

Microbiology

Microorganisms

Aristotle: Plant or Animal Kingdom

Protista (1866): bacteria, algae, fungi, protozoans

**Binomial System of Nomenclature:
Genus species**

Staphylococcus aureus
cerevisiae

clusters spherical golden

Saccharomyces

sugar fungus beer

**1940's Electron Microscope:
Prokaryotic and Eukaryotic**

Prokaryotes:

Bacteria

Bacillus/rods

Coccus

Spiral

Archae

Methanogens

Halophiles "salt lovers"

Thermophiles

Eukaryotes:

Fungi

Protozoa

Algae

Multicell Animal

Parasites(flatworms/roundworms)

Infectious Agents:

Viruses

Viroids

Prions

History of Microbiology:

Microscope:

Zaccharias Janssen

Robert Hooke 1665

Antoni van Leeuwenhoek 1673

Spontaneous Generation Theory:

Francesco Redi 1668

John Needham 1749

Lazzaro Spallanzani 1776

Louis Pasteur 1861

Germ Theory:

Pasteur 1865

Agostino Bassi 1835

Joseph Lister 1860

Robert Koch 1876

**Koch's postulates: link specific disease with
specific organism**

Vaccination:

Edward Jenner 1796

Louis Pasteur 1880

Antibiotics/Chemotherapy:

Paul Ehrlich 1910 "magic bullet" salvarsan

Alexander Fleming 1928 penicillin

DNA/Genetics:

**1941-1946 (Beadle, Tatum, Avery, MacLeod, McCarty,
Lederberg)**

1953 James Watson, Francis Crick, Rosalind Franklin

Importance of Microorganisms:

I. Maintain balance of living organisms and chemicals in environment:

- a. basis of food chain**
- b. recycle vital elements**
- c. photosynthesis**
- d. intestinal bacteria digest food**
- e. normal flora protects against pathogen**

II. Commercial Uses:

- a. chemicals**
- b. foods**
- c. enzyme products**
- d. sewage treatment**
- e. bioremediation**
- f. pest control**
- g. biotechnology**

Emerging Infectious Diseases:

West Nile Encephalitis

Bovine Spongiform Encephalopathy (mad cow)

Creutzfeld-Jakob

E. coli O157:H7

Flesh eating Streptococcus

Ebola

Hantavirus

Cryptosporidiosis

AIDS

Anthrax

