

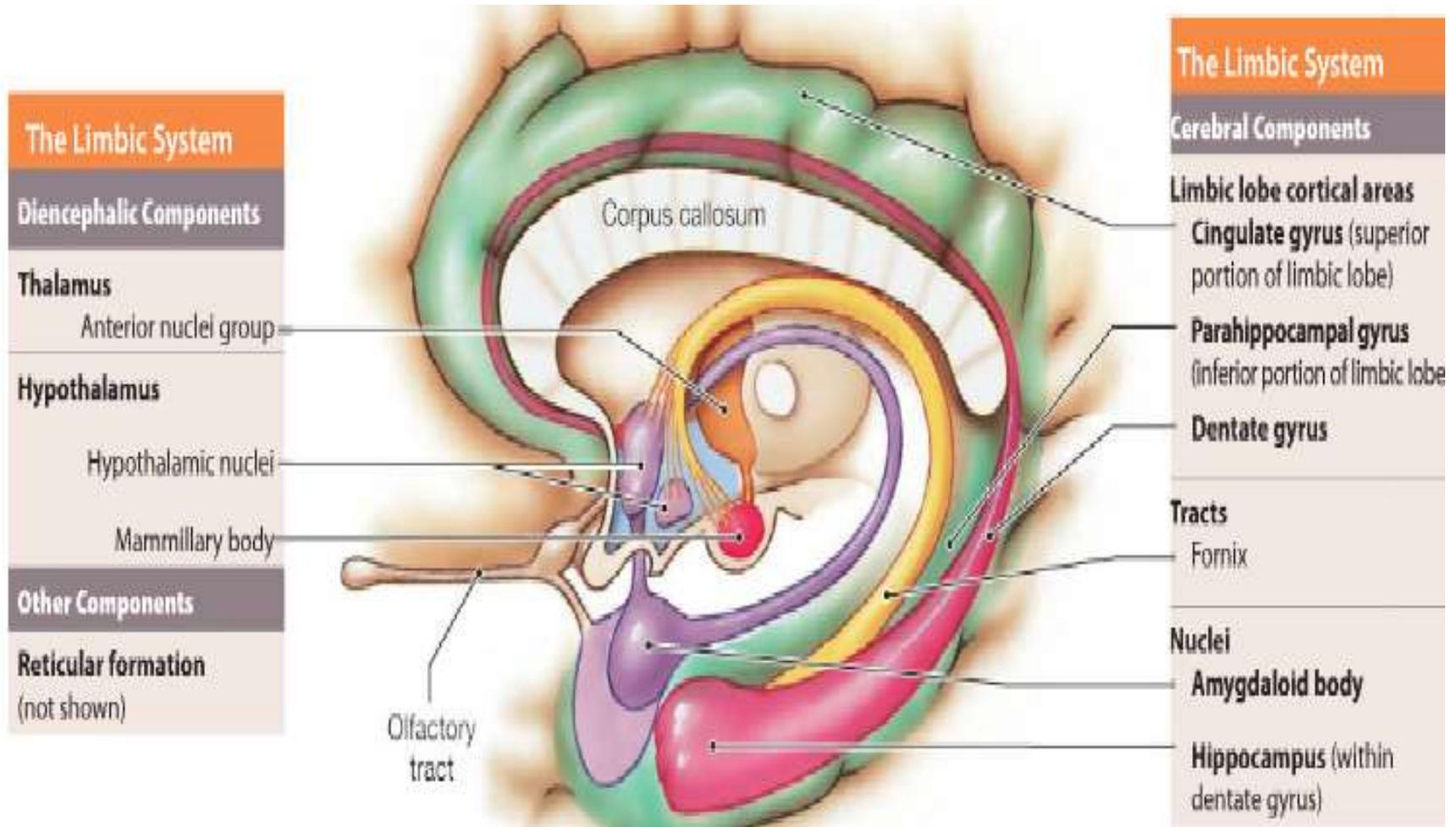
Limbic system

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Tricks to remember the structures of the brain



Consists of a complex network of neurons that interconnected a number of associated structures of the brain



Mnemonics of the Limbic system



Hypothalamus

Pineal gland very tiny regulate sleep cycle

Parinaud syndrome sunset eyes

Anterior hypothalamus cooling AC

Posterior hypothalamus Heating

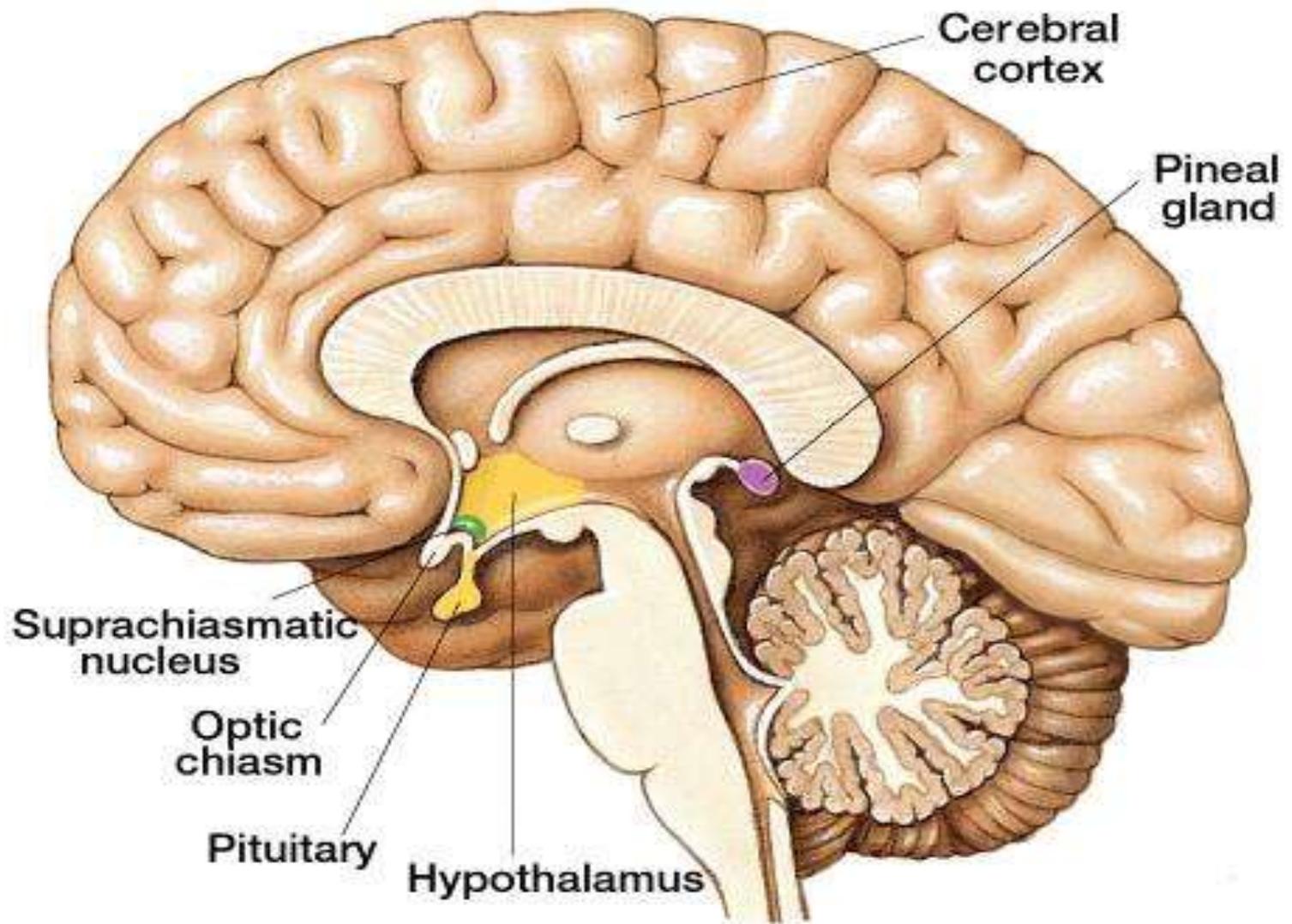
Lateral hypothalamus Hunger

Ventromedial nucleus satiety

Suprachiasmatic nucleus circadian rhythm

Supraoptic nucleus

Paraventricular nucleus parental viewing is needed



Cerebral cortex

Pineal gland

Suprachiasmatic nucleus

Optic chiasm

Pituitary

Hypothalamus

thalamus

- Routing sensory neurons to cerebral cortex
- VPL arms and legs
- VPM face and mouth
- Somatosensory information to parietal lobe
- Lateral geniculate nucleus
- Medial geniculate nucleus
- Conscious awareness and wakefulness
- Coma damage to thalamus

Basal ganglionea

Dorsal stratum

- Caudate cognitive memory and sleep
- Lenticular

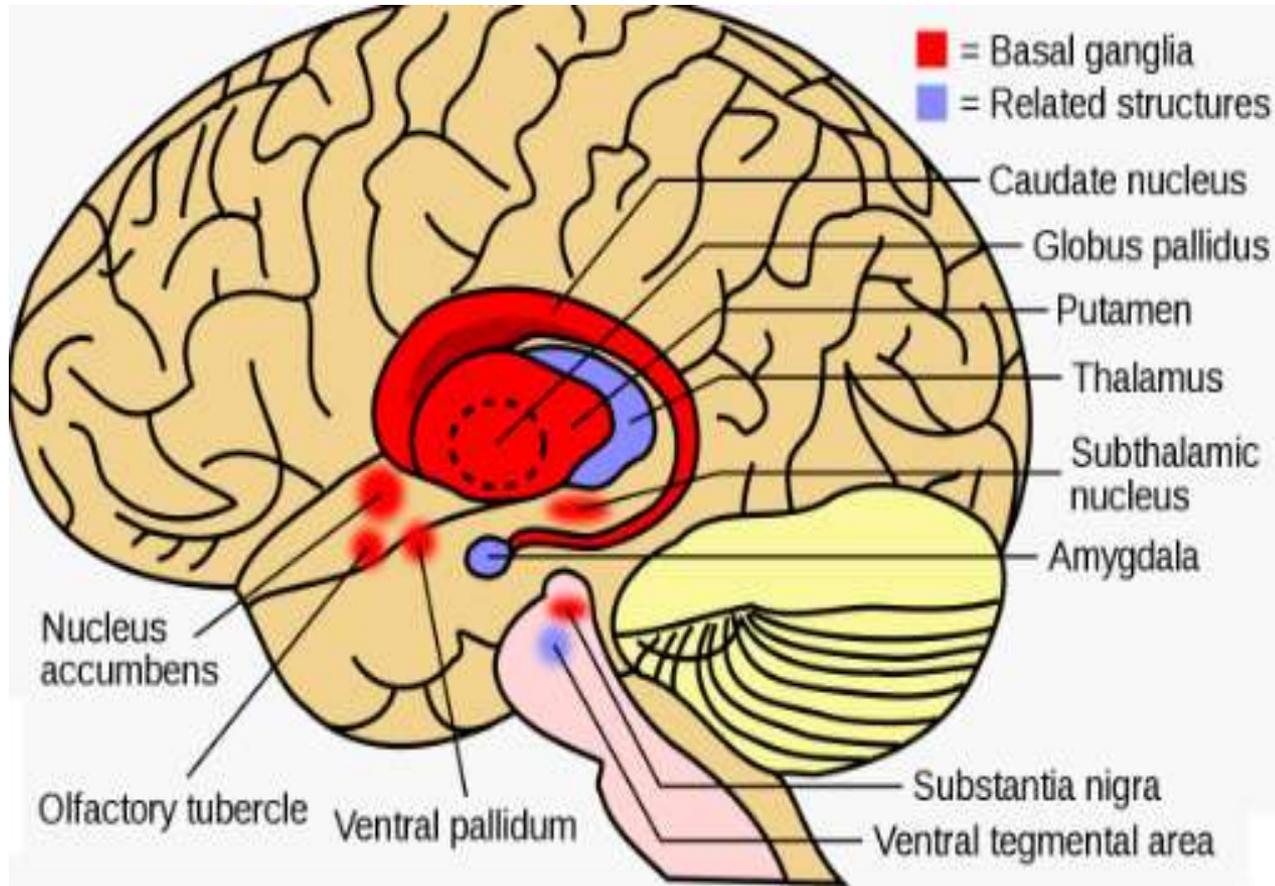
Putamen motor function

globus pallidus

- Substantia nigra Parkinson rigidity in movement
- Subthalamic n hemiballismus

Ventral striatum

- Nucleus accumbens
- Olfactory tubercle



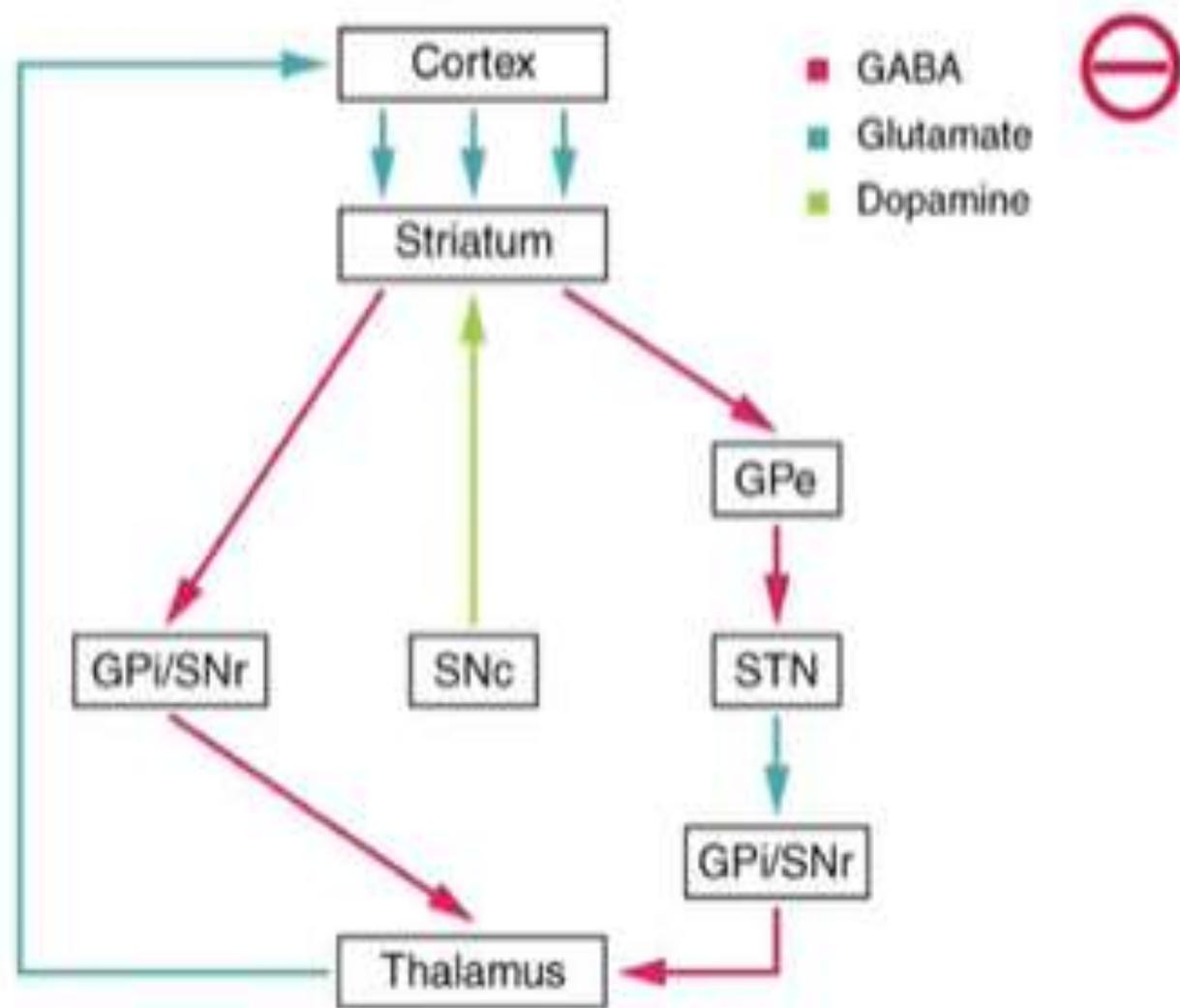
Basal ganglion

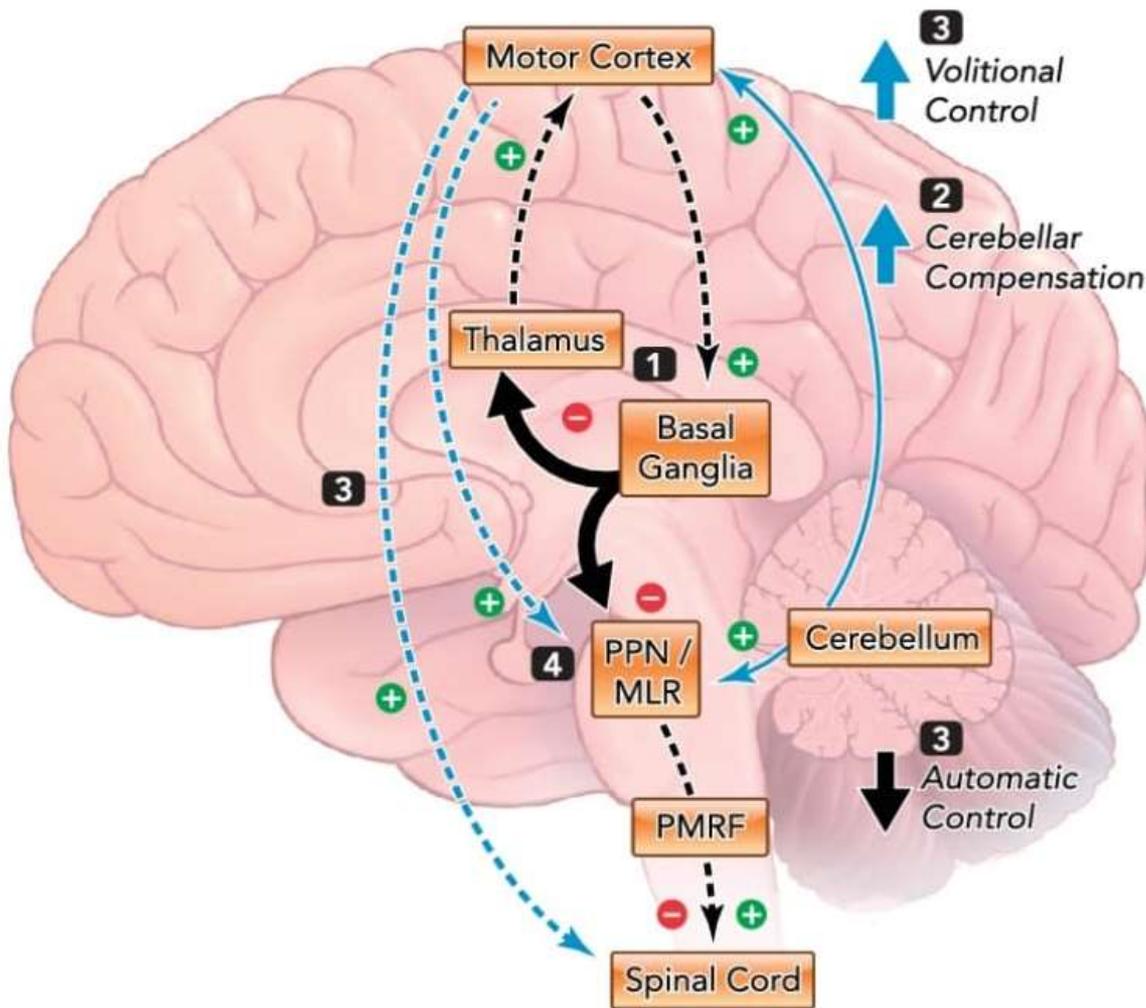
- Deep in the forebrain
- Integrate all cortical activity in one output

Behavior (bad or good day)

- Integration of output posture
- Learning and cognition body language
- Emotional aspect of behavior tone of voice

The direct and indirect pathways





Gait Slowness

- 1** Overactive inhibitory output from the basal ganglia reduces corticospinal drive and contributes to slowed gait.
- 2** Increased cerebellar activity may partially compensate for the overactive basal ganglia inhibition.

Gait Variability and Asymmet

- 3** Increased volitional (i.e. cortico-spinal), and reduce automatic control of locomotion contributes to variability of gait.

Postural instability

- 4** Dysfunctional brainstem activity contributes to postural instability, hypokinesia, and rigidity.

Amygdala

- Pavlovian association
- Threat detection
- Capturing of environmental stimuli retrieval memories

Processing memory

- Declarative conscious friend name

Episodic memory association

Semantic memory number

Prefrontal cortex processing short term memory

Hippocampus encoding short into long

- Non declarative not conscious drive a bike

Muscle or body memory not recalling basal ganglion

Long term potential

Short term memory several hours

Glutamate binds AMPA and NMDA

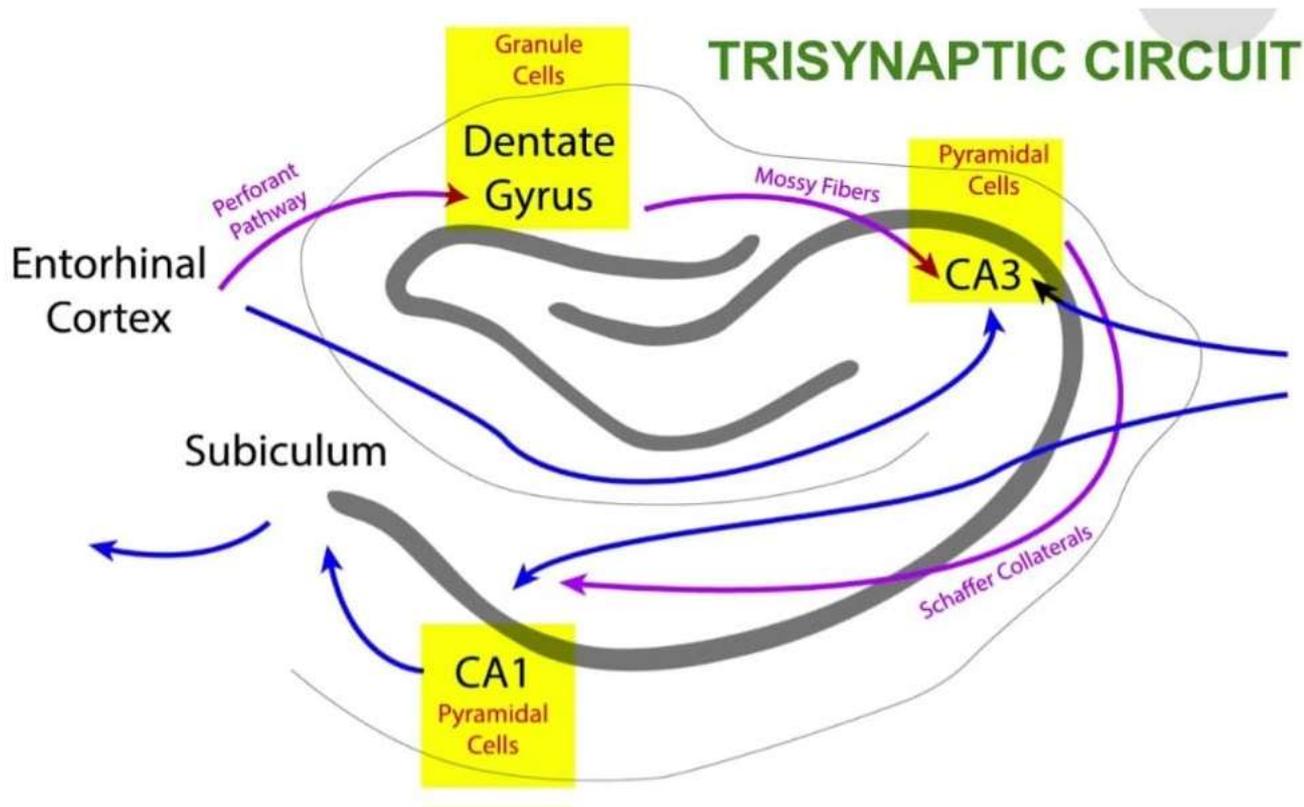
Calcium activate several protein kinase

Phosphorylation of AMPA

More Na conduction and more receptors AMPA

long term

Newly synthesized protein dendritic spines and synaptic connection



Neuroplasticity

- Learning
- Brain repair
- Synaptic connection change over time
- Use it or lose it
- Temporary short-term memory chemical synaptic change
- Long lasting memory

High frequency and repeating long term potential

New connections / neurons

Changes in cortical areas

New functions stroke rehabilitation

Neurotransmitter switch behavioral changes

- Phantom limb sensation
- Remarkable in children as their brain developing
- Negative and maladaptive
- Busy healthy and effective