

Optional Final Exam

Review

Who created best lenses for microscopes?

- Robert Koch
- Louis Pasteur
- Elie Metchnikoff
- Antoni van Leeuwenhoek
- Paul Ehrlich

What were some of Louis
Pasteur's
accomplishments?

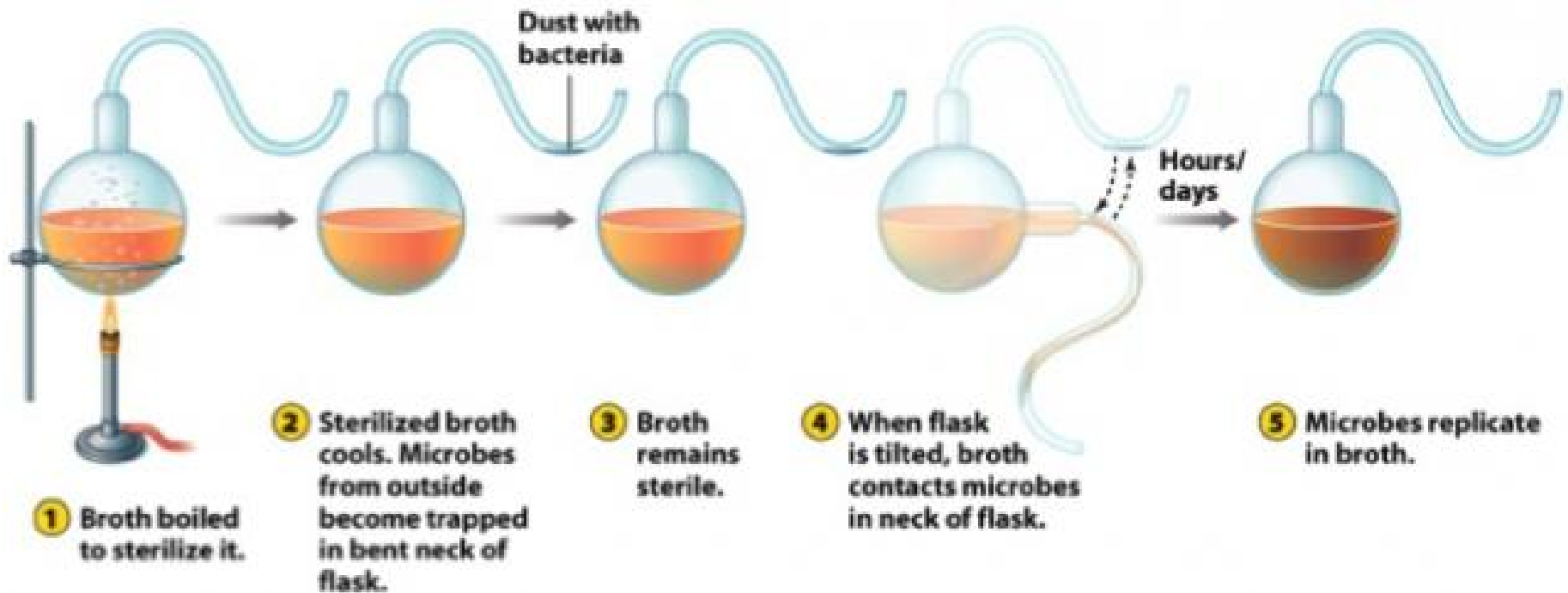
- Contributed to Germ Theory of Disease (what is this?)
- Discovered yeasts fermented sugars to make alcohol.
- Created vaccines (which is most famous one?)

- How was the rabies vaccine produced by Pasteur?
- What were the controversies associated with it?

- What were the two competing hypotheses regarding the origin of microorganisms?

- Spontaneous generation
- Biogenesis

- Which hypothesis is correct?
- Who finally demonstrated this and how?



Koch's Postulates

- What are they?

Koch's Postulates

- 1. The microorganism must be found in abundance in all organisms suffering from the disease, but should not be found in healthy organisms. (exceptions – carriers)
- 2. The organism must be isolated from the diseased host and grown in culture. (not always possible – growth requirements for all pathogens are not known)

Koch's Postulates

- 3. The disease must be reproduced when a pure culture of the organism is introduced into a healthy, susceptible host. (experimental hosts not always available)
- 4. The same organism must be reisolated from the experimentally infected host.

Viruses

- Are viruses living organisms? Explain.
- Original virus definition was that they were a slimy liquid or poison.
- What did Ivanovsky investigate?

What kind of organisms do viruses infect?

- So far, all of the giant viruses (Giruses) have been found to infect which hosts?

DNA → RNA → Protein

- What is the complimentary DNA sequence to this piece of DNA?

-GATTACA-

- What is the complimentary RNA sequence to that same piece of DNA?

- Where inside a cell does DNA replication occur?
- Where inside a cell does transcription occur?
- Where inside a cell does translation occur?

DNA polymerase, RNA polymerase, ribosomes

- Which of these is used to make RNA?
- Which of these is used to make proteins?
- Which of these is used to make DNA?

Diseases

- What is an epidemic?
- What is a pandemic?
- What is a fomite?

Diseases

- How are the following viruses typically transmitted?
- -Ebola
- -Influenza
- -Herpes
- -HPV
- -HIV
- -Zika, Dengue, West Nile

Defenses

- What do each of the following cell types do?
- B-cells
- T-cells
- Macrophages
- Killer cells

Antibodies

- How long does it take the immune system to make antibodies?
- What are the five mechanisms of antibody action?

Antibody Mechanisms

- Neutralization
- Precipitation
- Agglutination
- Opsonization
- Complement activation

Vaccines

- What are the five types of vaccines?

Vaccines

- - inactivated vaccines use dead bacteria and viruses
- - attenuated vaccines use live weakened bacteria and viruses
- - subunit vaccines use pieces (proteins) of bacteria and viruses
- - DNA vaccines – experimental, designed to make our cells produce pathogen proteins to stimulate the immune system
- - toxoid vaccines protect against the toxins produced by a pathogen (tetanus shot)

What is in us/on us?

- What do we call all of the microorganisms in and on us?
- What do we call all of the viruses in and on us?
- What kind of relationships exist between us and all of these things?

- How will climate change affect the spread of diseases?
- How does globalization affect the spread of diseases?