

FACTSHEET

MILESTONES IN THE DISCOVERY OF BACTERIA AND ANTIBIOTICS

1674

The Dutch cloth merchant Antonie van Leeuwenhoek was the first to observe bacteria in a microscope.

1828

The German zoologist Christian Gottfried Ehrenberg was the first to introduce the word *bacteria*, which is derived from the Greek word βακτήριον -α (bacterion -a) and means "small staff".

1847

The Hungarian doctor Ignaz Semmelweis was the first to demonstrate that the mortality rate of childbed fever could be drastically reduced (from above 10% to 1-2%) by implementation of proper hand hygiene practices in a maternity ward at the Vienna General Hospital. Although the medical establishment initially rejected his discovery, Semmelweis is today considered a pioneer of antiseptic procedures.

1854

The English physician John Snow received much attention for his work in tracing contaminated water as the source of a cholera epidemic in London. This discovery contributed to a better understanding that bacteria could cause diseases, which was not yet known.

1905

Another early pioneer in bacteriology was the German physician Robert Koch who was the first to identify the specific causative agents of anthrax, tuberculosis and cholera. His discovery was awarded the Nobel Prize in Physiology or Medicine.

1908

The Russian zoologist Élie Metchnikoff and the German scientist Paul Ehrlich are a further two Nobel Prize laureates in Physiology or Medicine for their development of the first effective treatment for syphilis, Salvarsan.

1928

The Scottish scientist and microbiologist Alexander Fleming accidentally discovered the mould called *Penicillium notatum*.

1935

The German pathologist Gerhard Domagk made discoveries about the bactericidal effect of the first sulphonamide, Prontosil, for which he received the Nobel Prize in Physiology or Medicine. For the first time a range of bacterial infections was now treatable and one of the early patients was Domagk's own 6-year-old daughter who was cured from a severe streptococcal infection.

1941

The Australian pathologist Howard Florey and the German-born biochemist Ernst Chain followed up on Fleming's discovery and developed penicillin as a medicine.

1945

Alexander Fleming, Howard Florey and Ernst Chain were awarded the Nobel Prize in Physiology or Medicine "for the discovery of penicillin and its curative effect in various infectious diseases".

1952

The Russian-born microbiologist Selman Abraham Waksman was awarded the Nobel Prize in Physiology or Medicine for his discovery of streptomycin, which was the first antibiotic effective against tuberculosis.

The 1960s

Until the end of the 1960s, one-half of the antibiotics commonly used today were discovered and currently no new classes of antibiotics have been marketed since 1987. The golden age of antibiotic discovery had come to an end.