

NW Noggin

Letting Knowledge Serve
through interdisciplinary
neuroscience (& a few
extra brains!)

- *How do we inspire and learn from ALL students? How do we inspire and learn from our ALL in our community?*
- Northwest Noggin (nwnoggin.org) : community, neuroscience and art



NWNOGGIN



nwnoggin.org

Arts integrated neuroscience
outreach for K-12 & community

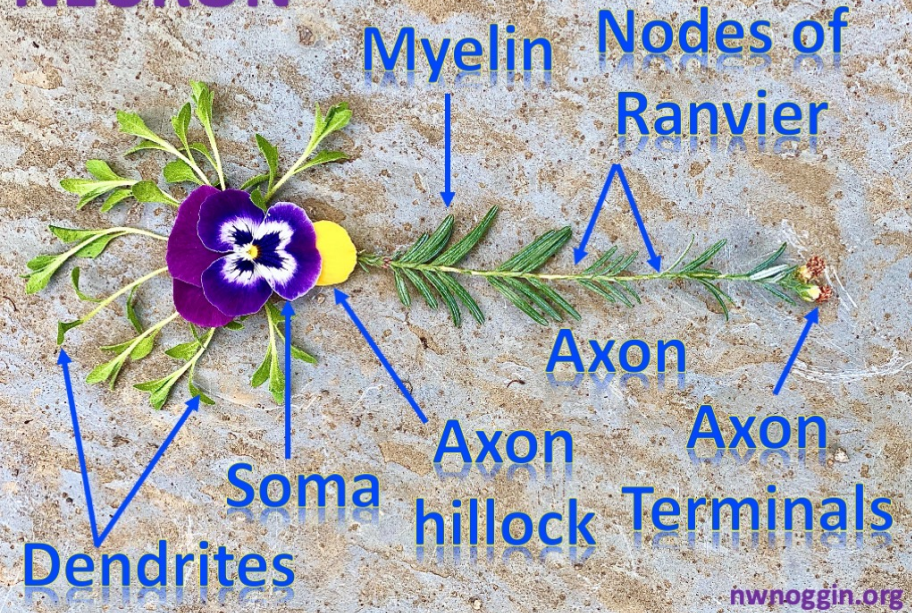


TEN YEARS!
ALL VOLUNTEER (everyone)
50,000+ community members

Art & Brains!



NEURON



Sleep
Anxiety
Depression
ADHD
Autism
Development
Perception
Drugs
Memory
Language
Racial Bias

...



***What you do
has relevance
GO PLACES***



We all pay for research



Greater understanding
More support for research
Increased participation
Less confirmation bias
New directions
FUN!

Connections matter

Why art & brains..?

- Motivation, engagement, **empathy**
- Exploration, creativity, INNOVATION
- **Personal relevance of STEAM material**



Build your own mouse line!



N.W. Noggin
@NWNoggin

Building a #rosehipneuron in
#pipecleaners 🧡 #nwnoggin 🧠🎨
#sciart #scicomm 🦋
nwnoggin.org/2018/08/31/ros...





N.W. Noggin
@NWNoggin

“What causes that feeling of [#paralysis](#) as you’re falling asleep? Does [#daylightsavingtime](#) affect sleep? Why is [#sleep](#) important for [#brains](#)? What brings on [#nightmares](#)?”

[#nwnoggin](#) @ [#astoriaoregon](#) high school 🧠👉 [nwnoggin.org/event/noggins-...](#)

[#outreach](#) [#allvolunteer](#) ❤️



N.W. Noggin
@NWNoggin

“Can you get a [#concussion](#) in your [#entericnervoussystem](#) or [#microbiome](#)? Is the [#brain](#) like a computer? What part of the brain is involved w/[#rhythm](#) & making your foot tap? Do you ever see a brain that’s smooth?”



N.W. Noggin
@NWNoggin

“I saw [#mycelium](#) in the forest and it looks like [#brain](#) cells 🍄! I think my [#brain](#) learns through stories” 🧠👉
🧠👉🐼👉🧠! Yes ❤️

Some of the deepest insights and questions from [#preK](#) today 😊😊

[#nwnoggin](#) [#oregoncoast](#) 🐦🌊👉👉
[nwnoggin.org/event/noggins-...](#)



N.W. Noggin
@NWNoggin

“Does [#alcoholism](#) run in families? How does smoking cigarettes affect the brain? What about [#cannabis](#)? What happens in your [#brain](#) if you have [#ADHD](#)? [#DID](#)? Why are drugs more dangerous for kids?”

GREAT QUESTIONS @ Seaside Middle School 🧠👉
😊👉 [nwnoggin.org/event/noggins-...](#)



School visits



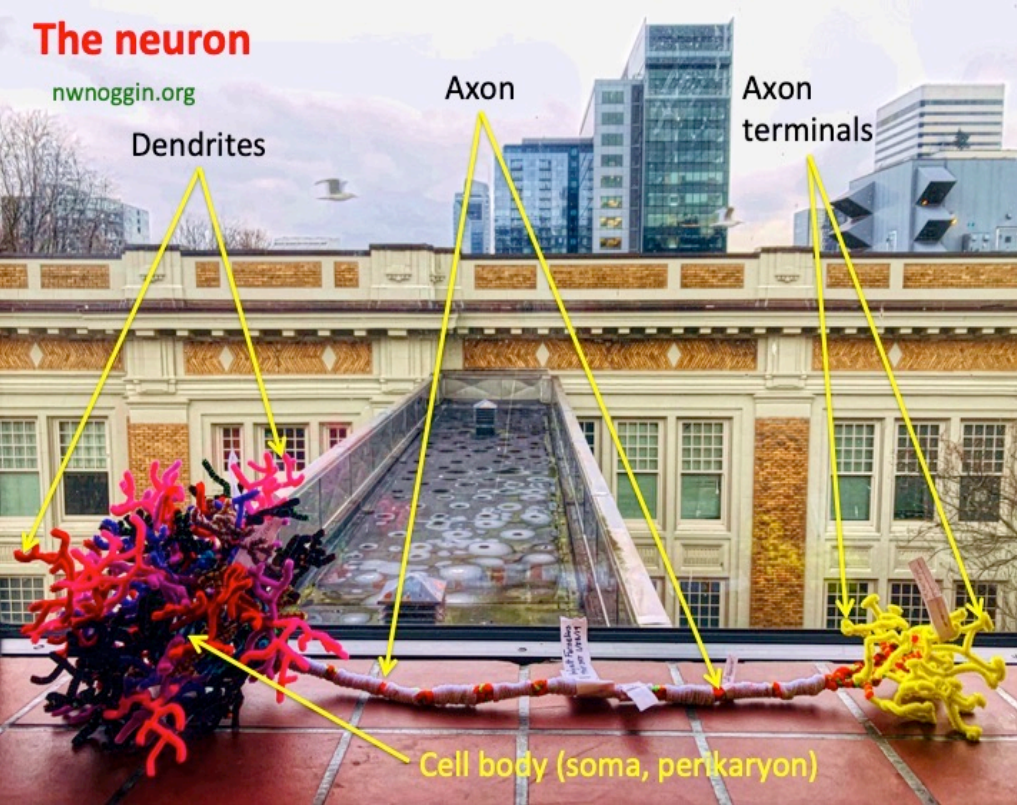
Turner Elementary, DC



Public outreach and connection

The neuron

nwnoggin.org



MAKE YOUR OWN: Details @ nwnoggin.org

Pipe cleaner brain cells!

Making a pipe cleaner neuron...

1. Start with a good amount of (colorful) pipe cleaners, I have 20 here.



2. Create the soma or cell body by linking several pipe cleaner hoops together.



3. Attach dendrites to your soma by wrapping them around the soma pipe cleaners.



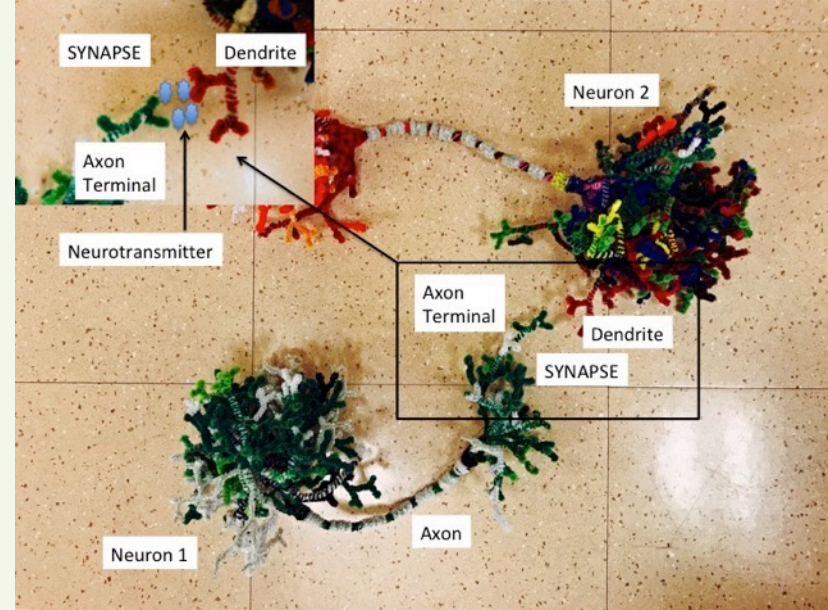
4. Attach axon terminals to the other end of your axon.



5. Wrap myelin around your axon.



6. Create a nucleus for your soma by wrapping two pipe cleaners around each other. Attach your nucleus inside your soma. You have a neuron!



MAKE CONNECTIONS

MAKE ART





Public Schools

During COVID-19

[#showusyourbraincell](#)

Neurons are a type of brain cell

The majority of neurons share some basic features

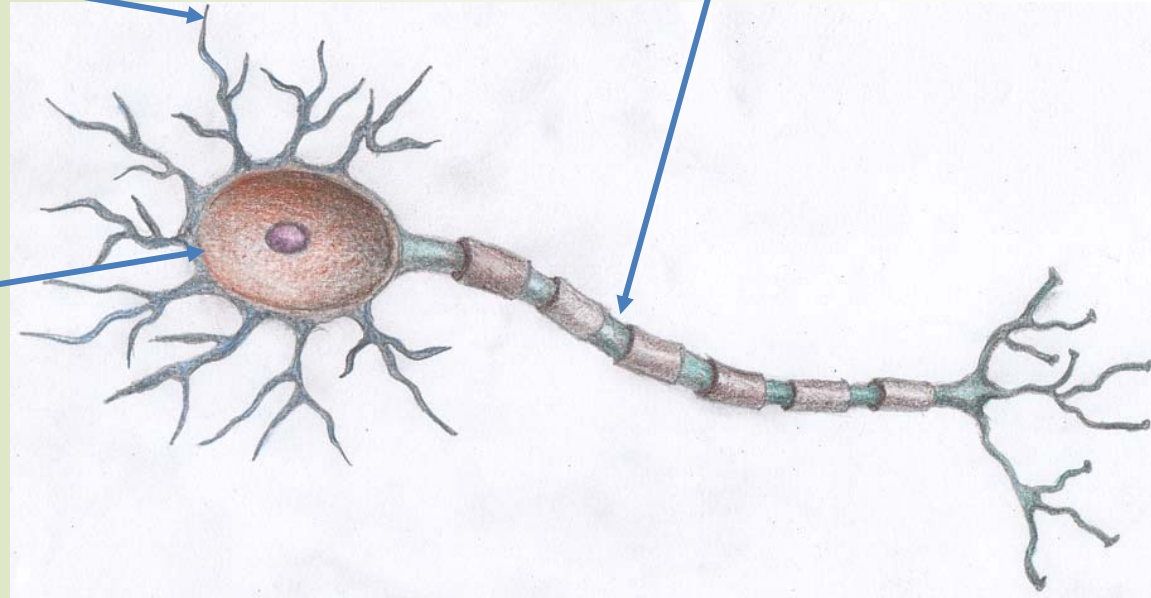
Dendrites

(Receive input from other neurons at gaps called **synapses**)

Cell Body

(or Soma, location of **nucleus** and cell **DNA**)

Axon (Carries electric message)



Found Object Brain Cells

DUTCH NEURON
By Austin Howard

#showusyourbraincell

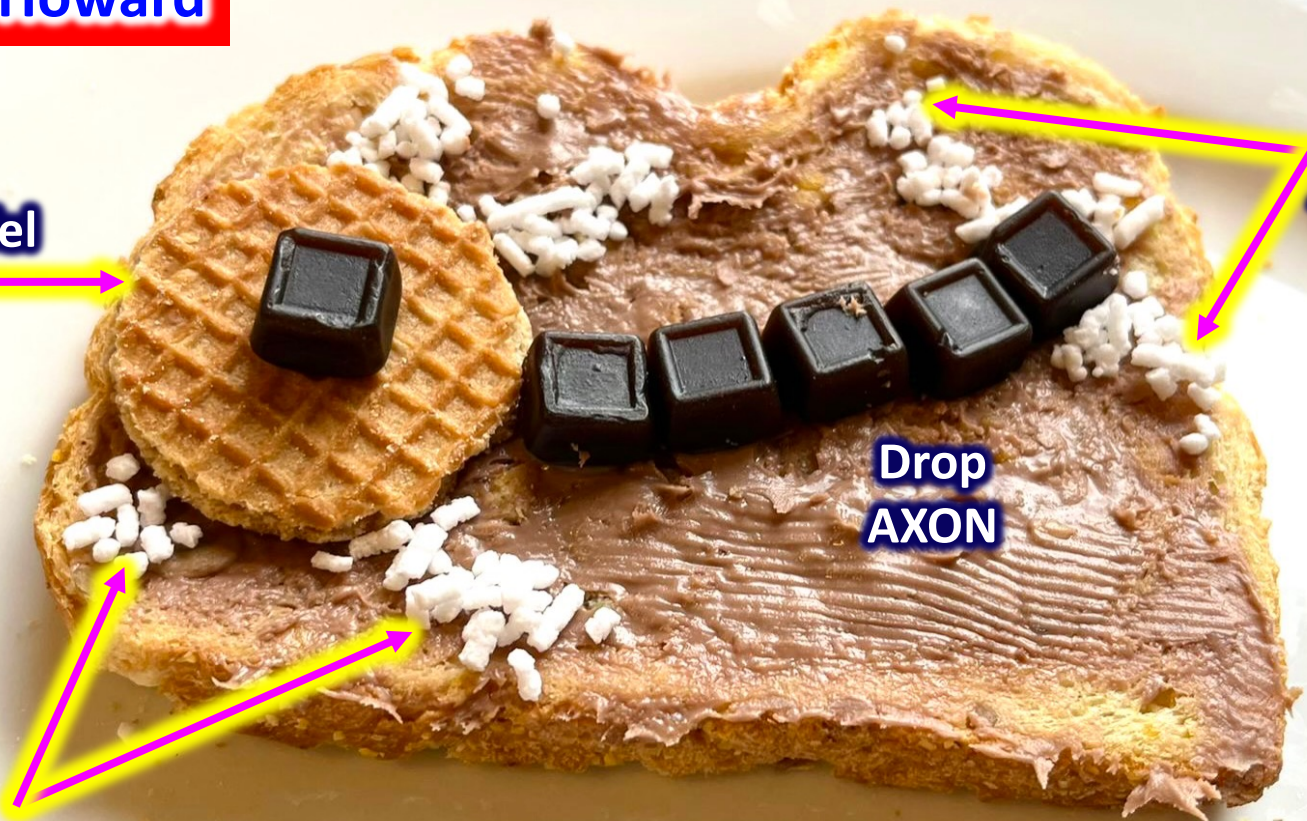
Stroopwafel
SOMA

Hagelslag
AXON
TERMINALS

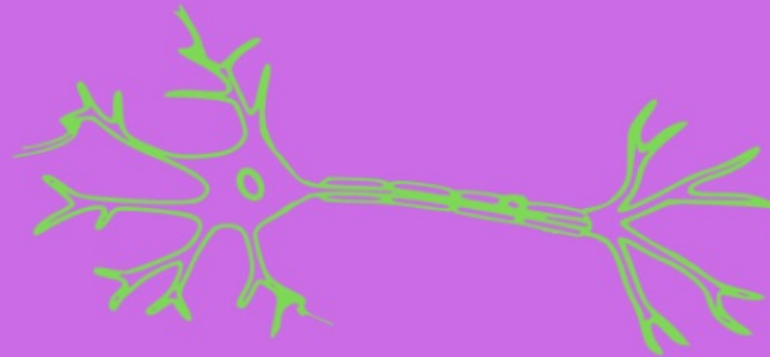
Drop
AXON

Hagelslag
DENDRITES

nwnoggin.org



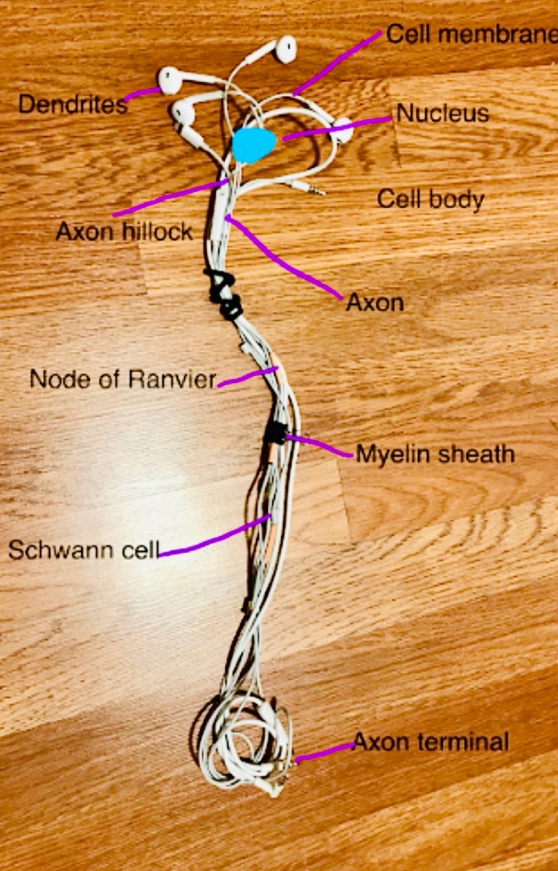
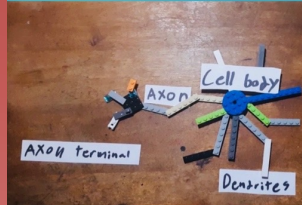
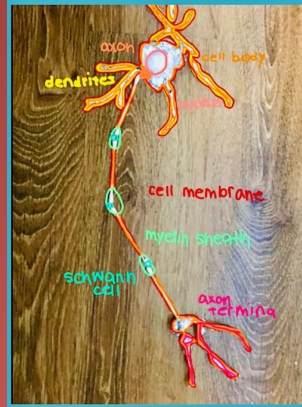
Een zenuwcel



#showusyourbraincell

Seaweed Neuron

#showusyourbraincell

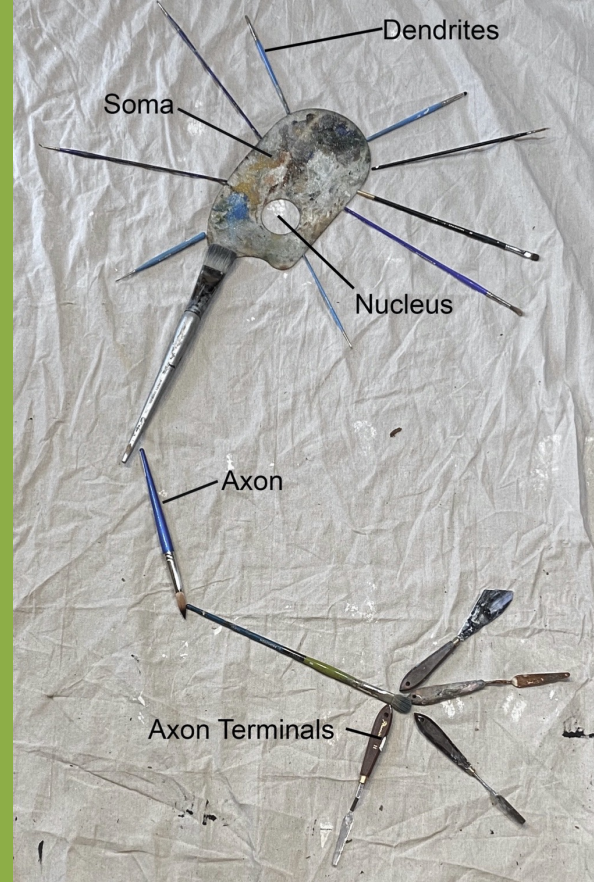
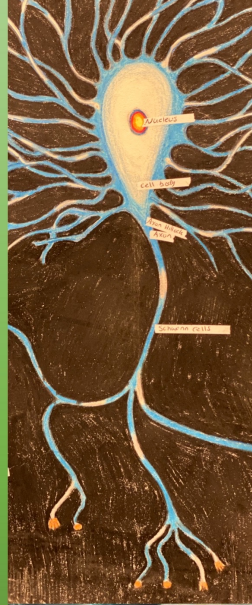


#showusyourbraincell

Neuron



#showusyourbraincell



By James & Mark
Rutledge-Gorman

#showusyourbraincell

Tuna Jig Neuron

#showusyourbraincell



Jigging is a type of fishing where your boat stays in place, or slowly drifts, while the line is jerked up and down to imitate the swimming of prey

In Oregon, tuna jigs are primarily used for trolling, a style of fishing where you pull hooks through water behind your boat

LEARN MORE
<https://Seagrass.oregonstate.edu>

By Amanda Gladics,
Oregon Sea Grant, OSU

Serotonin Flow



By Sai Kiersarsky

#showusyourbraincell

#showusyourbraincell

ANY BRAIN CELLS
Glial cells
Pyramidal neurons
Photoreceptors
Inner hair cells
Nociceptors
Rhombic lip neurons
Meissner's corpuscles

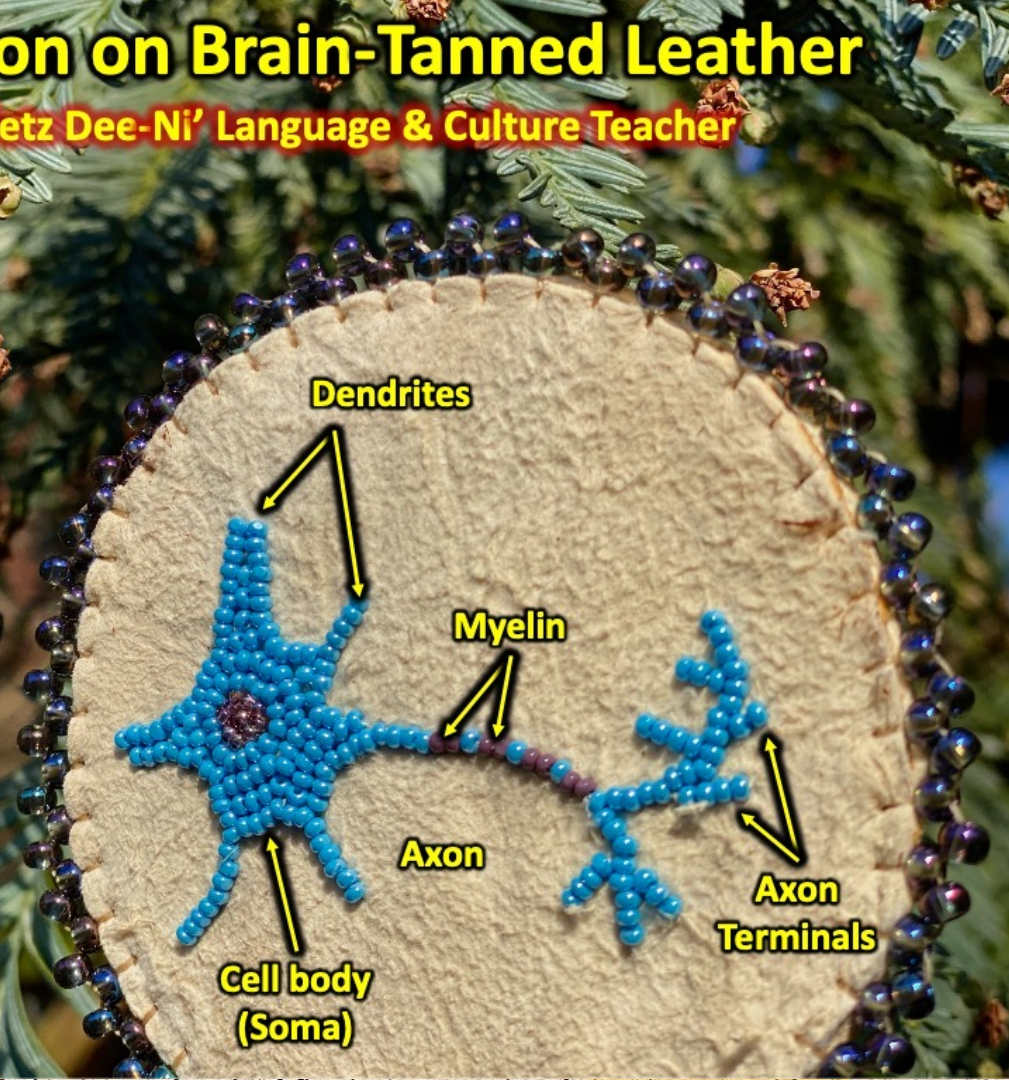


Beaded Neuron on Brain-Tanned Leather

By Theresa Smith, Siletz Dee-Ni' Language & Culture Teacher

"Every animal has enough brains to tan its own hide"

#showusyourbraincell
nwnoggin.org



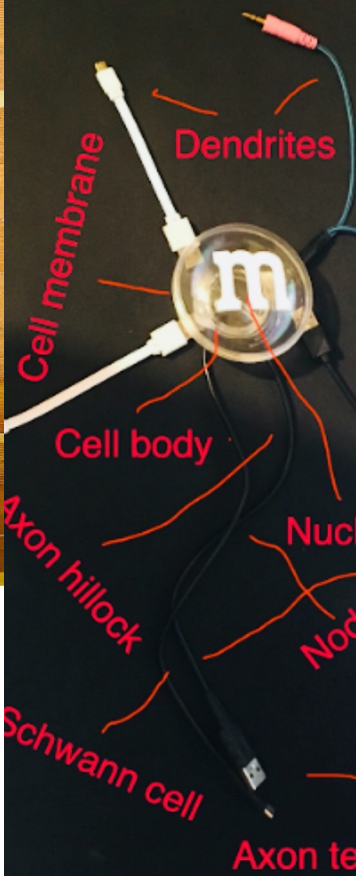
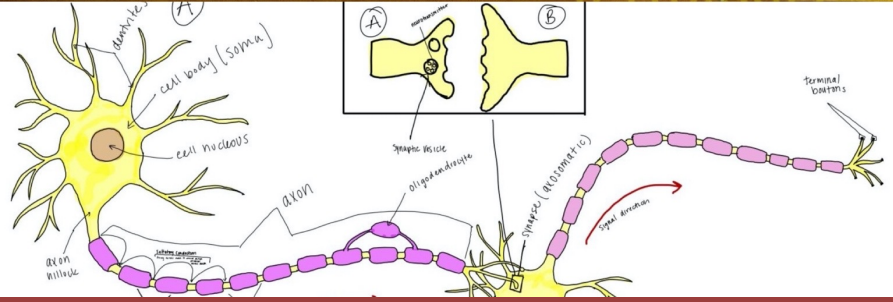
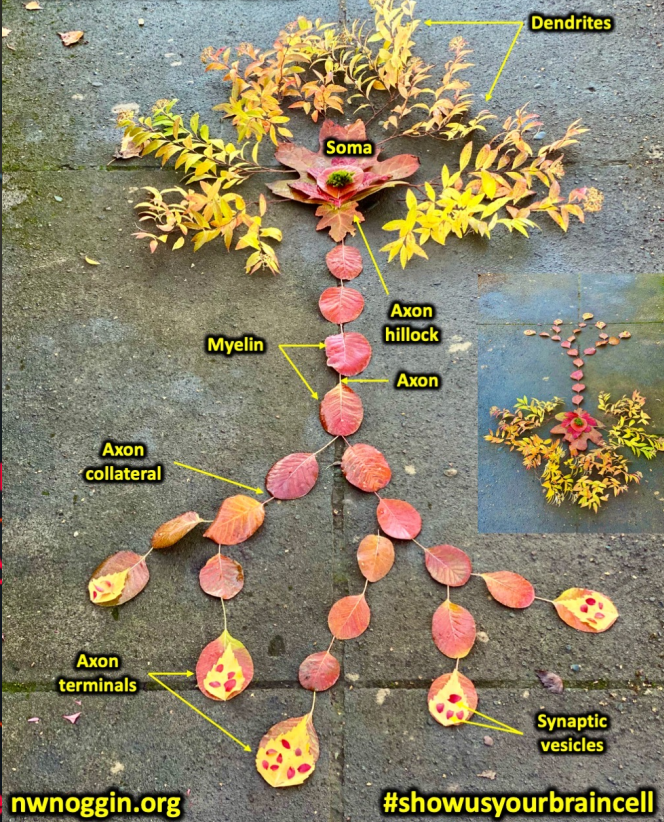


#showusyourbraincell

Neuron from the coat rack



Fall Neuron



#showusyourbraincell

nwnoggin.org

#showusyourbraincell

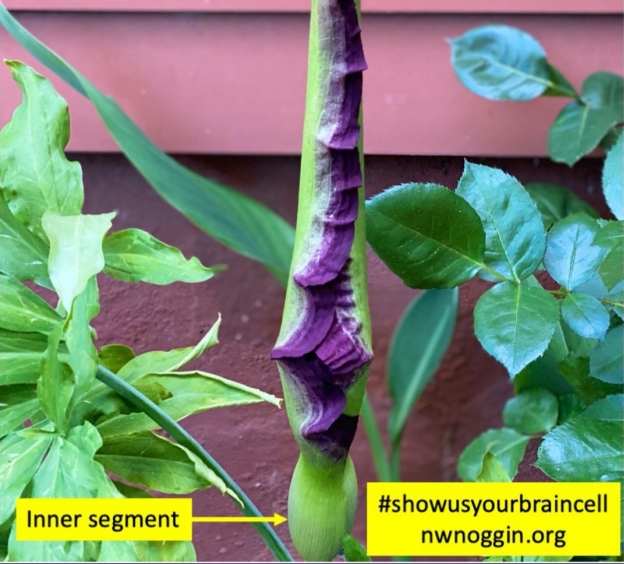
Dracunculus Vulgaris

Smells like rotting flesh
Pollinated by flies

Or...retinal cone cell?

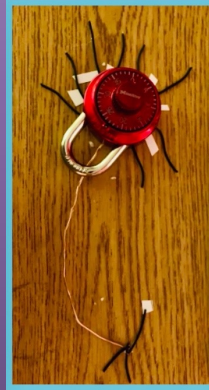
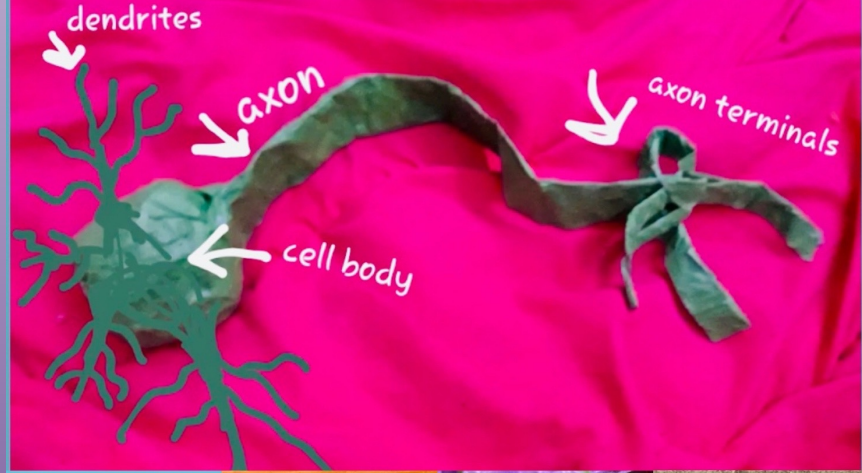
Membranous disks
(sites of photopigment)

Outer segment



Inner segment

#showusyourbraincell
nwnoggin.org



#showusyourbraincell

Taste afferent

Taste afferents are arranged like sections of an in **taste buds** on your tongue, with tiny **microvilli** poking out of **taste pores** for detecting chemicals (**tastants**) in food.



nwnoggin.org



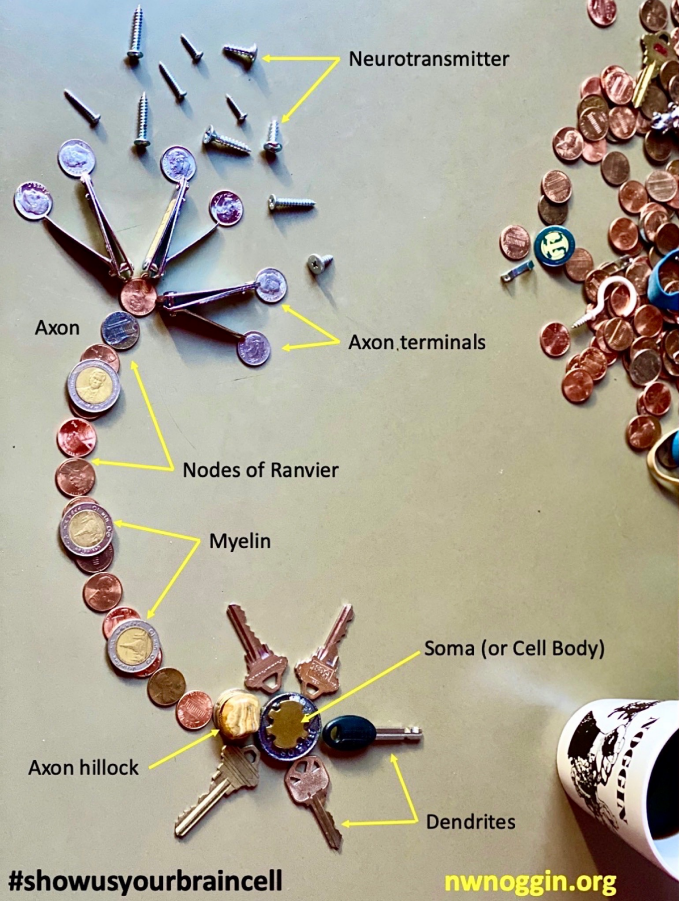
Microvilli
Site of receptor proteins that bind chemicals you can taste (tastants)

Nucleus

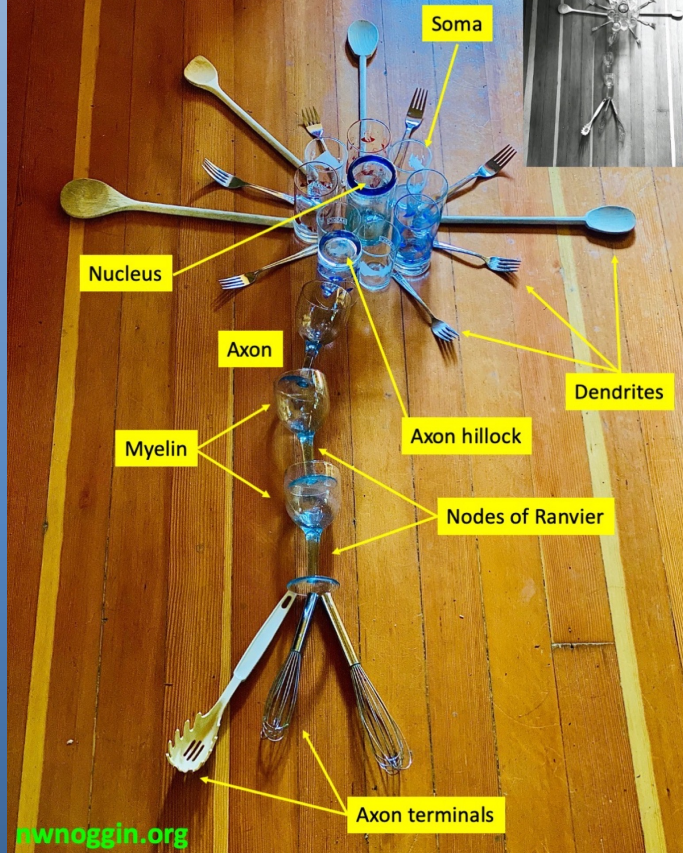
#showusyourbraincell



#showusyourbraincell

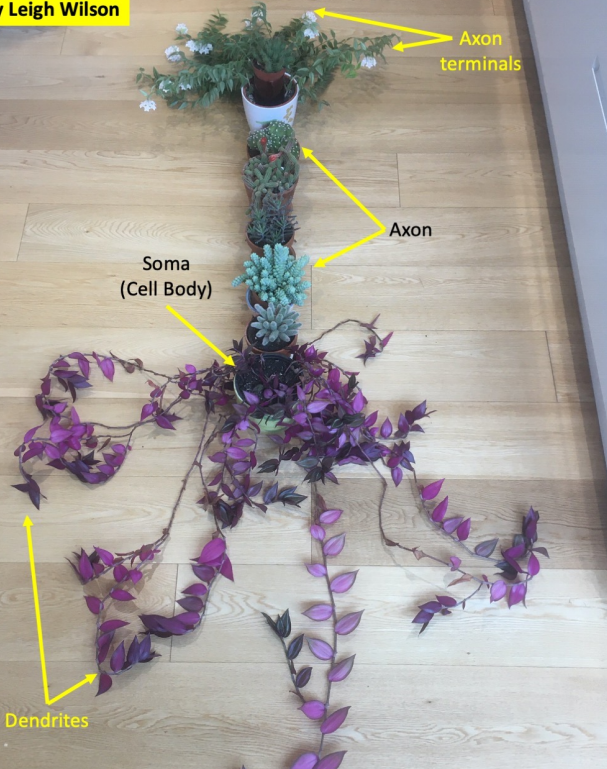


#showusyourbraincell



#showusyourbraincell

By Leigh Wilson



Axon terminals

Axon

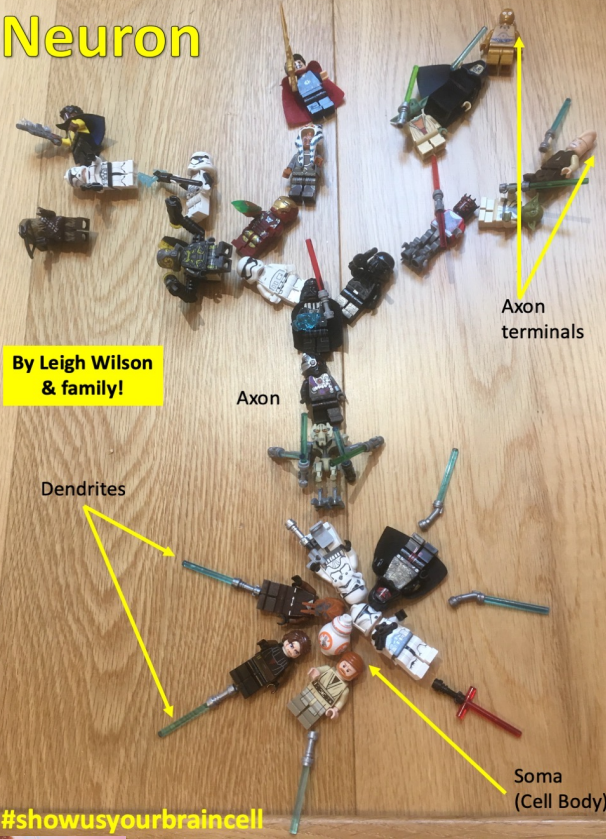
Soma (Cell Body)

Dendrites

#showusyourbraincell

Neuron

Neuron



By Leigh Wilson & family!

Axon

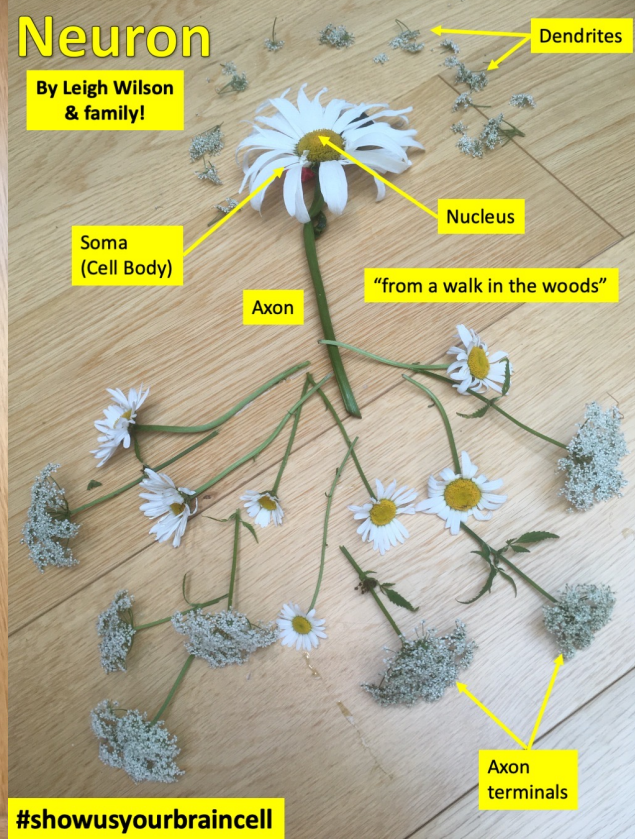
Dendrites

Soma (Cell Body)

Axon terminals

#showusyourbraincell

Neuron



By Leigh Wilson & family!

Soma (Cell Body)

Axon

"from a walk in the woods"

Nucleus

Axon terminals

Dendrites

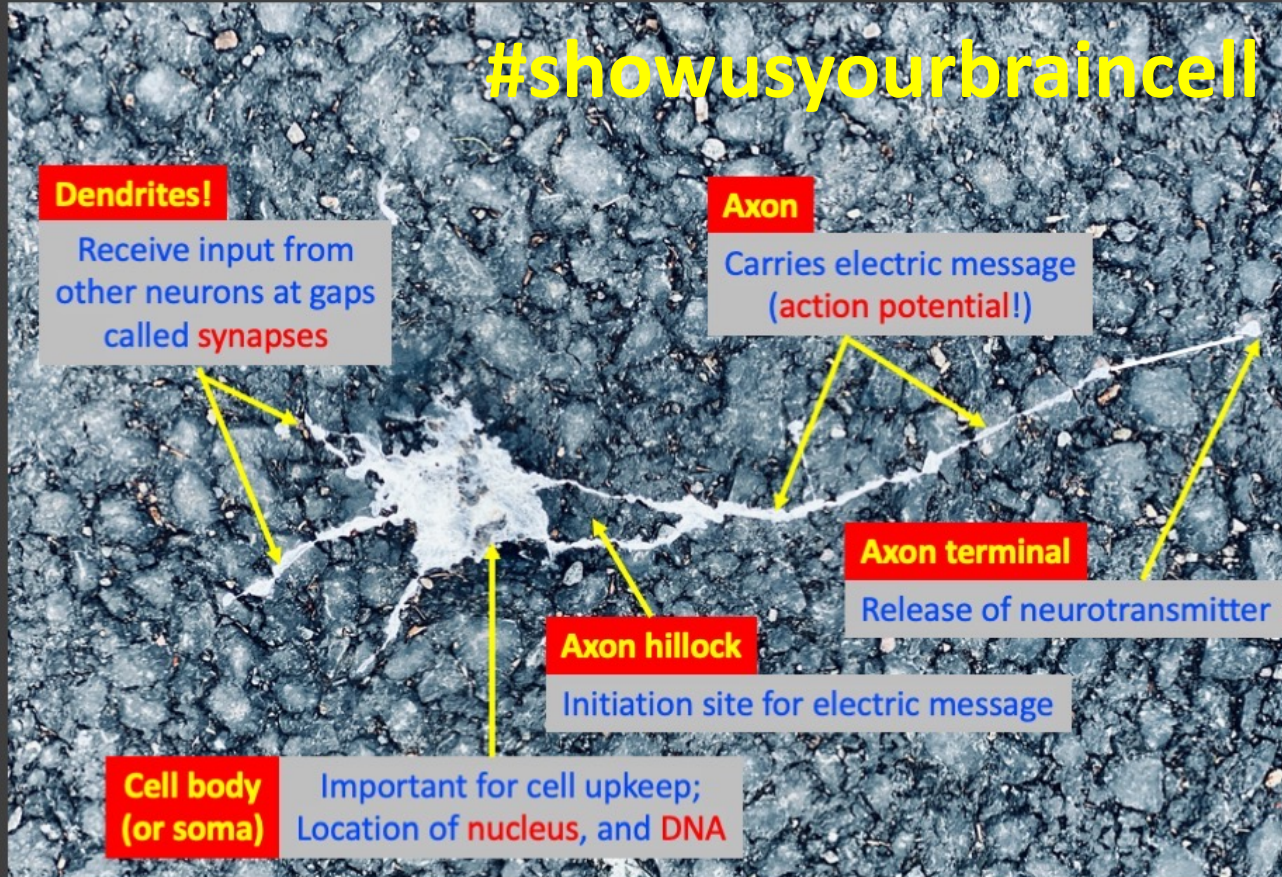
#showusyourbraincell



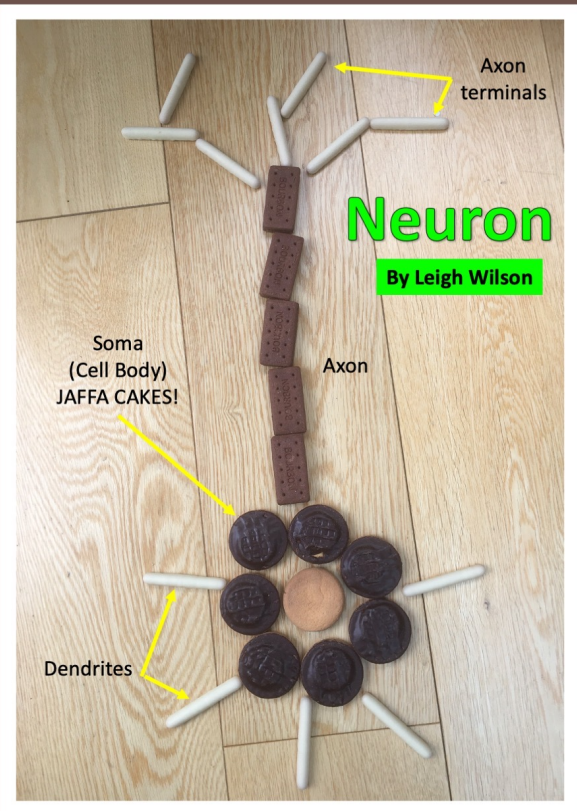
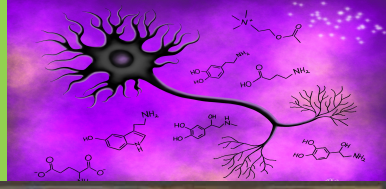
#showusyourbraincell

You can find neurons everywhere!

#showusyourbraincell



Make your own – AND SHARE!



#showusyourbraincell

#showusyourbraincell

