

## MICROBIOLOGY TOPICS [updated Fall 2005]

### Current diseases or events:

Avian flu  
West Nile Virus  
Bioterrorism and Microbiology  
Antimicrobial cleaning products  
Antimicrobial resistance  
Emerging infectious disease and disease trends  
“Sick house or building” syndrome  
Meningitis  
Biofilms  
Anthrax  
SARS  
Astro microbiology (microorganisms in space)  
Lyme disease  
Listeria  
HIV  
Hepatitis  
STD's (sexually transmitted diseases)  
Mad Cow disease (BSE)  
"Flesh Eating Disease" (necrotizing fasciitis) [believed to be caused by *S. pyogenes*]  
Hantavirus (originally made news as "four corners disease from New Mexico)  
Valley Fever  
Malaria  
TB  
Toxic shock syndrome (originally caused by *S. aureus*)  
Ebola  
Herpes Simplex Virus  
MRSA (methicillin resistant *S. aureus*)  
CMV (cytomegalovirus virus)  
Helicobacter pylori (causes ulcers)  
Cholera (*Vibrio cholera*)  
Legionella  
Vancomycin resistant *S. aureus*  
Vancomycin-resistant enterococci (VRE)

### Historical Developments in Microbiology:

Leeuwenhoek's microscope  
Pasteur  
Hooke  
Dr. Ehrlich's Magic Bullet  
Significant events or milestones in Microbiology in the last 100 years

### Disease of the past:

Iris potato famine  
Small Pox  
Bubonic Plague  
Pandemics

### Diseases associated with the environment:

Red Tide (dinoflagellates)  
Giardia (parasite found in local waters)

## MICROBIOLOGY TOPICS, continued

### Current techniques in Microbiology:

- ELISA
- EM (electron microscopy)
- Immunological techniques (agglutination, fluorescent antibody, etc.)
- Biochemical tests - rapid methods
- Bacterial nomenclature (Systematics)
- Molecular techniques (probes, PCR, etc.)

### Food Microbiology:

- Milk pasteurization
- Milk fermentation
- Fermented Products: Beer, Wine, Yogurt, Sauerkraut
- Food spoilage:
  - Salmonella in eggs
  - Staphylococcus (in mayonnaise)
- Shelf life of food
- Food preservation
- Diseases associated with food:
  - E. coli* O157: H7 (Jack in the Box hamburgers)
  - Botulism

### Beneficial or symbiotic uses of microorganisms:

- digestion of milk in ruminant animals
- digestion of wood in termite guts
- nitrogen-fixing plant symbionts
- bioremediation
- oxygen production by photosynthetic microorganisms (algae)
- recycling of nutrients by bacteria
- use of bacteria in agriculture - pesticides

### Miscellaneous

- Ecology: Bacterial responses to ultraviolet light
  - Salton Sea
- Fungi and molds and yeasts: *Candida albicans*, *Stachybotrys* black mold
- Valley Fever
- Gangrene
- Parasitology: *Cryptosporidium*
- Salmonella* and *Shigella*
- Campylobacter*
- Toxins
- Water microbiology (marine and drinking)
- Mummies tomb toxins
- Ancient bacteria
- Bacterial Cybernetics
- Germ warfare

These are suggestions to start you thinking about the large number of topics in Microbiology  
You are not limited to the ones listed. More suggestions are welcome.

Have Fun!