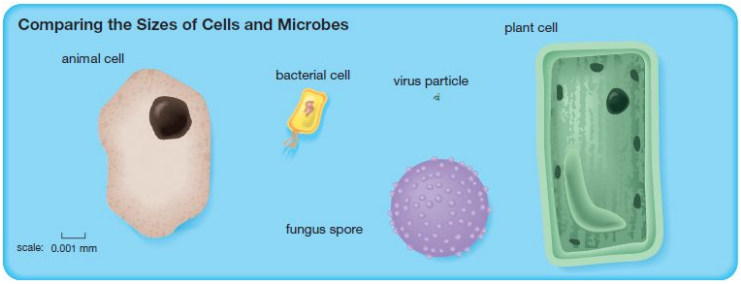
Science 30	Unit A: Biology
Lesson 7 - Pathogens and Disease	84 mins

Pathogens and Disease

Pathogen: an agent that causes disease

Bacteria, Viruses, other people cells, etc

Generally very small organisms.



Types of Pathogens

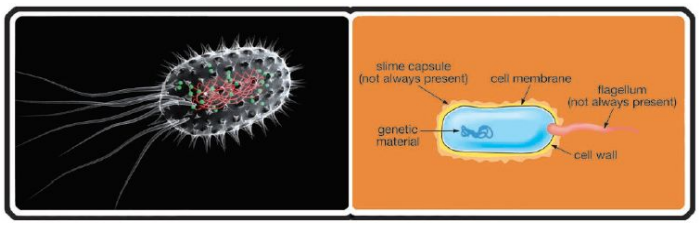
- Protozoans - a group of microscopic single-celled organisms that each have a nucleus

Malaria

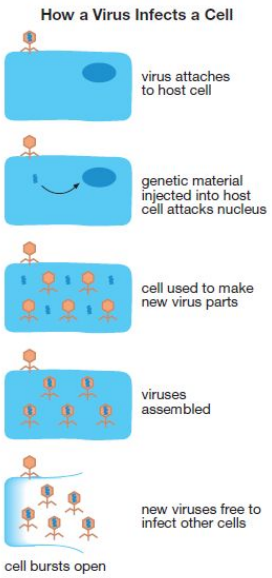
- Fungi - organisms that absorb food in solution directly through their cell walls and do not conduct photosynthesis; reproduction occurs through spores

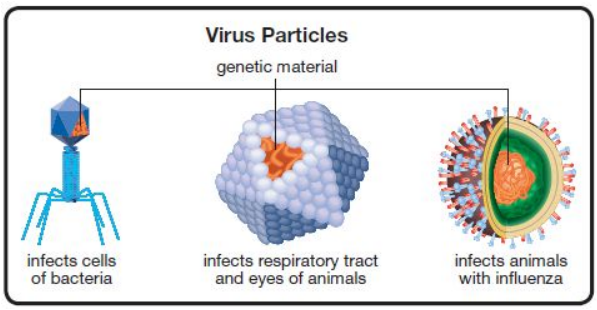
Molds, mushrooms and yeast… athlete's foot

- Bacteria - microscopic, single-celled organisms that lack a membrane-bound nucleus and membrane-bound organelles; reproduction is chiefly by cell division to produce identical daughter cells



- Viruses - a non-cellular particle consisting of a protein coat surrounding genetic material that multiplies only within the cells of a living organism





The Body's Defences: - Barrier Defences: keep a pathogen from entering the body, mostly the openings - Cellular Defences: cells specifically designed to capture or destroy pathogens	 Skin, sweat, oils, mucus, hair (cilla), etc White blood cells, platelets, T and B cells, etc
Where are Pathogens Found? - Food - undercooked or improperly stored food can and WILL have pathogens - Blood - cuts and punctures can allow pathogens direct access to the body	 Salmonella (chicken, fish, eggs), E. coli (meat and cheese) HIV and Hepatitis C
Spreading Disease: If pathogens are not destroyed they will be able to reproduce and spread.	 Pathogens are EVERYWHERE
Vectors - Organisms that can spread the pathogen, but are not necessarily affected.	 Mosquitoes (malaria), ticks (lyme disease), bats (rabies)

Artificial Pathogen Killers

Antiseptics - a solution or substance that prevents or inhibits the growth of microorganisms	 Alcohols, bleach, hydrogen peroxide, UV radiation, etc
Antibiotics - Chemical that only works on bacteria	 Penicillin (amoxicillin)
Antiviral - Chemical that only works on viruses	

Science 30 - Lesson 7 - Pathogens and Disease

Name: _____

1) Compare the parts of the immune system with a comparative example of a castle structure.

Part of the Immune System	Role	Castle Equivalent
		castle walls
cilia and mucous secretions		
	patch holes in protective barrier	
white blood cells		

2) Explain how each of the following disease-causing organisms overcomes the body's natural defenses to enter the body.
   a) Malaria

      _____

   b) hepatitis C

      _____

   c) Tuberculosis

      _____

   d) Salmonella

      _____

3) Compare the similarities and differences between bacteria and viruses.

Similarities	**Differences**

4) Explain how the following problems impair the body's ability to fight against disease-causing organisms.
   a) A person with hemophilia has blood that does not clot properly.

      _____

      _____

      _____

      _____

b) The skin is badly damaged so that tissues are exposed.

5) Research a Disease, Pick a disease and answer the questions below
   a) What background information should the public know about the disease you have chosen?
   b) What are the signs and symptoms of the disease?
   c) How is this disease transmitted?
   d) How can the disease be prevented and/or treated?
   e) Who is at risk for getting this disease?
   f) What do current statistics reveal about the number of people infected?