Medical microbiology: is the science of studying micro-organisms (too small to be seen by naked eye) which associated with human disease, their activity and their influences of different aspects of life.

* the organisms are widely distributed in nature
* some of them are beneficial to man and some are harmful. (Medical microbiology) deals with microbes that are harmful to man.

Beneficial

Food industry: fermentation of some products: bread, wine, cheese, yoghurt, Vinegar.

Industrial applications: bacteria is used in modern biotechnology such as:

- genetic engineering
- insulin
- Enzymes
- Amino acid
- Vitamins
- antibiotics
- Vaccines
- pharmaceutical industries

Sewage treatment: recycling water

Recycling Vital elements in the environment of elements: such as:

- nitrogen
- carbon
- oxygen
- sulfur
- Phosphorus

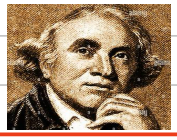
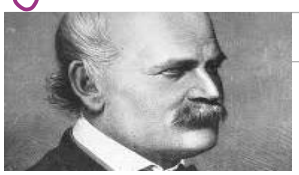
harmful

- food spoilage
- Diseases

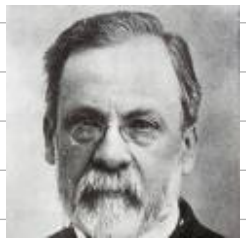
Pathogenic : Microorganisms that cause disease.

*Portal of entry
- Respiratory : via inhalation
- Alimentary (GIT) : by ingestion
- genetal tract : sexual contact
- skin : abrasions, bites
- others : conjuctiva, blood transfusion, injection and organ transplant
- congential infections (vertical transmission)

#short history : contribution of the scientists in the field of microbiology

Antony Van Leeuwenhoek 	Father of microbiology, Dutch microscopist who was the first to observe live microorganisms in water mud and saliva.
John hunter 	scottish surgen, he was considred the leading authority on Venereal diseases, and believed that syphilis and Gonorrhea were caused by single Pathogen.
Edward Jenner 	the one who pioneered the concept of Vaccines including creating the smallpox Vaccine, the world's first Vaccine. ← مطعوم الجدري
John snow 	he's known for locating source of cholera outbreak in London (thus establishing the disease as water-borne), also he is considered one of the founders of Modern epidemiology → علم الأوبئة
Ignaz semmelweis 	known as early pioneer of antiseptic procedures. described as the "Savior of mothers", he discovered that the incidence of puerperal sepsis can be prevented if the attending nurses apply hygienic measures * Hand washing stops infections

Louis Pasteur



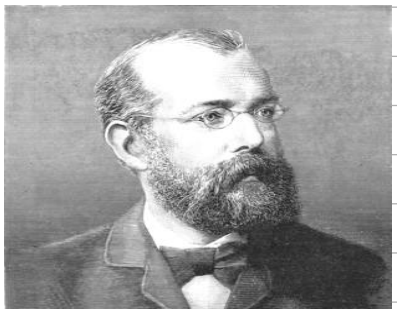
French biologist, microbiologist and chemist

1) discovered the principle of fermentation of alcohol by microorganisms.

2) invent a technique of treating milk and wine to stop bacterial contamination a process called Pasteurization

3) created the first Vaccines of rabies, Bacillus anthrax.

Robert Koch



developed microbiological media and streak plates for pure culture.

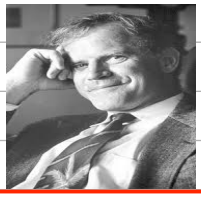
* germ theory (Koch's postulates)

- Microorganism must be present in every case of the disease.
- organism must be grown in pure culture from the disease host.
- Inoculation of above into host must give same disease.
- organism must be recovered from experimentally infected host.

Alexander Fleming

his best known discovery the world's first broadly effective antibiotic (Penicillin G) from the mould penicillium rubens in 1928.

Kary Mullis



invent Polymerase chin Reaction (PCR) technique

Zur Hausen

he has done research on cancer of the cervix, where he discovered the role of papilloma viruses, this research directly made possible the development of a vaccine HPV.

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