Frederick George Donnan Biography

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Contents

Biography

Frederick George Donnan was a British chemist whose work in the second decade of the twentieth century established the existence of an electrochemical potential between a semipermeable membrane. The membrane allows an unequal distribution of ionic species to become established on either side of the membrane. In **bacteria**, this **Donnan equilibrium** has been demonstrated to exist across the outer membrane of Gram-negative bacteria, which separates the external environment from the **periplasm**. The energy derived from this ionic inequity is vital for the operation of the bacteria.

Donnan was born in Colombo, Ceylon (now known as Sri Lanka). He was educated at Queen's College in Belfast, Northern Ireland, at the University of Leipzig in Berlin, and at the University College, London. He taught at Liverpool University from 1904 until 1913, when he rejoined the faculty of University College as a Professor of Inorganic and Physical Chemistry. He remained there until his retirement in 1937.

In 1911, Donnan began his studies of the equilibrium between solutions separated by a semipermeable membrane that led to the establishment of the Donnan equilibrium. He also was involved in important studies in physical chemistry, which included the study of colloids and soap solutions, behavior of various gases, oxygen solubility, and the manufacture of nitric acid.

Of all his research achievements, Donnan's major accomplish was the theory of membrane equilibrium. In his productive research career, Donnan authored more than one hundred research papers.