

Lecture 13: Germ Theory

1. Introduction

- Cholera in 2005
- Cholera in 1832
- The age of epidemics

2. Early Theories of Epidemics

- Airs, Waters, Places*
- Cities, swamps, and disease
- Europeans and tropical diseases
- Individual constitution
- Contagion, especially of smallpox
- Germ warfare at Fort Pitt
- Disease, sin, and morality

3. Origins of Germ Theory

- Justis von Liebig, fermentation, and putrefaction
- Louis Pasteur, fermentation, and microbes
- Fermentation, disease, and germ theory
- Silkworms
- Spontaneous generation

4. Germ Theory

- Robert Koch and anthrax
- Scientific bacteriology and Koch's Postulates
- Tuberculosis
- Rapid discoveries in 1880s and 1890s
- Pasteur, attenuation, and vaccination

5. Limits of Germ Theory

- Few immediate treatments
- Lack of consensus
- Role of social forces
- Franco-German politics

6. Implications of Germ Theory

- Germ theory and natural selection
- "Gospel of Germs"
- Modern hypervigilance and vestigial fear

Further Reading:

- Charles Rosenberg, *The Cholera Years: The United States in 1832, 1849, and 1866, 1962.*

Nancy Tomes, *The Gospel of Germs: Men, Women, and the Microbe in American Life*, 1998.

Names and Dates:

Cholera, *Vibrio cholerae*

Cholera pandemics: 1831-1832, 1848-1849, 1866

Airs, Waters, Places (Hippocratic writers, 4th century B.C.)

Great Stench, London, 1856

Seasoning

Tuberculosis: consumption (pulmonary TB), scrofula (lymphatic TB), miliary (blood-borne, TB sepsis)

Deliberate infection, germ warfare, e.g. Fort Pitt, 1763

Antony von Leeuwenhoek (1632-1723)

Robert Hooke (1635-1702)

Justis von Liebig (1803-1873)

Louis Pasteur (1822-1895), rabies vaccine 1885

Lazzaro Spallanzani (1729-1799), experiments on spontaneous generation

Robert Koch (1843-1910), *Mycobacterium tuberculosis*, 1882

Max von Pettenkofer (1818-1901),

Otto von Bismarck (1815-1898)

Franco-Prussian War, 1870-1871

“Gospel of Germs”