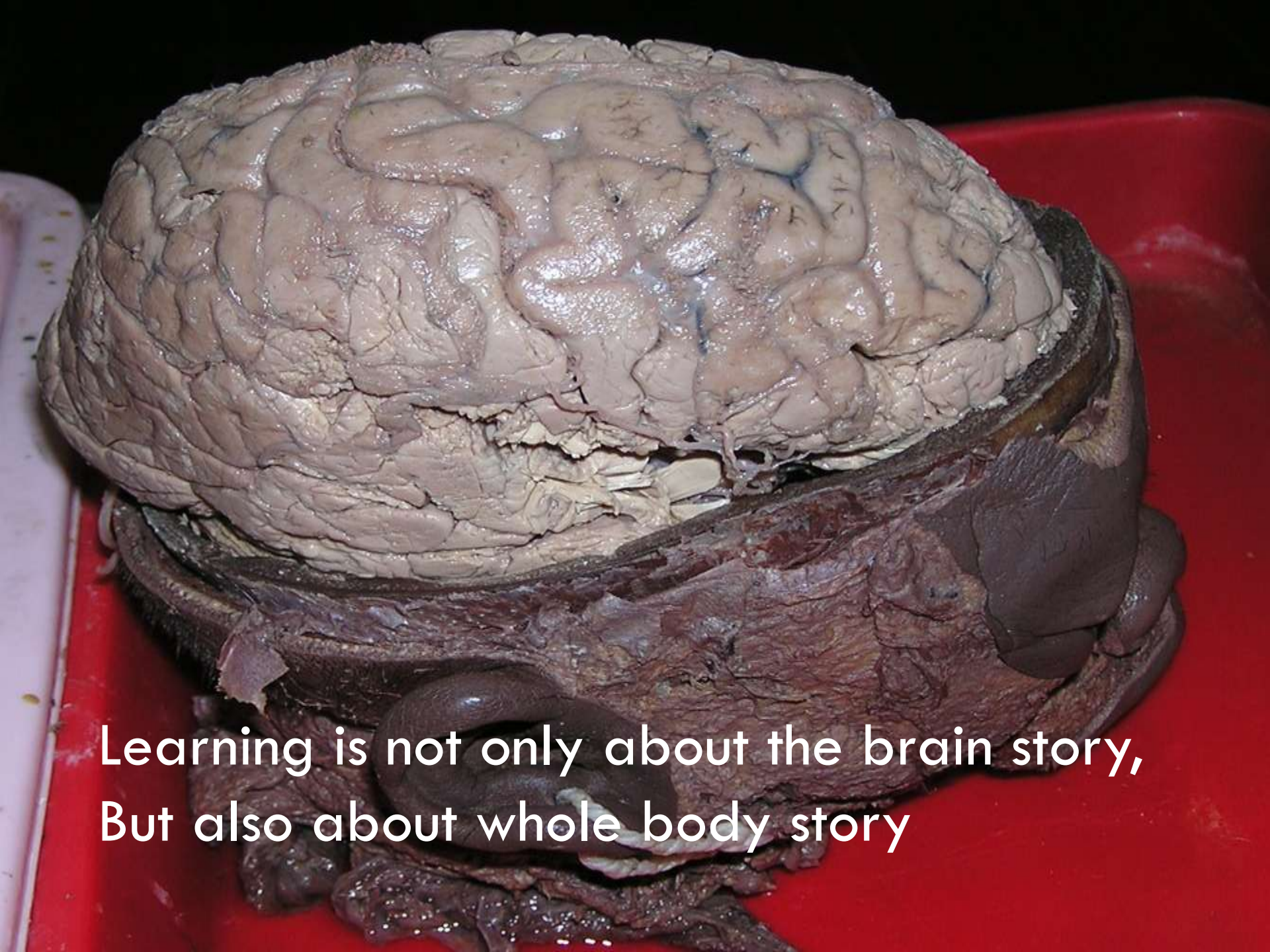




BRAIN BASED LEARNING

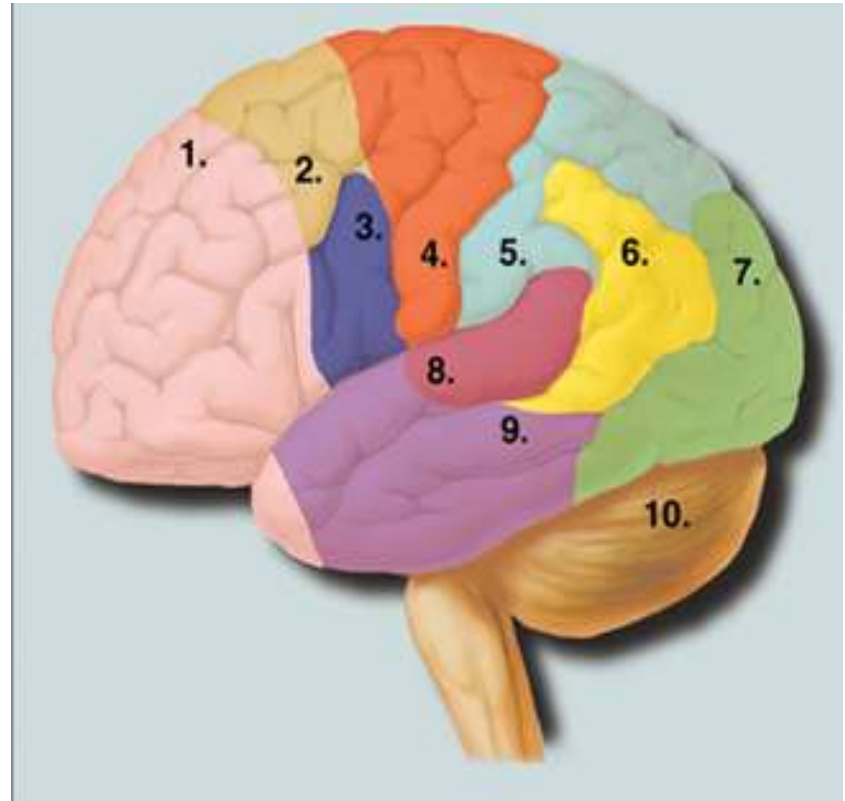
Taufiq Pasiak



Learning is not only about the brain story,
But also about whole body story

6'S BRAIN SYSTEM

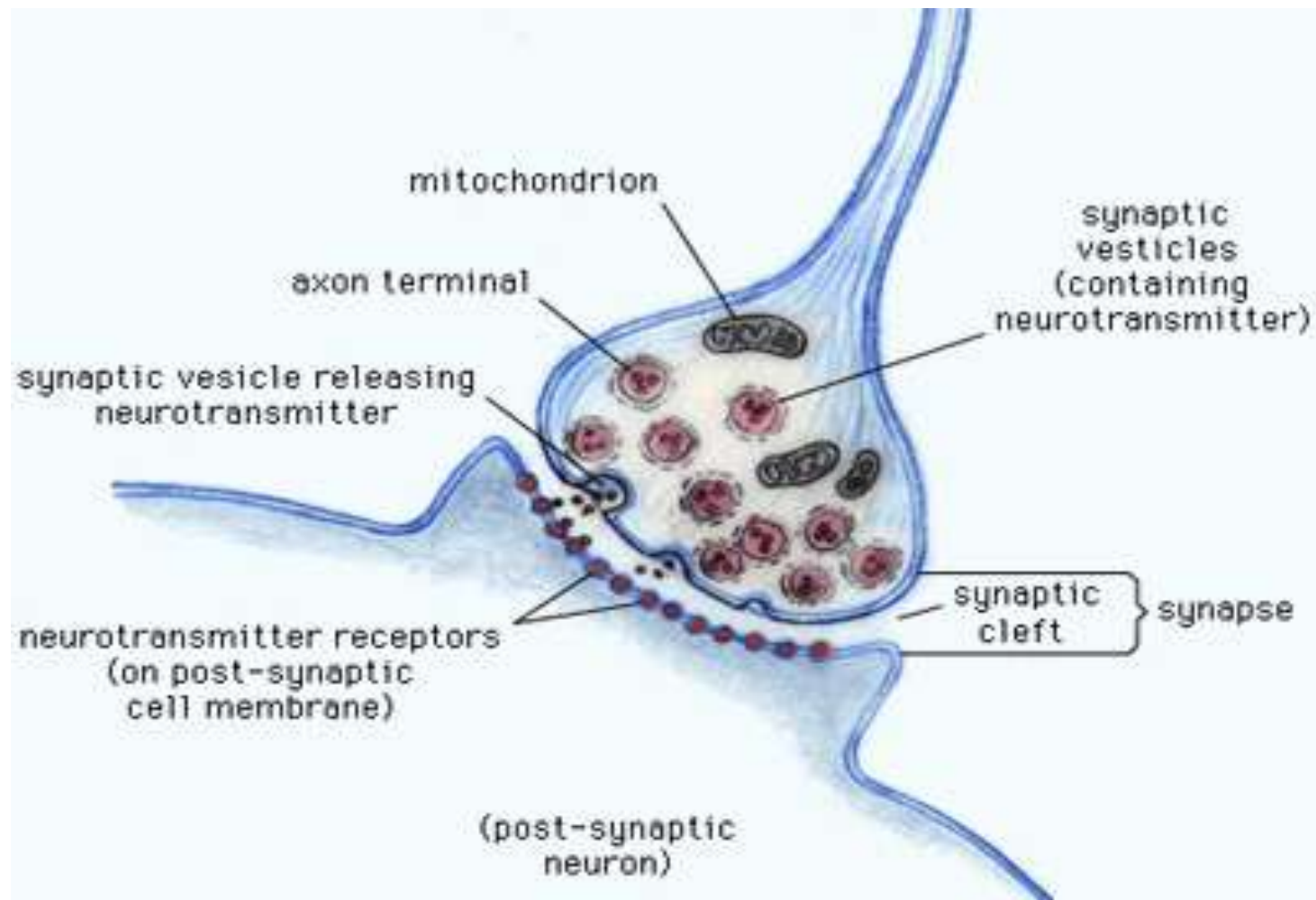
- ▶ **Cortex prefrontalis**
- ▶ **Gyrus Cingulatus**
- ▶ **Ganglia basalis**
- ▶ **Limbic System**
- ▶ **Cerebellum**
- ▶ **Lobus temporalis (occipitalis and parietalis)**



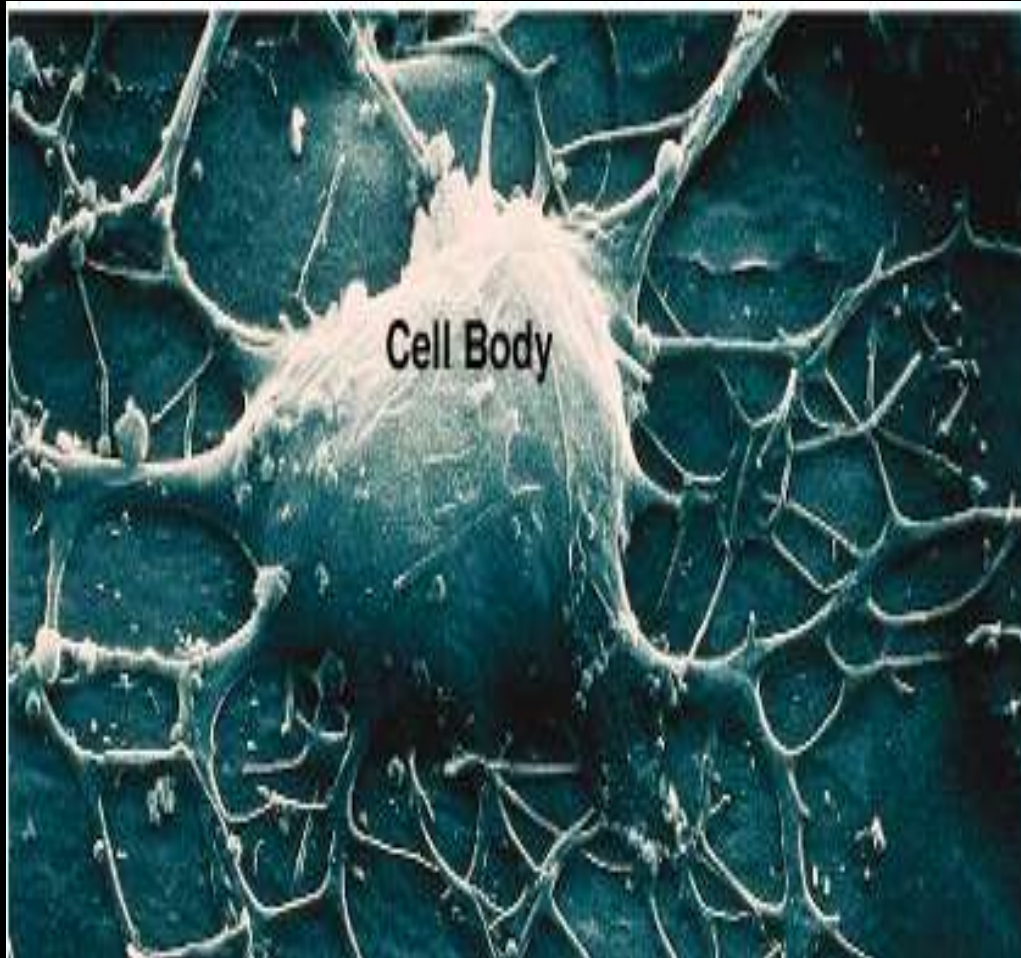
BRAIN IS A BIOLOGICAL SYSTEM



NEURON: synaps



NEUROPLASTICITY



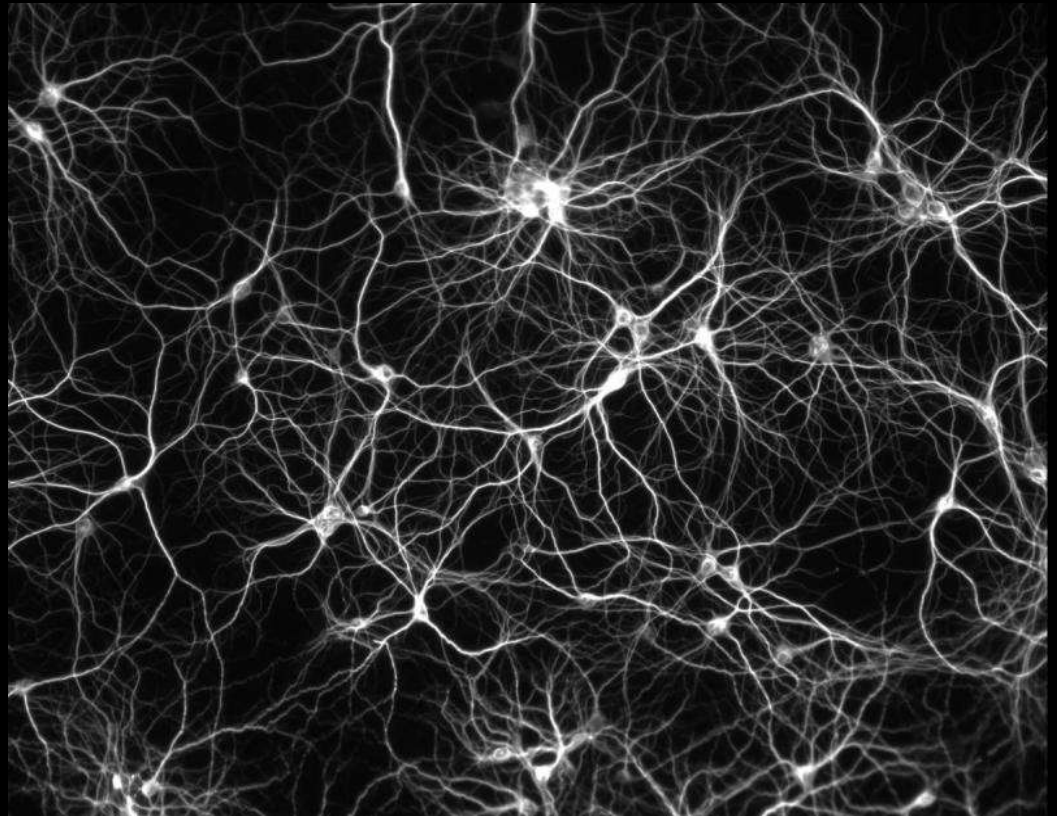
**Brain Ability To Reorganize
Itself By Forming
New Neural Connections
Throughout Life**

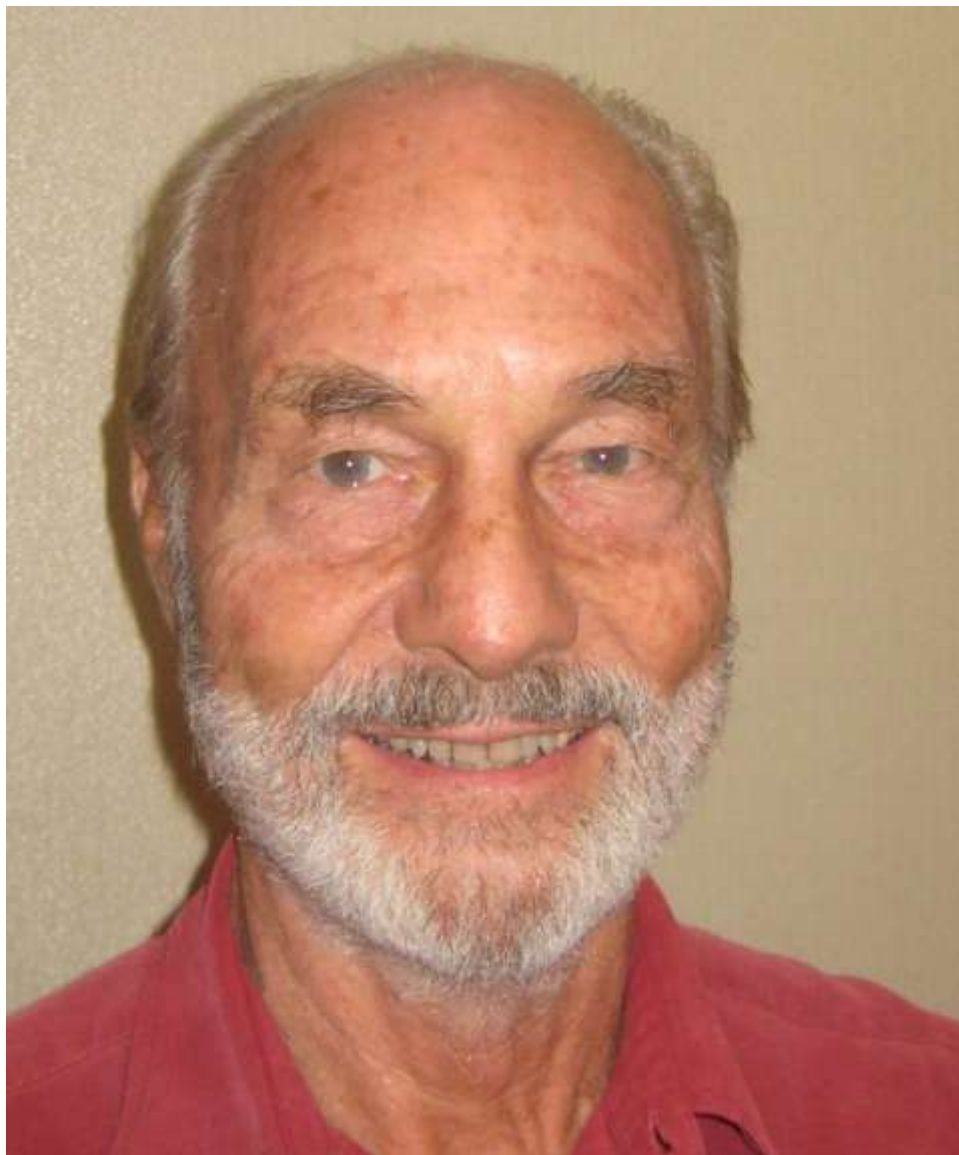
LEARNING:

is related to synaptic growth and the development of new dendritic spines.

The Neuron Changing:

- Changing the synaps
- Changing the amount of neurotransmitter





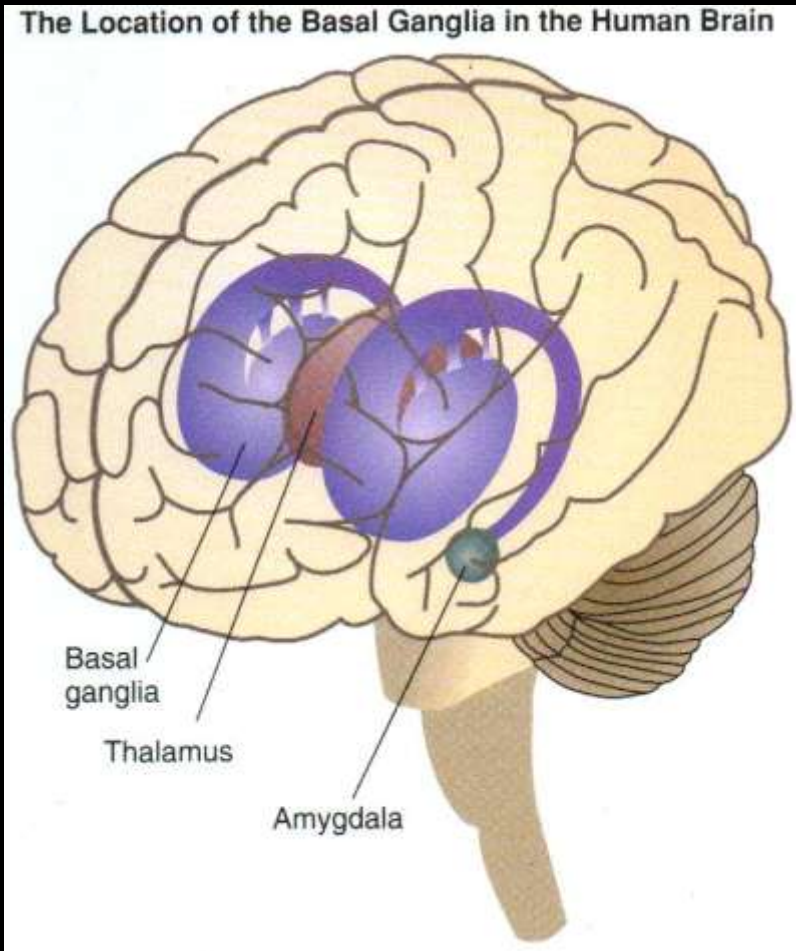


BRAIN BASED LEARNING; *PRINCIPLES*

- The brain works as a biological system (synaptic system)
- The Brain is unique
- brain consists of separate parts, but connected to each other
- Brain is the living organ (neuroplasticity)
- brain works all the time

BRAIN BASED LEARNING

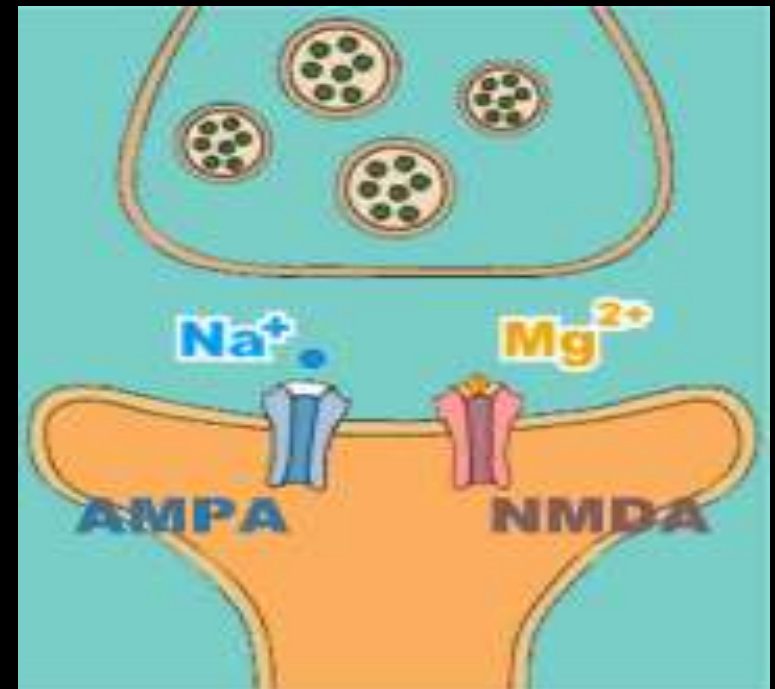
- Memory
- Emotion
- Creativity
- Character
- Sleep
- Nutrition
- Physical exercise



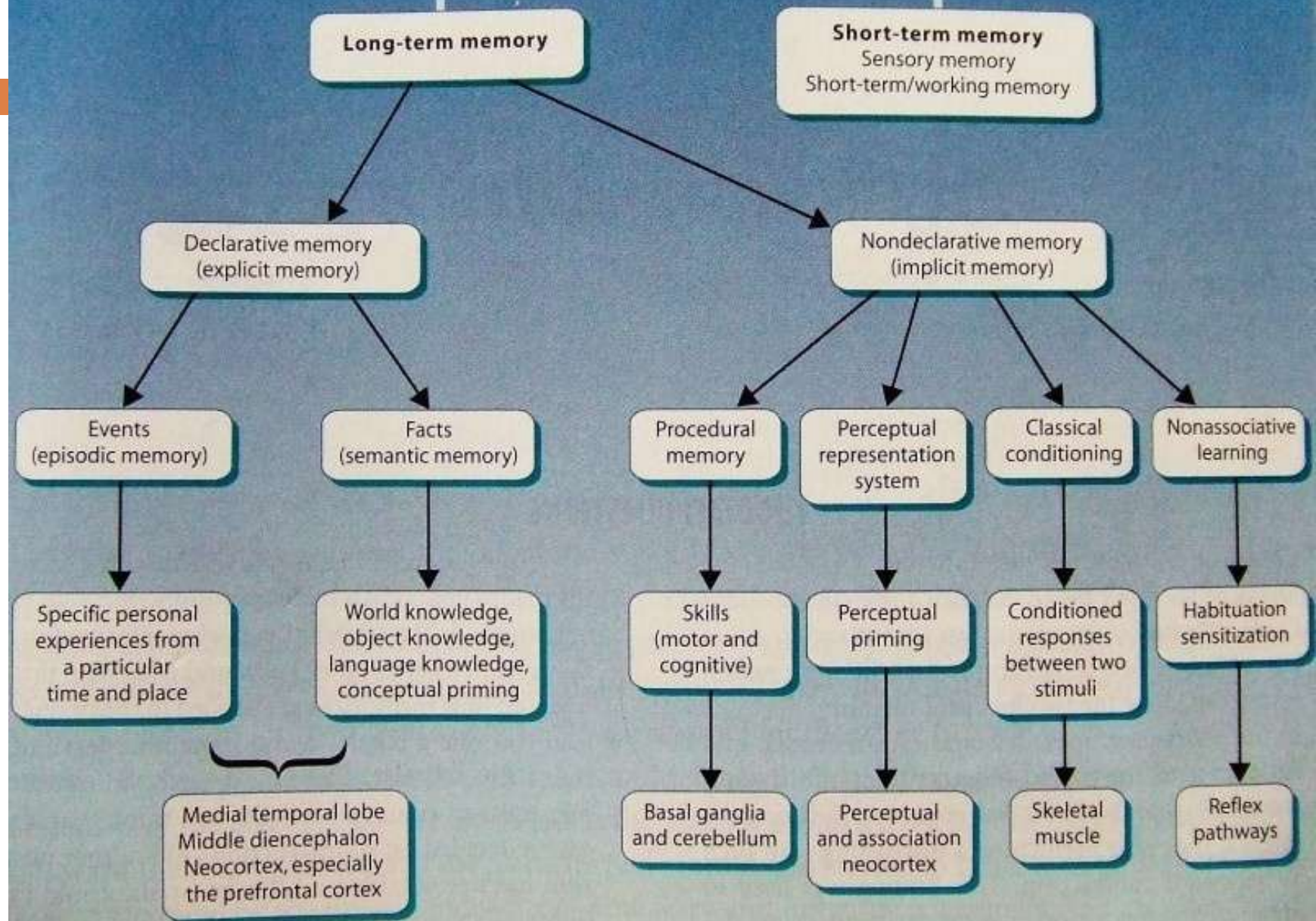
MEMORY : *LONG TERM POTENTIATION*

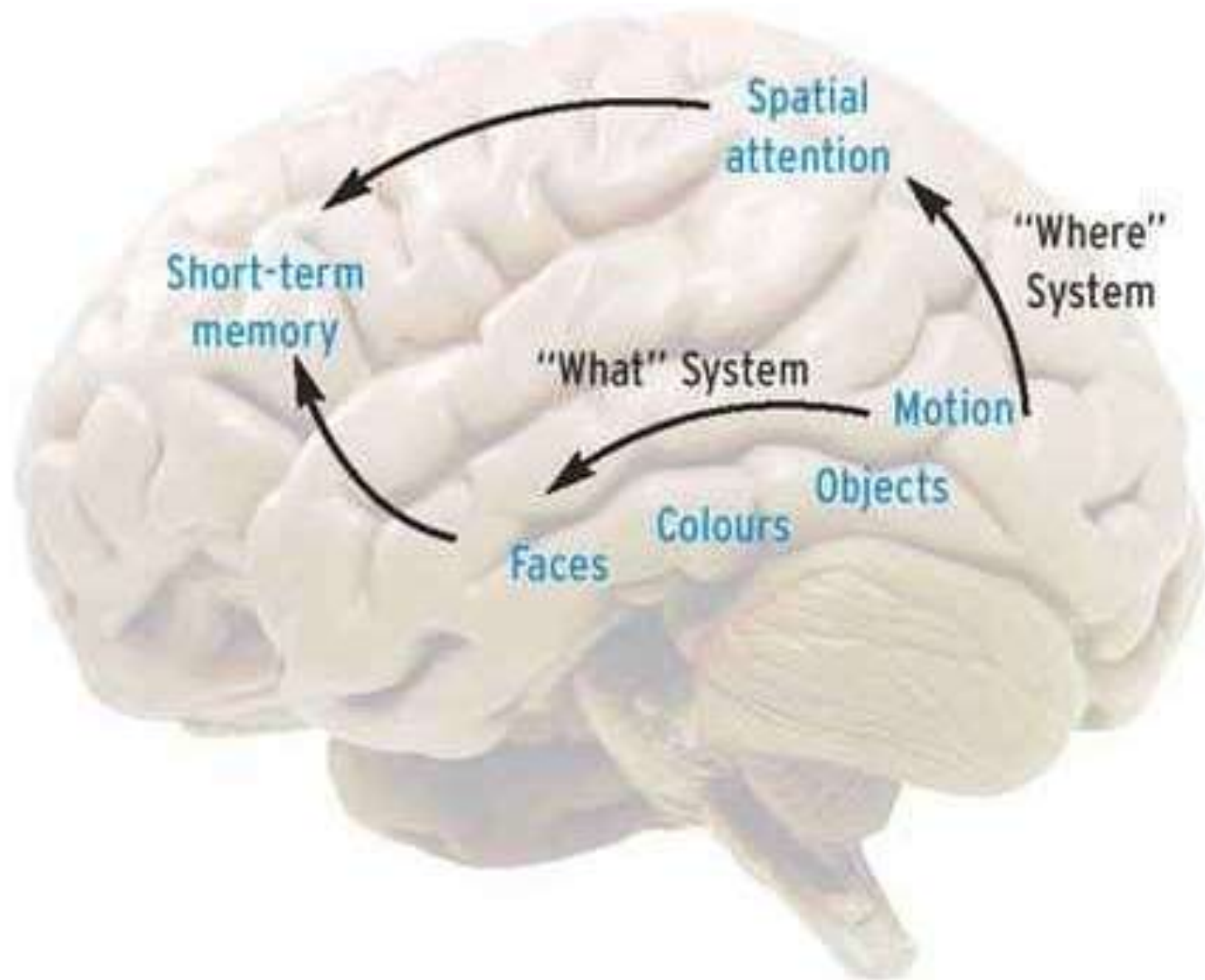
is a long lasting post synaptic depolarization, which is induced through the **repetitive stimulation** and **summation of excitatory** post-synaptic potentials

A long-lasting increase in synaptic efficacy, believed to be involved in information storage in the brain.



MEMORY

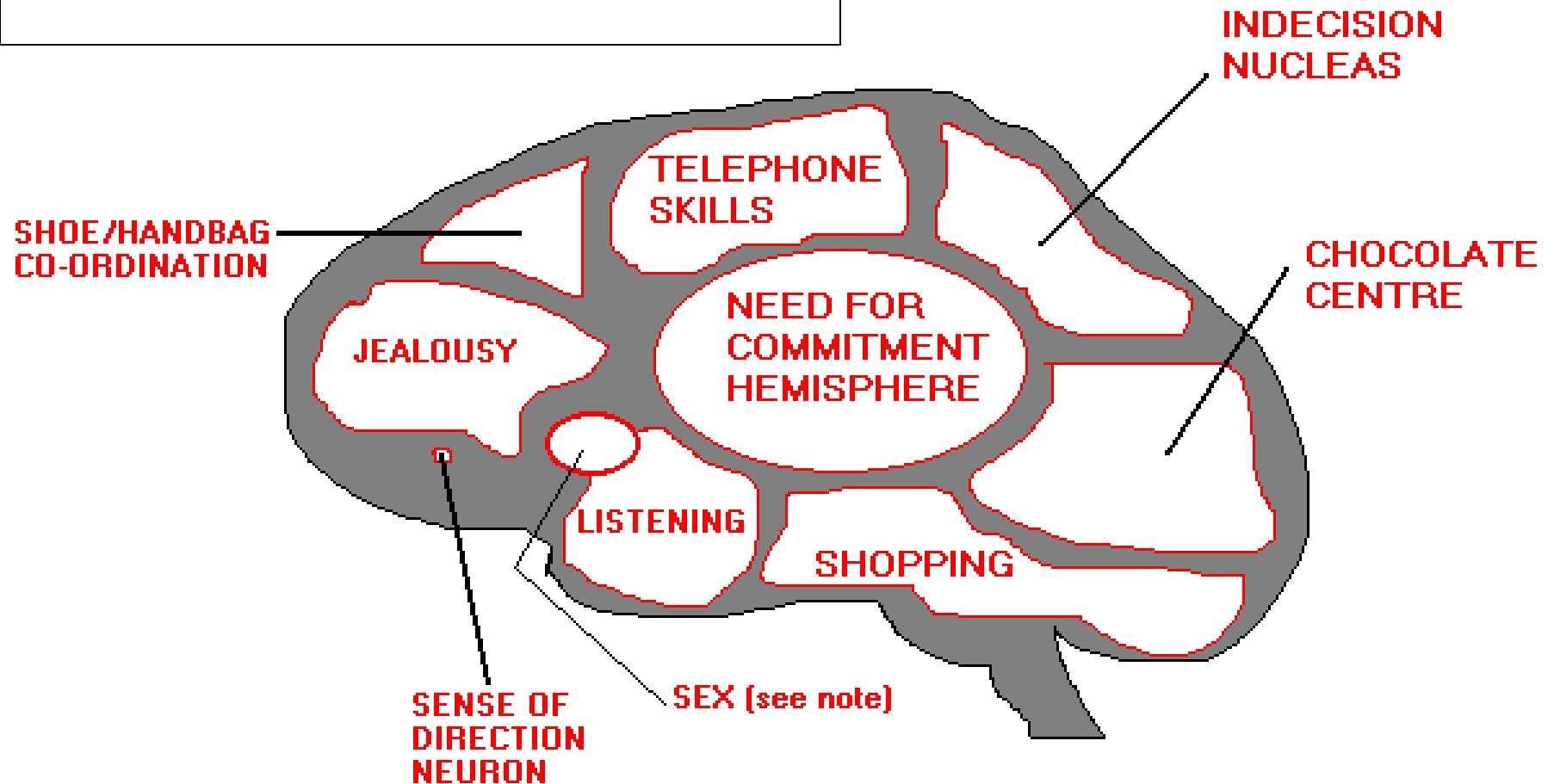






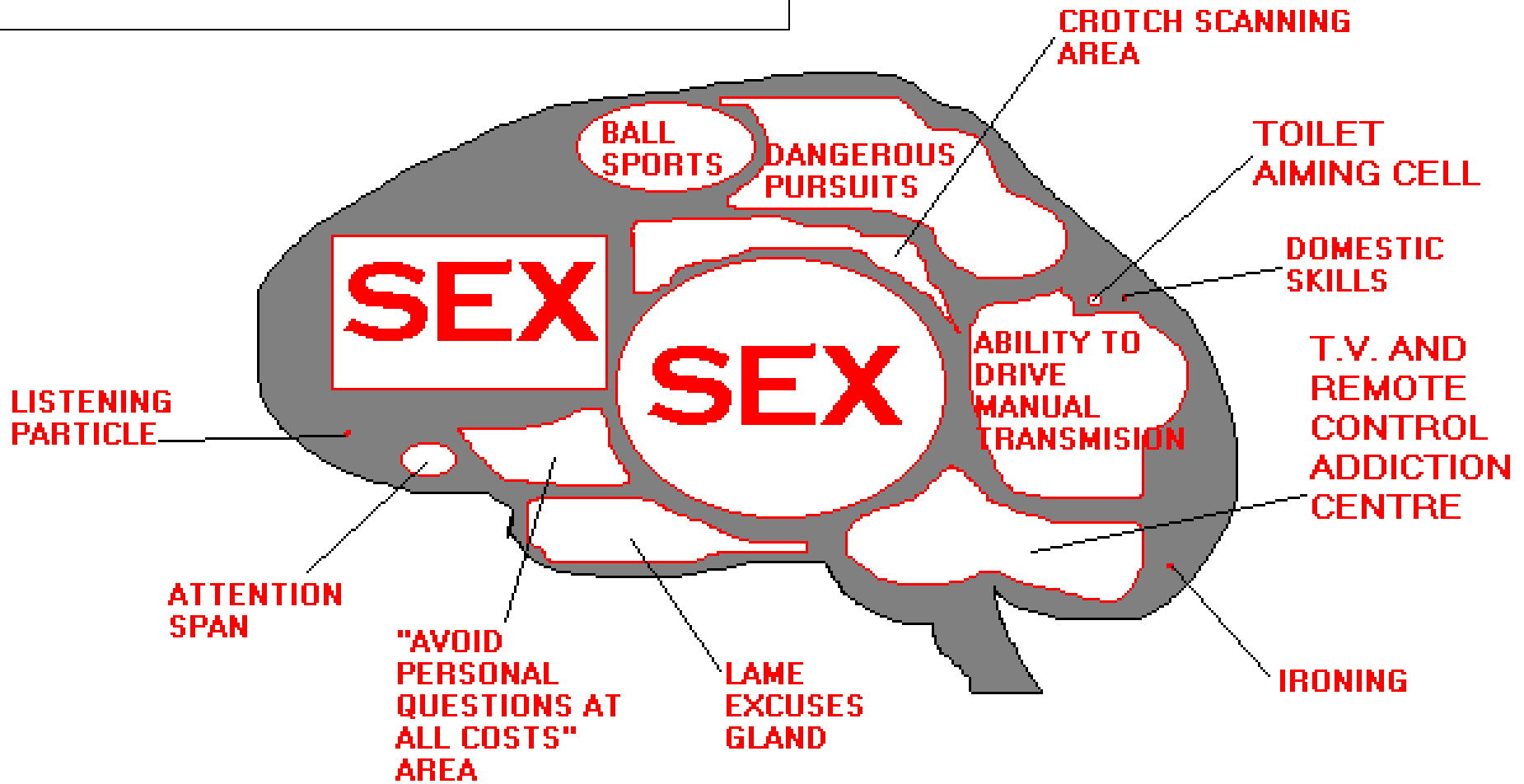
BRAIN IS UNIQUE

FEMALE BRAIN



FOOTNOTE: Note how closely connected the small sex cell is to the listening gland.

MALE BRAIN



FOOTNOTE: the "Listening to children cry in the middle of the night" gland is not shown due to its small and underdeveloped nature. Best viewed under a microscope.

INFORMATION : STIMULATION AND PROCESSING

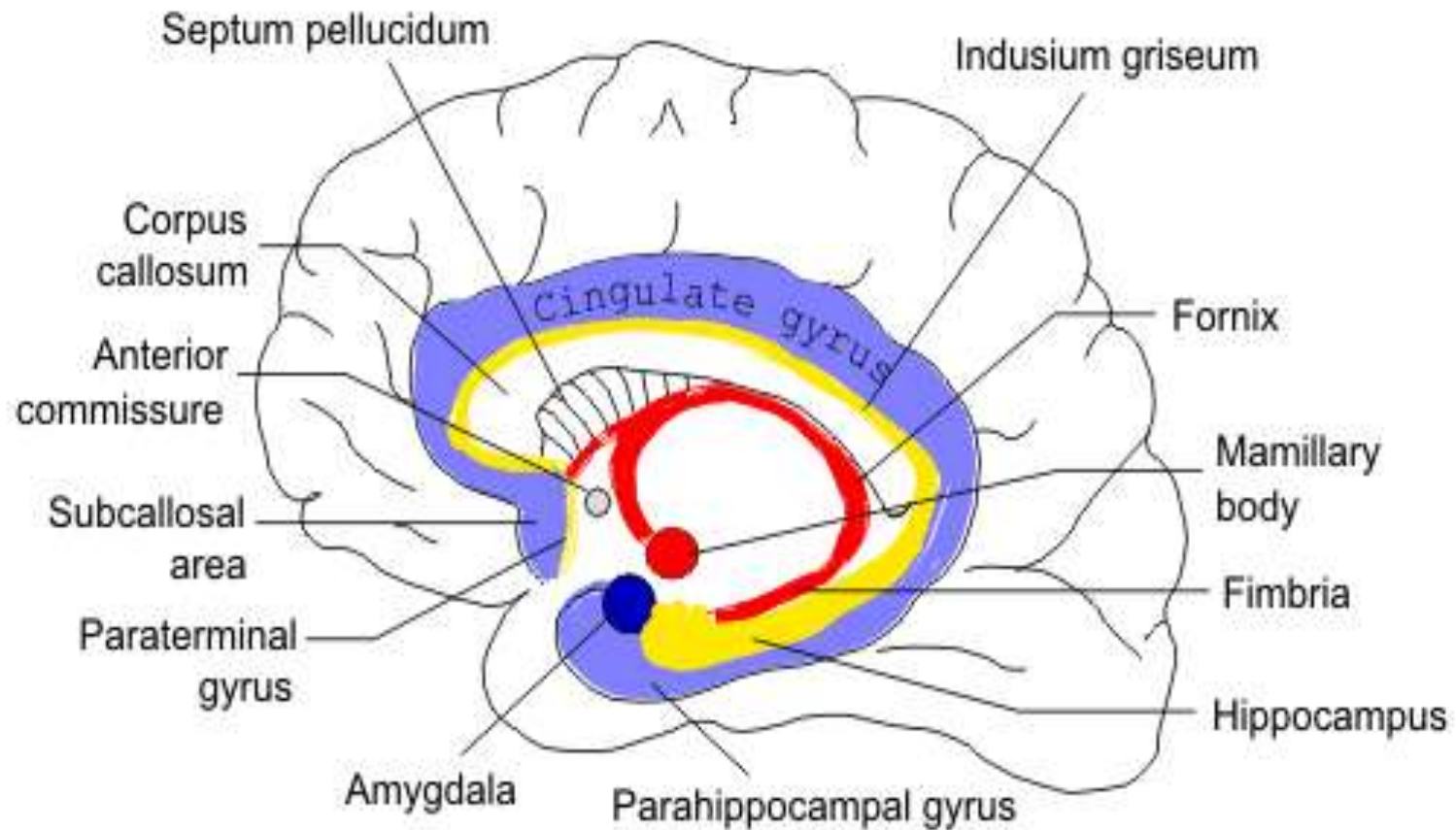
	MALE	FEMALE
Stimulation	Most Visual	Most Auditorik
Processing	Global to detail	Detail to Global

EMOTION



- There is neural circuit between amygdala, prefrontal cortex and thalamus
- emotions can affect cognition mutually

The Limbic System



-  Limbic Gyrus
-  Intralimbic Gyrus
-  Fornix & Inner Arc

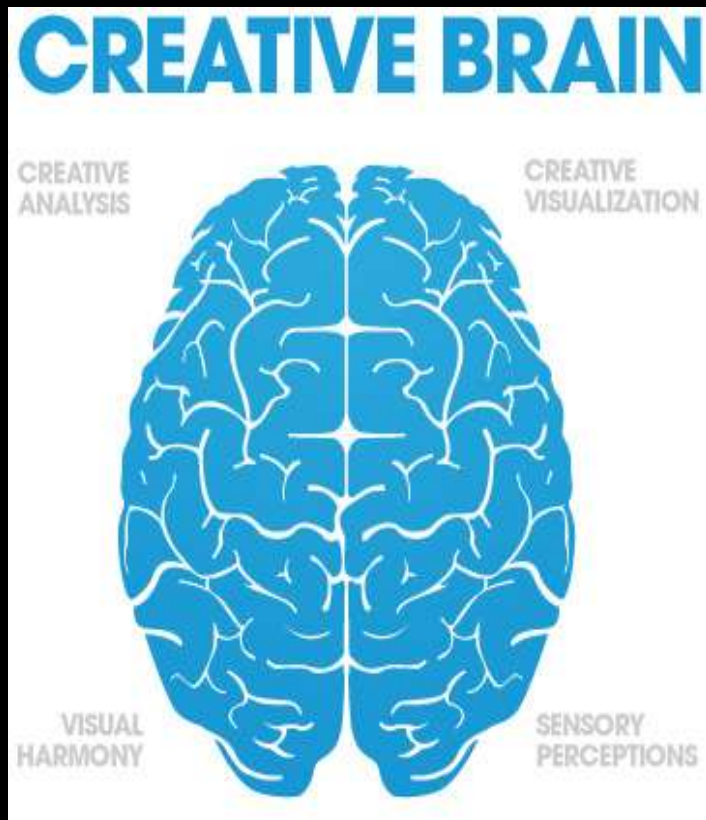


I LOVE

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CREATIVITY



Creativity and imagination begin with perception

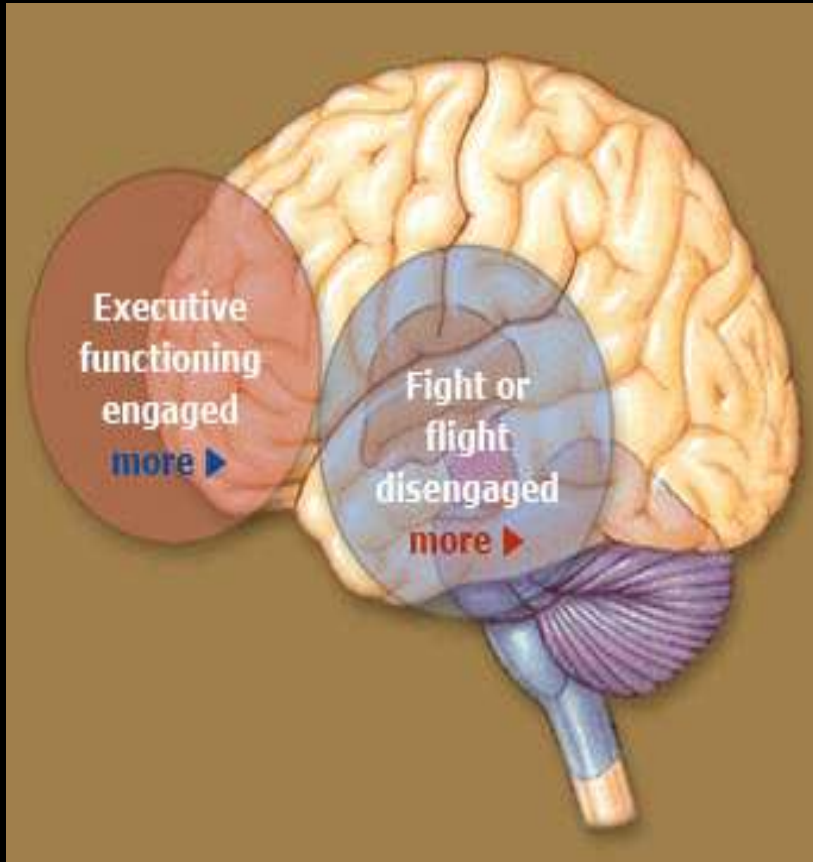
Some neural circuit for both function

Perception and imagination can be reprogrammed

**I LOVE
PETER SHEPARD,**

ESPECIALLY HIS NOSE AND HIS SHOES

CHARACTER:



Character related to life
meaning

The meaning was back up
by spirituality

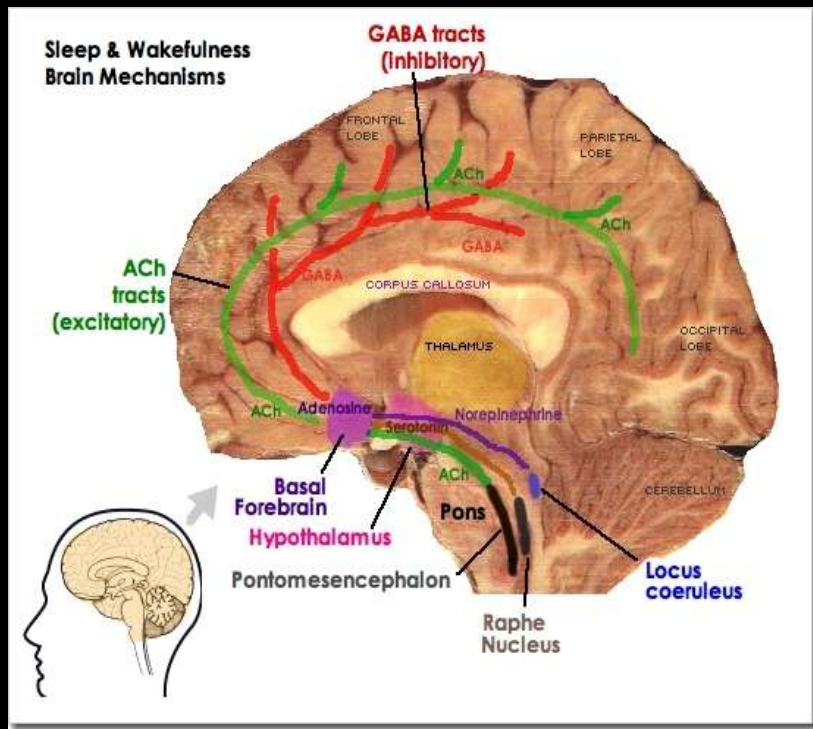
Spirituality brain is innate

SLEEP

neurons in the hippocampus reactivate in the same patterns during sleep as they did while recording activities as they were being performed.

stimulating the sleeping brain with external electric fields can further boost memory performance.





**Sleep can promote
differential neuron
strengthening
holding learned
information**

100% Sleep Cycle

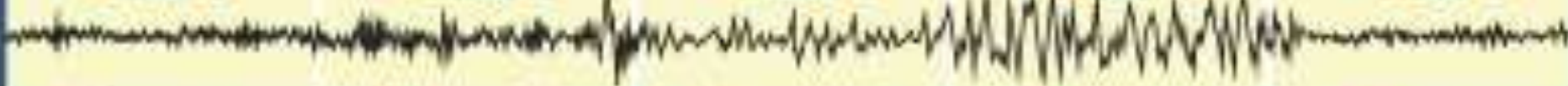
Stage 1

Stage 2

Stage 3

Stage 4

Stage 5



4-5%

Light sleep. Muscle activity slows down. Occasional muscle twitching.

45-55%

Breathing pattern and heart rate slows. Slight decrease in body temperature.

4-6%

Deep sleep begins. Brain begins to generate slow delta waves.

12-15%

Very deep sleep. Rhythmic breathing. Limited muscle activity. Brain produces delta waves.

20-25%

Rapid eye movement. Brainwaves speed up and dreaming occurs. Muscles relax and heart rate increases. Breathing is rapid and shallow.



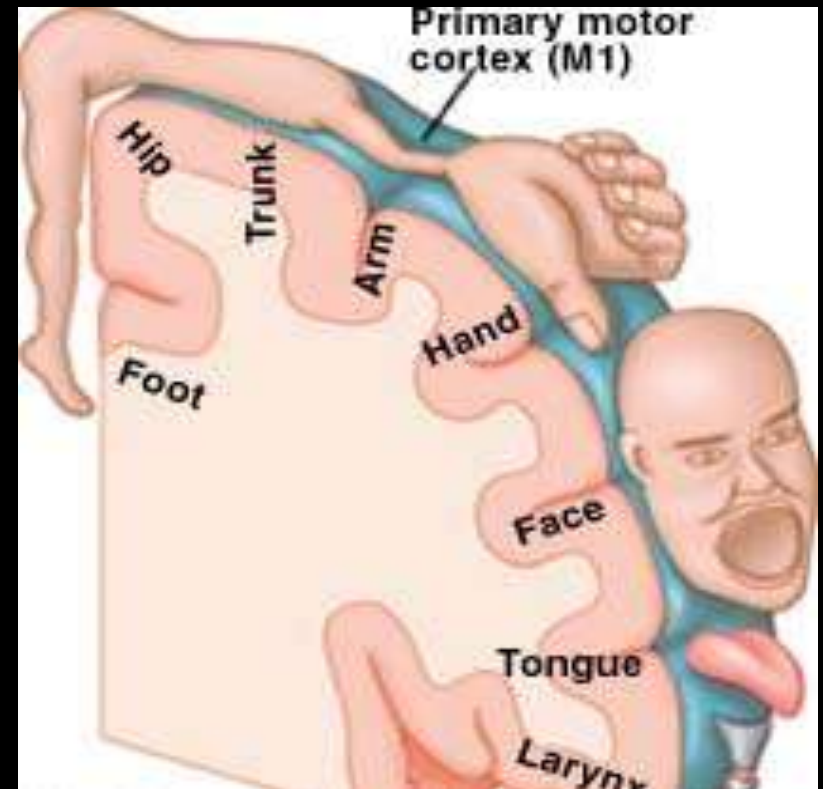
PHYSICAL EXERCISE



**Tongue and fingers area
occupy large parts of the
Homunculus motor in
Brain**

PHYSICAL EXERCISE AND LEARNING

- **Physical Movement release substances from the brain (BDNF)**
- **BDNF accelerated development of LTP**



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NUTRITION

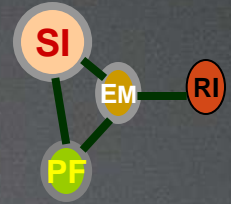
Good nutrition promotes healthy functioning of the brain

**High fat diet impairs brain glucose
To form Long term memory**

**Eating carbohydrates enhanced
memory**

**Lack of breakfast impairs
learning**







**CHANGE "YOUR BRAIN"
CHANGE YOUR LIFE**

Mr. Been Laden