c:₩>git clone https://github.com/yungbyun/clecturenote.git

AI and Deep Learning

뇌와 뉴런

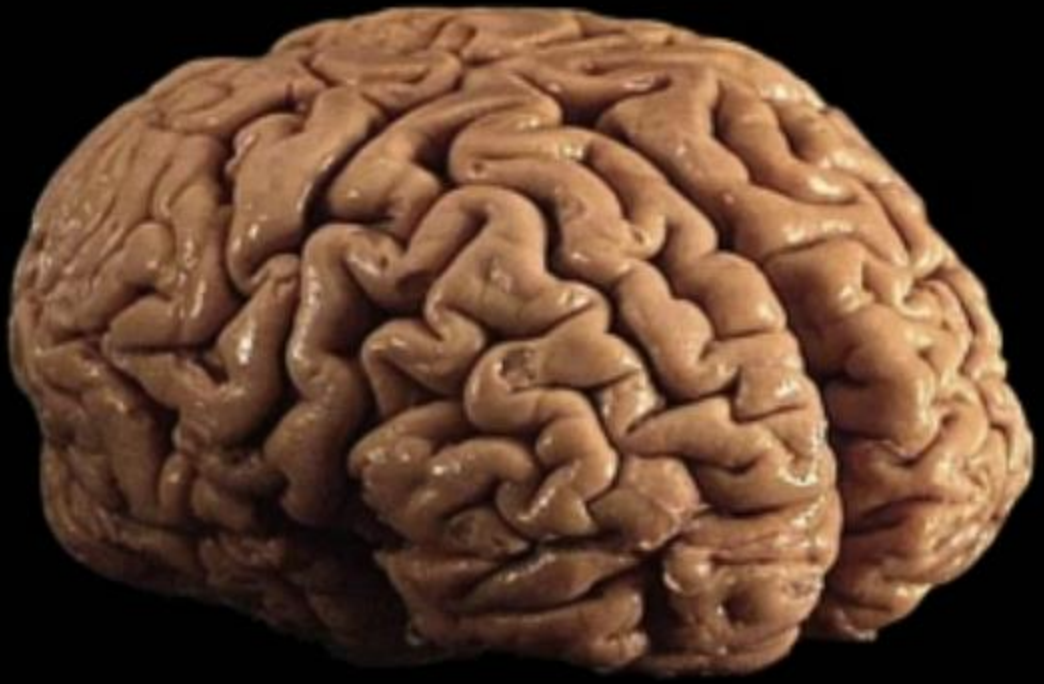
Jeju National University
Yung-Cheol Byun

c:₩>git clone https://github.com/yungbyun/clecturenote.git

컴퓨터가 잘하는 것,
사람이 잘하는 것

Now,
machines do better
than human
in most areas with AI

How can machines get Intelligence (AI)?



Agenda

- Artificial Intelligence
- Brain and Neurons
- Learning
- Regression
- Deep Neural Networks
- CNN
- RNN
- Unsupervised Learning
- Reinforcement Learning
- AI Applications

Supervised Learning

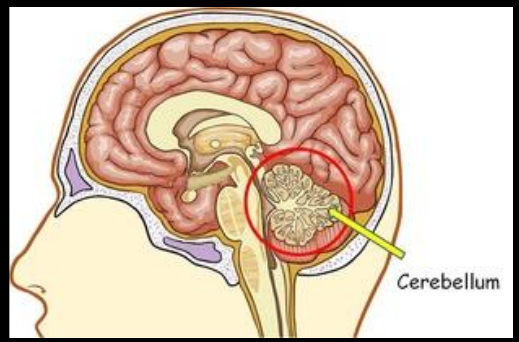
What happens inside the human brain?

Neuroanatomist

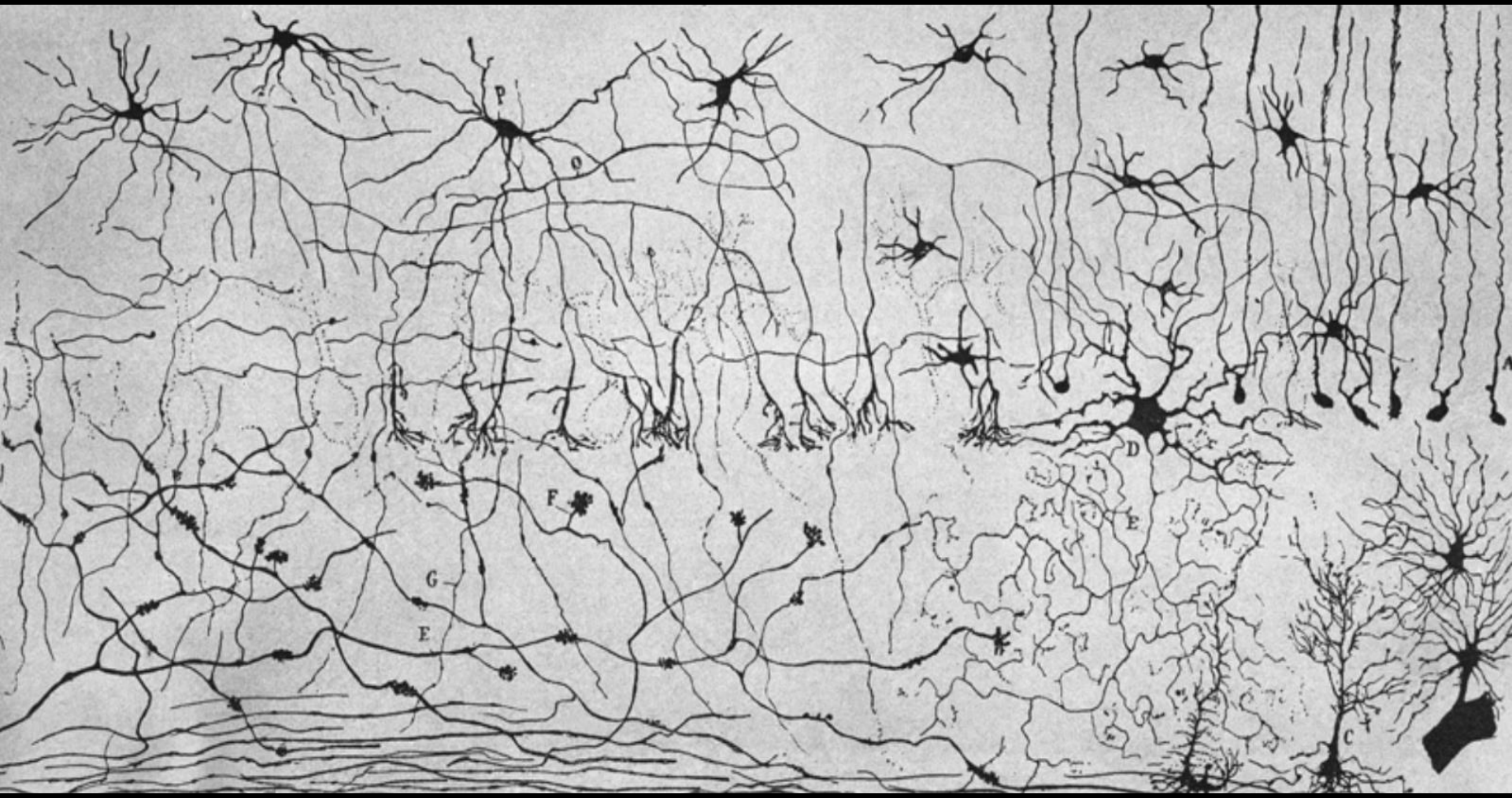
신경해부학자

산티아고 라모 니 카할, 스페인

세레벨럼(소뇌) : 척추돌물 두개골 뒤쪽에 있는
뇌의 일부분, 근육 운동을 조절함.



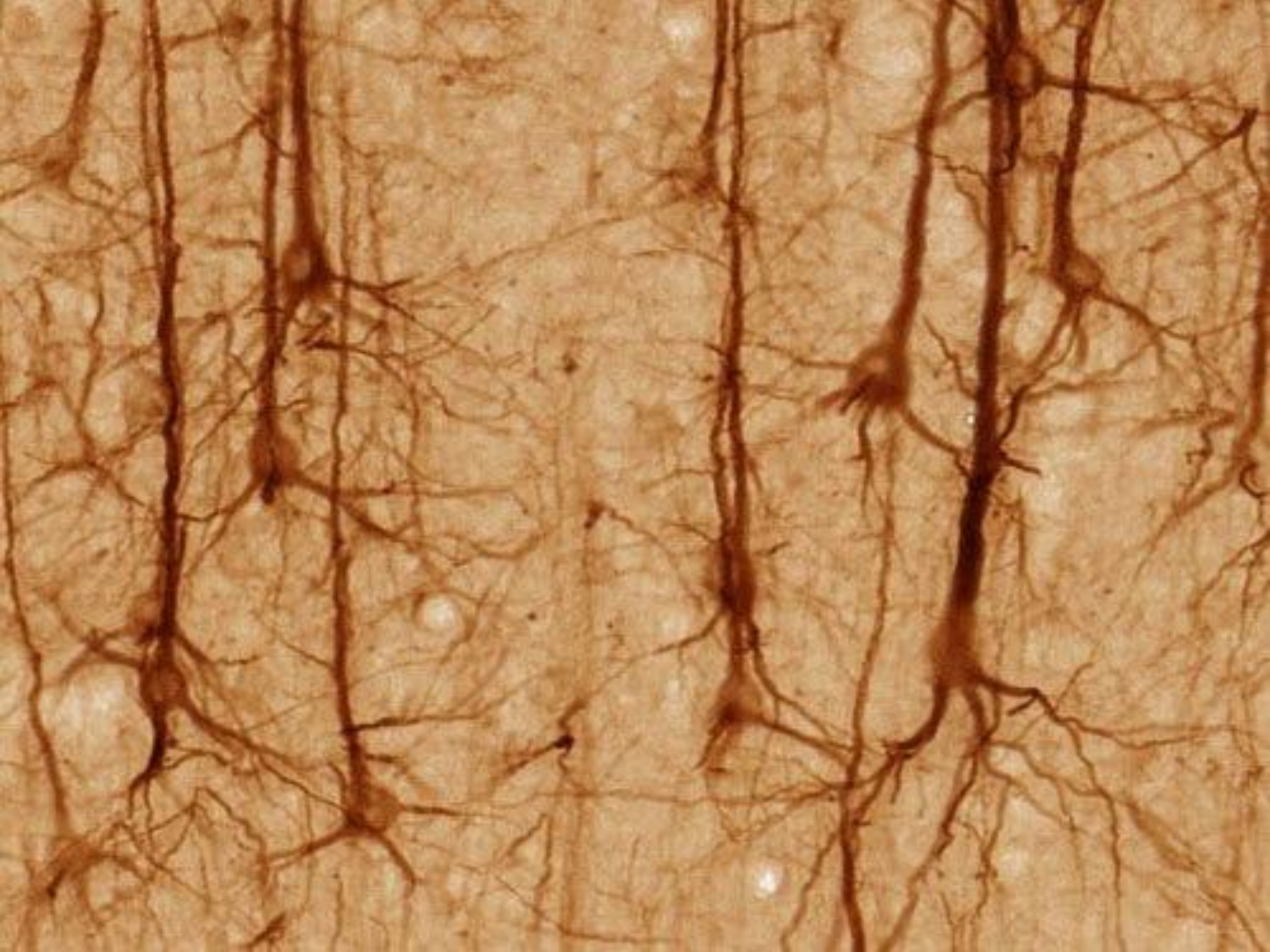
Neurons in a bird's brain



Ramón y Cajal's drawing of the neurons in a bird's cerebellum – a part of the brain.

Brain of Human

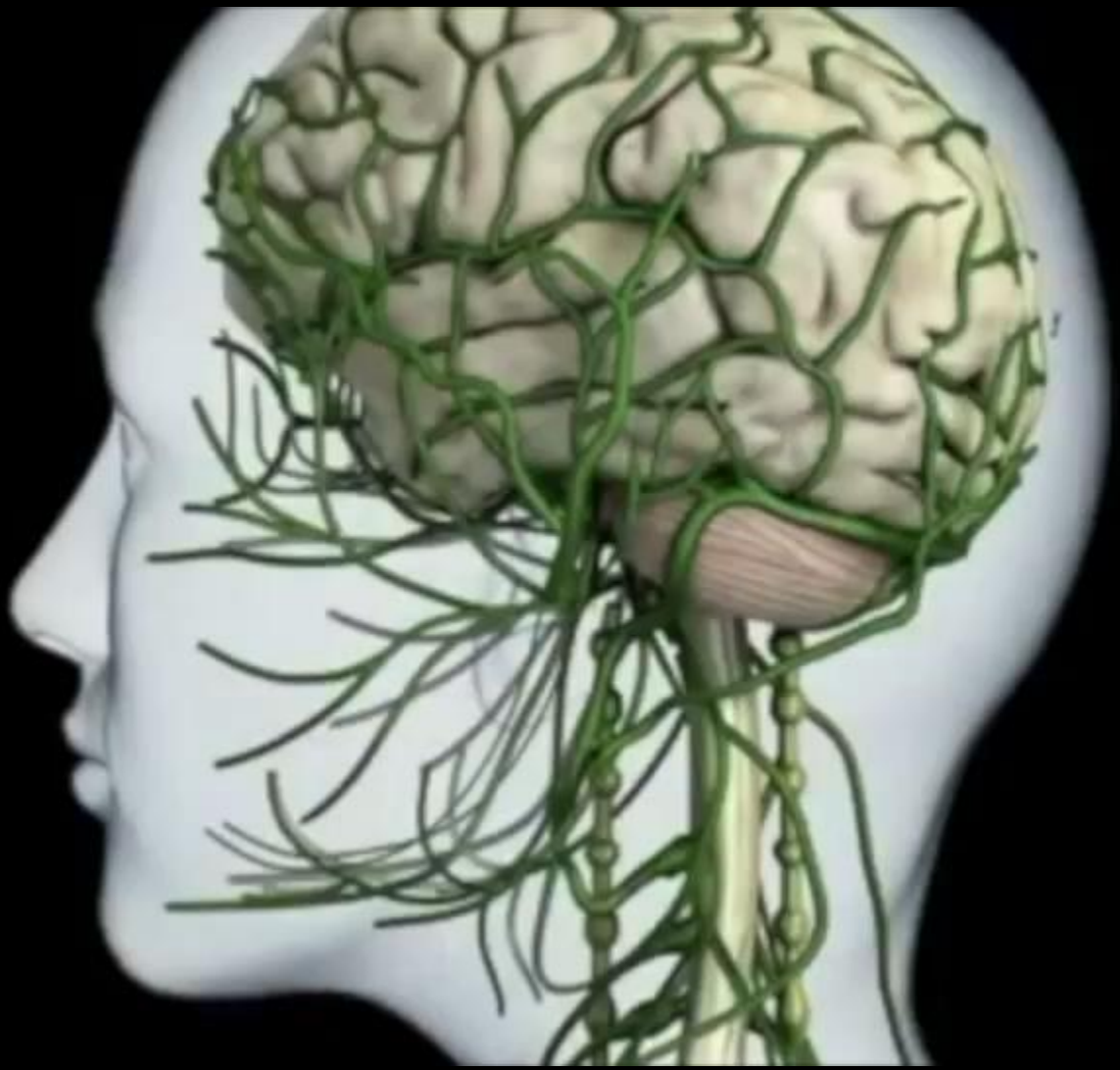

1
2
3
4
5
6
7



100 billion neurons
more than
the number of stars
in the universe

1,000억 개 뉴런

So, what happens inside?

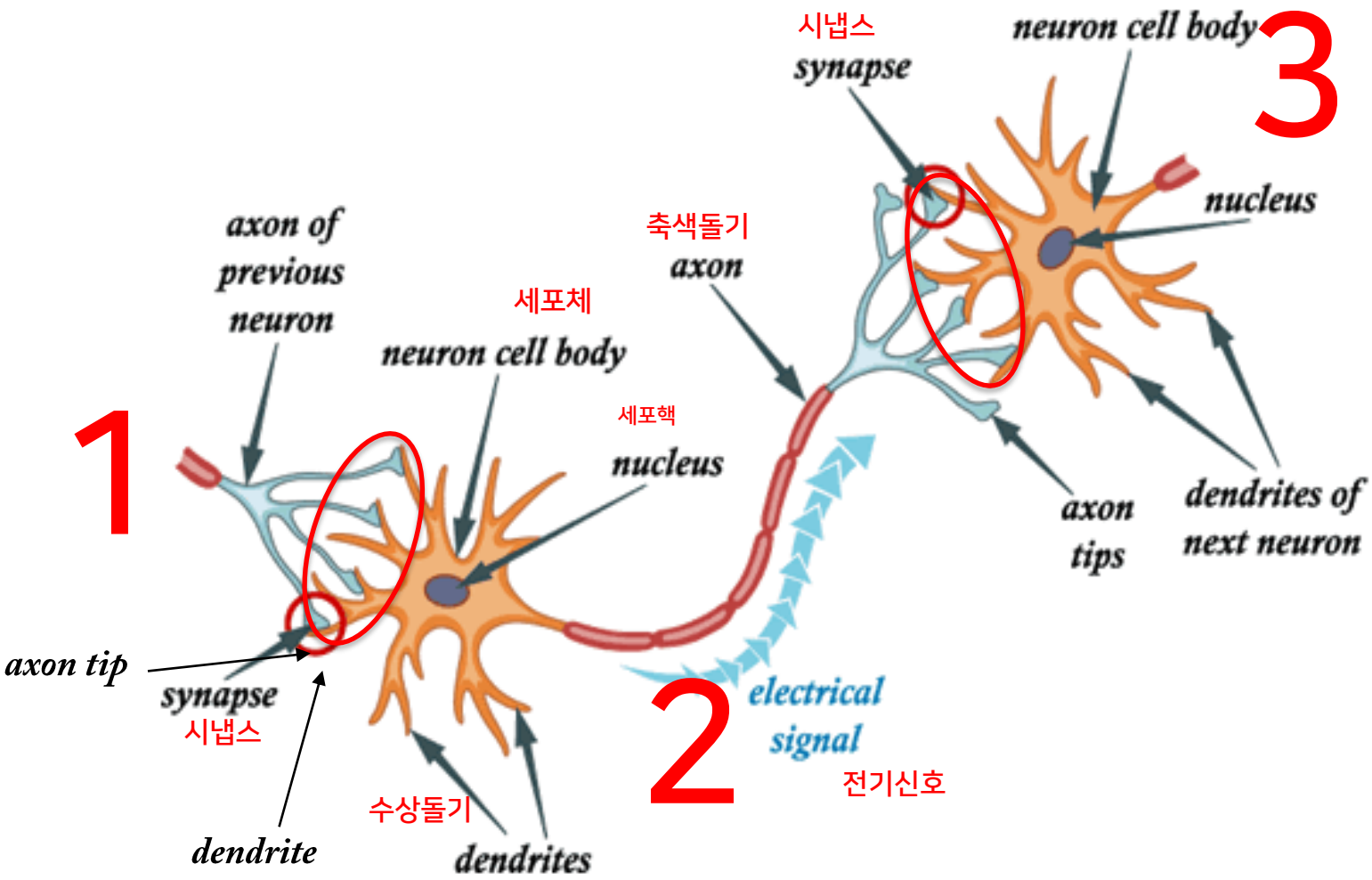


From a DVD that comes with the illustrated medical atlas, The Human Brain, DK Publishing UK.

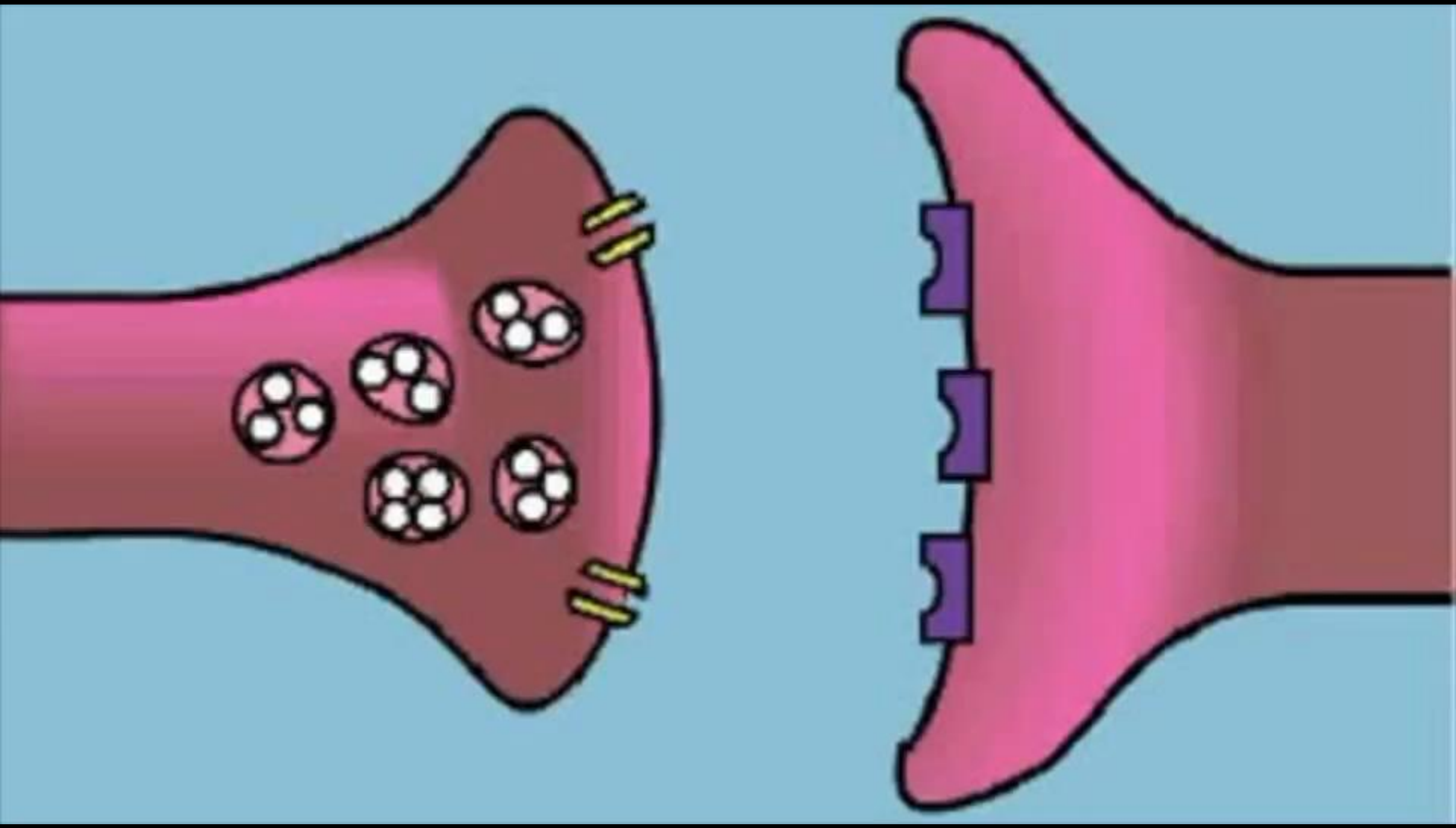
뉴런은 ON 혹은 OFF

- Signal or no signal
- 매우 단순

뉴런이 연결된 모습


시냅스
synapse
neuron cell body
3
nucleus
축색돌기
axon
axon of
previous
neuron
세포체
neuron cell body
세포핵
nucleus
1
axon
tips
dendrites of
next neuron
axon tip
synapse
시냅스
2
electrical
signal
전기신호
수상돌기
dendrite
dendrites

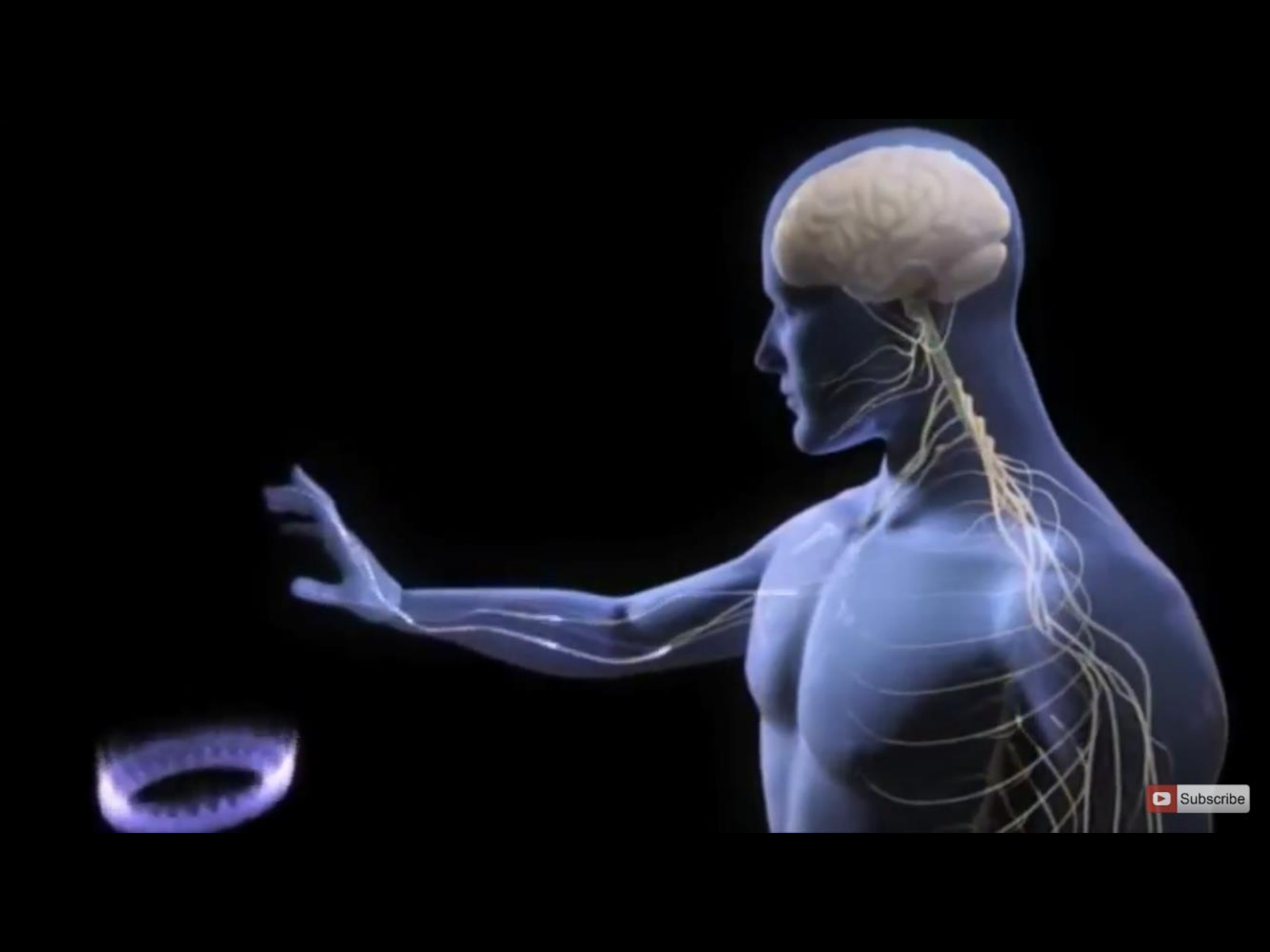
연결부위(시냅스)에서 어떤 일이...



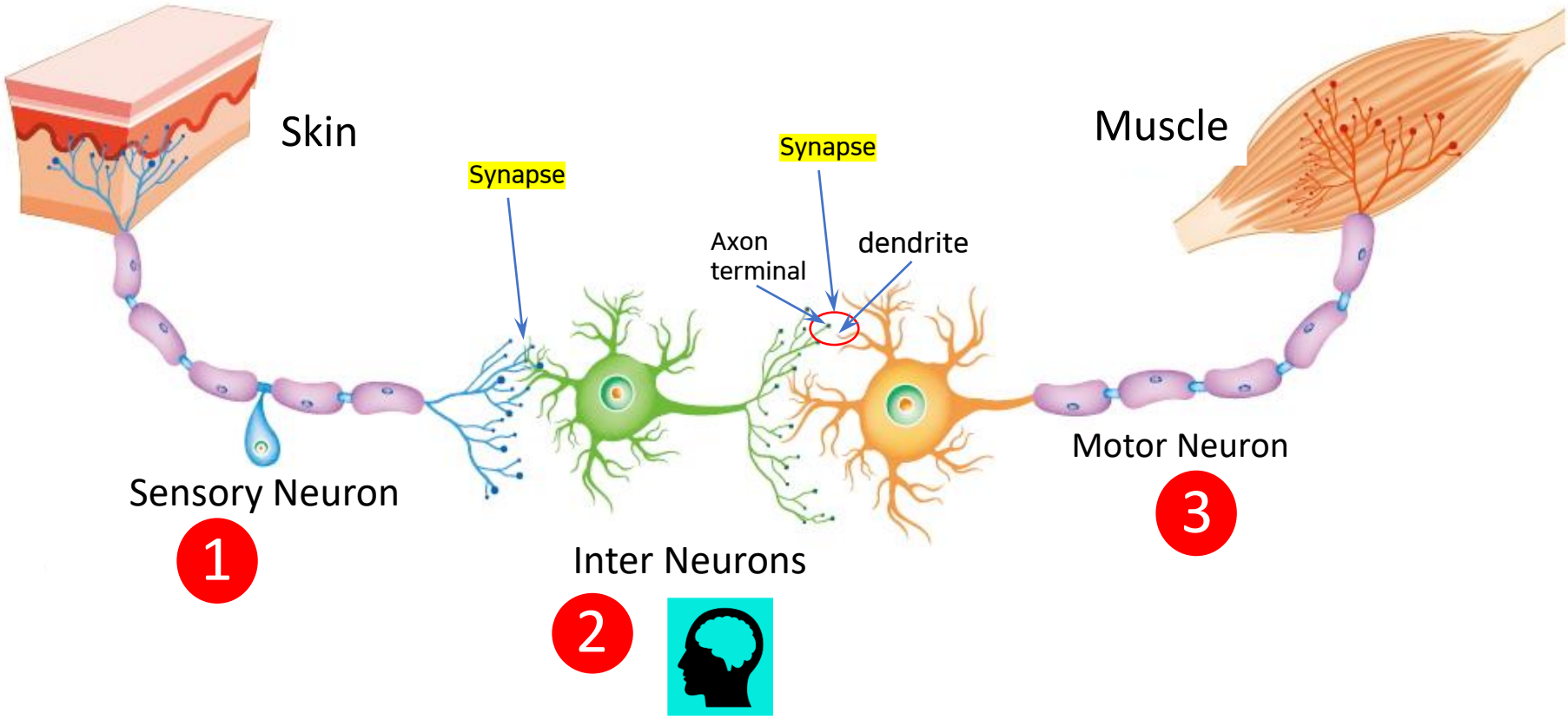
시냅스를 통한 신호 전달 시뮬레이션

A brain in a supercomputer | Henry Markram

우리가 하는 모든 일,
우리 몸(뇌)에 흐르는
수많은 전기신호로 가능


Subscribe

우리 몸에 있는 엄청나게 많은 뉴런들을 아주 간단히 표현하면..



인간의 고차원 기능은
단순한 뉴런의
수많은 연결로 가능

하지만,
연결만 되었다고 가능?

학습(Learning)

학습이란 무엇인가?

요 약

- 뇌 속에 있는 수많은 뉴런
- 수많은 뉴런의 수많은 연결
- 뉴런 1개의 동작은 굉장히 단순
- 학습이란?