

Phagocyte and Phagocytosis

Encyclopedia Article

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In the late 1800s and early 1900s, scientific researchers worked to uncover the mysteries of the body's immune system--the ways in which the body protects itself against harmful invading substances. One line of investigation showed that **immunity** is due to protective substances in the blood--antibodies--that act on disease organisms or toxins.

An additional discovery was made by the Russian-French microbiologist **Élie Metchnikoff** (1845-1916) in the 1880s. While studying transparent starfish larvae, Metchnikoff observed certain cells move to, surround, and engulf foreign particles introduced into the larvae. Metchnikoff then observed the same phenomenon in water fleas. Studying more complicated animals, Metchnikoff found similar cells moving freely in the blood and tissues. He was able to show that these mobile cells--the white blood corpuscles--in higher animals as well as humans also ingested **bacteria**.

The white blood cells responded to the site of an infection and engulfed and destroyed the invading bacteria. Metchnikoff called these bacteria-ingesting cells phagocytes, Greek for "eating cells," and published his findings in 1883.

The process of digestion by phagocytes is termed phagocytosis.

In 1905, English pathologist Almroth Wright (1861-1947) demonstrated that phagocytosis and **antibody** factors in the blood worked together in the immune response process.