Secrets of the Mind: The Drawings of Santiago Ramón y Cajal

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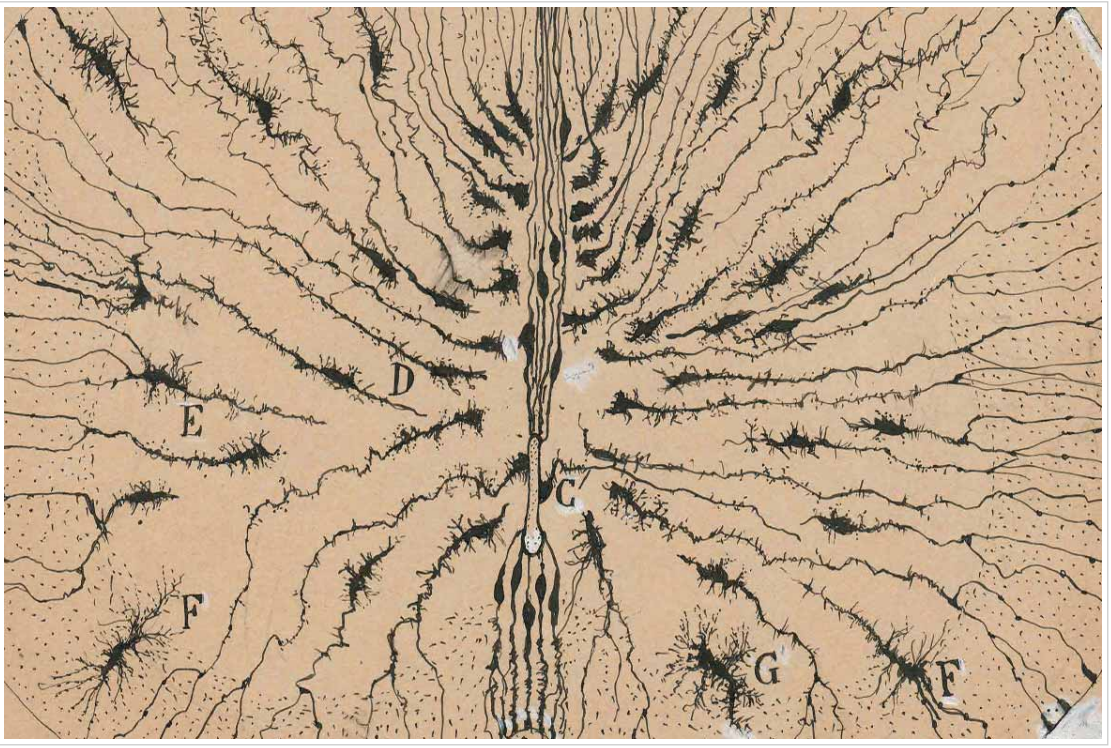

Santiago Ramón y Cajal, glial cells of the mouse spinal cord, 1899, ink and pencil on paper. Courtesy of Instituto Cajal (CSIC).

The human brain — how much do you really know about the organ responsible for all your motor functions, thoughts, even your feelings? Although the brain has been studied for centuries, there are many unanswered questions; the confounding mysteries of this complex organ remain a challenge to neuroscientists from all over the world.

Today, much of what we know and understand about the brain is because of one individual — a pioneer in the field and often cited as the 'father of neuroscience'. Santiago Ramón y Cajal (1852-1934) was a Spanish neuroscientist, pathologist, histologist and co-winner of the Nobel Prize in Physiology or Medicine in 1906 for his findings on the structure of the nervous system. Cajal believed that the brain is composed of individual nerve cells and not one single web, something that was only conclusively proven in the 1950s by electron-microscopy technology.

Santiago Ramón y Cajal, Untitled (self portrait), c.1885.

While studying brain cells at length under the microscope, Cajal documented his findings through detailed drawings that are still used today to explain complicated neuroscience principles. These drawings are now on display at UBC's Morris and Helen Belkin Art Gallery (in partnership with the Djavad Mowafaghian Centre for Brian Health with support from Vancouver General Hospital and UBC Hospital) in the exhibit *The Beautiful Brain: The Drawings of Santiago Ramón y Cajal*.

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"Without Cajal's impressive body of work, our understanding of the anatomy of the brain would not be so well-formed," explains Dr. Brian MacVicar, co-director of UBC's Djavad Mowafaghian Centre for Brian Health. "Cajal's legacy has been of critical importance to neuroscience teaching and research over the past century."

Cajal's work pulls you into his unique observations of the brain through the sinuous shapes of neural pathways and feathery illustrations of glial cells. One cannot help but wonder how Cajal was able to construct such truthful, accurate work before modern magnetic resonance imaging (MRI) was invented. Perhaps the answer can be found in the artist-neuroscientist's own words:

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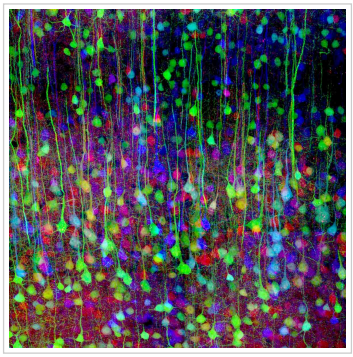
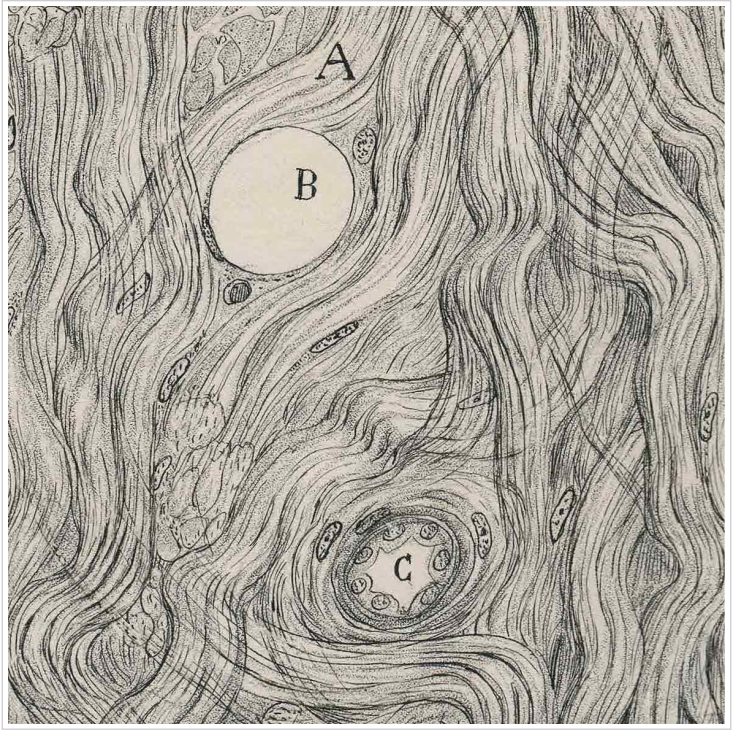
(Photo) Blair Jovellar, a neuroscience PhD student and ambassador of the exhibit. (Brain Scan) Jeff Lichtman, Joshua Sanes, and Jean Livet, Brainbow, 2007. (Drawing) Santiago Ramón y Cajal, endotelioma de la duramadre, 1890, ink and pencil on paper. Courtesy of Instituto Cajal





(CSIC).

The Beautiful Brain is a unique blend of science and art. Modern images of the brain through MRI scans, 3D renders, micrographs and microscopic-image-stacks are juxtaposed against Cajal's delicate, intricate illustrations of the brain. There are visual and audio interactive stations that allow you to visualize the composition of the brain and understand how various brain functions work.

Then of course, there is the collection of 80 of Cajal's drawings, mesmerizing depictions of what he saw under the microscope embellished with his scientific insights. Up close, every stroke, dot and shape he sketched a century ago reveals the wiring of a complex world from which Cajal made scientific discoveries and subtle artistic statements. In some drawings you can identify the neuroscientist-artist's handwriting in the margins, loopy slanted script, descriptions of the drawings, clarifying points, brief and poetic in nature.

Blair Jovellar, a neuroscience PhD student at UBC, volunteered as an ambassador for the exhibit. She was inspired by Cajal's work from both an artistic and scientific perspective.

"I was first introduced to his work in my *Neuroscience 500* class," Jovellar says. "The [professor] introduced him as the father of modern neuroscience and showed a few drawings that Cajal made. I was astonished — they were so beautiful. It spoke to me because I admired his patience, attention to detail, and his level of clarity and accuracy."

The Beautiful Brain runs until December 3, 2017. Exhibit tours take place on Saturdays and Sundays (1:30 and 3:30 p.m.). Alongside Cajal's work are abstract works from Lawren Harris, Charles Leadbeater and Annie Besant. *The Beautiful Brain* offers a rare collection from artists and scientists from around the world exploring ideas of consciousness and spirituality and encourages viewers to consider interdisciplinary art forms. As well, the gallery is hosting numerous events related to the exhibit. Learn more on the upcoming symposium, lecture and concert (http://belkin.ubc.ca/?id=496) happening this fall at the Morris and Helen Belkin Art Gallery on UBC's Vancouver campus.