

Granit, Ragnar Arthur

Introductory article

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p0001 Granit (1900–1991), a Finnish-born physiologist, naturalized Swede. He won the Nobel Prize for his discoveries concerning the primary physiological and chemical visual processes.

p0002 Arthur Ragnar Granit was born at Vantaa Finland, 30 October 1900 and died in Stockholm, Sweden, 12 March 1991, eldest son of the Crown forester Arthur Wilhelm Granit and Albertina Helena Maimberg. He was awarded with the Nobel Prize in Physiology or Medicine in 1967 along with Haldan Keffer Hartline and George Wald for the analysis of the internal electrical changes that take place when the eye is exposed to light.

p0003 Granit became interested in scientific research since he was a young student, specifically in the visual work. He graduated in 1927 from the Faculty of Medicine of the University of Helsinki Finland, after which he conducted research at the University of Pennsylvania and at the laboratory of Sir Charles Sherrington at Oxford, England. In 1940, he moved to the Karolinska Institute, Stockholm, becoming professor of neurophysiology at the newly founded Medical Nobel Institute in 1946 where he also became director. He retired as Professor Emeritus in July 1967. From 1956 to 1976, he was a visiting professor or researcher at numerous institutions.

p0004 Granit demonstrated that light not only stimulates but can also inhibit impulses along the optic nerve. He created his “dominator-modulator” theory of colour vision from studies of the action potentials in single fibres of the optic nerve. Studying the response of the optic nerve colours, he established the functions of the three types of cone cells, blue, green and yellow, in the retina and that some optic fibres, which he called *dominators*, are sensitive to the whole spectrum, whereas others, called *modulators*, respond to a narrow band of light wavelengths and are thus colour-specific. His book *Sensory Mechanisms of the Retina* (1947), where he exposed his theory of colour vision, is a classic work in the field of retinal electrophysiology. He also wrote *The Visual Pathway* (1962). **See also:** [Visual System](#)

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Ragnar Granit also turned his attention to the study of the control of movement, specifically the role of muscle

sense organs called muscle spindles and tendon organs. He helped to determine the neural pathways and processes by which these internal receptors regulate and coordinate muscle action. **See also:** [Basal Ganglia and the Regulation of Movement](#); [Nervous Control of Movement](#)

From 1920 to around 1947, Ragnar Granit’s main research was in the field of vision beginning with psychophysics in the 1920s and ending up with electrophysiological work from the early 1930s onwards, as briefly reported in the Nobel Lecture. He next took up muscular afferents. **See also:** [Motor System Organization](#)

In 1929, Ragnar Granit married Baroness Marguerite Ema Bruun and they had a son, Michael. p0006

Granit received numerous distinctions and awards from different universities and research institutes around the world. He had also been awarded numerous honorary doctorates. p0007

Granit remained as a patriotic Finn throughout his life. He said that his Nobel Prize ‘belongs fifty-fifty to Finland and Sweden’. p0008

Further Reading

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AU:2	Granit's death date is 12 march 1991. But in Grillner (1995), the article title says 11 March 1991. Please check whether we have to change the date in the article title.