



SNS COLLEGE OF NURSING

SARAVANAMPATTI, COIMBATORE-35

DEPARTMENT OF NURSING

COURSE NAME : BSC (N) I YEAR

SUBJECT : MICROBIOLOGY

UNIT I: INTRODUCTION

**TOPIC : PRINCIPLES OF
MICROBIOLOGY**

INTRODUCTION

Microbiology is the study of a variety of living organisms which are invisible to the naked eye like bacteria and fungi and many other microscopic organisms. Although tiny in size these organisms form the basis for all life on earth.





IMPORTANCE & RELEVANCE TO NURSING



- Microbiology is a subject which deals with microbes and their related concepts
- Nurses are involved in controlling infection in hospital, so nurses must know about microbiology.
- To know about harmful and harmless microorganisms to human being.



IMPORTANCE & RELEVANCE TO NURSING



- Nurses apply the knowledge in health care for drug production, diagnosis and sterilization methods and cleanliness.
- Nurses use hot water or antiseptic as a measure to sterilize the surgical knives, needles, scissors and other metal instruments.



IMPORTANCE & RELEVANCE TO NURSING



Microbiology also gives knowledge to nurses on how to handle a patient and his samples infected with communicable diseases, to free from microbes.



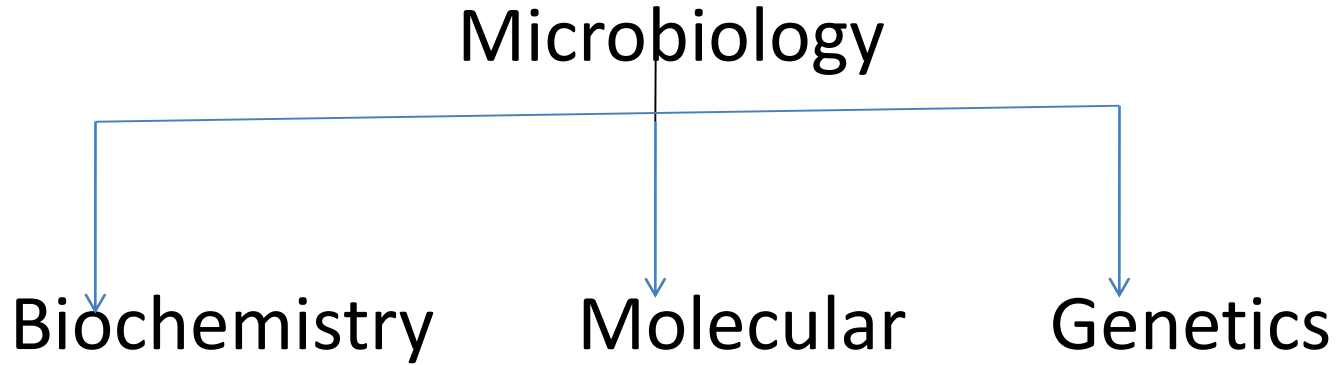
IMPORTANCE & RELEVANCE TO NURSING

It also helps detect diseases like Tuberculosis by simple skin test namely the Mantoux test.

Also diagnostic tests like Elisa, electrophoresis and radio immuno assay also use principles of microbiology for identification of disease.



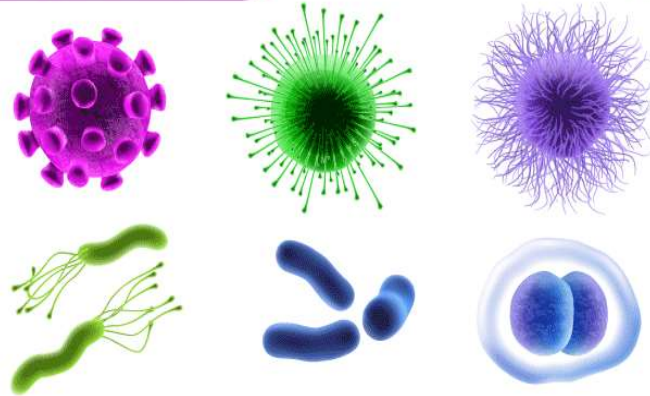
Principles of Microbiology



Microorganisms

- Non- Cellular organism Virus
- Prokaryotes Bacterium
- Eukaryotes Fungi
- Others Prions Viroid

MICROORGANISMS





Organisms included in the study of Microbiology

1. Bacteria → Bacteriology
2. Protozoans → Protozoology
3. Algae → Phycology
4. Parasites → Parasitology
5. Yeasts and
Molds
Fungi → Mycology
6. Viruses → Virology



HISTORICAL PERSPECTIVES



Naming and Classifying Microorganisms

- Carolus Linnaeus (1735) established the system of scientific nomenclature.
- Each organism has two names: the genus and specific epithet
- Are italicized or underlined. The genus is capitalized and the specific epithet is lower case.



LOUIS PASTEUR 1922- 95



- Contributed best in Microbiology
- Sterilization
- Hot Air oven
- Autoclave
- Anthrax vaccine
- Rabies vaccine
- Built the pasteur Institute



LOUIS PASTEUR

- Pasteur coined the word vaccine
- Vacca – Cow cow pox virus given for the prevention of Small pox
- Louis Pasteur considered the father of Modern Microbiology



Robert Koch 1843- 1910



- A German Scientist
- Formulated the Bacteriological techniques
- Staining Methods
- Discovered the Mycobacterium and Vibrio Cholera



Robert Koch Phenomenon



Koch observed that guinea pigs 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

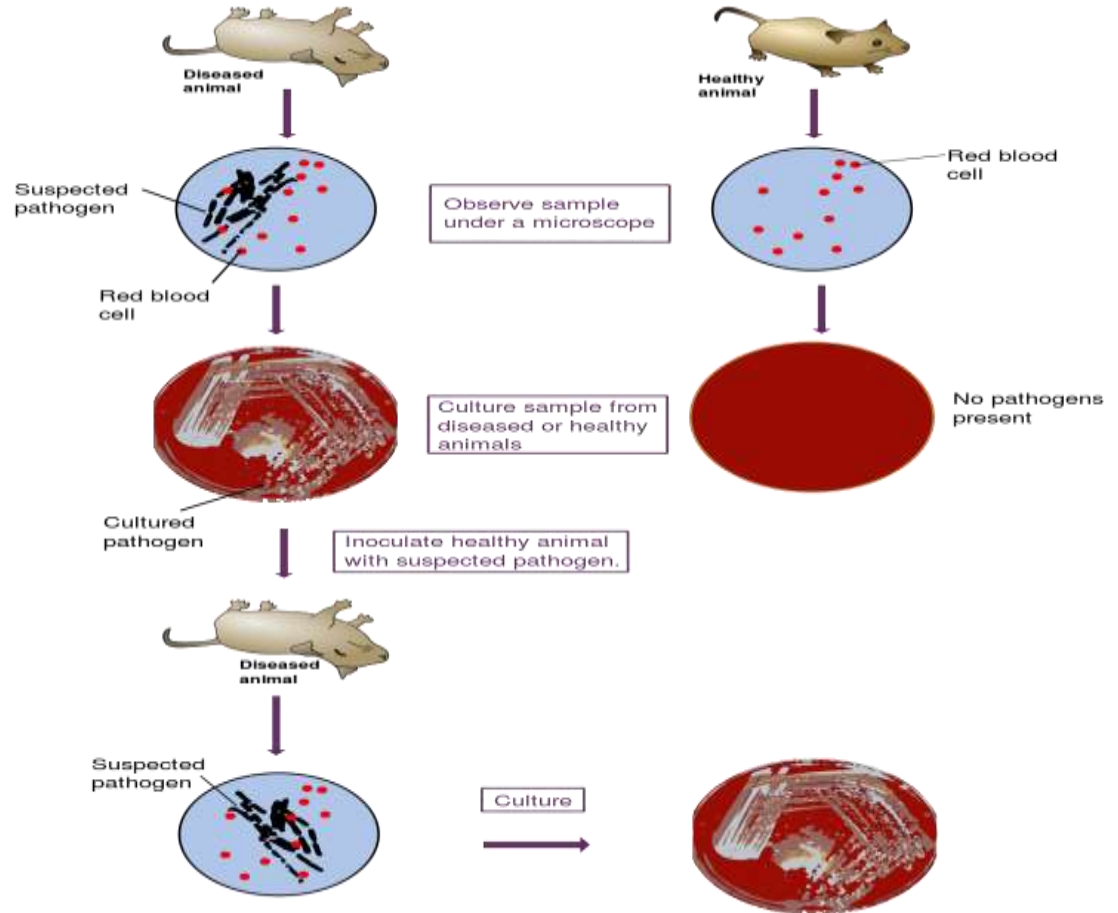
Koch's Postulates:

① The microorganism must be found in abundance in all organisms suffering from the disease, but should not be found in healthy organisms.

② The microorganism must be isolated from a diseased organism and grown in pure culture.

③ The cultured microorganism should cause disease when introduced into a healthy organism.

④ The microorganism must be reisolated from the inoculated, diseased experimental host and identified as being identical to the original specific causative agent.





Koch Postulates



Four criteria that were established by Robert Koch to identify the causative agent of a particular disease, these include:

1. The microorganism or other pathogen must be present in all cases of the disease.
2. The pathogen can be isolated from the diseased host and grown in pure culture.



Koch Postulates



3. The pathogen from the pure culture must cause the disease when inoculated into a healthy, susceptible laboratory animal.
4. The pathogen must be reisolated from the host and shown to be the same as the originally inoculated pathogen



CONCLUSION



- Cells are the smallest common denominator of life. Some cells are organisms unto themselves; others are part of multicellular organisms.



ASSESSMENT



1. What is a bacteria?
2. Define Koch Phenomenon.
3. Lewis Pasteur Theory.
4. Enlist the Principles of Microbiology



REFERENCE

- kannan," Hand book of Text Book of Microbiology (For B.sc Nursing students)
- RR Rao, Text Book of Microbiology (For B.sc Nursing students)



Thank You