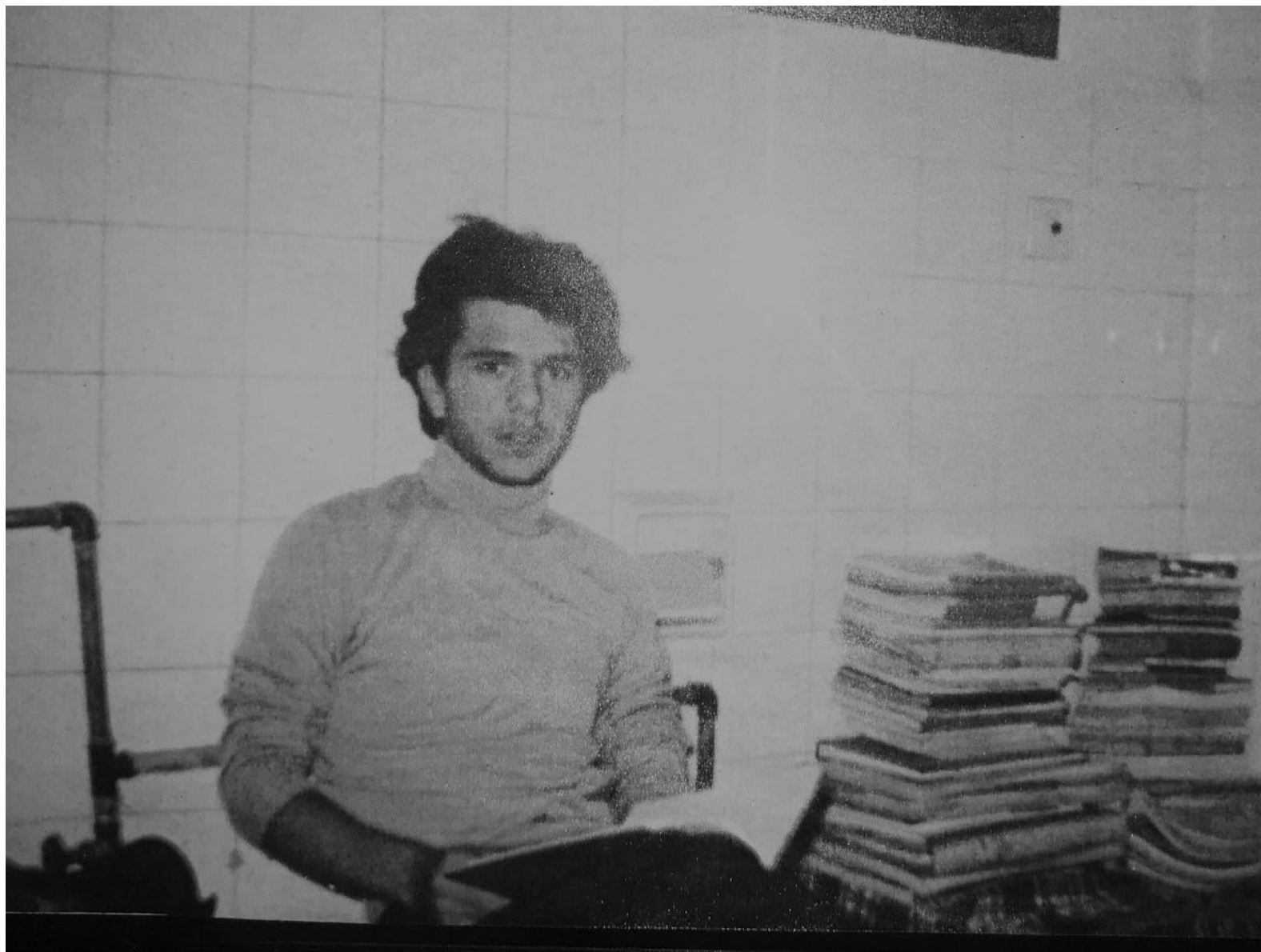


***DEFY***  
CONVENTION







PROFILE

# Harvard's Biggest Brain

*Medical student Majid Fotuhi has it — and it's 5-feet-tall*



Photo by Ilene Perlman

Majid Fotuhi, HMS '97, uses this huge brain stem model to teach neurobiology courses. A political refugee who fled his native Iran rather than join a holy war, Fotuhi is both a teacher and a student at the Medical School.

The background features a white central area flanked by two diagonal red sections. The left red section contains yellow and orange brushstroke-like patterns. The right red section contains a faint, stylized silhouette of a skull with a yellow line passing through it.

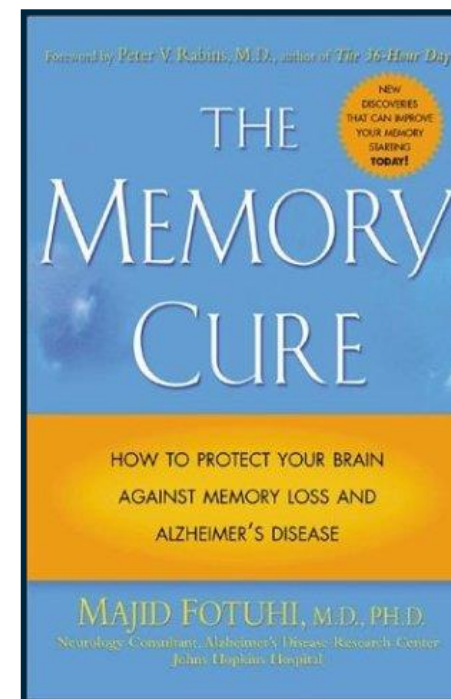
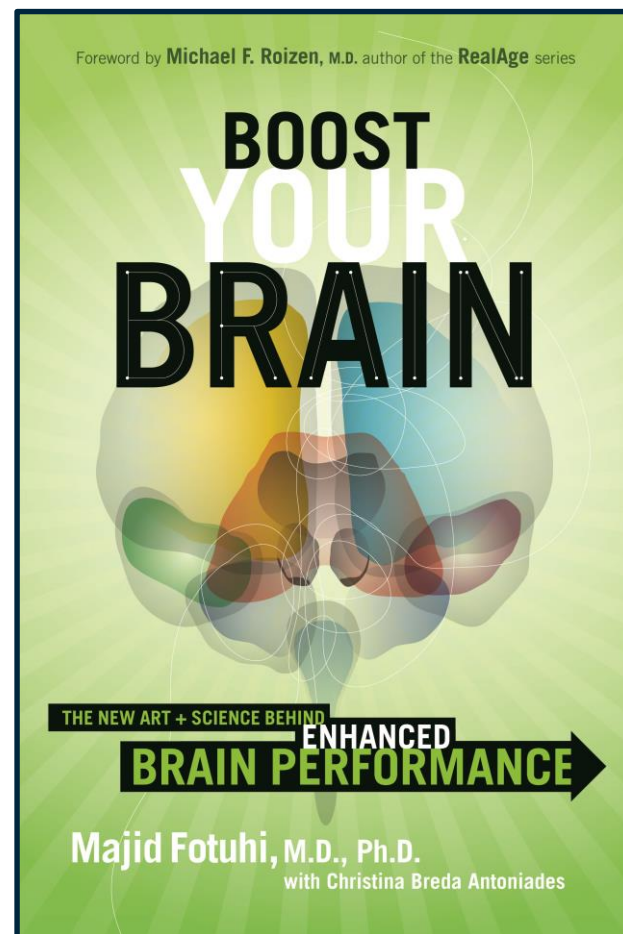
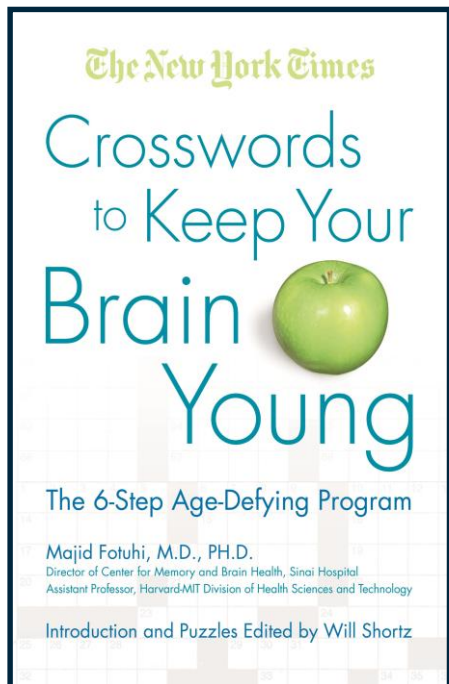
# **Defy Aging: How to Regrow Your Brain (in Three Months)**

# Neuroplasticity in the Human Brain:

## My Research & Publications



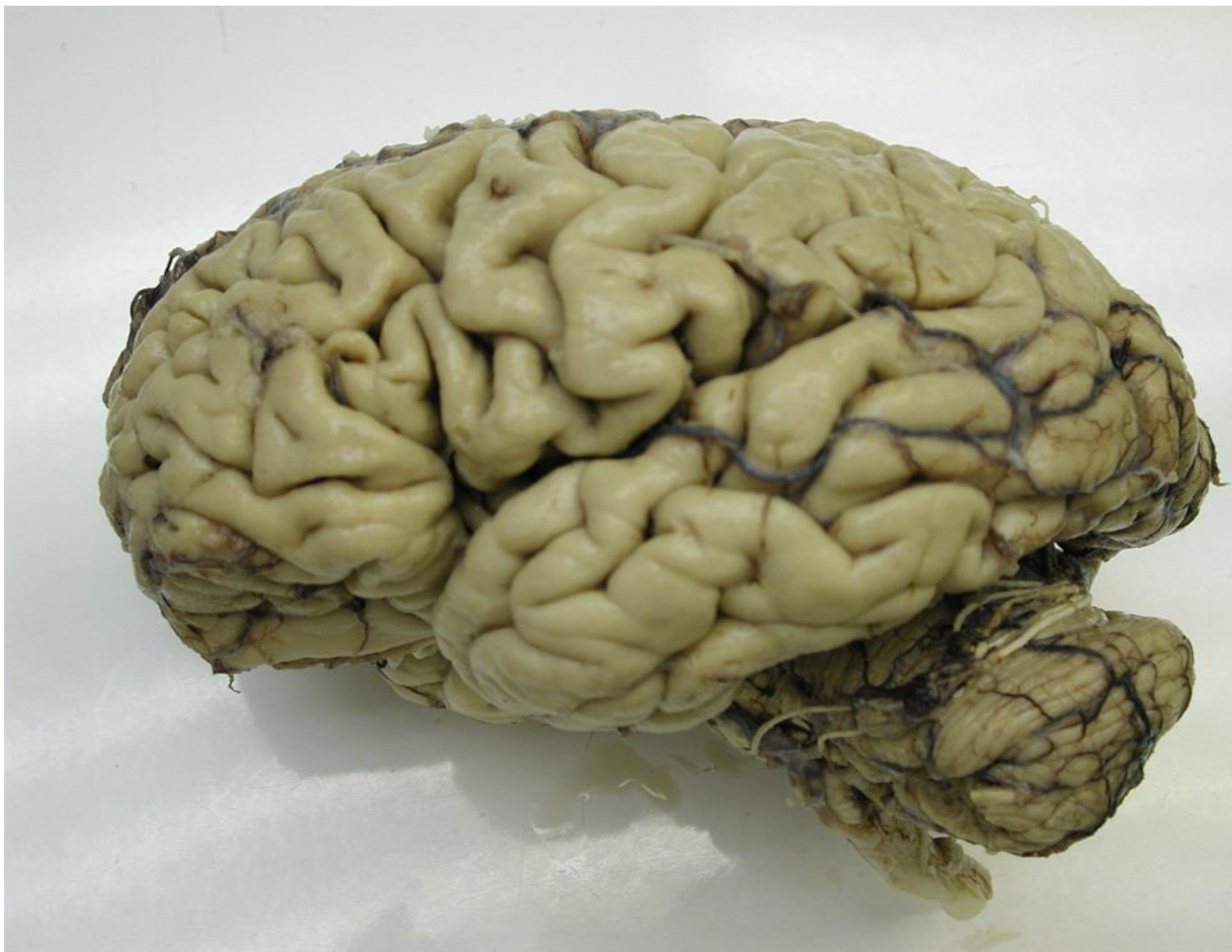






Forbes

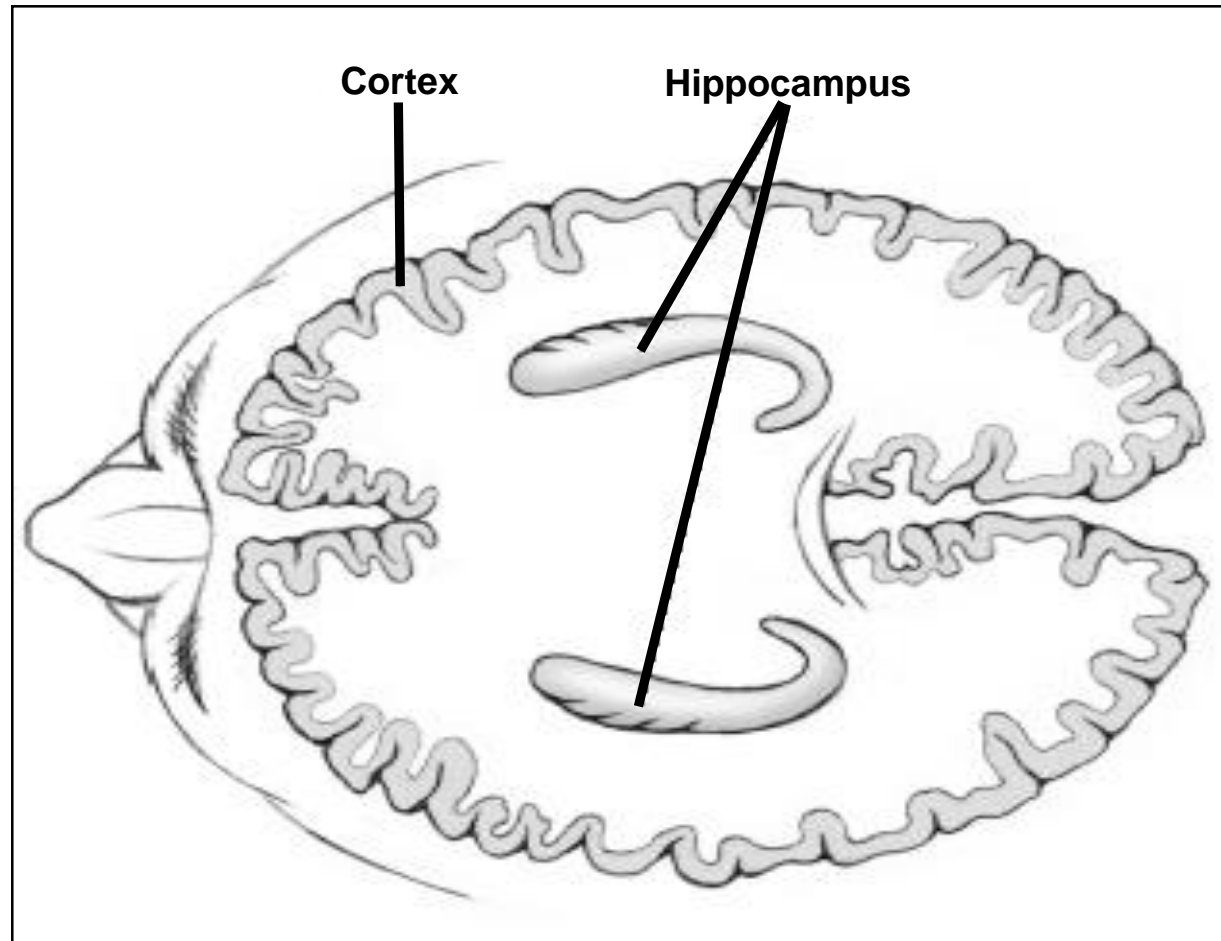




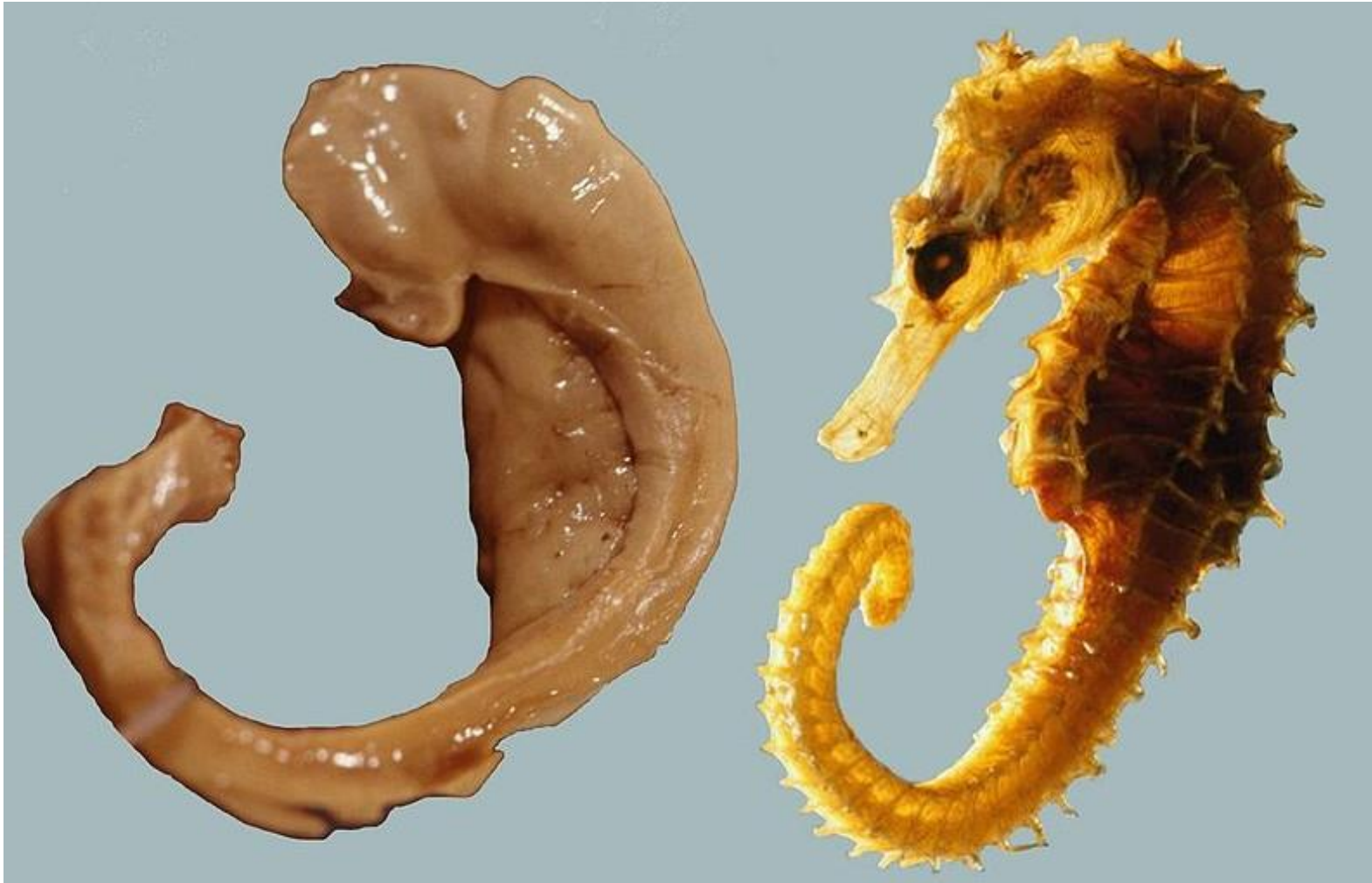


# Cortex: Long-term memory

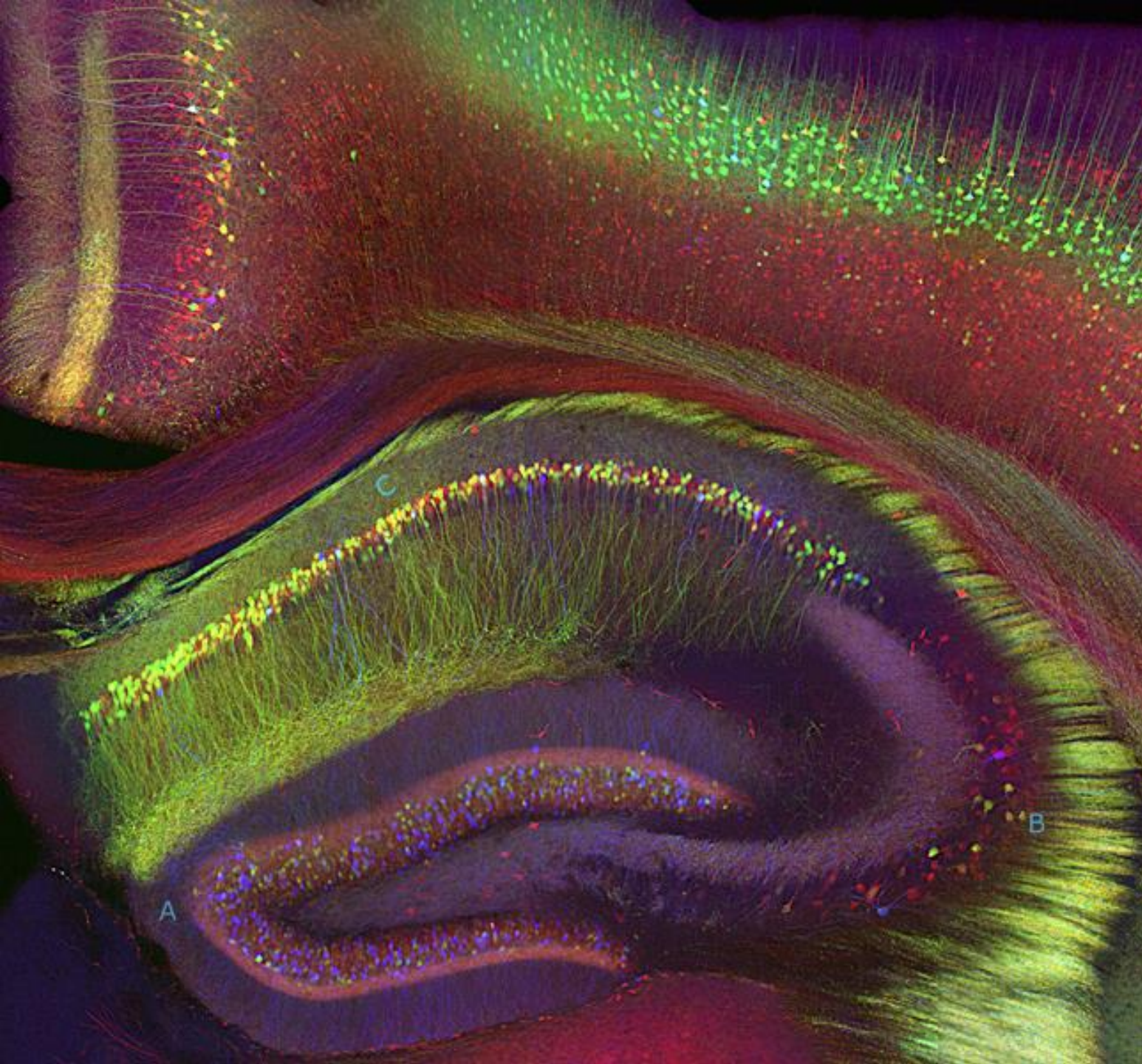
## Hippocampus: Short-term memory



# Hippocampus



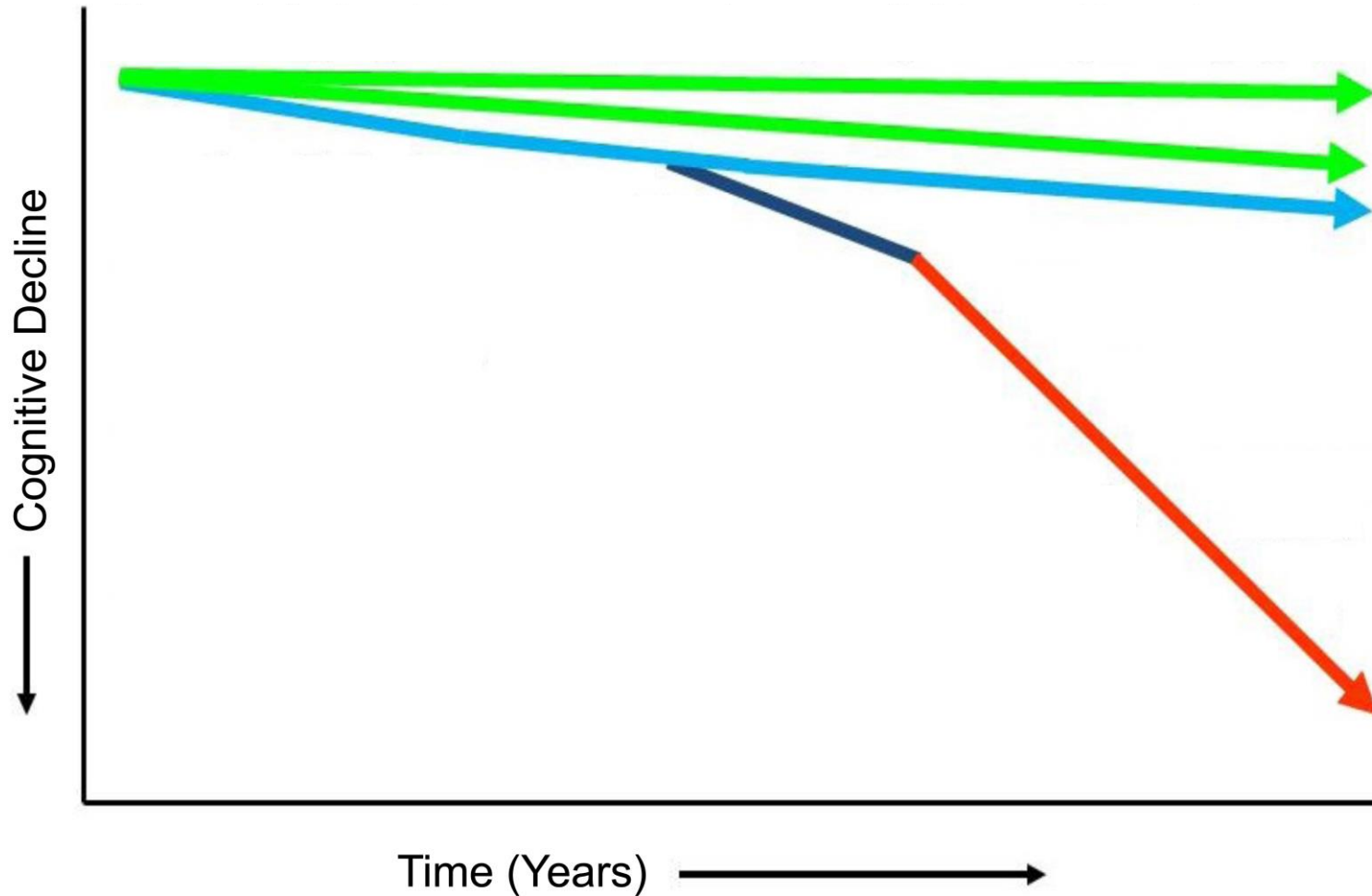




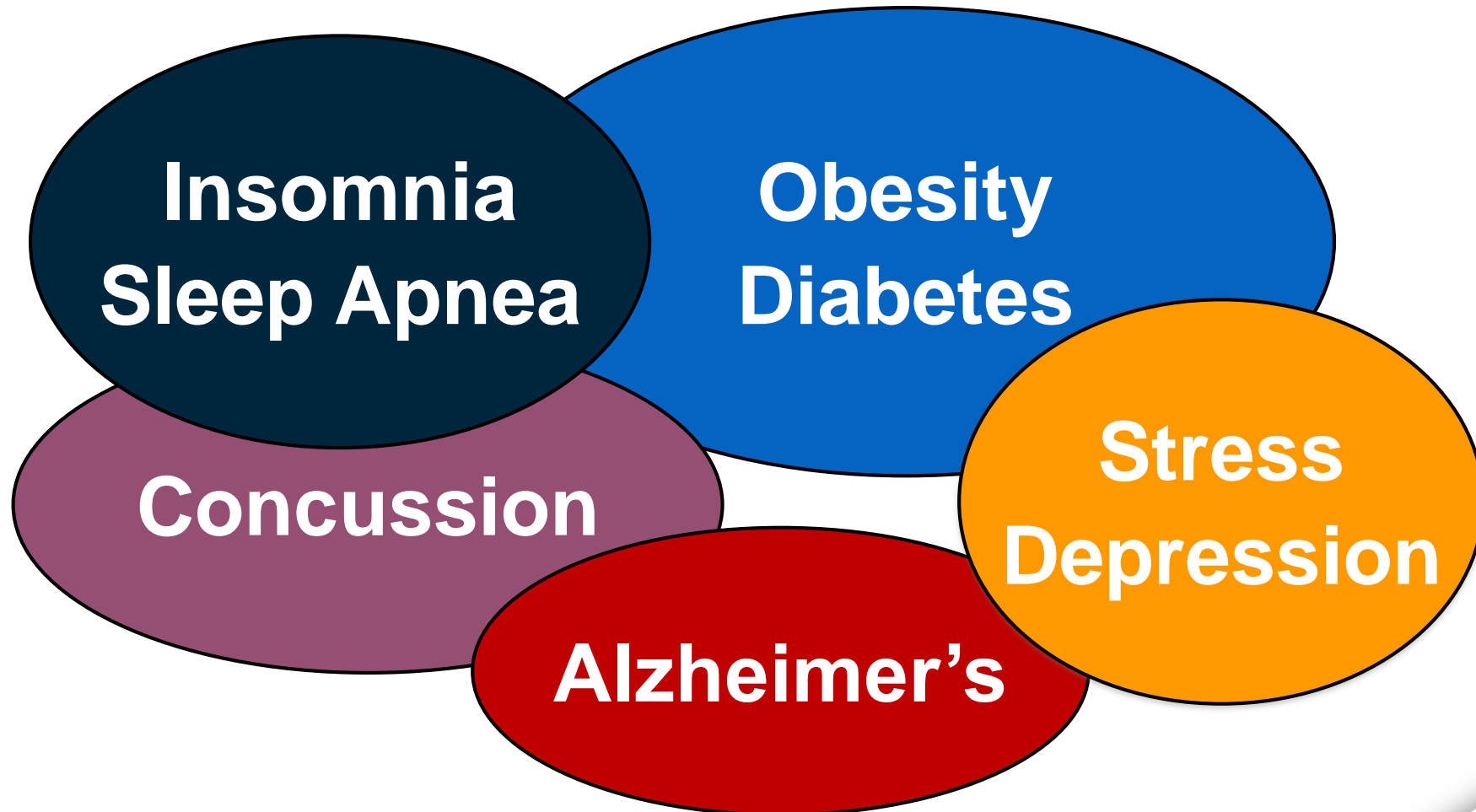
# Neurons in the Hippocampus



# Hippocampus and Cortex Shrink by About 0.5% per Year After Age 50

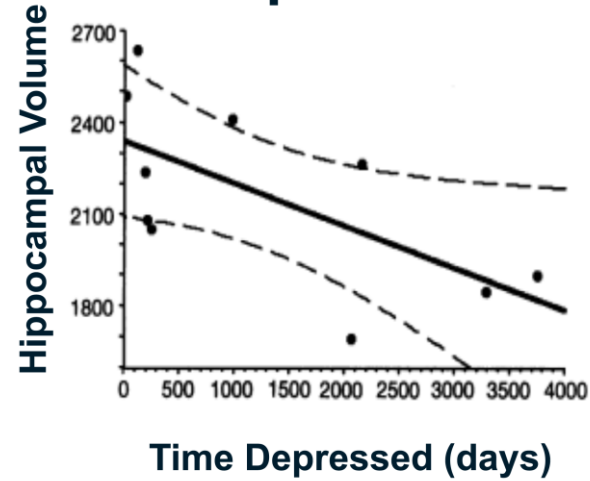


# What Causes Shrinkage in the Cortex & Hippocampus?

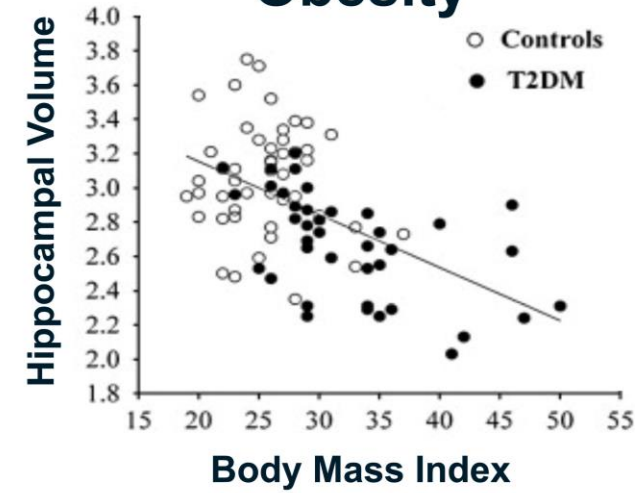


# More Depression, Obesity, Stress, and Insomnia, Smaller Hippocampus

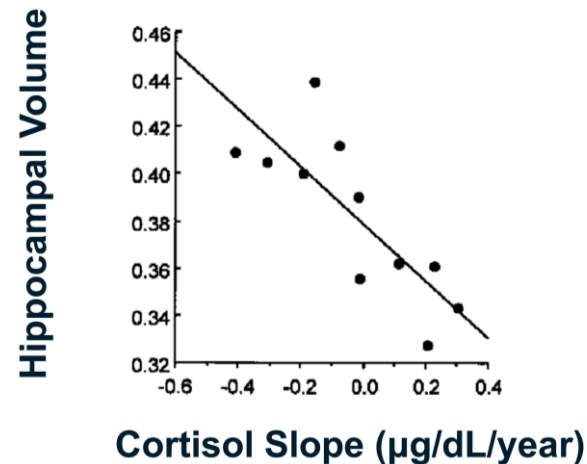
## Depression



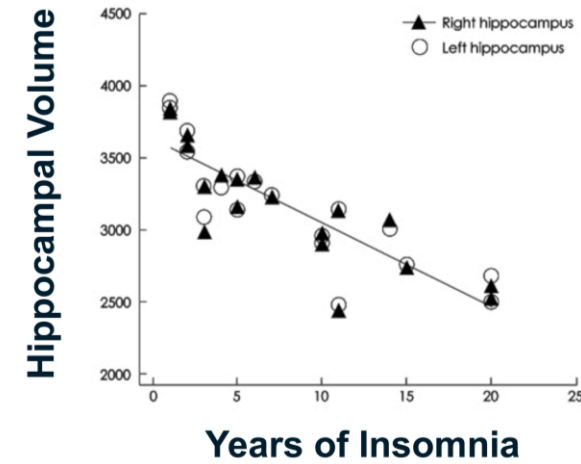
## Obesity



## Stress

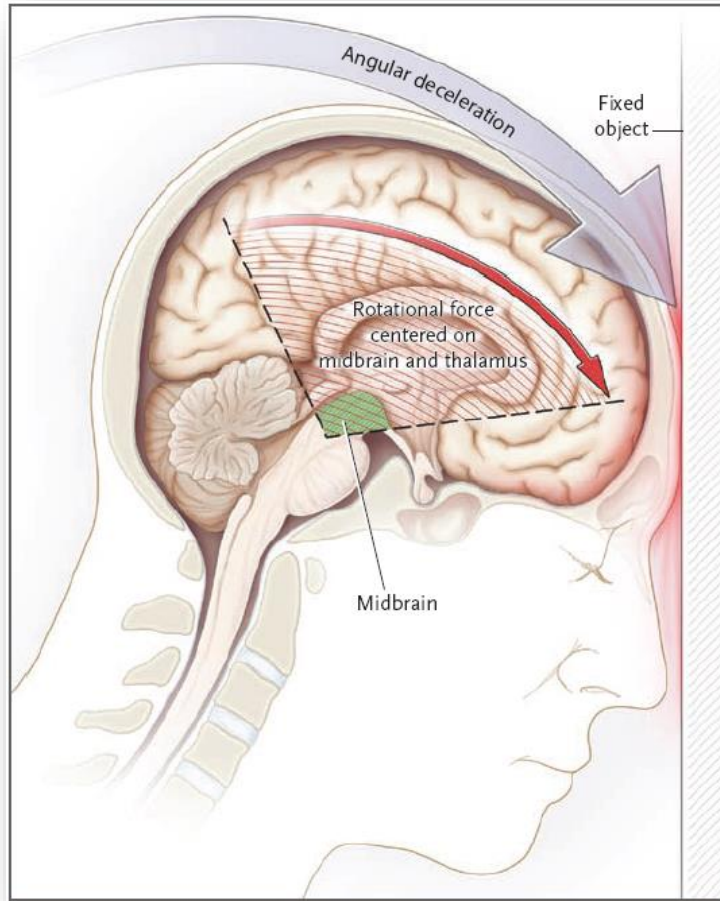


## Insomnia

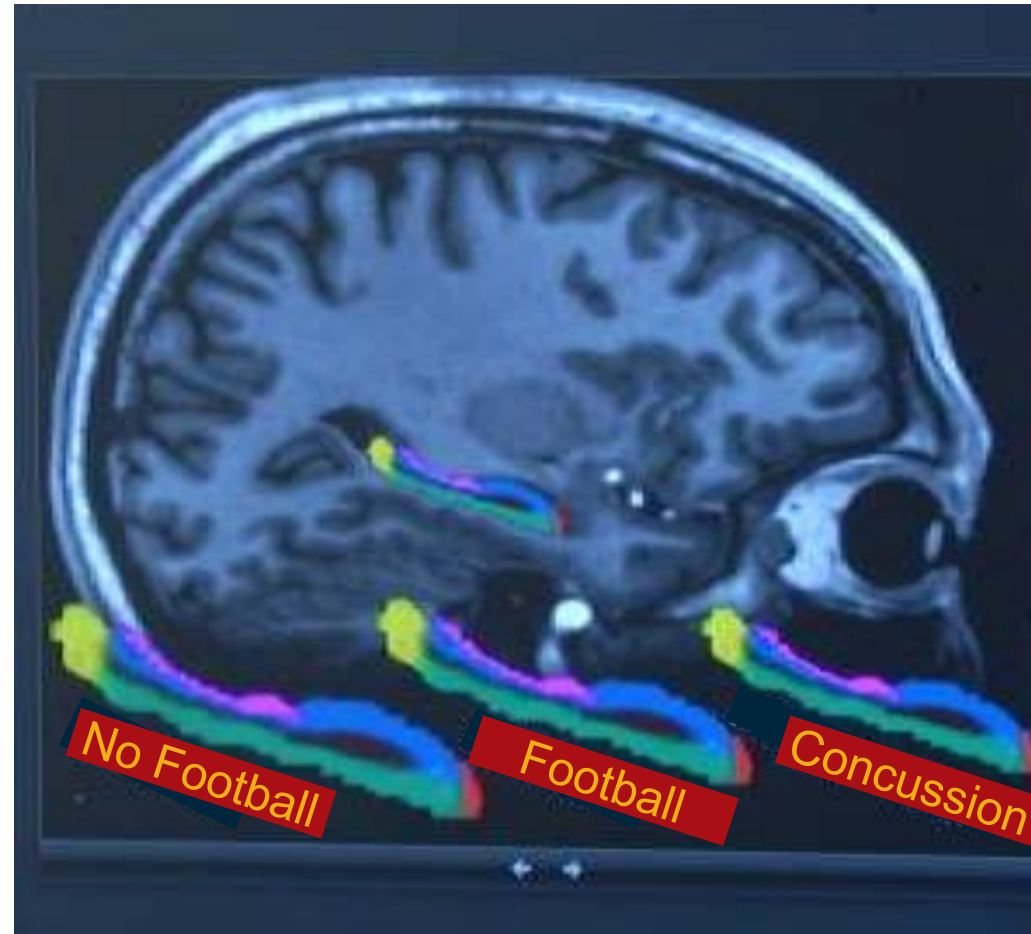




# More Concussion, Smaller Hippocampus

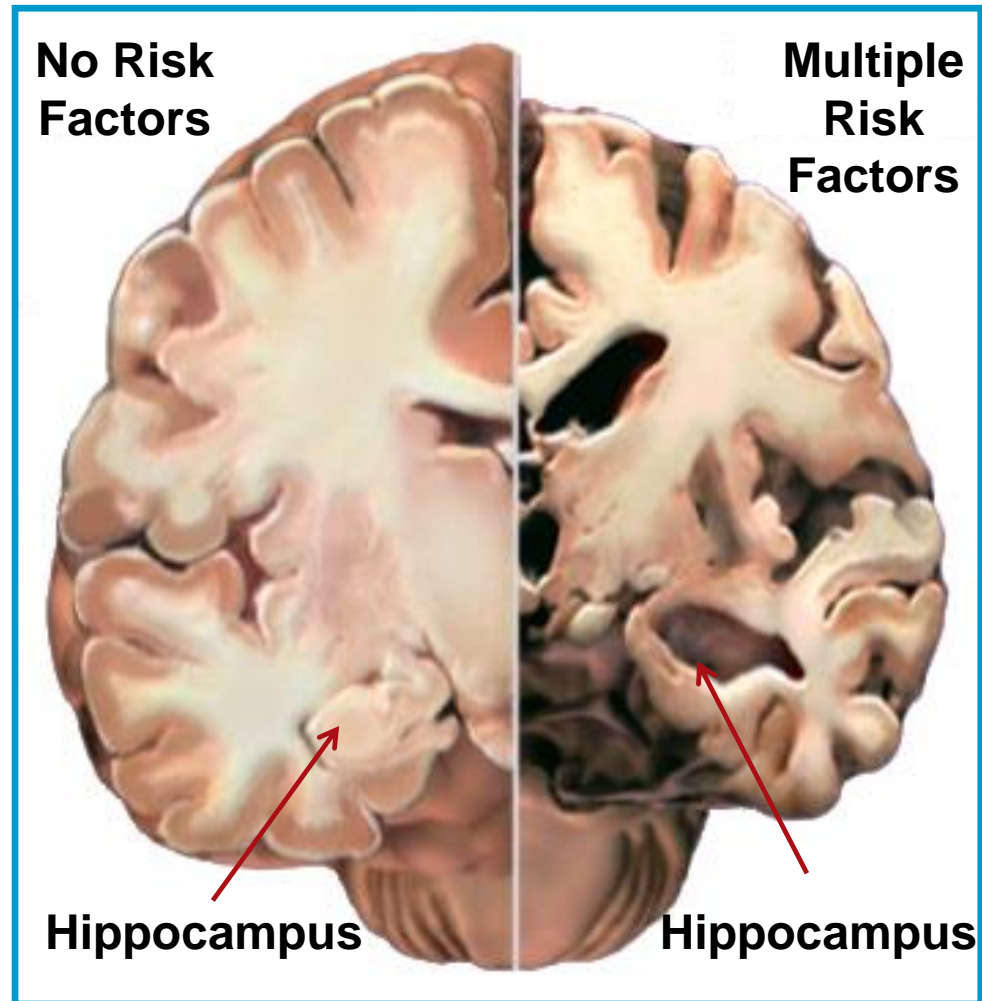


# More American Football and Concussions, Smaller Hippocampus

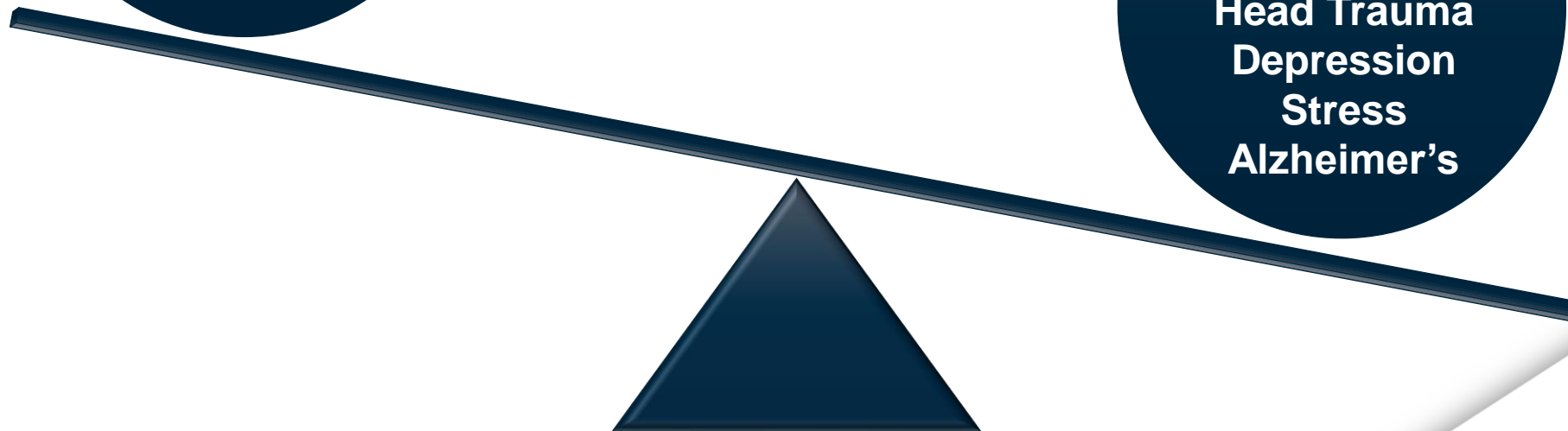
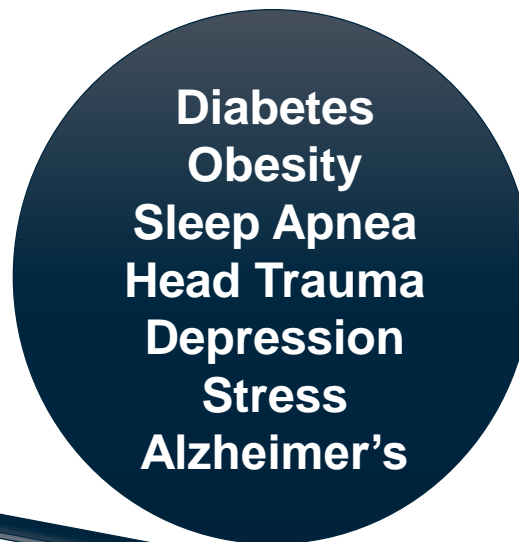
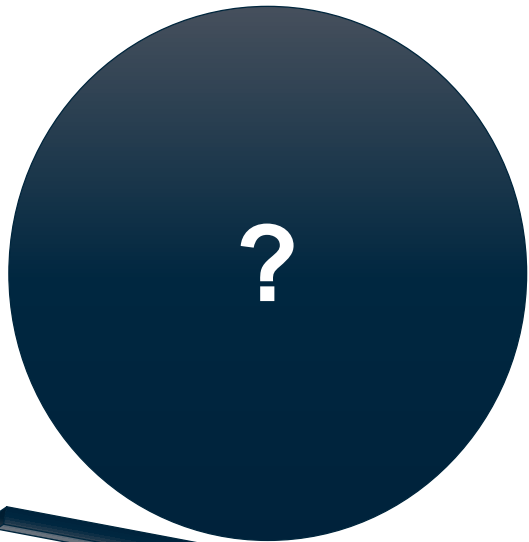


Singh, JAMA Neurology, 2014

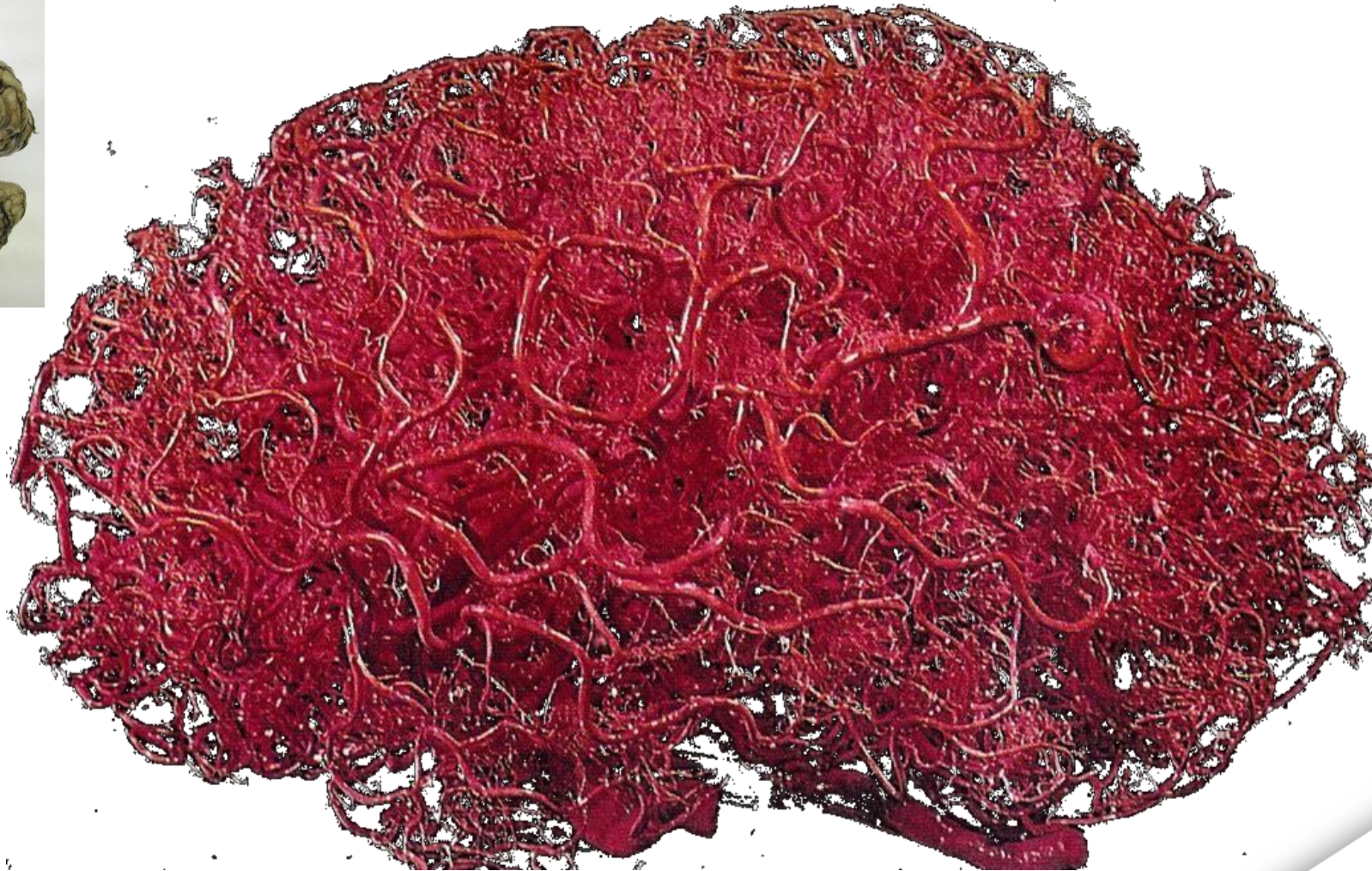
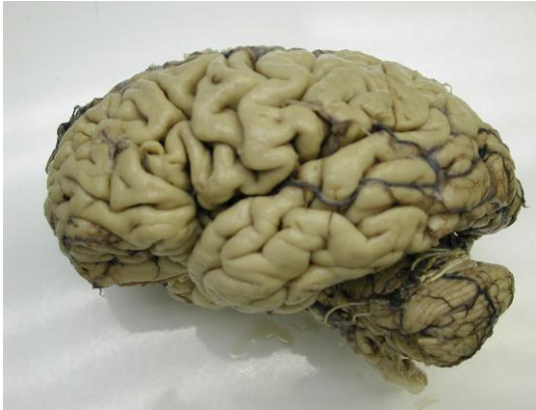
# Multiple Risk Factors, Much Smaller Cortex & Hippocampus





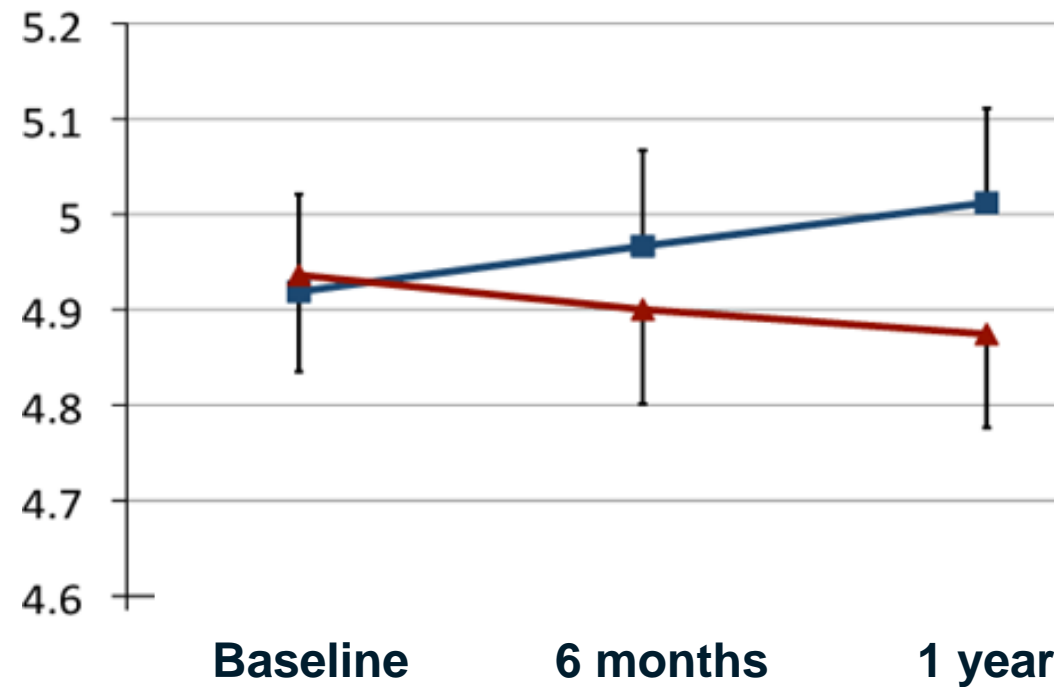


# The Brain has Lots of Blood Vessels



# 1. Get Fit

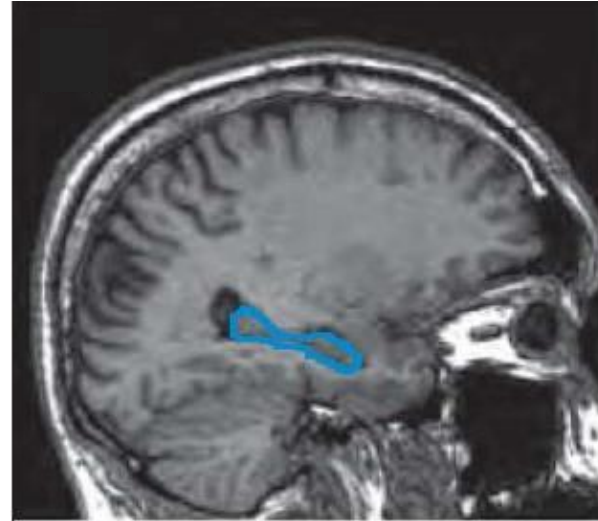
Walking 3 Times a Week For One Year Grows Your Hippocampus





# Three Months of Vigorous Exercise, Bigger Hippocampus

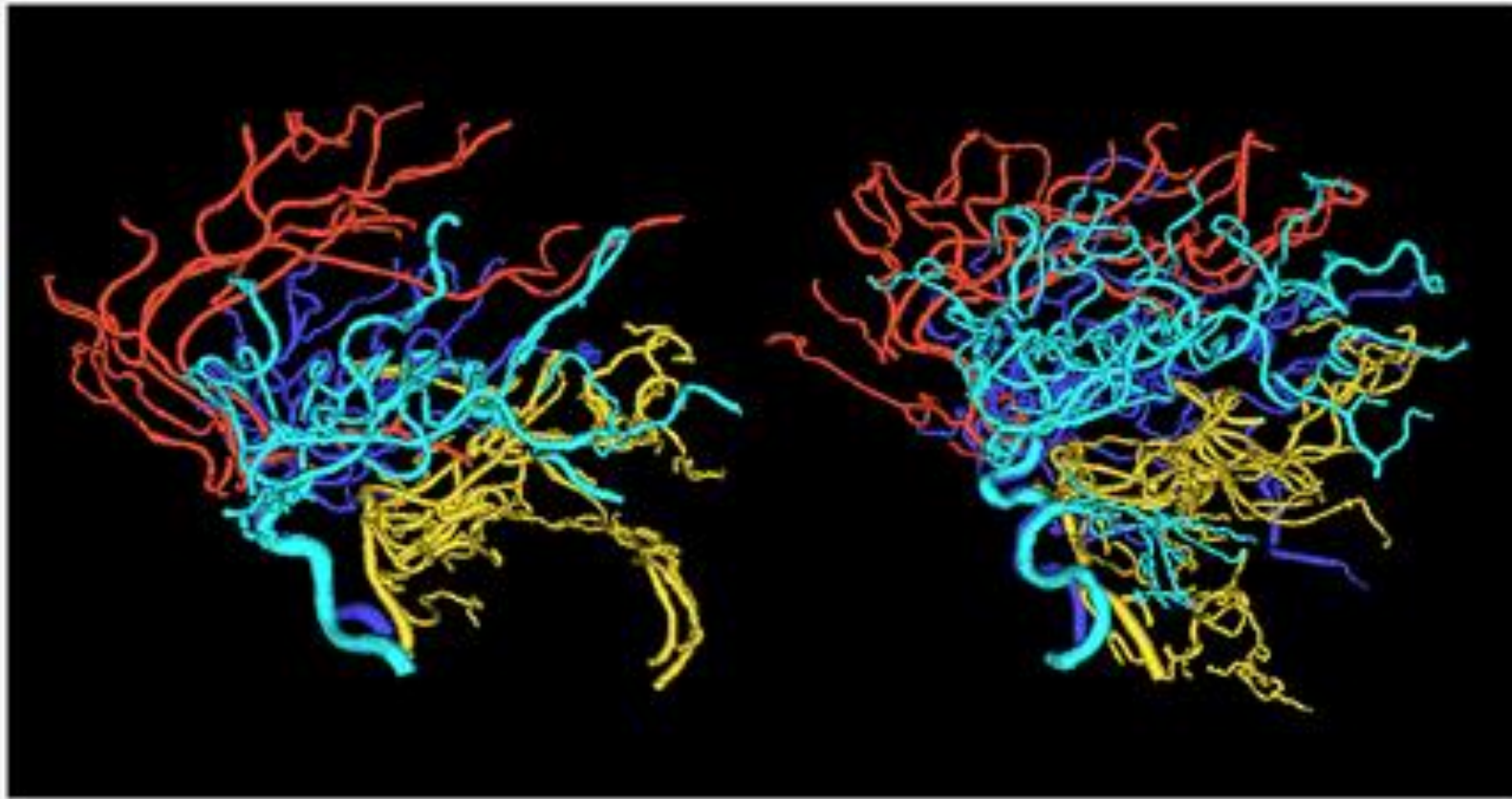
Before  
Exercise



After  
Exercise



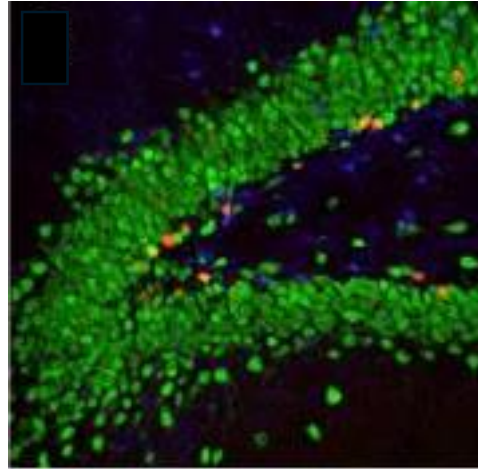
# More Exercise, More Blood Vessels in the Brain



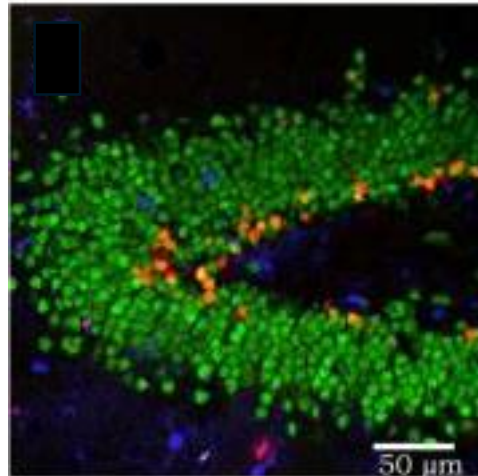
<http://archive.jsonline.com/news/health/35319459.html/>

# More Exercise: More Neurogenesis

Controls

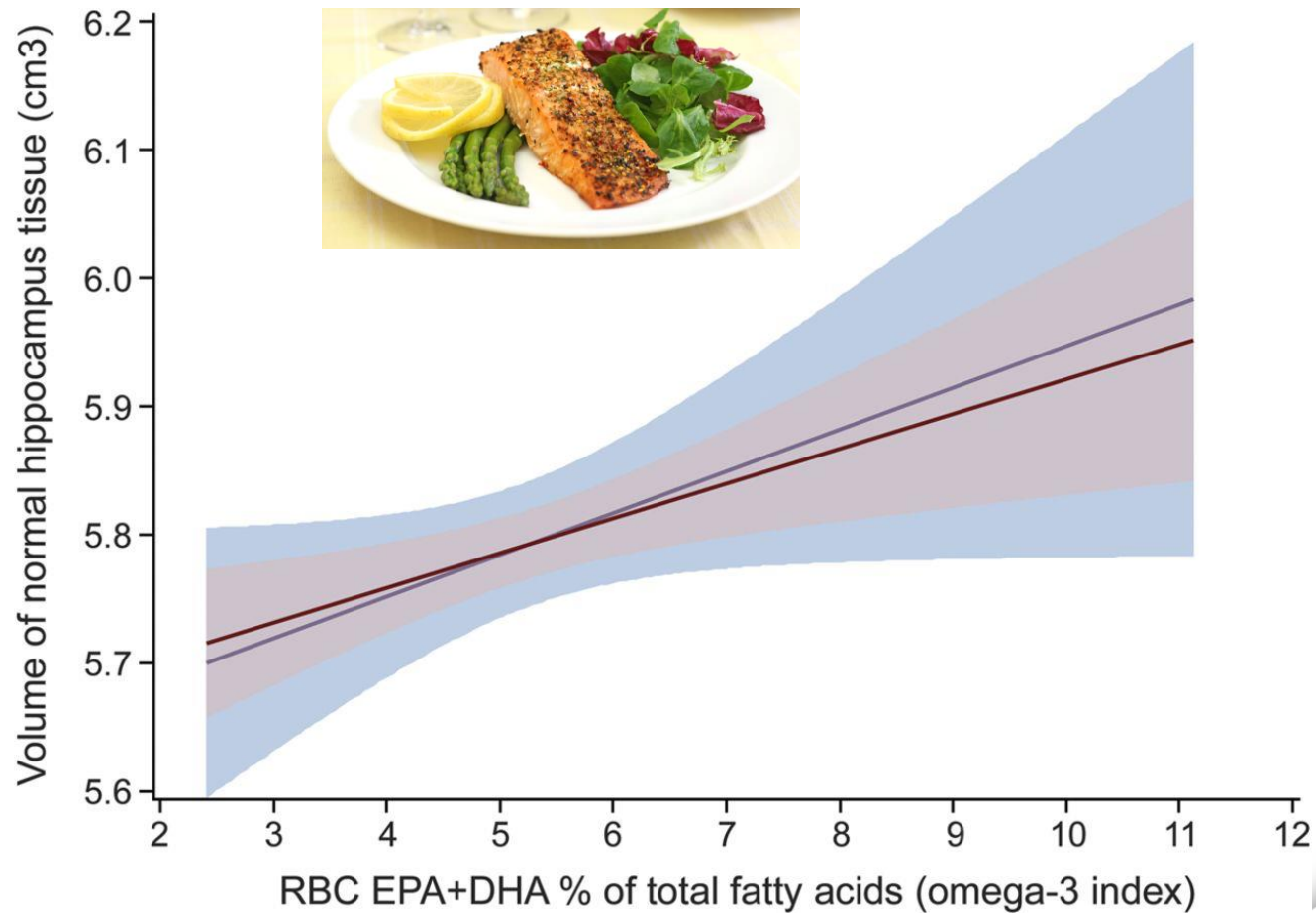


Runners



## 2. Eat a Mediterranean Diet

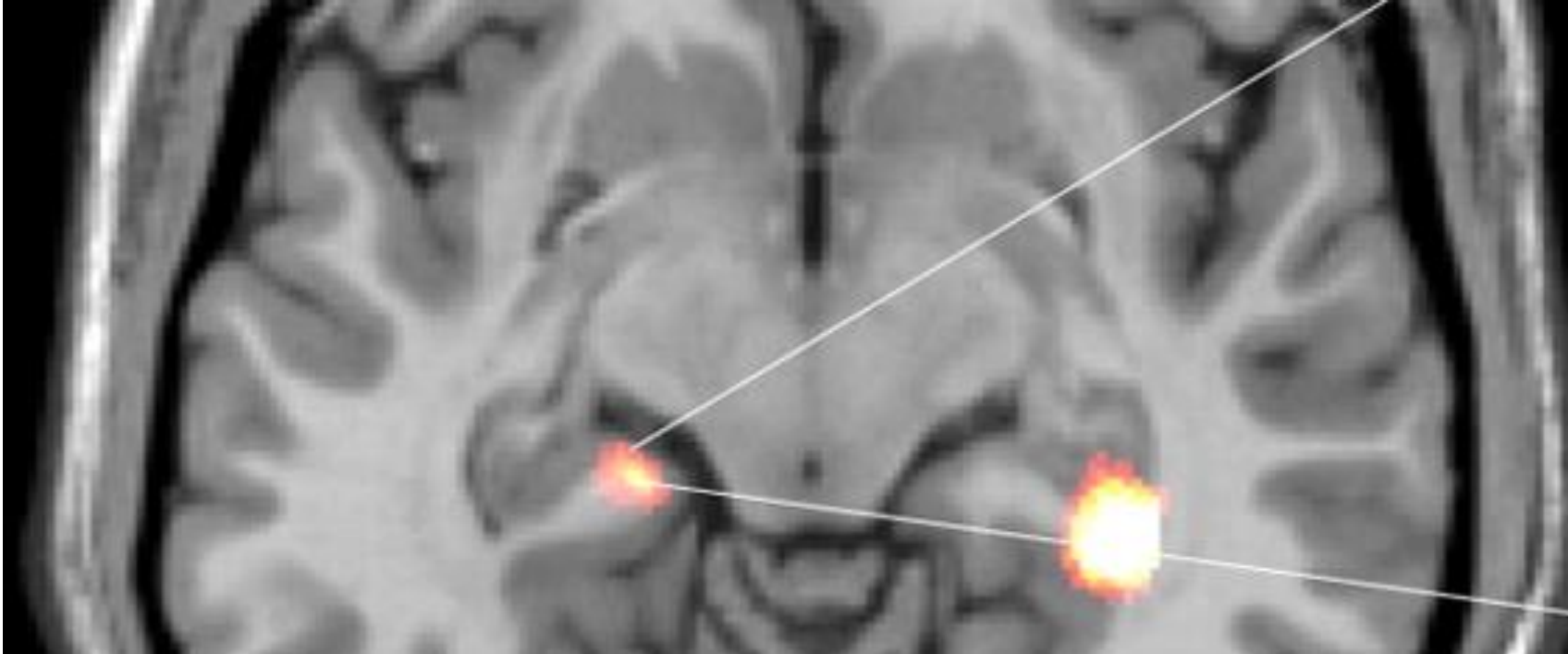
Take Omega-3 Supplements



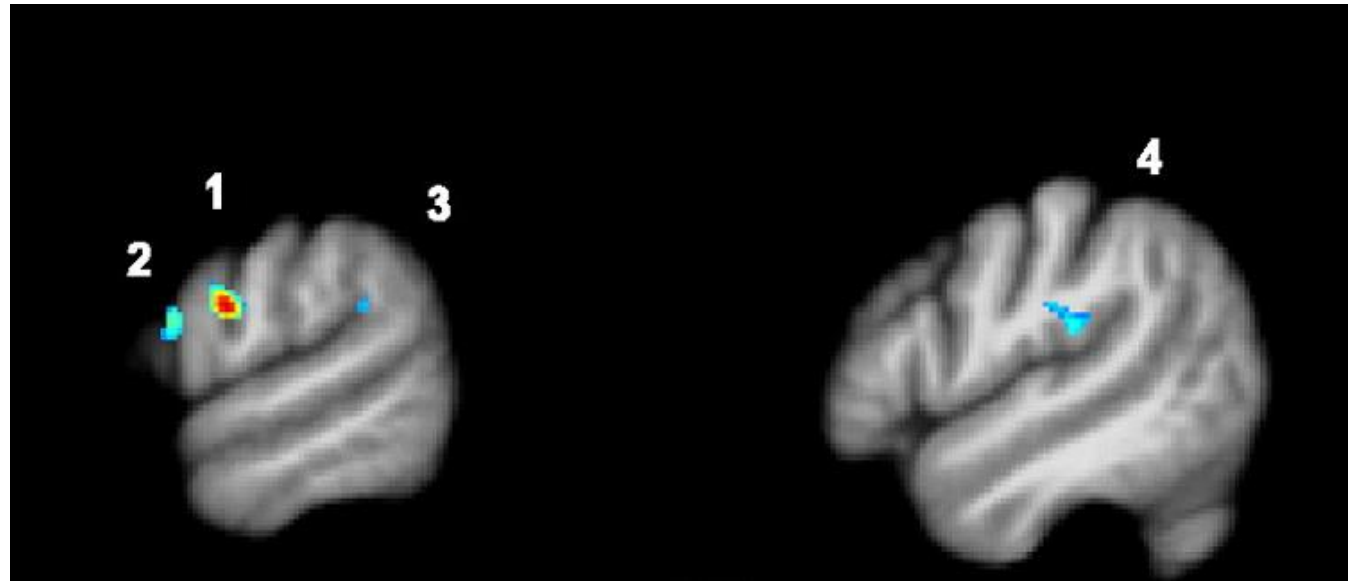


### 3. Learn Something New

Learn a New Language



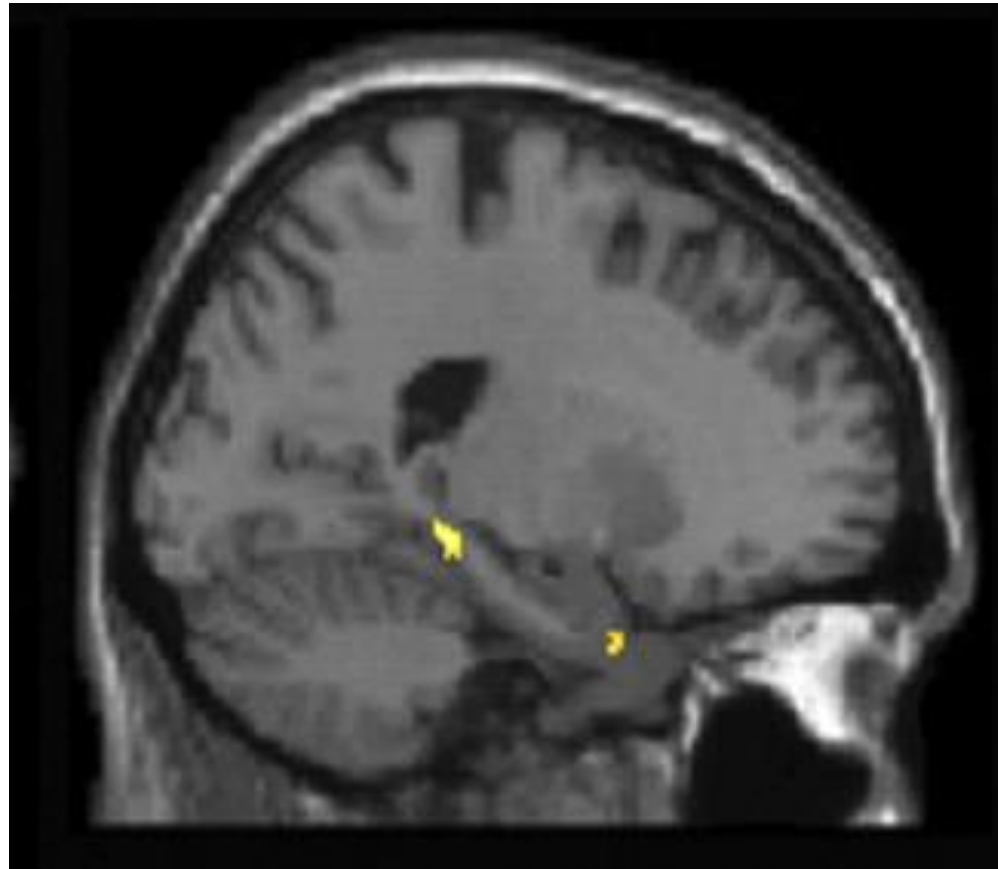
# Learning to Play Golf Grows Your Cortex



Bezzola, Landina 2009

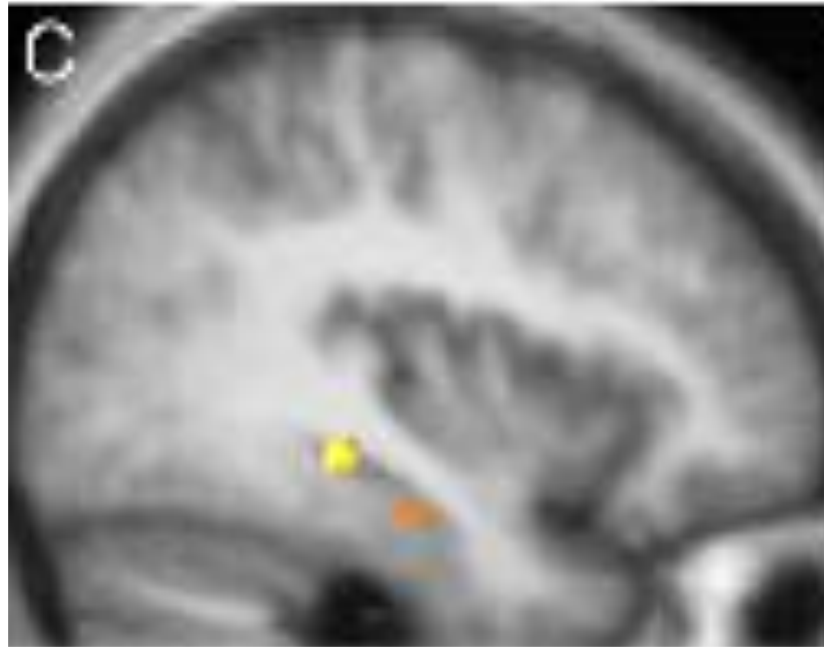
## 4. Sleep Well

Treat Your Sleep Apnea



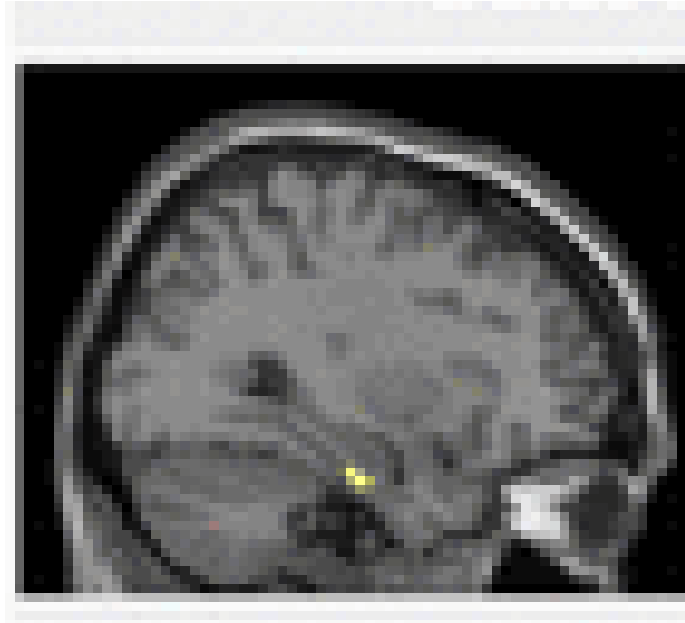
## 5. Meditate

Lower Your Stress, Be Happy





# Dancing Can Grow Your Hippocampus



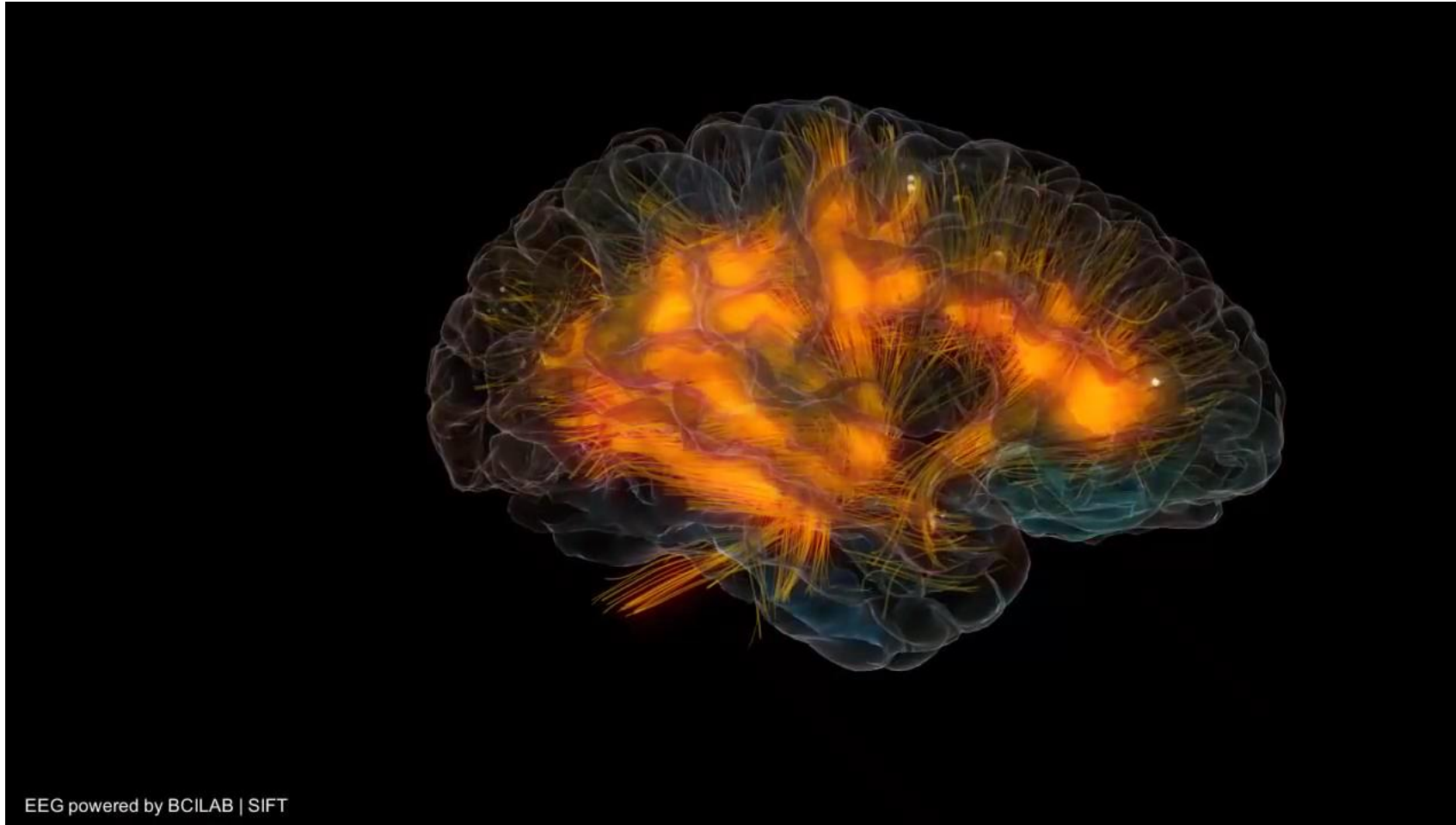
## 6. Have a Purpose in Life

Pursue Your Passion



# Neuronal Pathways Use Electricity to Communicate with Each Other.

These pathways can be degraded or upgraded.



<http://neuroscape.ucsf.edu/technology/#glass-brain>





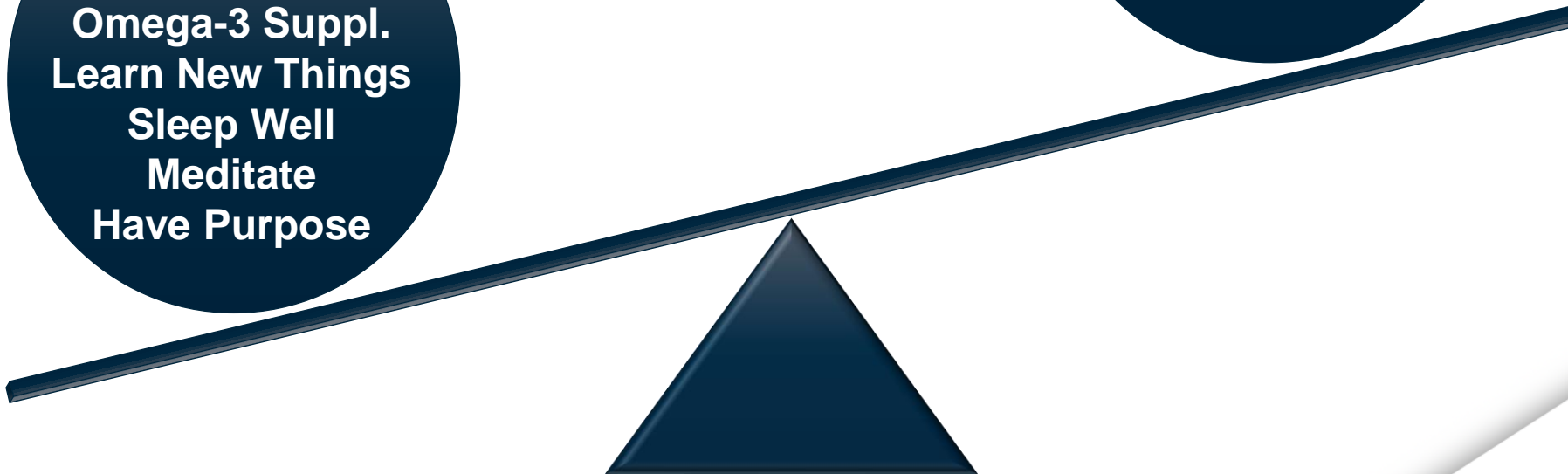
# Defy Aging



**Get Fit  
Medit Diet  
Omega-3 Suppl.  
Learn New Things  
Sleep Well  
Meditate  
Have Purpose**



**Diabetes  
Obesity  
Sleep Apnea  
Head Trauma  
Depression  
Stress  
Alzheimer's**



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# YPO EDGE

Singapore 2018