

# Germ theory

**Germ theory**, in medicine, the theory that certain diseases are caused by the invasion of the body by microorganisms, organisms too small to be seen except through a microscope. The French chemist and microbiologist Louis Pasteur, the English surgeon Joseph Lister, and the German physician Robert Koch are given much of the credit for development and acceptance of the theory. In the mid-19th century Pasteur showed that fermentation and putrefaction are caused by organisms in the air; in the 1860s Lister revolutionized surgical practice by utilizing carbolic acid (phenol) to exclude atmospheric germs and thus prevent putrefaction in compound fractures of bones; and in the 1880s Koch identified the organisms that cause tuberculosis and cholera.

Louis Pasteur.

*Archives Photographiques, Paris*

Although the germ theory has long been considered proved, its full implications for medical practice were not immediately apparent; bloodstained frock coats were considered suitable operating-room attire even in the late 1870s, and surgeons operated without masks or head coverings as late as the 1890s.

Joseph Lister, 1857

*Courtesy of the Wellcome Trustees, London*

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