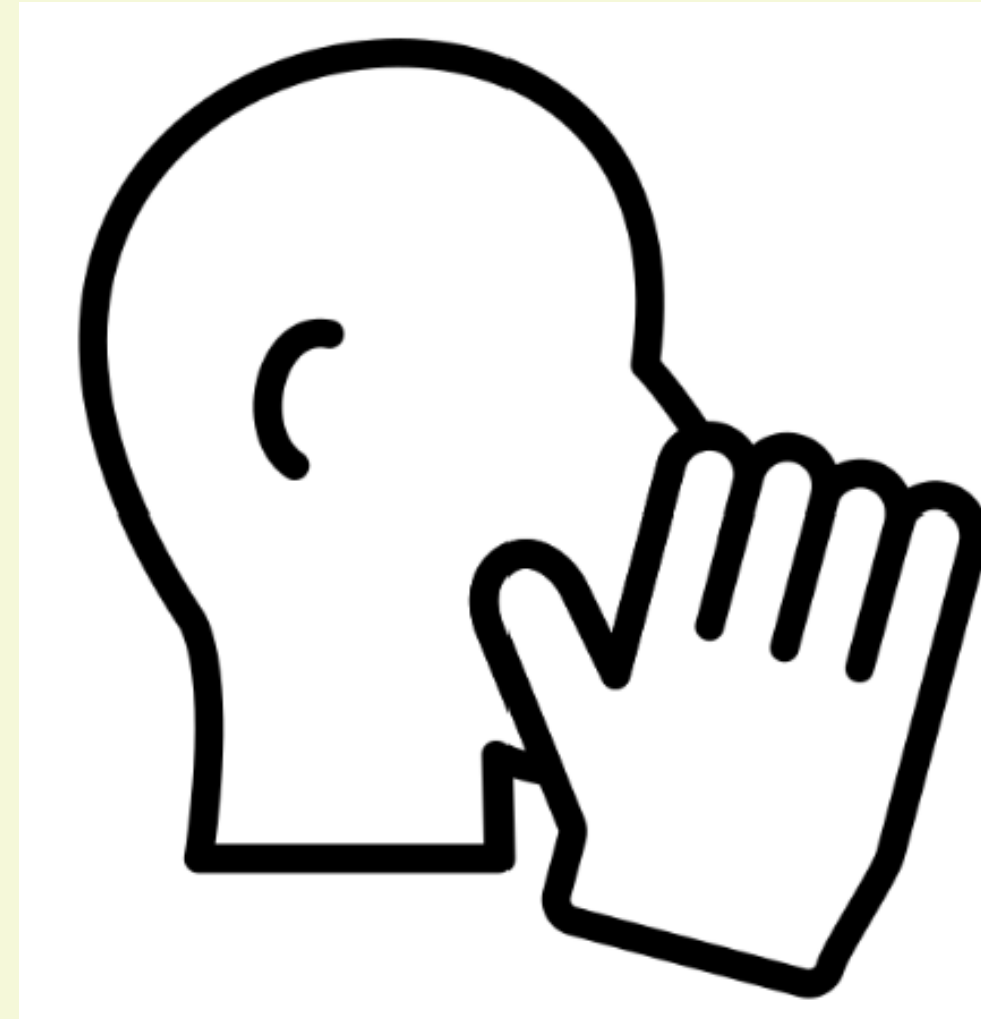


# Mission Myelin: Model, Damage, Repair

# "TELEPHONE"

- Stand in a line.
- Whisper the message you heard to the next person.
- Say it only once; no repeats.
- Say only the message, no other words or explanations allowed.



# Is the final message correct?

---

What was easy or difficult  
about this game?

What would make the game  
of Telephone easier to play?

What could be done to make sure  
the correct message gets to each person?

# LET'S TRY AGAIN!

- New message
- Read the message from the paper to the next person in line. Hand them the paper.

# Is the final message correct?

---

What was easy or difficult  
about this version of the  
game?

# LET'S PLAY ONE MORE TIME!

- New message
- With some extra directions  
(follow the directions on the  
card you are given)

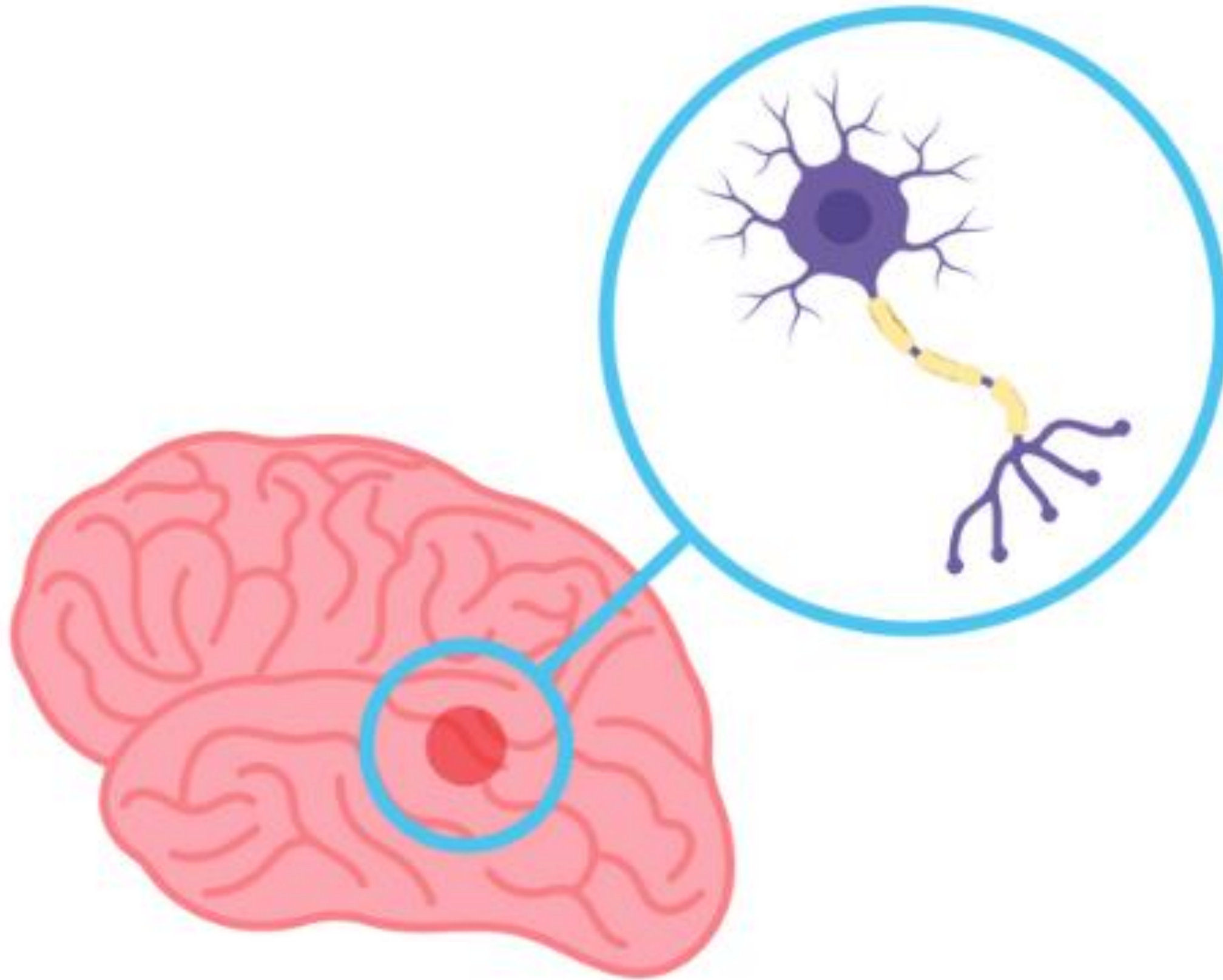
# Is the final message correct?

---

What was easy or difficult  
about this version of the  
game?

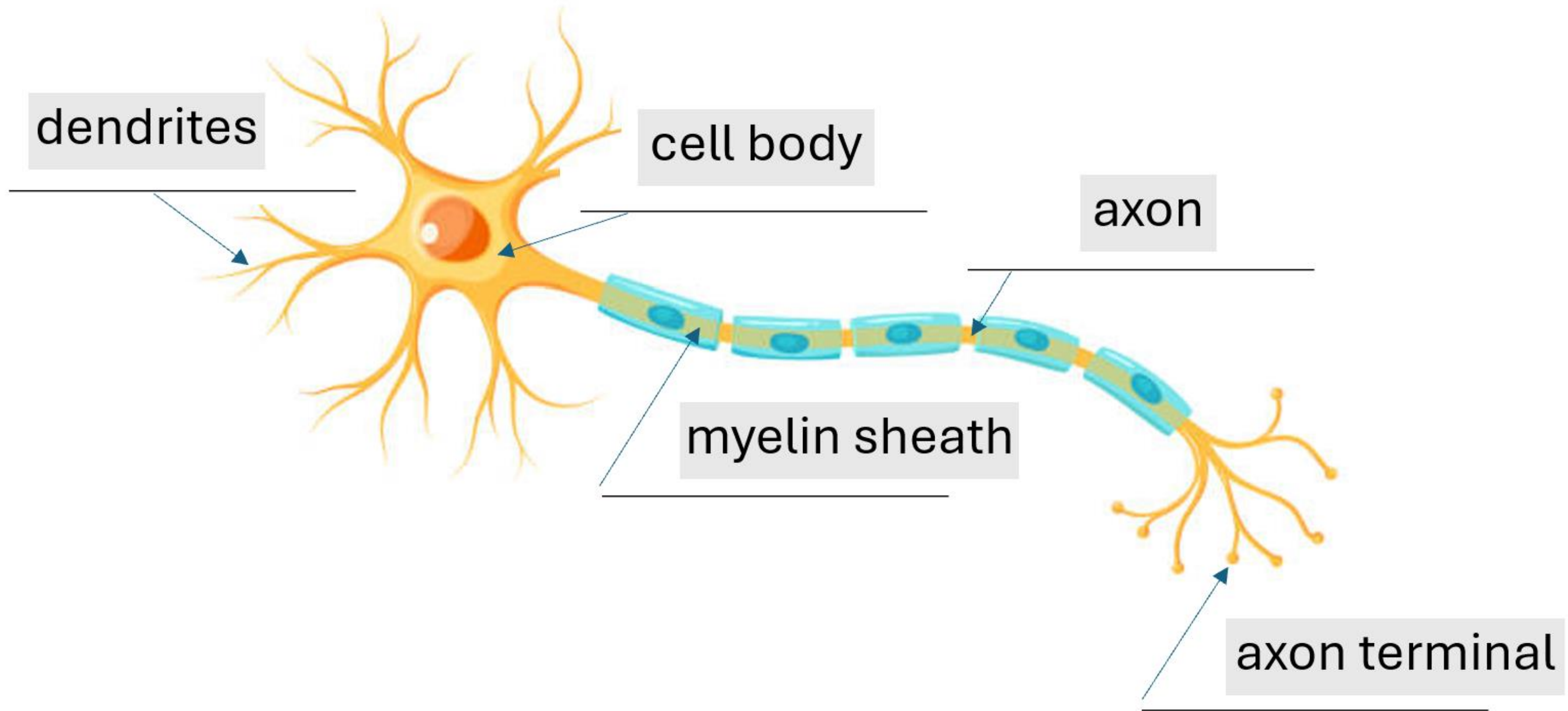


neuron

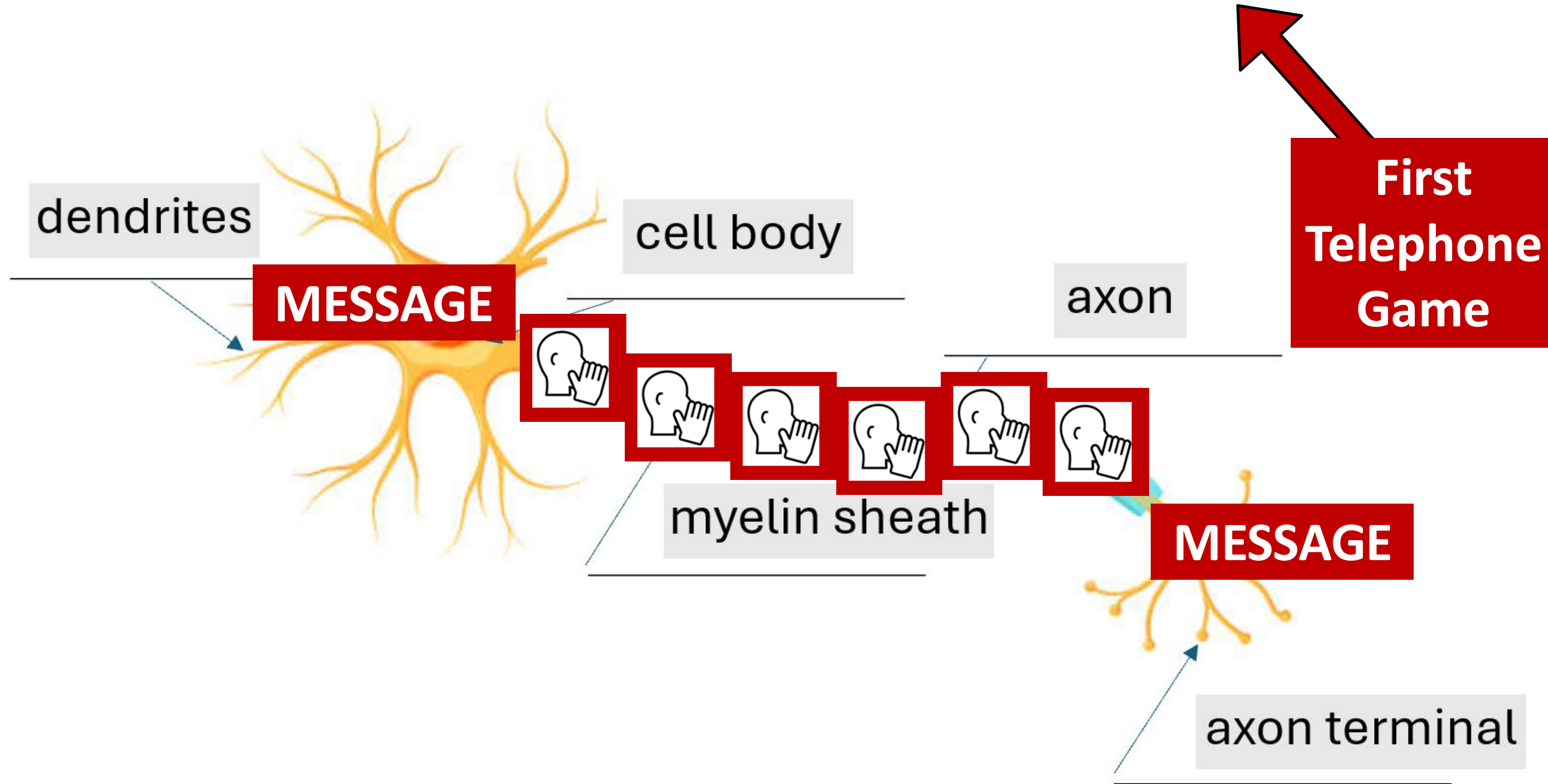


brain

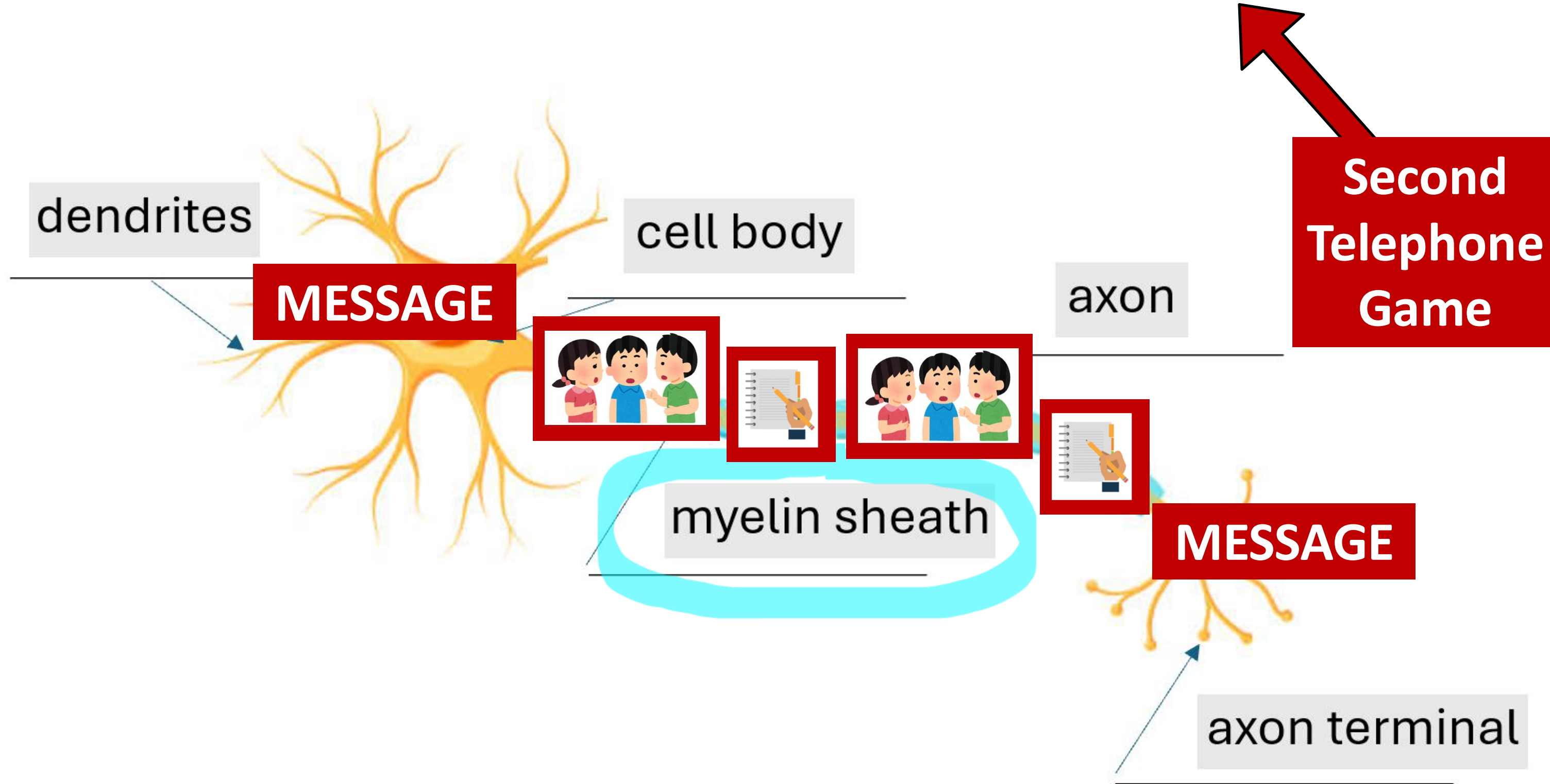
**NEURON – Nerve Cell - (special cells in the brain and spinal cord that send messages to the body)**



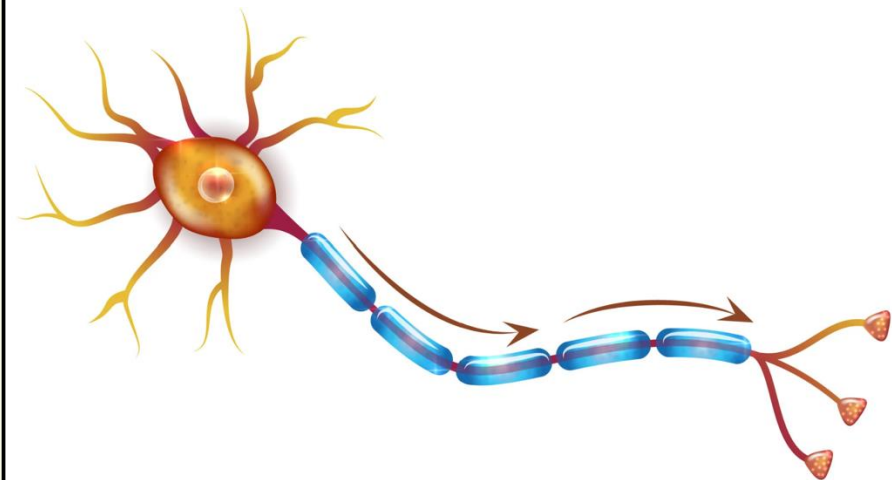
**NEURON – Nerve Cell - (special cells in the brain and spinal cord that send messages to the body)**



**NEURON – Nerve Cell - (special cells in the brain and spinal cord that send messages to the body)**

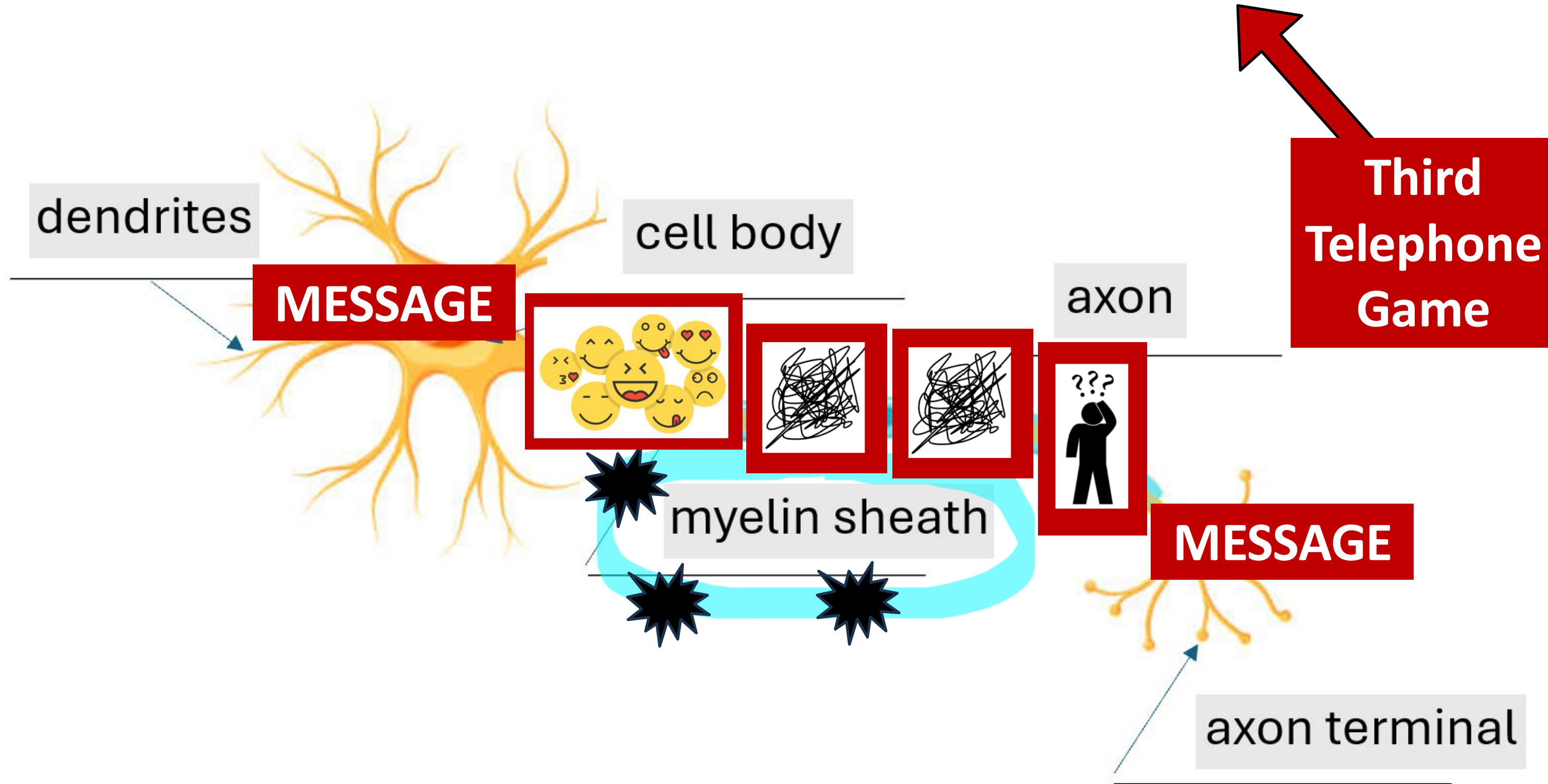


# Myelination

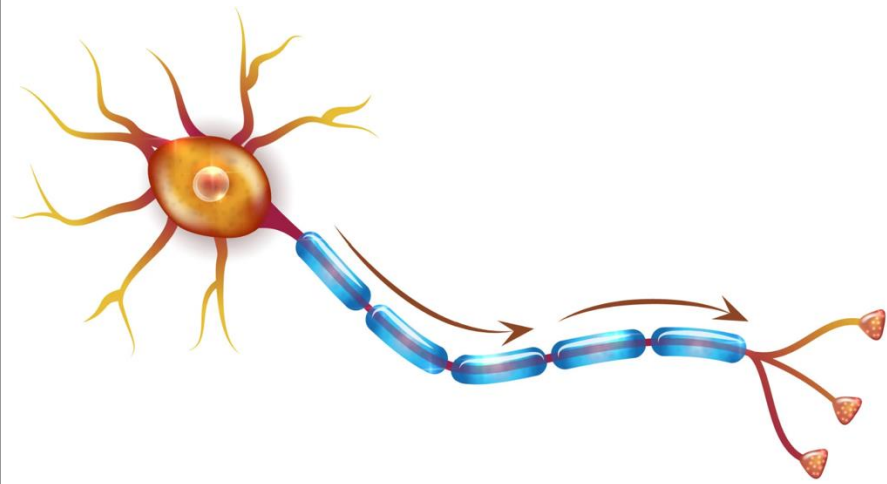




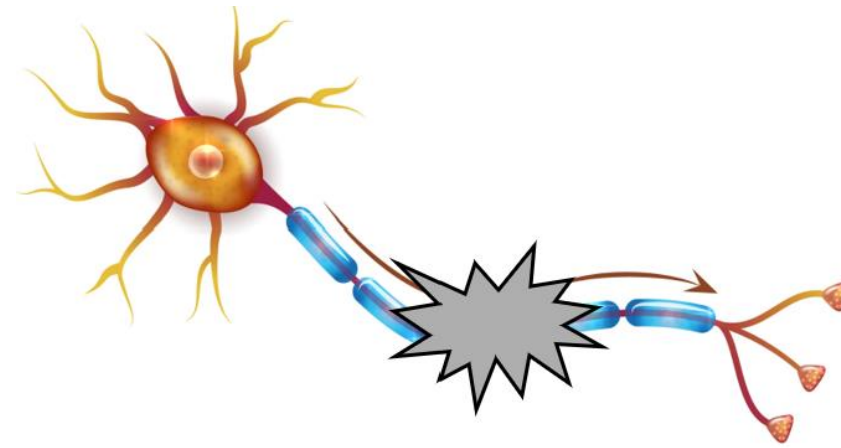
NEURON – Nerve Cell - (special cells in the brain and spinal cord that send messages to the body)



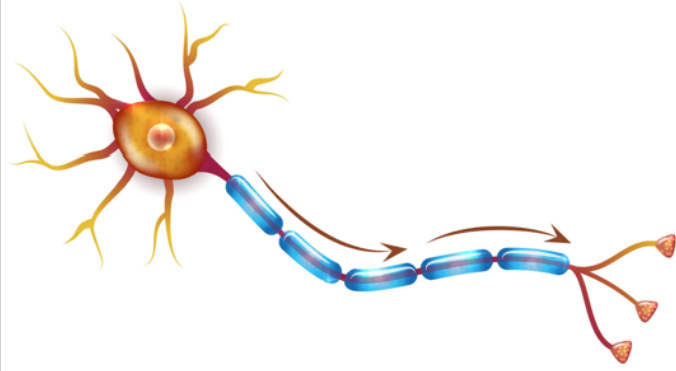
## Myelination



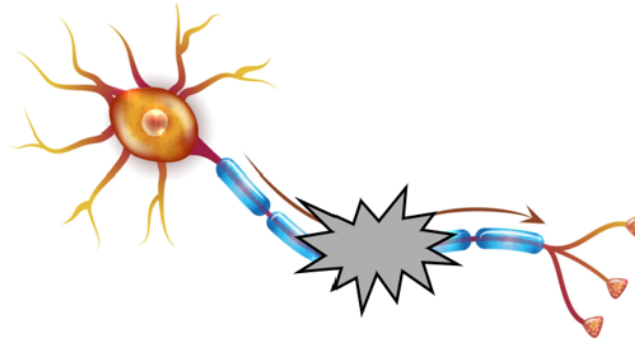
## Demyelination



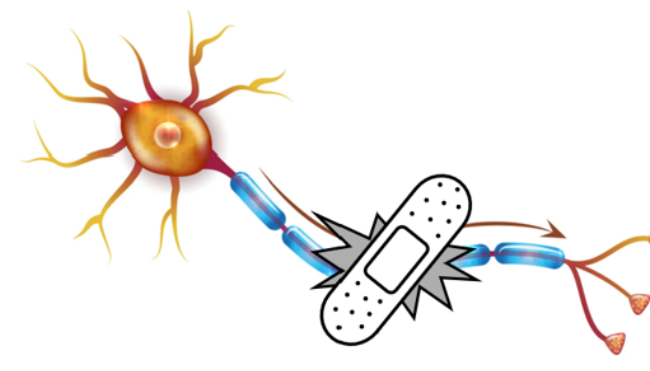
## Myelination



## Demyelination



## Remyelination



Damage to the myelin can slow down, disrupt, or block signals to/from the brain. This can cause various health issues involving vision, muscles, coordination, balance, memory, concentration, thinking, and more. A commonly known demyelination disorder/disease is multiple sclerosis (MS). There is no known cure, but scientists are working to protect myelin from damage and also learning how to repair or replace damaged or missing myelin. The Hartley lab is exploring the roles of hormones and lipids in the myelination and remyelination processes.





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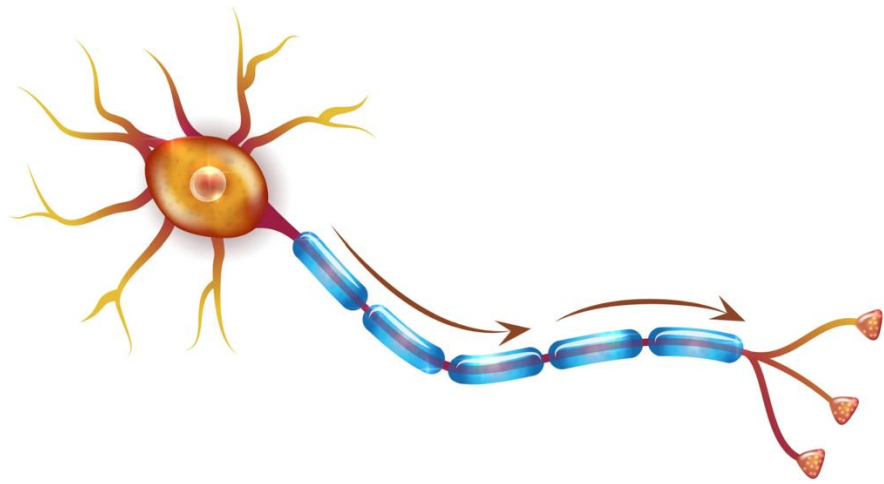
KU

Welcome to the Hartley Laboratory located at the University of Kansas in the Chemistry Department! We are a multidisciplinary lab at the interface of chemistry and biology exploring the roles of hormones and lipids in neurological physiology and pathophysiology.

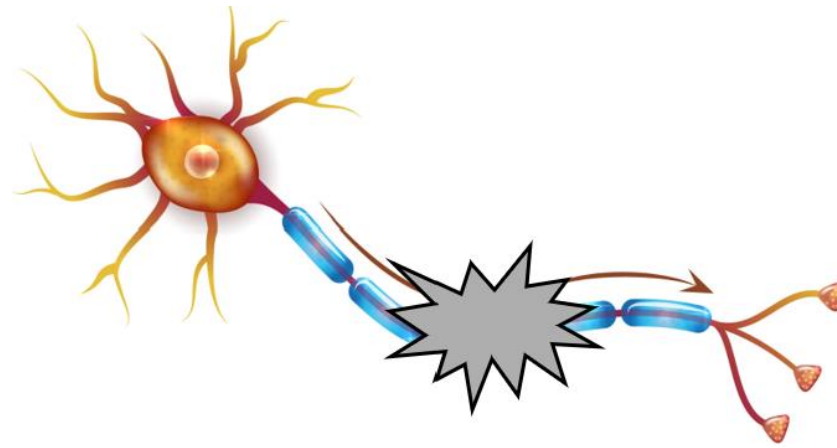




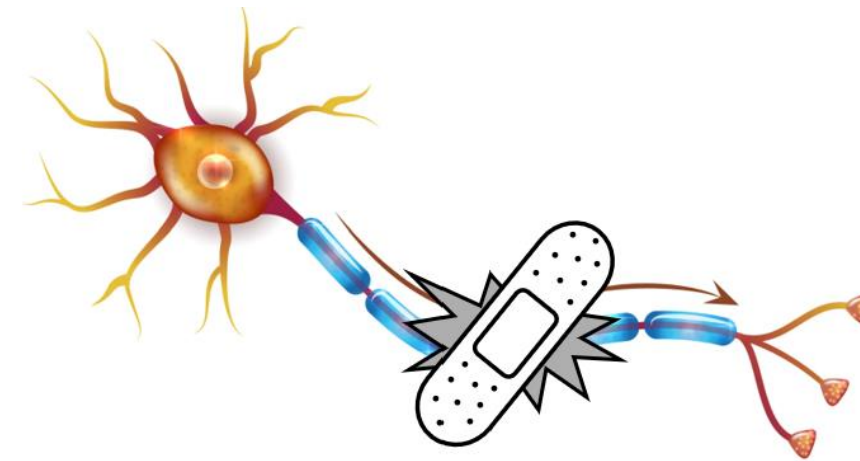
## Myelination



## Demyelination



## Remyelination



# Phenomenon

- Reflexes (hot stove)
- How messages travel and are communicated to/from the brain/body
- The importance of quick, efficient, and correct information

# Challenge

Mimic the design of a neuron (axon with myelin) to engineer a quick and efficient pathway for a message to be sent.

high and low friction material options = myelin

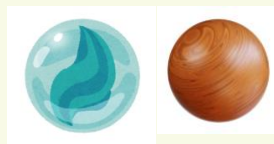
foam tube = axon



board (ramp) to keep  
tube at consistent angle



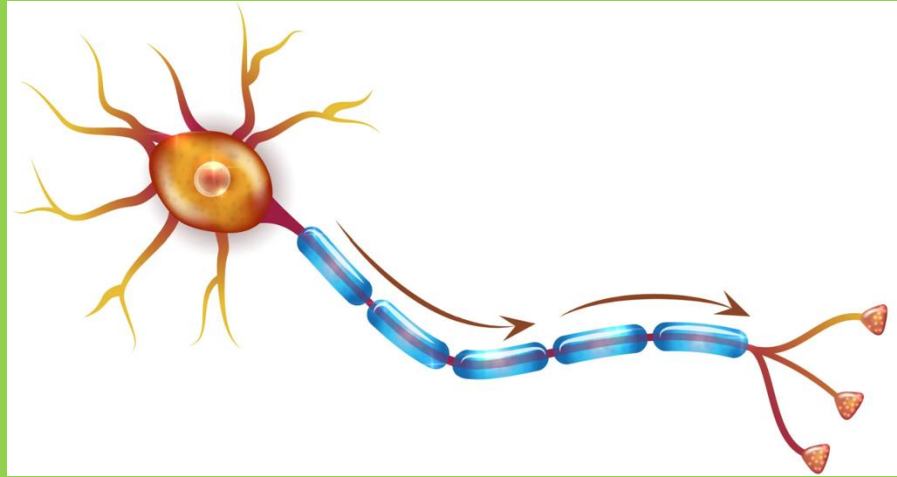
time to nearest  
tenth of a second



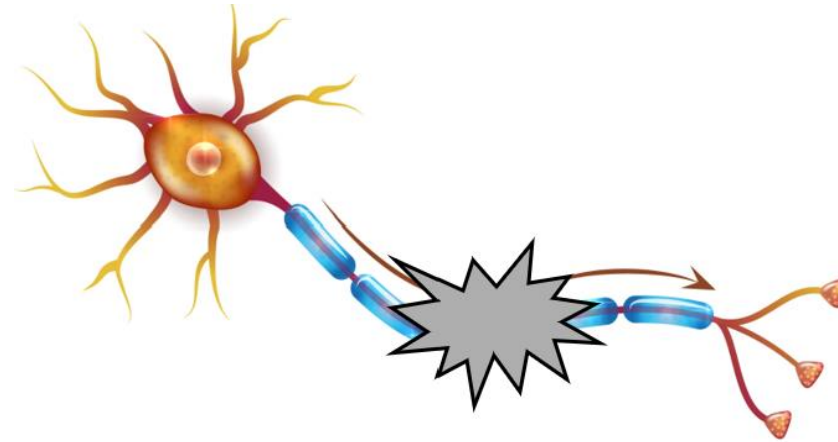
marble or wooden ball = message



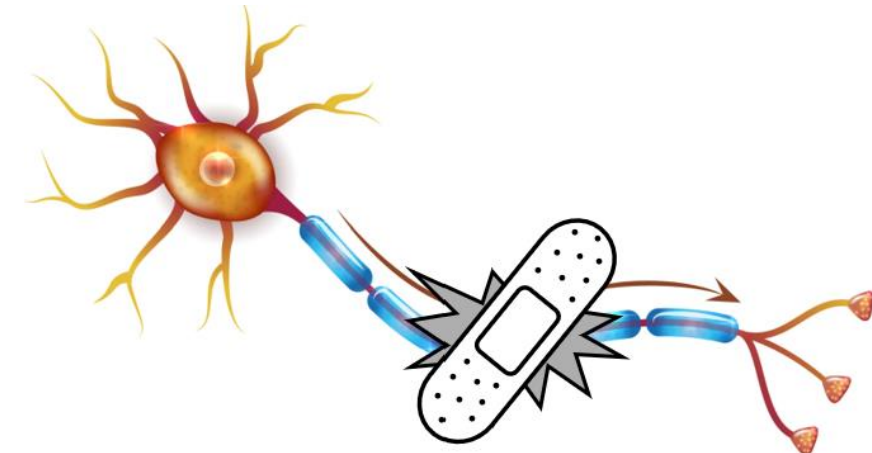
## Myelination



## Demyelination



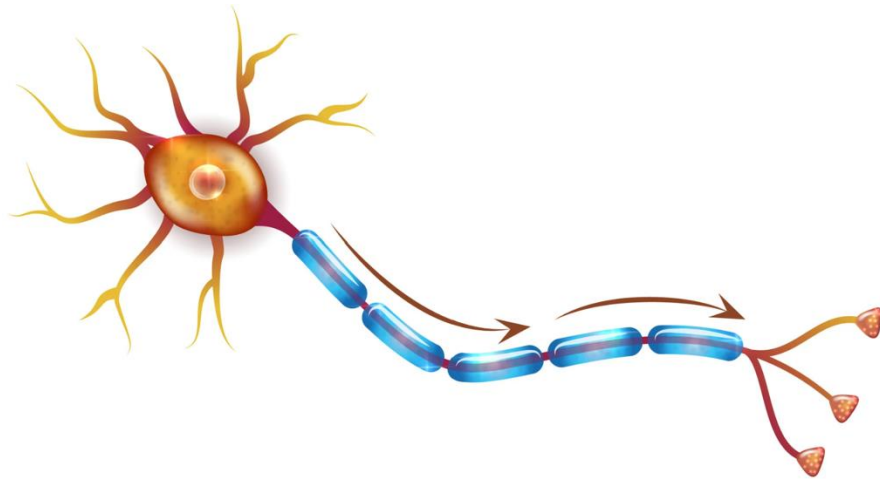
## Remyelination



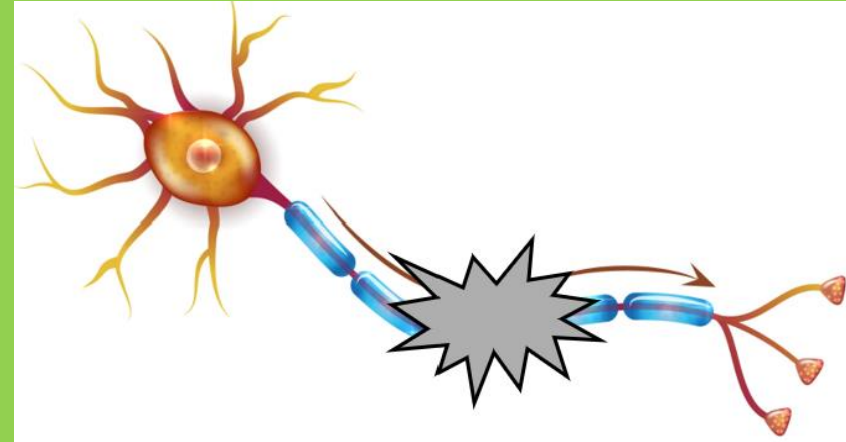
- View and test out sample materials.
- Cover the axon with myelin.
- Conduct 5 timed trials.



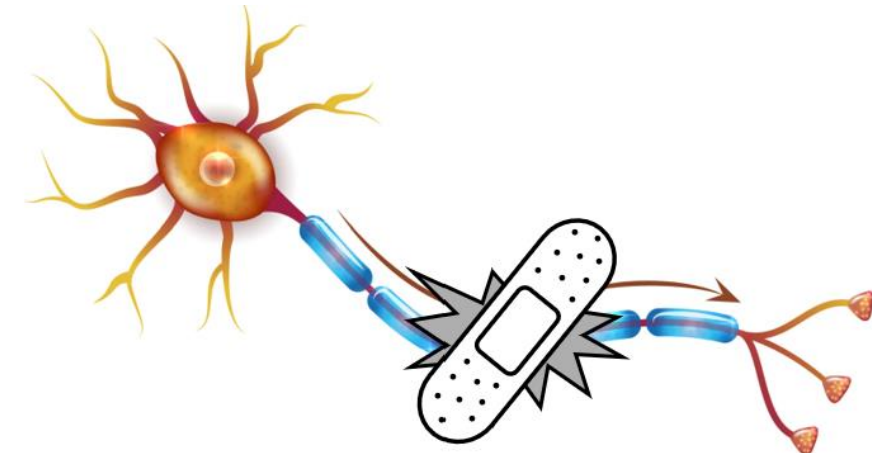
## Myelination



## Demyelination



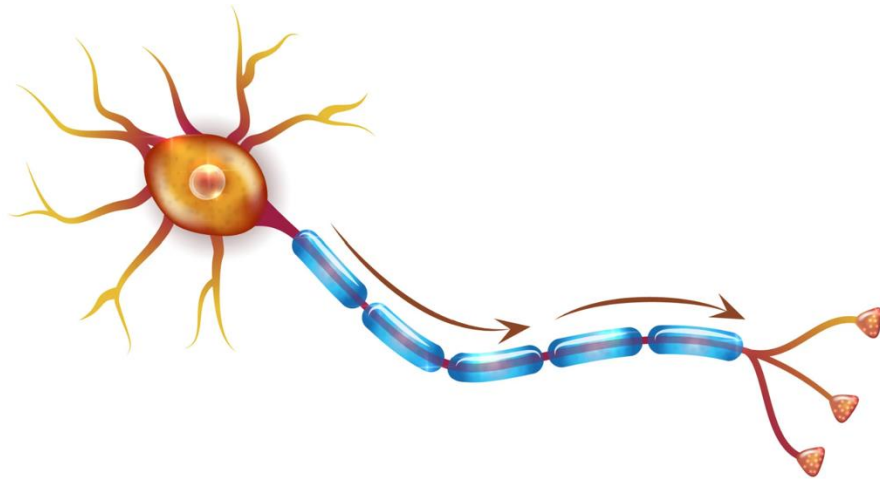
## Remyelination



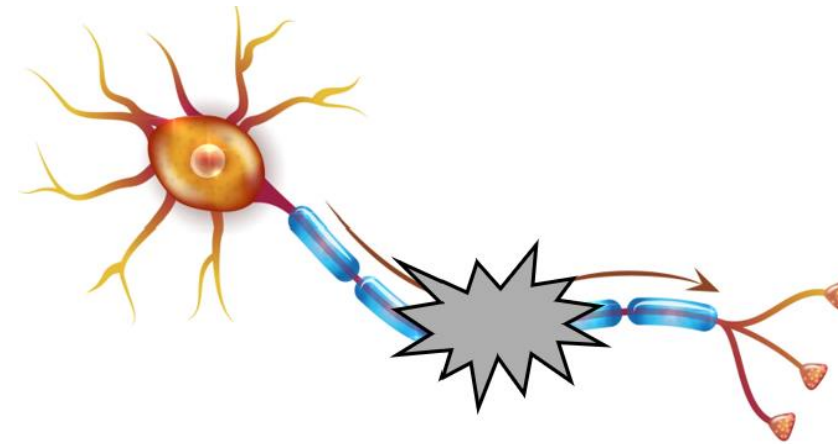
- Oh no! Damaged myelin discovery
- Conduct 5 timed trials.
- Compare to myelinated axon time.



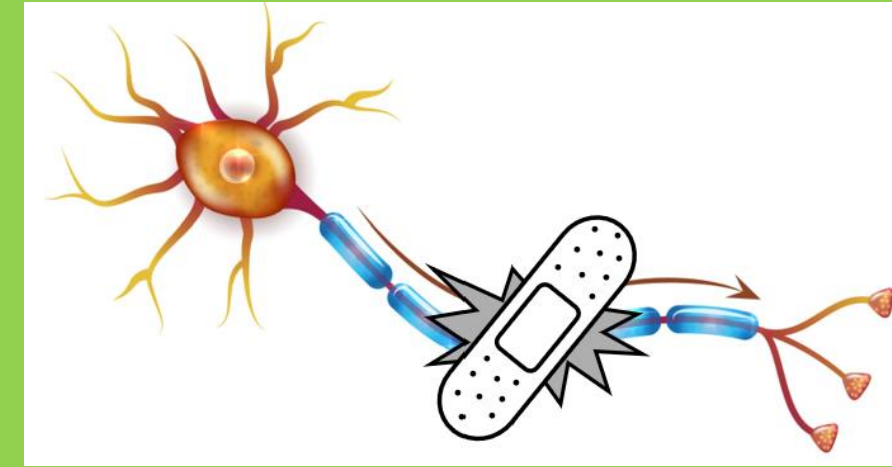
## Myelination



## Demyelination



## Remyelination



- Repair myelin.
- Conduct 5 timed trials.
- Compare to myelinated axon time.
- Compare to demyelinated axon time.



