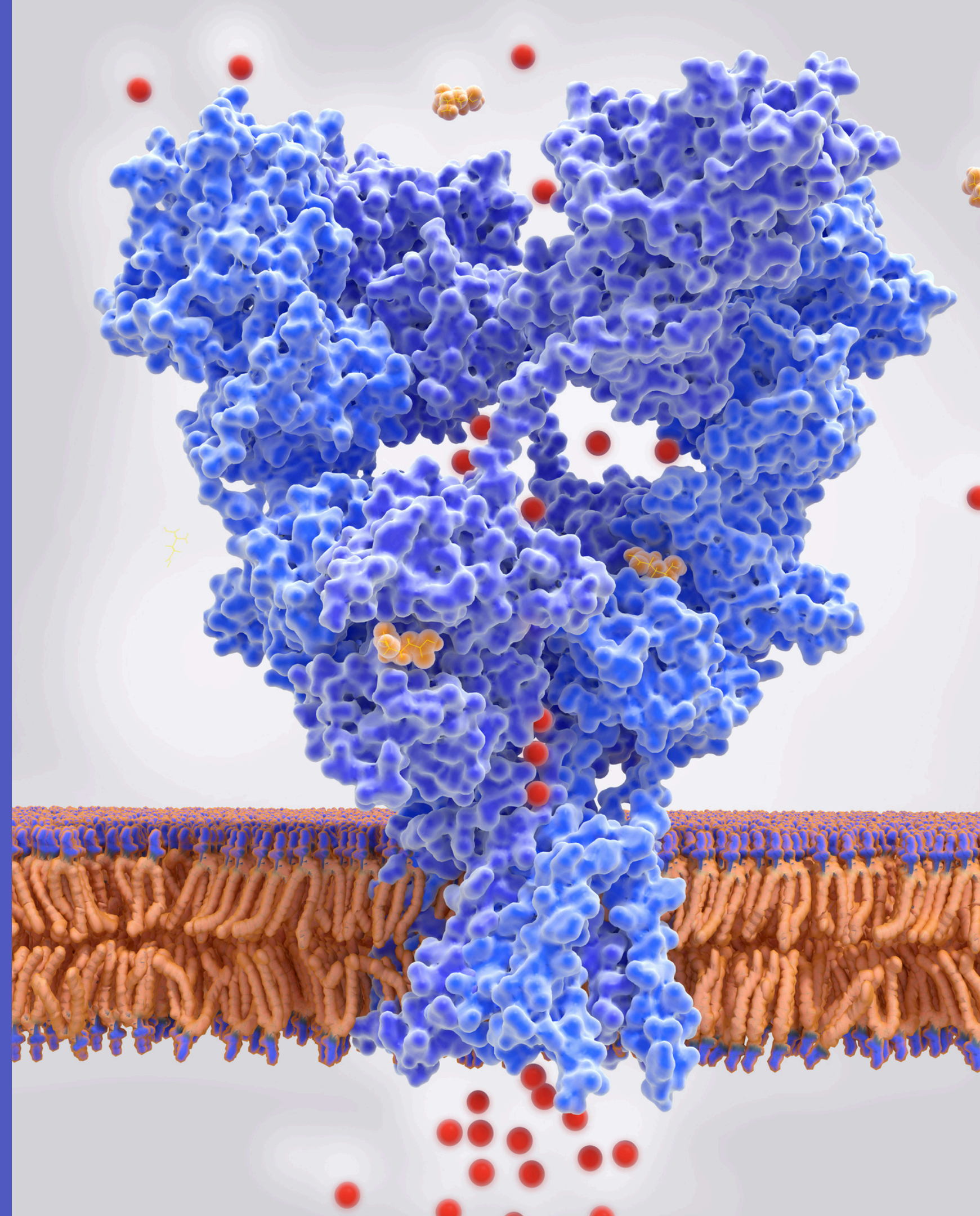


NEURONS & NEUROTRANSMITTERS

The Chemicals That
Control Our Minds



Lessons in Mental Health





Lessons in Mental Health

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- Link: [Neurons and Neurotransmitters](#)
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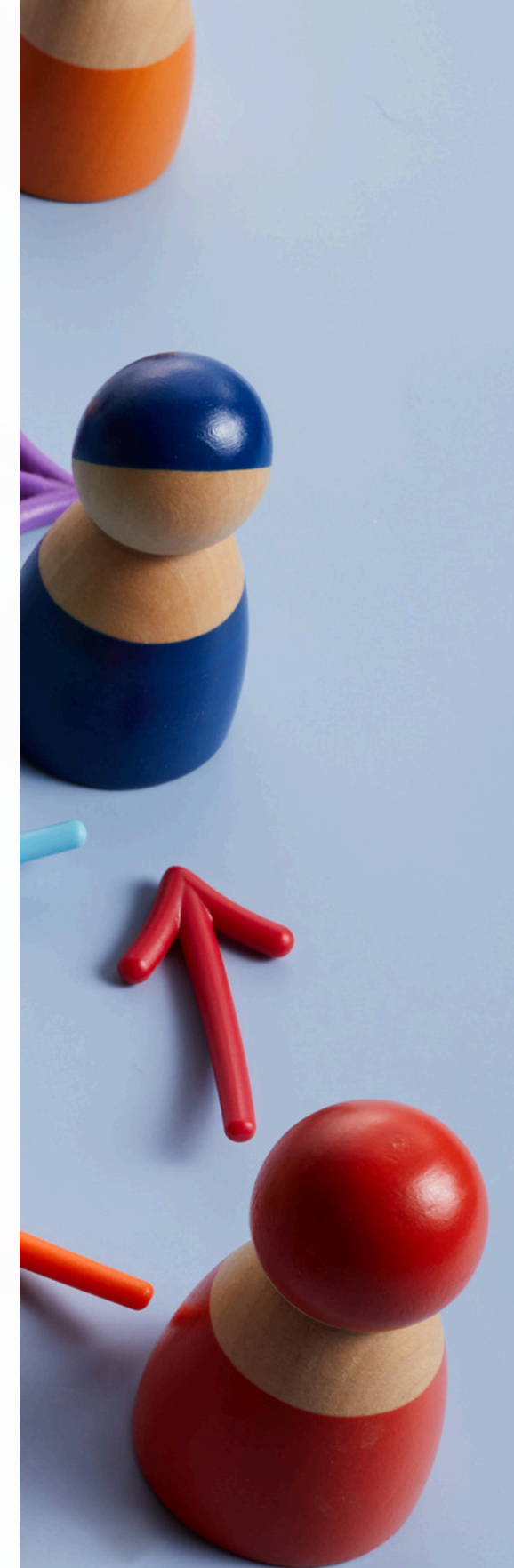
TODAY WE WILL....

- Learn how brain cells send and receive messages
- Understand what neurotransmitters do
- Explore how these chemicals affect behavior
- Compare excitatory and inhibitory neurotransmitters
- Connect neurotransmitter function to mental health

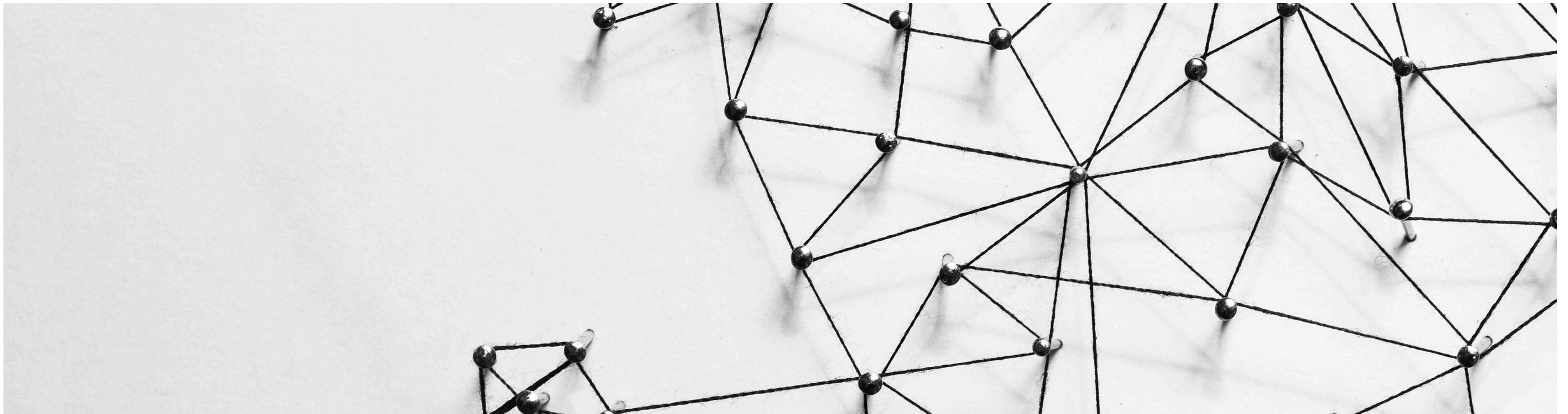
BRAIN COMMUNICATION

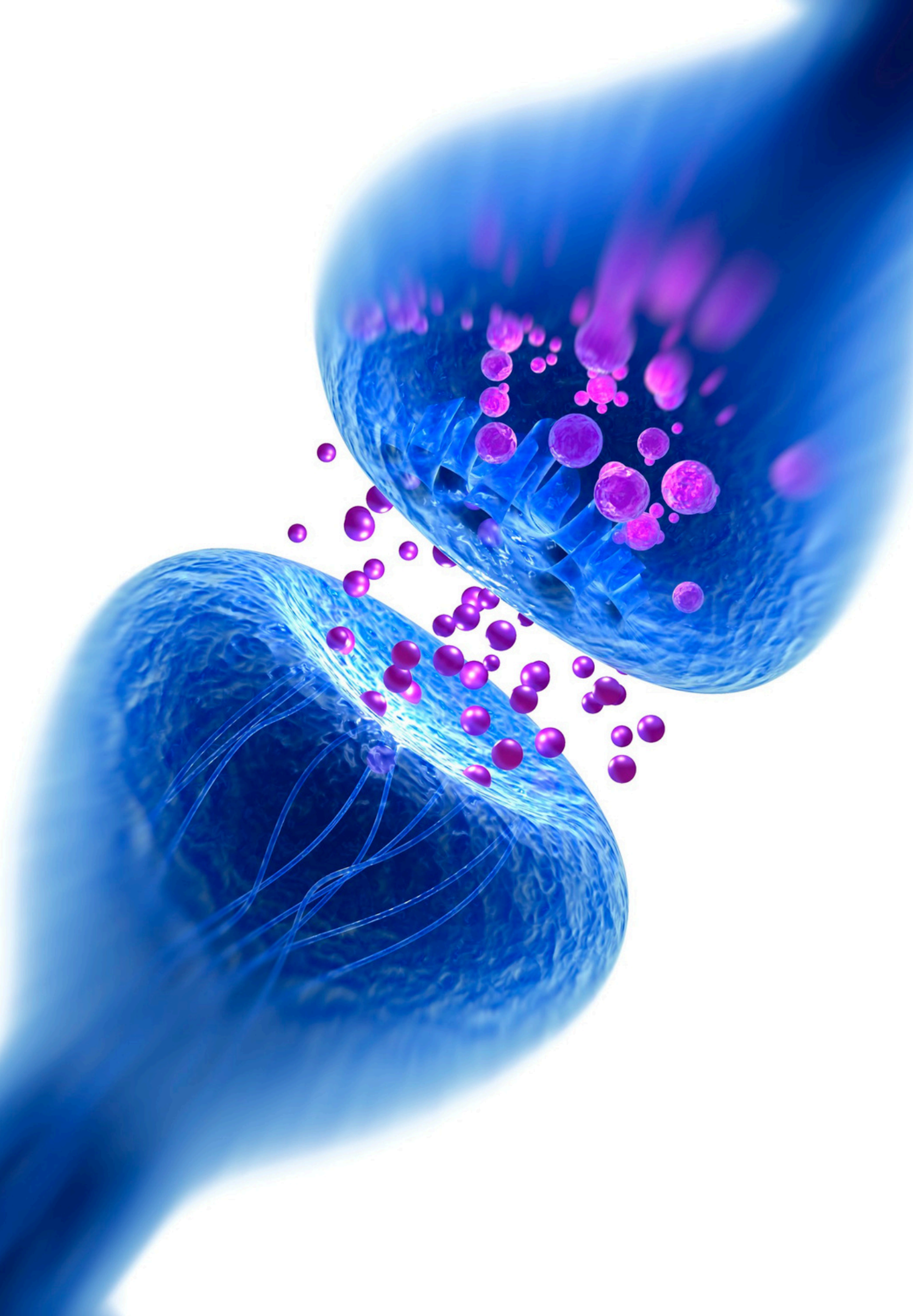
Imagine your brain as a social media network. Just like how people on social media send messages to each other, your brain cells communicate with each other by sending tiny chemical messages.

These messages are called neurotransmitters and are the basis of our thoughts, feelings, and behaviors.



Neurotransmitters are chemical messengers that allow brain cells to communicate with each other.





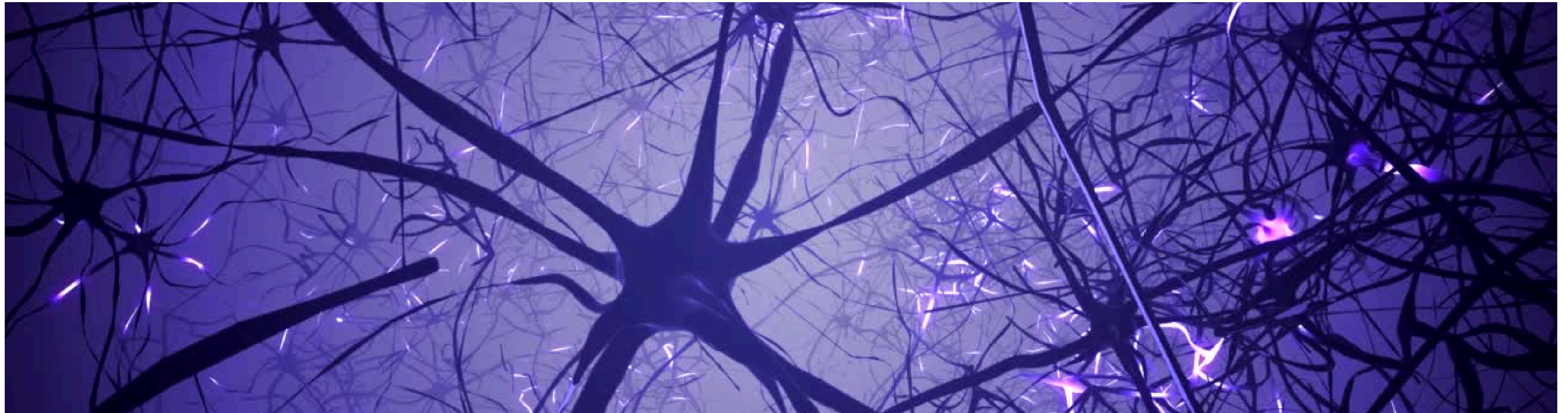
NEUROTRANSMITTERS

Neurotransmitters play a vital role in all of our thoughts, feelings, and actions.

They are involved in regulating our:

- ⦿ Mood
- ⦿ Cognition
- ⦿ Movement
- ⦿ Sensation
- ⦿ Reward
- ⦿ Sleep

**To better understand neurotransmitters, let's
first take a look at neurons and synapses,
the brain's building blocks.**



FILL OUT THE PROVIDED GUIDED NOTES

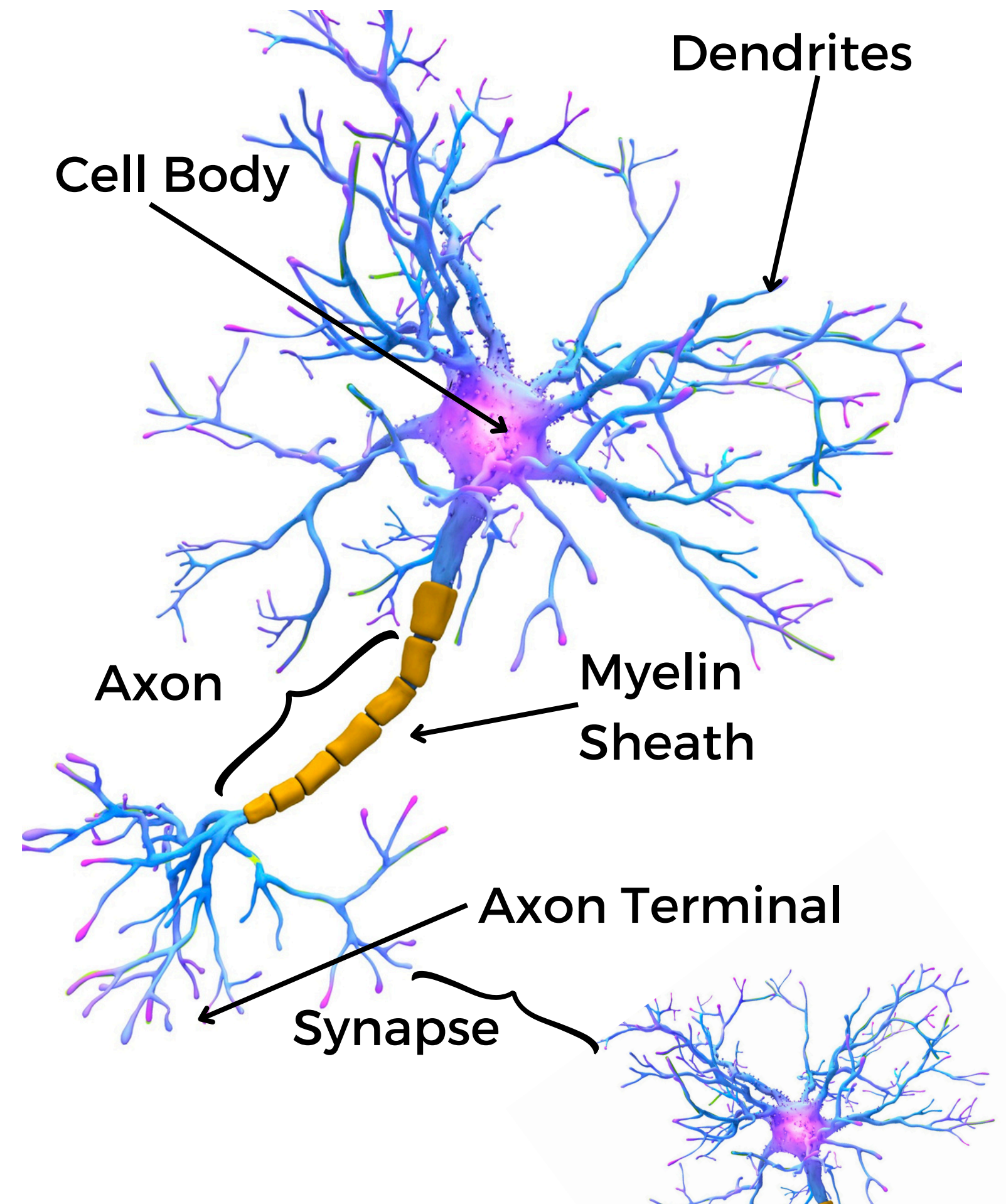


NEURONS

Neurons are specialized cells that transmit electrical signals throughout the body and play a fundamental role in our thoughts.

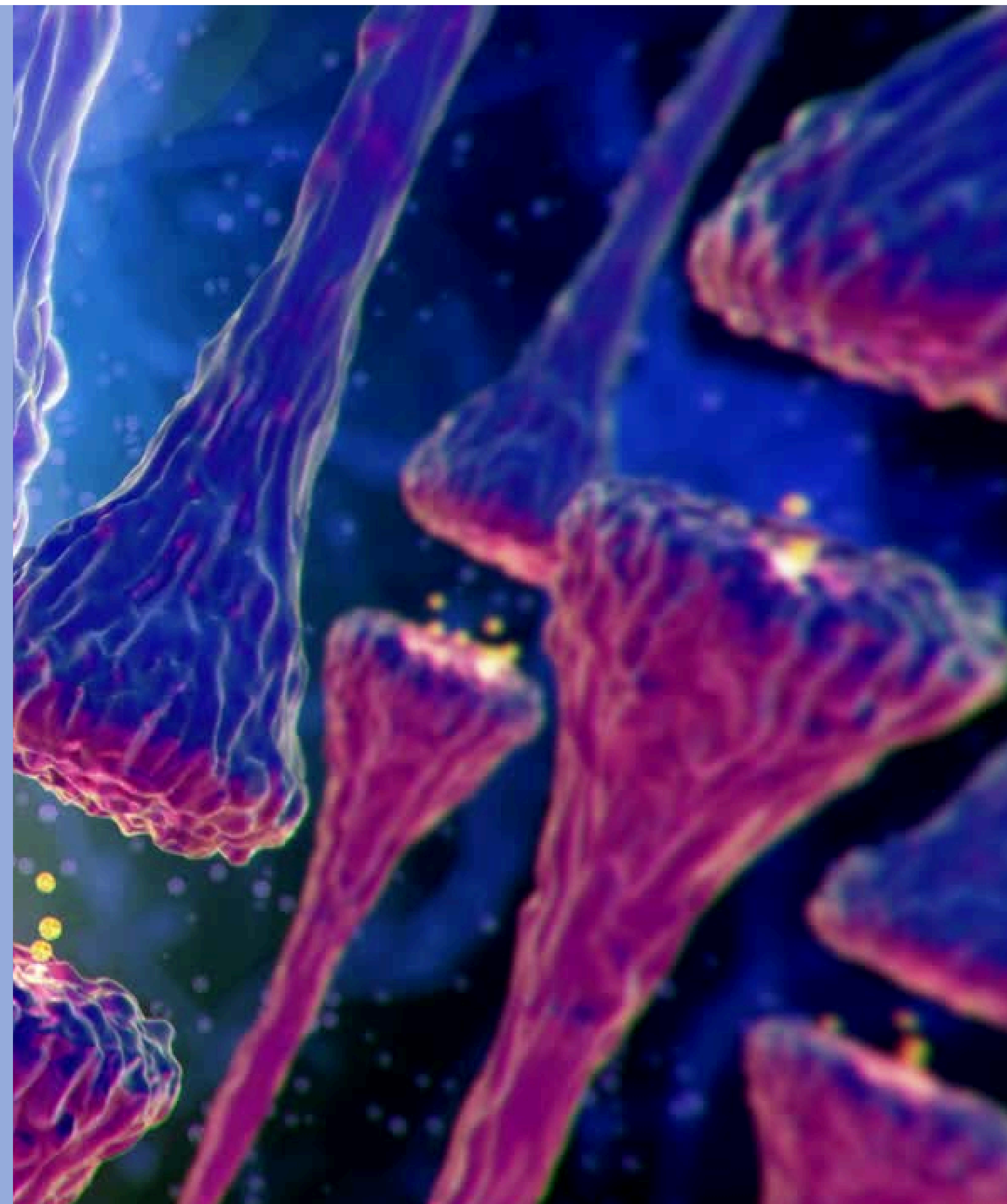
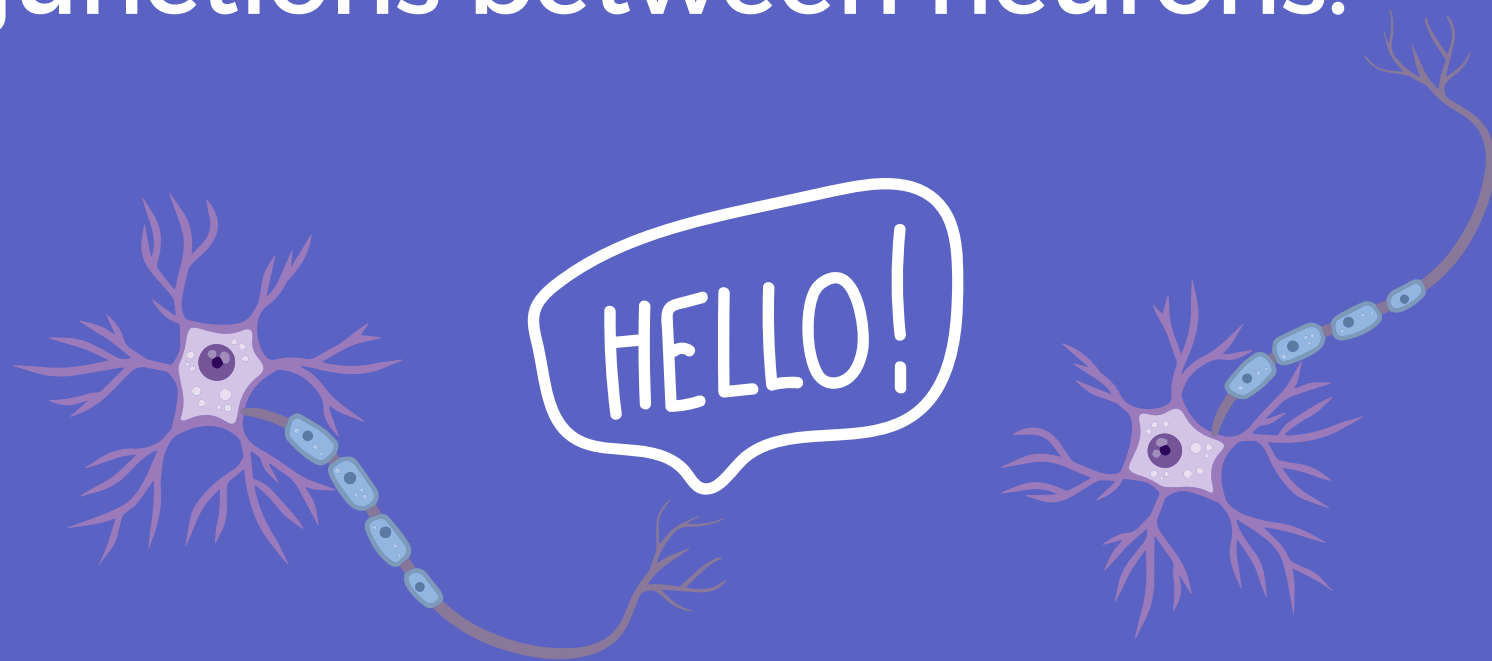
The six main parts of a neuron are:

- Cell Body
- Axon Terminal
- Dendrites
- Myelin Sheath
- Axon
- Synapse

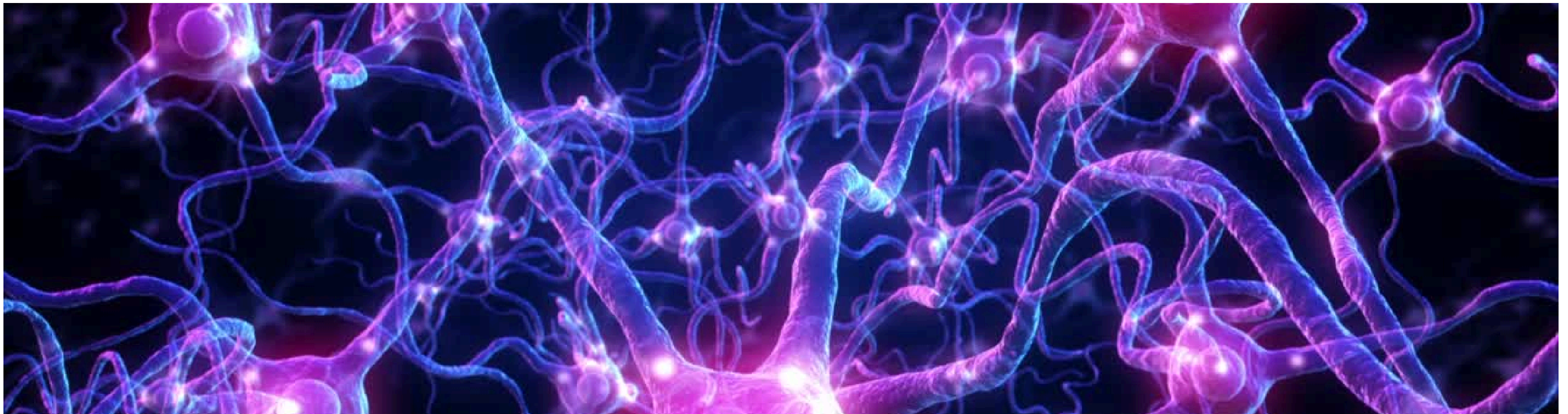


SYNAPSES

Neurons communicate with each other by releasing chemicals called neurotransmitters into synapses, which are the junctions between neurons.



**Neurotransmitters travel across the synapse
and bind to receptors on the next neuron,
creating a chain reaction.**

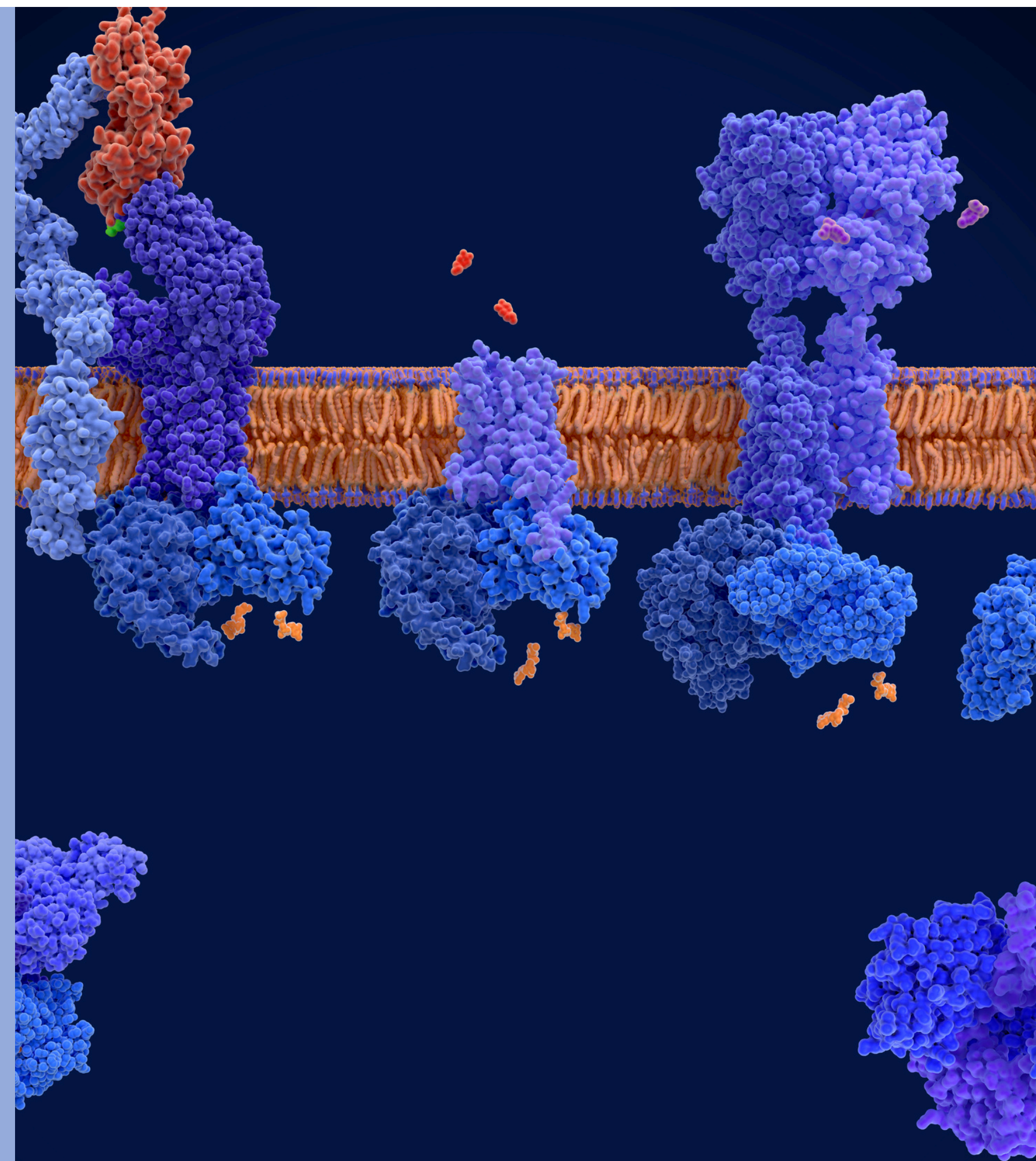


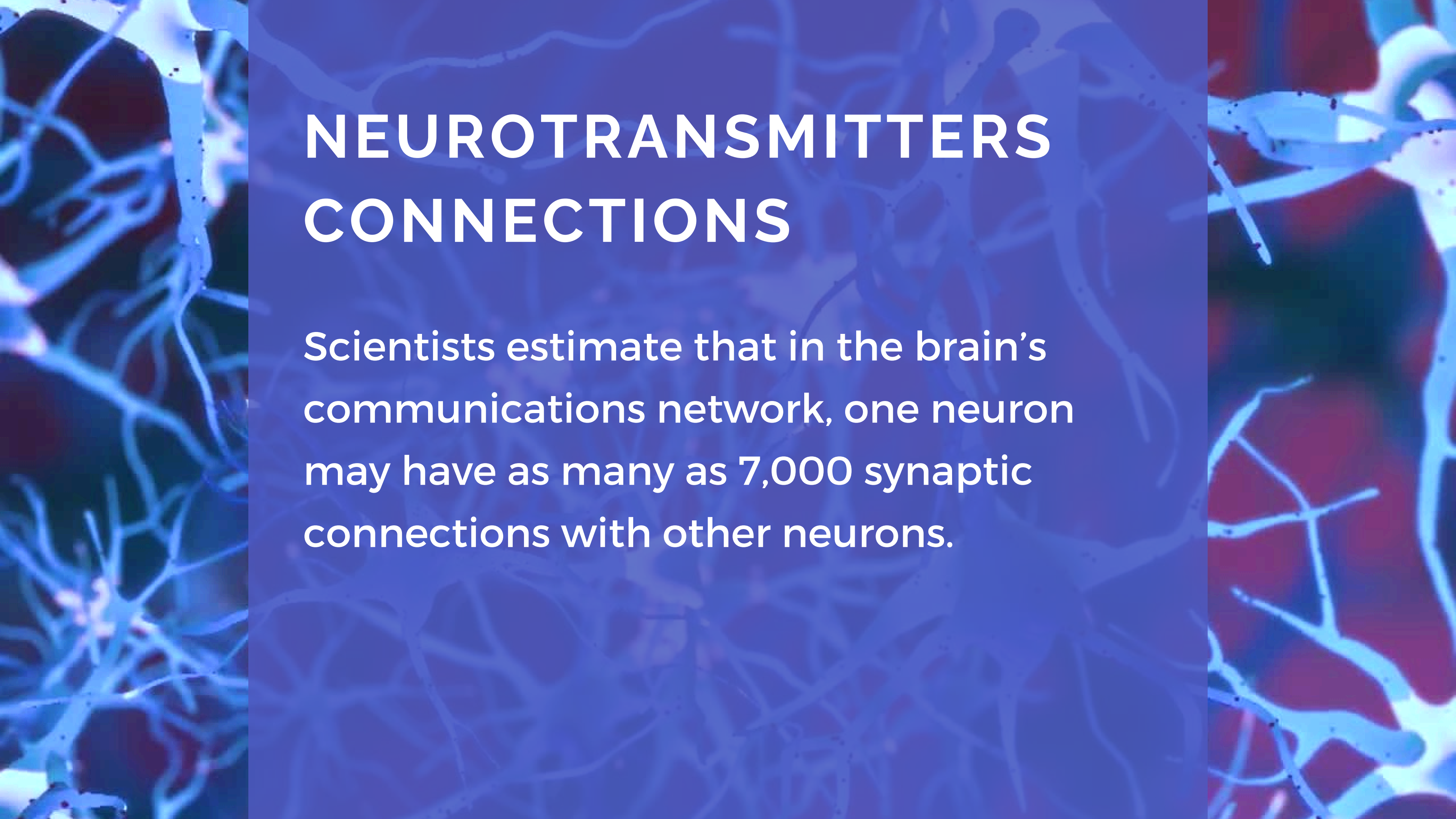
KEY & LOCK

Neurotransmitters don't work alone:

Receptors on the next neuron act like locks, and neurotransmitters are the keys.

A message only gets through if it fits the right receptor.



A microscopic image of neurons, showing a dense network of branching cell bodies and axons. The image is overlaid with a semi-transparent blue rectangle that contains text. The neurons are stained in shades of pink, red, and blue, with some bright spots indicating specific cellular components.

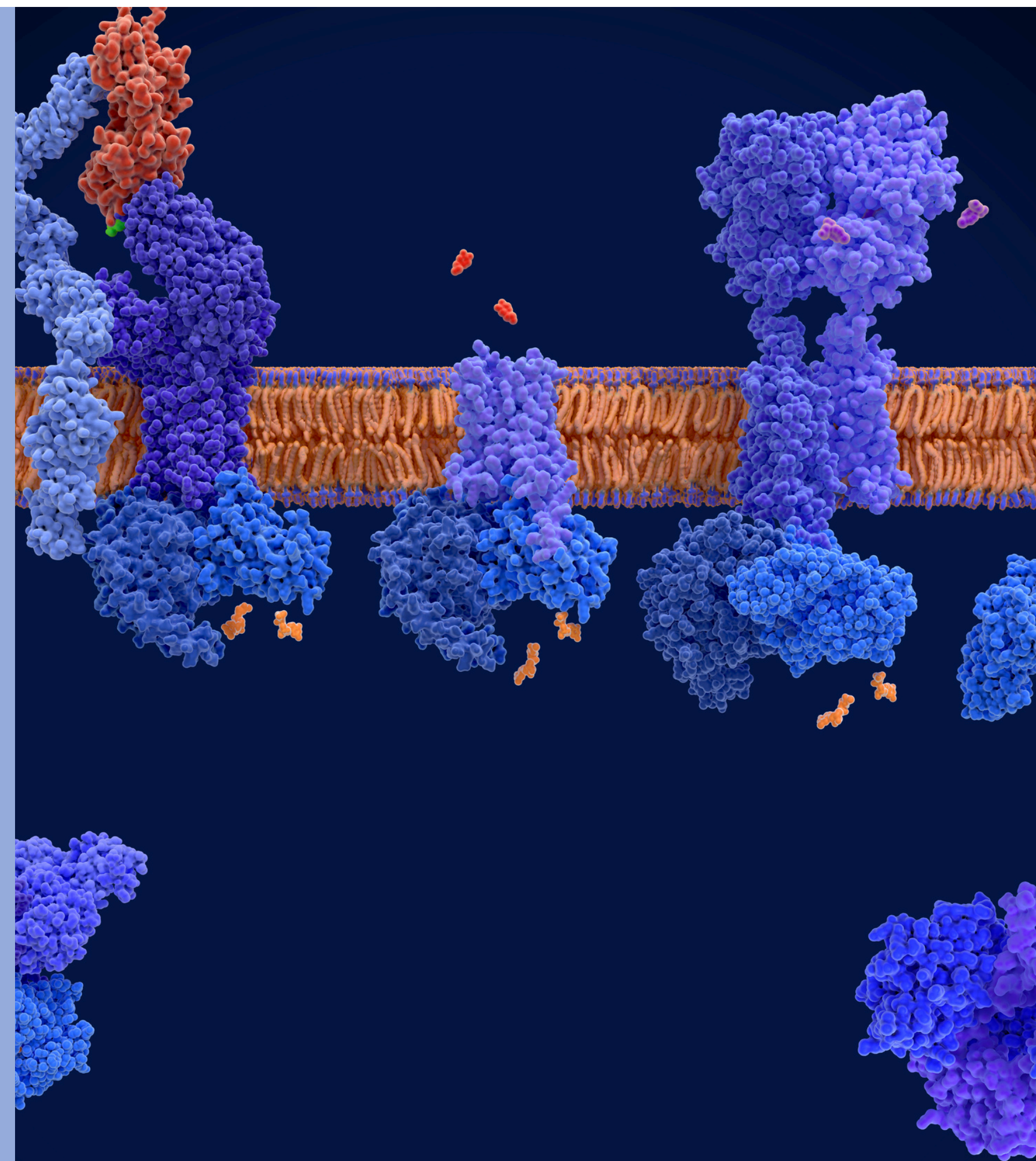
NEUROTRANSMITTERS CONNECTIONS

Scientists estimate that in the brain's communications network, one neuron may have as many as 7,000 synaptic connections with other neurons.

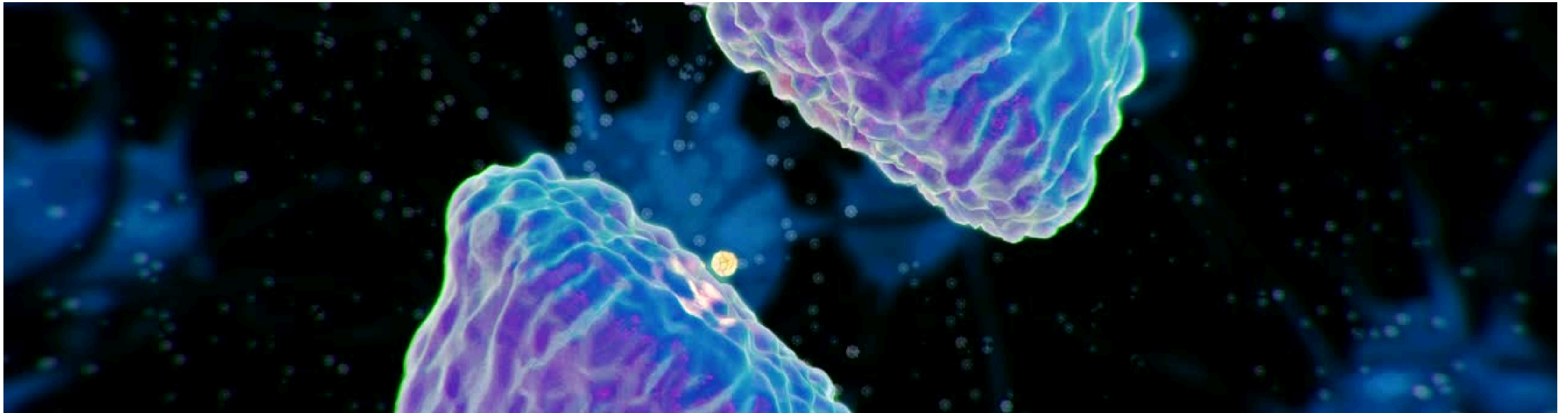
NEUROTRANSMITTER EFFECTS

Different neurotransmitters have different effects on the next neuron.

Some neurotransmitters make the next neuron more likely to fire, while others make it less likely to fire.



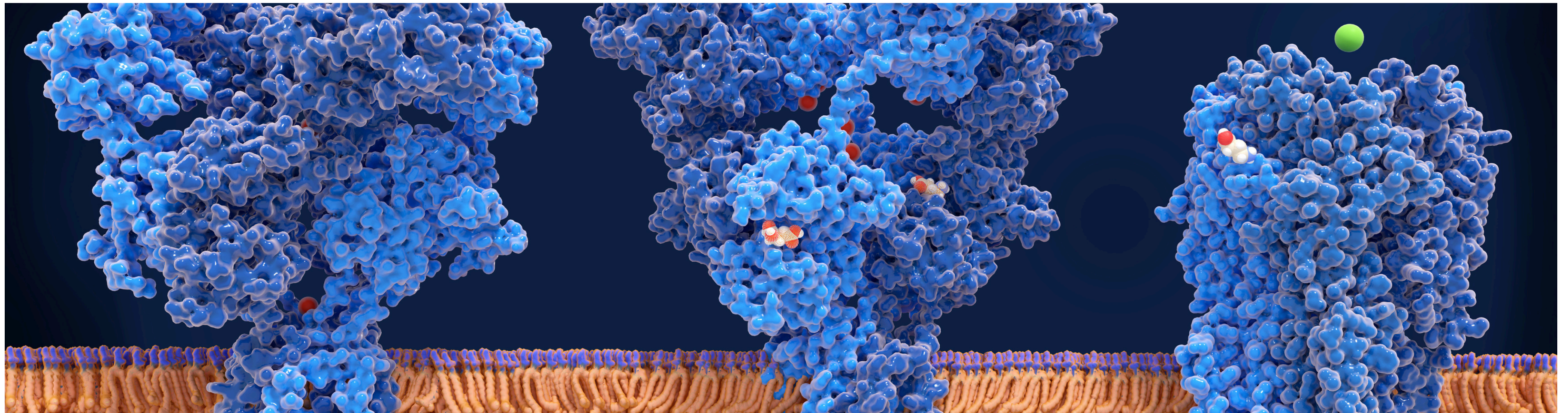
This is how neurotransmitters influence our thoughts, feelings and actions.



NEUROTRANSMITTERS AT WORK

Imagine that you and your friends are at a party. You're having a great time, dancing and talking. Suddenly, you see your crush across the room. Your heart starts to race, your palms get sweaty, and you feel a flutter in your stomach.

It's your neurotransmitters at
work!



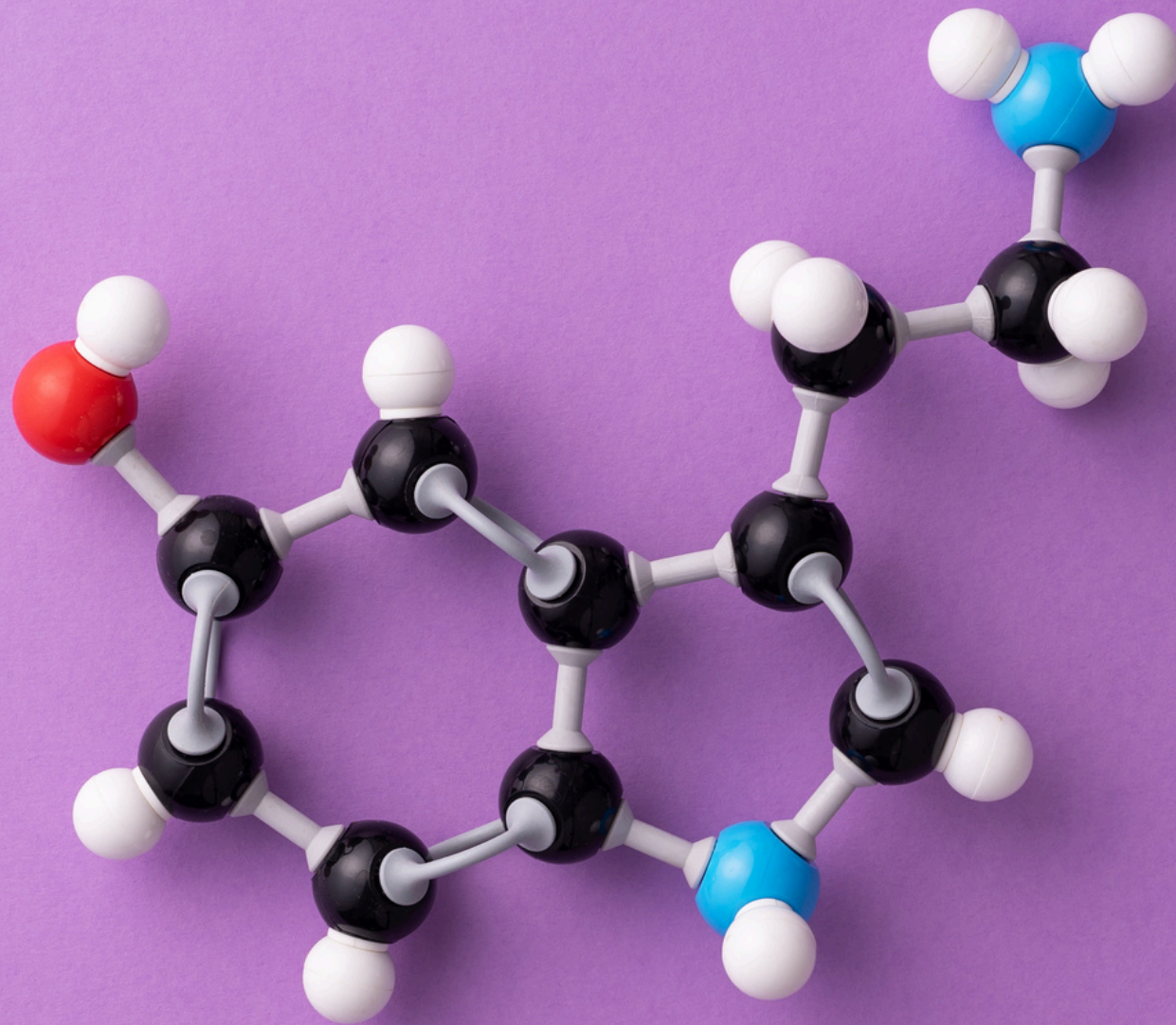
WHEN YOU SEE YOUR CRUSH

**When you see your crush,
your brain releases
norepinephrine.**

**Norepinephrine makes your
heart race and breathing
quicken. This is why you
feel so nervous when you're
around your crush.**

**Norepinephrine is a “fight or
flight” hormone because it
prepares you for action or, in
this case, talking to your crush.**

**Norepinephrine also causes
excitement, so even though
you are nervous, you are
excited to talk to your crush.**



NEUROTRANSMITTERS

There are many different types of neurotransmitters, each with its own unique function.

Some of the most important include:

- ⦿ Serotonin
- ⦿ Dopamine
- ⦿ Norepinephrine
- ⦿ GABA
- ⦿ Glutamate
- ⦿ Acetylcholine

**NEUROTRANSMITTERS HAVE A SIGNIFICANT
IMPACT ON OUR BEHAVIOR BY INFLUENCING THE
FIRING OF NEURONS.**

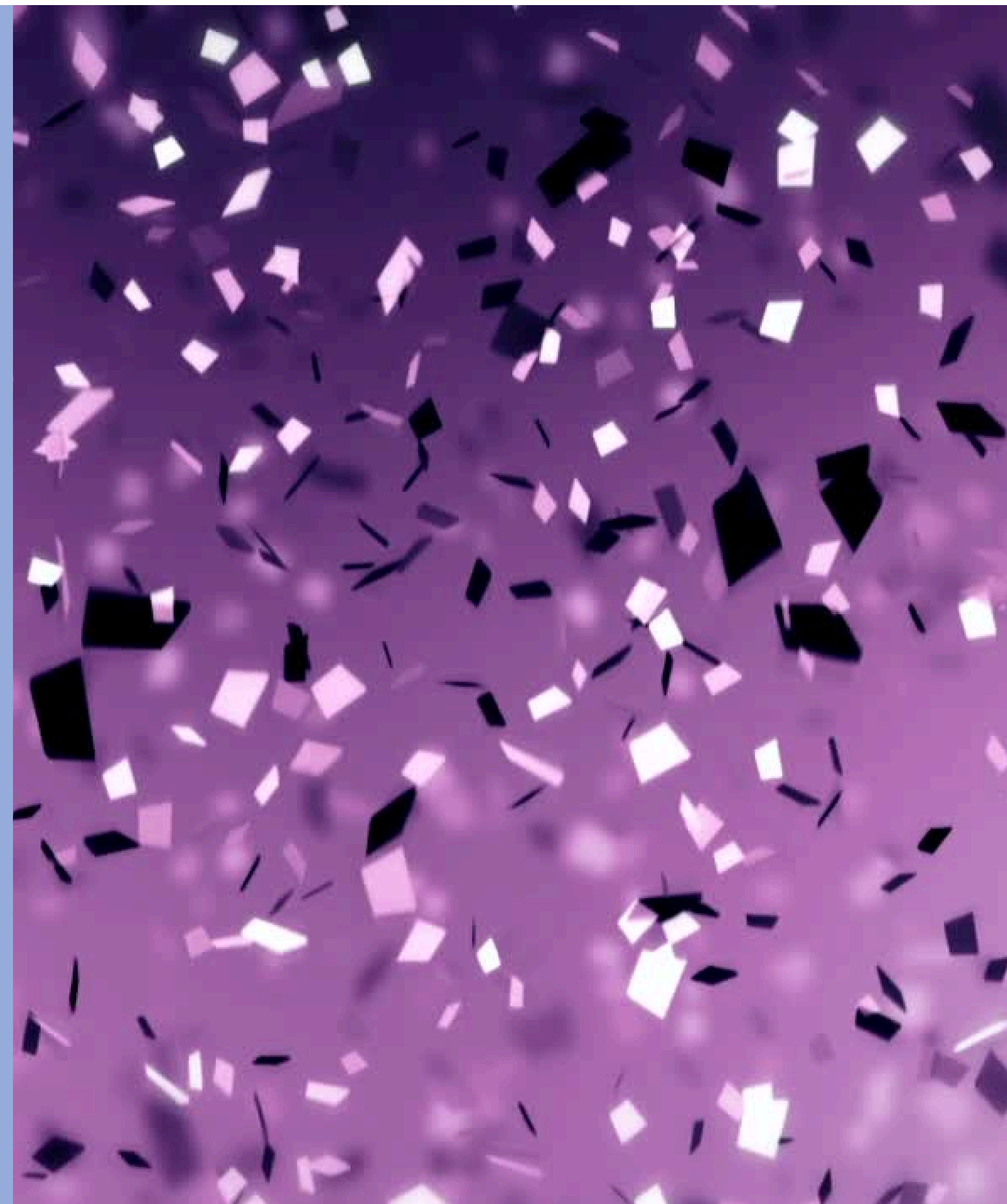


EXCITATORY

Some neurotransmitters are excitatory, meaning they make the next neuron more likely to fire.

Excitatory reactions increase the following behaviors:

- ⦿ Alertness
- ⦿ Energy
- ⦿ Motivation
- ⦿ Focus
- ⦿ Learning
- ⦿ Eagerness
- ⦿ Aggression
- ⦿ Impulsivity



INHIBITORY

Other neurotransmitters are inhibitory, meaning they make the next neuron less likely to fire.

These reactions increase feelings of relaxation and sleep but also decrease the following behaviors:

- ⦿ Energy
- ⦿ Alertness
- ⦿ Focus
- ⦿ Motivation
- ⦿ Drive
- ⦿ Attention



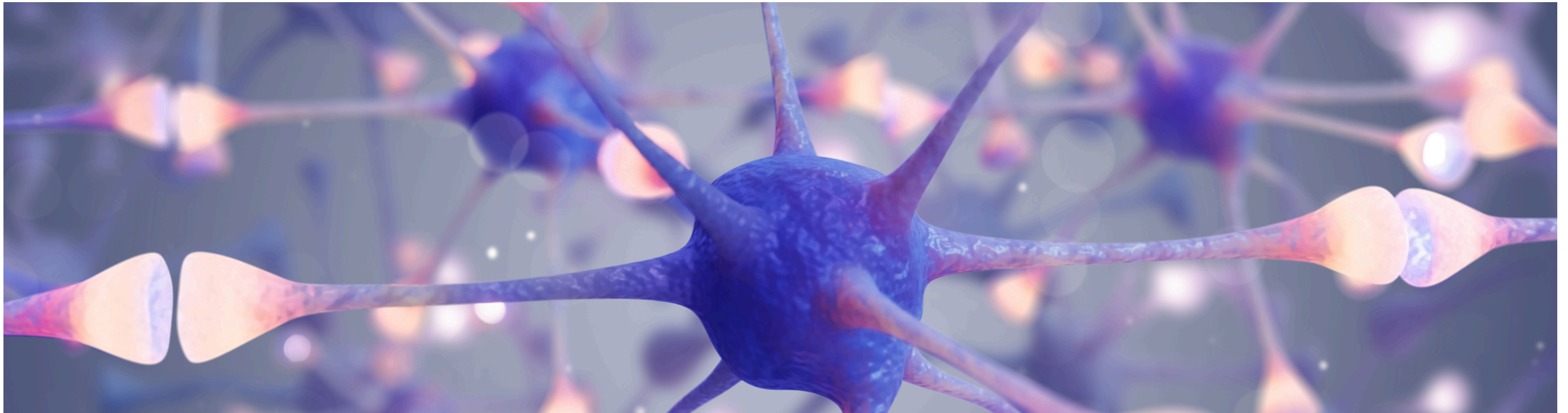


NEUROTRANSMITTER BALANCE

- Neurotransmitter balance is essential for optimal brain function and behavior.
- Neurotransmitter imbalances can lead to a variety of mental health conditions.

EXAMPLE: LOW LEVELS OF SEROTONIN
HAVE BEEN LINKED TO DEPRESSION.

Mental health disorders can be treated with a variety of medications that target neurotransmitter imbalances.





MEDICATION

Medications treat mental health disorders by either blocking or increasing neurotransmitter activity.

- ⦿ Agonists: Act like neurotransmitters, increasing their effects in the brain.
- ⦿ Antagonists: Block neurotransmitters, decreasing their effects in the brain

LIFESTYLE CHANGES

Lifestyle changes can also help to improve neurotransmitter function and mental health:

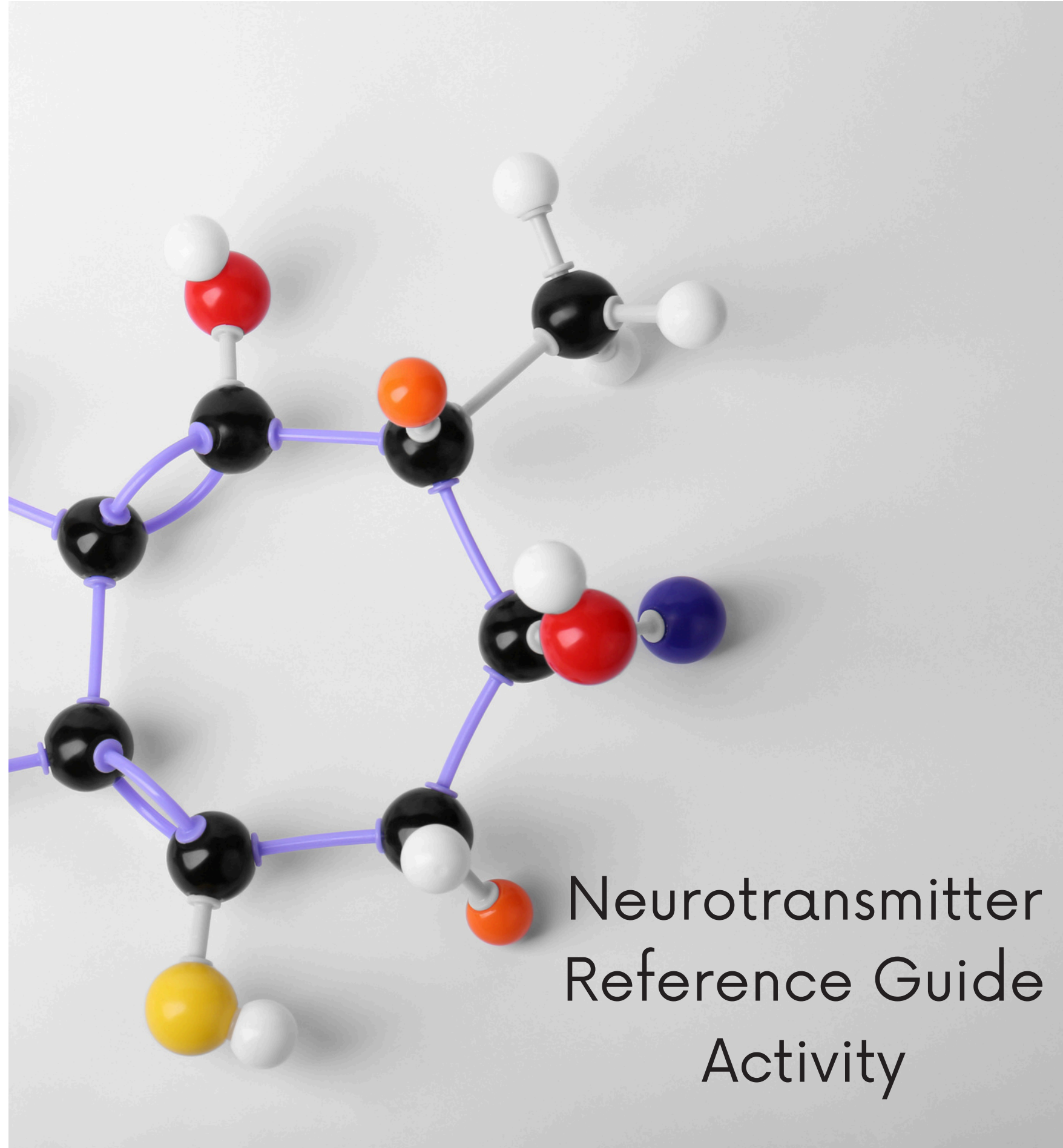
- ⦿ Getting regular exercise
- ⦿ Eating a healthy diet
- ⦿ Getting enough sleep
- ⦿ Managing stress
- ⦿ Relaxation techniques





UNDERSTANDING NEUROTRANSMITTERS

Neurotransmitters play a vital role in our behavior, mood, and mental health. By understanding them, we can develop better treatments and prevention strategies.



Connect what you
have learned —

Click the link below
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LEAD WITH COMPASSION, EDUCATE WITH PURPOSE.

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