

1. Record Nr.	UNINA9910220058803321
Autore	Miguel A. Merchan
Titolo	The Major Discoveries of Cajal and His Disciples: Consolidated Milestones for the Neuroscience of the XXIst Century
Pubbl/distr/stampa	Frontiers Media SA, 2017
Descrizione fisica	1 online resource (161 p.)
Collana	Frontiers Research Topics
Soggetti	Neurosciences
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Sommario/riassunto	<p>When Santiago Ramon y Cajal started to unravel the fine structure of the nervous system in the last decades of the XIXth century maybe only his unbeatable soul of brave Spaniard imagined that most of the descriptions were scientific truths that lasted to date. Simple histological stainings, curiosity to ameliorate these, monocular microscopes, patience for drawing his observations and a rich imaginative open mind: this is the recipe for Cajal success. His descriptions of connectivity in the nervous system, compiled in Cajal's opus magna published in 1904 ("Textura del sistema nervioso del hombre y los vertebrados") and 1911 ("Histologie du systeme nerveux"), have been corroborated by modern techniques decade after decade. Even more, the main hypothesis that Cajal raised are universally recognised as biological laws, today: the neuron theory, the law on the dynamic polarization of the neuron and the chemotropic hypothesis. That is: the nervous system is not a sincitial network but is formed by individual cells; the transmission of the nerve impulses follow a main direction within a given neuron; the axons are guided by chemical substances in a chemotropic way, till form synapses with their targets. Attracted by Cajal's strong personality and scientific success, a number of medical students and doctors join him in the crusade to explore the nervous system. And the seed planted by the universal savant was really successful: Francisco Tello described interesting aspects of the regeneration of peripheral nerves which are very useful</p>

for neuroscientist currently working in this topic; Nicolas Achucarro significantly contributed to study neuroglia and future microglia; Pio del Rio-Hortega identified two out of the four main nervous cell types, the oligodendrocytes and microglia, and proposed an almost still valid classification for the CNS tumours; Fernando de Castro made was the first description of arterial chemoreceptors in the carotid body; Rafael Lorente de No was a dominant figure of Neuroscience for decades after the IInd World War, first describing the columnar organization of the cerebral cortex well before Mountcastle, Hubbel and Wiesel. Even less recognised co-workers and disciples of Cajal (his brother Pedro Ramon y Cajal, Domingo Sanchez, the neurologist Rodriguez-Lafora... protagonised discoveries that are consolidated scientific truths today). Altogether, it is difficult (if not impossible) to find a school in biology contributing in such a fundamental and variated way to the common acervo like the collectively known as Cajal School or Spanish Neurological School. Although the particular way to work of the Maestro, selecting a pleiade of brilliant collaborators with whom accomplish such a titanic feat, giving them freedom for their studies, has been recognised and confronted to antagonic systems followed by other relevant scientists and scientific schools, the general recognition of such a significant major milestones for Neuroscience and their vigency in the well-marched XXIst century is not: this is the purpose of this Ebook, to remind all these examples of how successful can be the scientific work when it is minutious, constant and performed by brilliant, imaginative and skilled scientists with a minimal conditions supporting their efforts. When Santiago Ramon y Cajal started to unravel the fine structure of the nervous system in the last decades of the XIXth century maybe only his unbeatable soul of brave Spaniard imagined that most of the descriptions were scientific truths that lasted to date. Simple histological stainings, curiosity to ameliorate these, monocular microscopes, patience for drawing his observations and a rich imaginative open mind: this is the recipy for Cajal success. His descriptions of connectivity in the nervous system, compiled in Cajal's opus magna published in 1904 ("Textura del sistema nervioso del hombre y los vertebrados") and 1911 ("Histologie du systeme nerveux"), have been corroborated by modern techniques decade after decade. Even more, the main hypothesis that Cajal raised are universally recognised as biological laws, today: the neuron theory, the law on the dynamic polarization of the neuron and the chemotropic hypothesis. That is: the nervous system is not a sincitial network but is formed by individual cells; the transmission of the nerve impulses follow a main direction within a given neuron; the axons are guided by chemical substances in a chemotropic way, till form synapses with their targets. Attracted by Cajal's strong personality and scientific success, a number of medical students and doctors join him in the crusade to explore the nervous system. And the seed planted by the universal savant was really successful: Francisco Tello described interesting aspects of the regeneration of peripheral nerves which are very useful for neuroscientist currently working in this topic; Nicolas Achucarro significantly contributed to study neuroglia and future microglia; Pio del Rio-Hortega identified two out of the four main nervous cell types, the oligodendrocytes and microglia, and proposed an almost still valid classification for the CNS tumours; Fernando de Castro made was the first description of arterial chemoreceptors in the carotid body; Rafael Lorente de No was a dominant figure of Neuroscience for decades after the IInd World War, first describing the columnar organization of the cerebral cortex well before Mountcastle, Hubbel and Wiesel. Even less recognised co-workers and disciples of Cajal (his brother Pedro Ramon

y Cajal, Domingo Sanchez, the neurologist Rodriguez-Lafora...
protagonised discoveries that are consolidated scientific truths today).
Altogether, it is difficult (if not impossible) to find a school in biology
contributing in such a fundamental and varied way to the common
acervo like the collectively known as Cajal School or Spanish
Neurological School. Although the particular way to work of the
Maestro, selecting a pleiade of brilliant collaborators with whom
accomplish such a titanic feat, giving them freedom for their studies,
has been recognised and confronted to antagonic systems followed by
other relevant scientists and scientific schools, the general recognition
of such a significant major milestones for Neuroscience and their
vigency in the well-marched XXIst century is not: this is the purpose of
this Ebook, to remind all these examples of how successful can be the
scientific work when it is minutious, constant and performed by
brilliant, imaginative and skilled scientists with a minimal conditions
supporting their efforts.
