

- Most microorganisms are harmless to humans; You swallow millions of microbes every day with no ill effects. In fact, we are dependent on microbes to help us digest our food.
- Microbes also keep the biosphere running by carrying out essential functions such as decomposition of dead animals and plants. They make possible the cycles of carbon, oxygen, nitrogen and sulfur that take place in terrestrial and aquatic systems.
- Microorganisms have also harmed humans and disrupted society over the millennia.

- They sometimes cause diseases in man, animals and plants. They are involved in food spoilage.
- Infectious diseases have played major roles in shaping human history (the Roman Empire & conquest of the New World).
- The "Great Plague", reduced population of western Europe by 25%.
- Smallpox and other infectious diseases introduced by European explorers to Americas in 1500's were responsible for decimating Native American populations.
- Until late 1800's, no one had proved that infectious diseases were caused by microbes.

• Discovery of Microorganisms:

- Invisible creatures were thought to exist long before they were observed.

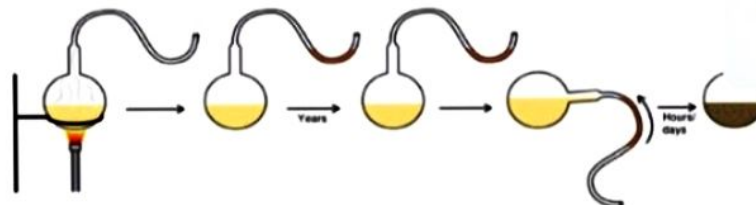


- **Antony van Leewenhoek** (1632 – 1723) who invented the first microscope (50 – 300x), was the first to accurately observe and describe microorganisms.



• Spontaneous Generation Conflict:

- From earliest times, people believed that Living organisms could develop from nonliving or decomposing matter.
- The SGT was challenged by Redi, Needham, Spallanzani
- **Louis Pasteur** (1822-1895) settled the conflict once for all; heated the necks of flasks and drew them out.



• Role of Microorganisms in Disease:

- **Bassi** – showed that silkworm disease was caused by a fungus.
- **Berkeley and Pasteur** showed that Microorganisms caused disease.
- **Joseph Lister** – developed system for sterile surgery
- **Robert Koch** (1843 – 1910) established the relationship between *Bacillus anthracis* and anthrax; also isolated the bacillus that causes tuberculosis.
- **Charles Chamberland** (1851-1908) discovered viruses and their role in disease.