

A microscopic image of neural tissue, likely a histological section, showing a dense network of cells and fibers. The cells are stained in various colors, including blue, green, red, and purple, highlighting different cellular components. The fibers are thin and thread-like, forming a complex web. The overall appearance is that of a highly organized and interconnected neural network.

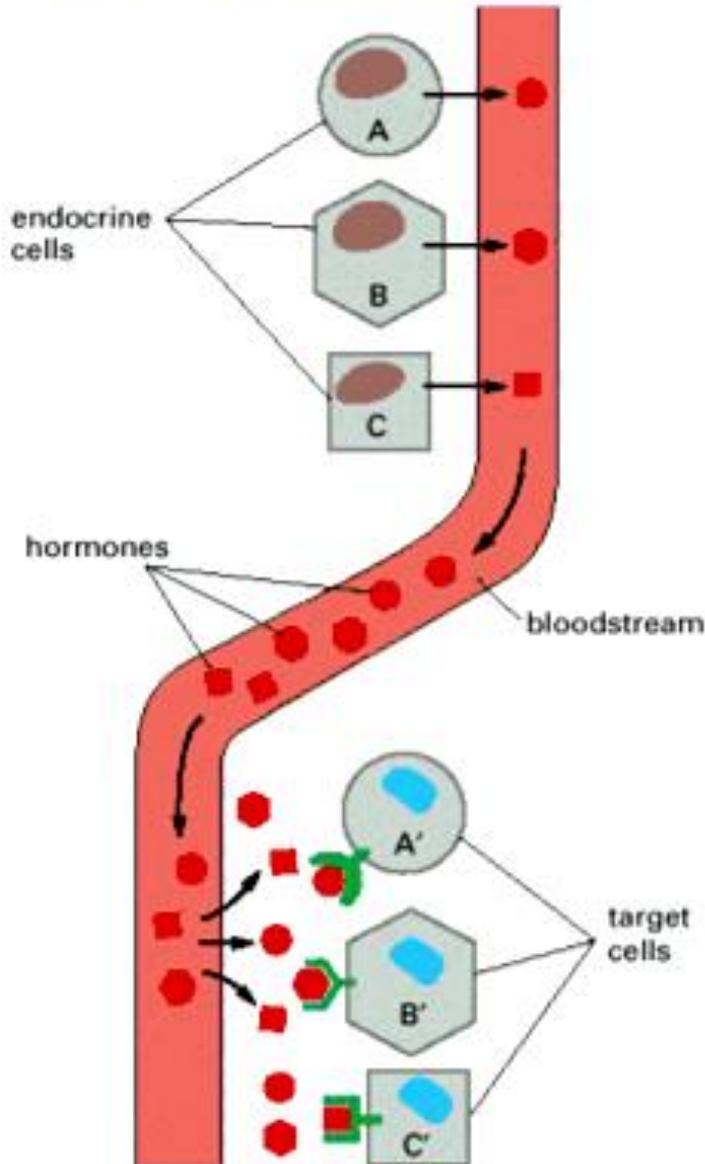
Las células del sistema nervioso I

Estructura y función básicas de
neuronas y células gliales

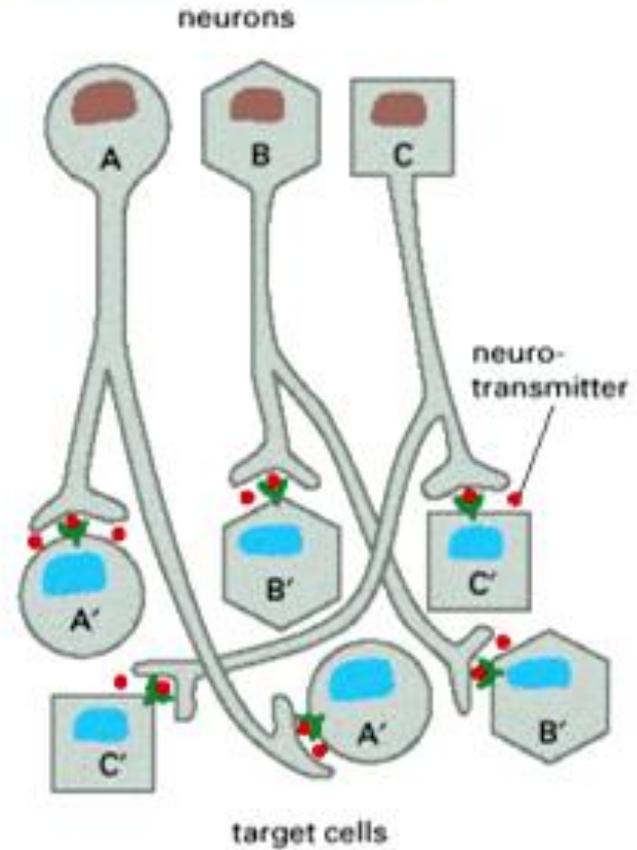
Flavio Zolessi

Comunicación intercelular a distancia

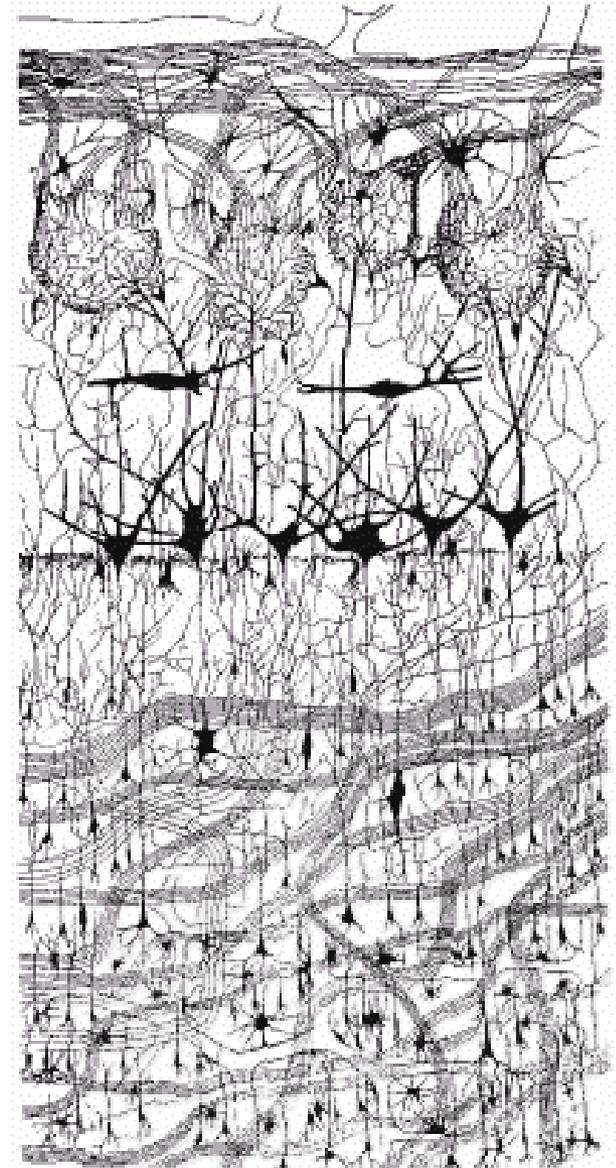
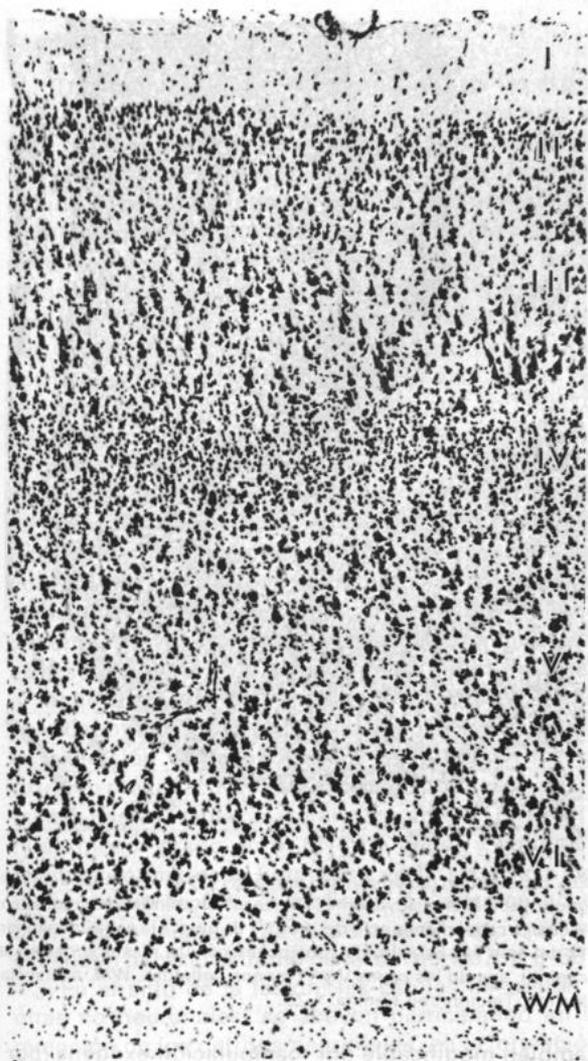
(A) ENDOCRINE SIGNALING



(B) SYNAPTIC SIGNALING



Complejidad del tejido nervioso en animales superiores



1906: Premio Nobel en Medicina y Fisiología



Santiago Ramón y Cajal

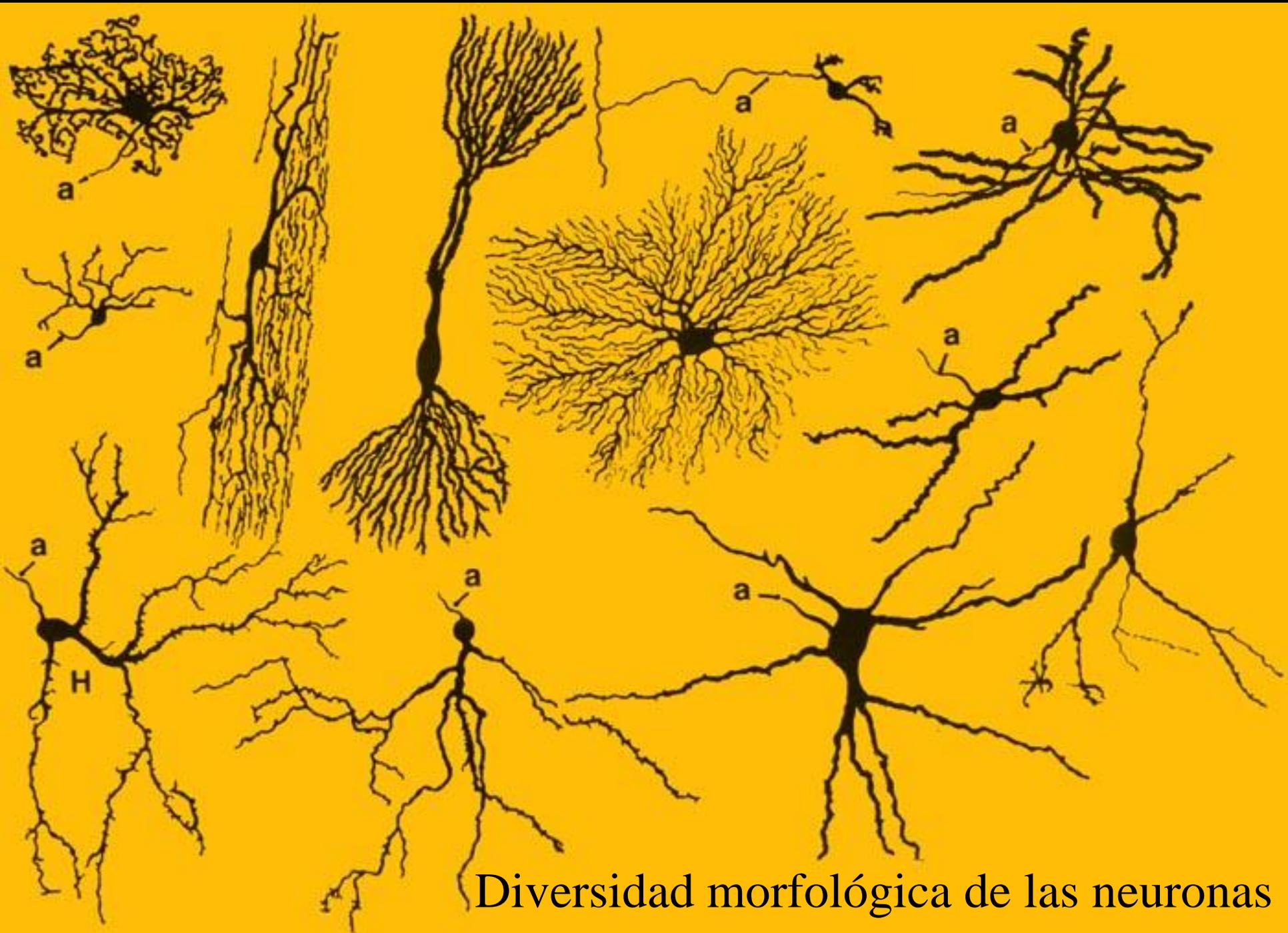
dendrite



axon



Camillo Golgi



Diversidad morfológica de las neuronas

Neuroglia

Todas las células del tejido nervioso que NO son neuronas

Astroцитos: (SNC) Fibrosos
Protoplasmáticos

Homeostasis del SN
Barrera hemato-encefálica

Células endimarias (SNC)

Recubrimiento de ventrículos

Microglia (SNC)

Fagocitosis

Oligodendrocitos (SNC)

Formación de vainas de mielina

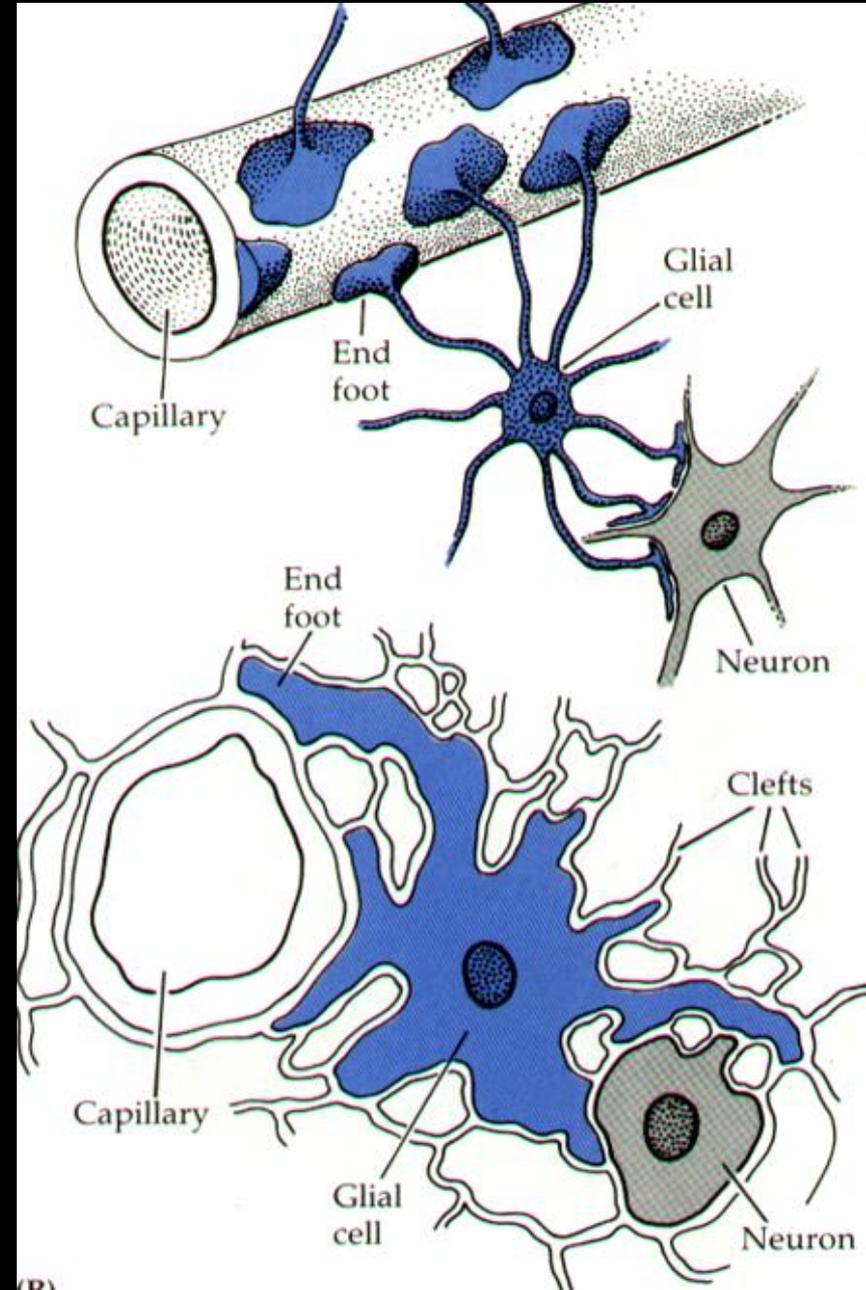
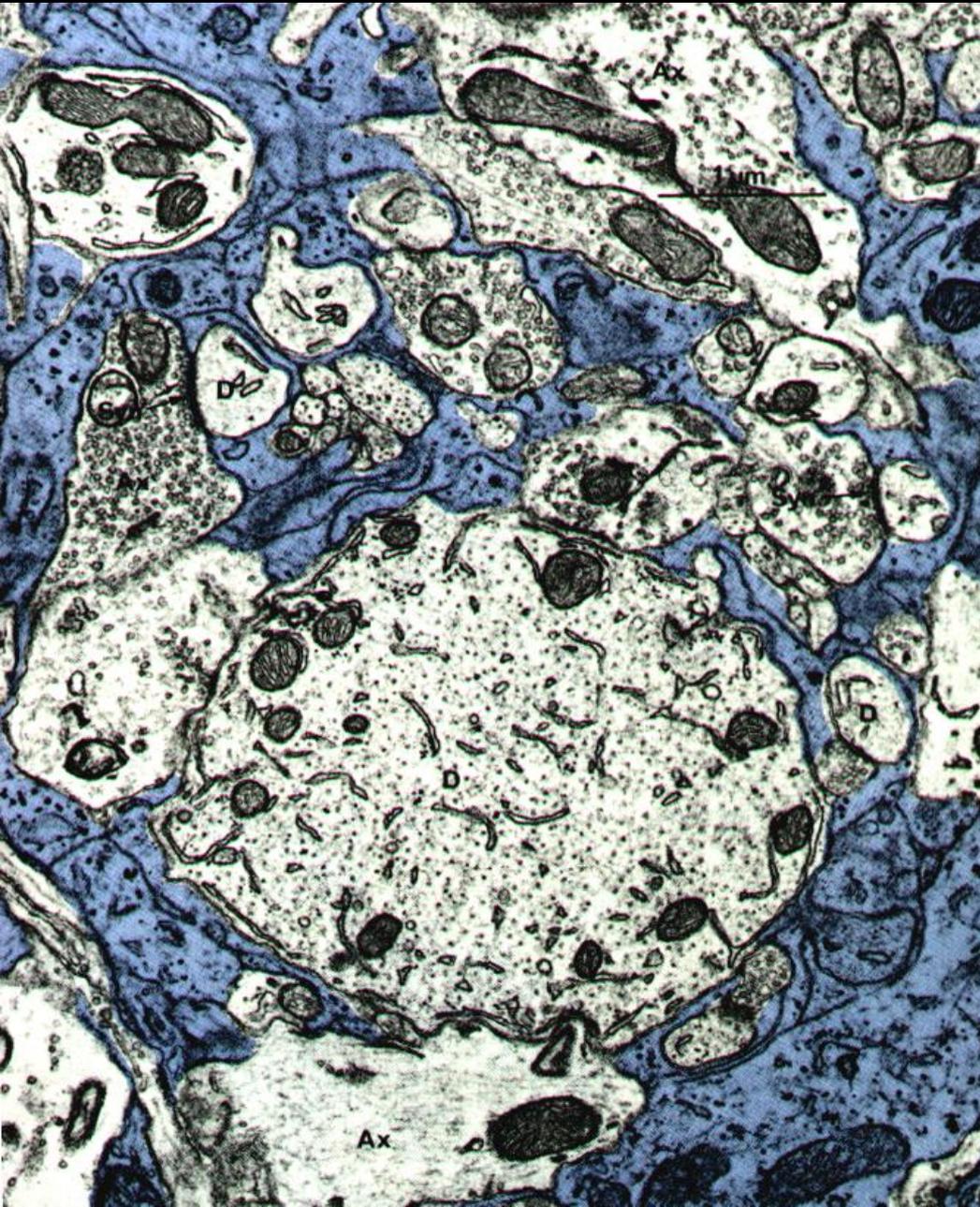
Células de Schwann (SNP)

Protección de somas neuronales

Celulas satélite (SNP)

Glias radiales (SNC) Progenitores neurales/soporte en migración neuronal

Astrocitos



Ejercicio 1:

¿Cuántas neuronas hay en el cerebro?

Grupo 1 - ¿Cuántas en el cerebro humano?

Grupo 2 - ¿En otras especies?

Grupo 3 - ¿Cómo se calcula?

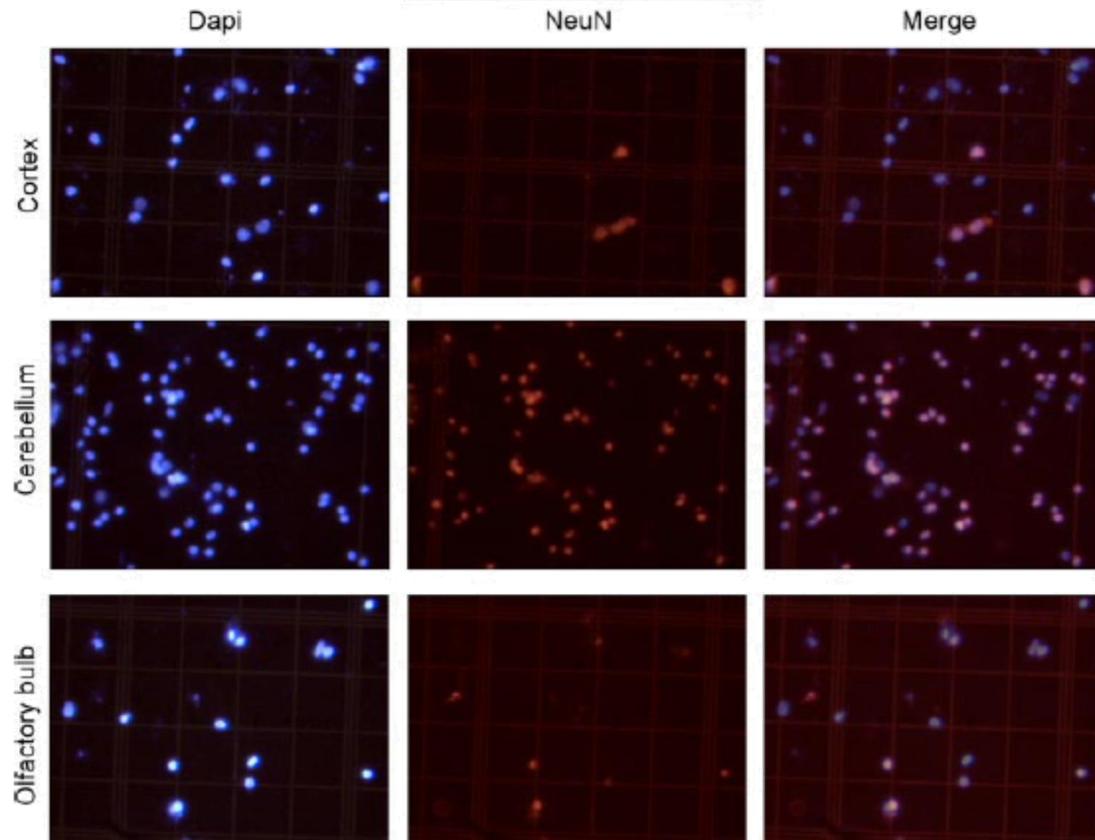
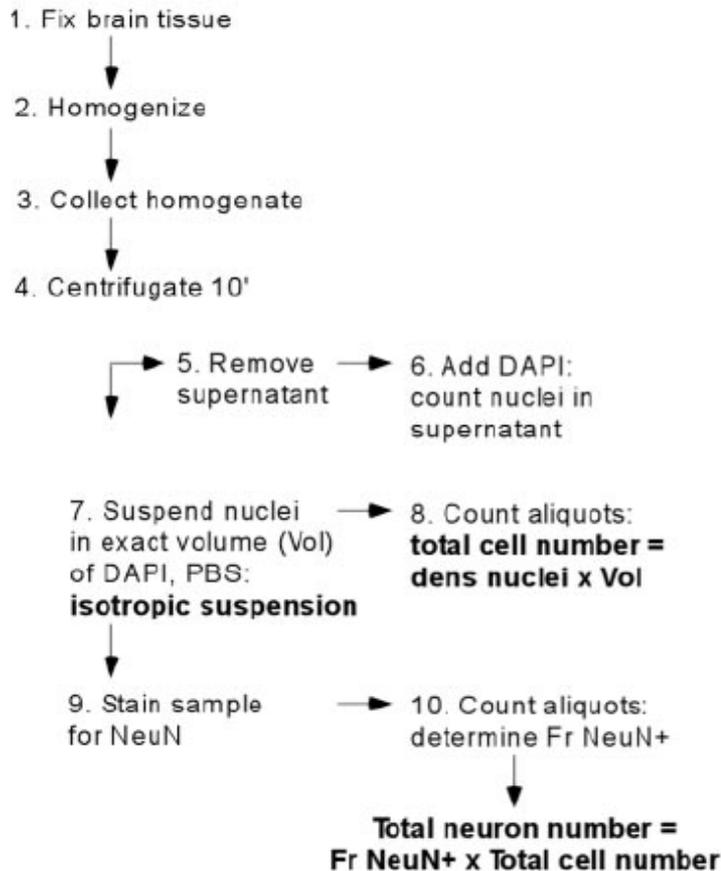
Grupo 4 - ¿Tiene este número relación con la cognición?

Isotropic Fractionator: A Simple, Rapid Method for the Quantification of Total Cell and Neuron Numbers in the Brain

<https://www.jneurosci.org/content/25/10/2518>

Suzana Herculano-Houzel and Roberto Lent

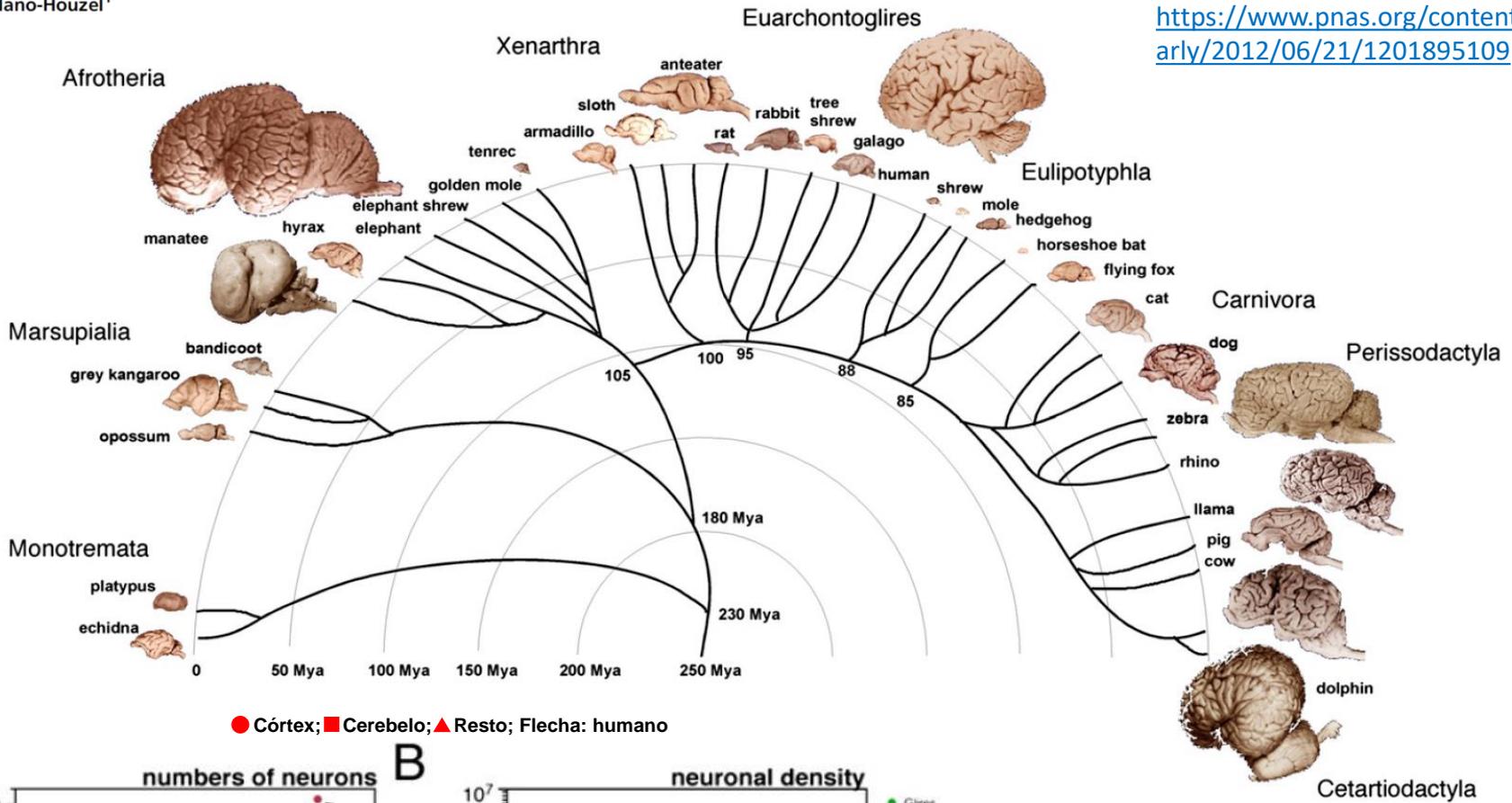
Departamento de Anatomia, Instituto de Ciências Biomédicas, Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil 2



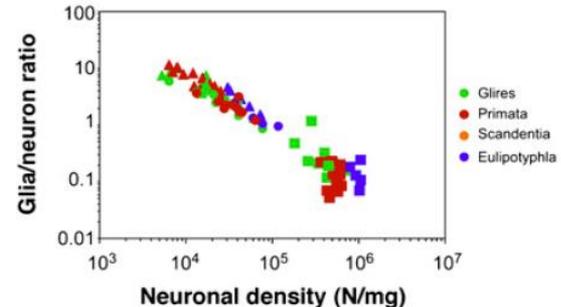
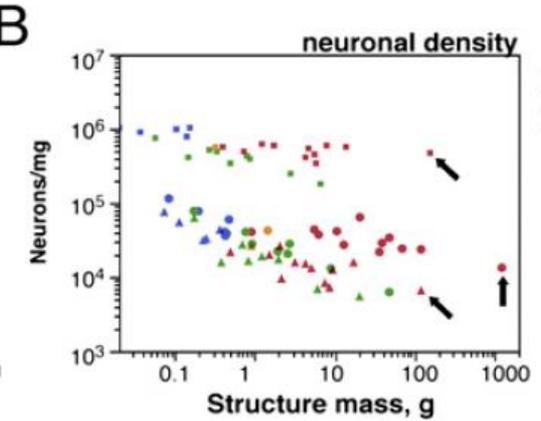
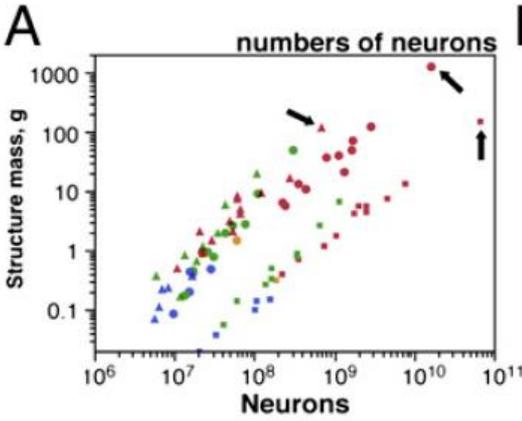
The remarkable, yet not extraordinary, human brain as a scaled-up primate brain and its associated cost

Suzana Herculano-Houzel¹

<https://www.pnas.org/content/early/2012/06/21/1201895109>



● C6rtex; ■ Cerebelo; ▲ Resto; Flecha: humano



Neuronas

Número estimado en el cerebro humano: 8.6×10^{10}

Sensoriales: colectan impulsos desde receptores en la periferia hacia el sistema nervioso central (SNC)

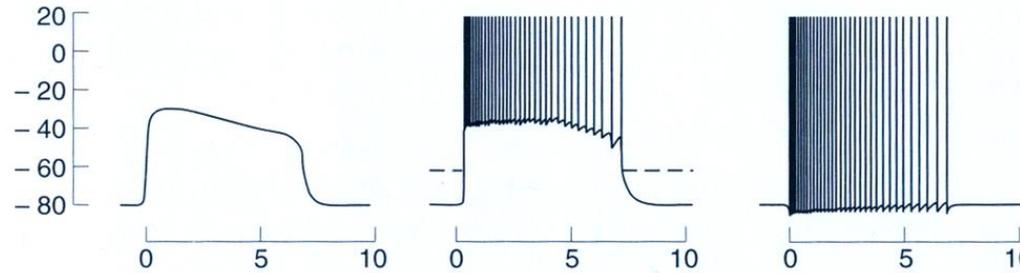
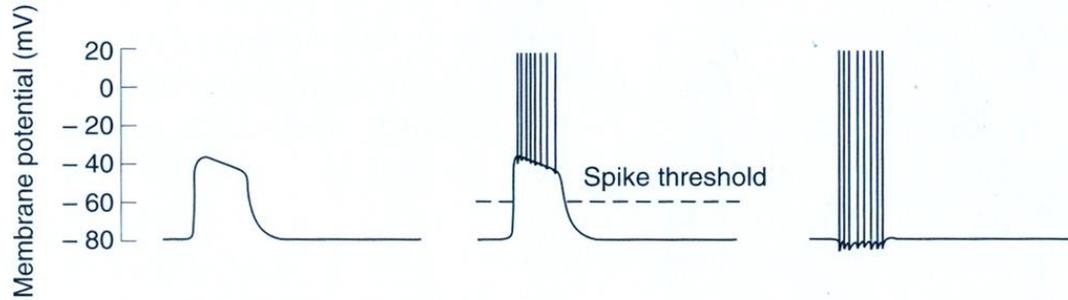
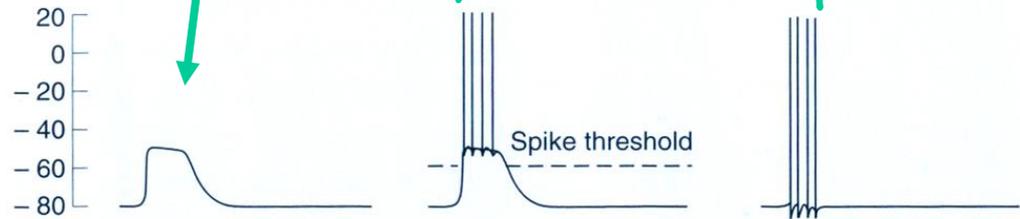
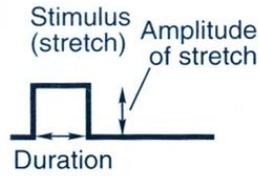
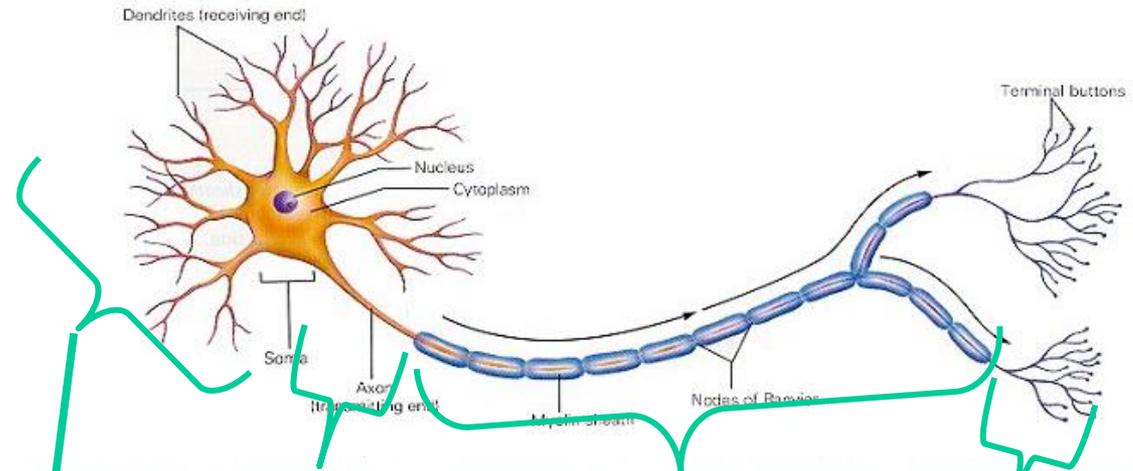
Motoras: emiten impulsos desde el SNC hacia células efectoras

Interneuronas: red interpuesta entre neuronas sensoriales y motoras.

99.98% de todas son interneuronas.

Número estimado de células gliales en el cerebro humano: \approx neuronas

Polaridad funcional y estructural de las neuronas



Time (seconds)

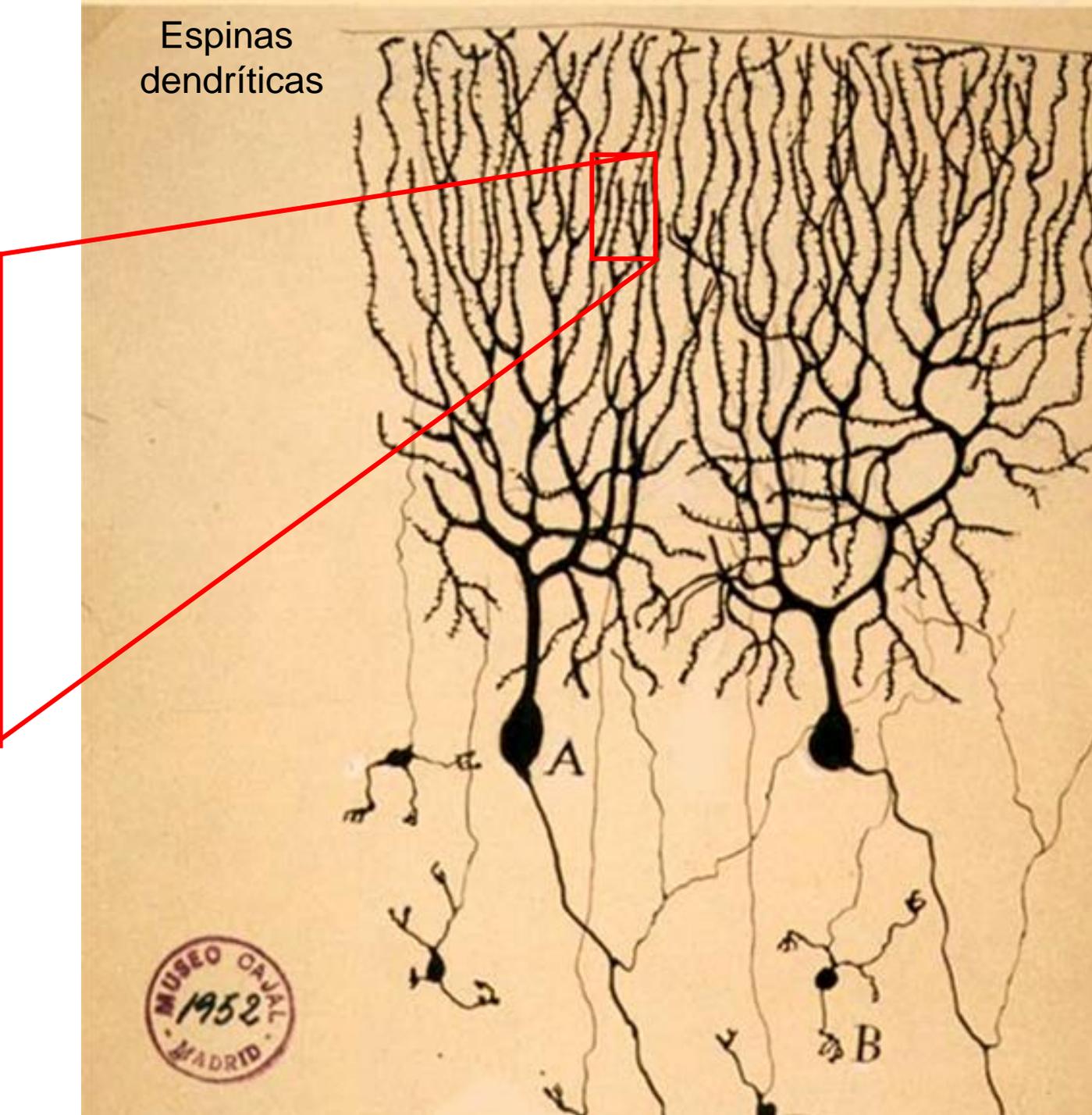
Polaridad molecular de las neuronas



Tau
MAP-2

Dendritas

Espinas
dendríticas



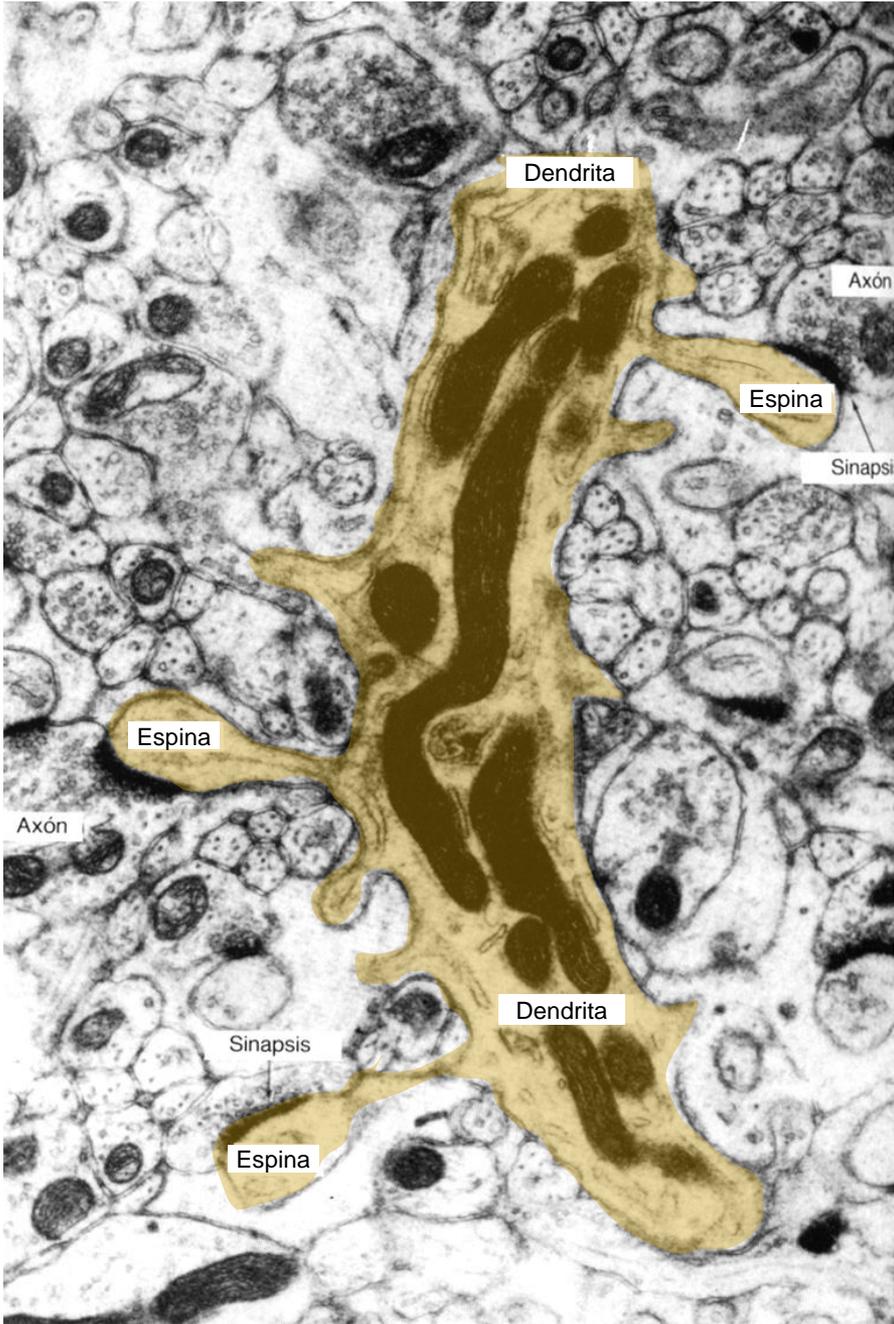
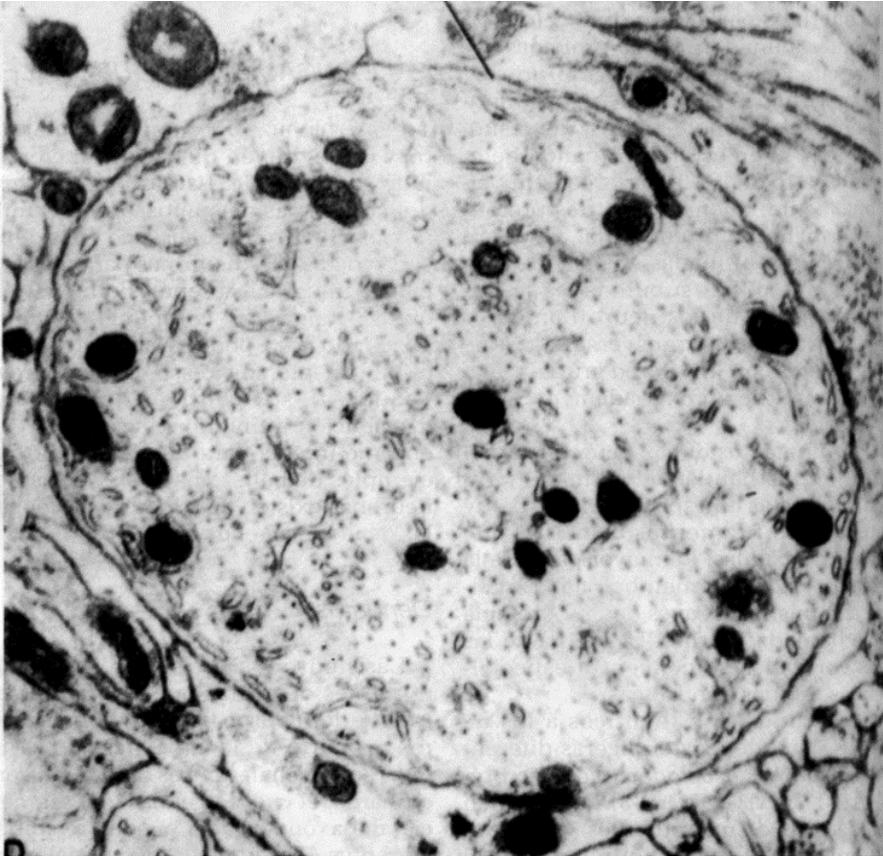
MUSEO CAJAL
1952
MADRID

Dendritas



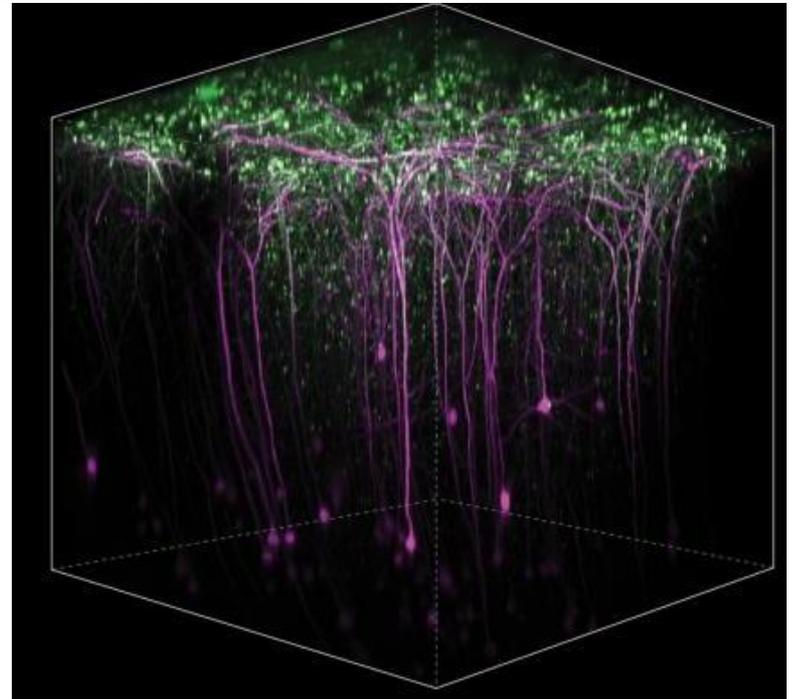
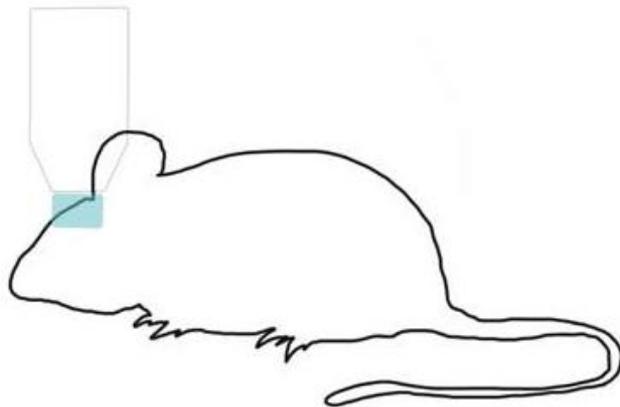
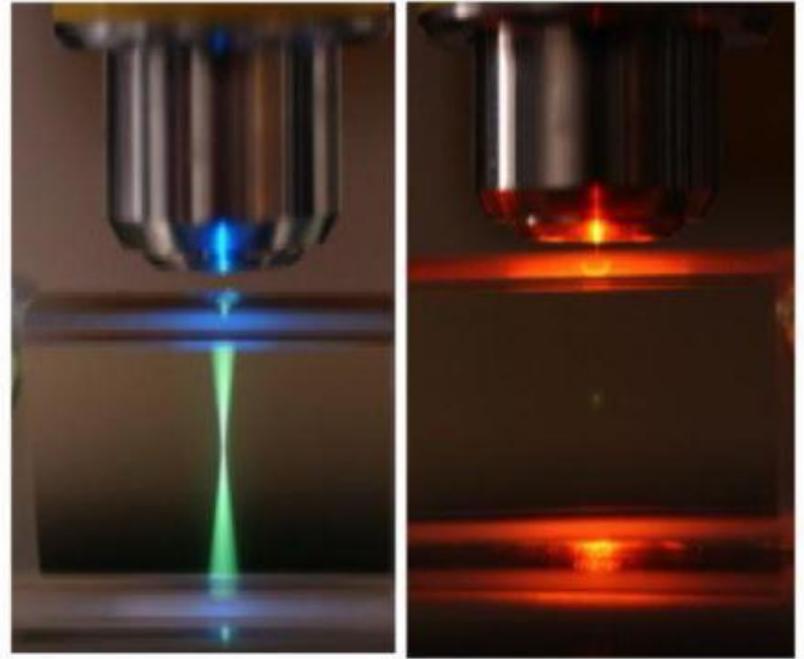
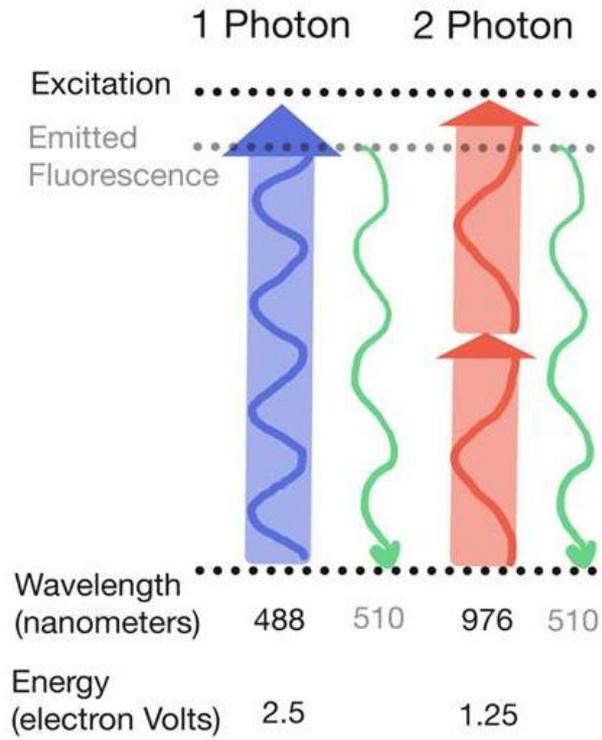
Extremo

Base

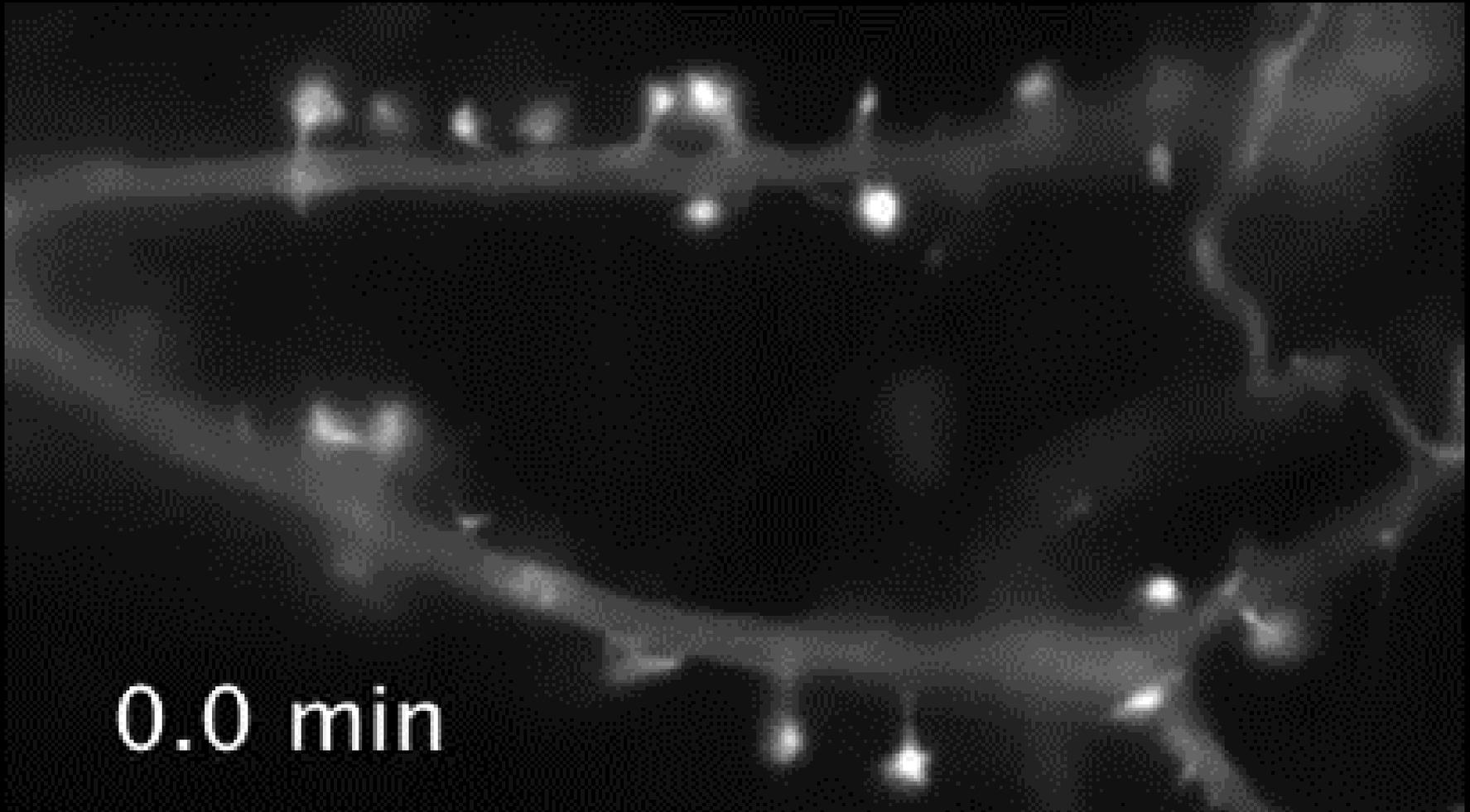


Neuropilo

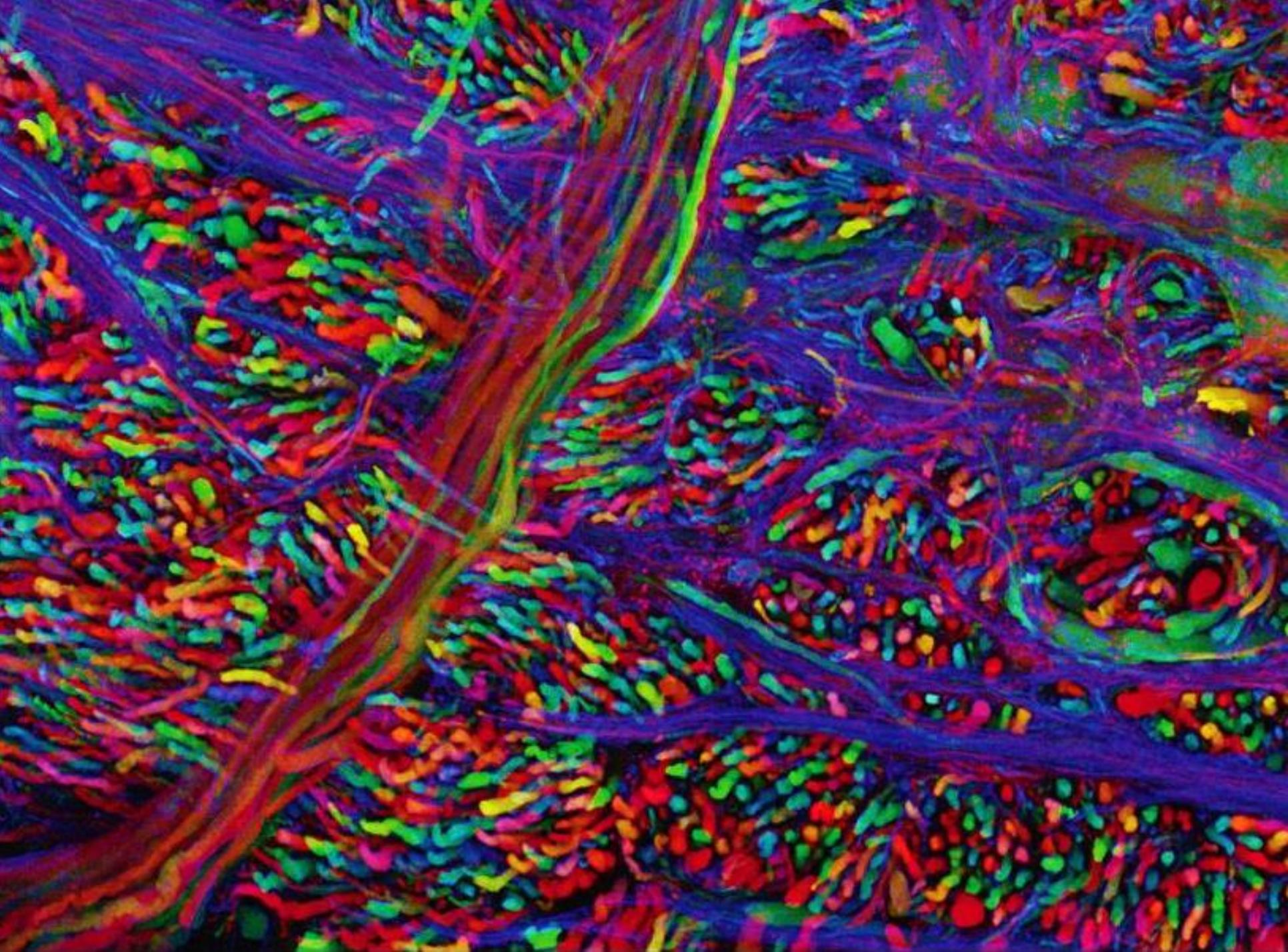
Microscopía bifotónica



Dinámica de la actina en espinas dendríticas



<https://www.youtube.com/watch?v=Cjjdky96ubc>



Sistema "brainbow"

