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UNIVERSITY

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FACULTY OF ENGINEERING & TECHNOLOGY
DEPARTMENT OF BIOTECHNOLOGY

Lazzaro Spallanzani

(1729–1799) found that boiling broth would sterilize it and kill any microorganisms in it. He also found that new microorganisms could settle only in a broth if the broth was exposed to the air.

Antony van Leeuwenhoek

Anton van Leeuwenhoek (1632 - 1723) was a Dutch tradesman and scientist, best known for his work on the development and improvement of the microscope and also for his subsequent contribution towards the study of microbiology.

Antony van Leeuwenhoek is regarded as the father of microbiology.

Van Leeuwenhoek discovered "protozoa" - the single-celled organisms and he called them "animalcules".

He also improved the microscope and laid foundation for microbiology.

He is often cited as the first microbiologist to study muscle fibers, bacteria, spermatozoa and blood flow in capillaries.

Contributions of Antony Van Leeuwenhoek

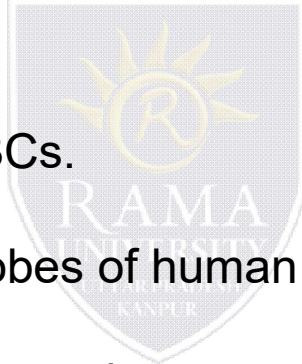
He first discovered & reported bacteria (1676).

Observed Microscopic structure of seeds & embryos of plants & some invertebrates.

He discovered Spermatozoa & RBCs.

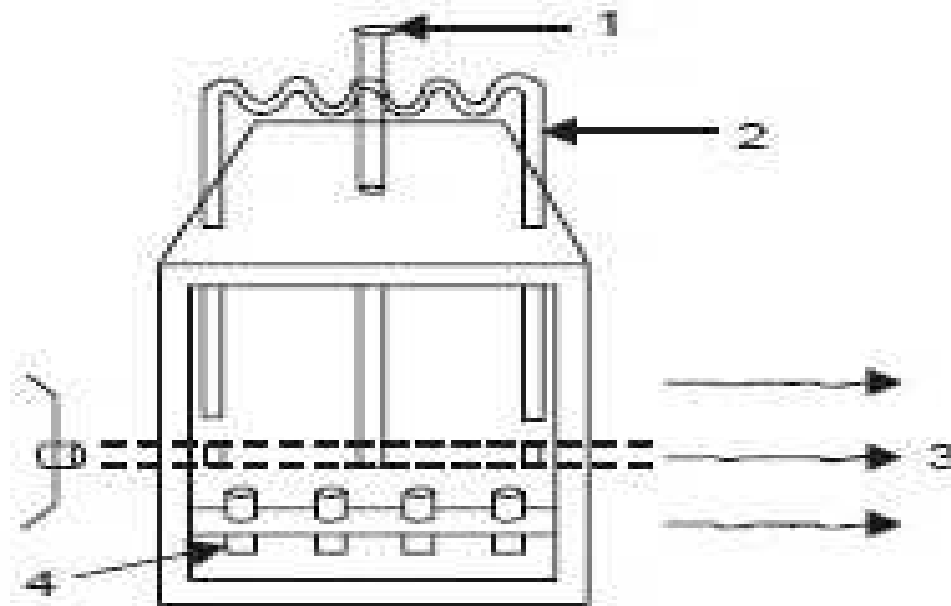
He discovered characteristic microbes of human mouth, curd, vinegar.

Emphasized the abundance of these microorganisms.



John Tyndall:

- ❖ The Irish physicist John Tyndall (1820-1893) is best known for his work on the scattering of light by atmospheric particles and on the absorption of infrared radiation by gases.
- ❖ He also did much to popularize science among laymen.
- ❖ In the field of microbiology, John Tyndall played an important role in disproving theory of spontaneous generation.
- ❖ He constructed dust free incubation chamber and demonstrated that dust actually contained and carried the microbes.
- ❖ If no dust was present, sterile broth remained free of microbial growth for indefinite period.
- ❖ He also developed method of discontinuous heating known as Tyndallization.
- ❖ The process of tyndallization is used to convert spores into vegetative cells.

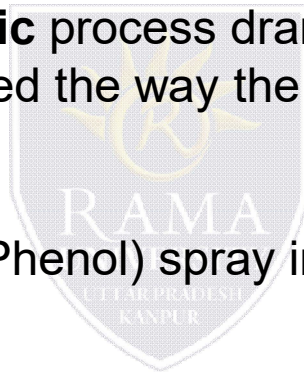


- 1 = Tube for filling broth ;
2 = inlet of air via convoluted tubes ;
3 = Light ; 4 = Sterile nutrient broth ;

Figure 4: Dust free chamber designed by John Tyndall

Joseph Lister (1827-1912):

- ❖ Acknowledged as the “Father of **Antiseptic** Surgery”, Joseph Lister's contributions paved the way to safer medical procedures.
- ❖ His introduction of the **antiseptic** process dramatically decreased deaths from childbirth and surgery and changed the way the medical industry looked at sanitation and proper hygiene.
- ❖ He invented the carbolic acid (Phenol) spray in the belief that most infection-causing germs were in the air.
- ❖ The steam spray covered everyone and everything in the operating room or hospital ward with a vapour of carbolic acid or phenol, creating an antiseptic environment.



Dimitri Iwanowsky (1864-1920):

- ❖ He was a Russian botanist and is known for his work on Tobacco mosaic virus (TMV).
- ❖ Through various experiments he concluded that transfer of infection to healthy tobacco plants is caused by exceedingly small parasitic microorganism that was invisible even under great magnification and that could permeate porcelain filters designed to trap ordinary bacteria
- ❖ It was after Iwanowsky's work (1892), that scientists started looking beyond the bacteria that could not be retained by the bacterial filter (Chamberland Candle filter).