**Nursing Dept. / Second year/ قسم التمريض / المرحلة الثانيه**

**Microbiology / الأحياء المجهرية**

**Lecture one / المحاضرة الأولى**

**الأستاذ الدكتور خيري عبدالله داود + الدكتوره شهد سعد محمد**

**Microbiology : It is a science studied microorganisms (Bacteria , Viruses , Protozoa , Helminthes , Fungus ).**

**Microorganisms present in huge numbers , distributed everywhere in water , soil , air , food , clothes and on human body . Most of these microorganisms(MO) cause a diseases ( Medical MO or pathogenic microorganisms ) .**

**Microbial divisions :**

**1 – Bacteriology : It is a science dealing with study of Bacteria .**

**2 – Virology : It is a science dealing with study of viruses .**

**3 – Protozology : It is a science dealing with study of protozoa .**

**4 – Immunology : It is a science dealing with host’s protection and defense mechanism against diseases by antibodies and cellular immunity .**

**5 – Mycology : It is a science dealing with study of fungi .**

**History of development of microbiology**

**Leeuwenhoch : ( 1673) Scientist designed and constructed simple microscope ,( he made ) and described most major types of microorganisms ( algae , bacteria , protozoa , and yeasts ) .**

**Edward Jenner ( 1796) Scientist discovered the vaccine against smallpox from cowpox .**

**Louis Pasteur ( 1850 ) Scientist demonstrate the biological functions of bacteria , fermentation theory , sterilization (pasteurlization ) and development of vaccines against microbial diseases such as Anthrax , Rabies .**

**Joseph Lister ( 1827) Scientist showed the role of MO in the wound contamination and develop system , to be known as antiseptic surgery which includes the heat sterilization of instruments .**

**Alexander Fleming (1929) Scientist isolated a mold produced substance that inhibit bacteria but was non toxic to lab. Animals . He named this antibacterial material pencillin , which is one type of antibiotics .**

**Eukaryotic and Prokaryotic Cells : Comparison**

**1 - Structure Eukaryotic cell prokaryotic cell**

**2 - Nucleus yes No**

**3 - Replication mitosis binary fission**

**4 - Organelles yes No**

**(Mitochondria ,**

**Golgi , ………… )**

**5 - Organisms human,animals , Bacteria**

 **Protozoa , fungus**

**6 - Chromosomes multiple single**

**Comparison between bacteria and virus :**

**Structure bacteria virus**

**1 - Cell yes/prokaryotic no/ particles**

**2 - Size can see it by by electron microscope**

 **light microscope**

**3 - Seitz filter cann’t pass pass**

**4 - replication binary fission multiplication**

**5 - growth Culturing media tissue culture or**

 **Agar , Macconkey agar egg inoculation**

**6 - Pathogen not all bacteria are all viruses are**

 **Pathogenic**

**Nomenclature ( Scientific name of organisms ):**

**This system of scientific names published by Carl Linnaeus (father of taxonomy .**

**First letter of genus should be written in capital letter whereas first letter of species must be write in small letter .**

**Name of genus and species for any organism must be in Italic form or place line under each genus and species . E*X .***

***Staphylococcus aureus .***

**Name of bacteria is derived from :**

**1 – Name of the disease : Ex. *Vibrio cholera =* cause*s* cholera .**

**2 – Organ of isolation : Ex. *Escherichia coli =*  from colon .**

**3 – Locality of isolation : Ex. *Listeria =* Lister**

**Prion : It is type of protein that can trigger normal protein in the brain and cause a disease .**

**Prion can affect both humans and animals , sometimes spread to humans by infected meat .**

**It is cause a disease called Crentzfeldt – Jakob disease (CJD) / Mad cow disease .**

 **Bacteria / bacilli**

