

Unit 2 – Biology of Psychology

Day 1 -

NEURONS

***Because when you say
someone's "wires are
crossed" you might actually
be correct***



Objectives

- **Understand the relationship between “Biology” and “Psychology”**
- **Identify the two major systems that affect biological psychology**
- **Compare the three types of Neurons**
- **Terms:** ➔

- **Biology**
- **Nervous System**
- **Endocrine System**
- **Neurons**
- **Sensory Neuron**
- **Motor Neuron**
- **Interneuron**
- **Dendrite**
- **Axon**
- **Myelin Sheath**
- **Action Potential**
- **Synapse**

Remind Me...

- **What is “Psychology”?**
- **What do we mean by “mind”?**
- **HOW could we study that?**
- ***Can we learn everything about the “mind” just by the methods we’ve already looked at?***
- **Are there any “internal” factors / variables?**

BIOLOGY

- The Study of Life
- Includes Structure, Function, Growth, and Evolution
- *Why might those be important for Psychology?*
- *And, in fact, there is an endless debate in Psychology over which influences our behavior more, our biology, or our environment*
 - *We call that “Nature Vs. Nurture” and will discuss it MUCH more next term.*

BIOLOGY

- *In studying the biological basis of psychology, we are concerned with TWO SYSTEMS*

- **1) Nervous System**

- **Our senses – Things happen, we encounter stimulus, and our brain interprets them**

- **2) Endocrine System**

- **The reaction – How we think, feel, or change as a result of stimulus**

NERVOUS and ENDOCRINE

- **BOTH** of these systems use chemical “messengers” to send signals
- What is different is the **SPEED** and the **PURPOSE** of each
- Today, we will focus on the Nervous System...

NEURONS: You ARE Hard-Wired

- *To understand how the body interprets stimuli, you need to understand the “connectors” that receive, send, and store signals.*
- **NEURONS**
 - A nerve cell
 - The basic building block of the Nervous System
 - *They come in three types...*

Three Types of Neurons

- **1) SENSORY NEURONS**
- **2) MOTOR NEURONS**
- **3) INTERNEURONS**



⇐ **Neutron, NOT Neuron**

SENSORY NEURONS

- Incoming Information
- The “senses” send signals to the brain
- *Cadet Carlson can taste the delicious Red Vines*



MOTOR NEURONS



- **Outgoing Information**
- **The brain sends “signals” to the muscles, and limbs**
- ***Cadet Peterson moves to avoid his Mother’s affection***

INTERNEURONS

- **The Middlemen**
- **Intercommunication – from one part of the brain to another**
- **Interpret what Sensory said, and tell Motor what to do**
- *Cadet Seipert sees a funny show, which makes her smile from joy*



And now the pieces...

•All of those neurons look, roughly, the same. So let's look at the parts....

•Dendrite

•Axon

•Myelin Sheath

•Nerve Endings

•Plus, we'll look at the two “steps” in the process

•Action Potential

•Synapse

**YOU WAKE UP TO FIND THIS
ON YOUR BEDROOM FLOOR**



WHAT DO YOU DO???

The Parts

- **DENDRITE**

- **The branched projection**

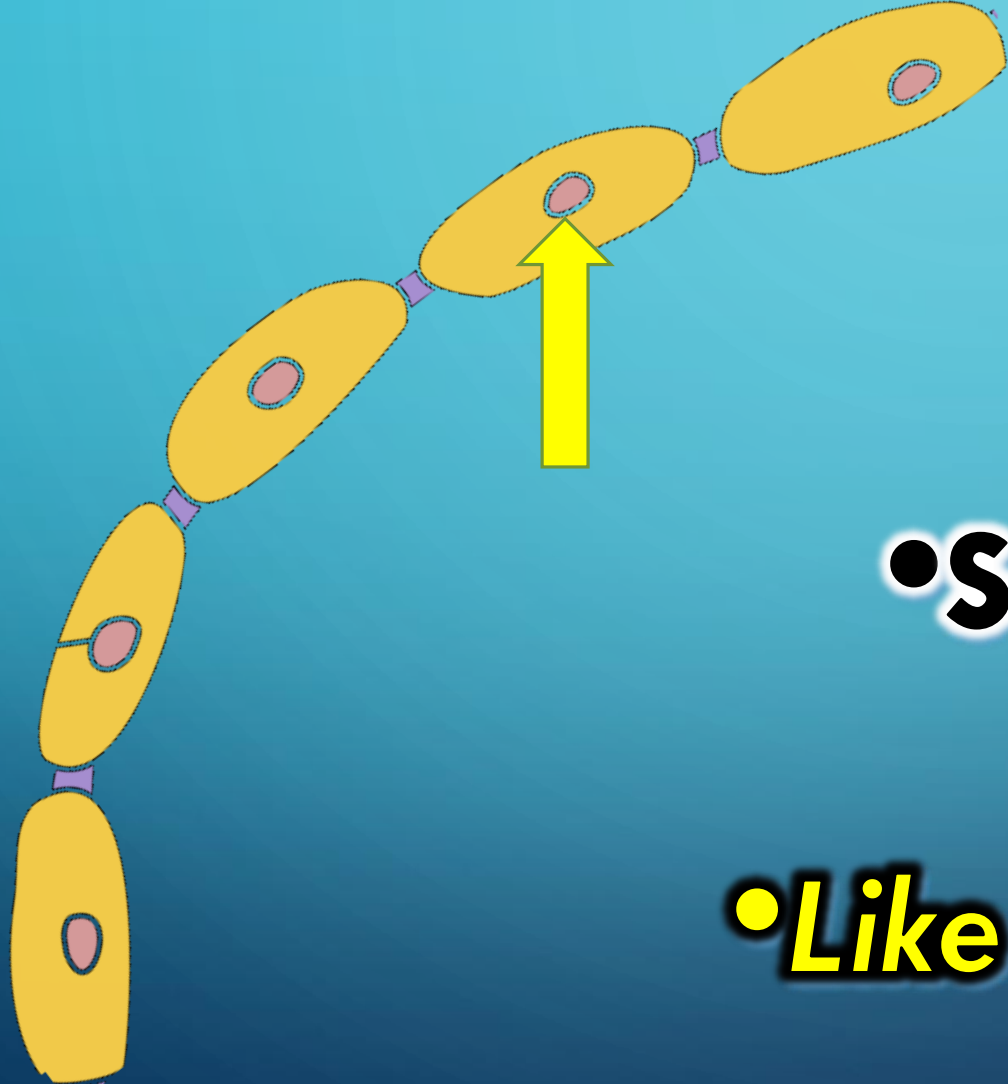
- **Information Collector**

- **Gets the INPUT**

- *Like your battery pack, or whatever is plugged in*



The Parts



- **AXON(s)**
- **The long, thin connectors**
- **Sends information**
- **The OUTPUT**
- ***Like the electrical cord***

The Parts

- **NERVE ENDINGS**
 - *Self-explanatory*
 - **Connects one
Neuron to another**
 - *The plug on the cord*



The Parts

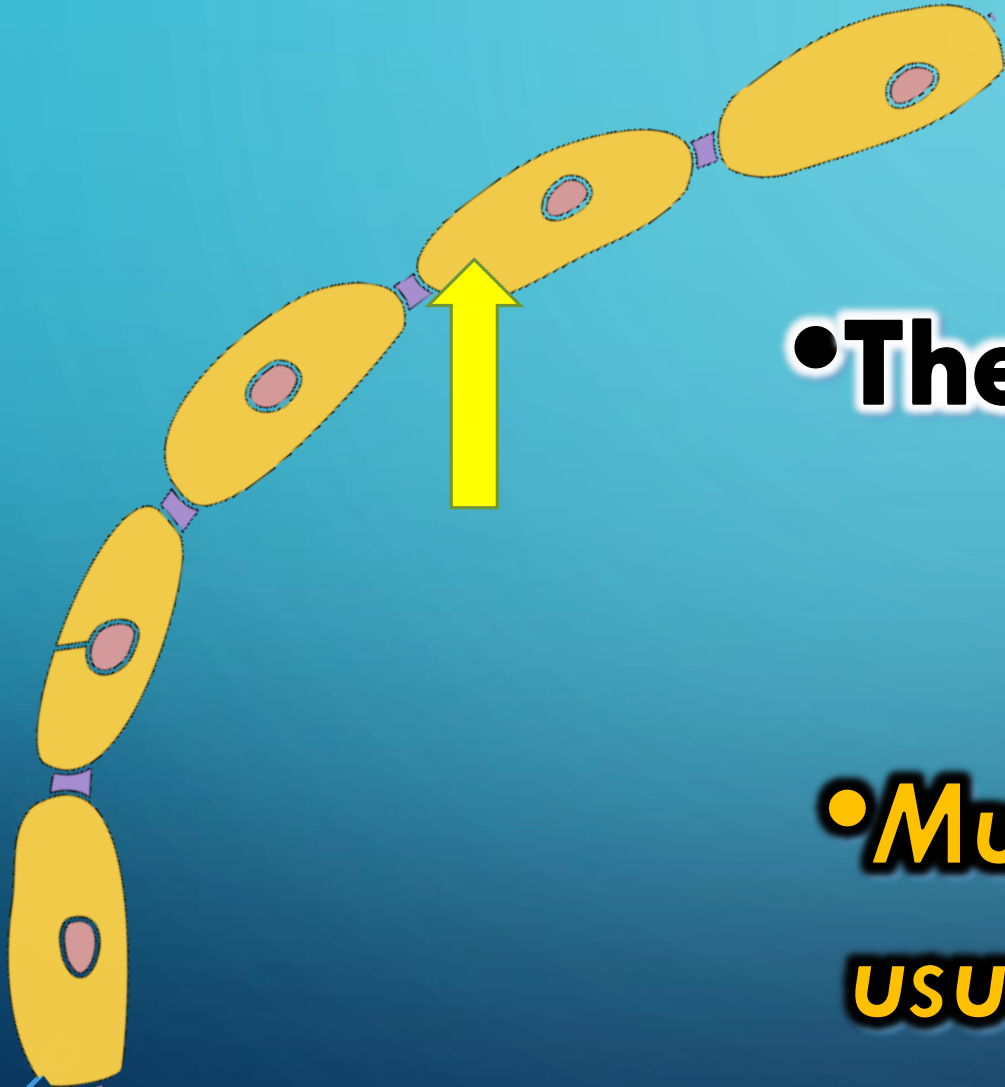
• **MYELIN SHEATH**

• *Not a Ninja Weapon* 🙄

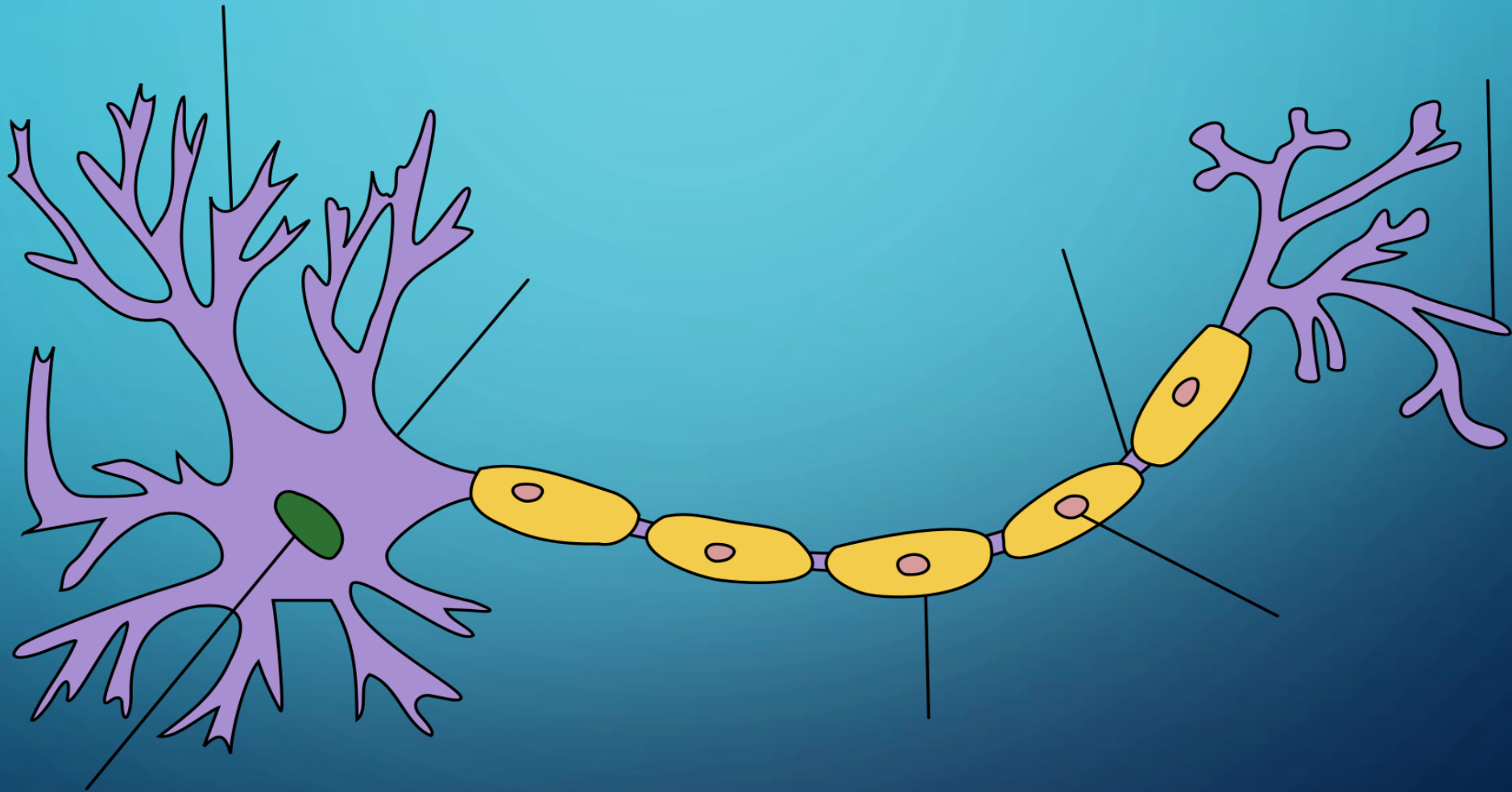
• **The white fatty case on the axon**

• **The insulator**

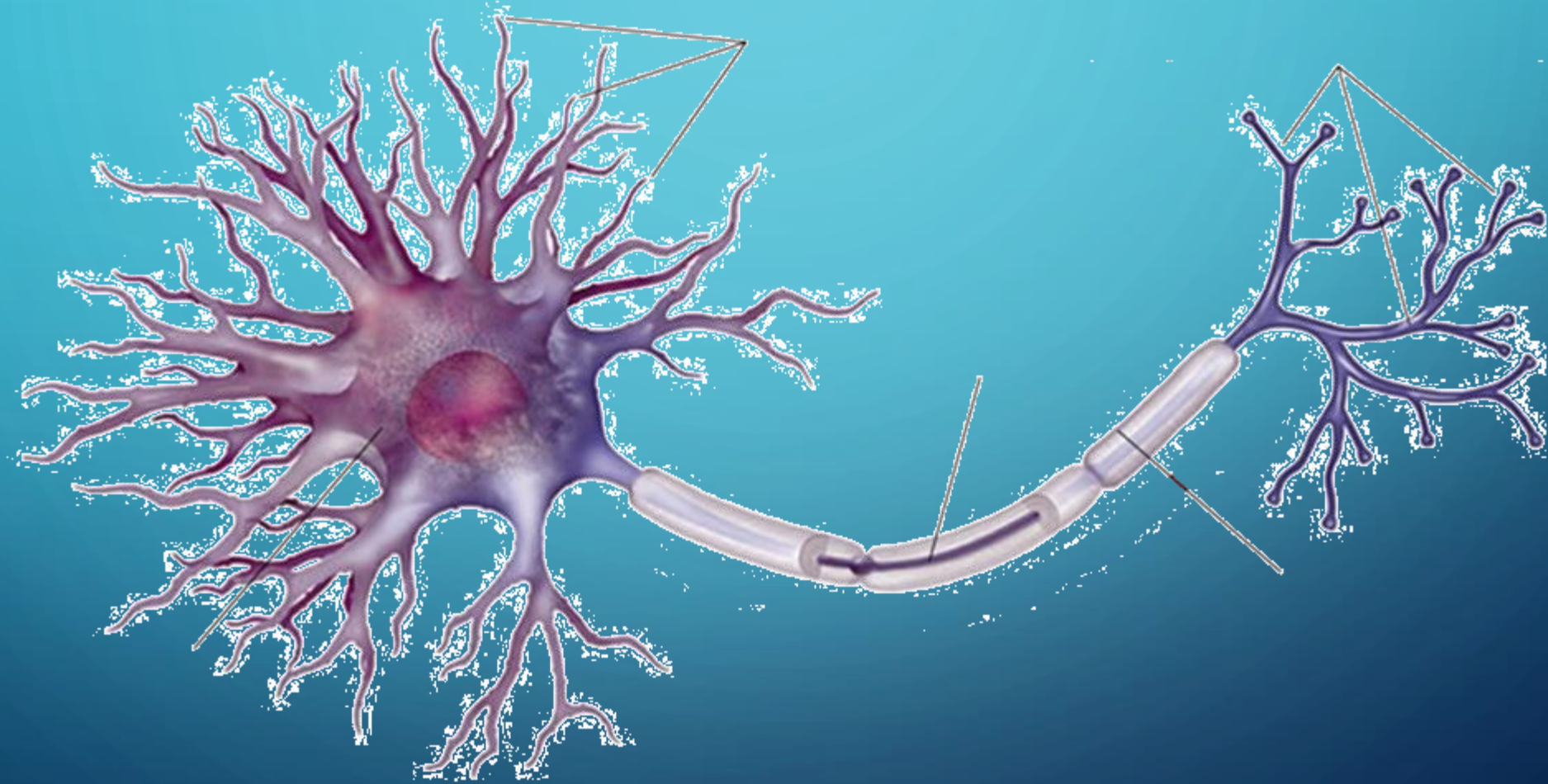
• *Much like wires are covered, usually, with plastic or rubber*



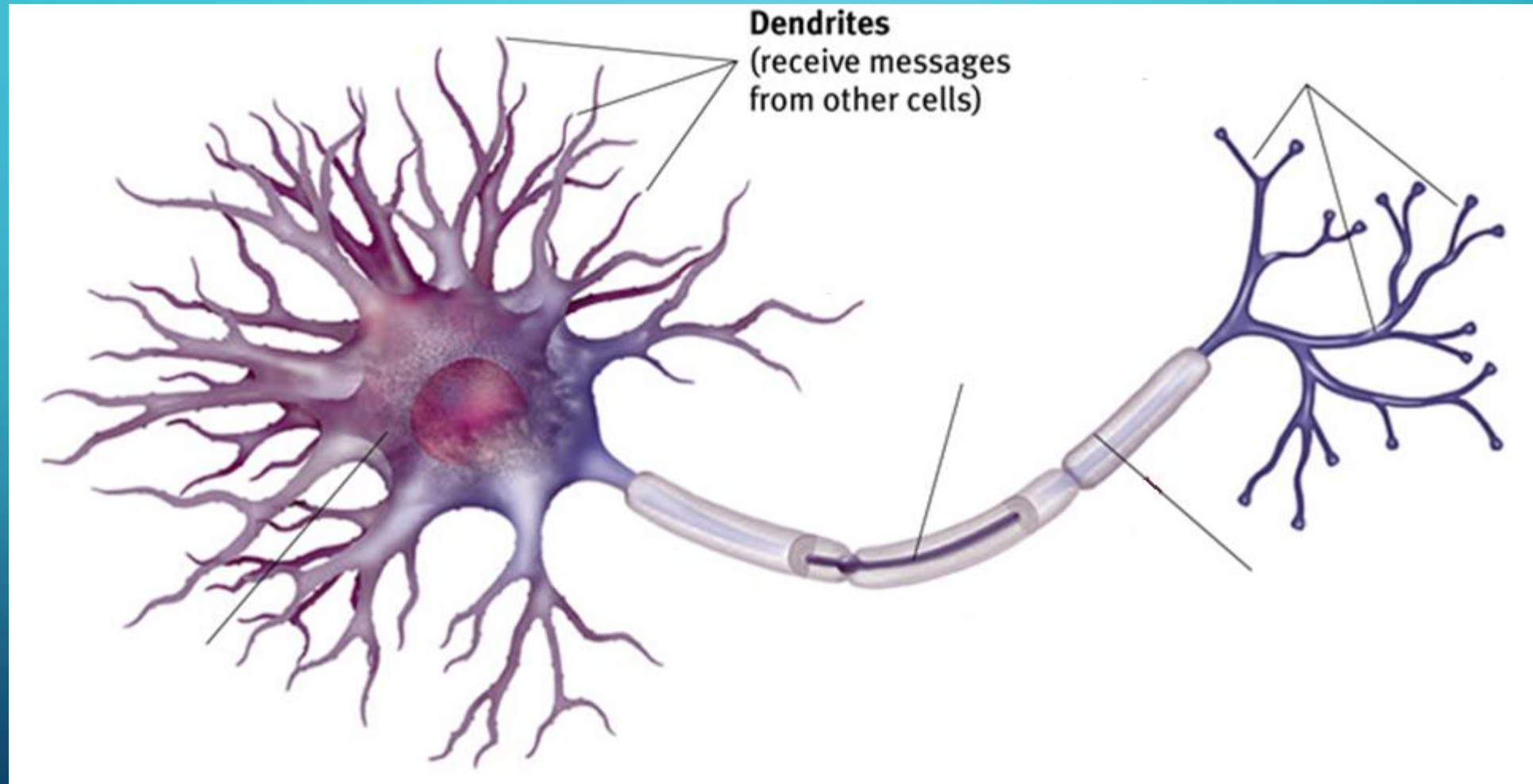
Neurons



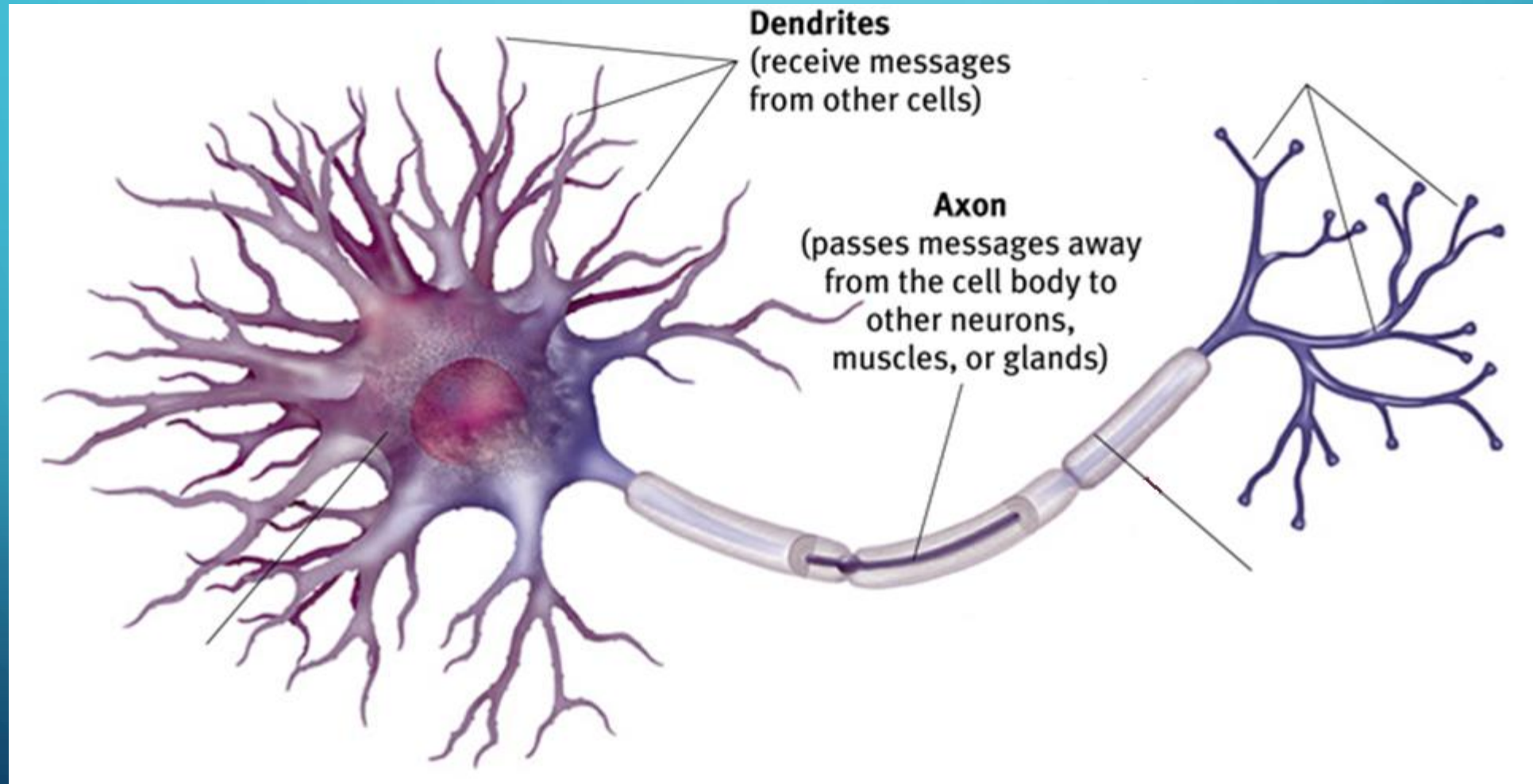
Neurons



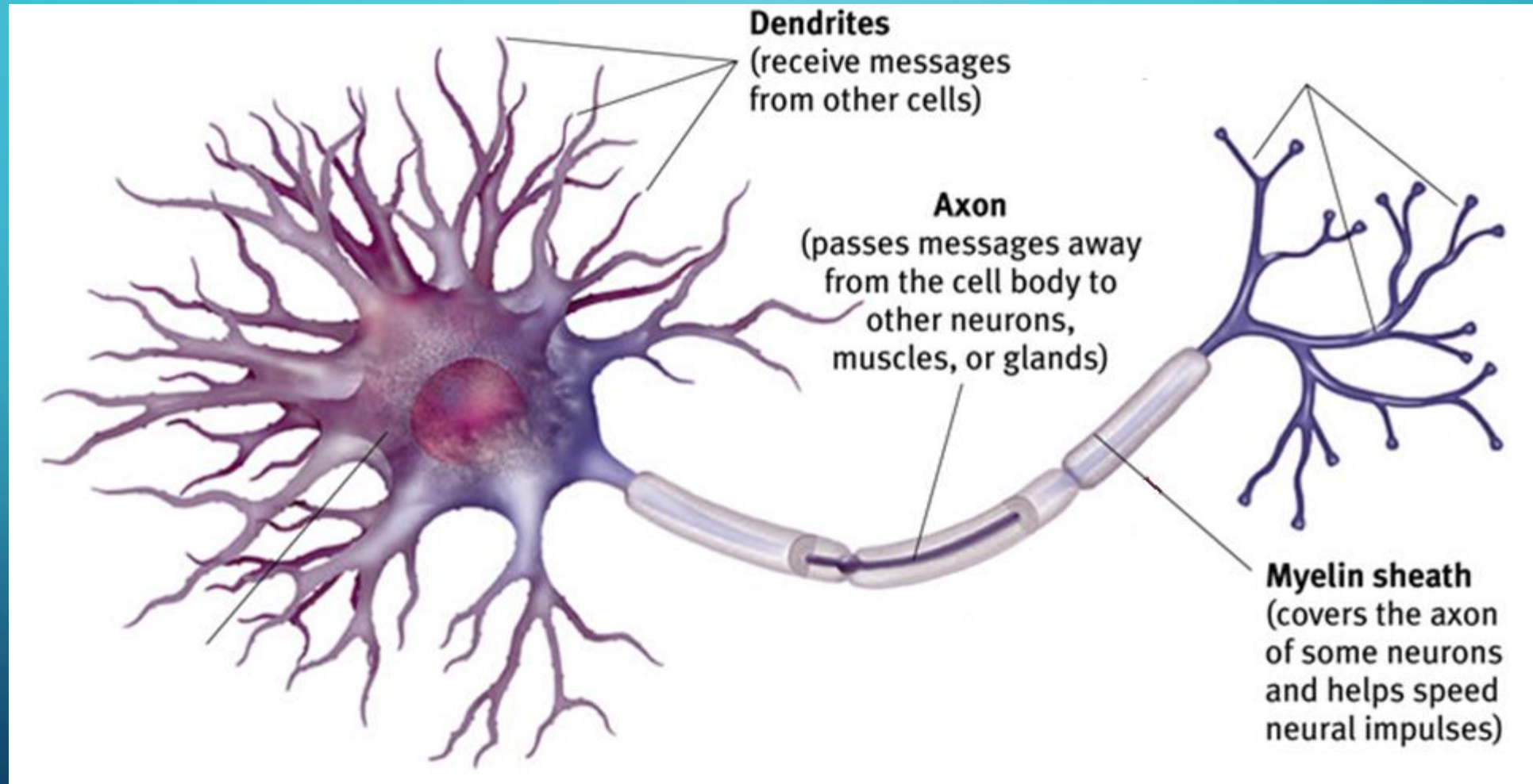
Neurons



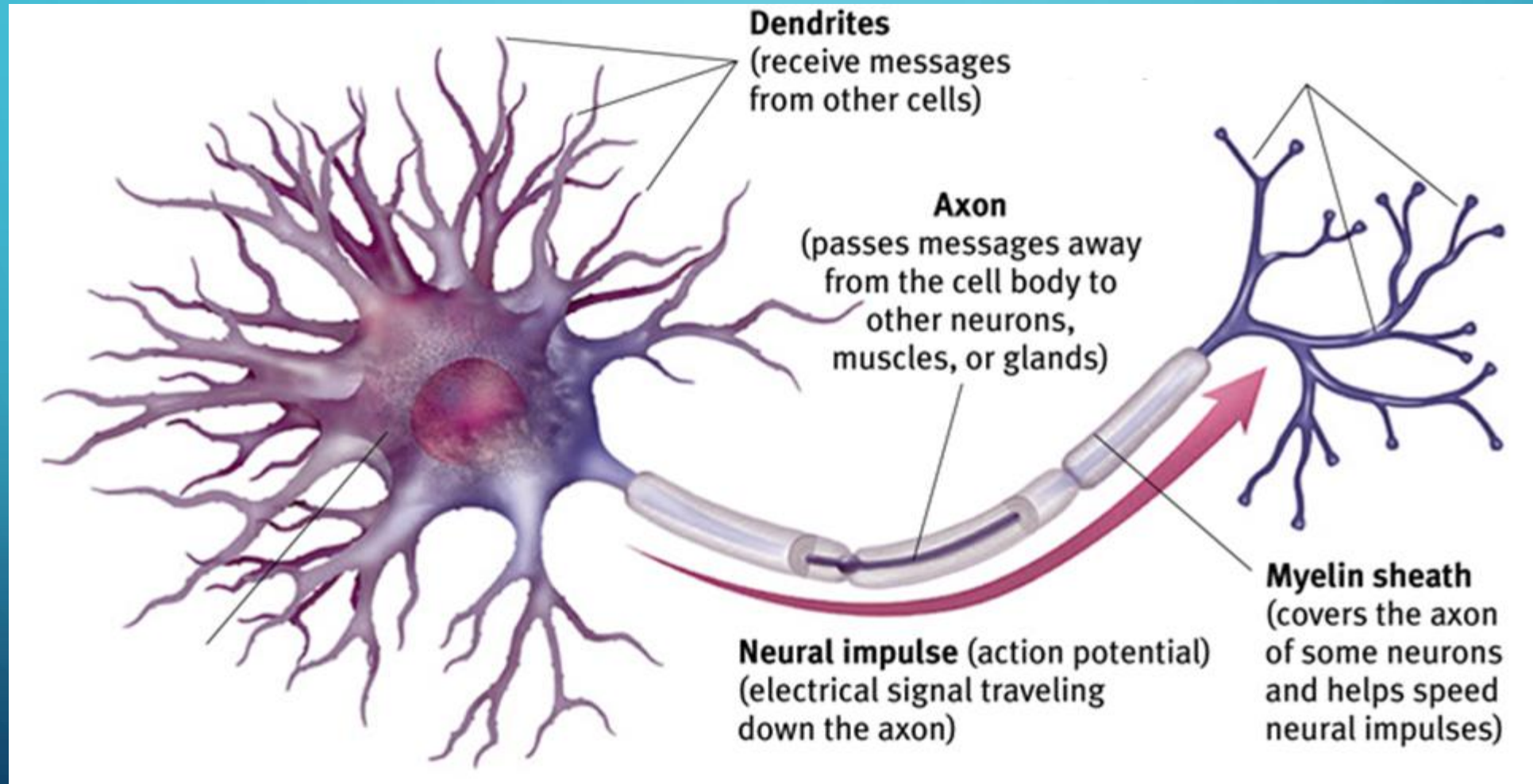
Neurons



Neurons



Neurons



The Process

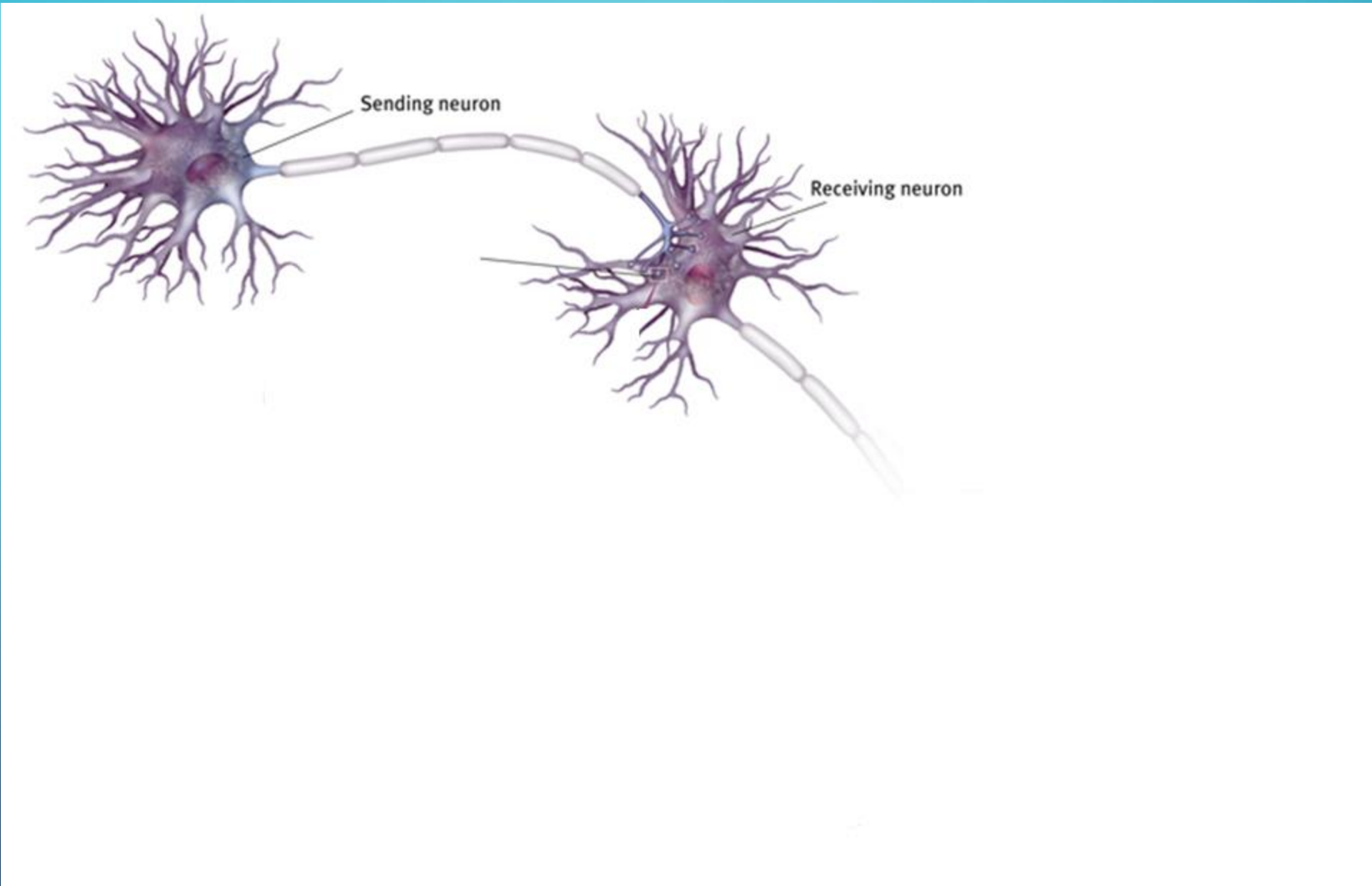
- **ACTION POTENTIAL**

- **A neural impulse**
- **Travels down the axons**
- *cord plugged in, electricity going down in*

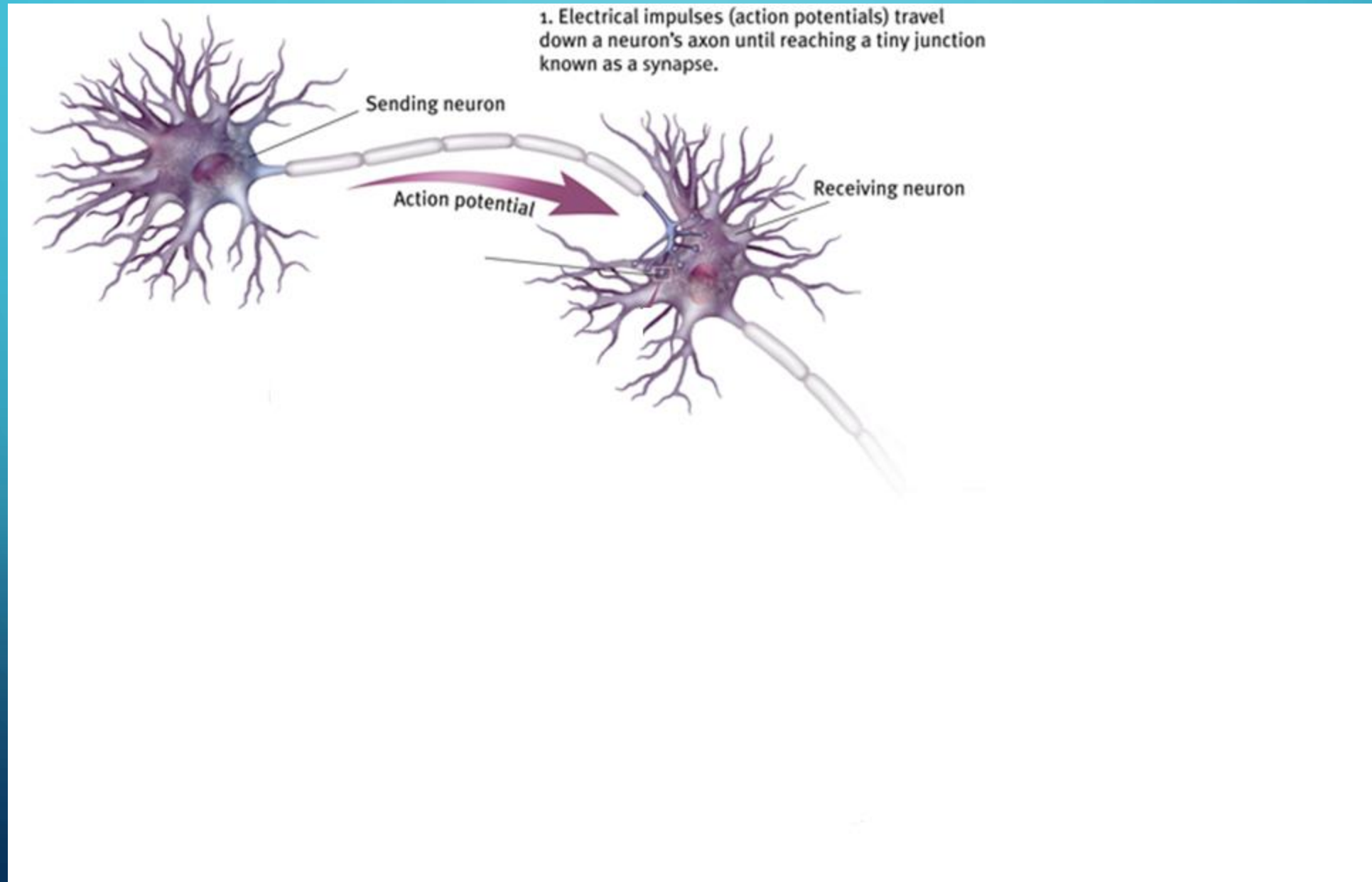
- **SYNAPSE**

- **Where nerve endings connects to another neuron's dendrite**
- *The “plug” in the wall*

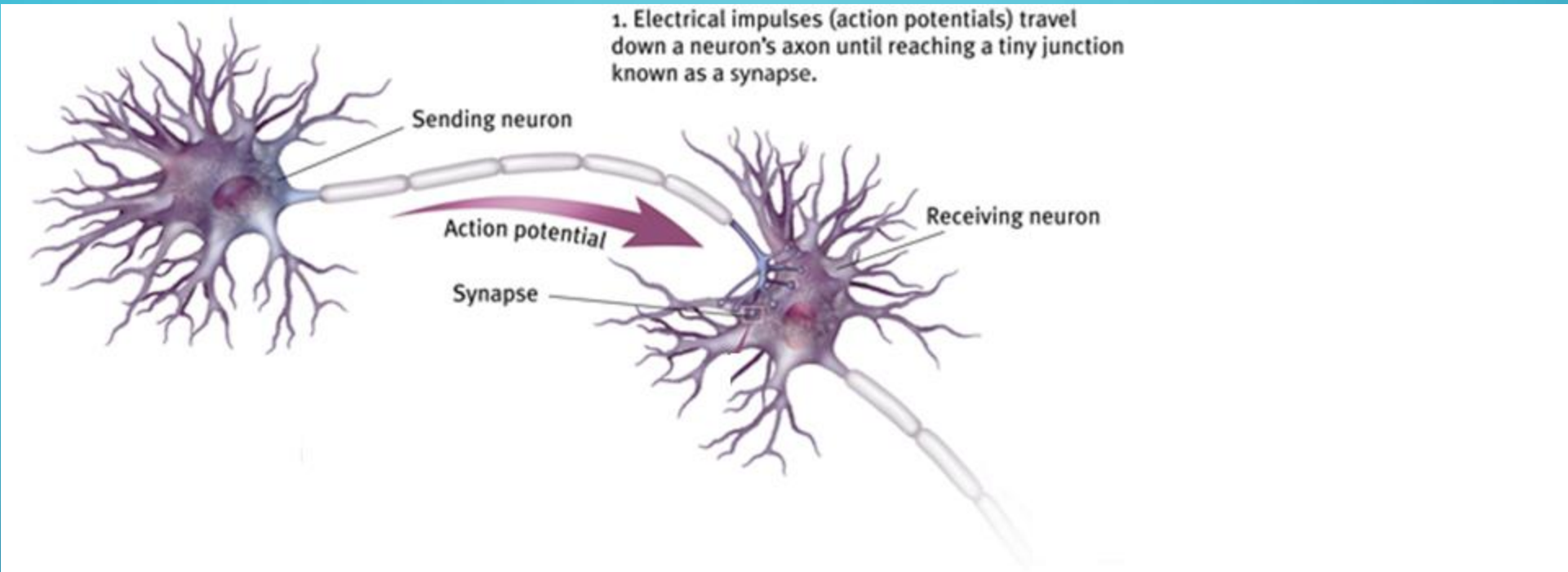
How Neurons Communicate



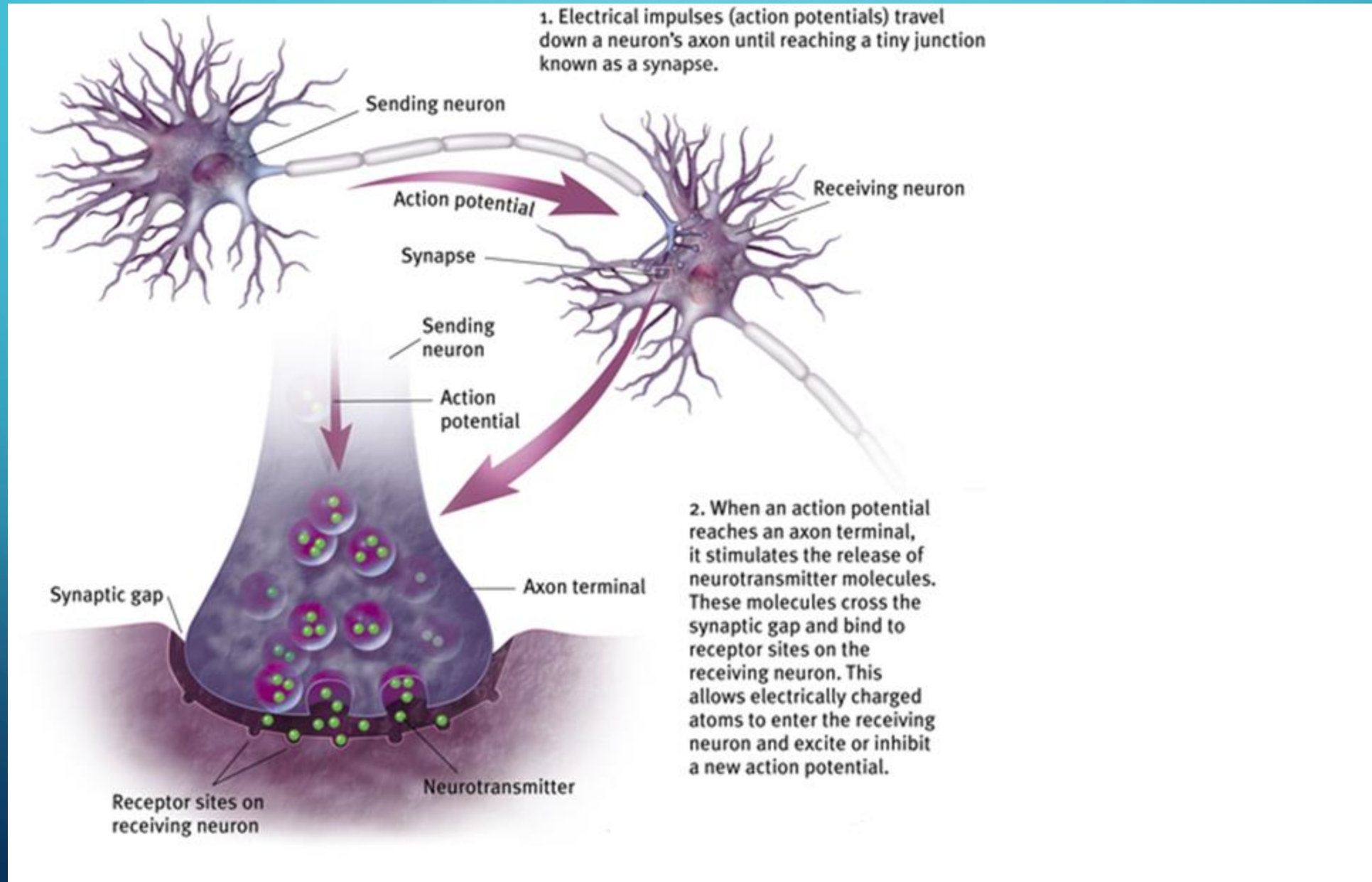
How Neurons Communicate



How Neurons Communicate



How Neurons Communicate



So what?

- Well, in our final unit when we discuss abnormalities in psychology, you will see that many have to do with this process
- Sometimes, there is a failure of Action Potential (axons aren't firing)
- Other times, it's the synapse (things aren't connecting)
- Also, and even cooler, we can STOP some of these processes....
- Why would we ever do that?

The Nervous System

- This system is our “senses”
 - We see, hear, touch, taste, smell
- How important is it, then, for them to work correctly?
- NEXT TIME: How we can “fool” some senses (taste)
 - Monday – Hormones (*Why Jr High isn't lit*)
- QUIZ COMING Feb 26th!

Objectives

- **Understand the relationship between “Biology” and “Psychology”**
- **Identify the two major systems that affect biological psychology**
- **Compare the three types of Neurons**
- **Terms:** ➔

- **Biology**
- **Nervous System**
- **Endocrine System**
- **Neurons**
- **Sensory Neuron**
- **Motor Neuron**
- **Interneuron**
- **Dendrite**
- **Axon**
- **Myelin Sheath**
- **Action Potential**
- **Synapse**