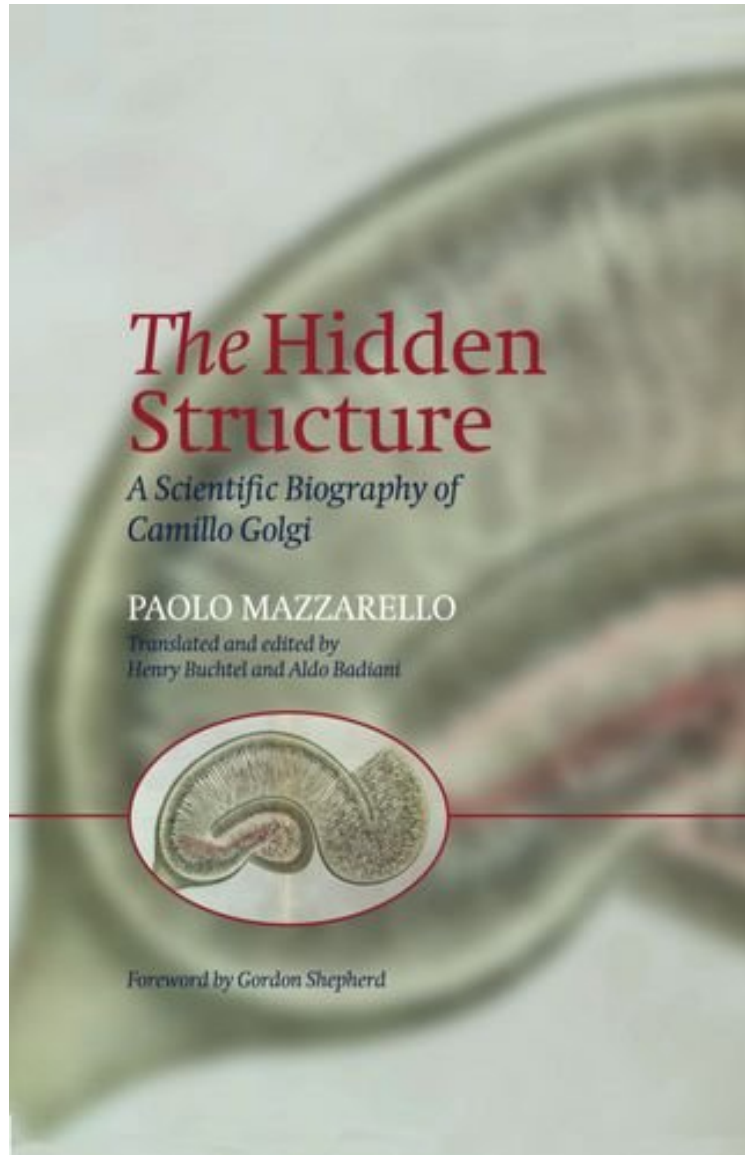


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The Hidden Structure: A Scientific Biography of Camillo Golgi

Paolo Mazzarello

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Paolo Mazzarello : The Hidden Structure: A Scientific Biography of Camillo Golgi before purchasing it in order to gage whether or not it would be worth my time, and all praised The Hidden Structure: A Scientific Biography of Camillo Golgi:

0 of 0 people found the following review helpful. Five StarsBy M. CorreaGreat service! I am a happy customer.

Camillo Golgi (1843-1926) is widely regarded as one of the founders of modern neuroscience. In 1873, he discovered the black reaction -- a histological stain which proved to be a revolutionary method for studying the structure of the nervous system. To this day, the Golgi stain is widely used. And for every student of medicine or biology, Golgi's name is synonymous with one of the basic structures in the cell: Golgi Apparatus. He discovered the apparatus in 1898 and, as a result, is among the most widely cited biologist in scientific literature. But this was only one of Golgi's many contributions to scientific research. He also devised a system for the classification of neurons on the basis of axonal distribution, identified a type of cell in the cerebellum, and described the malarial cycle in the human. His discoveries were rich with therapeutic implications, and his remarkable achievements earned him a Nobel Prize for Medicine in 1906. Most books of biology or medicine point out that Golgi is one of the giants of 19th Century scientific endeavor, but he continues to remain a relatively unknown figure in the history of neuroscience and cell biology. This long-awaited biography, in a new translation from the Italian, is a fascinating analysis of Golgi's experiments, ideas, and personal life. It is welcomed by anyone who has ever learned about his brilliant discoveries but wondered about Golgi, the person. In fact, all those with an interest in the history of science, and cell biology in particular, as well as those involved in neuroscience, medicine, and biochemistry will benefit from this book.

From The New England Journal of Medicine Great conceptual advances in science are often based on great technical advances. Either type of discovery can bring scientific fame. In 1896 Riva-Rocci devised the mercury sphygmomanometer for measuring blood pressure, but it took several decades for hypertension as a cause of disease to be unmasked. Conversely, Watson and Crick in 1953 discovered the structure of DNA but not the technique of x-ray crystallography that limited the number of possibilities for their model. There are countless other examples, but it is rare for a scientist to develop both a new instrument and new ideas. Camillo Golgi (1843-1925) did his utmost to be more than the inventor of a revolutionary staining technique for nerve tissue. The "reazione nera," or black reaction, which he discovered in 1873 after systematic experiments, consisted of immersing specimens in silver nitrate after fixation with potassium dichromate. It allowed visualization of nerve cells and their ramifications in unprecedented detail. In *The Hidden Structure*, the excitement of this discovery is conveyed to the reader mainly through words, because the histologic illustrations are sparse. Once Golgi's technique was used in other countries (he published almost exclusively in Italian), it stirred a flurry of new hypotheses about the anatomical organization and eventually the function of the nervous system. Golgi was less successful in staking his claims with regard to these wider implications. His theory that nerve-cell processes formed a giant anastomotic network was initially attractive, because it fit with the emerging notions about electricity in the nervous system. But with the ascendancy of the cell theory in the second half of the 19th century, fewer and fewer scientists were prepared to make an exception for the nervous system. The doctrine of separate nerve cells, first proposed by His (in 1886) and Forel (in 1887), was anathema to Golgi until the end of his life. The ultimate insults were the term "neuron" (coined by Waldeyer in 1891) and the successful campaigning for the individual nerve cell by Ramon y Cajal. The Spaniard made a rather sudden appearance on the international stage (he too published only in his own language) and swiftly convinced the scientific community with his superb preparations, made with modified Golgi stains. He later added the concept of "dynamic polarization" (i.e., one-way traffic in nerve cells). Cajal and Golgi would never get on well together. Irony dictated that in 1906 they were to share the Nobel Prize for Medicine. Sadly enough, Golgi chose to use his official lecture for another desperate attack on the neuron doctrine. Though in his main theme of research Golgi's work exemplified a mixture of success and error, he was undoubtedly a great scientist in many other respects. That Mazzarello's book makes this abundantly clear is its greatest merit. The book follows Golgi from the cradle to the grave, in 24 chronologically arranged chapters. It describes his lifelong attachment to the University of Pavia, which was interrupted only by a stint as the director of a psychiatric hospital in the country. It was there, in his spare time and in the kitchen of his private apartment, that he discovered the black reaction. His name is also linked with the discovery of several microscopic cellular structures (tendon organ, muscle spindle) and subcellular structures (the Golgi apparatus). What will be new to most readers outside Italy are his contributions to general medicine with regard to intestinal-worm infections, Bright's disease of the kidney, and especially malaria. Golgi and his pupils not only accepted and defended Laveran's theory of a parasitic origin for malaria, but they also provided many new pieces of evidence and wholeheartedly threw their weight into a prolonged and complicated battle with proponents of a "bacillus malariae." The book has some weak points, in addition to the elaboration of histologic details without corresponding illustrations. The style does not always run smoothly, and in places it is too encyclopedic. Also, Golgi does not really come to life as a human being, apart from his stubborn defense of "reticularism"; however, he was probably reserved in his private life, leaving few emotional traces for his biographers. Where the book does succeed is in depicting a man who, until his last moments, was totally dedicated to medicine and to his university, at which he served as rector for a long period late in his life. Inevitably, the reader is given many a glimpse of the intricacies of Italian politics. Only one year before his death, when he was 80 years old and had received all imaginable honors, Golgi had to endure the transfer of Pavia's medical school to Milan, an event he had tried to avoid for decades. All in all, the book is a good read, especially for aficionados of histology and neuroscience. J. van Gijn, M.D. Copyright 2001 Massachusetts Medical Society. All

rights reserved. The New England Journal of Medicine is a registered trademark of the MMS. "Camillo Golgi (1843-1926) was awarded the Nobel Prize for medicine in 1906 for his achievements in the nascent science of neurobiology. This biography, although occasionally mentioning personal details, focuses almost exclusively on Golgi's scientific work discovering and describing such structures and processes of neuroanatomy as the Golgi apparatus, a cellular structure involved in protein glycosylation and transport. Translated and revised from the Italian work *La struttura nascosta*."--SciTech Book News" This important biography describes his scientific studies in the context of their intellectual and political milieu...and places Golgi's many accomplishments within the science of his time."--Frank Freeman, JAMA "The Hidden Structure is an exceptionally valuable entry because it begins to make sense of the scientist, his science, his life and its constraints and his values. We see Golgi as a reserved researcher who is more comfortable at home, in his lab, or serving as rector for his local university than at international meetings or fancy dress occasions....It is a superb historical achievement with beautiful illustrations and a rich bibliography, enhanced since the original Italian version."--Journal of the History of Biology About the Author Paolo Mazzarello is at University of Pavia.