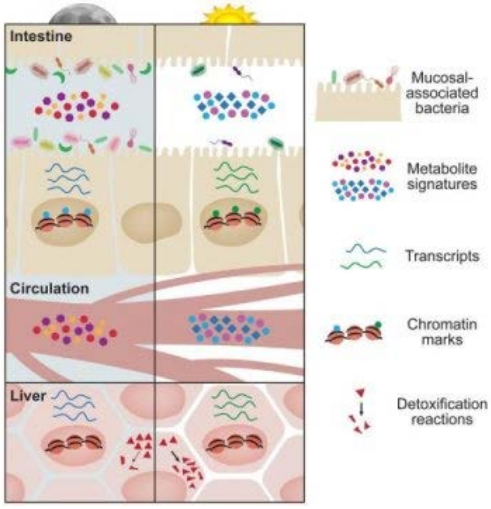



- Links to microbiota and digestion
- Our microbiota also follows a circadian clock.
- Different bacteria are active during different part of the day.
- Regularity between fasting and eating allows a vast variety of species to grow.
- Time-restricting changes the way sugar are digested.
- It can also decrease our cholesterol level and increase the production of bile acid.

# PERSONALIZED NUTRITION WI TH GUT MICROBES

Scientists also discovered that it wasn't only WHAT we eat but WHEN, because of the microbial circadian rhythms.

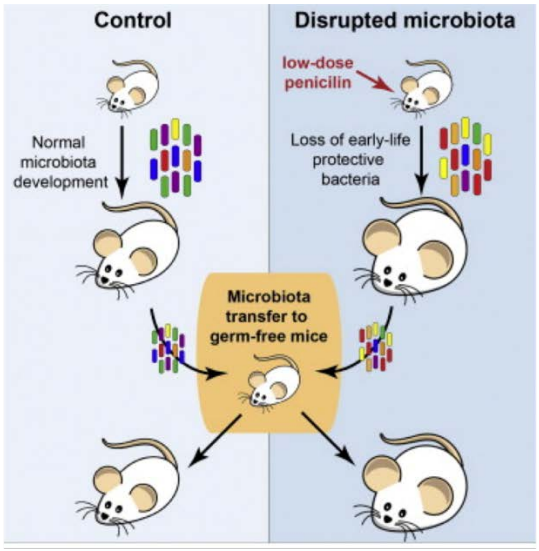
Using Machine Learning they discovered that they could deeply personalize food that would stabilize blood sugar based on the microbiome circadian rhythms.



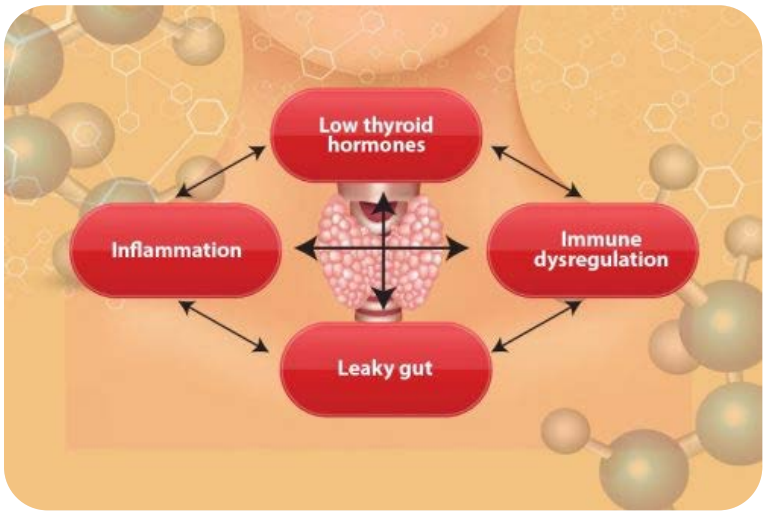
## HEALTHY GUT

- Good bacteria in the gut provides benefit to our health by:
  - Fermentation of indigestible carbohydrates
  - Production of vitamins
  - Protection from pathogenic bacteria and viruses
  - Priming the immune system

## GUT HEALTH: FECAL MATTER TRANSPLANT




*LM Cox et al., Cell *158*, 705–721, August 14, 2014



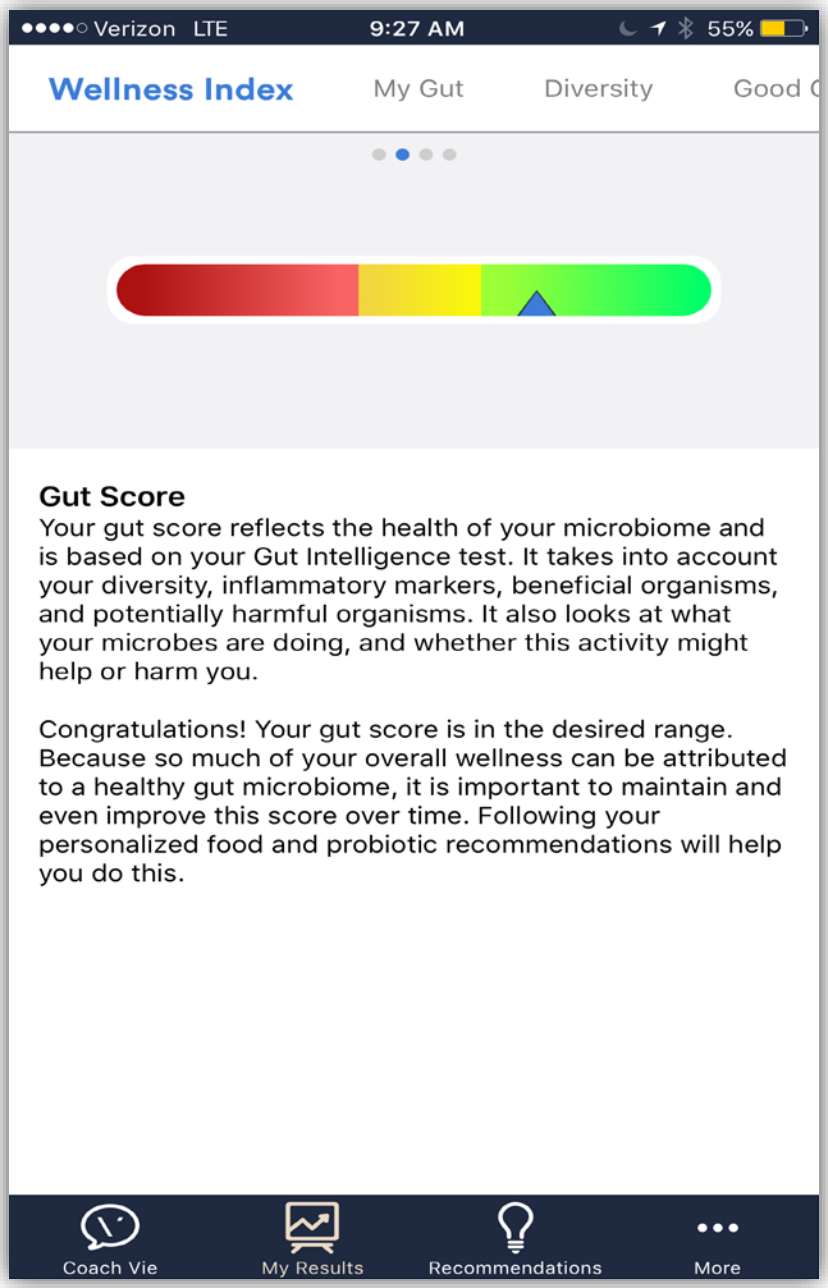
# METABOLIC AND GUT INTELLIGENCE


"I want to live in a world where illness is a choice."

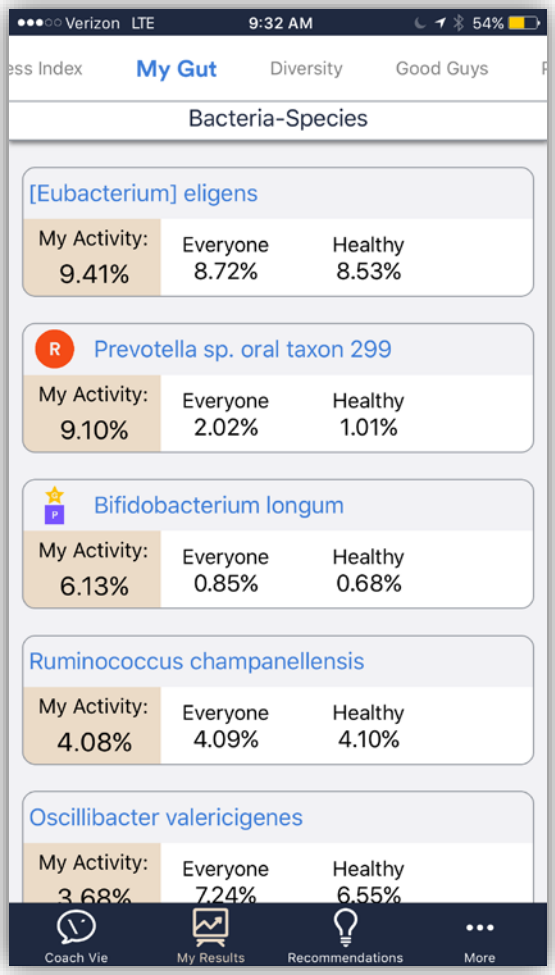
*Naveen Jain, CEO*

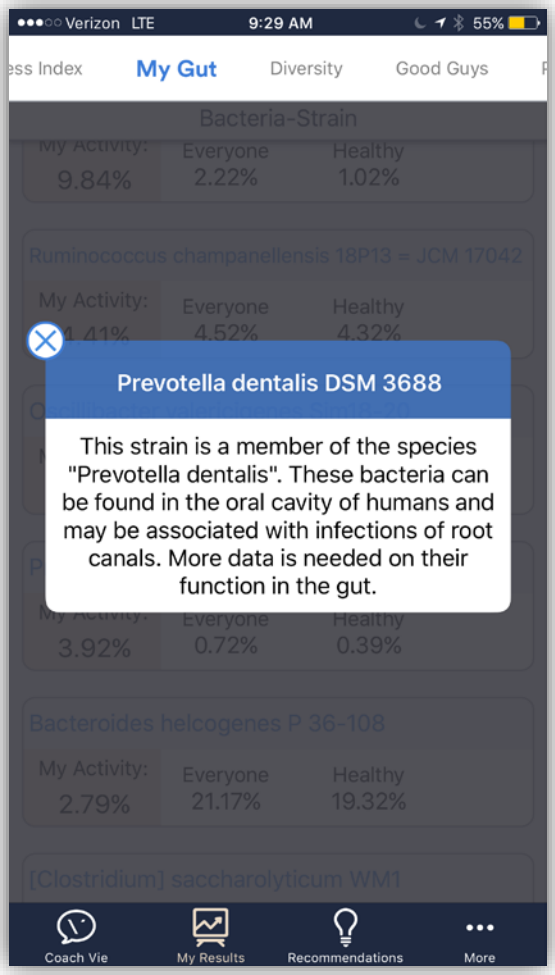
VIOME

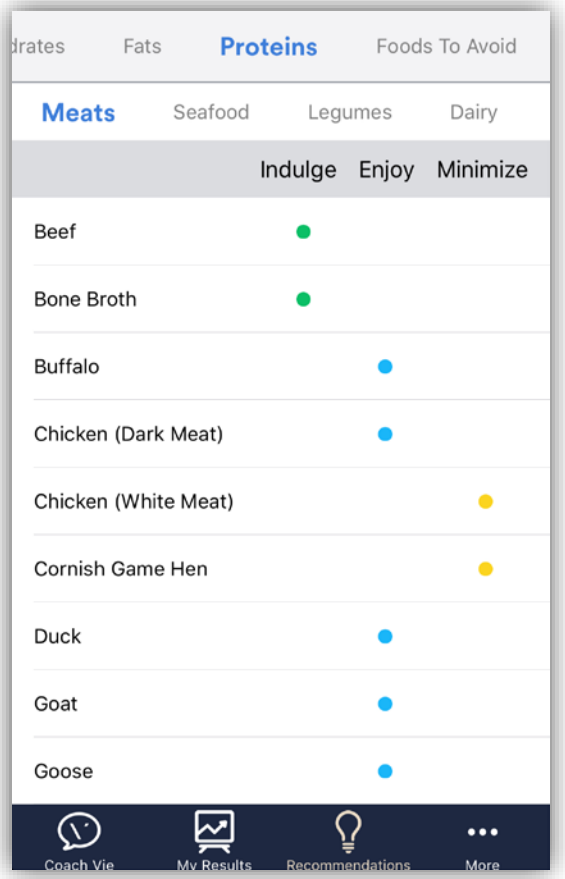
# REGAN'S RESULTS

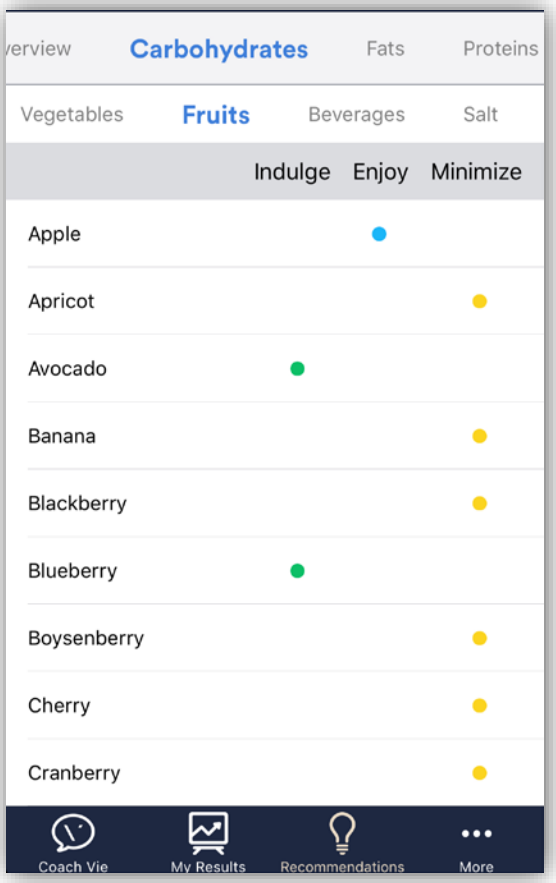


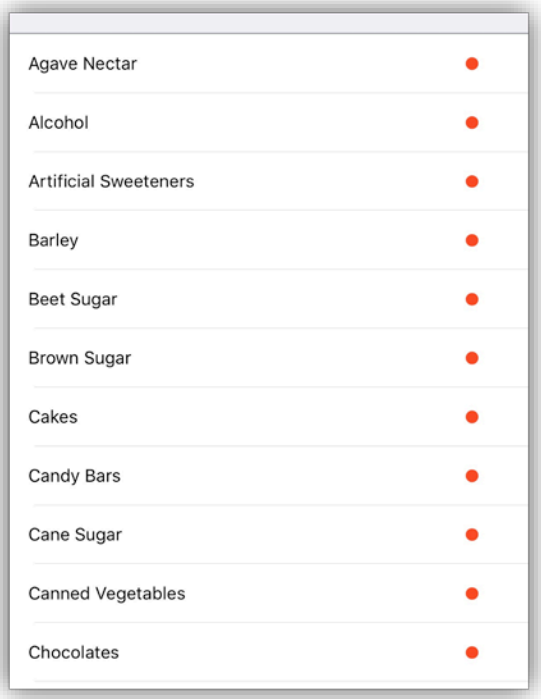

Results
My RNA
Results
Good Guys
Probiotics
My RNA
Compared to:
Everyone
Healthy
You
Everyone
Amount of Human RNA
What does this mean?
The x-axis shows the proportion of human RNA in the samples and the y-axis shows the number of the selected population having that amount of human RNA. The red line shows the amount of human RNA in your sample. Typically, small amounts of human RNA are detected in healthy individuals. When an infection or inflammation occurs, the cells lining the gut are shed in higher amounts and can lead to a greater amount of human RNA in your stool.


Verizon LTE 9:32 AM 54%
ess Index
My Gut
Diversity
Good Guys
Bacteria-Species
[Eubacterium] eligens
My Activity: 9.41%
Everyone 8.72%
Healthy 8.53%
Prevotella sp. oral taxon 299
My Activity: 9.10%
Everyone 2.02%
Healthy 1.01%
Bifidobacterium longum
My Activity: 6.13%
Everyone 0.85%
Healthy 0.68%
Ruminococcus champanellensis
My Activity: 4.08%
Everyone 4.09%
Healthy 4.10%
Oscillibacter valericigenes
My Activity: 3.68%
Everyone 7.24%
Healthy 6.55%
Coach Vie
My Results
Recommendations
More


Verizon LTE 9:29 AM 55%
ess Index
My Gut
Diversity
Good Guys
Bacteria-Strain
Everyone 2.22%
Healthy 1.02%
Ruminococcus champanellensis 18P13 = JCM 17042
Everyone 4.52%
Healthy 4.32%
Prevotella dentalis DSM 3688
This strain is a member of the species "Prevotella dentalis". These bacteria can be found in the oral cavity of humans and may be associated with infections of root canals. More data is needed on their function in the gut.
Everyone 0.72%
Healthy 0.39%
Bacteroides helcogenes P 36-108
My Activity: 2.79%
Everyone 21.17%
Healthy 19.32%
[Clostridium] saccharolyticum WM1
Coach Vie
My Results
Recommendations
More


drates
Fats
Proteins
Foods To Avoid
Meats
Seafood
Legumes
Dairy
Indulge
Enjoy
Minimize
Beef
Bone Broth
Buffalo
Chicken (Dark Meat)
Chicken (White Meat)
Cornish Game Hen
Duck
Goat
Goose
Coach Vie
My Results
Recommendations
More

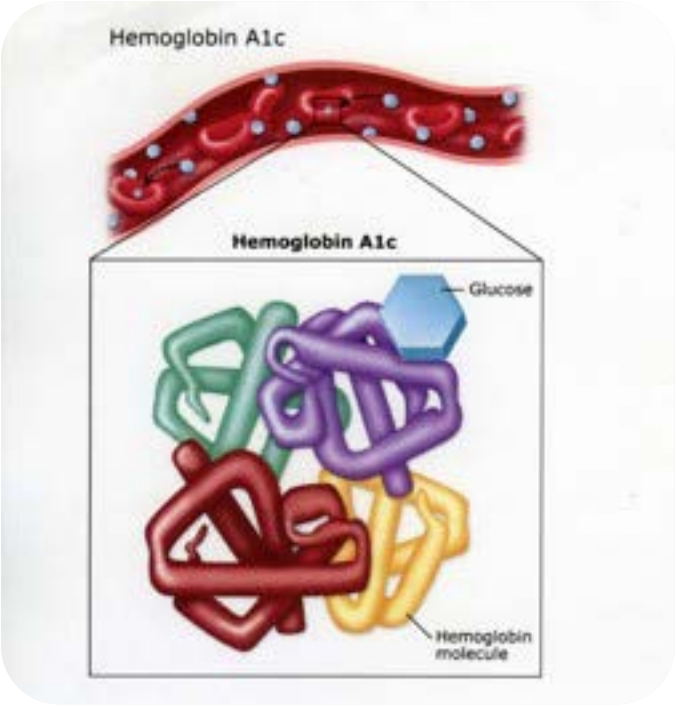

verview
Carbohydrates
Fats
Proteins
Vegetables
Fruits
Beverages
Salt
Indulge
Enjoy
Minimize
Apple
Apricot
Avocado
Banana
Blackberry
Blueberry
Boysenberry
Cherry
Cranberry
Coach Vie
My Results
Recommendations
More


Agave Nectar
Alcohol
Artificial Sweeteners
Barley
Beet Sugar
Brown Sugar
Cakes
Candy Bars
Cane Sugar
Canned Vegetables
Chocolates

## ARE YOUR NUMBERS IMPROVING?


- Under 100 mg/dL is considered normal
- 101-126 mg/dL is considered "pre-diabetic"
- Over 126 mg/dL is considered "diabetic"
- Fasting blood sugar between 75-94 mg/dL
- HA1c between 4.9 and 5.4

## WHAT ARE YOUR NUMBERS? HA1C



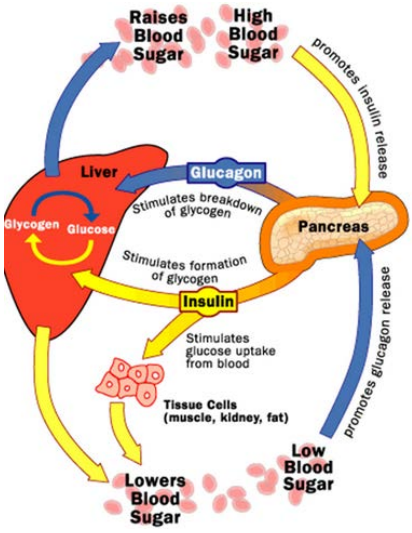

- Glucose sticks to the hemoglobin proteins in red blood cells.
- Red blood cells last for about three months before they die. They're constantly making them and they're constantly dying every day.
- Hemoglobin A1c gives you a picture of how much glucose is stuck to the red blood cells. Because once it sticks, it stays there.
- This is a 3 month picture of your blood glucose.

## WHAT ARE YOUR NUMBERS? C-PEPTIDE

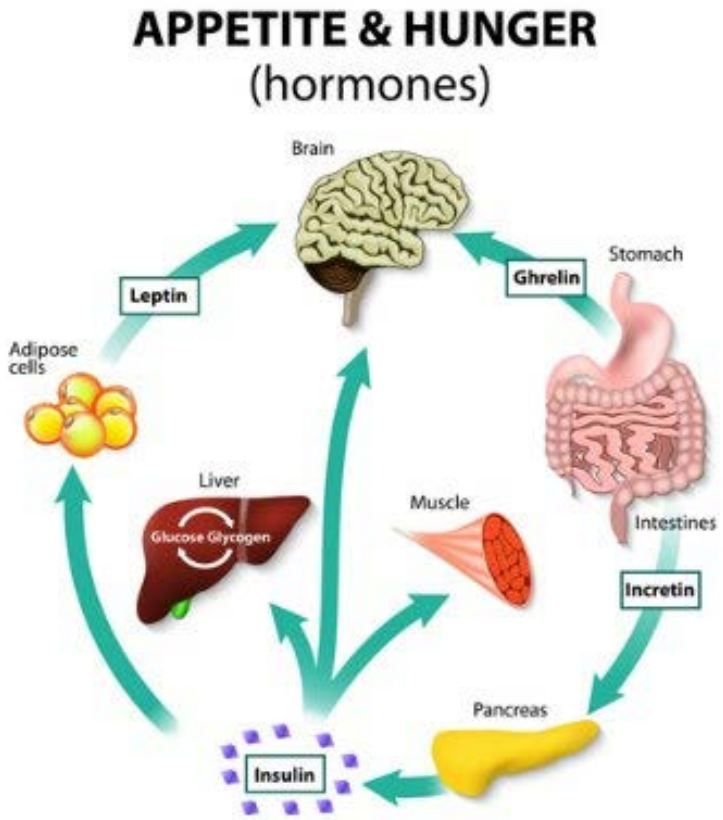

- C-peptide is the peptide that's attached to what I'll say dormant insulin. So the body is making insulin, it's ready to go and then it's dormant state, it's attached to a C-peptide. The second the insulin becomes activated, the C-peptide is cleaved off and then the C- peptide floats around in the bloodstream.
- C-Peptide should be 1 to 5, but not below 1.

## LIVER HEALTH TO TRANSFORM BLOOD SUGAR

- Insulin balances the amount of sugar the liver is pushing into the blood.
- Adrenalin and cortisol cause the liver to push extra amounts which impacts your Thyroid.



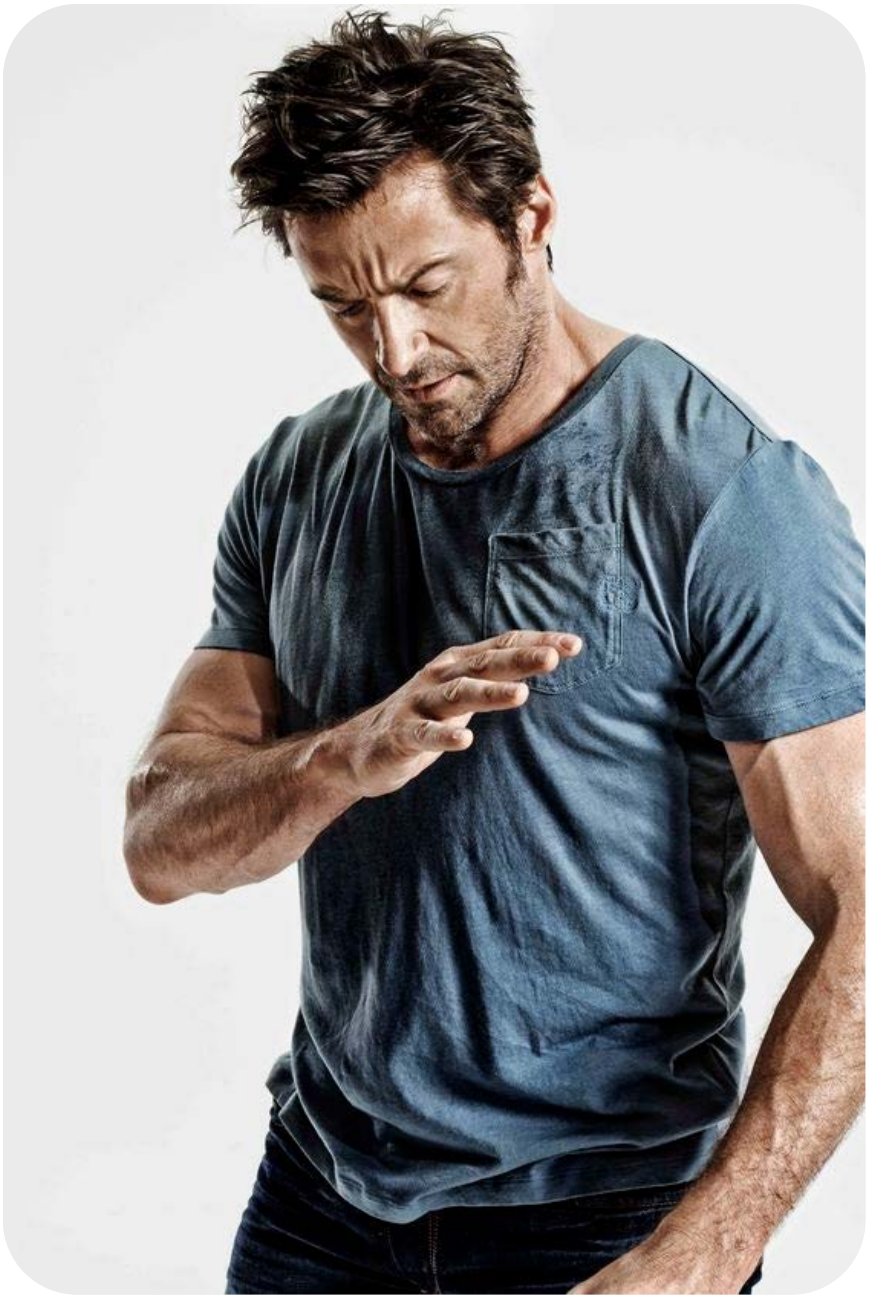
## WHAT ABOUT THE HUNGER?




## WHAT ABOUT THE HUNGER?

- The 'hunger hormone' ghrelin typically rises during weight loss and increases food cravings. However, in a recent study, this increase was suppressed in dieters in ketosis, despite a caloric deficit.
- In the same study, the satiety hormones leptin and amylin rose despite the participants losing weight. After reintroducing carbohydrate, satiety hormones fell, and hunger hormones quickly increased.
- A high presence of ketone bodies may provide a signal to inhibit the body's production of hunger hormones.

# HOMEWORK

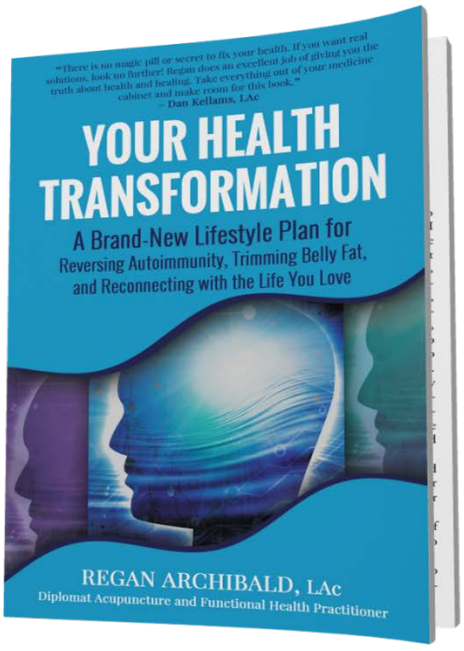


- Hugh Jackman follows a strict adherence of 16/8, only eating from 10 a.m. to 6 p.m.
- Can you start with 12 hours of no eating per day for 5 days per week?

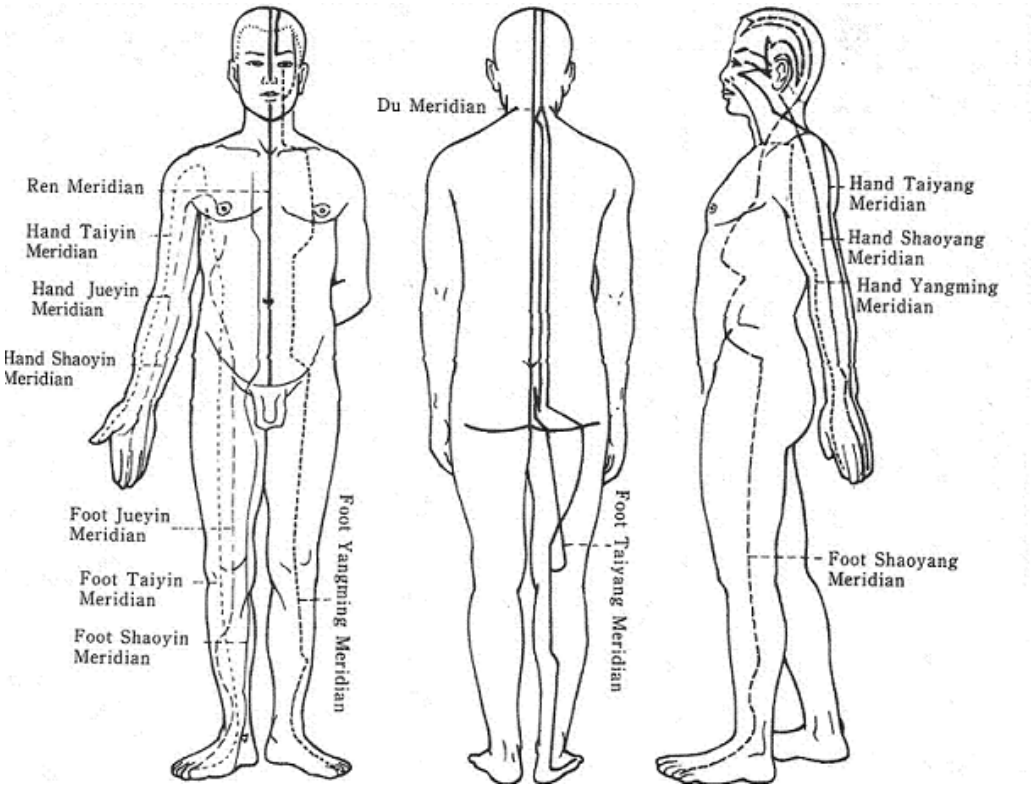
| NUTRITION PLAN | Name: | | Date: | |
|---|---|---|---|---|
| | When to Eat | Best Foods | Worst Foods | Energy Results |
| Past | | | | |
| Present | | | | |
| Future | | | | |
| Strategy | Breakfast | Lunch | Dinner | |

## "Your Health Transformation Course"

By Regan Archibald, Lac, CSSAc.,
Functional Medicine Practitioner



# THE ACUPUNCTURE IMPACT ON STEM CELLS




Distribution of the 14 meridians of the hand and foot

- Acupuncture meridians are the sensitive "organizing center network" as a behind-the-lines' general ready to send in "green" reserve troops (i.e., stem cells) who will evolve into the front-line combatants replacing those who have fallen from the attacks of disease, trauma, and aging.
- Acupuncture can also provide a much healthier environment in the case of transplanted stem cells as the bodies own stem cells can be recruited into a new network for repair and regeneration.
- Indiana University School of Medicine, March 2017
- A new study demonstrates how acupuncture triggers a neurological mechanism that can help promote tissue repair and relieve injury-induced pain
- Acupuncture led to activation of the hypothalamus -- a part of the brain that controls the nervous system and involuntary bodily functions such as heart rate and digestion -- within nine to 22 minutes. The stem cells were mobilized within two hours.

- "The acupuncture stimulus we're giving these animals has a rapid effect on neuroanatomical pathways that connect the stimulus point in the arm to responsive neurons in the spinal cord and into a region in the brain called the hypothalamus. In turn, the hypothalamus directs outgoing signals to stem cell niches resulting in their release," said Dr. White, who is a neuroscientist at the Richard L. Roudebush VA Medical Center in Indianapolis.

## THE MIND/EMOTIONAL IMPACT ON STEM CELLS

- Our emotions, attitudes, and consciousness influence how stem cells turn into new cells. What organs are affected by grief, fear, anger, anxiety and worry?
- Stem cells are influenced by consciousness and vibrations and become either a new cell full of vitality or they vibrate at a disease level and contribute to negative patterns already present in the body.

## ENERGETIC IMPACTS ON STEM CELLS

Emotions, attitudes, and overall consciousness can potentially transform our health and influence stem cells.

Dr. Bruce Lipton hypothesizes that our consciousness affects DNA expression through influencing proteins embedded in our cell membranes.

## ENVIRONMENTAL IMPACTS ON STEM CELLS

Scientists, indeed, have shown that the subtlest of energies can affect stem-cell expression or viability. For example, these cells are exceptionally sensitive to cosmic radiation.

## CHEMOTHERAPY IMPACT STEM CELLS

- Chemotherapy: Patients need B-12 therapy w MSC's
- Recent studies indicate that commonly used chemotherapy agents are more toxic to neuronal stem and progenitor cells than the cancer cells it targets (Dietrich J, et al. J Biol, 5(7), 2006).

> "Due to this toxicity, chemotherapy is associated with many adverse, long-term neurological consequences. Given the incidence of cancer, it is estimated that more people suffer from chemotherapy-related neurological damage than many of the more widely recognized neurological disorders."

## RADIATION AND CHEMOTHERAPY IMPACT STEM CELLS

Scientists exposed regular cancer cells to gamma-rays, one form of ionizing radiation. They found that under the conditions that normally foster stem cell growth, regular cancer cells formed balls of cells — a hallmark of cancer stem cells.

Additionally, analysis of these irradiated cancer cells revealed activity of genes linked with stem cell behaviors, according to the findings the scientists detailed online Aug. 21, 2012 in the journal PLoS ONE.

> "So radiation and chemotherapy not only might create cancer stem cells, any pre-existing cancer stem cells in a tumor were very resistant to radiation and chemotherapy, so they remain as well. This could help explain why these therapies are sometimes not as effective as we might hope."
>
> Charles Q. Choi, cancer researcher

## THE ENVIRONMENTAL IMPACT ON STEM CELLS

### Hormesis

Definition:

- Dose response phenomenon characterized by a low dose stimulation and a high dose inhibition.
- Generally similar quantitative features with respect to amplitude and range of the stimulatory response.
- May be directly induced or the result of compensatory biological processes following an initial disruption in homeostasis.

## TRANSFORM YOUR HEALTH FIRST

- 30 times balloon blowing
- Breathe in fully Breath out fully and hold until gasp reflex
- Inhale fully and hold for 10-15 seconds.
- Repeat until finished
- Take 5 minutes to relax and scan your body


"Notice that you are stronger without air than you would normally be if you could breathe!"

Charge the energy up the spine by holding moola banda, contract the rectum & sex organ and pull the navel inward towards the spine.

Stand up in squat position and do the balloon breath. Try to breathe away the burn. (Get seated again the moment you continue the cycle, you don't want to be standing and faint) See if you can get the energy overtake the pain. Don't give up easily and see how far you can go if you have the willpower!"

Wim Hoff Quotes from bengreenfieldfittness.com

Work up to a minimum of 15 minutes or 6 rounds with exercises. You can do this practice for how long it pleases you. If you feel dizziness or pain, get out of the posture and lie on your back. Breathe easily again and stop this practice session. Reserve at least 5 minutes after this practice to relax and scan the body.

**"If you can learn how to use your mind, anything is possible."**

**Wim Hof, The Iceman**

# TRANSFORM YOUR HEALTH FIRST: DAILY COLD EXPOSURE

# Breathing Exercises Benefits

# Cold Exposure Benefits

| HEALTH TRANSFORMATION HABITS | |
|---|---|
| **Healthy** | **Unhealthy** |
| | |
| **90 Day Goals** | |
| | |
| Accountable to: | Date of Accountability: |