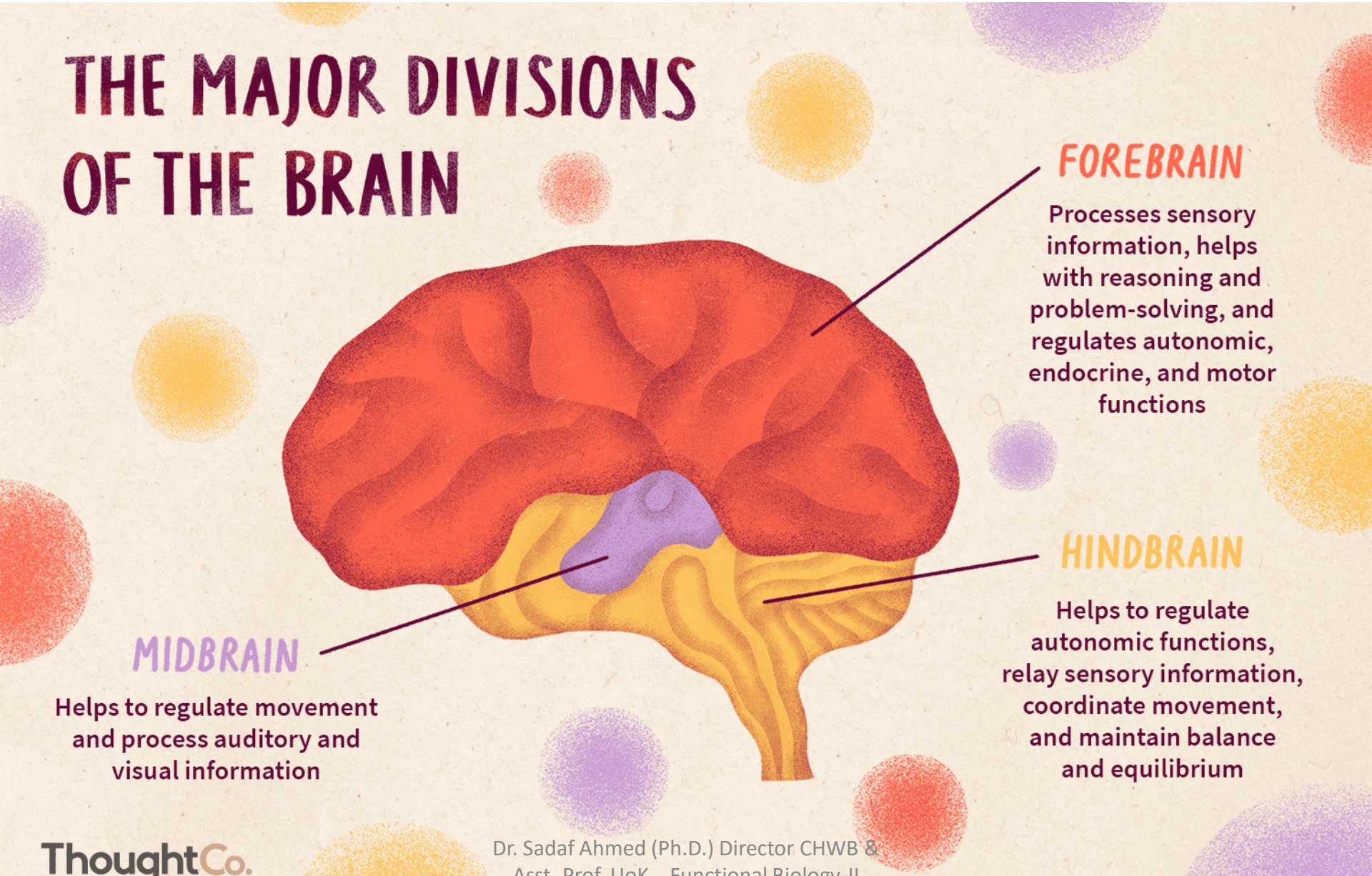
LEARNIG OBJECTIVE 3

To go through various Parts of Human Brain & its functions

LEARNIG OUTCOME

Acquired knowledge about the human brain functions and structures.

Following are the major parts of the human brain:



Forebrain – Largest part of the brain

- It is the anterior part of the brain. The forebrain parts include:

i. Cerebrum

ii. Hypothalamus

iii. Thalamus

- Controls the reproductive functions, body temperature, emotions, hunger and sleep.
- The largest among the forebrain parts is the cerebrum. It is also the largest part of all vertebrate brains.

Midbrain: Smallest and central part of the brain

- The *midbrain* consists of:

i. Tectum

ii. Tegmentum

- The tectum serves as a relay centre for the sensory information from the ears to the cerebrum. It also controls the reflex movements of the head, eye and neck muscles.
- Tegmentum mainly involved in body movements, sleep, arousal, attention, and different necessary reflexes.

Hindbrain: The lower part of the brain

- The *hindbrain* is composed of:

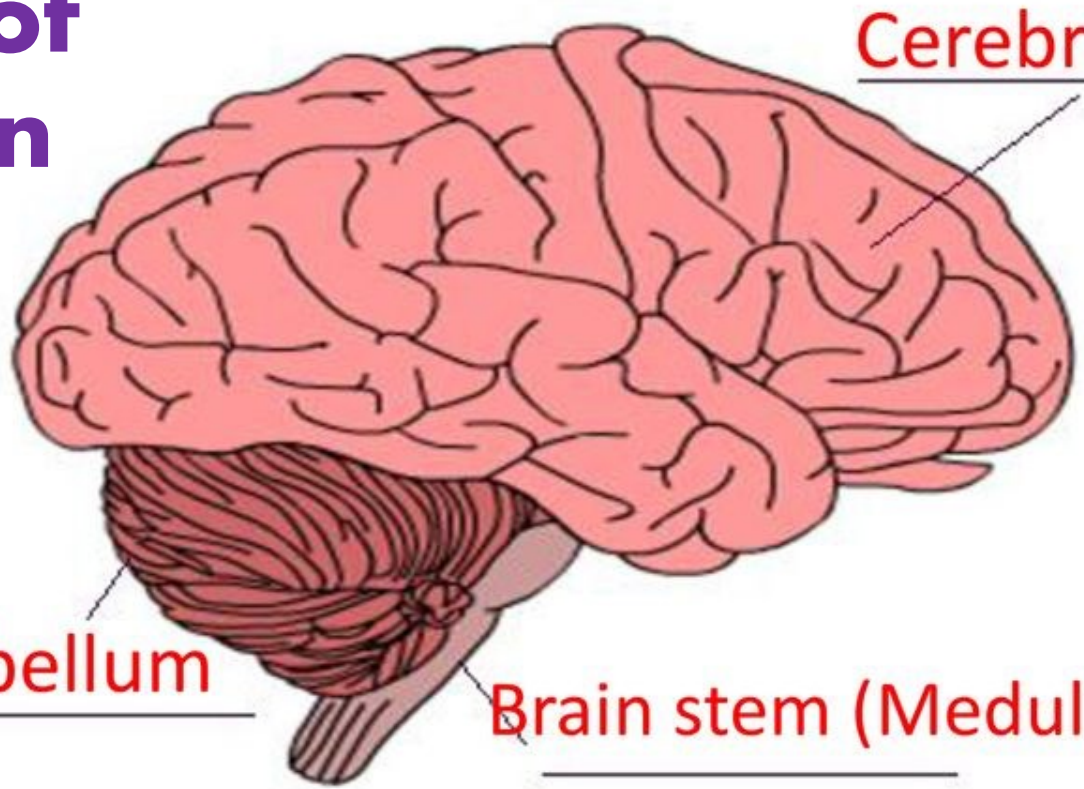
i. Cerebellum

ii. Medulla

iii. Pons

- *The three regions of the hindbrain coordinates all processes necessary for survival. These induce breathing, heartbeat, sleep, wakefulness and motor learning.*

Parts of Human Brain



Brain stem

- Changes in heart rate
- Breathing, blood pressure, vomiting, swallowing
- Digestion

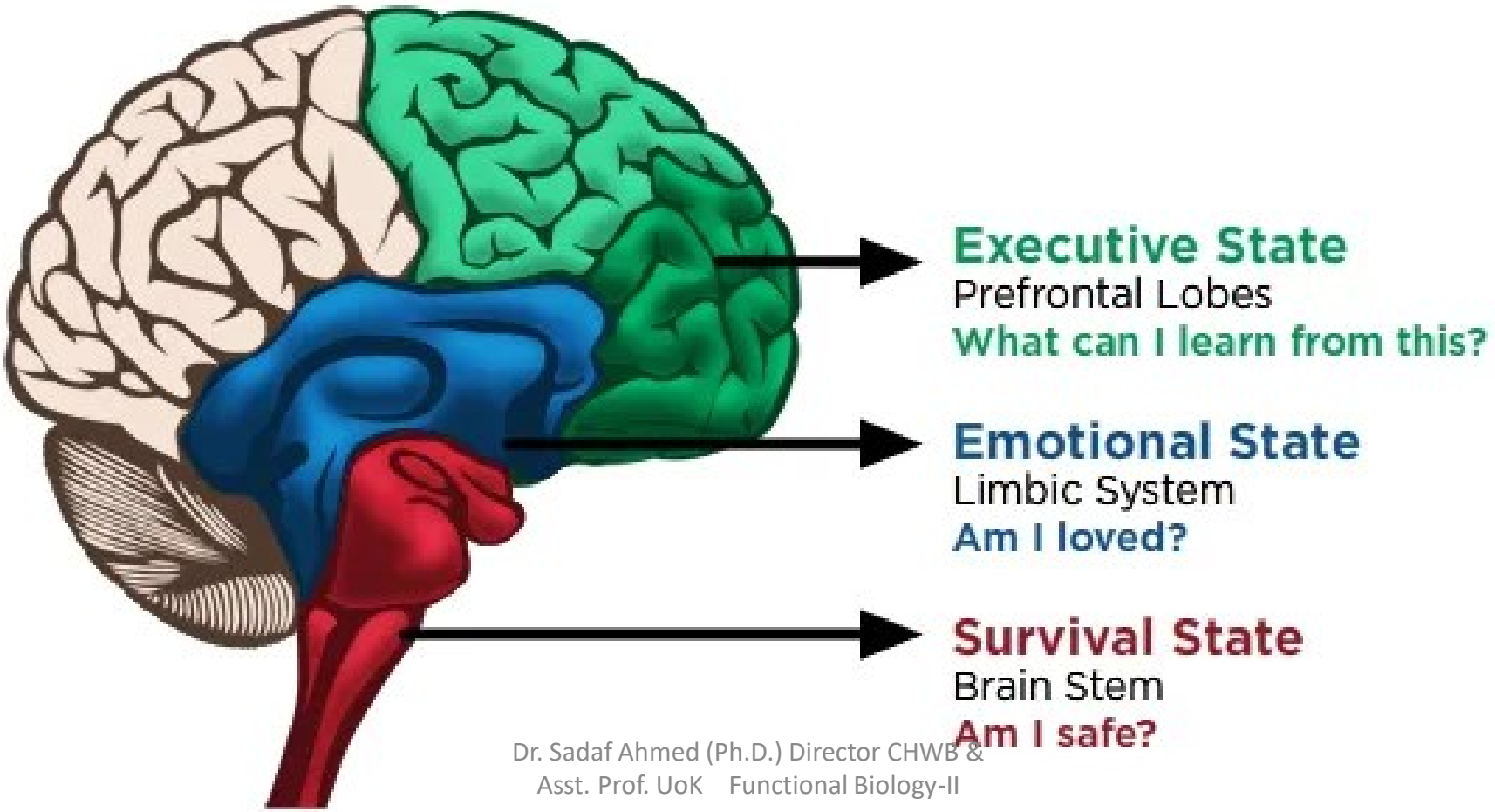
Cerebrum

- Intelligence, learning, judgment
- Speech and memory
- Sense of hearing, vision, taste and smell
- Skeletal muscle movements

Cerebellum

- Balance and coordination
- Posture

The Emotional Brain

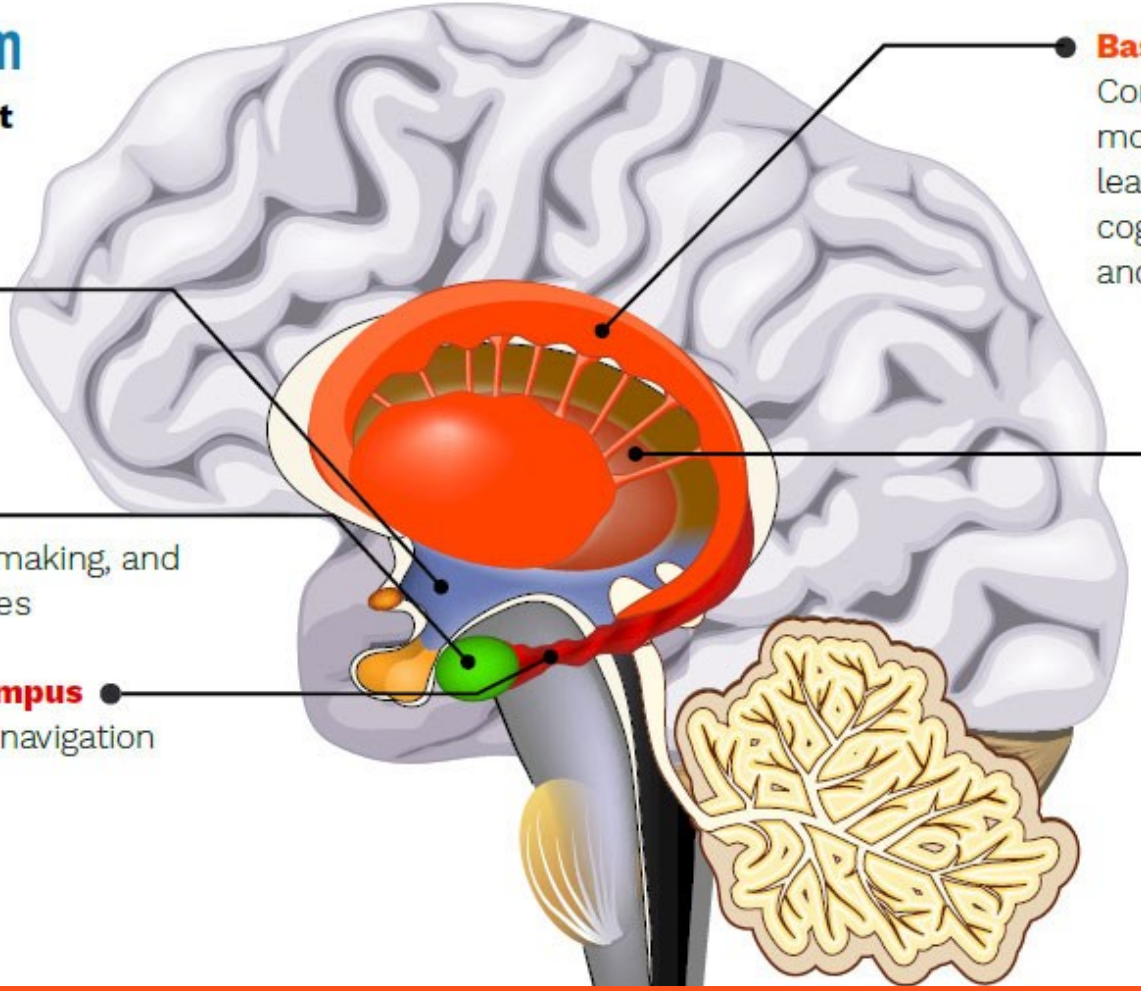


The emotional brain has three parts:

- **Prefrontal cortex:** Logical reasoning and thinking part of the brain
- **Limbic system:** The “alarm system” and home of the amygdala (emotional control center)
- **Brainstem:** Part of the brain that responds to the limbic system alert signals with fight, flight, or freeze

The Limbic System

Regions of the brain most relevant to emotional intelligence



Basal ganglia
Control of movements, learning, habit, cognition, and emotion

Hypothalamus
Controls body temperature, hunger, fatigue, sleep

Thalamus
Regulation of sleep, consciousness, and alertness

Amygdala
Memory, decision-making, and emotional responses

Hippocampus
Memory, navigation

The brain is responsible for thoughts, feelings, and actions. Those feelings we experience are emotions. Brain regions including the amygdala, the insula, and Basal Ganglia– just to name a few – are part of the brain's limbic or emotion system, and are responsible for summoning these feelings. This system helps us to seek out the things we both want and need, protect ourselves from harm, and socially connect with others. Emotions tend to be intense, depending on the situation you find yourself in and, for the most part, last only a short time, soon to be replaced by the next feeling you need to help you navigate the world around you.

ZONES OF REGULATION!

Blue	Green	Yellow	Red
			
Sick Sad Tired Bored Moving Slowly	Happy Calm Good to Go Focused Ready to Learn	Frustrated Worried Silly/Wiggly Anxious Excited	Mad/Angry Mean Yelling/Hitting Out of Control I Need Time and Space

All of these brain waves are available always.

YOUR UNIQUE BRAINWAVE PROFILE

Delta

Function:
- Facilitate quick healing

Increased through:
- Sleep, meditation

Too much:
- Learning problems

Optimal:
- Restorative, deep sleep

Too little:
- Poor sleep

Alpha

Function:
- Calm nervous system

Increased through:
- Closed eyes, relaxing

Too much:
- Daydreaming

Optimal:
- Flow state, relaxation

Too little:
- Anxiety, insomnia, OCD, stress

Theta

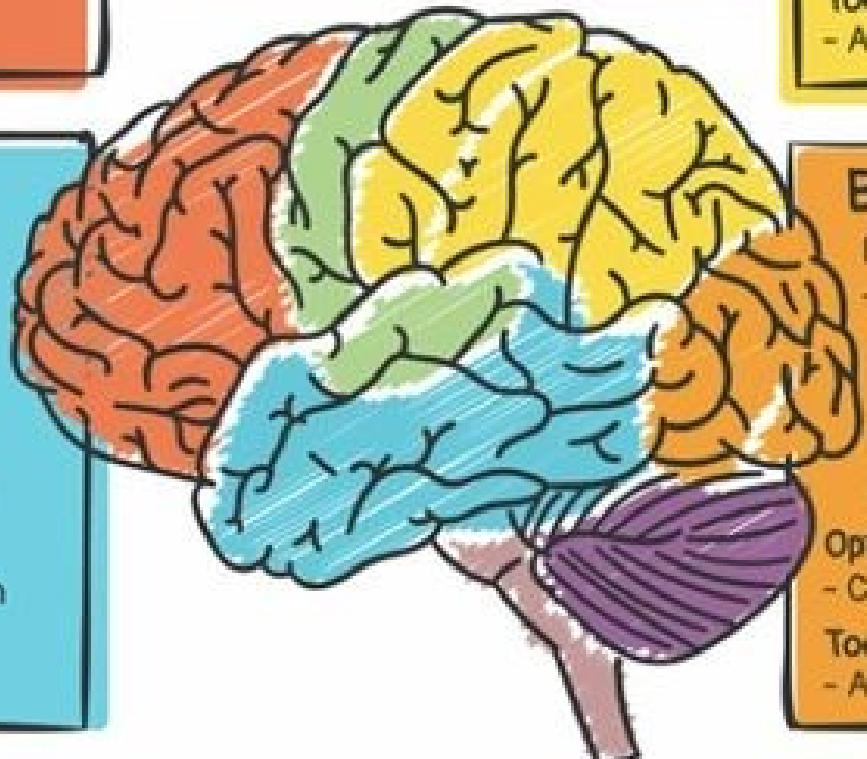
Function:
- Encourage creativity

Increased through:
- Deep breathing

Too much:
- Depression, ADHD

Optimal:
- Flow state, creativity

Too little:
- Anxiety, stress



Gamma

Function:
- Decrease anxiety & fear

Increased through:
- Using imagination

Too much:
- Stress, high arousal

Optimal:
- Learning, perception

Too little:
- ADHD, depression

Beta

Function:
- Create awareness

Increased through:
- Caffeine, thinking

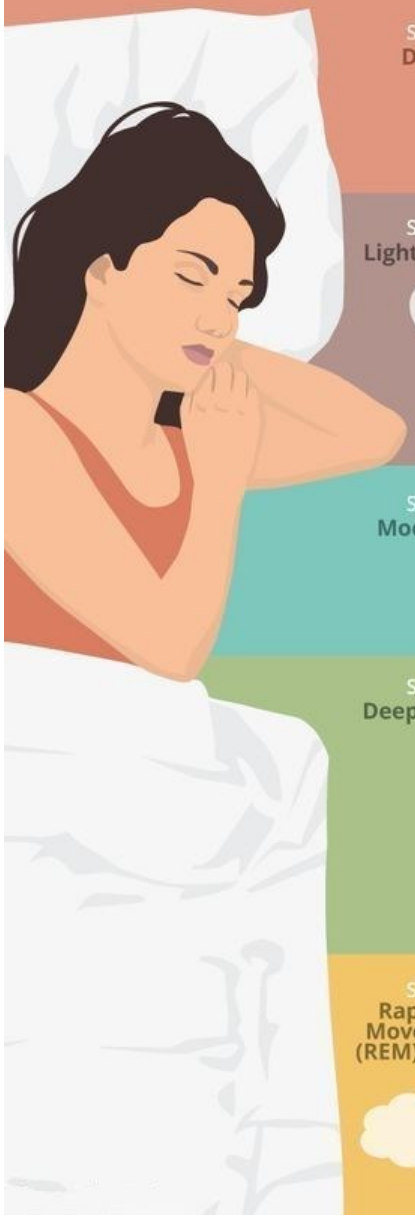
Too much:
- Stress, adrenaline

Optimal:
- Concentration & focus

Too little:
- ADHD, poor cognition

The Five

Stages of Sleep



STAGE 1
Drowsy

First 5-10 minutes of sleep cycle. This is the transition between wakefulness and sleep where the brain produces theta waves.

STAGE 2
Light Sleep

Lasts about 20 minutes and your brain starts to produce rhythmic brain waves known as sleep spindles. **Body temperature starts to decrease and heart rate slows down.**

STAGE 3
Moderate Sleep

Brain starts to produce **deep and slower brain waves** called delta waves.

STAGE 4
Deep Sleep

A very deep sleep that **lasts about 30 minutes**. If prone to sleepwalking, it would occur during the end of this stage.

STAGE 5
Rapid Eye Movement (REM) Sleep

Muscles become more relaxed while brain system is more active. **Dreaming occurs during stage five** because of the increase in brain activity and the temporary paralysation of voluntary muscles.