



SCIENTIFIC DEVELOPMENT OF MICROBIOLOGY

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Scientific development of microbiology was introduced by Louis Pasteur, Robert Koch, Joseph lister and Paul ehrlich F.REDI.



Louis Pasteur(1822-1895)

- He is also known as Father of Microbiology.
- He established that fermentation was caused by microbial agents and different types of fermentations were associated with different kinds of microorganisms.
- **Fermentation:** The chemical break down of a substance by bacteria ,yeasts or other micro organisms,typically involving Decomposition of dead animals.



IMPORTANT CONTRIBUTIONS OF LOUIS PASTEUR

1. Development of methods and techniques of bacteriology.
2. Proved that microbes arose only from their like.
3. He disproved the spontaneous generation theory(production of living things from none living) of microbe of Pouchet by demonstrating the ubiquity(appear every where) of microbes in the air by his experiments performed in the swan-necked flasks.
4. Introduction of sterilization techniques and development of steam,autoclave and hot-air oven.



5. Studies on anthrax, chicken pox, cholera and hydrophobia.
6. During studies on rabies he suggested that the causative agent of rabies was too small to be seen by microscope.
7. He introduced attenuated live vaccine for prophylactic use.(Preventive measures)
8. He proved that inoculation (artificial induction of immunity vaccination)of such bacilli in animals induced specific protection against anthrax.

9. He demonstrated the protective role of anthrax vaccine in a public experiment in 1881 in sheep, goats and cows with a virulent anthrax bacillus culture. All the vaccinated animals survived while an equal number of unvaccinated control animals died.



10. He introduced the term vaccine.

11. He obtained the fixed virus of rabies in intracerebral passage in rabbits.

12. The Pasteur Institute, Paris, was built by public contribution for the preparation of vaccines and for the investigation of infectious diseases.



Robert Koch(1843-1910)

- He is also known as Father of Bacteriology.

CONTRIBUTIONS OF ROBERT KOCH

1. Introduced methods for isolation of pure strains of bacteria and improved bacteriological techniques.
2. Introduced methods of obtaining bacteria in pure cultures using solid media.
3. Introduced staining techniques.
4. Discovered anthrax bacillus(1876), tubercle bacillus(1882) and cholera vibrio (1883).



KOCH'S POSTULATES

According to Koch's postulates, a microorganism can be accepted as the causative agent of an infectious disease only if the following conditions are fulfilled:

1. The organism should be constantly associated with the lesions of the disease
2. Organism should be isolated from the lesion of the disease in pure culture.
3. Isolated organism when inoculated (vaccination) in suitable laboratory animals should produce a similar disease.
4. It should be possible to re-isolate the organism in pure culture from the lesions produced in the experimental animals.



KOCH'S PHENOMENON

Robert Koch observed that guinea pigs (rabbits) already infected with tubercle bacillus responded with an exaggerated inflammatory response when injected with the tubercle bacillus or its protein. This hypersensitivity reaction is called Koch's Phenomenon.



Joseph Lister (1827-1912)

- He is also known as Father of Antiseptic surgery.
- He applied Pasteur's work and introduced antiseptic techniques in surgery (1867).
- Due to his work there was drop in morbidity(the rate of diseases in population) and mortality due to surgical sepsis.
- His antiseptic surgery involved the use of carbolic acid.



late 1600's

Francisco Redi,s exp

Living organisms arise from nonliving things (ex. maggots come from rotting meat) a soft bodied legless larva of a fly or other insect found in decaying matter.

In the late 1600's **Francisco Redi** showed that maggots developed only in meat that flies could reach to lay eggs on.

Many insisted that he only disproved spontaneous generation for microorganisms;

Thank you

