

¹ The newsletter title has been changed from **Aphasia Insights** to **Plasticity Insights** to encompass brain function and plasticity as the foundation of all learning as well as recovery.

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“Oh, allow me [Baumann, Superintendent of the colony of Godthaab, Greenland] to congratulate you on taking your Doctor’s degree.” This came like a thunderbolt from a blue sky, and it was all I could do to keep myself from laughing outright. To put it very mildly, it struck me as comical that I should cross Greenland to receive congratulations upon my Doctor’s degree, which I happened to have taken just before I left home. Nothing, of course, could have been more remote from my thoughts at the moment.”

Nansen, Fridtjof (1890). The First Crossing of Greenland. Translated from the Norwegian by Hubert Majendie Gepp, Longmans, Green, and Co., 39 Paternoster Row, London, New York, and Bombay, 1906.

Aphasia Nation, Inc. is committed to educating the wider public about stroke and aphasia and the “*Aim High for Aphasia!*” international Aphasia Awareness campaign.

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Plasticity Insights!¹

Fridtjof Nansen: Norway’s first brain scientist and Nobel Peace Prize (1922).

By Tom Broussard, Ph.D.

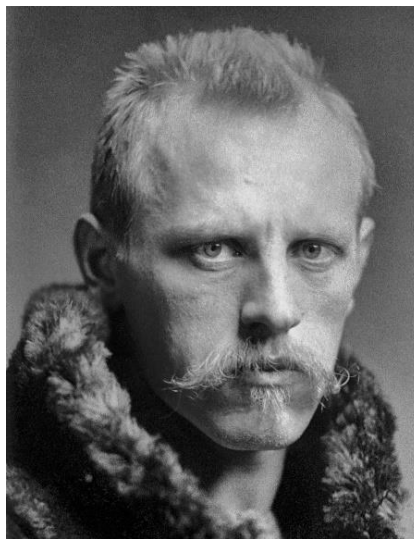
This is the next in a series of articles about the science and scientists behind the brain, stroke, aphasia, plasticity and recovery.

Fridtjof Wedel-Jarlsberg Nansen (October 10, 1861 – May 13, 1930) was a Norwegian [polymath](#) and [Nobel Peace Prize](#) laureate. He gained prominence at various points in his life as an explorer, scientist, diplomat, humanitarian and as co-founder of the [Fatherland League](#) ([Wikipedia](#)).

Nansen passed his university entrance examination, the [examen artium](#) in 1880 and decided to study [zoology](#). He began his studies at the [Royal Frederick University](#) in Christiania (now Oslo) early in 1881 ([Wikipedia](#)).

Early in 1882 Nansen’s professor, [Robert Collett](#), proposed that he take a sea voyage to study Arctic zoology first hand. Nansen left on the [sealer, Viking](#), with [Captain Axel Krefting](#), and started a five-month voyage on March 11, 1882. With many weeks at sea, Nansen was able to concentrate on his studies as well ([Wikipedia](#)).

Through the spring and early summer *Viking* roamed between Greenland and [Spitsbergen](#) in search of seal herds. Nansen became an expert marksman and recorded that his team had shot 200 seals. In July, *Viking* was trapped in the ice off of Greenland, and as a result he began to think about exploring the [Greenland icecap](#). On July 17, 1882, the ship broke free from the ice and arrived back in Norwegian waters in early August 1882 ([Wikipedia](#)).



Fridtjof Nansen
(1861 – 1930)

Now back at school, he decided to stop his zoology studies. Instead, he accepted a post as assistant curator in the zoological department of the [Bergen Museum](#) at aged 21 years. He spent six years there studying his new field of [neuroanatomy](#), and specifically the central nervous system of lower marine creatures ([Wikipedia](#)).

Nansen’s first step was to find a state-of-the-art microscope. His father loaned him the money to buy the “latest model Zeiss microscope, which cost six hundred [kroner](#), equipped with one of the first oil-immersion, lenses” (Nickelsen, 2012).

It was a groundbreaking machine and Nansen made good use of it, studying the tissues, cells and the structure of the nervous system of several different species including worms and hagfish (Nickelsen, 2012).

He learned how to cut thin sections of nerve tissues with new dyes that made the cells visible under the Zeiss’s

lenses. He published his first paper in 1885 using those new techniques (Nansen, 1885). But he wanted to learn more about staining cells and silver nitrate; he traveled to Italy in early 1886 to visit Camillo Golgi, the famous Italian [anatomist](#), to study the [black reaction technique](#) and learn to see the “black tracery to their finest ramifications” (Edwards et al., 1998).

He published his next paper in English in September 1886, summarizing his research to date, stating that “unions between the different ganglion cells” were not connected or joined (Nansen, 1886). His view was confirmed by research of the embryologist [Wilhelm His](#) in October 1886 and the psychiatrist [August Forel](#) in January 1887 (Edwards et al., 1998). At that point, all three were in agreement regarding Golgi’s reticular theory, that the nerve cells in the brain being fused and connected, was wrong.

Nansen wrote his research paper, [The Structure and Combination of Histological Elements of the Central Nervous System](#) and was published in December 1887. As stated in the paper, “Direct anastomosis (fusion) between the processes (nerves fibres) ...does not exist.” He went on to say that, “We are obliged to abandon the theory of the direct combination of the nerve cells” (Nansen, 1887, pp. 146-147). This was the first explicit rebuttal of the Golgi’s [reticular theory](#) (Bock, 2011, 2013).

This paper became his doctoral thesis and was published in April 28, 1888. His dissertation contained 214 pages with 113 illustrations of “outstanding quality” (Nickelsen, 2012). Nansen’s drawings were excellent such that one professor suggested he go into art. After defending his dissertation, he left school shortly to start his next challenge. He would lead an expedition to trek across Greenland. With

no regrets, he left without knowing whether his thesis was approved or not. His successful trip took six months and arrived at a small western town, [Godthaab, Greenland](#) now Nuuk) on October 3, 1888. Amazingly, an advanced emissary met Nansen as he and his team walked into town and almost immediately congratulated him on getting his doctorate. As Nansen wrote later,



Picture of Fridtjof Nansen (1861-1930), right, shown with Captain Axel Krefting and the Viking during an 1882 sealing expedition to the Greenland Sea with shot polar bear. Nansen observed dark stains on the ice sheet that he hypothesized were from dust transported by air from more southern lands (uploaded by [Timothy Garrett](#))

“Nothing, of course, could have been more remote from my thoughts at the moment” (Nansen, 1890). Although he left the scientific community, his dissertation “contained so many novel interpretations that the examination committee accepted it with reluctance, but [Nansen’s] work is now considered a classic” (Haas, 2003). Nansen’s research was the precursor of what became the neuron doctrine that predated Ramon y Cajal’s research by eighteen months until Cajal published his results in May 1888.

Nansen left his mark in the world of science, exploration and statecraft by those who knew that Hansen could “handle the microscope as well as ice axe and skis” (Edwards et al, 1998).

Signed: *The Johnny Appleseed of Aphasia Awareness*

The author is a three-time stroke survivor and has aphasia as a result of the strokes. His language skills continue to improve.

He is Founder and President, Aphasia Nation, Inc., a non-profit organization whose mission is educating the wider public, national and international, about aphasia and plasticity, the foundation of all learning.

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