

GAUHATI UNIVERSITY
HANDIQUE GIRLS COLLEGE
DEPARTMENT OF MICROBIOLOGY



SEMINAR TOPIC: GERM THEORY OF DISEASE, DEVELOPMENT OF VARIOUS MICROBIOLOGICAL DISCIPLINES AND GOLDEN ERA OF MICROBIOLOGY

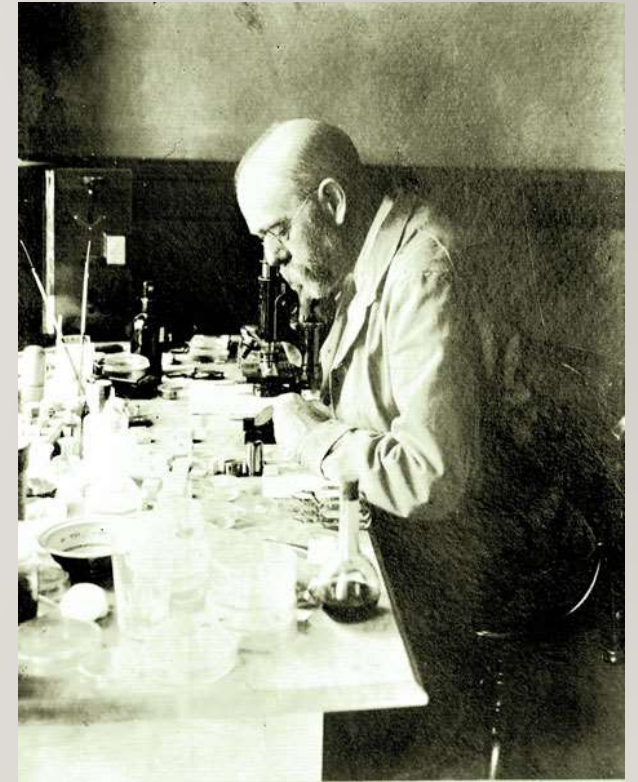
- **PAPER NAME:** Introduction to microbiology and microbial diversity.
- **PAPER CODE:** MIC010104
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THE GERM THEORY OF DISEASE

The germ theory of disease has presented a great stimulus in microbiology and medicine.

1876: Robert Koch proved that a bacterium causes anthrax and provided the experimental steps, Koch's postulates, to prove that a specific microbe causes a specific disease .



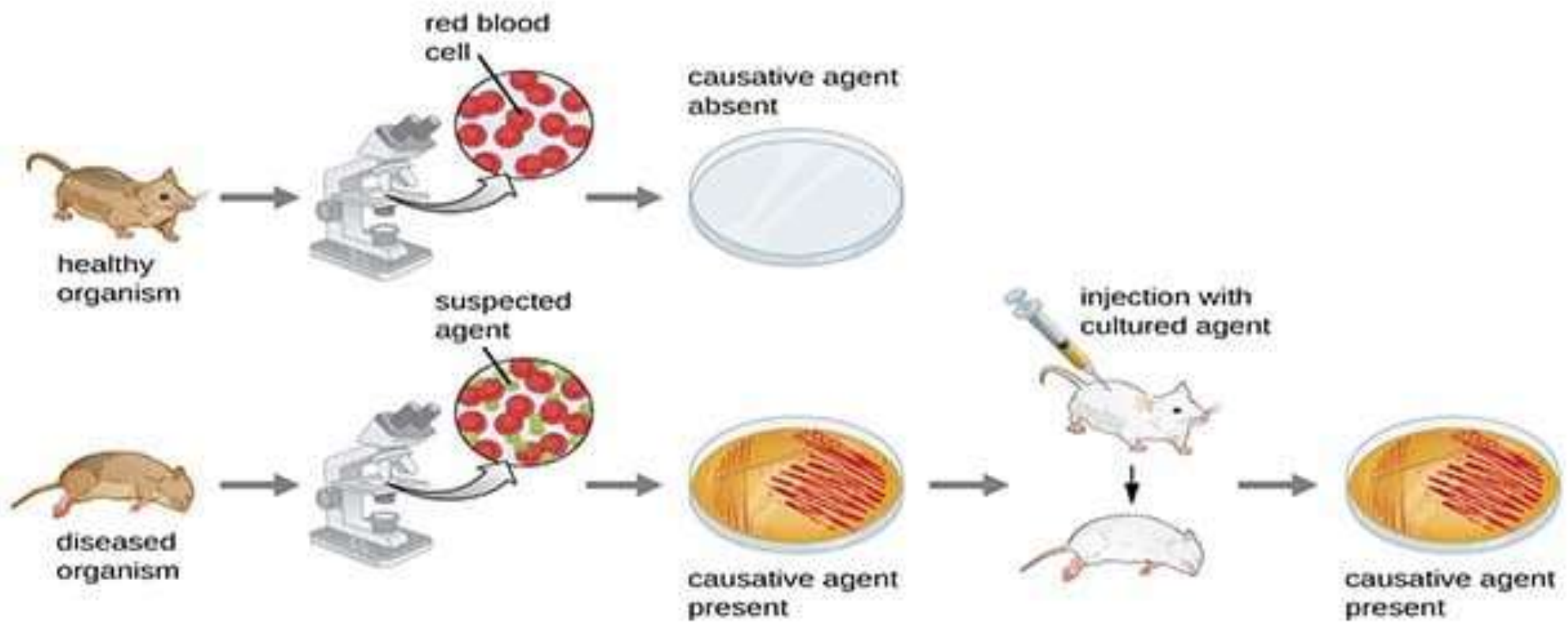
KOCH'S POSTULATES

Postulate 1: The microbe must be present in every instance of the disease under conditions which explain pathological changes and chemical features.

Postulate 2: The microbes must be isolated from three infected individual should be grown in pure culture.

Postulate 3: The microbe obtained from the culture should produce the same disease when injected to a healthy animal.

Postulate 4: The same microbe must be obtained from the body of the newly infected animal.



1 The suspected causative agent must be absent from all healthy organisms but present in all diseased organisms.

2 The causative agent must be isolated from the diseased organism and grown in pure culture.

3 The cultured agent must cause the same disease when inoculated into a healthy, susceptible organism.

4 The same causative agent must then be reisolated from the inoculated, diseased organism.

DEVELOPMENT OF MICROBIOLOGY AS A DISCIPLINE

- The vast development in the field of microbiology has given birth to several sub disciplines including virology, parasitology, mycology and bacteriology.
- The field of microbiology owes its development to the invention & improvement of the indispensable tool 'The microscope' which provided the first glimpse of the microbial world.

- Edward Jenner (1749-1823) first introduced the concept of vaccination for small pox using cow pox in 1796.

- Louis Pasteur worked on sterilization methods to end the spontaneous generation.

Alexander Fleming discovery of penicillin was another important step in the field of microbiology.

GOLDEN ERA OF MICROBIOLOGY (1860-1910)

- Golden Era of microbiology started with the work of Louis Pasteur and Robert Koch.
- Pasteur became interested in fermentation products and observed different kind of microbes associated with different kind of fermentation.

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- **Pasteur developed the procedure of pasteurization to prevent the spoilage of beer and wine by undesired microbes.**
 - **The unity of biology at a molecular level concept was developed when it was discovered that the carbohydrate metabolism pathways are similar in some microbes and in mammals.**

