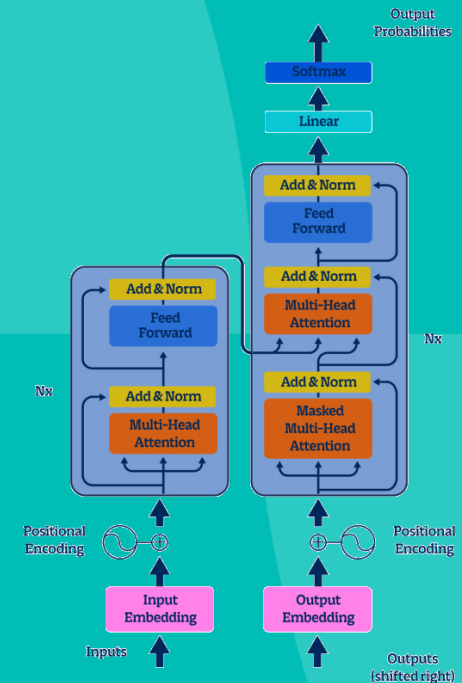


How Your Brain Really Learns:

Practical tools for teachers and leaders

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Coursera's Inaugural Innovation Instructor
Winner of McGraw Prize in Education (2023)
Distinguished Professor of Engineering
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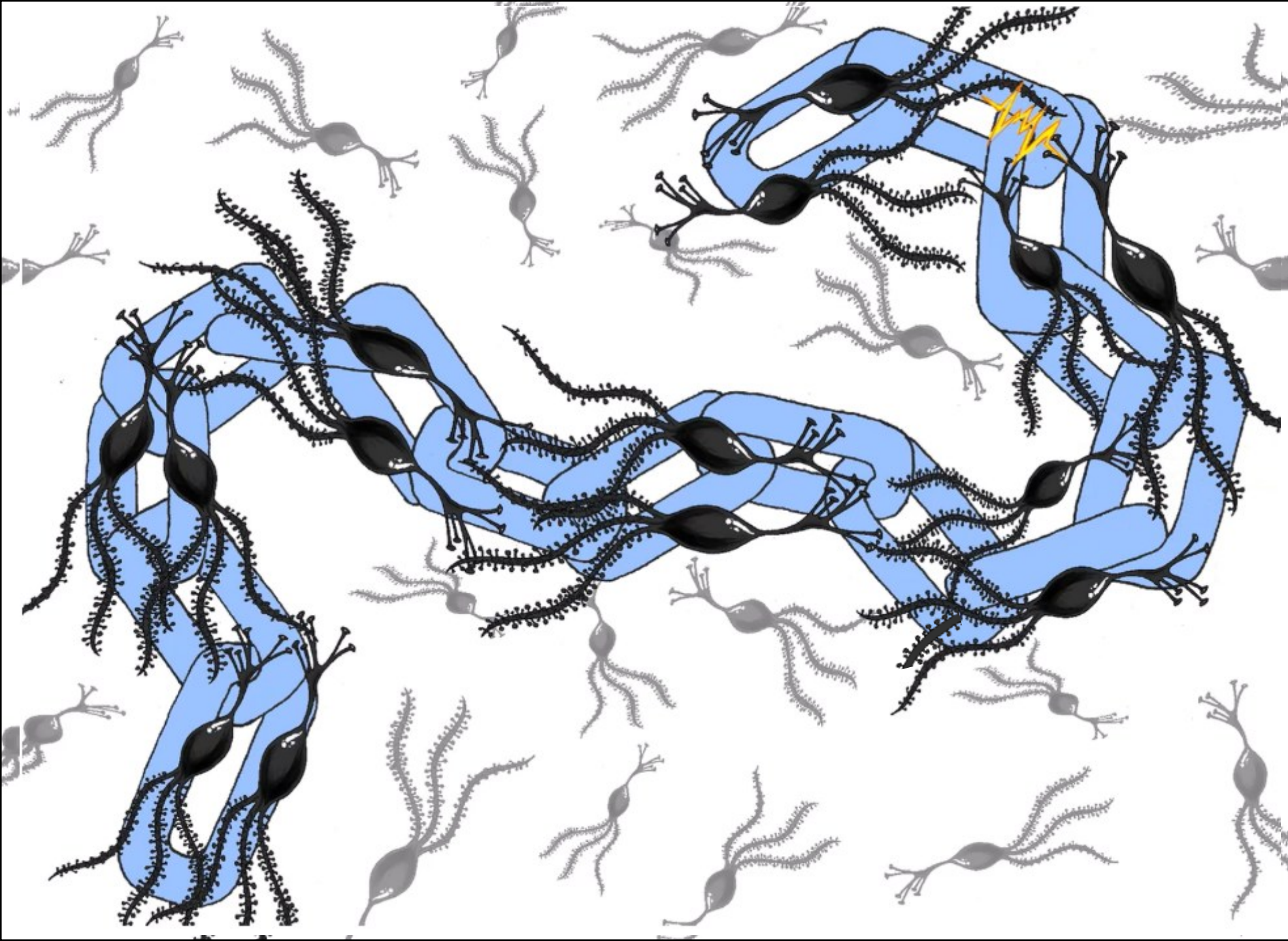
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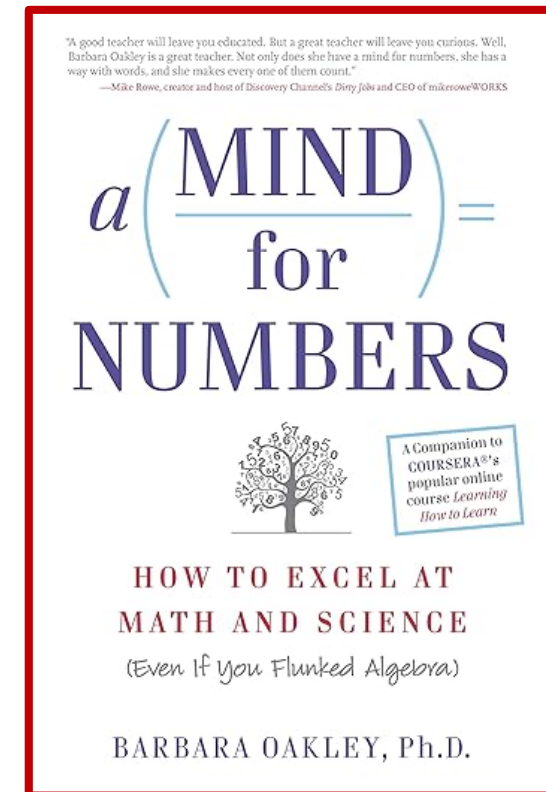
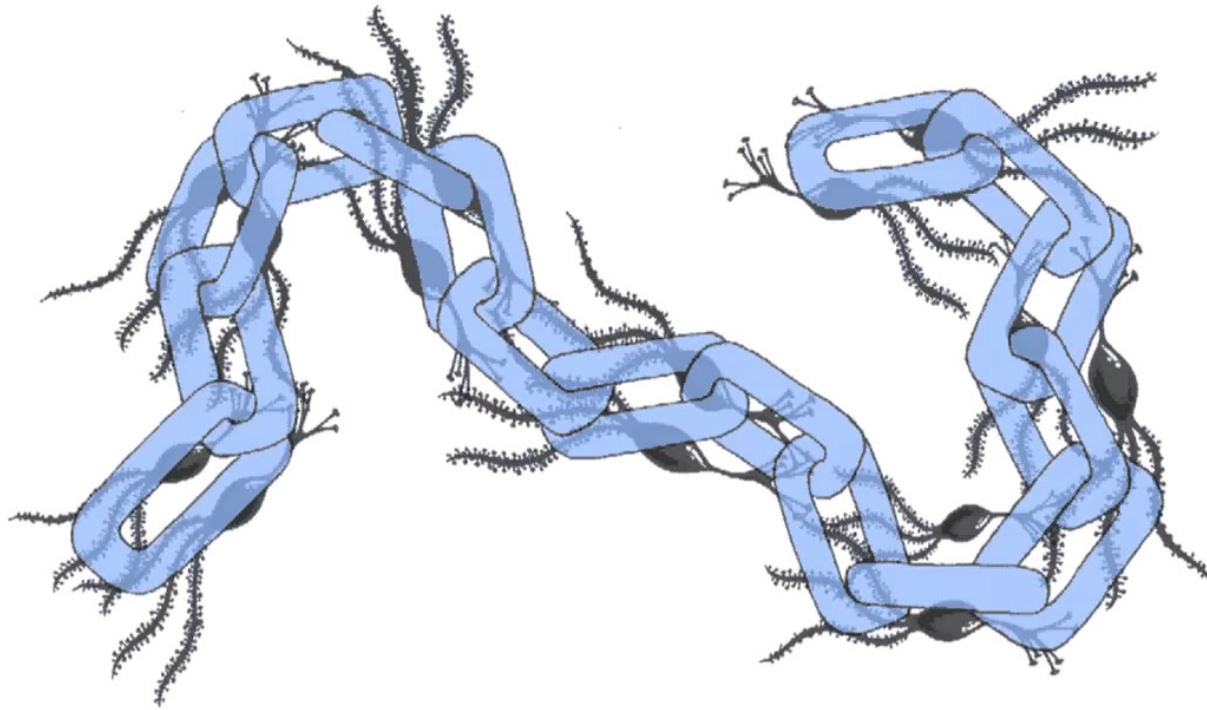
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These are like
sets of links
in a necklace.

The value of metaphor



How to come up with metaphors?

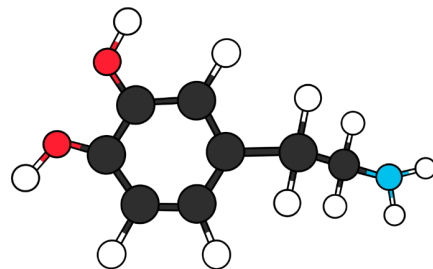
ChatGPT!

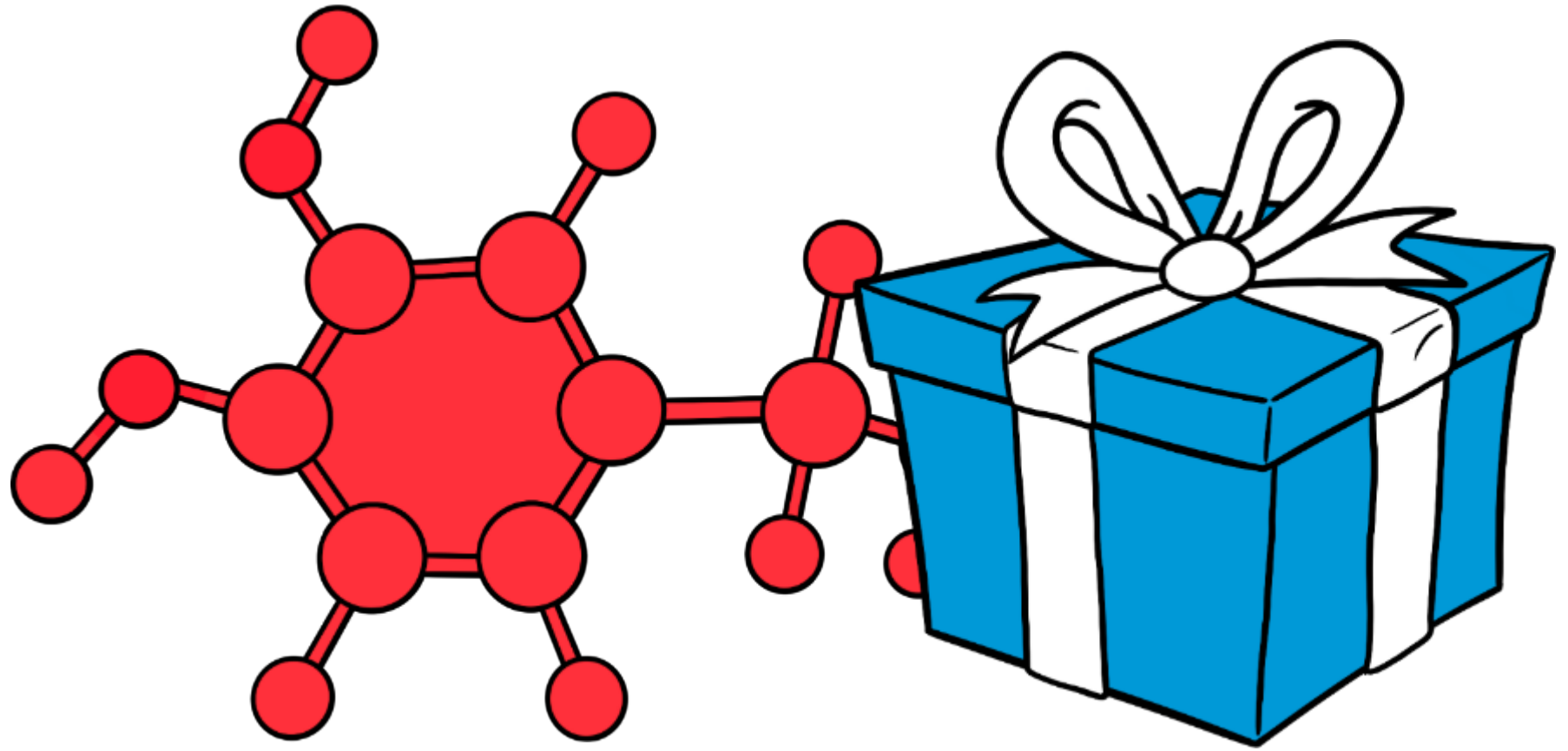
Sample prompt: Can you use a metaphor to explain the difference between and how to handle **Main Guard** and **Scope** in Python Programming?

- Think of the **Main Guard** in a Python script as the gatekeeper of a castle, and **Scope** as the various rooms within that castle.
- The **Main Guard**, represented by `if __name__ == '__main__':`, acts like the gatekeeper deciding what actions should take place when the script is the main program being run versus when it's being imported as a module in another script...
- **Scope**, on the other hand, can be thought of as the different rooms in the castle, each with its own set of objects and rules. In Python, variables and functions exist within different scopes (global, local, etc.), much like objects exist in different rooms of a castle...

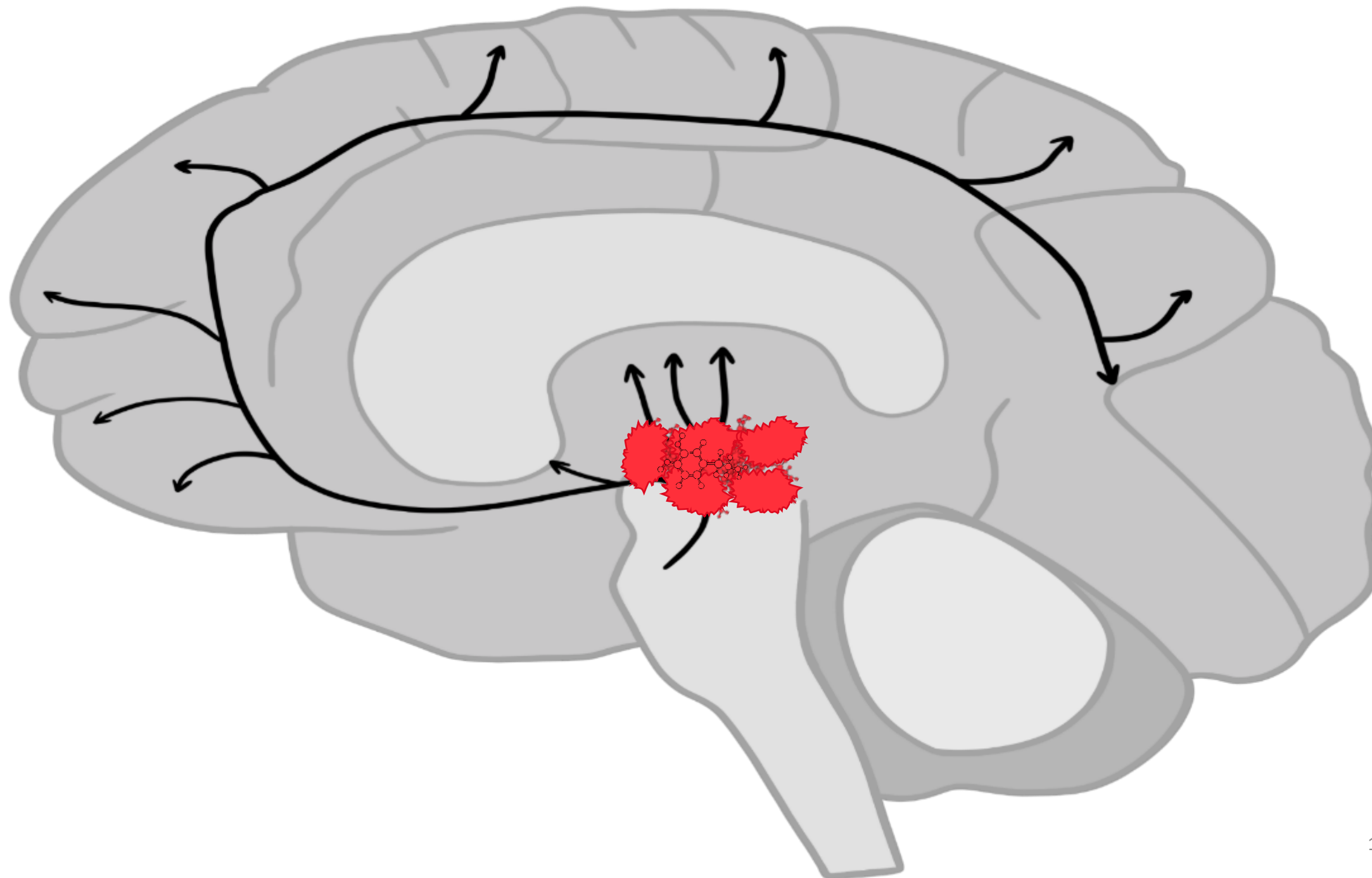


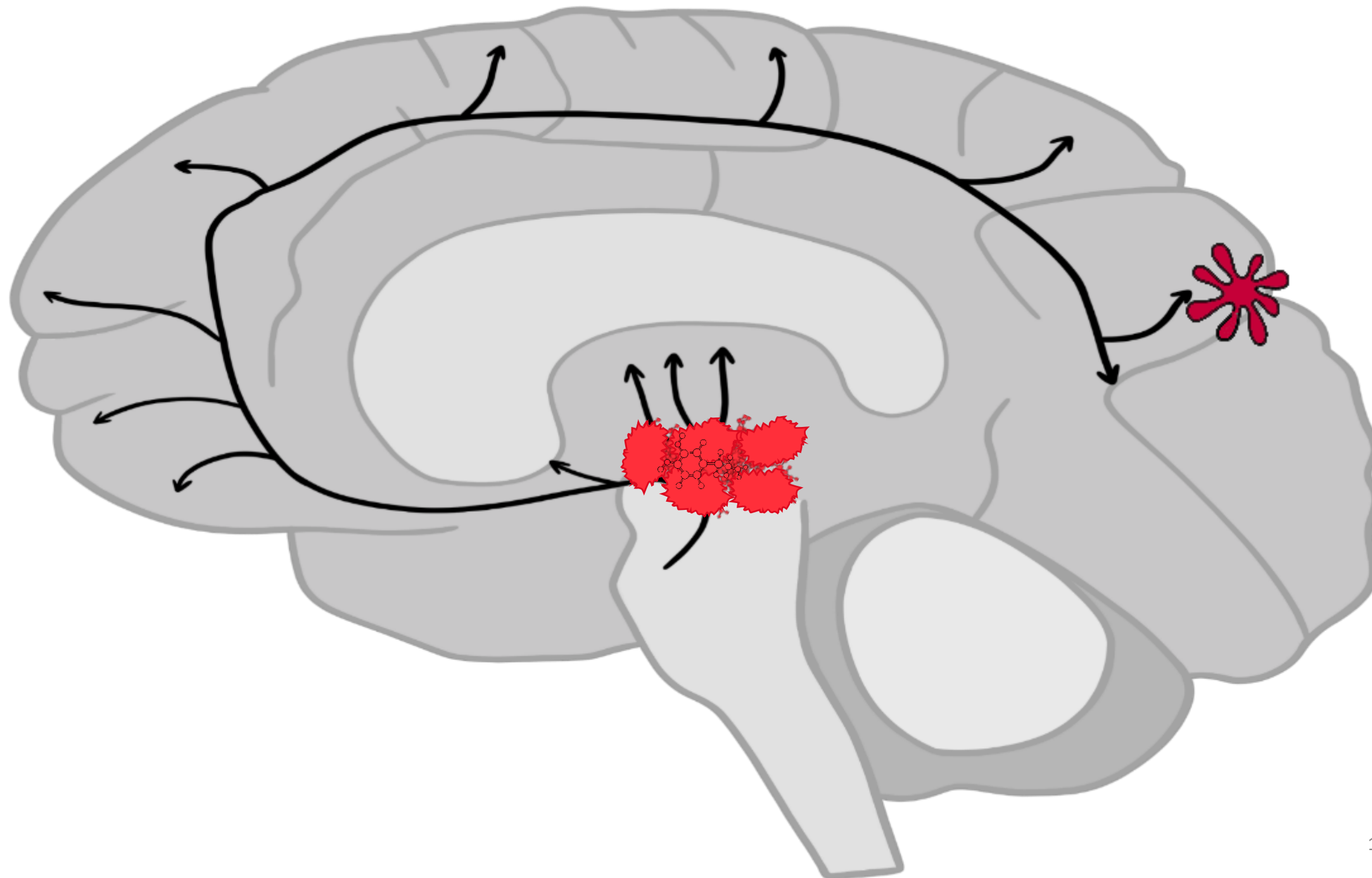
The value of good hooks





Dopamine - the “feel good molecule”

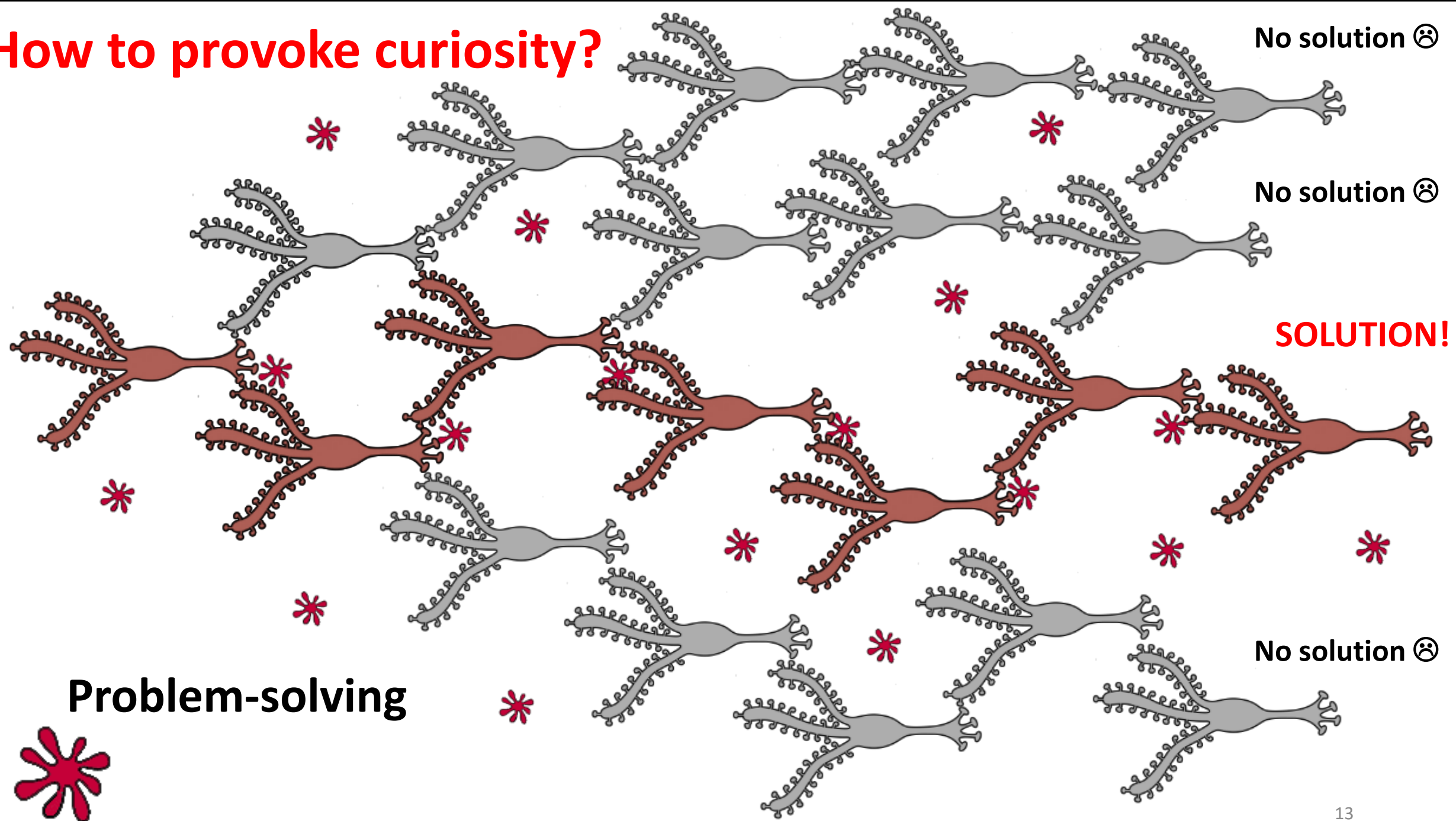






Mice with inactivated dopamine systems *can't learn anything new.*

How to provoke curiosity?



*Ask ChatGPT!

BO My Mongolian college sophomore students are super bored when I try to teach them about main guard versus scope in Python programming. How can I connect these ideas to the nomadic ways of life that my students grew up with?



Ask ChatGPT!

BO My Mongolian college sophomore students are super bored when I try to teach them about main guard versus scope in Python programming. How can I connect these ideas to the nomadic ways of life that my students grew up with?

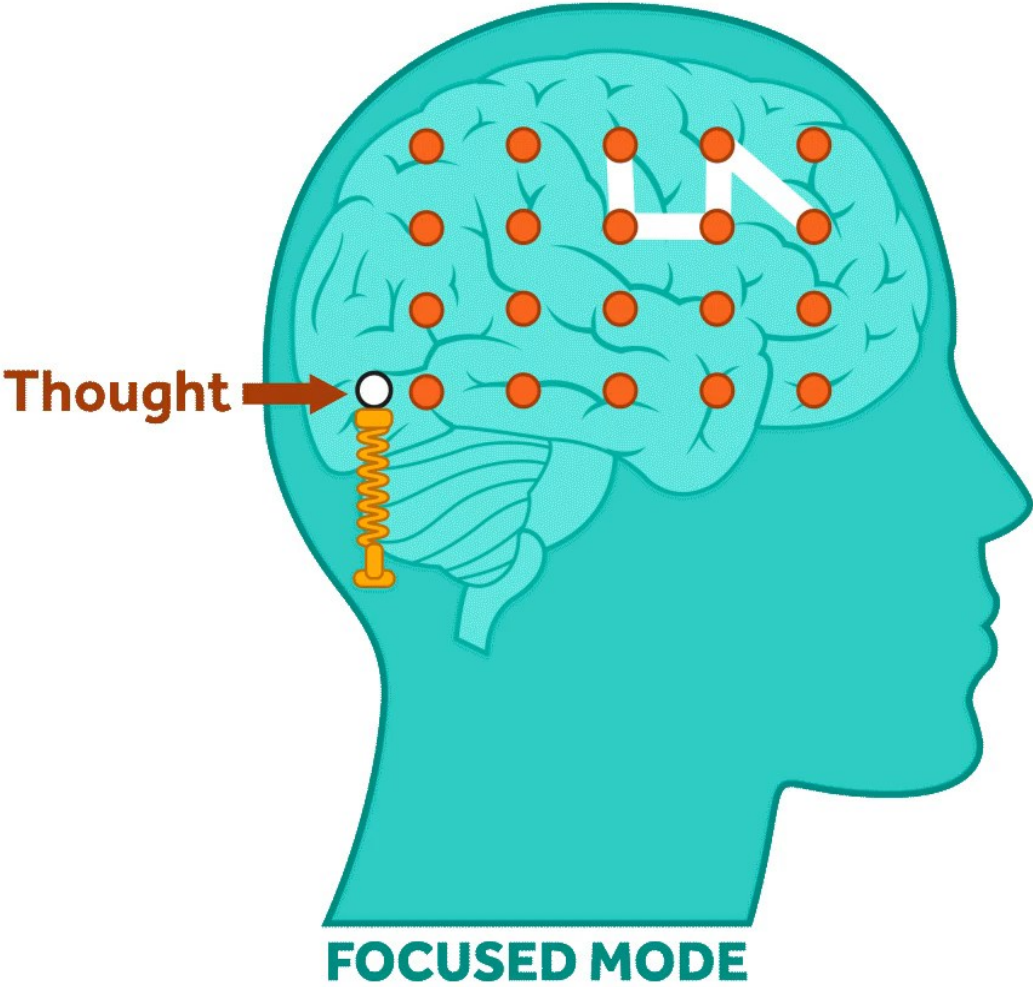


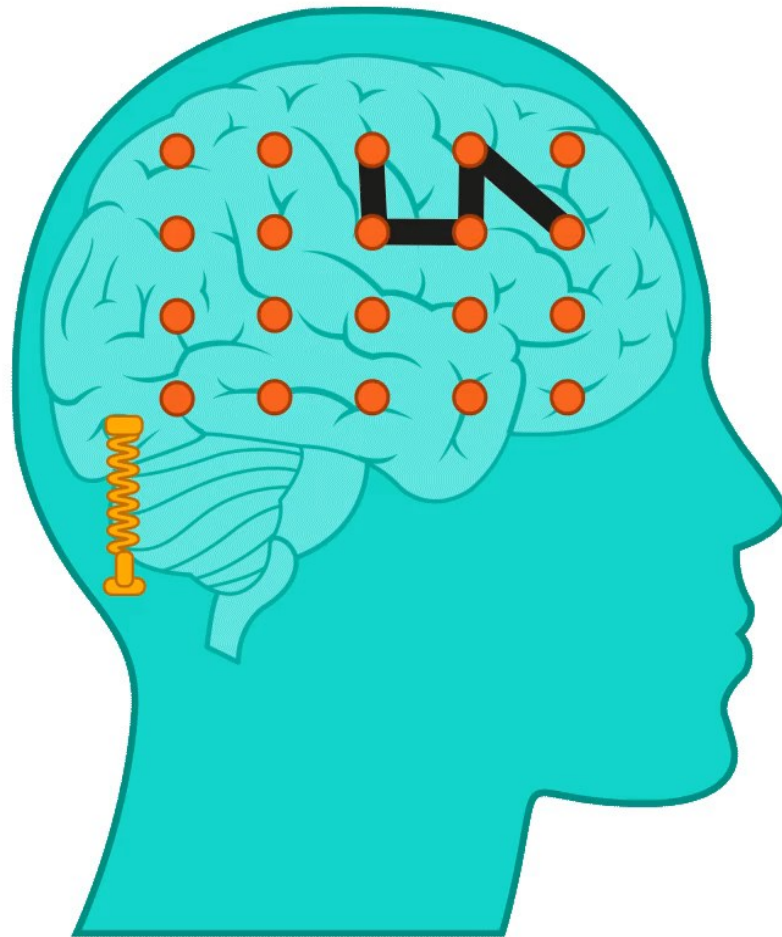
Focused mode

Diffuse mode

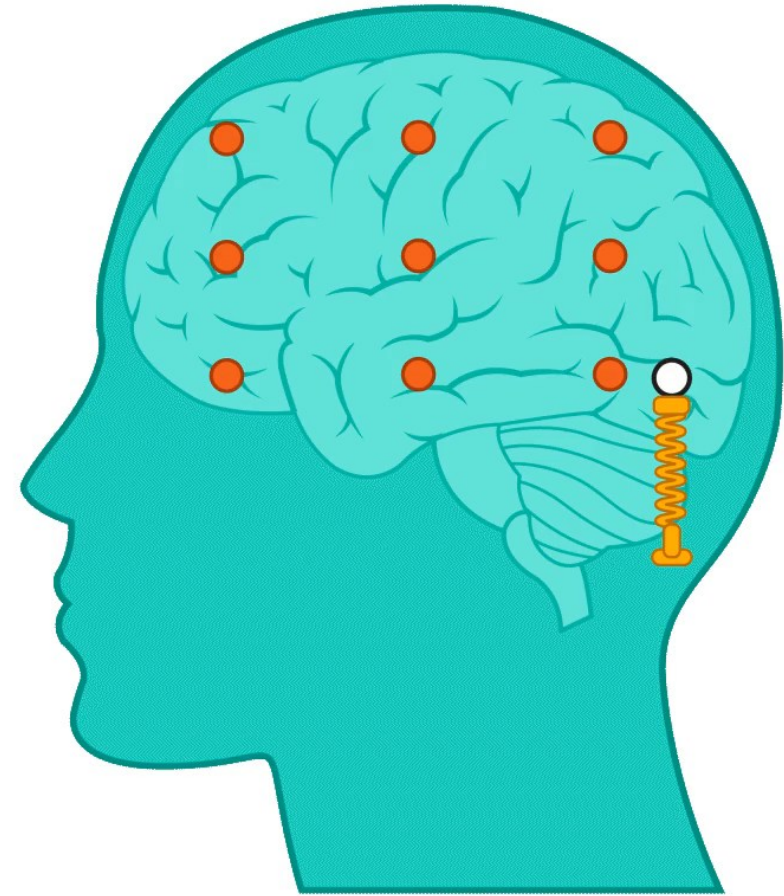








FOCUSED MODE

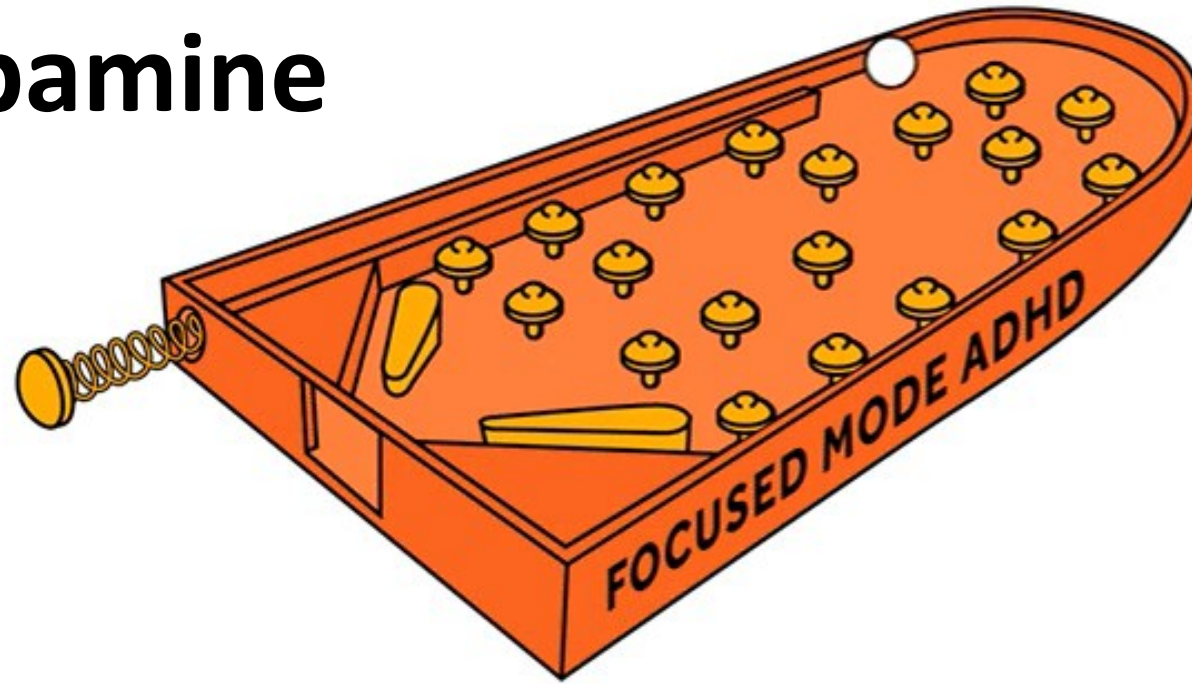


DIFFUSE MODE

Break Out Groups

- Introduce yourselves
- Describe the difference between focused and diffuse mode.

ADHD and dopamine



Meditation

- **Focused attention forms of meditation**

- Mantra
- Samatha (Buddhist)
- Some forms of Zazen
- Loving Kindness
- Chakra
- Kundalini
- Many others...

- **Open monitoring forms of meditation**

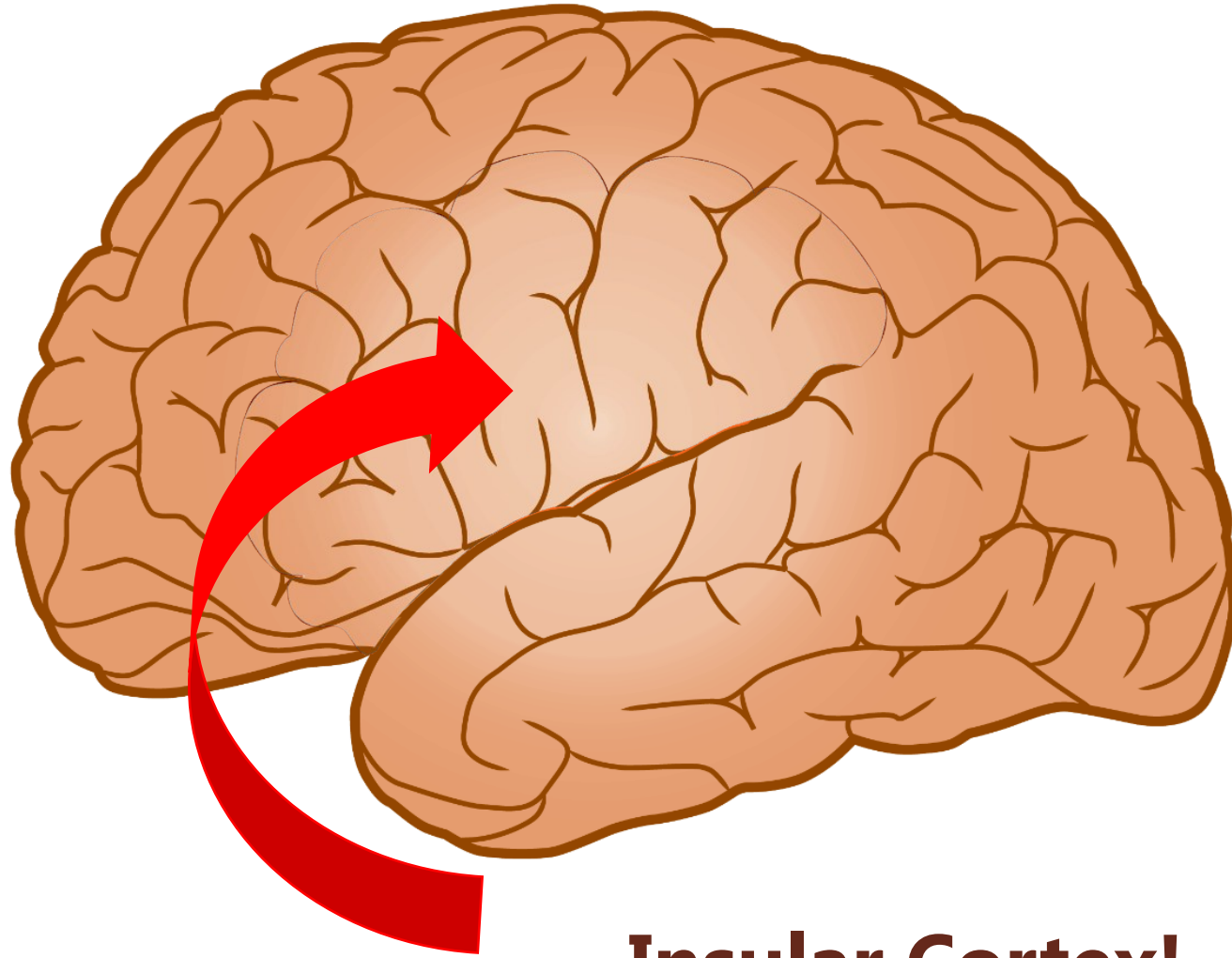
- Mindfulness meditation
- Vipassana
- Some types of Taoist Meditation.



See <http://liveanddare.com/types-of-meditation/>

Procrastination

Procrastination



Insular Cortex!

①

Unhappy
feeling

②

Turn your attention to
something more pleasant

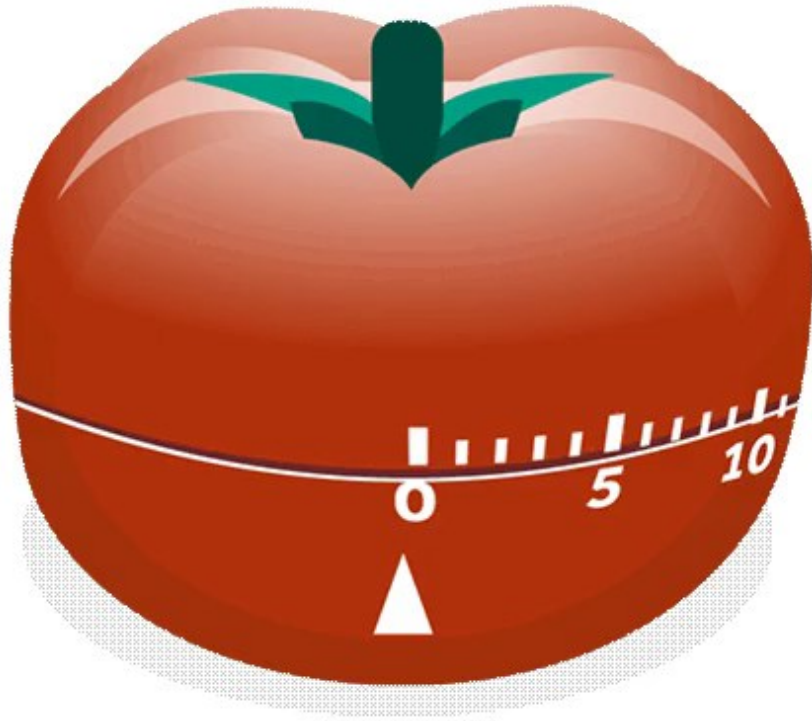
③

Feel happy
(temporarily)



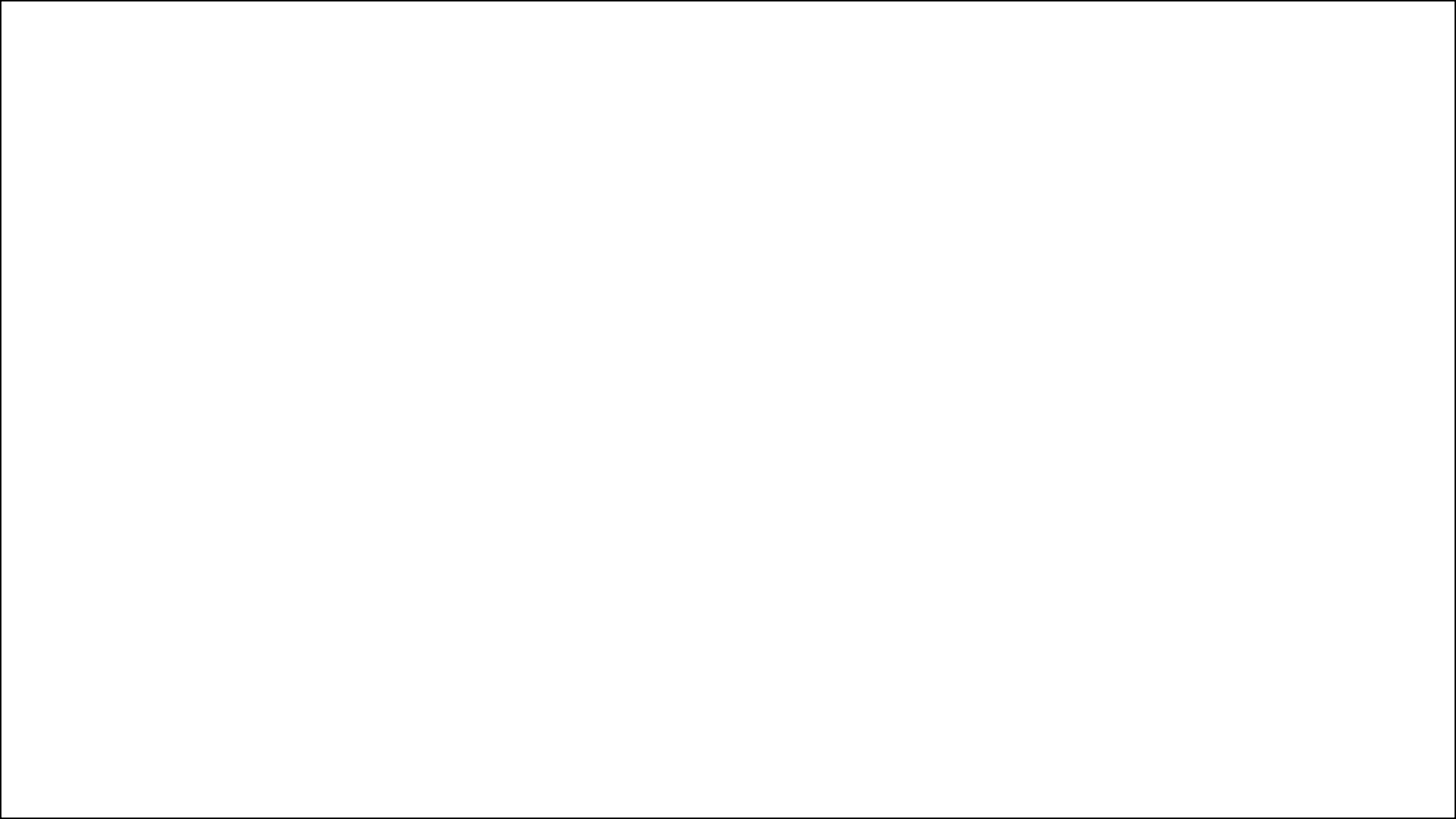
Zombie Tube



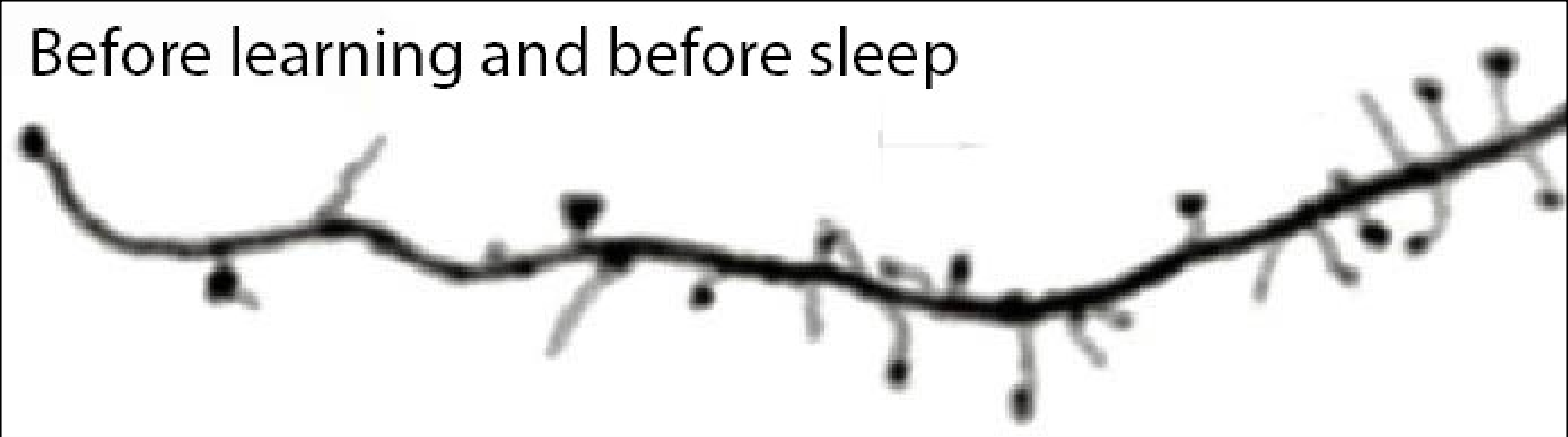


Pomodoro Technique

- Turn off all distractions
- Set timer for 25 minutes
- Focus
- Take a break!
 - *Retrieve*
 - *Do nothing*



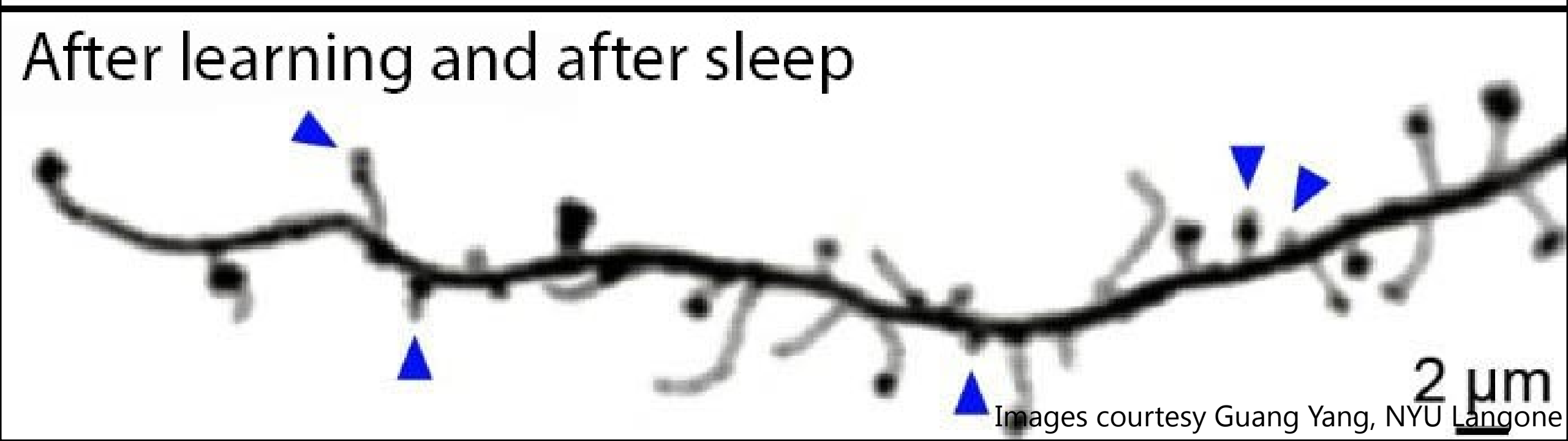
Before learning and before sleep



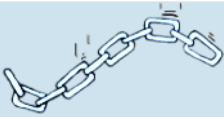
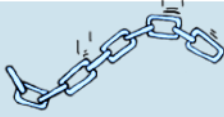
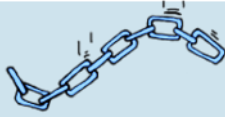
Before learning and before sleep

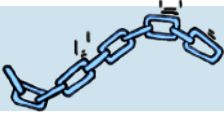


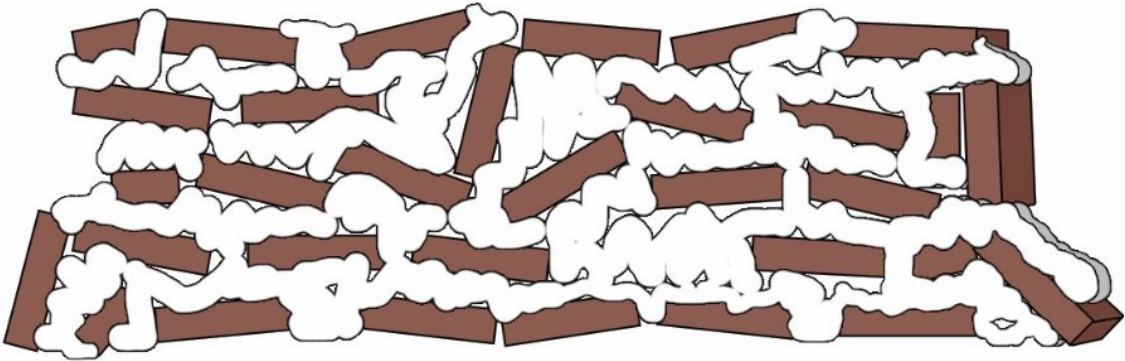
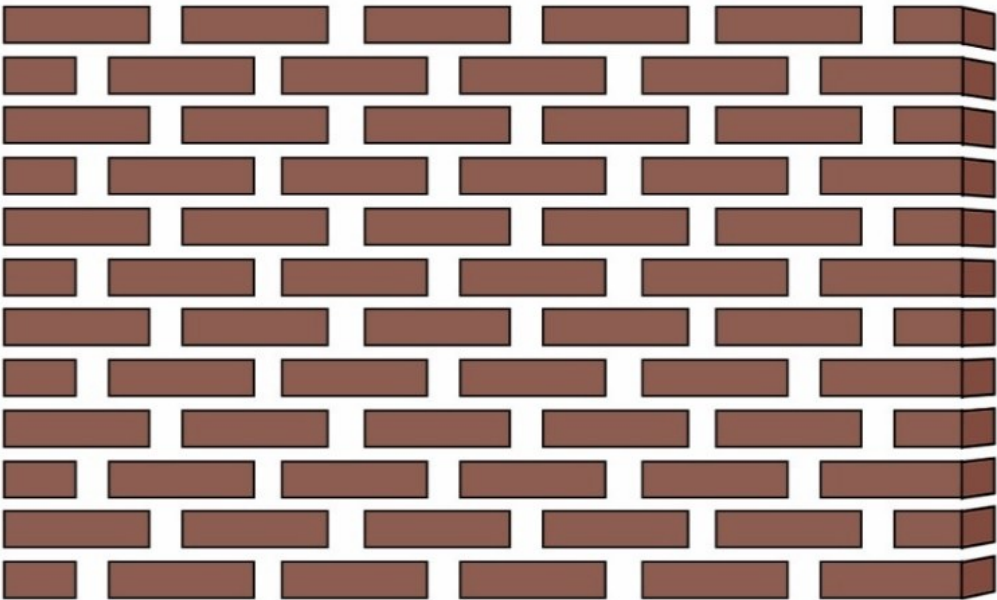
After learning and after sleep



Images courtesy Guang Yang, NYU Langone

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
						

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
						

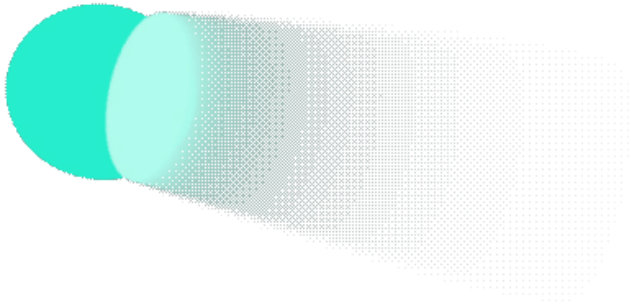


It takes time

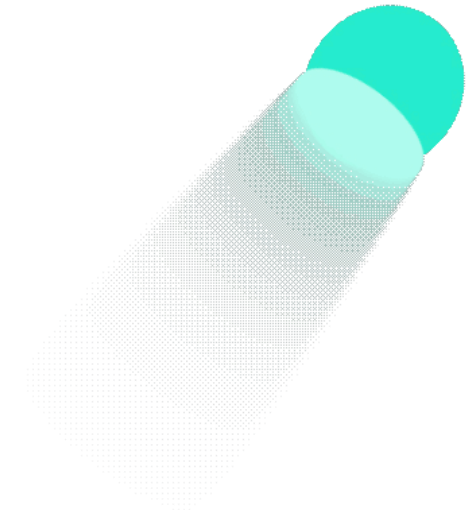


Weight lifter Sultan Rakhmanov, RIA Novosti

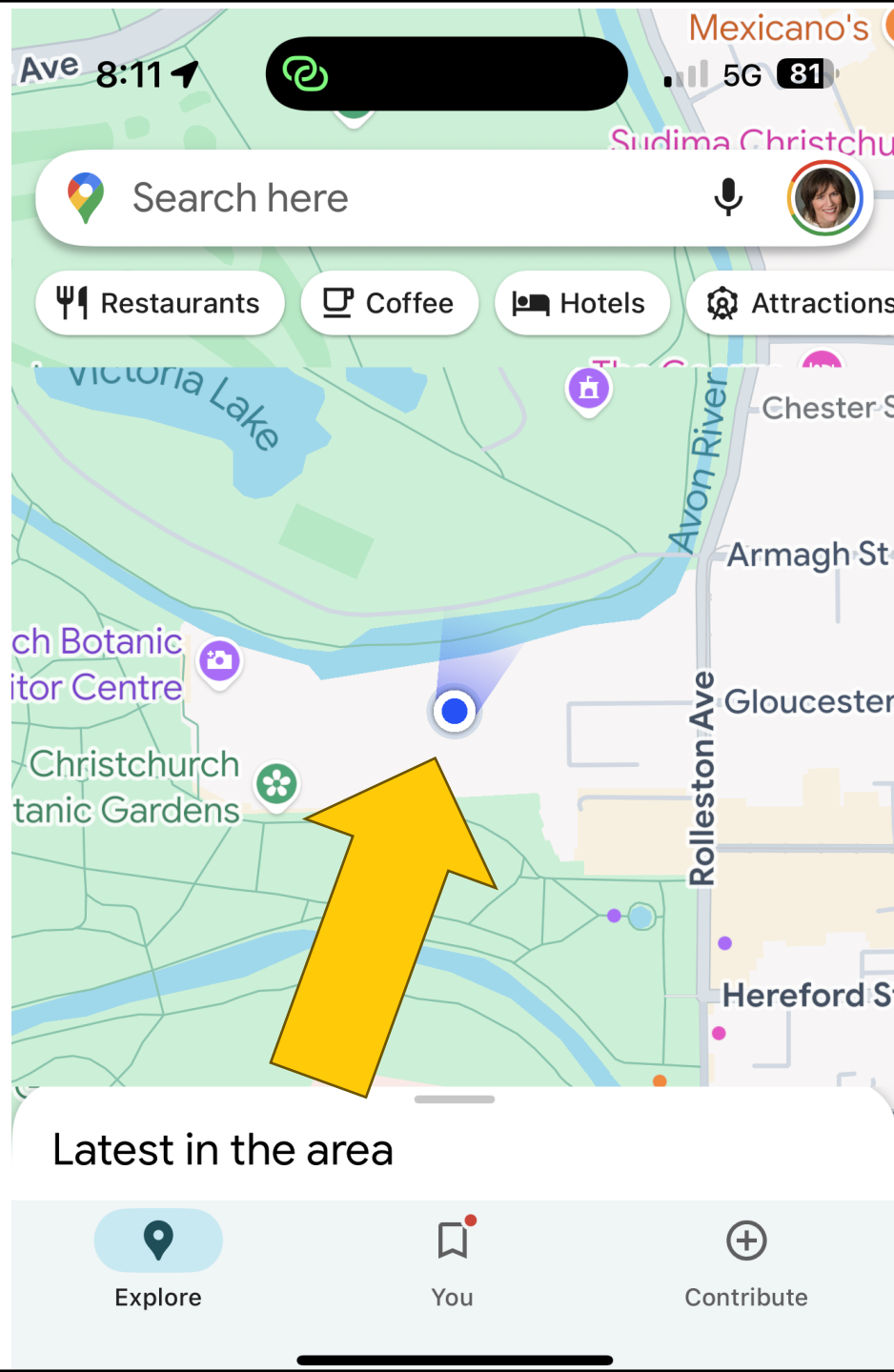
Multi-tasking

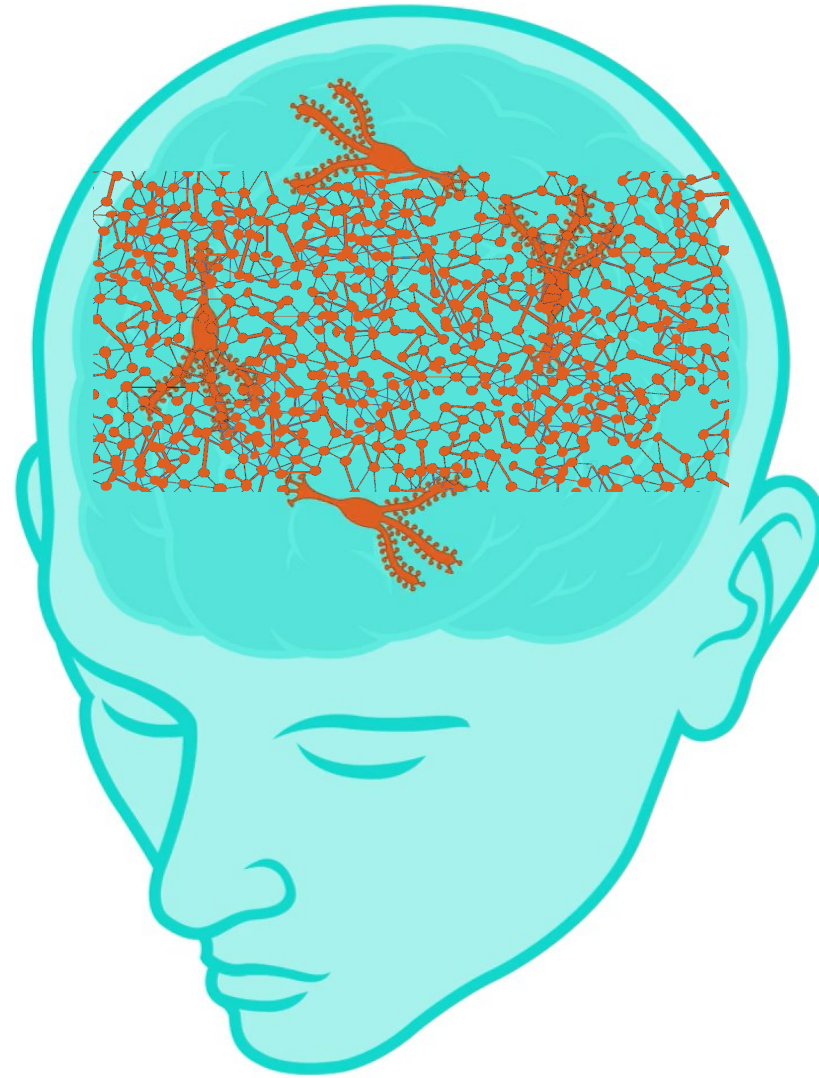


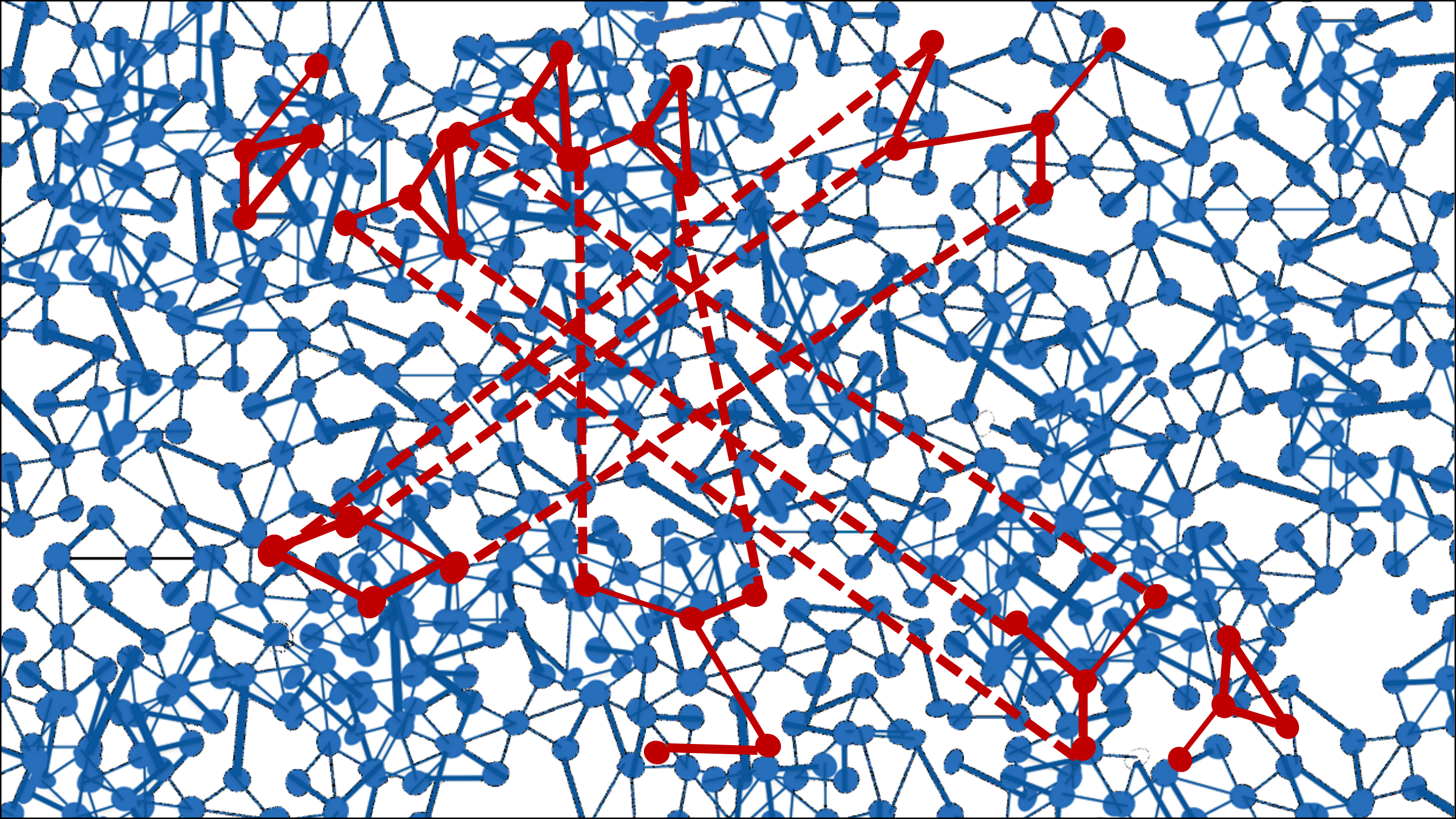
Dual tasking

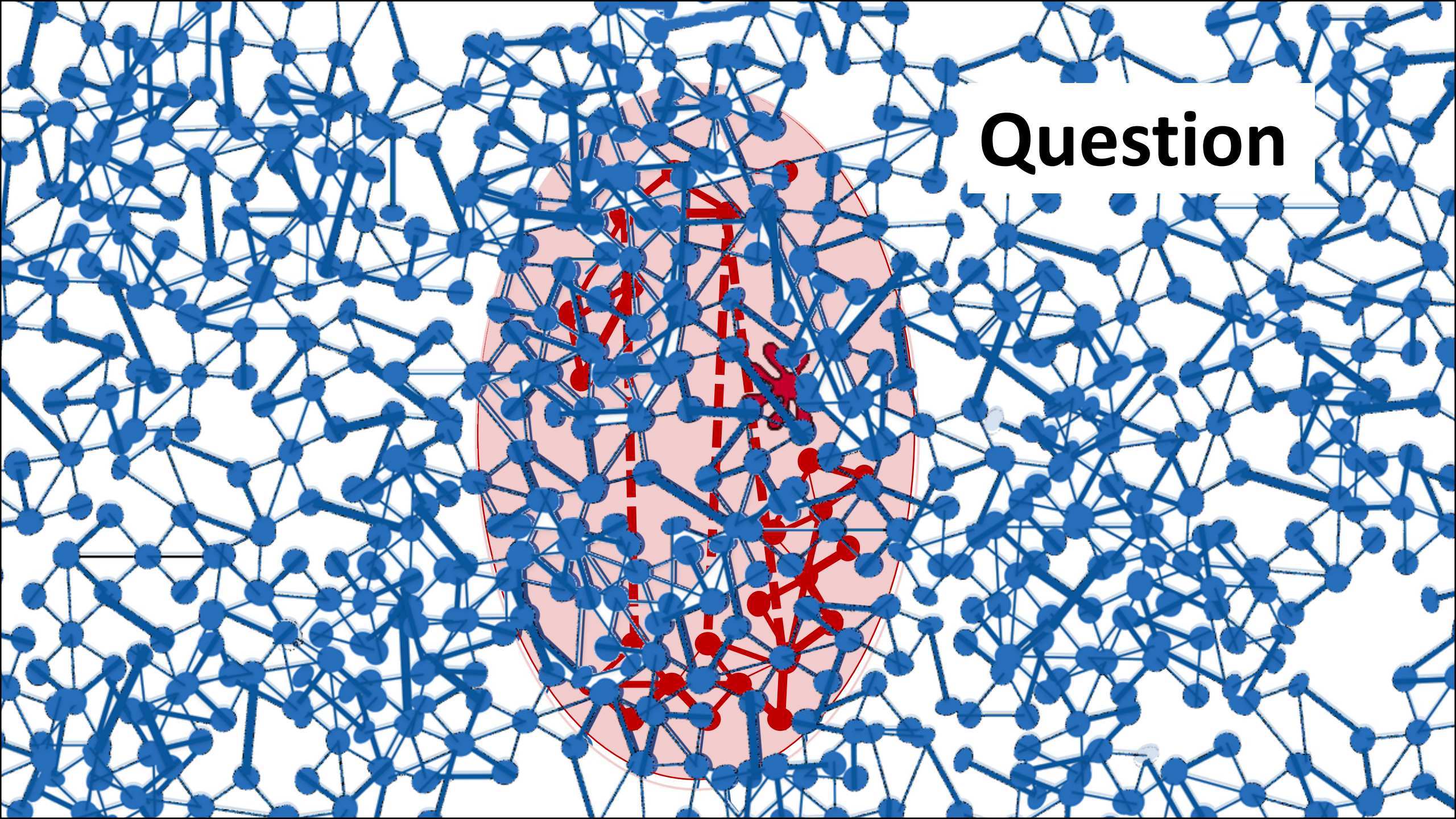


Task switching

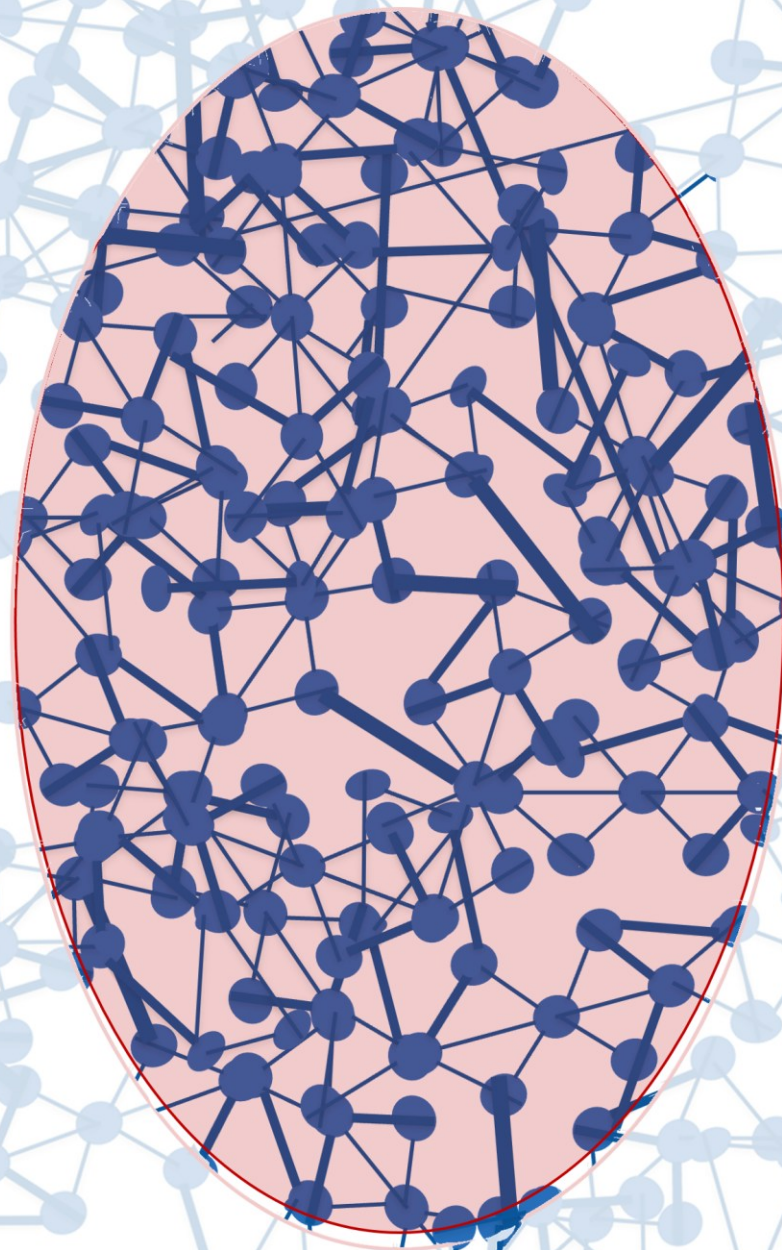




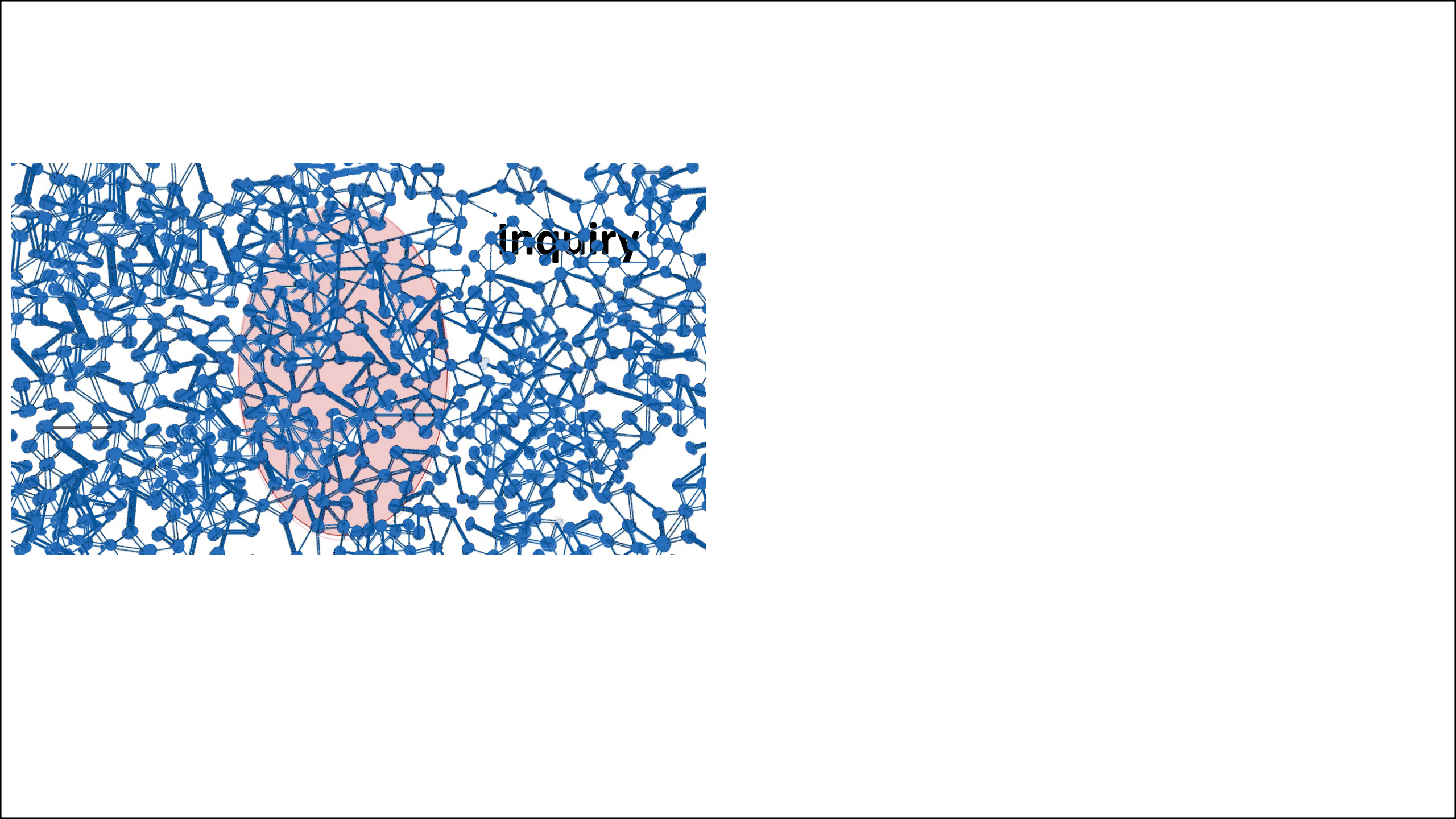


The image displays a complex network graph. It consists of a large number of blue circular nodes connected by thin blue lines, forming a dense, interconnected web. In the center of the image, there is a specific cluster of nodes and edges highlighted in red. This red cluster is enclosed within a semi-transparent red oval. The overall background is white, and the network structure fills most of the frame.

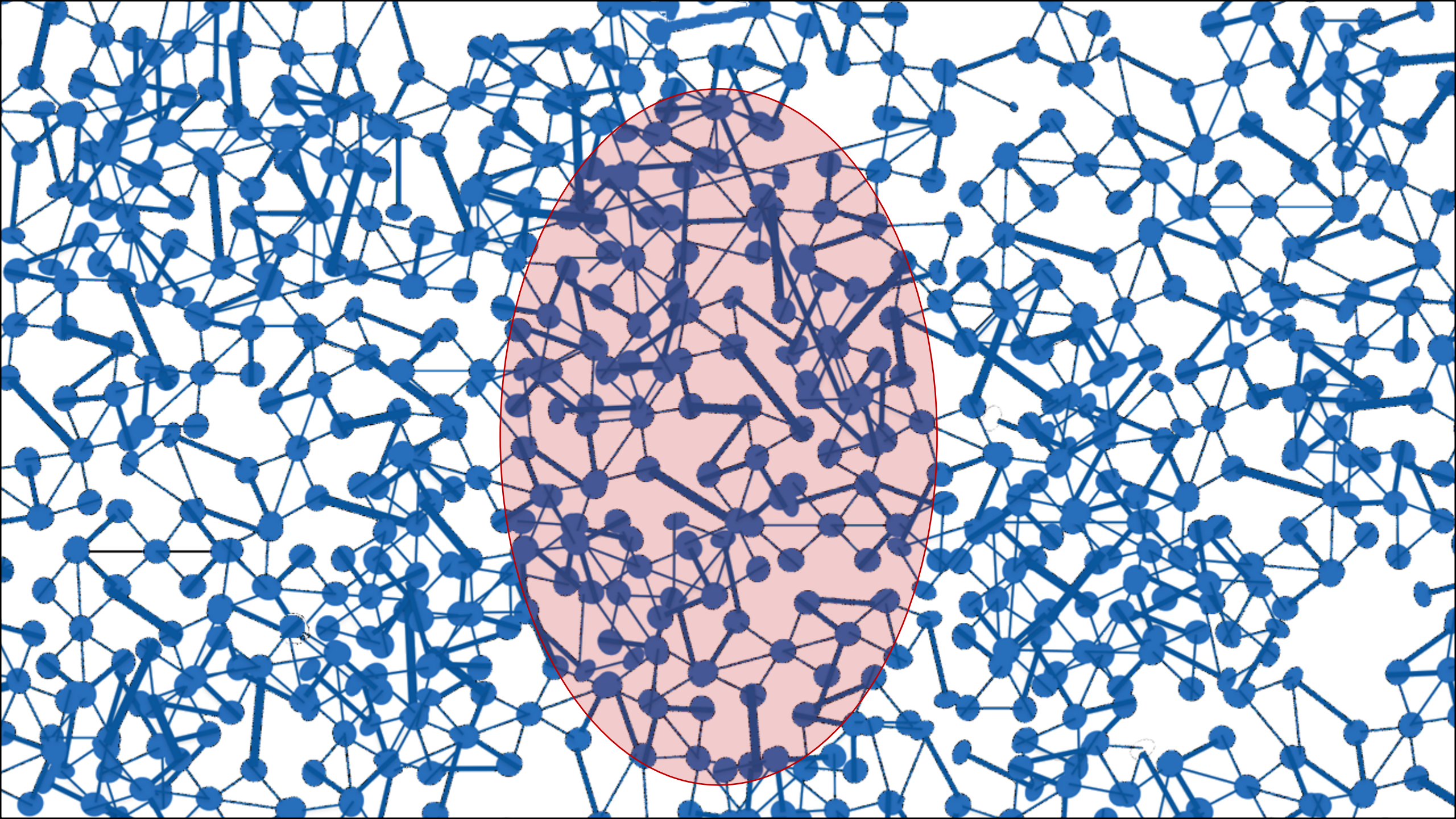
Question

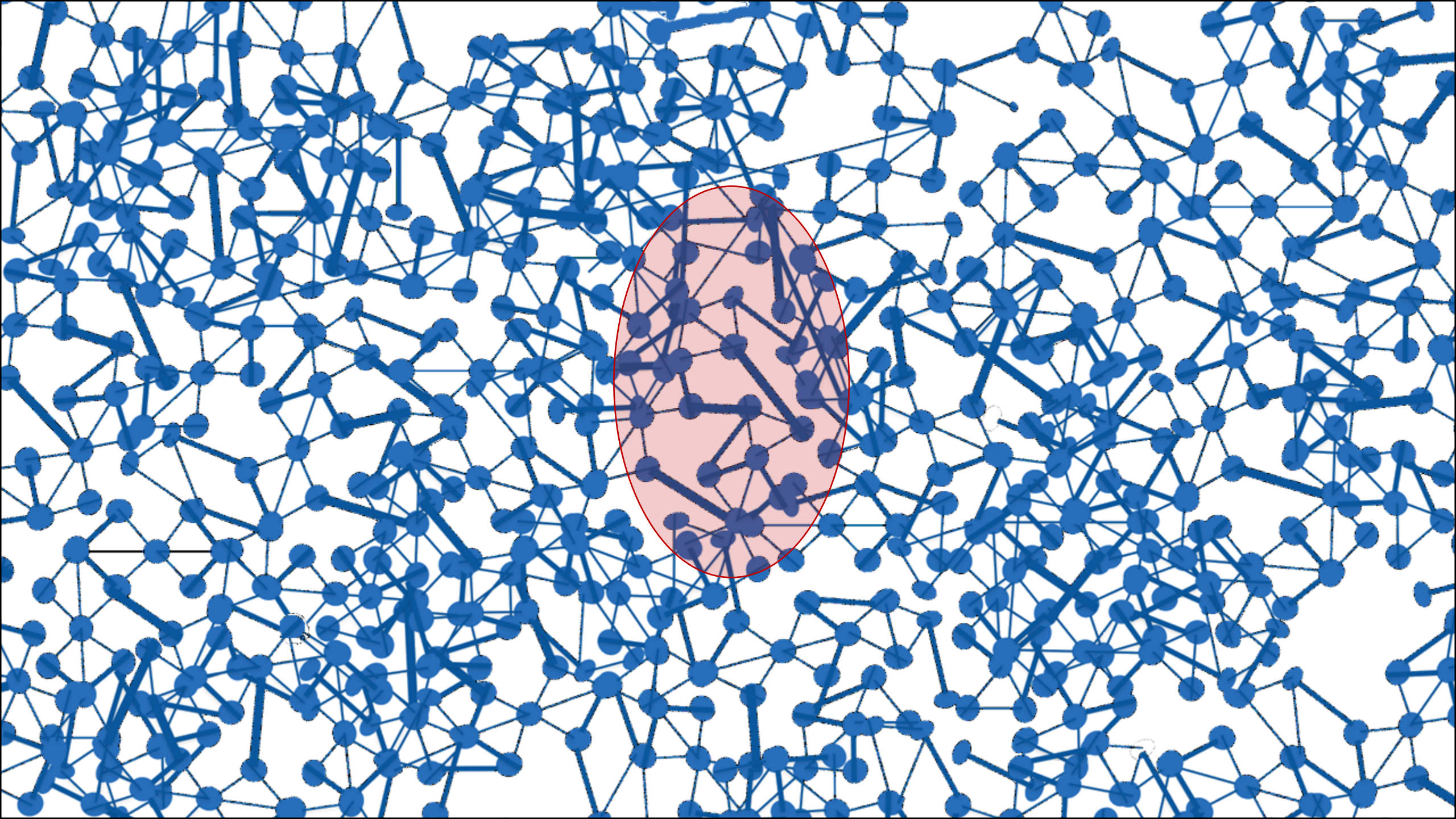


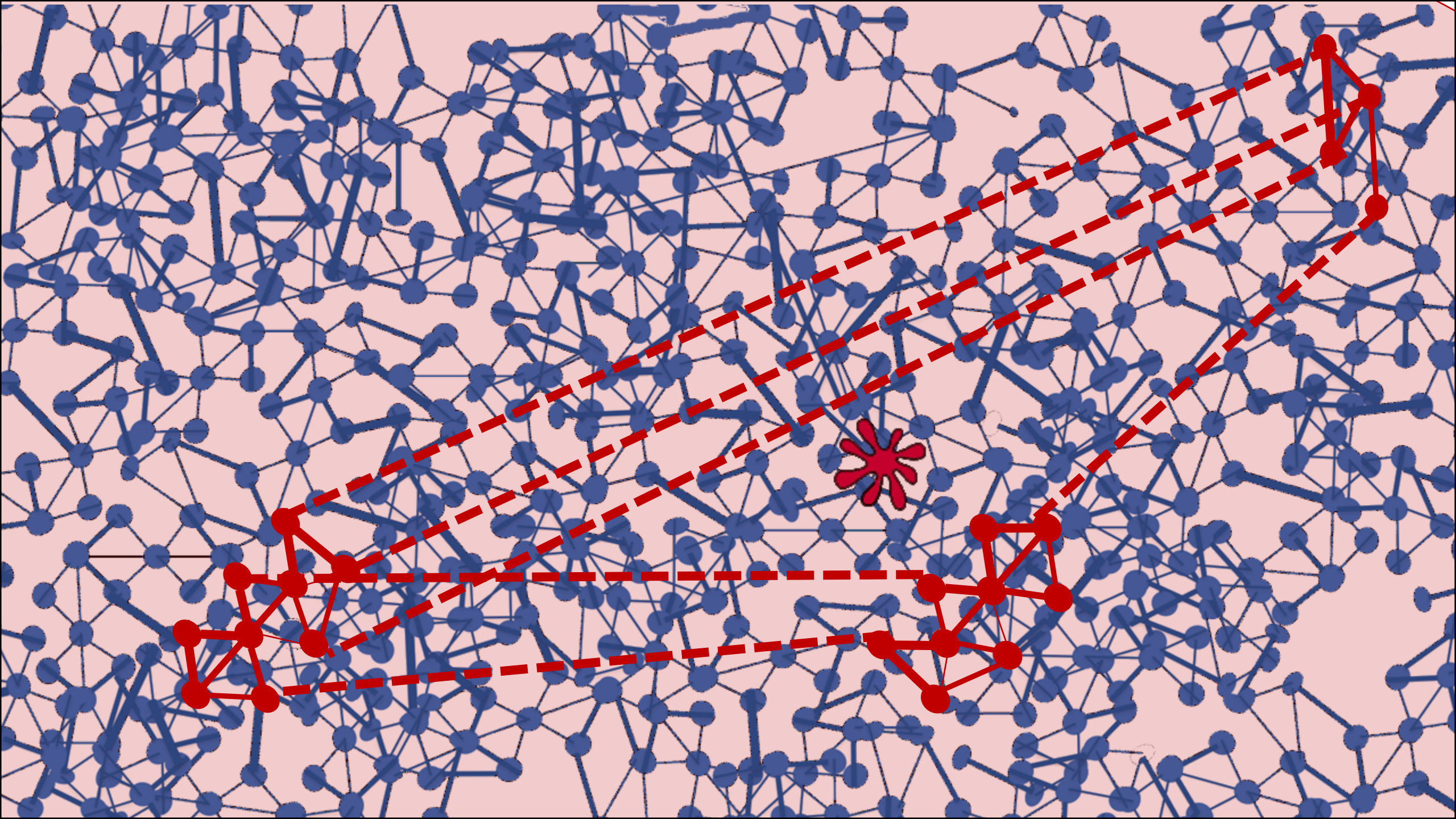
I did it!

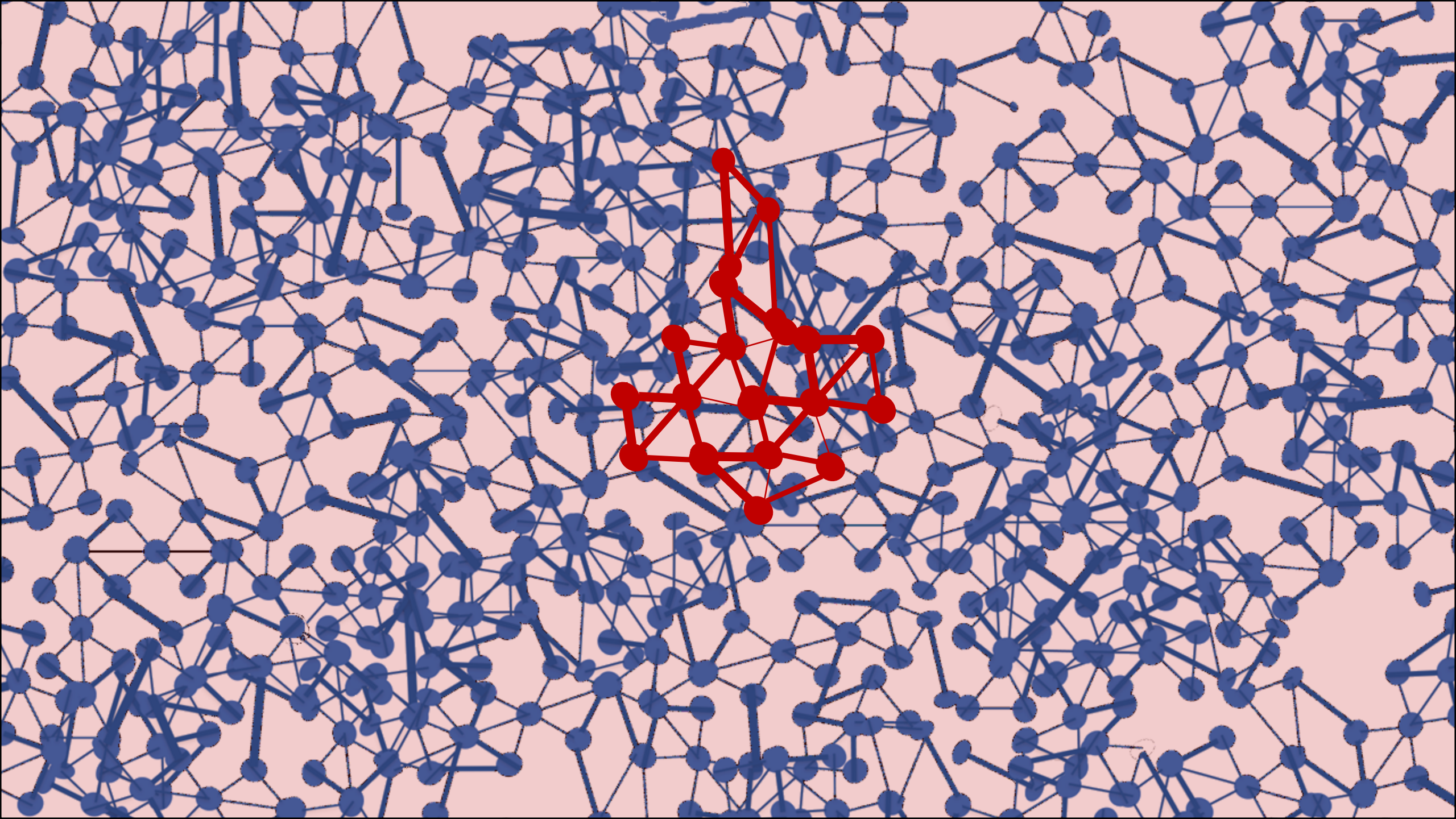


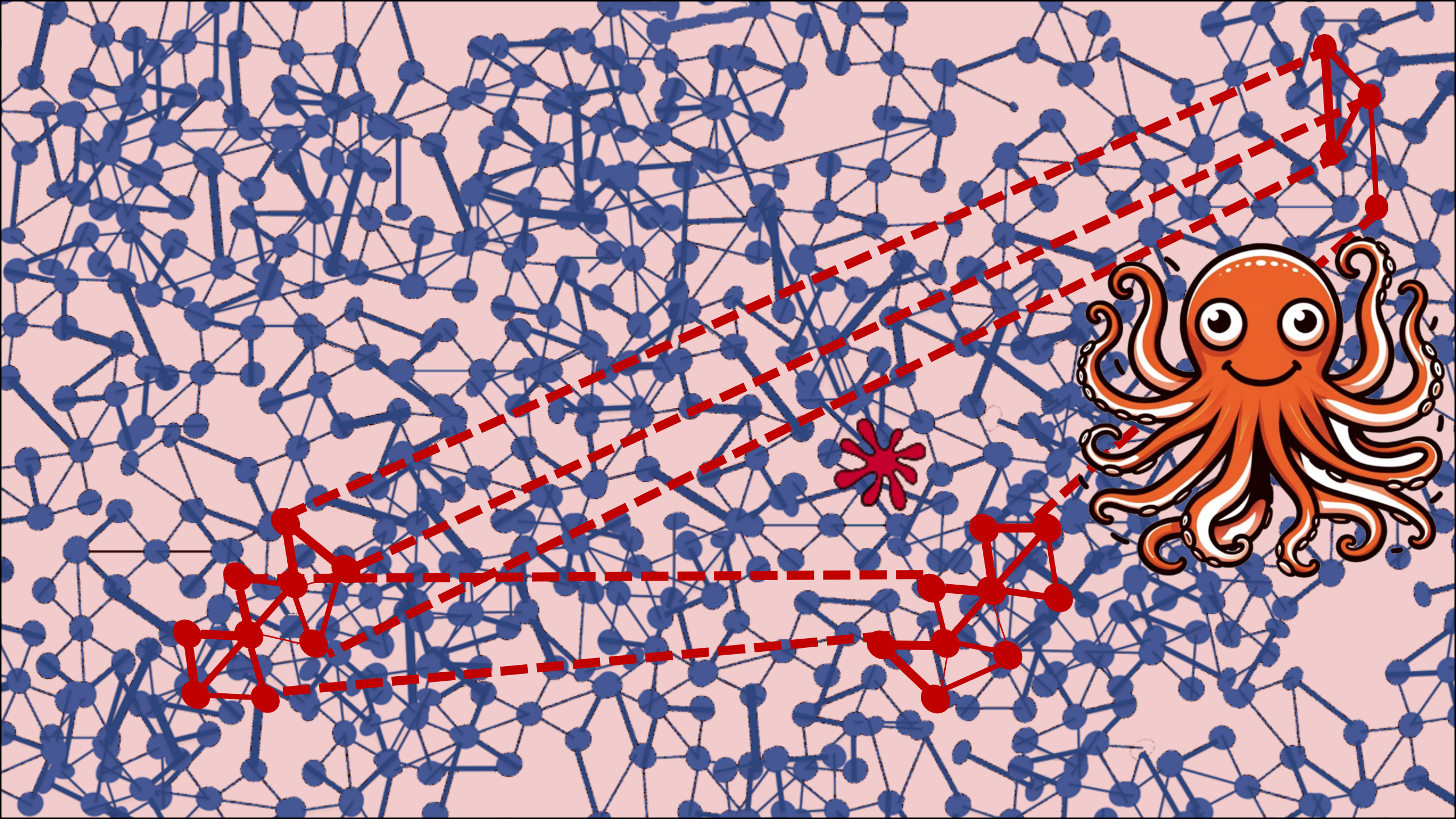
Inquiry

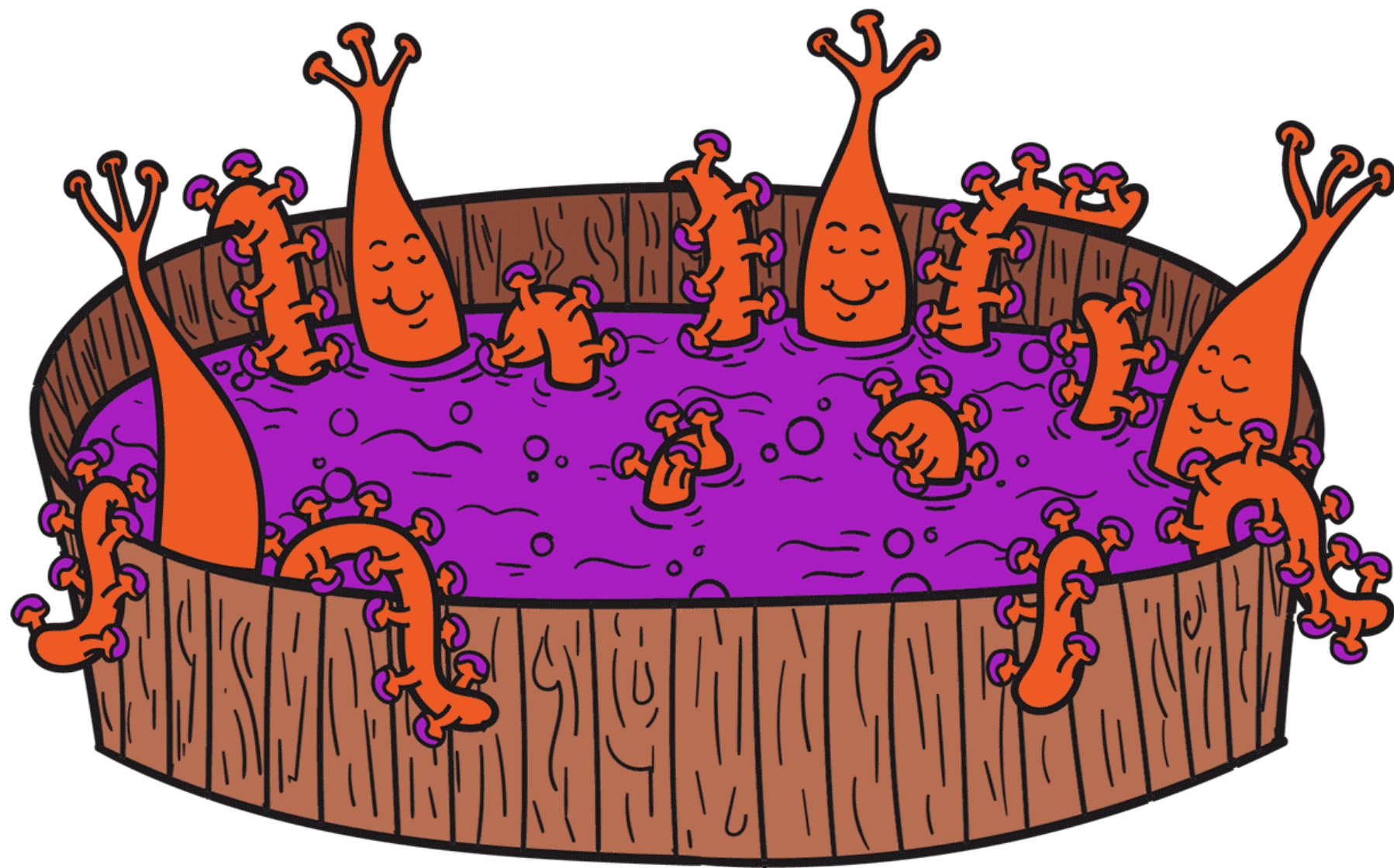




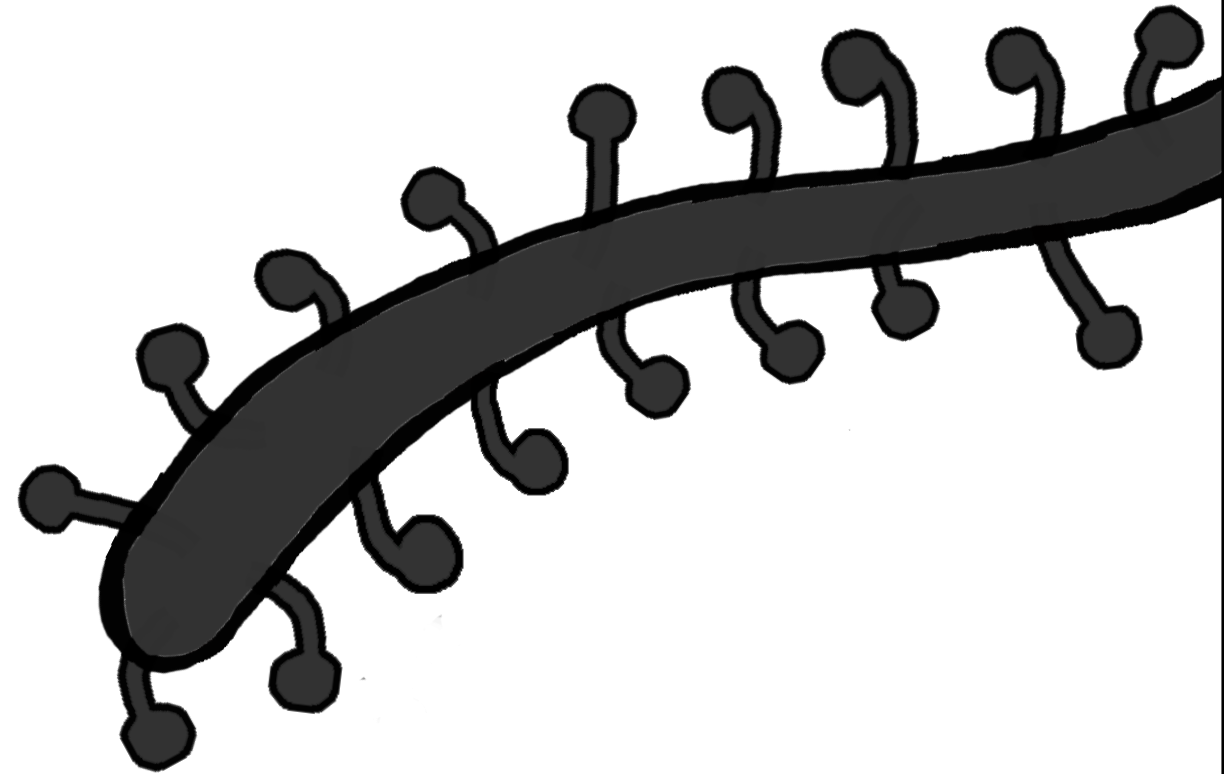




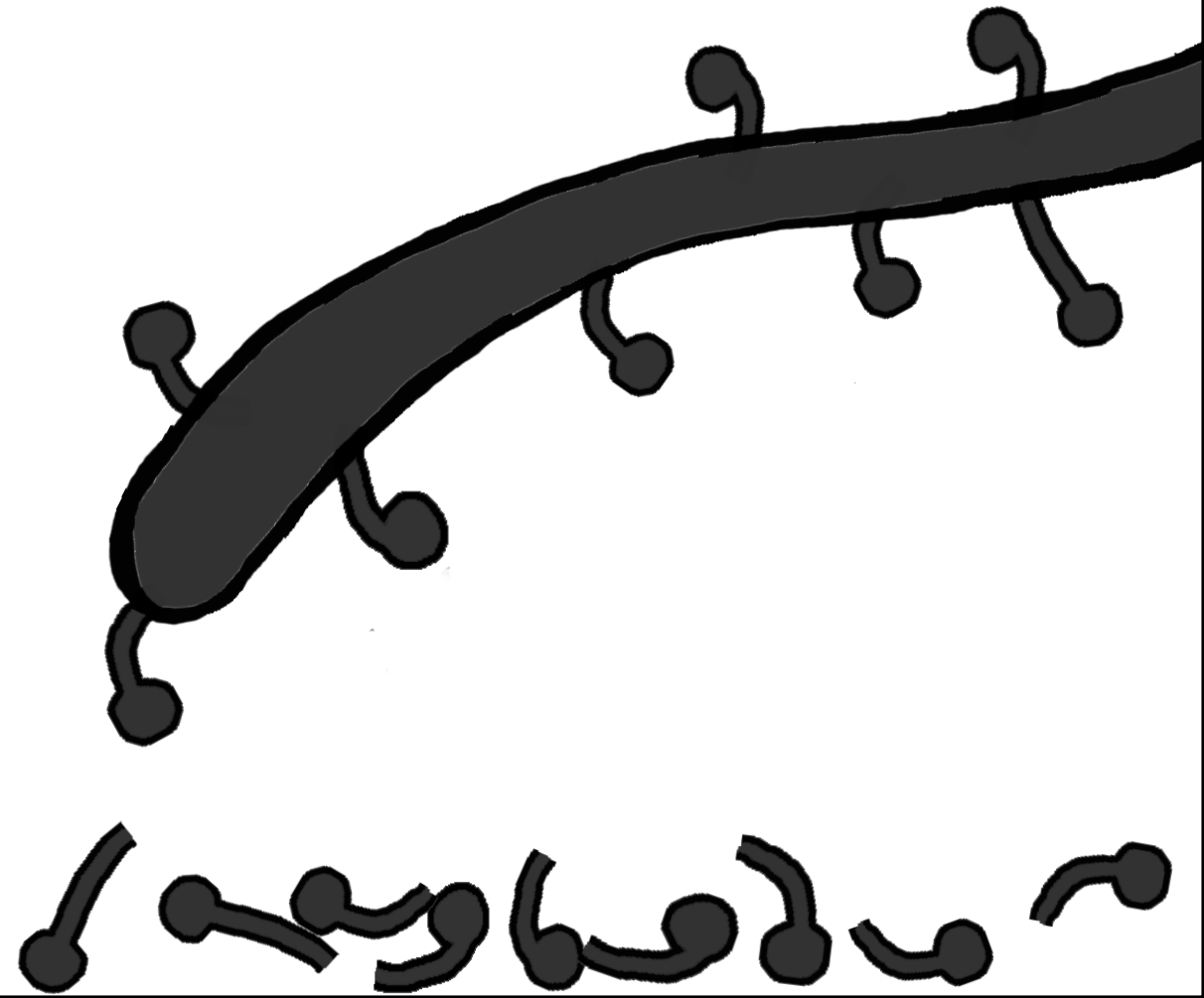




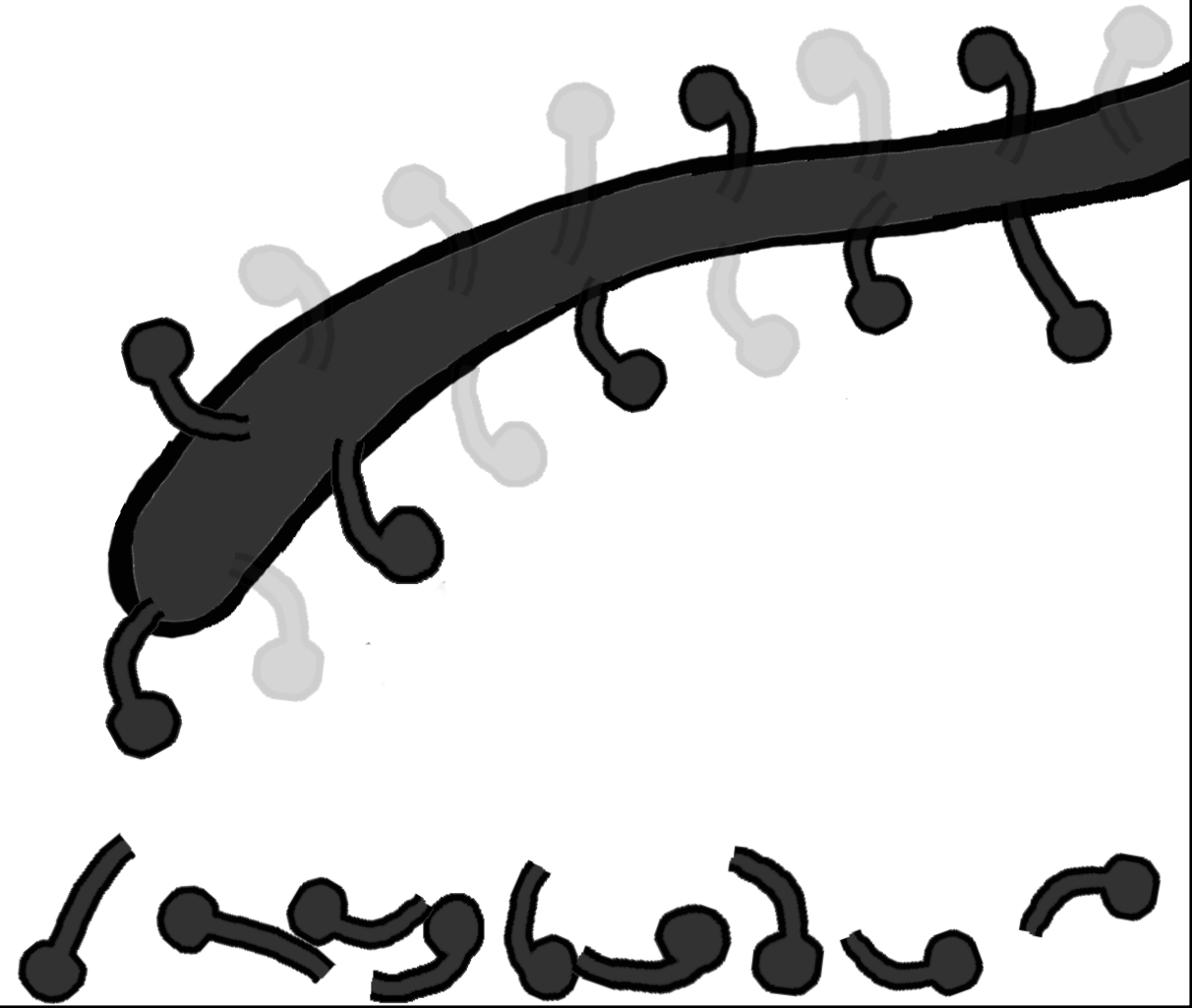
Slow Learner—forgets



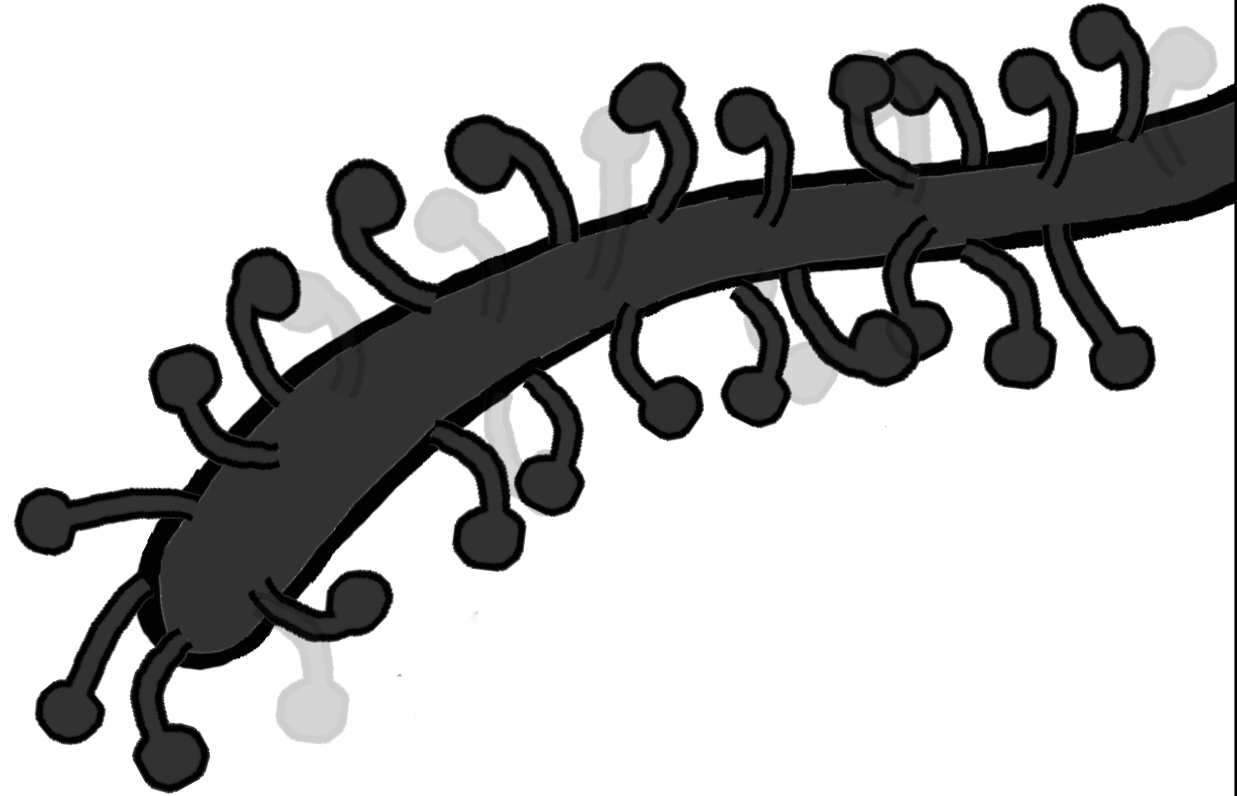
Slow Learner—forgets



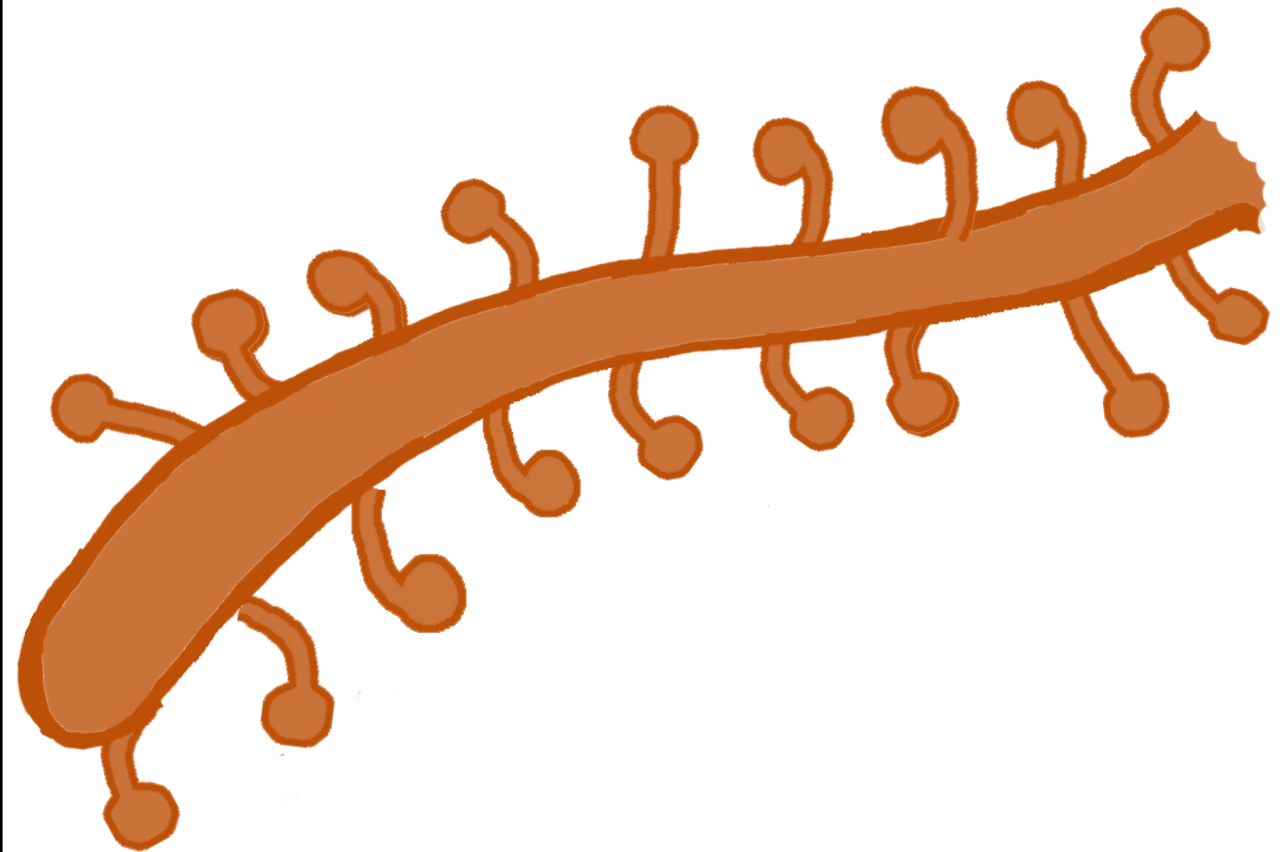
Slow Learner—forgets



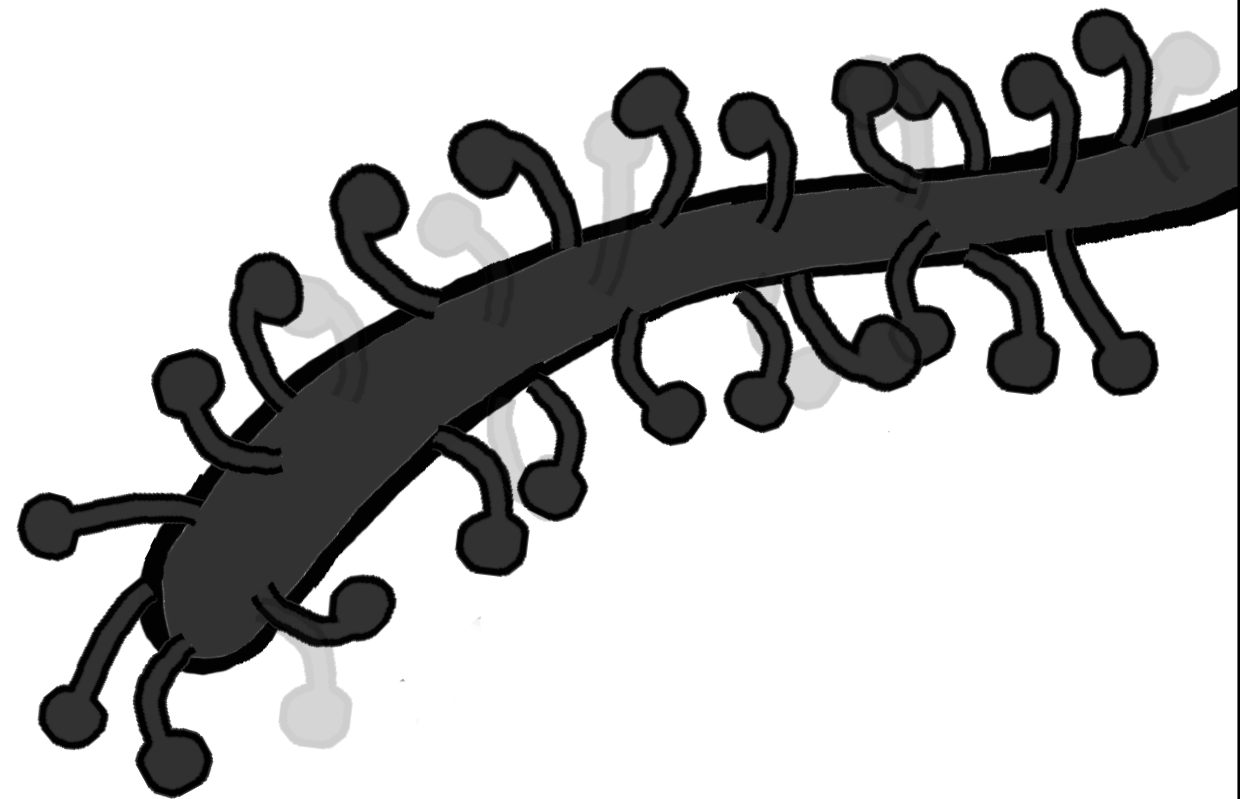
Slow Learner—forgets



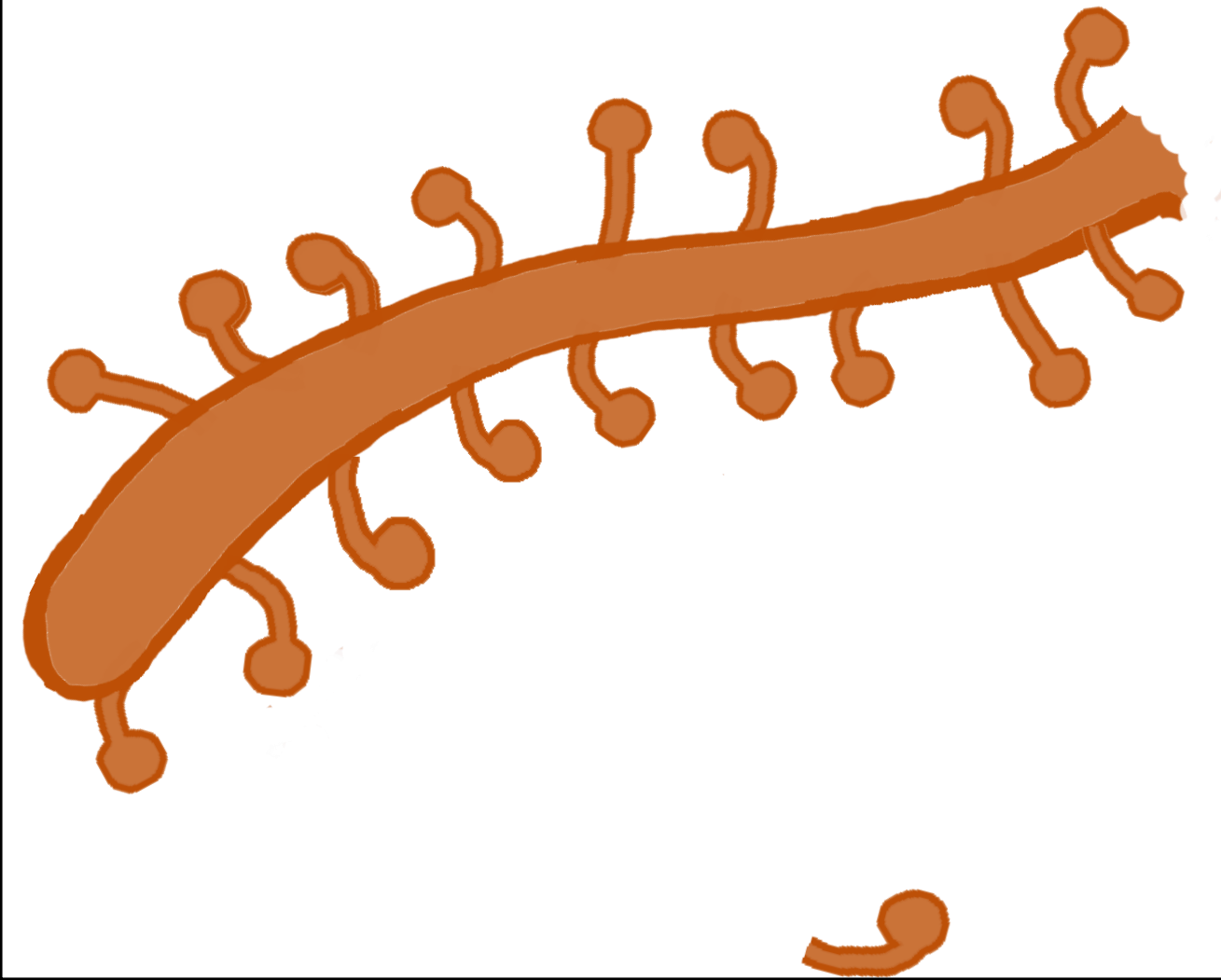
Fast learner—barely forgets



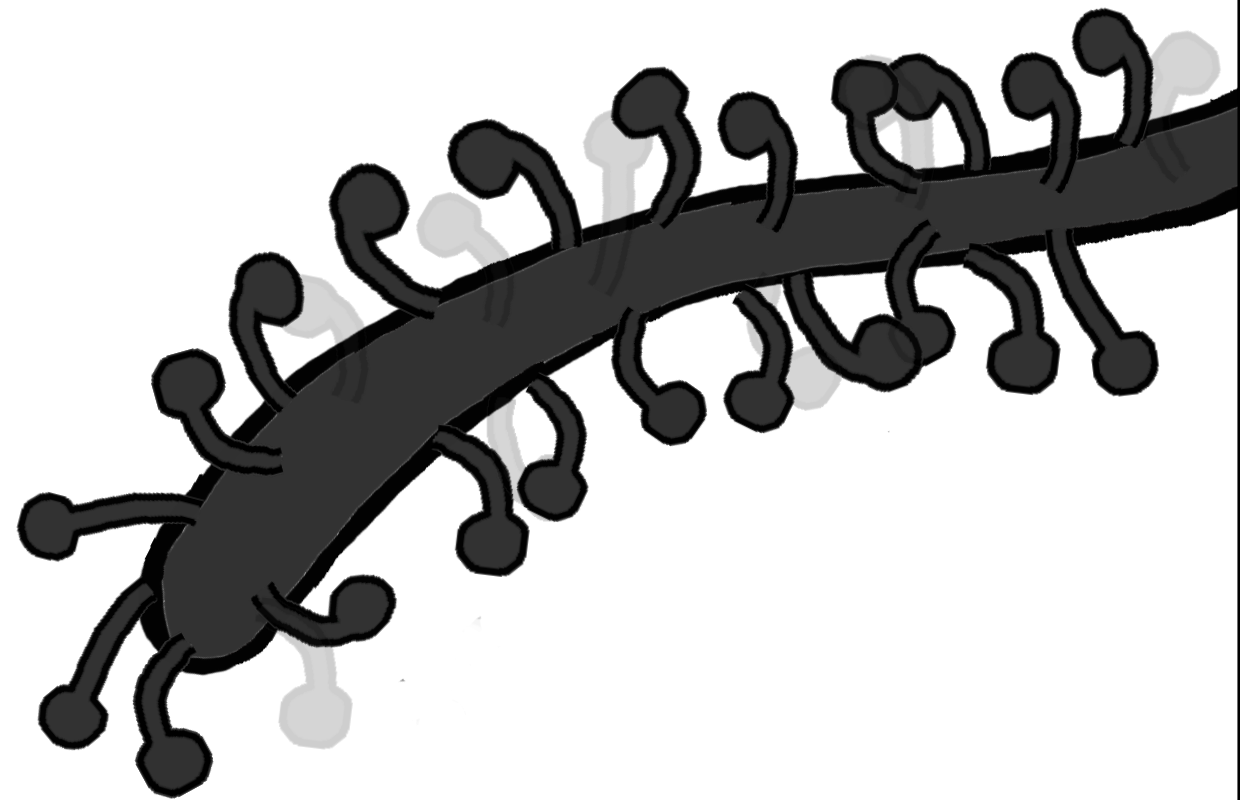
Slow Learner—forgets



Fast learner—barely forgets



Slow Learner—forgets





Race car learners

**THE WORLD NEEDS
BOTH KINDS OF
LEARNERS!**

Hiker learners





Santiago
Ramón y Cajal

Feedback



Any questions?

Cambridge Schools Conference, July 2026
Future-ready: preparing learners to thrive

Thank you!

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