New set of neuroanatomy drawings by Santiago Ramón y Cajal installed in Building 35

A new set of neuroanatomy drawings by Santiago Ramón y Cajal was installed in Building 35.

Current set of seven neuroanatomy drawings by Santiago Ramón y Cajal will remain on rotation in Building 35.

The drawings date back to the turn of the last century when Santiago Ramón y Cajal shared the Nobel Prize (1906) with Camillo Golgi for their work on the structure of the nervous system. We thank our partners at the Cajal Institute in Madrid, Spain for making this exhibit possible. You can see the original drawings, or touch 3-D prints of enlarged drawing details, until September.


Basket cells in the cerebellum
Basket cells are inhibitory interneurons found in several parts of the brain. Those shown here, in the cerebellum, make motor movement possible by preventing inhibitory signaling from Purkinje neurons. Each basket cell is composed of Purkinje neuron cell bodies surrounded by basketlike networks of axon branches (c) from the nearby stellate neurons (A and B); Cajal called these basketlike cell terminals 'pinceau,' French for 'paintbrush.'
Using the silver nitrate staining method to visualize these cells, he recognized that although the axons of the stellate neurons made numerous synapses with the Purkinje neuron cell bodies, they did not fuse at any point. This supported his Neuron Doctrine, wherein the nervous system is composed of distinct cells rather than a network of continuously connected cells, and nervous impulses travel from the axon of one cell to the body of another.
Although he first posited the Neuron Doctrine in 1894, it was not until the 1950s, when the first electron microscopes became available, that scientists were able to confirm the existence of the synapse and thus validate Cajal's theory.
Astrocytes at the border of a wound
Astrocytes are a type of macroglia that are critical for maintaining physiological homeostasis in the CNS and supporting neuronal function. Astrocytes in the grey and white matter of the brain typically have pedicles, or "feet", that form contacts with capillaries (A, B, e) and control local blood flow.
Using a uranium-nitrate technique specifically for staining astrocytes on a tissue sample bordering a cerebral wound, Cajal observed not only normal astrocytes in contact with capillaries, but also small amoeboid cells (a,b,c). Other scientists, such as Alzheimer, had previously noted such cells in the CNS tissue of persons with various degenerative diseases, but their origins were uncertain. Cajal correctly inferred that these cells were astrocytes which had somehow reshaped themselves after the injury.
We now know that astrocytes become "reactive" after a brain injury: they become polarized, migrate, and their cell bodies swell. Such reactive astrocytes are postulated to have both beneficial (wound healing, limitation of inflammation) and detrimental (scar formation) roles in the response to injury.

Santiago Ramón y Cajal Exhibit