Casual Friday Series

Unlocking the Cognitive Decline Code

BIOGENETIX.COM

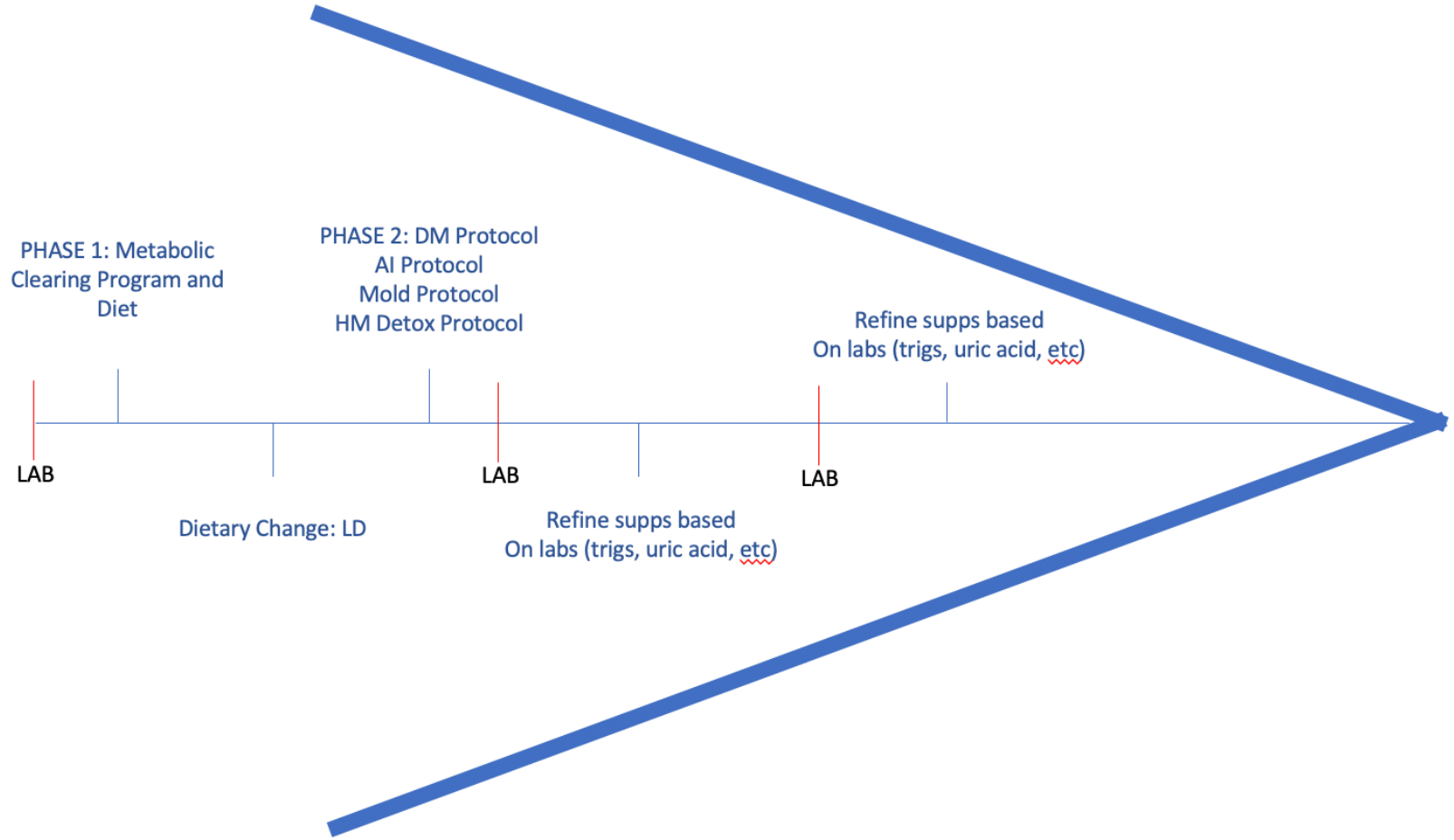
Disclaimer

- *Information in this presentation is not intended, in itself, to diagnose, treat, reverse, cure, or prevent any disease. While this presentation is based on medical literature, findings, and text, 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.*

(Lifestyle + Genetics) x Time = Chronic Health Condition

(Lifestyle + Genetics) x Time = Chronic Health IMPROVEMENT

Supplement and Diet Protocols



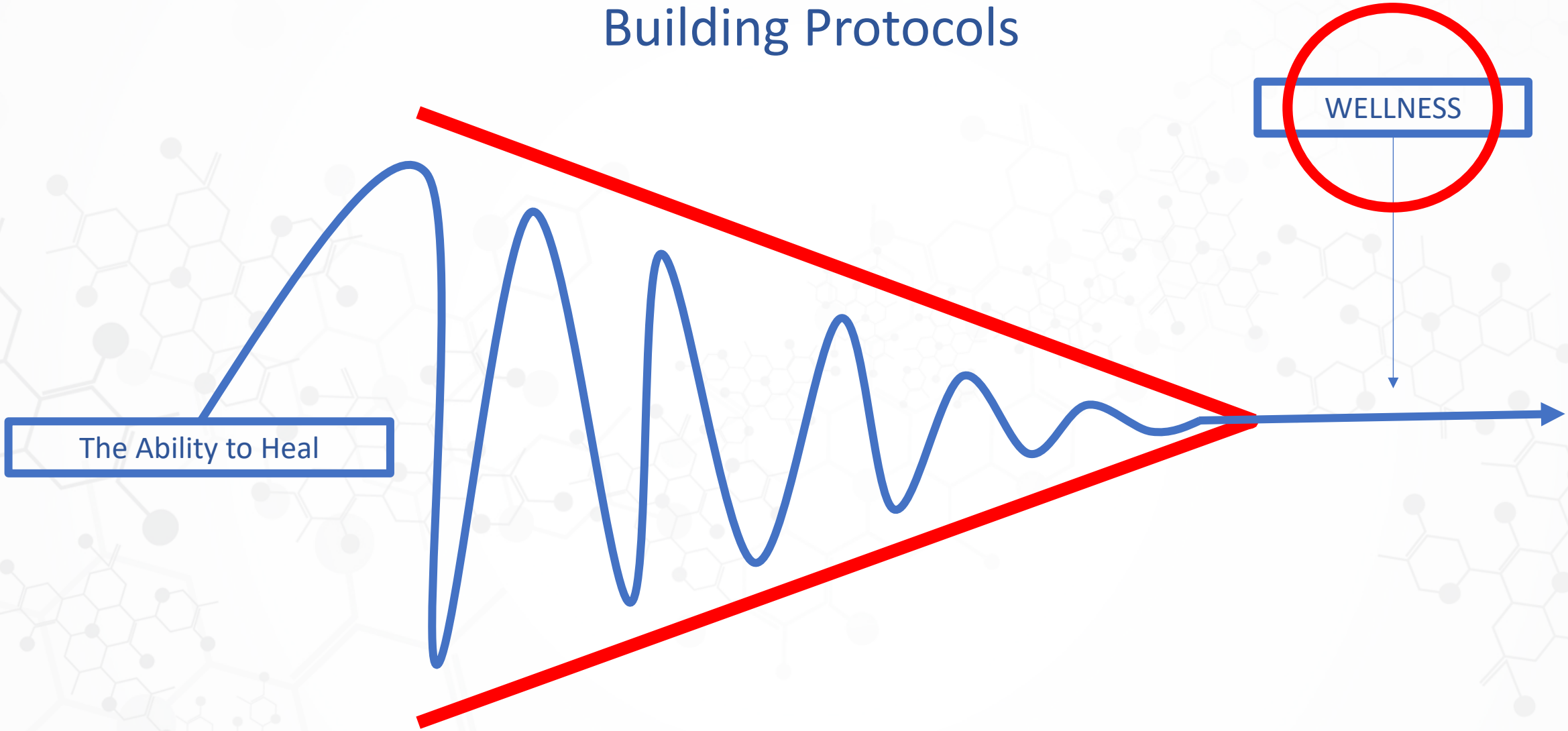
Retest a lab at least every 60 days.

85% of patients will improve with basic structures and healthy eating.

% of problem analysis: this is what the cleanse is for.

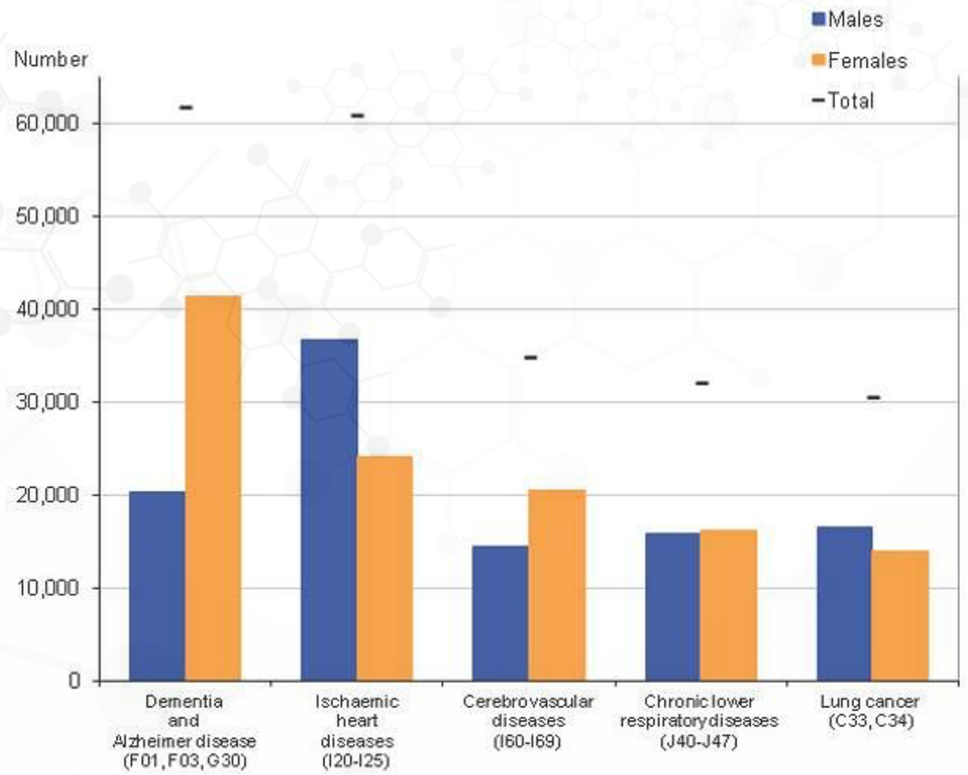
General → Fine Tune

Building Protocols



Losing Your Marbles

- Loss of cognitive function is the #1 concern of individuals over 50.



If you’re an adult over 50, you have a larger risk of developing Alzheimer’s disease or dementia than breast cancer and prostate cancer combined.

150M cases by 2050.

A New Epidemic

Journal of Diabetes Science and Technology
Volume 2, Issue 6, November 2008

REVIEW ARTICLE

Alzheimer's Disease Is Type 3 Diabetes—Evidence Reviewed

Suzanne M. de la Monte, M.D., M.P.H.[1–3] and Jack R. Wands, M.D.[3]

Abstract

Alzheimer's disease (AD) has characteristic histopathological, molecular, and biochemical abnormalities, including cell loss; abundant neurofibrillary tangles; dystrophic neurites; amyloid precursor protein, amyloid-β (APP-Aβ) deposits; increased activation of prodeath genes and signaling pathways; impaired energy metabolism; mitochondrial dysfunction; chronic oxidative stress; and DNA damage. Gaining a better understanding of AD pathogenesis will require a framework that mechanistically interlinks all these phenomena. Currently, there is a rapid growth in the literature pointing toward insulin deficiency and insulin resistance as mediators of AD-type neurodegeneration, but this surge of new information is riddled with conflicting and unresolved concepts regarding the potential contributions of type 2 diabetes mellitus (T2DM), metabolic syndrome, and obesity to AD pathogenesis. Herein, we review the evidence that (1) T2DM causes brain insulin resistance, oxidative stress, and cognitive impairment, but its aggregate effects fall far short of mimicking AD; (2) extensive disturbances in brain insulin and insulin-like growth factor (IGF) signaling mechanisms represent early and progressive abnormalities and could account for the majority of molecular, biochemical, and histopathological lesions in AD; (3) experimental brain diabetes produced by intracerebral administration of streptozotocin shares many features with AD, including cognitive impairment and disturbances in acetylcholine homeostasis; and (4) experimental brain diabetes is treatable with insulin sensitizer agents, i.e., drugs currently used to treat T2DM. We conclude that the term "type 3 diabetes" accurately reflects the fact that AD represents a form of diabetes that selectively involves the brain and has molecular and biochemical features that overlap with both type 1 diabetes mellitus and T2DM.

J Diabetes Sci Technol 2008;2(6):1101-1113

Measuring Cognitive Function

Measuring Cognitive Function

Pre November 9, 2010

Patient Profile	Percentile Range				> 74	25 - 74	9 - 24	2 - 8	< 2
	Standard Score Range				> 109	90 - 109	80 - 89	70 - 79	< 70
Domain Scores	Subject Score	Standard Score	Percentile	Valid Score**	Above	Average	Low Average	Low	Very Low
Neurocognitive Index (NCI)	NA	81	10	Yes			X		
Composite Memory	97	97	42	Yes		X			
Verbal Memory	51	96	40	Yes		X			
Visual Memory	46	99	47	Yes		X			
Psychomotor Speed	168	93	32	Yes		X			
Reaction Time*	816	64	1	Yes					X
Complex Attention*	15	65	1	Yes					X
Cognitive Flexibility	41	88	21	Yes			X		
Processing Speed	46	80	9	Yes			X		
Executive Function	51	102	55	Yes		X			
Social Acuity	6	81	10	Yes			X		
Reasoning	10	114	82	Yes	X				
Sustained Attention	16	74	4	No				X	
Working Memory	14	115	84	No	X				

Post November 24, 2010

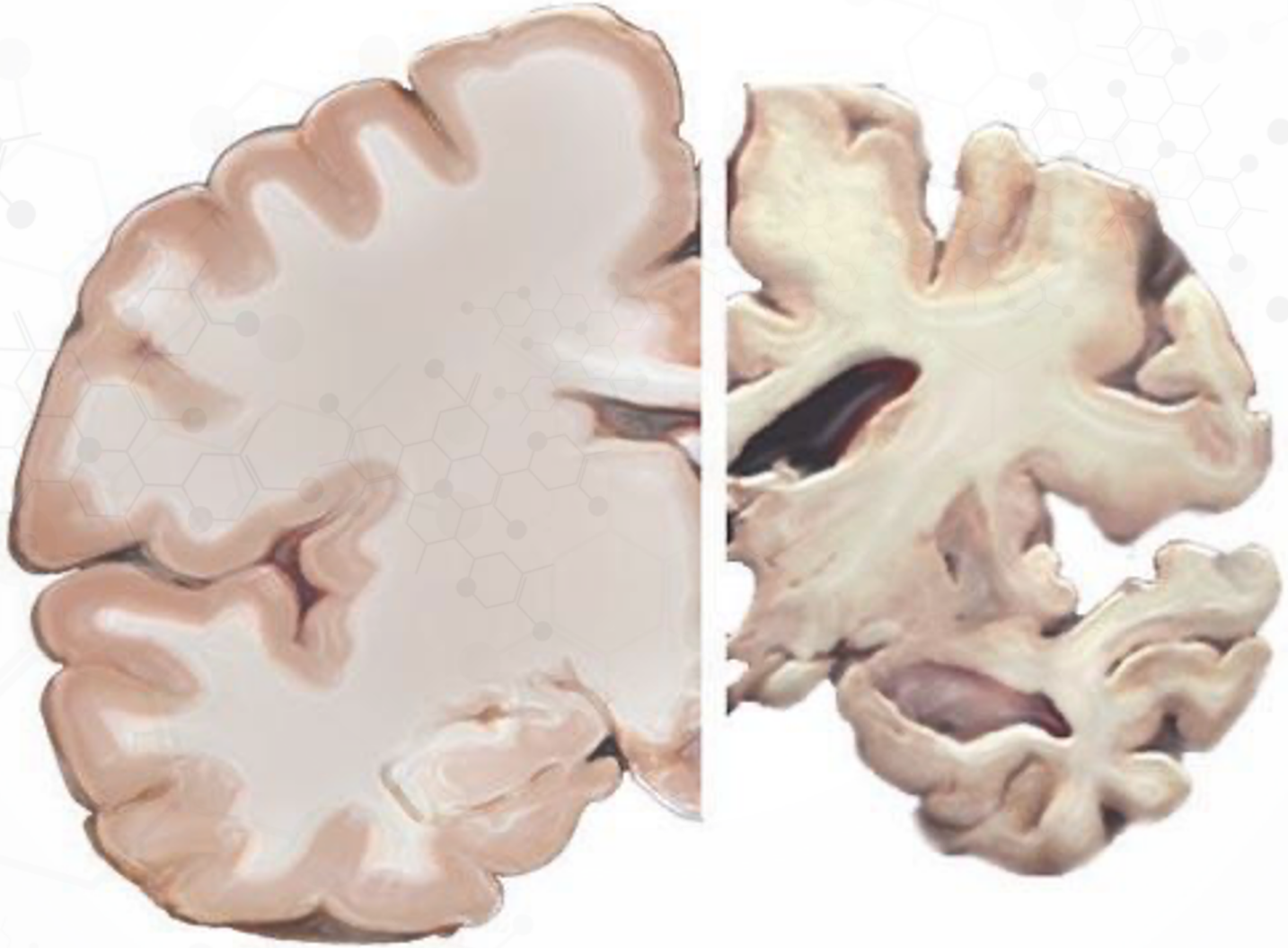
Patient Profile	Percentile Range				> 74	25 - 74	9 - 24	2 - 8	< 2
	Standard Score Range				> 109	90 - 109	80 - 89	70 - 79	< 70
Domain Scores	Subject Score	Standard Score	Percentile	Valid Score**	Above	Average	Low Average	Low	Very Low
Neurocognitive Index (NCI)	NA	89	23	Yes			X		
Composite Memory	105	113	81	Yes	X				
Verbal Memory	56	112	79	Yes	X				
Visual Memory	49	109	73	Yes		X			
Psychomotor Speed	192	109	73	Yes		X			
Reaction Time*	947	41	1	Yes					X
Complex Attention*	9	87	19	Yes			X		
Cognitive Flexibility	45	94	34	Yes		X			
Processing Speed	58	97	42	Yes		X			
Executive Function	46	94	34	Yes		X			
Social Acuity	10	110	75	Yes	X				
Reasoning	14	128	97	Yes	X				
Sustained Attention	34	112	79	Yes	X				
Working Memory	12	109	73	Yes		X			

Post March 7, 2011

Patient Profile	Percentile Range				> 74	25 - 74	9 - 24	2 - 8	< 2
	Standard Score Range				> 109	90 - 109	80 - 89	70 - 79	< 70
Domain Scores	Subject Score	Standard Score	Percentile	Valid Score**	Above	Average	Low Average	Low	Very Low
Neurocognitive Index (NCI)	NA	106	66	Yes		X			
Composite Memory	101	105	63	Yes		X			
Verbal Memory	60	125	95	Yes	X				
Visual Memory	41	82	12	Yes			X		
Psychomotor Speed	234	137	99	Yes	X				
Reaction Time*	723	80	9	Yes			X		
Complex Attention*	5	102	55	Yes		X			
Cognitive Flexibility	52	105	63	Yes		X			
Processing Speed	67	110	75	Yes	X				
Executive Function	53	105	63	Yes		X			
Social Acuity	10	110	75	Yes	X				
Reasoning	15	131	98	Yes	X				
Sustained Attention	35	114	82	Yes	X				
Working Memory	14	115	84	Yes	X				

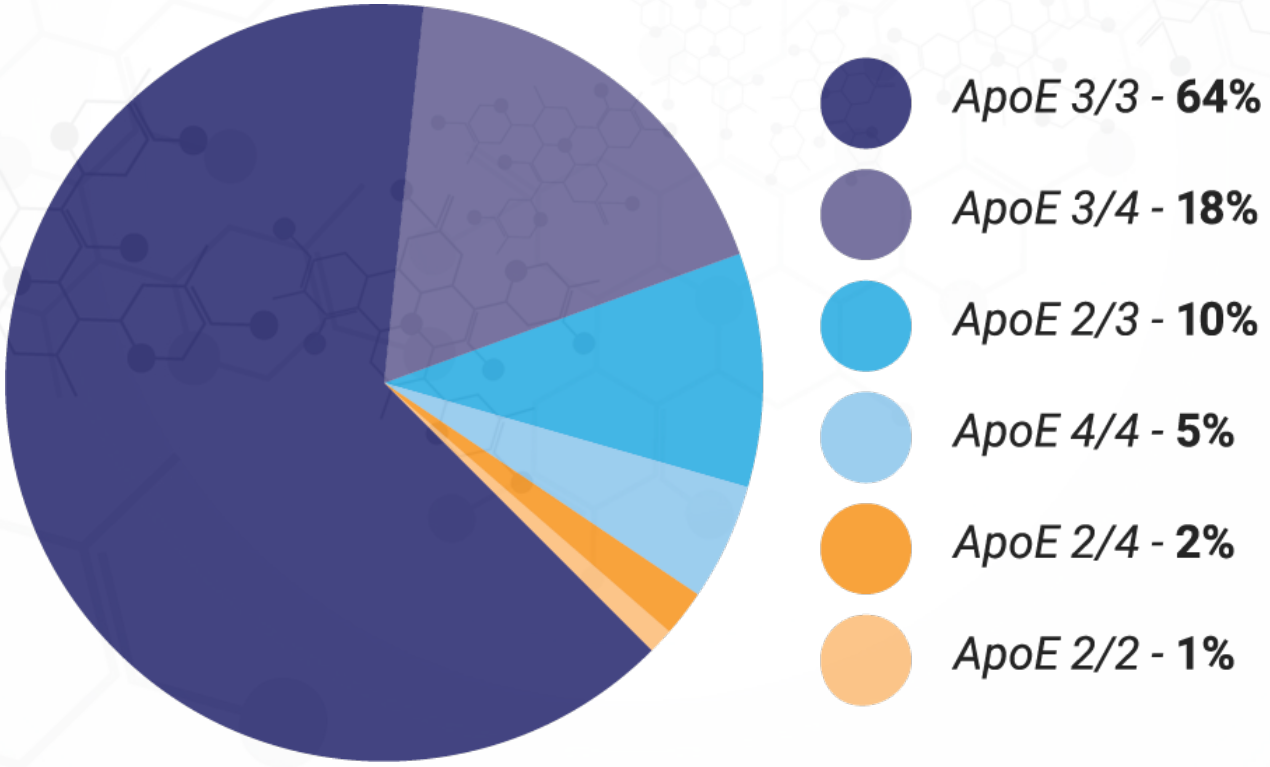
Healthy Brain

Severe AD



Where Healthcare Has Been

1. It’s genetic! APOE-4 status



Where Healthcare Has Been

1. Single Nutrient Single Action Pharma

Health & Science

After many disappointments, the search for Alzheimer's drugs is more urgent than ever

By **Melissa Bailey**
February 6, 2017

Despite a 99 percent failure rate and a recent setback, Alzheimer's researchers are plowing ahead with hundreds of experiments — and a boost in federal money — to try to crack a deadly disease that has flummoxed them for decades.

A law passed by Congress in December and signed by President Barack Obama sets aside $3 billion over 10

Where Healthcare Has Been

1. Single Nutrient Single Action Pharma

HEALTH NEWS JANUARY 7, 2018 / 1:59 PM / A YEAR AGO

Pfizer ends research for new Alzheimer's, Parkinson's drugs

NEW YORK (Reuters) - Pfizer Inc (PFE.N) is abandoning research to find new drugs aimed at treating Alzheimer's and Parkinson's disease, the U.S. pharmaceutical company announced on Saturday.

The company said it expects to eliminate 300 positions from the neuroscience discovery and early development programs in Andover and Cambridge, Massachusetts,

But then…

1. Eat/Think/Move

Aging (Albany NY). 2014 Sep; 6(9): 707–717.
Published online 2014 Sep 27. doi: 10.18632/aging.100690
PMCID: PMC4221920
PMID: 25324467

Reversal of cognitive decline: A novel therapeutic program

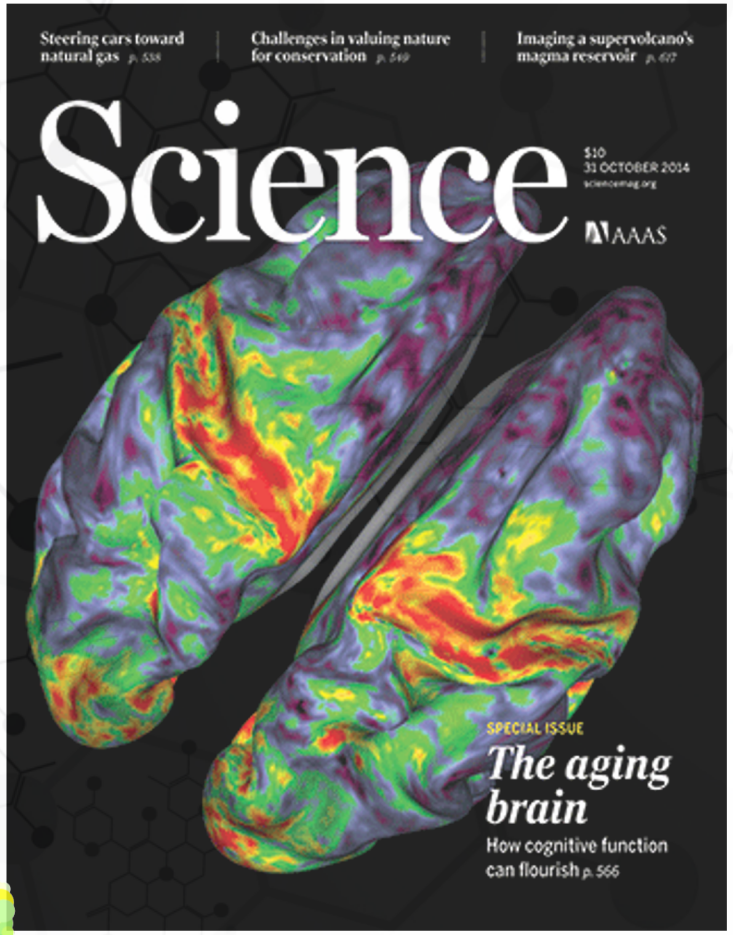
Dale E. Bredesen[1,2]

Abstract

Go to:

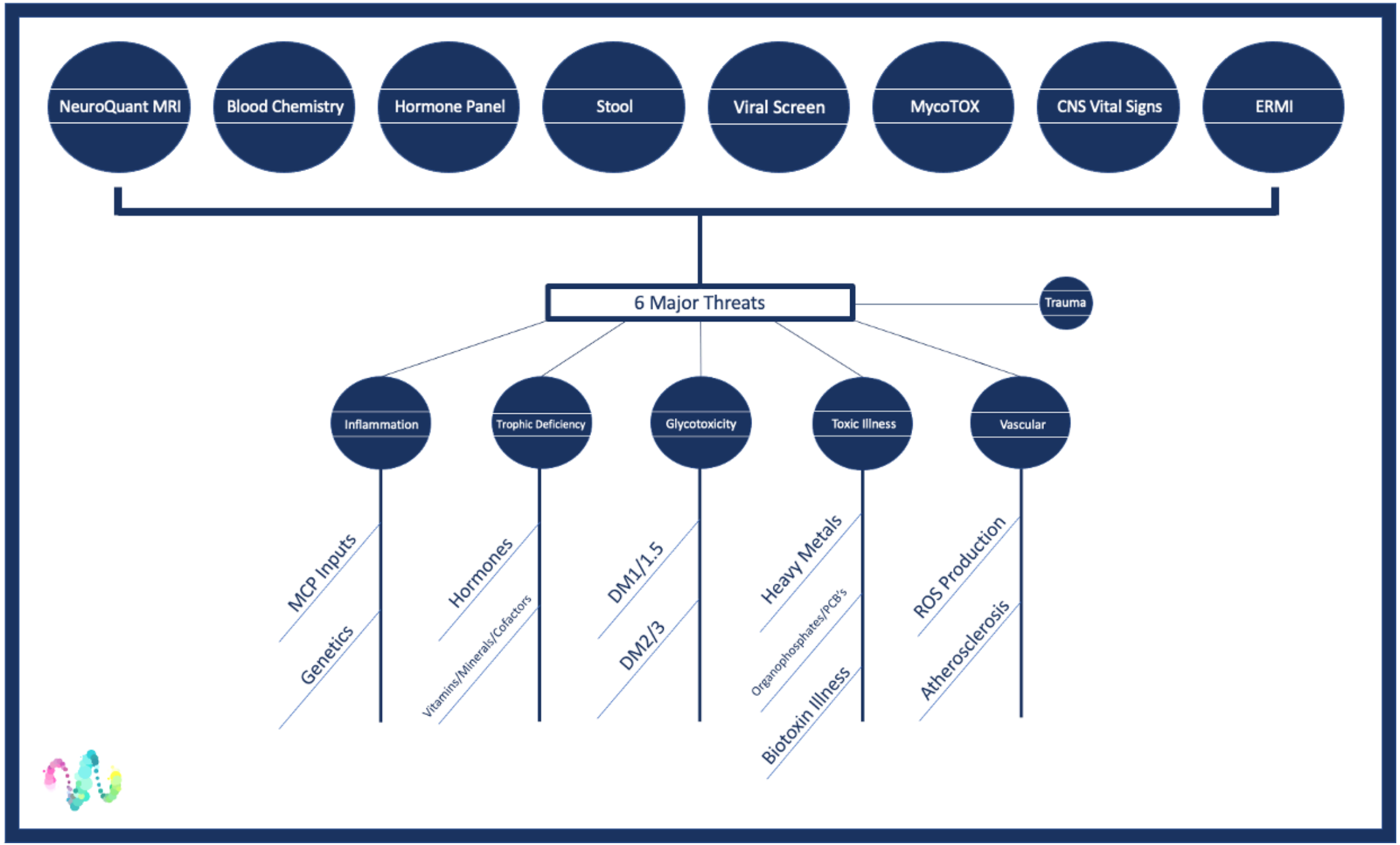
This report describes a novel, comprehensive, and personalized therapeutic program that is based on the underlying pathogenesis of Alzheimer's disease, and which involves multiple modalities designed to achieve metabolic enhancement for neurodegeneration (MEND). The first 10 patients who have utilized this program include patients with memory loss associated with Alzheimer's disease (AD), amnestic mild

How Do We Heal or Enhance Our Cognitive Function?



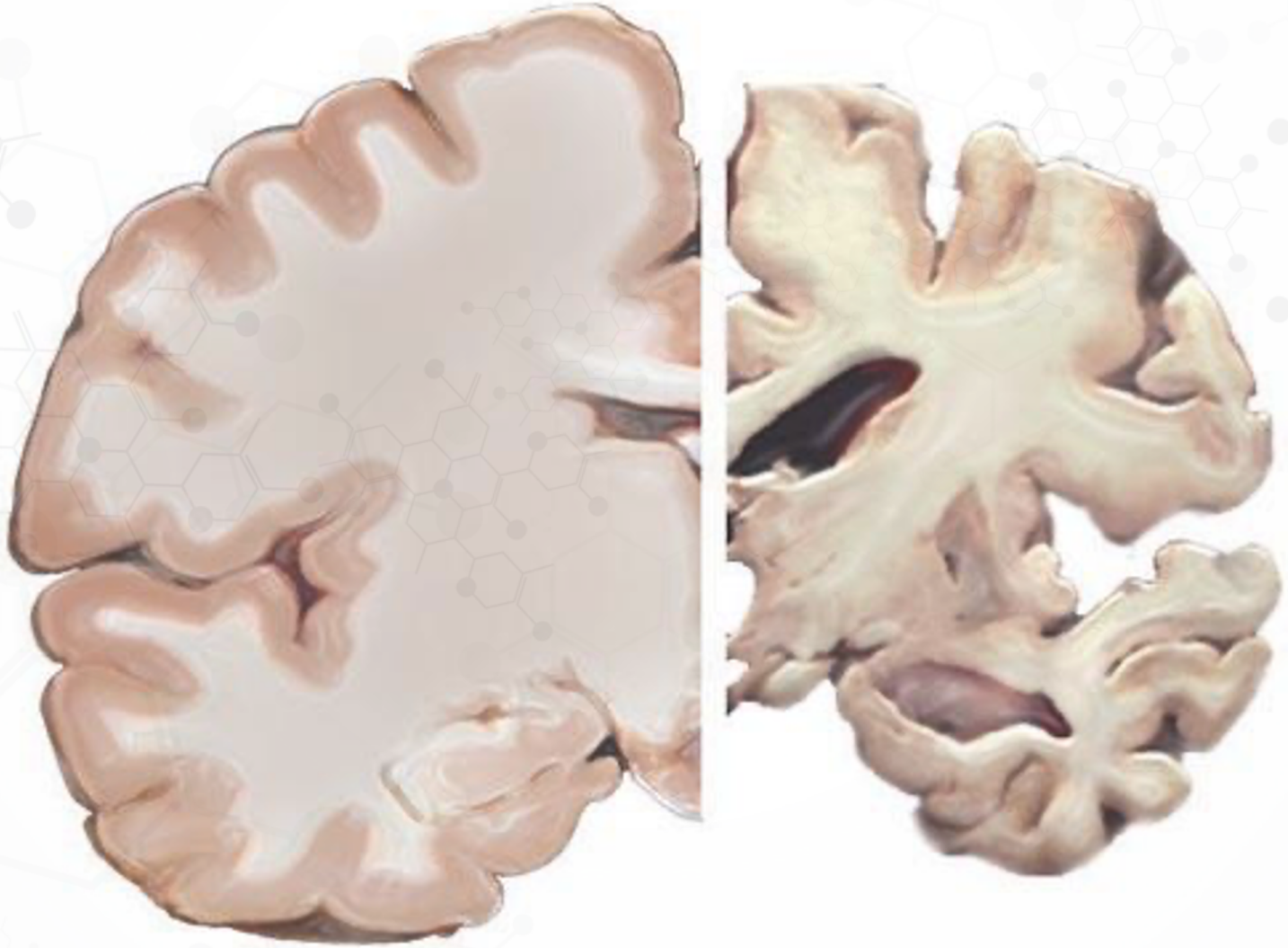
The Key is Neuroplasticity:

The building, grooming and integration of neural pathways.

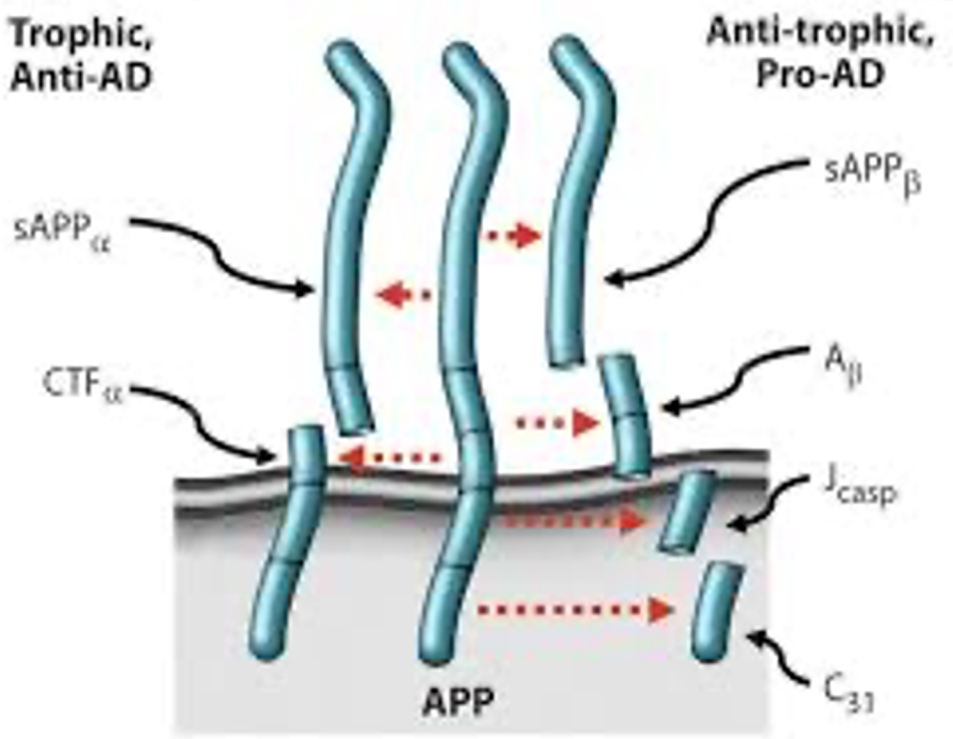

NeuroQuant MRI
Blood Chemistry
Hormone Panel
Stool
Viral Screen
MycoTOX
CNS Vital Signs
ERMI
6 Major Threats
Trauma
Inflammation
Trophic Deficiency
Glycotoxicity
Toxic Illness
Vascular
MCP Inputs
Genetics
Hormones
Vitamins/Minerals/Cofactors
DM1/1.5
DM2/3
Heavy Metals
Organophosphates/PCB's
Biotoxin Illness
ROS Production
Atherosclerosis

Healthy Brain

Severe AD



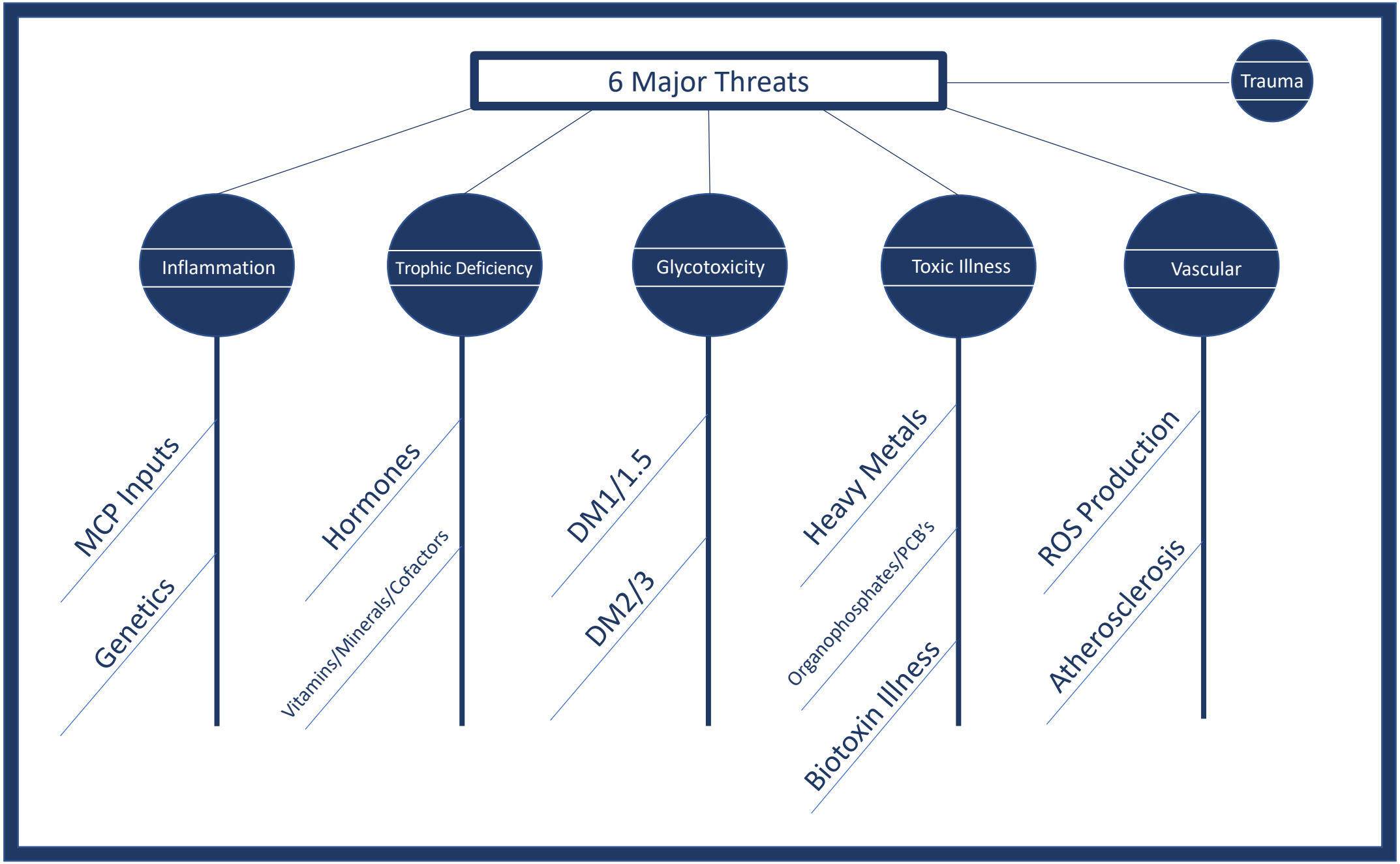
What is Happening?

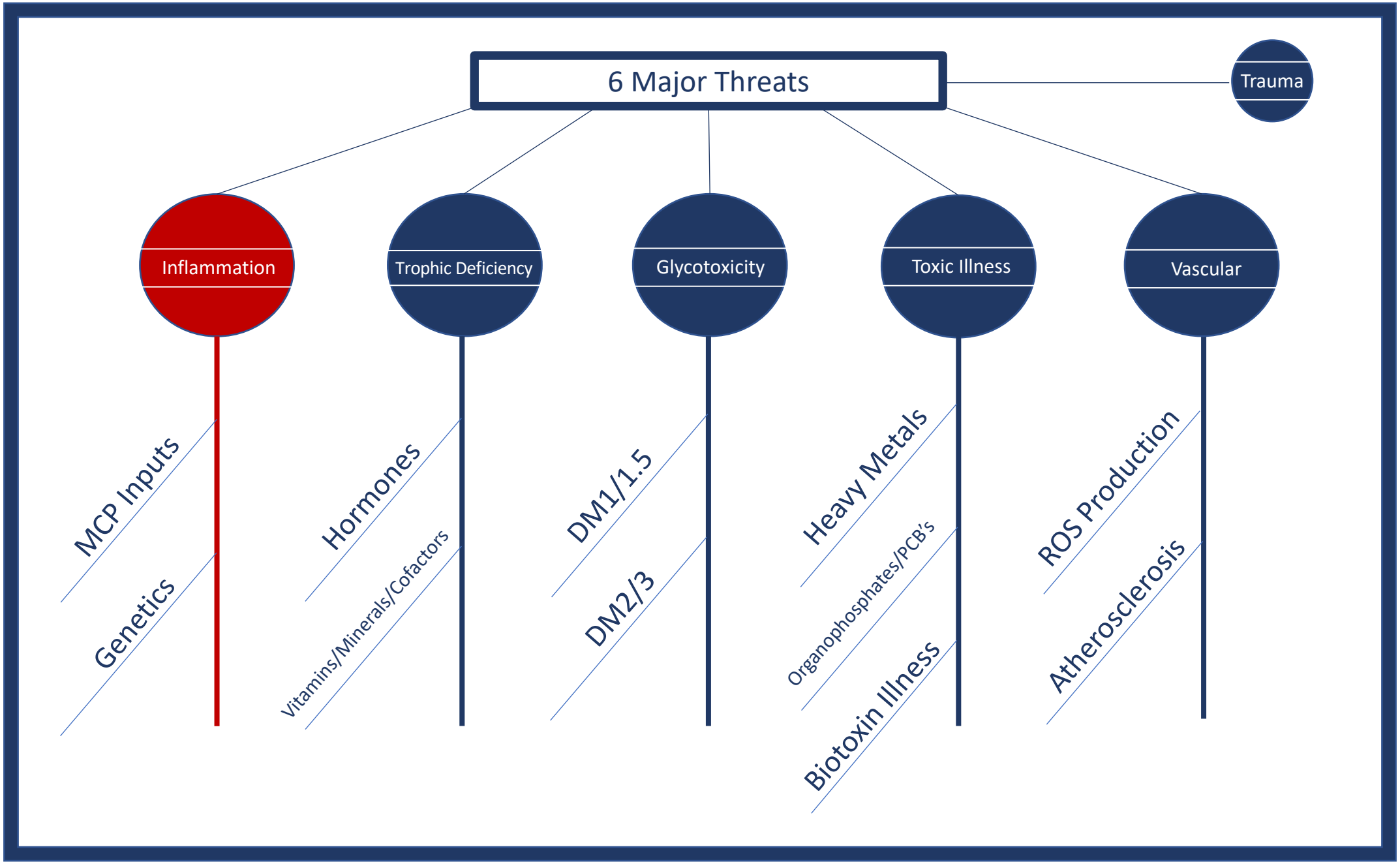


The Six Threats

Different threats affect different areas of the brain resulting in different domain alterations.

*6 Threats are the same for degenerative processes….


6 Major Threats
Trauma
Inflammation
Trophic Deficiency
Glycotoxicity
Toxic Illness
Vascular
MCP Inputs
Genetics
Hormones
Vitamins/Minerals/Cofactors
DM1/1.5
DM2/3
Heavy Metals
Organophosphates/PCB's
Biotoxin Illness
ROS Production
Atherosclerosis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Heavy Metals
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Atherosclerosis

Cellular Inflammation

1. Innate Immune Function
2. Signaling molecules
   - NF-kb (in cell nucleus)

Two Types of Inflammation

- NF-kb
  - Nuclear signaling molecule
    - Triggered by TNF-a and IL-1
      - Rapid Release upon Injury and/or infection. Indication of tissue damage.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2882124/


NF-kb in an
Injury or
infection.

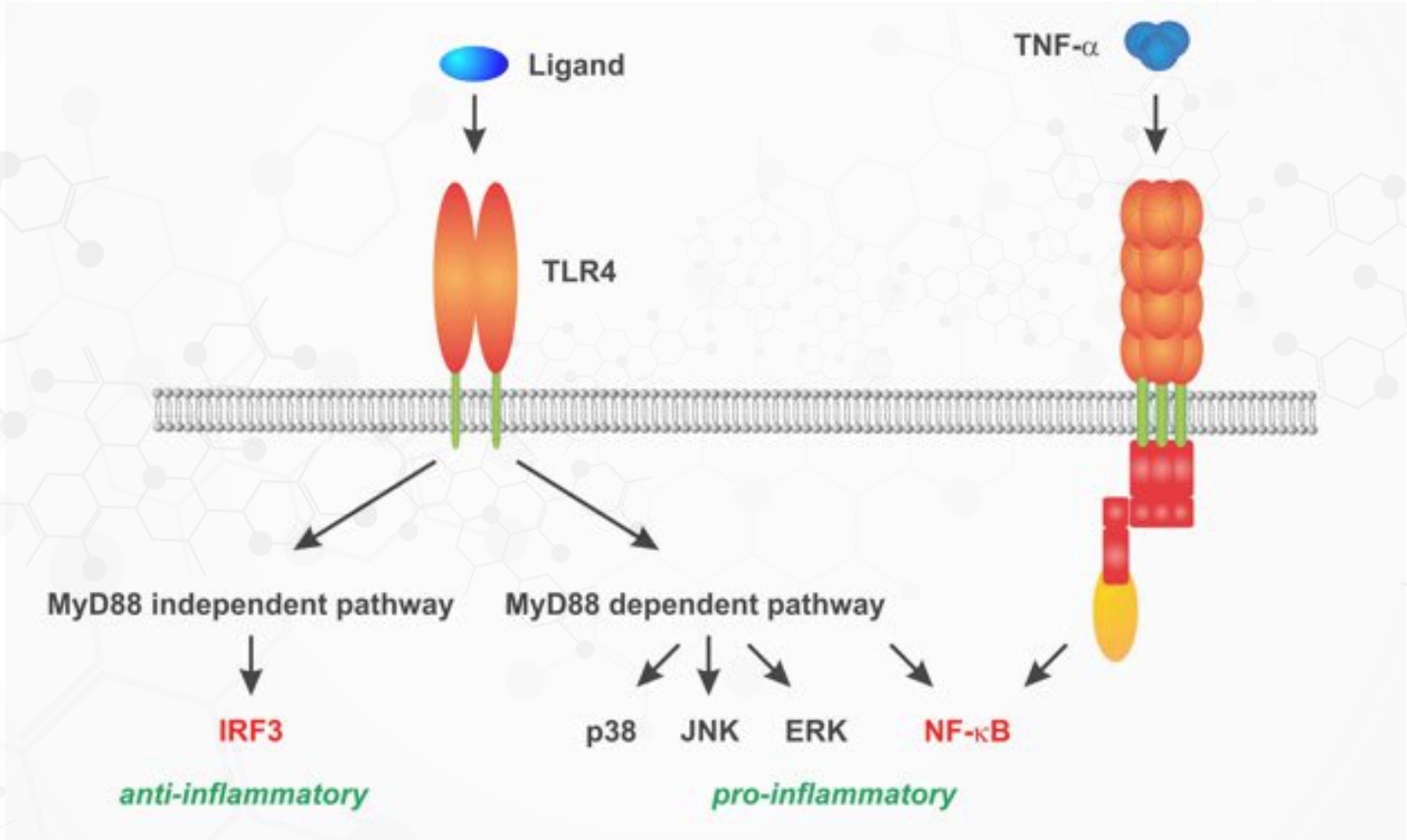
Two Types of Inflammation

- LPS activation of NF-kb
  - Toll-like microbial pattern recognition receptors (TLR's)
    - TLR's are a non-self recognition system hardwired to trigger inflammation in the absence of injury or infection.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2882124/


NF-kb in and LPS
driven
inflammation.

LPS activates TLR's, triggers release from macrophage



http://www.wideralab.org/index.php/2-uncategorised/16-inflammatory-signalling-pathways-in-stem-cells

Lipopolysaccharides

- 50% of the US population has full blown metabolic endotoxemia.
- LPS inherent in gram-negative gut bacteria (commensal).
- Endotoxemia from Non-genetic causes/Non-injury related causes.
- Lifestyle related!

https://www.ncbi.nlm.nih.gov/pubmed/26133659

https://www.dynamicchiropractic.com/mpacms/dc/article.php?id=58132

Fatty Acids and LPS Toxicity

- When commensal bacteria use saturated fatty acids to form their outer membranes, they create a more toxic form of LPS.

Two Types of Inflammation

LPS Long-term Manifestations

1. Cognitive Decline
2. Cardiovascular Disease
3. Autoimmune Diseases
4. Diabetes
5. Inflammatory Arthritis
   - All Joints!
6. Etc., etc.

Back to the Six Major Threats…

1. **Inflammation**
2. Trophic Deficiency
3. Glycotoxicity
4. Toxic Illness
5. Vascular
6. Trauma

Key Components of an *Effective* Lifestyle Intervention

Stimulate

1. Targeted Nutritional Support
2. Ketogenesis
3. Proper Sleep
4. Intermittent Fasting/Autophagy
5. HIIT
6. Cognitive Retraining

Supportive Nutrition

1. Nootropic Action is *key.*
   - *Bacopa Monnieri*
   - *Magnesium Threonate*
   - *Citicoline*
   - *Whole Coffee Fruit Extract*

THE JOURNAL OF ALTERNATIVE AND COMPLEMENTARY MEDICINE
Volume 18, Number 7, 2012, pp. 1–6

DOI: 10.1089/acm.2011.0367

Review Article

The Cognitive-Enhancing Effects of *Bacopa monnieri*: A Systematic Review of Randomized, Controlled Human Clinical Trials

Matthew P. Pase, BSc, BA(Hons),[1] James Kean, BSc(Hons),[1] Jerome Sarris, MHSc, PhD,[1,2] Chris Neale, BSc, MSc,[1] Andrew B. Scholey, PhD,[1] and Con Stough, PhD[1]

Abstract

Objectives: Traditional knowledge suggests that *Bacopa monnieri* enhances cognitive performance. Such traditional beliefs have now been scientifically tested through a handful of randomized, controlled human clinical trials. The current systematic review aimed to examine the scientific evidence as to whether *Bacopa* can enhance cognitive performance in humans.
Design: A systematic review of randomized controlled trials is presented. Multiple databases were systematically searched by multiple authors. Relevant trials were objectively assessed for methodological quality.
Subjects: The subjects studied were adult humans without dementia or significant cognitive impairment.
Interventions: *B. monnieri*, including *Bacopa* extracts, were administered over long-term supplementation periods.
Outcome measures: Any validated cognitive test, whether a primary or secondary outcome.
Results: Six (6) studies met the final inclusion criteria and were included in review. Trials were all conducted

Review

Annals of Neurosciences

Ann Neurosci 2017;24:111–122
DOI: 10.1159/000475900

Received: May 19, 2016
Accepted: March 28, 2017
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Neurocognitive Effect of Nootropic Drug *Brahmi* (*Bacopa monnieri*) in Alzheimer's Disease

Kaustubh S. Chaudhari[a, b, d] Nishant R. Tiwari[c] Rakesh R. Tiwari[d]
Rohan S. Sharma[b]

[a]Department of Neurology, and [b]Department of Internal Medicine, University of Oklahoma Health Sciences Center, Oklahoma City, OK, USA; [c]Department of Internal Medicine, Byramjee Jeejeebhoy Medical College, Pune, and [d]Department of Samhita Siddhanta (Ayurveda), Kamaladevi Gauridutt Mittal Ayurvedic Hospital and College, Mumbai, India

Keywords
Alzheimer's disease · *Bacopa monnieri* · *Brahmi* · Nootropics · Ayurveda

Abstract
Alzheimer's disease (AD) is a progressive neurodegenerative disease of the elderly. The rapid increase in its incidence has

the total memory score and maximum improvement was seen in logical memory and paired associate learning in humans and reversed phenytoin-induced memory impairment in experimental model. EBm has not shown any serious clinical, neurological, hematological complications, or vital organs damage in experimental studies. Rats showed marked reduction in fertility; however, libido was unaffected. There is no experimental evidence of genotoxicity or teratogenesis

Neuron

Volume 65, Issue 2, 28 January 2010, Pages 165-177

Article

Enhancement of Learning and Memory by Elevating Brain Magnesium

Inna Slutsky [3, 6, 7], Nashat Abumaria [1, 7], Long-Jun Wu [5], Chao Huang [1], Ling Zhang [1], Bo Li [1], Xiang Zhao [1], Arvind Govindarajan [2, 3, 4], Ming-Gao Zhao [5], Min Zhuo [5], Susumu Tonegawa [2, 3, 4], Guosong Liu [1, 3, 4]

Show more

https://doi.org/10.1016/j.neuron.2009.12.026

Referred to by Ashley I. Bush

Kalzium Ist Nicht Alles

Neuron, Volume 65, Issue 2, 28 January 2010, Pages 143-144

Download PDF

Summary

Learning and memory are fundamental brain functions affected by dietary and environmental factors. Here, we show that increasing brain magnesium using a newly developed magnesium compound (magnesium L-threonate, MgT) leads to the

Citicoline (Cognizin) in the treatment of cognitive impairment

Mario Fioravanti[1]
Ann E Buckley[2]

[1]Department of Psychiatric Science and Psychological Medicine, University of Rome La Sapienza, Rome, Italy; [2]Department of Political and Social Sciences; John Cabot University, Rome, Italy

Abstract: Pharmacological treatment of cerebrovascular disorders was introduced at the beginning of the 20th Century. Since then, a multitude of studies have focused on the development of a consensus for a well defined taxonomy of these disorders and on the identification of specific patterns of cognitive deficits associated with them, but with no clear consensus. Nevertheless, citicoline has proved to be a valid treatment in patients with a cerebrovascular pathogenesis for memory disorders. A metanalysis performed on the entire database available from the clinical studies performed with this compound confirms the experimental evidence from the animal studies which have repeatedly described the multiple biological actions of citicoline in restoring both the cell lipid structures and some neurotransmitter functions.

Keywords: citicoline, CDP-choline, dementia, cerebrovascular disorders

Introduction

Citicoline is the name for cytidine 5′-diphosphocholine (CDP-choline) when this is used as an exogenous sodium salt. In fact, CDP-choline is an endogenous nucleotide naturally found in the body where it is an essential intermediate in the synthesis of the major phospholipid of the cell membranes, phosphatidylcholine (PtdCho). This type of synthesis is called the Kennedy pathway (Fernandez-Murray and McMaster 2005).

As a drug, citicoline has been proposed for use in traumatic brain injures, stroke, vascular dementia, Parkinson's disease, and brain aging (Blount et al 2002) where it

Clinical Interventions in Aging

Dovepress

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REVIEW

The role of citicoline in cognitive impairment: pharmacological characteristics, possible advantages, and doubts for an old drug with new perspectives

This article was published in the following Dove Press journal:
Clinical Interventions in Aging
3 September 2015
Number of times this article has been viewed

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Alberto Castagna[1]
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Giovambattista De Sarro[4]
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Background: Citicoline is able to potentiate neuroplasticity and is a natural precursor of phospholipid synthesis, or rather serves as a choline source in the metabolic pathways for biosynthesis of acetylcholine. Several studies have shown that it can have beneficial effects both in degenerative and in vascular cognitive decline. The aim of the present study was to review the pharmacokinetics and pharmacodynamics of this drug and its role in cognitive impairment according to the present medical literature.

Methods: A MEDLINE® search was made using the following key words: citicoline, pharmacokinetics, pharmacodynamics, elderly, cognitive impairment, vascular dementia, and Alzheimer's disease. Recent studies on the possible role of citicoline in increasing sirtuin 1 (SIRT1) expression were assessed. Some personal studies were also considered, such as the VITA study and the IDEALE study.

Results: Administered by both oral and intravenous routes, citicoline is converted into two major circulating metabolites, cytidine and choline. It is metabolized in the gut wall and liver. Pharmacokinetic studies suggested that it is well absorbed and highly bioavailable with oral dosing. A number of studies have clearly shown the possible role of citicoline in cognitive impairment of diverse etiology. It can also modulate the activity/expression of some protein kinases involved in neuronal death and increases SIRT1 expression in the central nervous

Br J Nutr. 2013 Aug 28;110(3):420-5. doi: 10.1017/S0007114512005338. Epub 2013 Jan 14.

Modulatory effect of coffee fruit extract on plasma levels of brain-derived neurotrophic factor in healthy subjects.

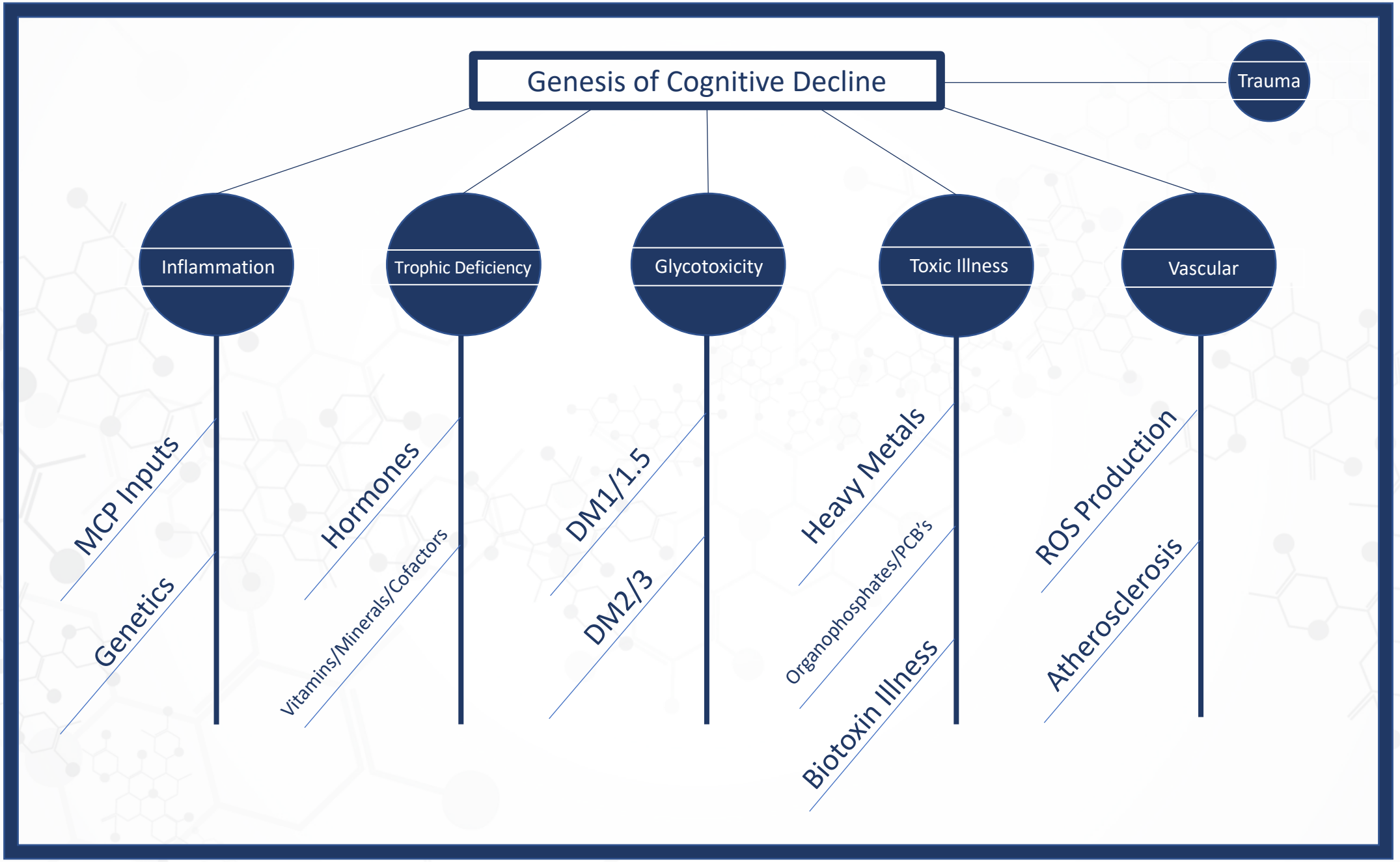
Reyes-Izquierdo T[1], Nemzer B, Shu C, Huynh L, Argumedo R, Keller R, Pietrzkowski Z.

Author information

Abstract

The present single-dose study was performed to assess the effect of whole coffee fruit concentrate powder (WCFC), green coffee caffeine powder (N677), grape seed extract powder (N31) and green coffee bean extract powder (N625) on blood levels of brain-derived neurotrophic factor (BDNF). Randomly assorted groups of fasted subjects consumed a single, 100mg dose of each material. Plasma samples were collected at time zero (T0) and at 30 min intervals afterwards, up to 120 min. A total of two control groups were included: subjects treated with silica dioxide (as placebo) or with no treatment. The collected data revealed that treatments with N31 and N677 increased levels of plasma BDNF by about 31% under these experimental conditions, whereas treatment with WCFC increased it by 143% (n 10), compared with baseline. These results indicate that WCFC could be used for modulation of BDNF-dependent health conditions. However, larger clinical studies are needed to support this possibility.

PMID: 23312069 DOI: 10.1017/S0007114512005338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Vitamins/Minerals/Cofactors
DM1/1.5
DM2/3
Heavy Metals
Organophosphates/PCB's
Biotoxin Illness
ROS Production
Atherosclerosis

The Biogenetix Brain Box

Biogenetix: 833-525-0001

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