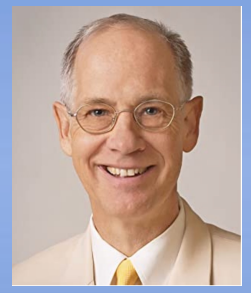
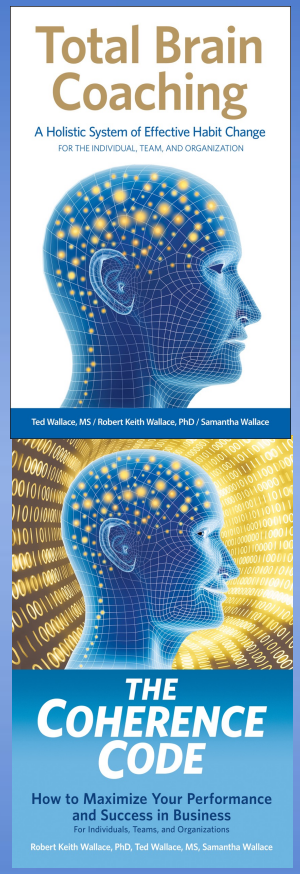
THE POWER OF NEUROTRANSMITTERS

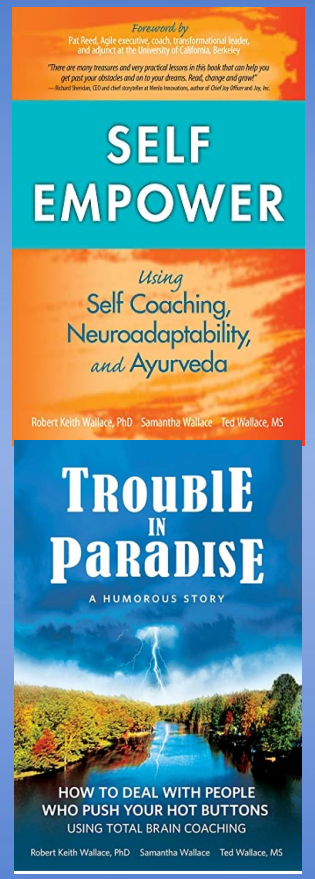
ENHANCE YOUR LEARNING AND CREATIVITY

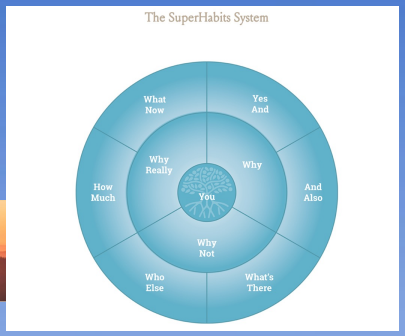
Ted Wallace, MS
Agile/Technical Coach

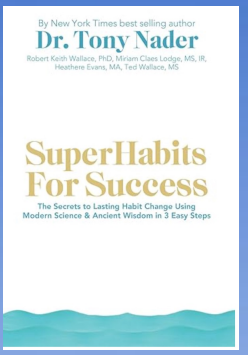
How did we get here?

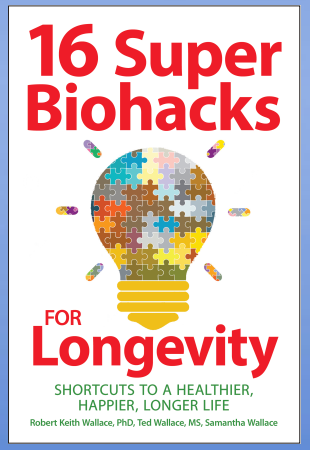


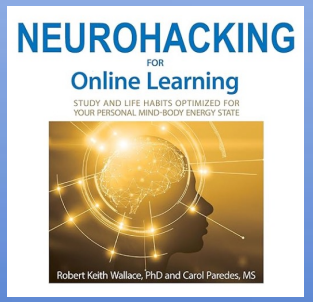


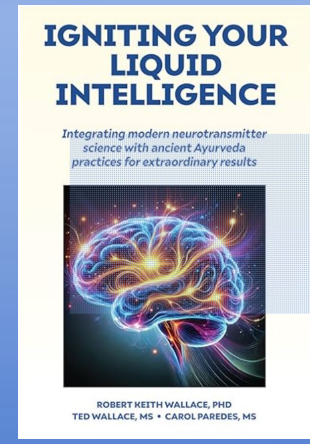












2010 2019 2020 2021 2023 2024 2025

CSM CTC

IGNITING YOUR LIQUID INTELLIGENCE

Integrating modern neurotransmitter science with ancient Ayurveda practices for extraordinary results

ROBERT KEITH WALLACE, PHD
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Brain is Amazing at handling complexity

The human brain is considered to be the most complex organ in the body and one of the most complex structures in the universe. The brain's complexity is due to a number of factors, including:

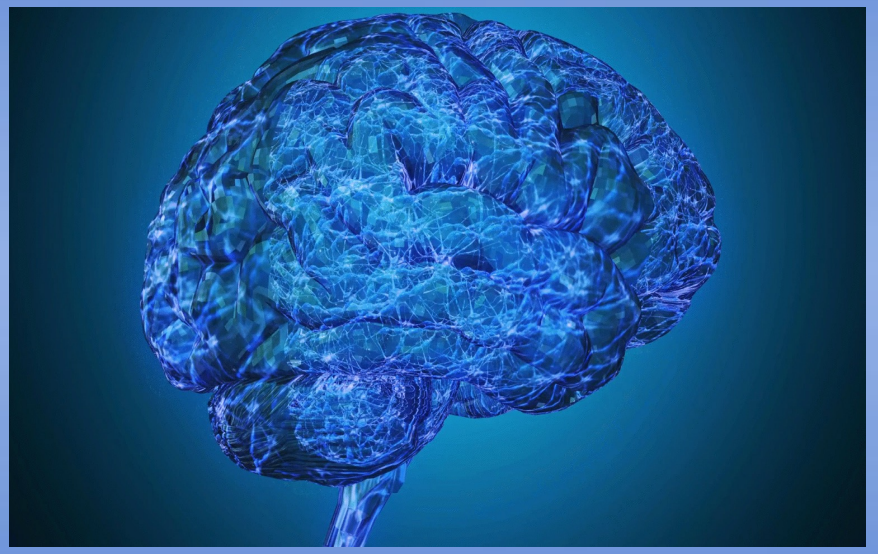
•Number of neurons: The brain contains around 86 billion neurons, each of which connects to thousands of other neurons.

•Connections: The brain has over 100 trillion connections between neurons.

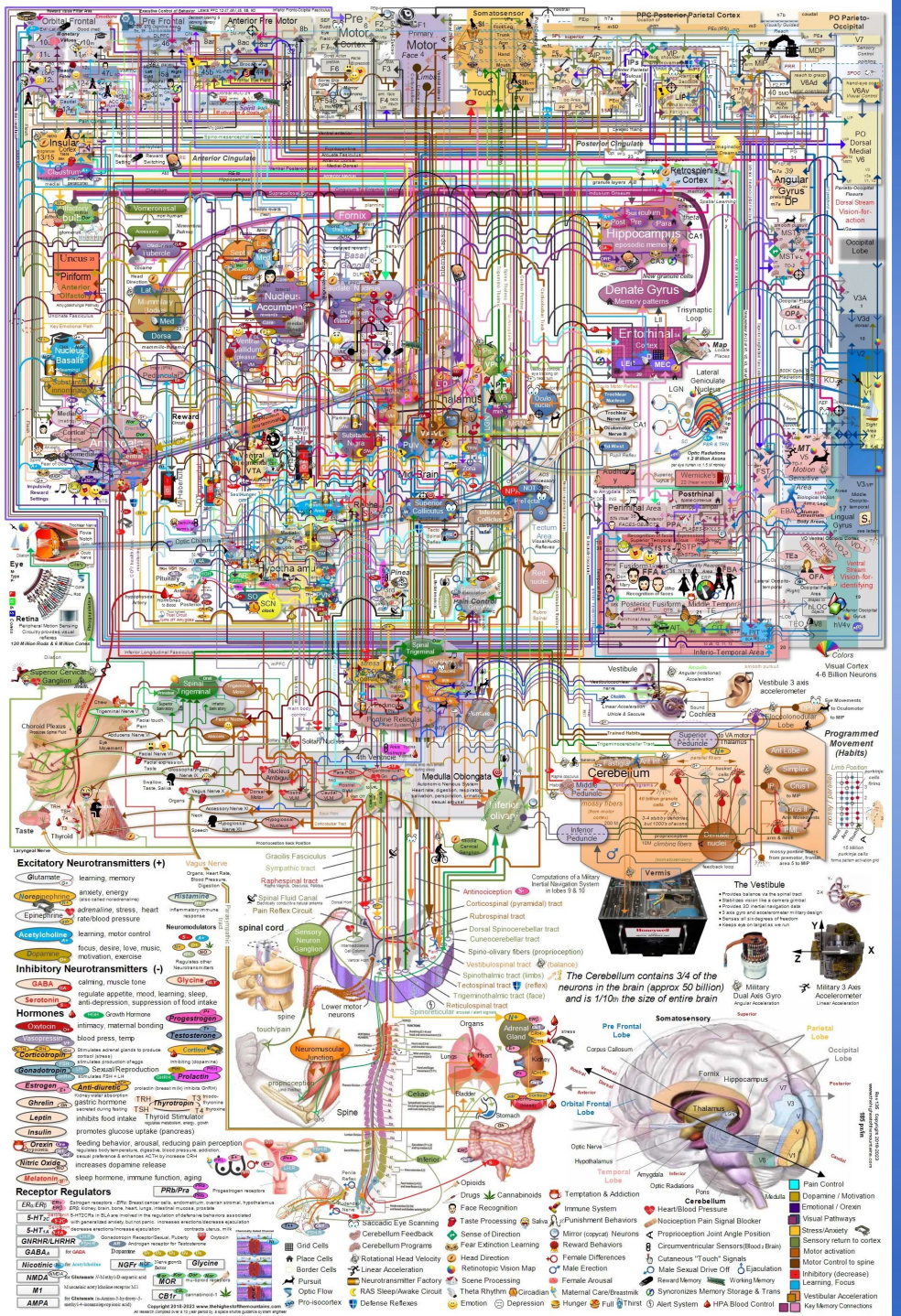
•Interactions: The brain's many complex connections and interactions give it an intricate functioning whole.

•Learning: The brain's ability to learn is one of its most important characteristics.

•Energy efficiency: The brain can perform the equivalent of an exaflop of mathematical operations per second with just 20 watts of power.



A tiny amount of the complexity



One of the main ways the brain handles complexity is balance

1. Homeostatic Plasticity: Maintaining Neural Stability

Homeostatic plasticity refers to the brain's ability to regulate its own excitability in response to changes in network activity.

2. Allostasis: Predictive Regulation for Efficiency

Beyond maintaining stability, the brain employs allostasis—a process of achieving stability through change. Allostasis involves the brain's predictive regulation of physiological systems to meet anticipated demands, optimizing efficiency.

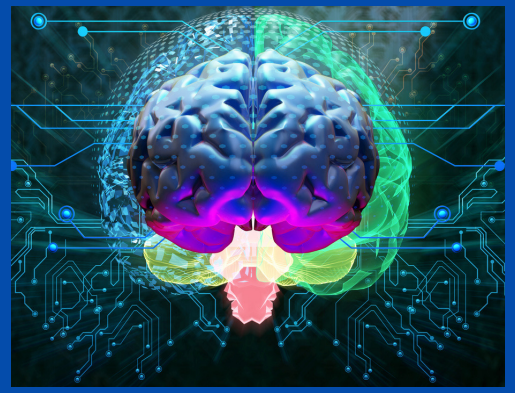
3. Hemispheric Integration: Balancing Specialized Functions

The brain's two hemispheres have specialized functions: the left hemisphere is typically associated with analytical and logical tasks, while the right hemisphere is linked to holistic and intuitive processing. Effective cognitive functioning relies on the integration and balance of these hemispheric activities.

4. Network Dynamics: Balancing Segregation and Integration

At the network level, the brain balances segregation (specialized processing within distinct regions) and integration (coordinated activity across regions).

BALANCING YOUR NEUROTRANSMITTERS

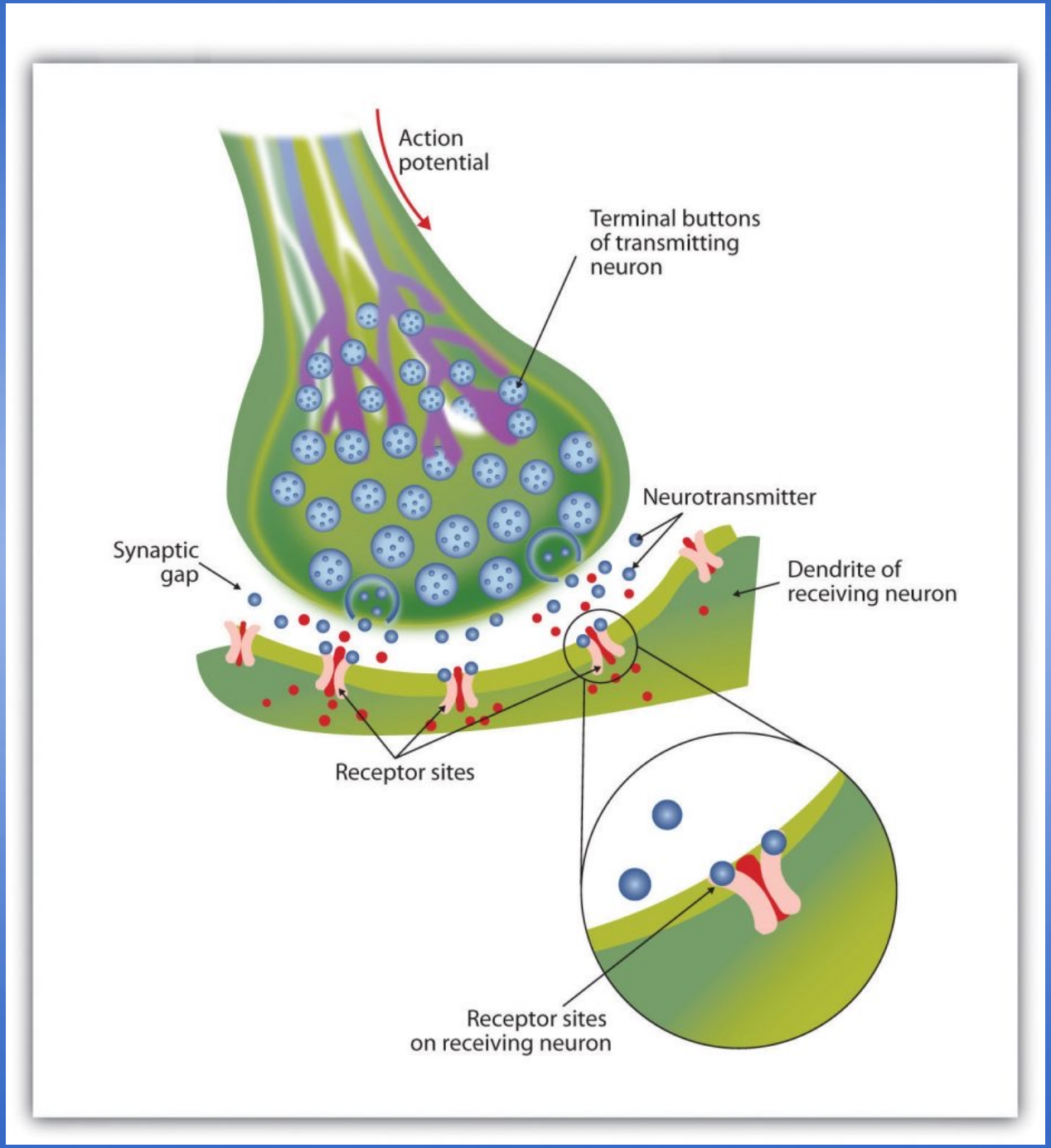


Be aware who you are.

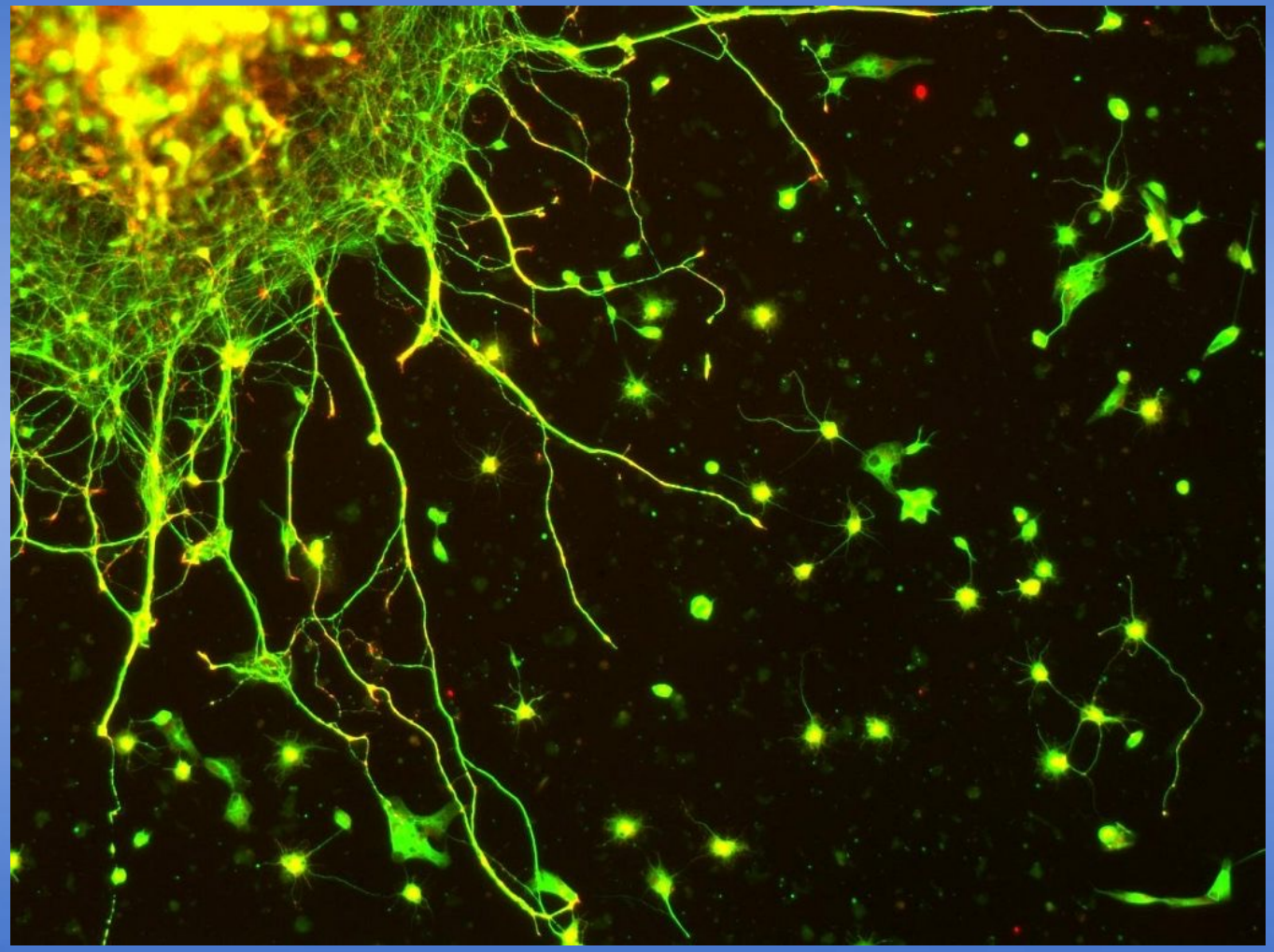
Who is in control of your brain?

What are Neurotransmitters?

A **neurotransmitter** is a chemical messenger released by neurons (nerve cells) to transmit signals across a **synapse** — the small gap between the sending (presynaptic) neuron and the receiving (postsynaptic) neuron or target cell (e.g., muscle, gland).



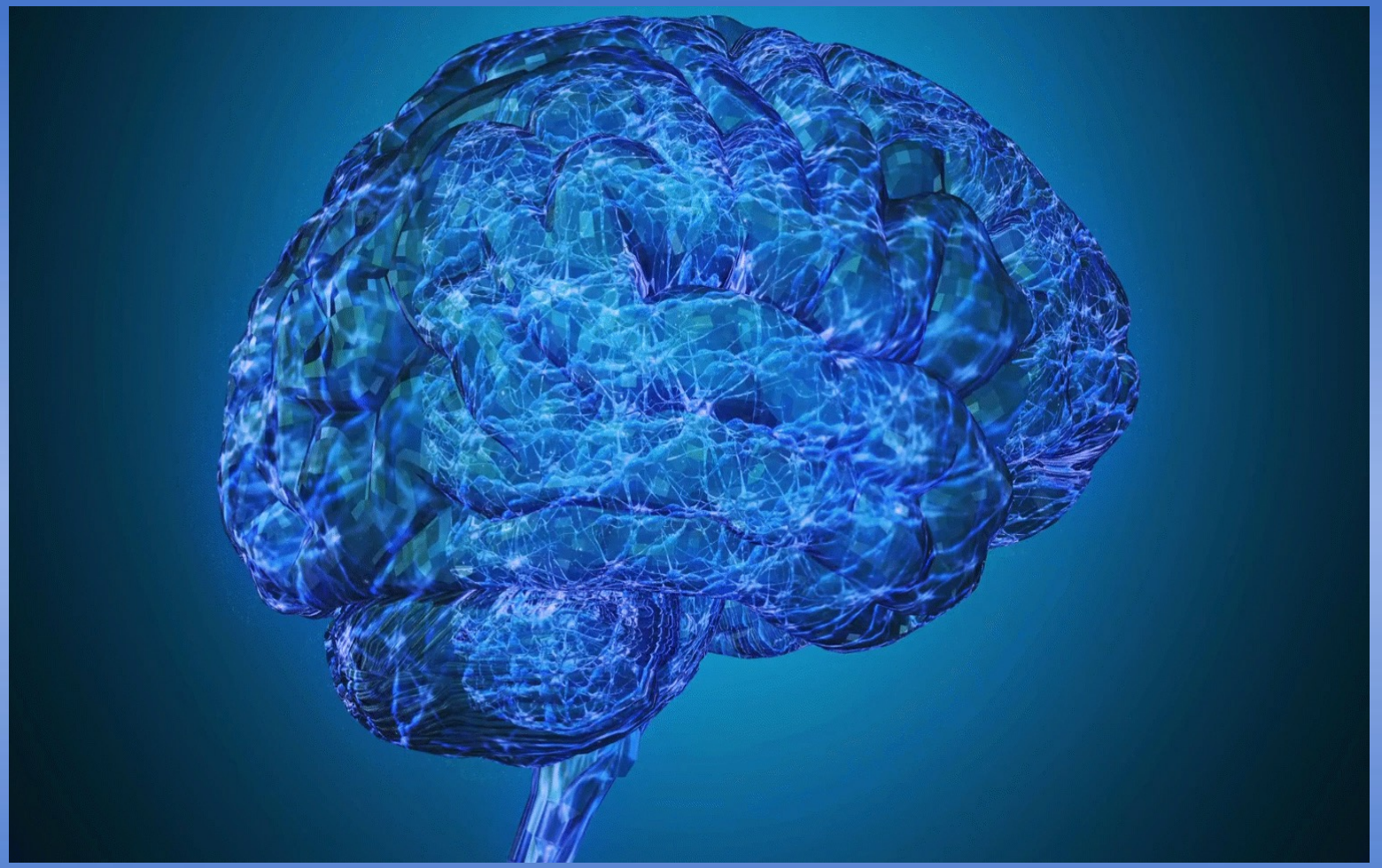
How do Neurotransmitters help with Complexity?



In a complex environment, the brain uses neurotransmitters to **adjust network activity**:
For example-

- Dopamine modulates motivation and reward prediction errors.
- Serotonin influences mood, patience, and adaptability.
- GABA and glutamate balance neural excitability, preventing overload.
- Acetylcholine enhances signal-to-noise ratio for learning and attention.

Neuroplasticity is Your Greatest Super Power

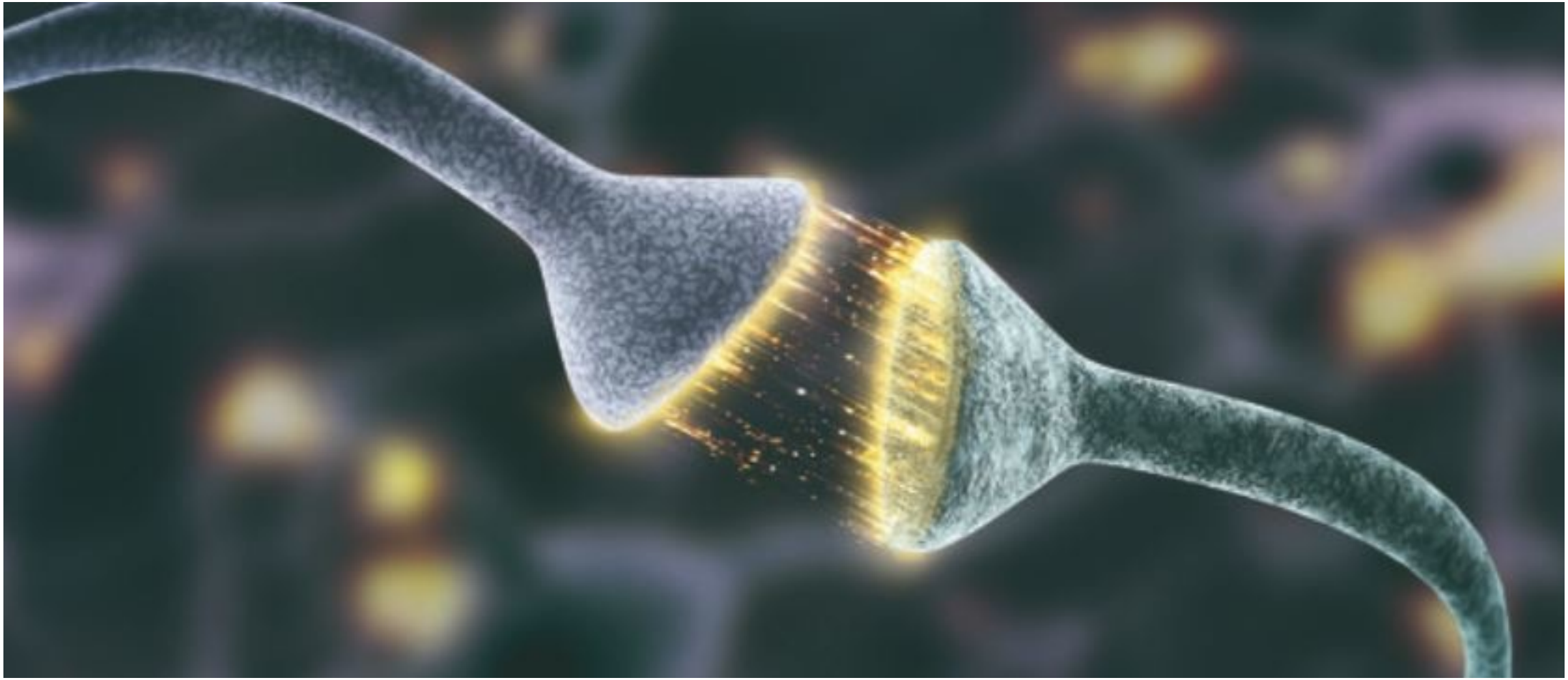


Learning from Complexity
Some chemicals (dopamine, acetylcholine) help you *rewire* your brain.

This is called **neuroplasticity** — learning new skills, breaking bad habits, and adapting when life throws curveballs.

Self-Correction Loops
Your thinking brain (prefrontal cortex) can *turn the dials* on these chemicals so you react the right way to what's happening.

Your body also sends signals back (stress, excitement, boredom), which makes your brain adjust again.
This is how you stay balanced instead of stuck in overdrive or shut-down.

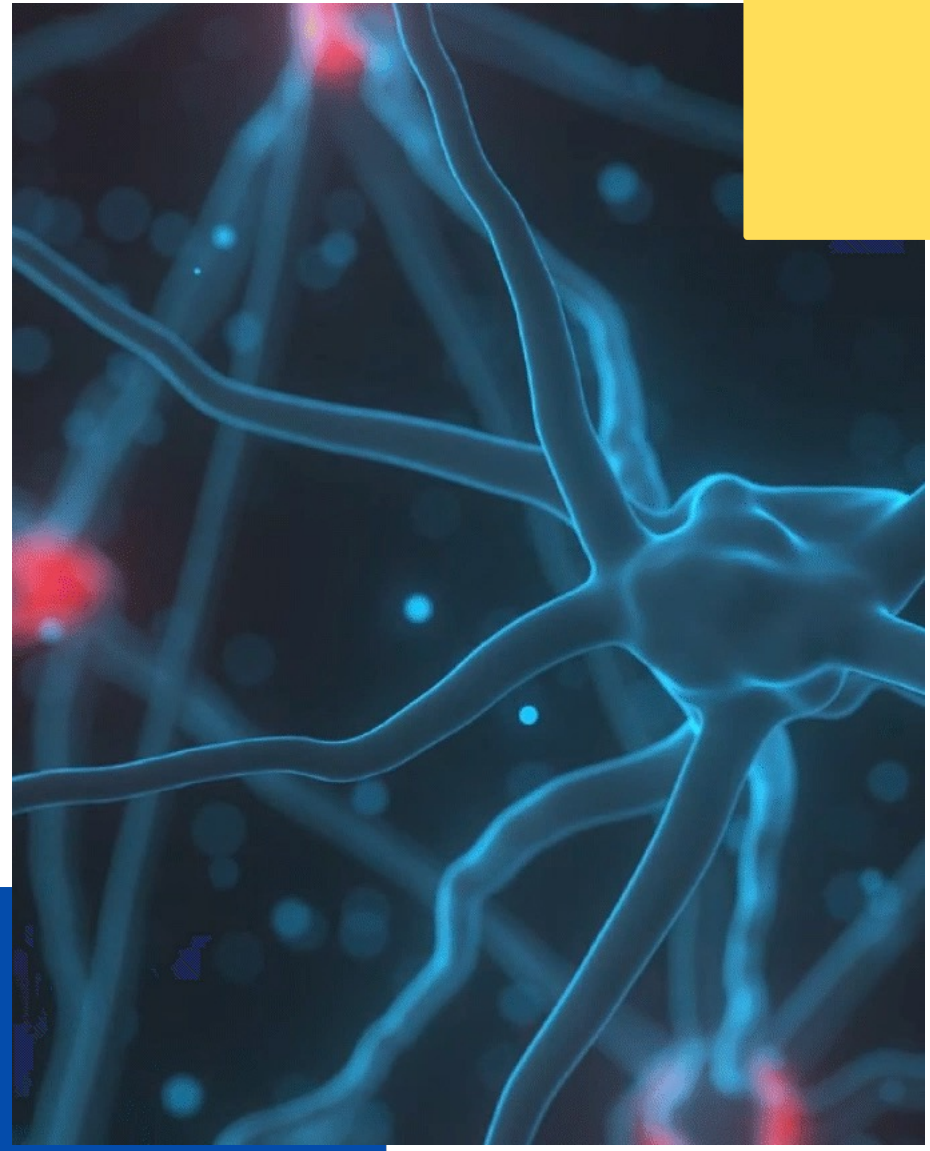


Neurons that fire together, wire together

EXPERIENCE CHANGES THE BRAIN

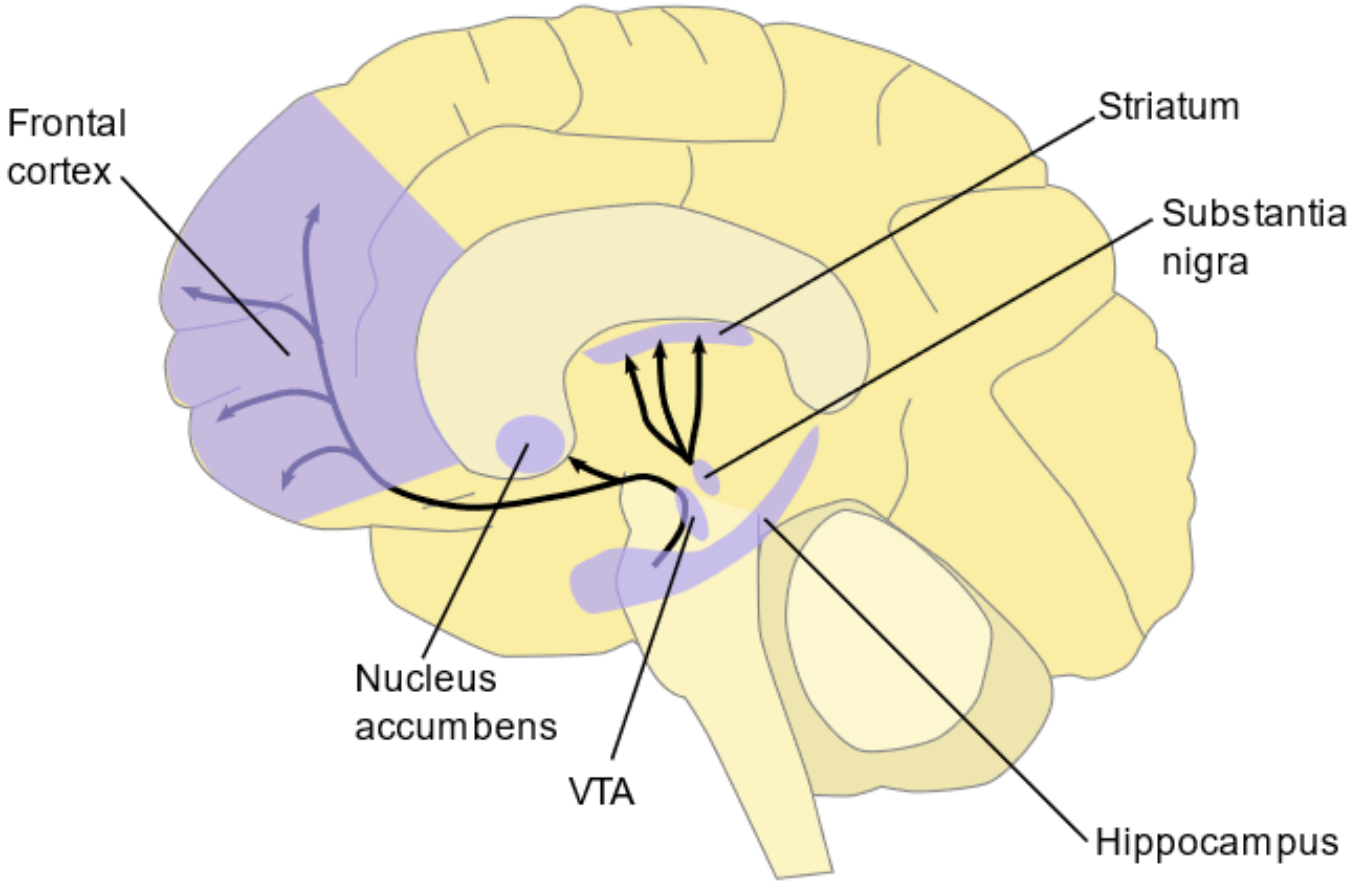
- Between the ages of 0 to 25 we can change a neural circuit in a few days
- After 25 it takes the right combination of chemicals and a period of rest to promote changes in neural circuits

NEURAL CIRCUITS



DOPAMINE SYSTEM (FUTURE)

Dopamine reward system is the basis of healthy motivation as well as unhealthy addictions.



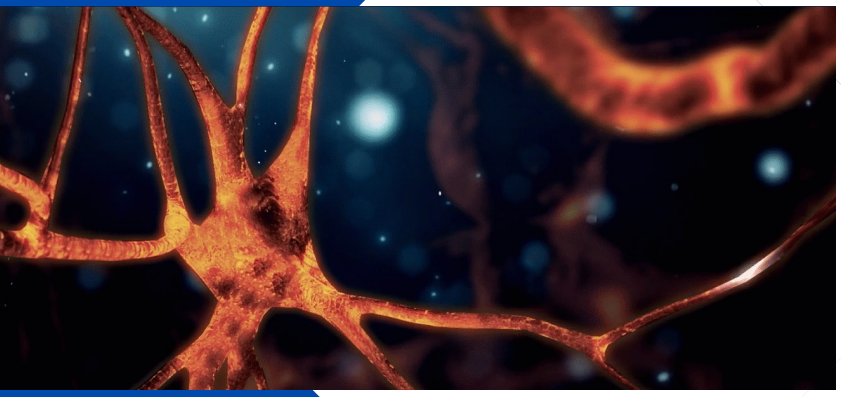
Here & Now Neurotransmitters (Present)

- Serotonin: Mood Stabilizer
- Endorphins: Painkiller
- Oxytocin: Love
- Adrenaline: Alterness
- Acetylcholine: Focus

DOPAMINE

THE MOTIVATOR

DOPAMINE CIRCUITS



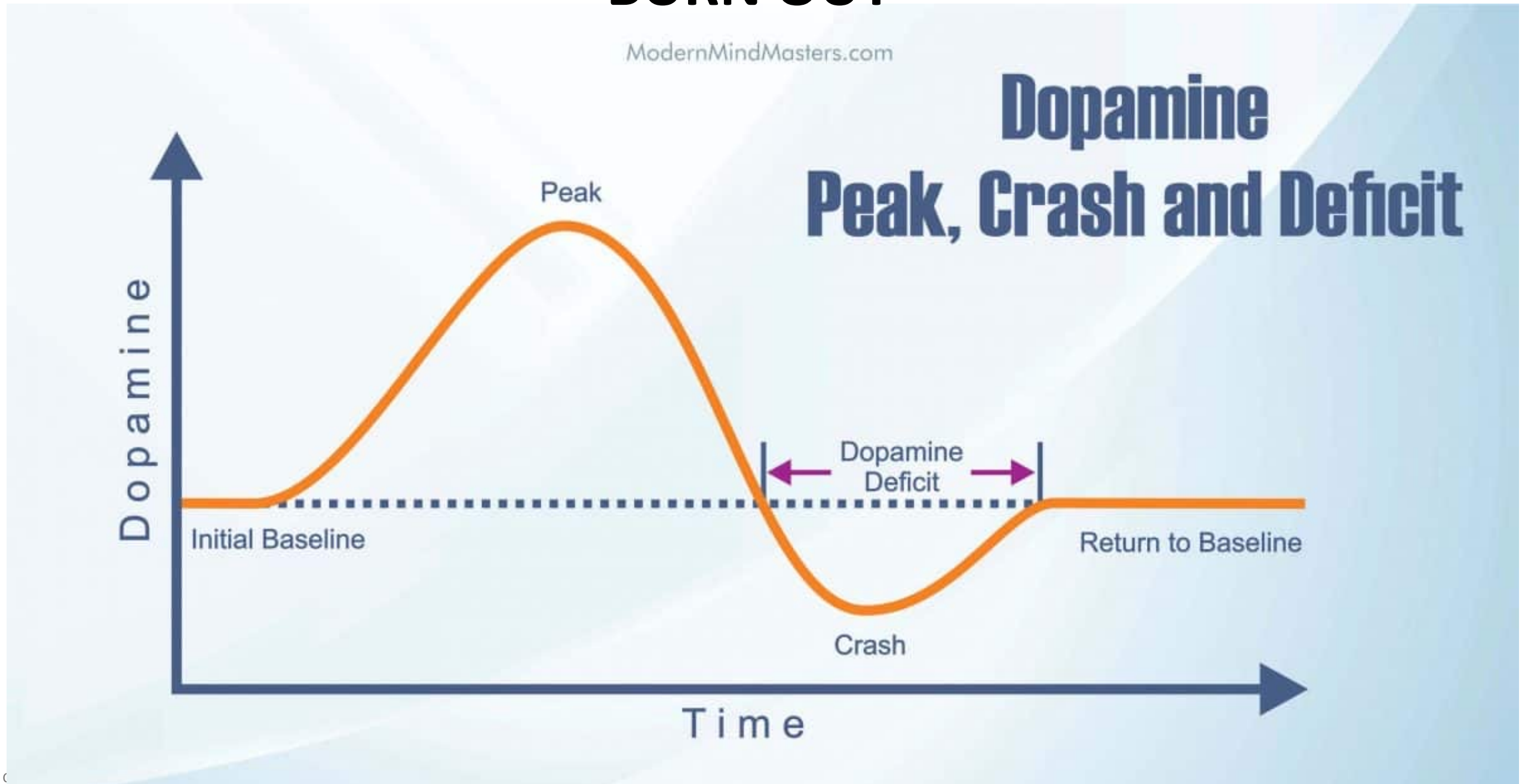
DESIRE CIRCUIT

The desire circuit is turned on when you anticipate something that will make you happy. This circuit is located in the core of the brain and has been essential for our survival. Today, it is being hijacked by addictive drugs, as well as video game and social media.

CONTROL CIRCUIT

The control circuit takes us beyond excitement and motivation, allowing us to evaluate options, selects tools, and plots a strategy to get what it wants. It extends from the core of the brain to its higher centers in the prefrontal cortex.

BURN OUT


ModernMindMasters.com
Dopamine
Peak, Crash and Deficit
Peak
Dopamine
Dopamine Deficit
Initial Baseline
Return to Baseline
Crash
Time

EACH PERSON IS DIFFERENT

- Different DNA
- Different early environment
- Different set of experiences
- Different Energy Types (Ayurveda)

V Energy State

V Energy State	Strongly Disagree / Strongly Agree				
1. Light sleeper, difficulty falling asleep	[1]	[2]	[3]	[4]	[5]
2. Irregular appetite	[1]	[2]	[3]	[4]	[5]
3. Learns quickly but forgets quickly	[1]	[2]	[3]	[4]	[5]
4. Easily becomes overstimulated	[1]	[2]	[3]	[4]	[5]
5. Does not tolerate cold weather very well	[1]	[2]	[3]	[4]	[5]
6. A sprinter rather than a marathoner	[1]	[2]	[3]	[4]	[5]
7. Speech is energetic with frequent changes in topics	[1]	[2]	[3]	[4]	[5]
8. Anxious and worried when under stress	[1]	[2]	[3]	[4]	[5]
V Score	*Total your responses*				

https://su.vc/vquiz

P Energy State

P Energy State	Strongly Disagree / Strongly Agree
1. Easily becomes overheated	[1] [2] [3] [4] [5]
2. Strong reaction when challenged	[1] [2] [3] [4] [5]
3. Uncomfortable when meals are delayed	[1] [2] [3] [4] [5]
4. Good at physical activity	[1] [2] [3] [4] [5]
5. Strong appetite	[1] [2] [3] [4] [5]
6. Good sleeper but may not need as much sleep as others	[1] [2] [3] [4] [5]
7. Clear and precise speech	[1] [2] [3] [4] [5]
8. Becomes irritable and or angry under stress	[1] [2] [3] [4] [5]
P Score	*Total your responses*

https://su.vc/pquiz

K Energy State

K Energy State	Strongly Disagree / Strongly Agree				
1. Slow eater	[1]	[2]	[3]	[4]	[5]
2. Falls asleep easily but wakes up slowly	[1]	[2]	[3]	[4]	[5]
3. Steady, stable temperament	[1]	[2]	[3]	[4]	[5]
4. Doesn't mind waiting to eat	[1]	[2]	[3]	[4]	[5]
5. Slow to learn but rarely forgets	[1]	[2]	[3]	[4]	[5]
6. Good physical strength and stamina	[1]	[2]	[3]	[4]	[5]
7. Speech may be slow and thoughtful	[1]	[2]	[3]	[4]	[5]
8. Possessive and stubborn under stress	[1]	[2]	[3]	[4]	[5]
K Score	*Total your responses*				

https://su.vc/kquiz

Dopamine Desire Circuit

VATA OR V ENERGY

Balanced: Creative and enjoys new ideas

Imbalanced: Attention changes quickly, more impulsive

SUGGESTIONS FOR VATA OR V ENERGY

- Nurture and enjoy the creative energy by finding ways to engage your creativity in the learning process.
- Create a routine to help to help focus.
- Get adequate amounts of sleep.

Dopamine Control Circuit

PITTA OR P ENERGY

Balanced: Goal oriented, high achiever

Imbalanced: Irritable, angry, controlling

SUGGESTIONS FOR PITTA OR P ENERGY

- Celebrate your mistakes as they are valuable learning tools.
- Eat on time to avoid “hangry”
- Stay hydrated and cool.
- Don’t burnout.

Here & Now Neurotransmitters (e.g. Serotonin)

KAPHA OR K ENERGY

Balanced: Steady, reliable, and kind

Imbalanced: Resist change, stubborn

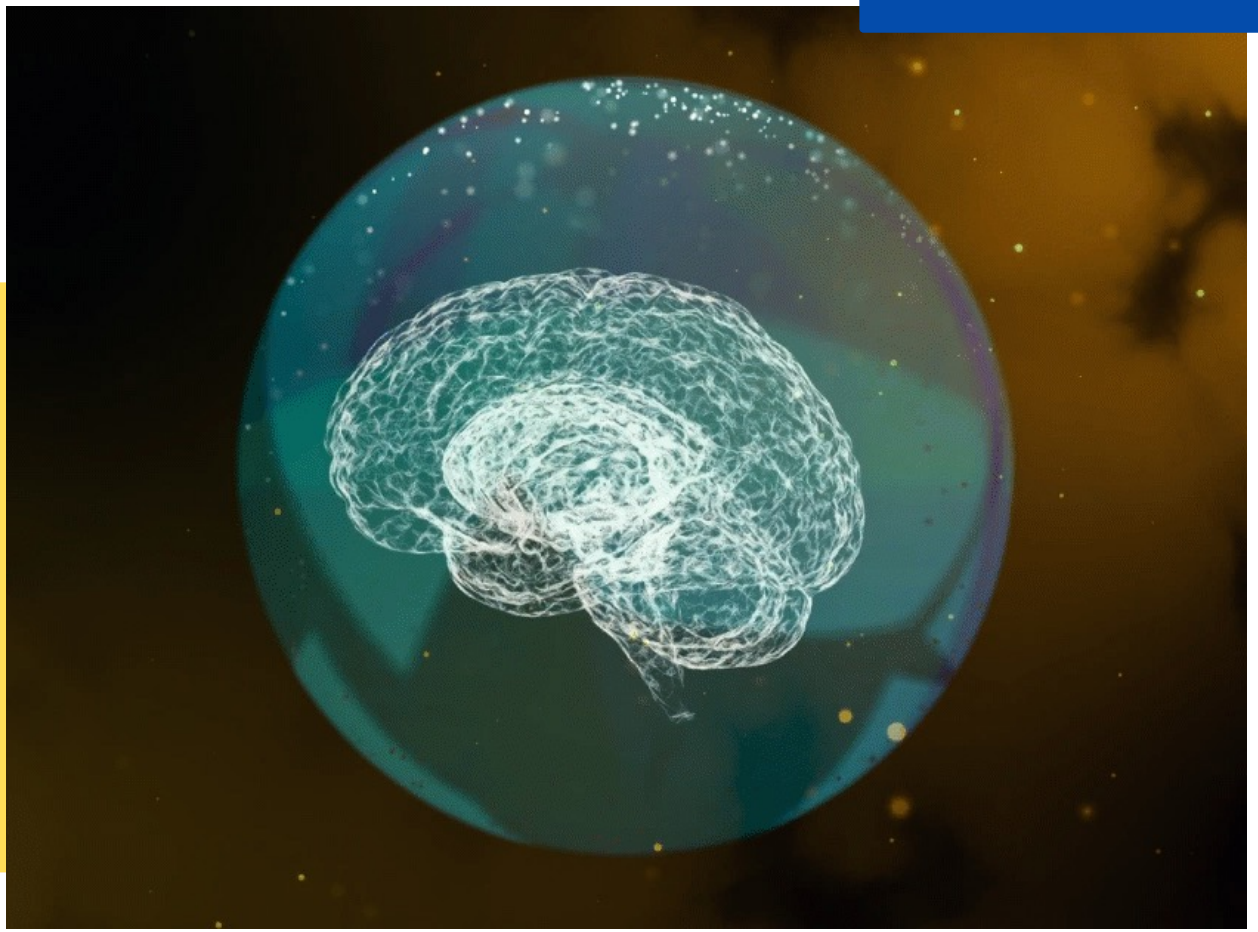
SUGGESTIONS FOR KAPHA OR K ENERGY

- Exercise in the morning and in the afternoon.
- Eat light meals.
- Engage with others.

EXPERIMENT

Protocols to Improve Brain Performance

TIME TESTED NEUROHACKS



Every culture has time-tested knowledge such as:

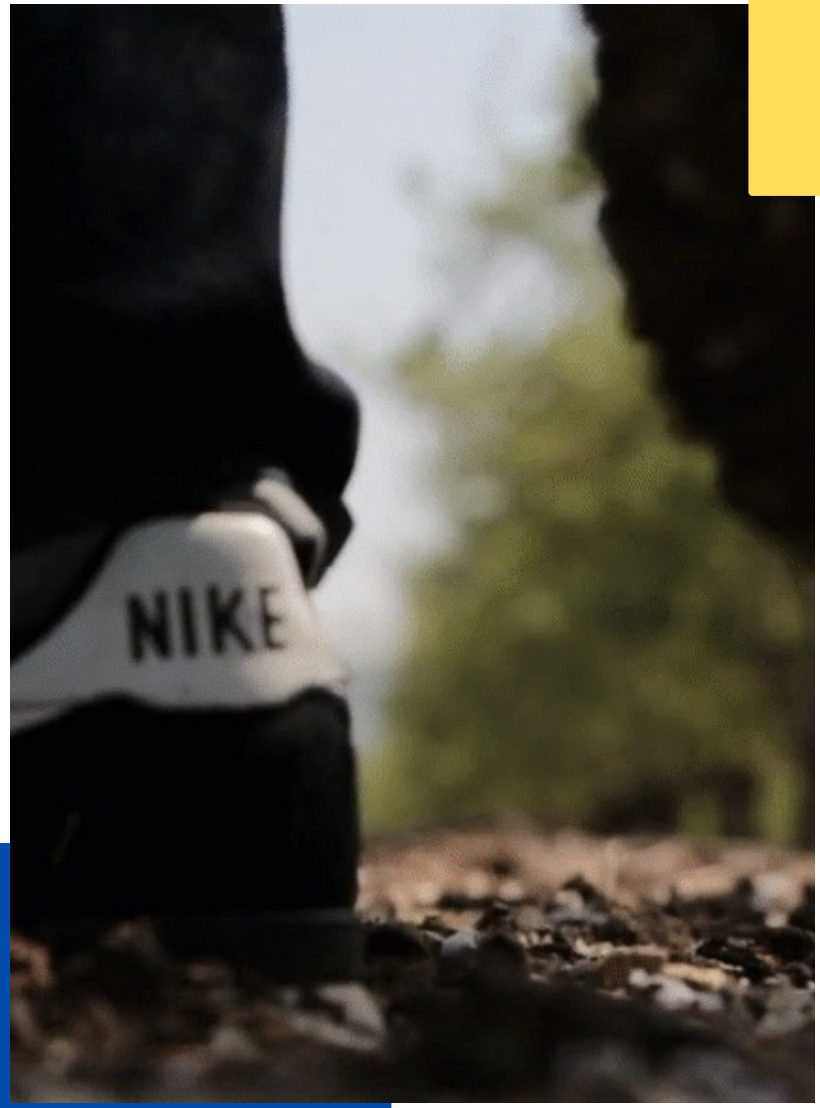
- Meditation
- Diet
- Behavioral Codes
- Exercise
- Sleep
- Sunlight

SUNLIGHT

Resets circadian rhythms

Synchronize biological clocks in DNA of cells with suprachiasmatic nuclei in brain

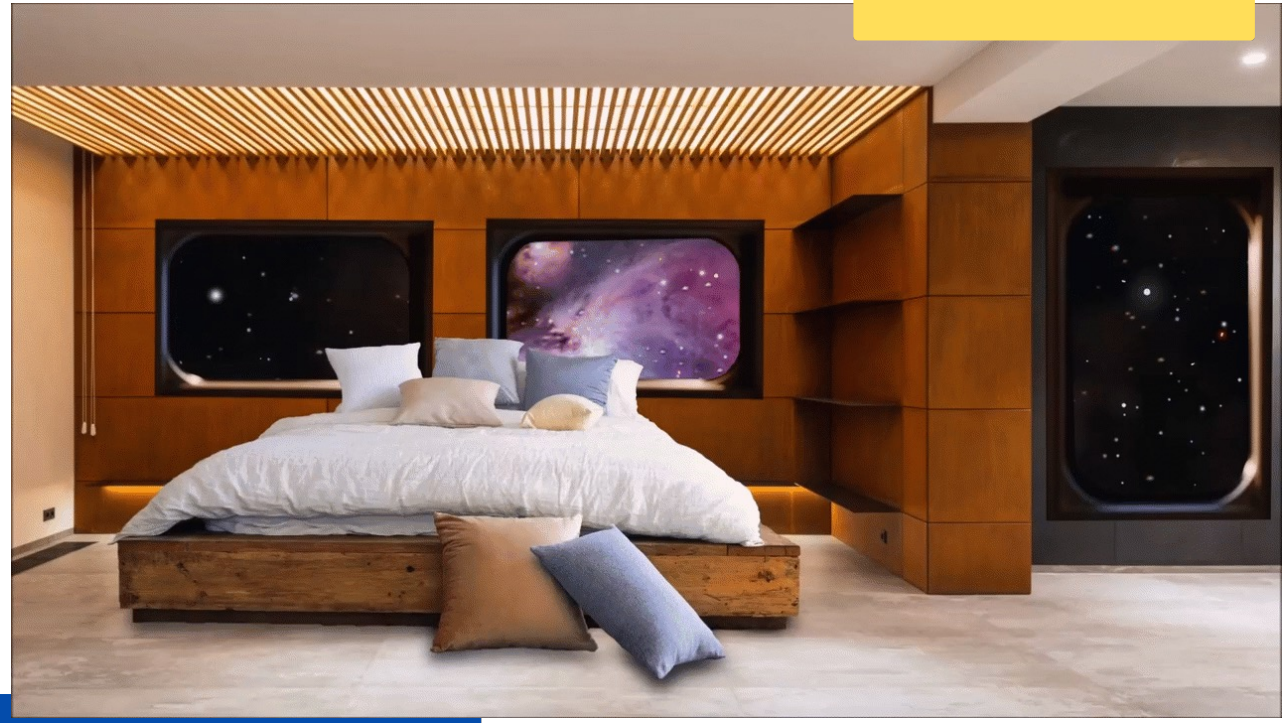
EXERCISE



Number one risk factor for cardiovascular disease is lack of exercise

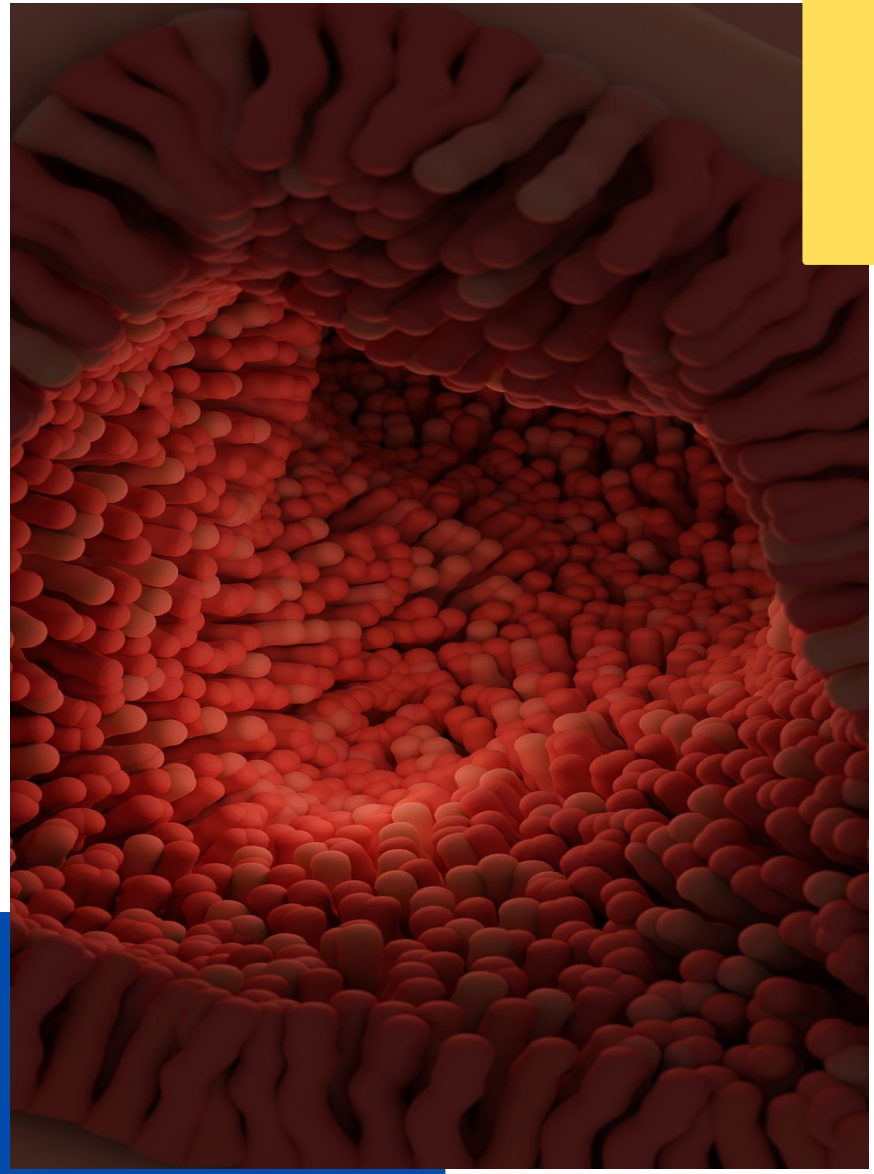
Improves all aspects of mind and body

SLEEP



- Sleep is critical for clearing away toxins that build up in the brain during the day (glymphatic system).
- Numerous studies have correlated lack of sleep with poor mental performance and health problems.

DIET AND DIGESTION



MEDITATION AND YOGA

- Rewires the brain for maximum performance
- Creates better mental and physical health

MINDSET

There is no such thing as failure.

If you don’t succeed, then keep experimenting and adjust.

You can always learn from your mistakes and create a better plan. In every aspect of life there is always room for improvement.

NEUROADAPTABILITY QUIZ

Answer the following questions numerically on a 1 to 5 Scale- 1= NO 3=Maybe 5=YES

https://su.vc/naquiz

1. I interpret difficult challenges as opportunities.
2. I can easily change plans and adapt to new circumstances.
3. Even when something important doesn't work out, it takes me a short amount of time to adjust.
4. I enjoy working with people who like to experiment with new ideas.
5. I take time to adopt new habits and improve my life.
6. I listen carefully when others express their opinions.
7. I value feedback.
8. I encourage other team members to express their ideas.
9. I can perceive and empathize with another person's point of view.
10. My self-talk is generally positive and encouraging.
11. My energy level is good.
12. I have the ideal weight for my body type.
13. I make an effort to exercise appropriately and regularly.
14. I get enough rest at night.
15. I do my best to have a healthy diet.

BE REAL

Four Levels of Assessment and Coaching

- Personal assessment
- Accountability Partner
- Group coaching
- Environmental coaching

A Balanced Brain -

- Creativity
- Adaptability
- Intuition

When not balanced

- Cognitive Biases
- Depression and Anxiety
- Burnout

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