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Malaria

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Malaria is an ancient disease, with references to what was almost likely malaria in a Chinese document from around 2700 BC, Mesopotamian clay tablets from 2000 BC, Egyptian papyri from 1570 BC, and Hindu writings dating back to the sixth century BC. After this, we have some more solid evidences. The early Greeks, including Homer about 850 BC, Empedocles of Agrigentum around 550 BC, and Hippocrates around 400 BC, were well aware of the typical poor health, malarial fevers, and enlargement spleens seen in persons living in marshy areas. Malaria is mentioned by the Greek poet Homer (approximately 750 BC) in The Iliad, Aristophanes (445-385 BC) in The Wasps, and Aristotle (384-322 BC), Plato (428-347 BC), and Sophocles (496-406 BC).

For almost over 2500 years, the concept that malaria fevers were caused by miasmas rising from wetlands remained, and it is usually assumed that the name malaria comes from the Italian malaria, which means spoiled air, but this has been challenged later on. The hunt for the source of malaria became more intense after Antoni van Leeuwenhoek discovered bacteria in 1676, and Louis Pasteur and Robert Koch developed the germ theory of infection in 1878-1879. By 1879, the miasma theory had fallen out of popularity, and the two competing theories were whether the microbes were conveyed through air and inhalation or through water and ingestion. In this time an Italian Corrado Tommasi-Crudeli and a German Theodor Albrecht Edwin Klebs, a famous microbiologist first identified the bacteria responsible for typhoid and diphtheria.

Charles Louis Alphonse Laveran (1845–1922) was a French army doctor during the Franco-Prussian War. He later wrote on military medicine. In it, he disputed conventional understanding about malaria's ecology, specifically that the disease was limited to humid low-lying plains. Malaria, according to Laveran, can also occur in temperate zones, and the disease is not limited to tropical regions only. Laveran was aware from modern scientific papers that many ailments formerly attributed to miasmas, or evil vapours, were actually caused by bacteria. Thus, he predicted: "Swamp fevers are caused by a germ".

On October 20, 1880, while examining under a primitive microscope at the blood of a feverish soldier, Laveran noticed crescent-shaped entities that were practically transparent except for one small dot of pigment. Several researchers, including Meckel, Virchow, and Frerichs, had previously discovered the brownish-black pigment hemozoin (now known to be the result of hemoglobin breakdown by the malaria parasite) in cadaveric spleens and blood of malaria victims. Laveran then studied blood samples from 192 malaria patients, discovering pigment-containing crescents in 148 of them. He eventually identified four unique forms in human blood that would show to be the malaria parasite in various stages of its life cycle. Thus, Alphonse Laveran in 1889 was able to definitively show that malaria is caused by another type of single-celled organism, a protozoan of the Plasmodium family, which attacks red blood cells. Laveran was awarded Nobel Prize in Physiology or Medicine 1907. He utilized half of his Nobel Prize money to establish the research institute Société de Pathologie Exotique and donated the other half to the Institut Pasteur, where he had worked previously.

Camillo Golgi (1843-1926), one of several famous Italian scientists who explored this topic, made substantial contributions both in cell biology and malaria infection research, providing precise explanations of Plasmodium infection processes inside intraerythrocytic cycles. Golgi pioneered breakthrough research into the temporal linkages between frequent fever bouts and higher malaria parasite numbers in the human bloodstream. His efforts not only advanced this field, but also built on previous research that concentrated on determining the causes and propagation processes of malaria inside human blood. However, the most notable contributor in this field was Sir Ronald Ross.

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His contribution in discovering the transmission of malaria parasite is well known.

Sir Ronald Ross was born in India on May 13, 1857, in a family of Scottish army officer. When he was eight years old, he was moved to the Isle of Wight in England. He had a passion for poetry, lyrics, literature, and mathematics since he was very young. Ross was 14 years old when he got an award for his mathematics talent. Following his education in England, he enrolled in St. Bartholomew's Hospital Medical College in 1874. After a few years, Ross joined the Liverpool School of Tropical Medicine, eventually becoming a professor of Tropical Medicine at the University of Liverpool.

Ross's interest in malaria began in the early 1890s, when he was in India. Malaria was a serious public health concern at the time, but the mechanism of transmission was unknown. Influenced by the work of Sir Patrick Manson, who theorized that mosquitos contributed to malaria transmission. Ross began conducting studies that would eventually support this notion. Sir Ronald Ross made his first major breakthrough in the study of malaria while working in Secunderabad. On August 16, 1897, Ross allowed 10 Anopheles mosquitos to feed on a malaria sufferer who volunteered. He dissected the mosquitoes over the next few days but found no malarial parasites until August 20, when he studied stomach tissue of one such mosquito and discovered cells with clusters of black granules resembling Laveran's parasites. The following day, he discovered much larger parasites in another mosquito's gut, establishing the relationship between mosquitos and malaria. Ross declared August 20 "Mosquito Day." The next year, in Kolkata's Presidency General Hospital (now the SSKM Hospital) Ross established how the parasite spread. Using bird subjects to research avian malaria, he discovered that the parasite developed in mosquito stomachs and then moved to the salivary gland, where it infected new hosts. Ross received Nobel Prize in Physiology or Medicine in 1902.

Sir Ronald Ross' groundbreaking results not only increased the understanding of malaria, but also had a substantial impact on public health responses to the epidemic, saving many lives and laying the framework for future research and control activities. Despite significant hurdles, Ross's dedication to scientific study resulted in a rich legacy for the globe.

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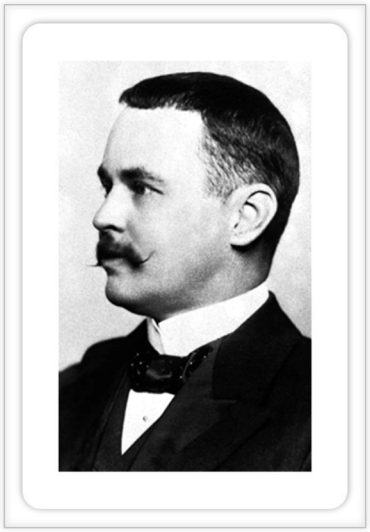
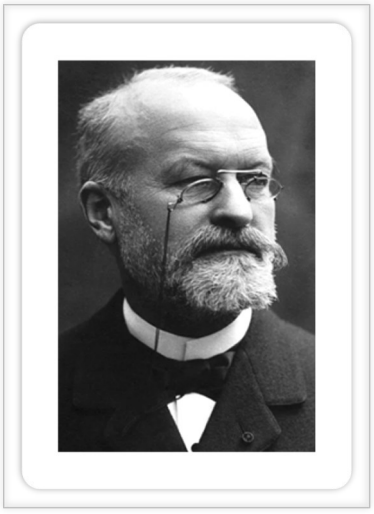


Sir Ronald Ross



Charles Louis Alphonse Laveran