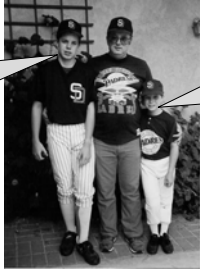


Ch 6 Bacteria and Viruses

Your feet stink because of bacteria Adam!



All those zits on your face are because of bacteria Robert!

Section 1 Classifying Organisms

Classification = grouping things based on their similarities = makes easier to study

Taxonomy = scientific study of how living things are classified



Binomial Nomenclature = a two part name

- First Part is the GENUS = grouping that contains similar closely related organisms

- Second Part is the SPECIES = a group of similar organisms that can mate and make fertile offspring

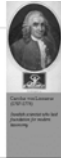
- names are in Latin because it was a language all scientists could communicate in at the time



Latin is the language of fun!

Binomial Nomenclature

- Carlus von Linnæus
- Three word naming system
- Genus
- Species (epithet, Underlined or italicized)
- Example: *Linnaeus Carolus* Underlined or italicized



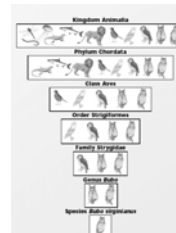
BioEd Online

Levels of Classification – 7 of them

Kingdom, Phylum, Class, Order, Family, Genus, Species

-Kingdom the broadest and Species most specific

-The more common characteristics the more levels two organisms share



Species with similar evolutionary histories are classified more closely together – look at the fossil record, comparative anatomy, early development, DNA

- Classifications are manmade and can change as more information is discovered



•Pandas are related to bears, but they are classified in their own group.

Section 2 The 6 Kingdoms

Archaeobacteria – Prokaryotes which lack a nucleus- autotrophs or heterotrophs

Eubacteria – Different chemical make up than Archaeobacteria - heterotrophs or autotrophs



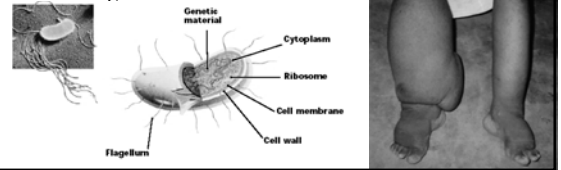
Play the video!

Protists – called “odds and ends” kingdom – are eukaryotes (have a nucleus) – some are autotrophs and some heterotrophs
 Fungi – mushroom, mold, mildew – heterotrophs – most feed on dead or decaying organisms
 Plants – autotrophs – multicellular eukaryotes
 Animals – multicellular eukaryotes - heterotrophs

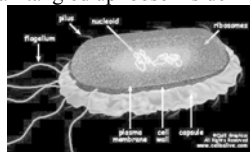
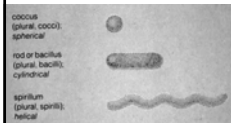
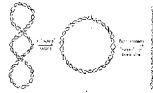


Section 3 Bacteria

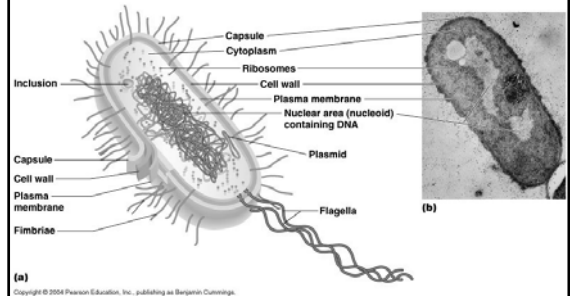
- Found everywhere on earth but not found until 1600s by Anton van Leeuwenhoek
 -Are single celled
 -Are prokaryotes = no nucleus
 -Do use energy, grow, develop, and respond to surroundings



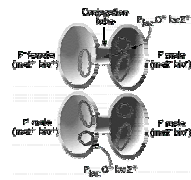
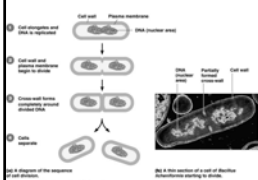
-3 shapes = spherical, rodlike, or spiral shaped
 -Shaped determined by cell wall (outside of the cell)
 -Inside the cell wall is the cell membrane = regulates what goes in and out
 -Inside cell membrane is cytoplasm
 -Contain ribosomes = proteins produced
 -DNA forms a circular shape – all tangled up loose inside cytoplasm



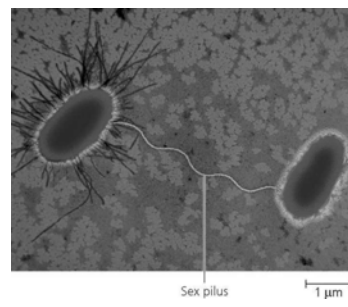
-Flagellum = long whiplike structure – helps the bacteria cell move like propeller – some have many, one or none
 -If no flagella cannot move on their own



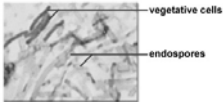
-2 kingdoms of bacteria = Archaeobacteria & Eubacteria
 -Reproduce through 2 ways
 -Binary Fission = 1 cell divides into 2 identical cells = Asexual Reproduction
 -Sexual Reproduction = 2 parents combining their genetic material to produce new organism (different than both parents genetically) = conjugation



conjugation = one bacterium transfers some of its DNA into another bacteria cell through a thin threadlike bridge – then divides by binary fission



Endospore formation = when conditions in the environment become unfavorable some can form a endospore = a small, rounded thick walled resting cell that forms inside the bacterial cell - contains genetic material and can resist freezing, heating, drying and can survive for many years – can be lifted and carried to other places where conditions may be more suitable - will then grow and multiply



Bacteria can make you sick, be harmless, or helpful – bacteria involved in fuel and food production, recycling and clean up (decomposers = break down large chemicals into smaller ones), and production of medicines



Oh my gosh! I would love to watch the saved MPEG on the good and bad sides of bacteria!
Thank you so much Mr. Dorchak! You are the best 7th grade science teacher at West Cottonwood!

Your Health

Infectious Disease = illnesses that pass from one organism to another

Can spread in 4 ways contact with

- another infected person
- contaminated object
- infected animal
- environmental source

I wonder if I play the MPEG I will know why I was so sick...



Disease causing agents can enter through:

- breaks in the skin
- inhaled or swallowed
- most linings of the eyes, ears, nose, mouth, or other body openings



I am a 7th grade student... the perfect vector for germs!

A **vector in biology** has several meanings:

- An organism (biotic vector, pollinator) or medium (abiotic vector, e.g. wind) which transports pollen to a stigma
- An organism that transmits disease by conveying pathogens from one host to another (vector insect)
- A virus used to deliver genetic material into a cell
- A piece of DNA meant to carry DNA fragments into a host cell.

Treating Infectious Diseases

-for most the best treatment is bedrest = rest, drinking lots of fluids, and eating well balanced meals

Viral Disease = no medications can cure all viral infections – can only treat symptoms – these medications can also delay recovery if you resume your normal routine while you are sick – will only hide symptoms

Please don't send me back to Mr. Dorchak's class...



DO NOT WRITE THIS

ANTIVIRALS - What are antivirals?

Antivirals are prescription medications that actively attack the flu virus and stop it from spreading to the rest of your body. In order to be effective, antiviral medications must be used within the first 12-48 hours of flu symptoms.

Preventing the Flu with Antivirals

Not only can antivirals help treat the flu, they can also help prevent you from getting it. For example, if you or your loved ones experience symptoms that are consistent with the flu (sudden symptoms, chills, fever), an antiviral will help to protect them from getting this virus.

Bacterial Disease

Antibiotic = a chemical that can kill bacteria without harming a person's cells - made naturally by some bacteria and fungi

- Penicillin = antibiotic that works by weakening the cell walls of some bacteria and cause the prokaryote to burst

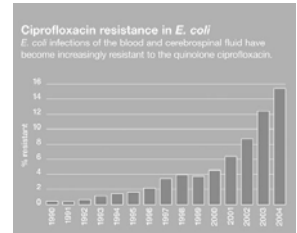
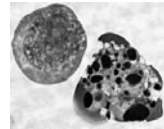


Bacteria sucks when you are in your teens!

Shhh... don't listen to what I tell you about acne!



Antibiotic Resistance = over the years since antibiotics have been used they do not kill all the bacteria – the few not killed by the antibiotic will reproduce and pass on the resistance to future generations –RESULT = race to continue to make stronger antibiotics to try and stay one step ahead



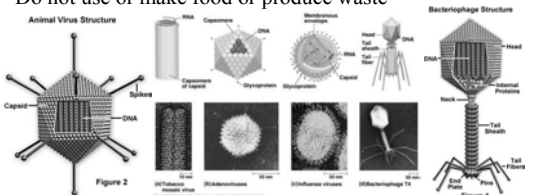
Section 4 Viruses

-Virus = a small NONLIVING particle that invades and reproduces inside a living cell

-Non living because are not cells

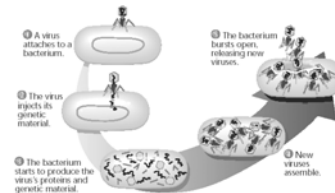
-Do not use energy to grow or to respond to surroundings

-Do not use or make food or produce waste



-Viruses can only multiply when inside a living cell

-Host = an organism that the virus enters and multiplies inside – provides a source of energy for a virus or an organism



-Organism (including viruses) that live on or in their host and cause harm to the host = parasite

-Almost all viruses act like parasites because they destroy the cells in which they multiply

-Viruses can enter any living organisms

-Viruses are specific to specific organisms

-Enter and infect only a few types of cells (ex. Cold virus infects nose and throat)



Play the scary video about viruses

Yeah, play it! Play it!



-Viruses are named after the disease they cause, organisms they affect, where they were found, or the people who discovered them

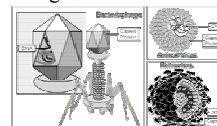
-Come in different shapes and sizes

-Very small – measured in nanometers (nm)

-2 basic parts

-Outer coat to protect the virus

-Inner core made of genetic material

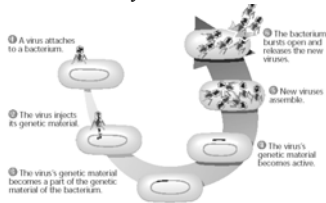


-Outer coat is made of unique proteins to attach (lock and key) to specific host cell

-Example HIV

-Once inside the cell a virus (genetic material) takes over the cell function – use it to produce more viruses

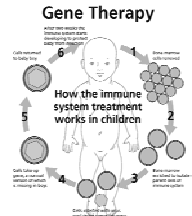
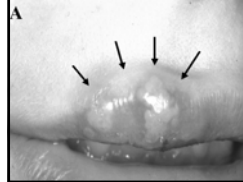
-Some take over immediately others takes a while (go dormant)



-Viruses that do not go directly into action will become part of the cell's DNA – cell multiplies – later becomes active and takes over the cells function

-Ex. Cold sores

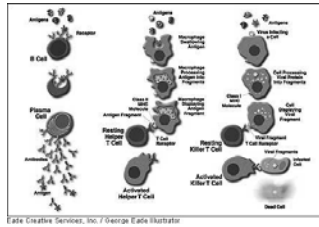
Gene Therapy = use virus to insert DNA into a host cell's genetic material – virus is the messenger service to deliver the genetic material the host needs



Vaccine = a substance that stimulates the body to produce chemicals that destroy viruses or bacteria (antibody) – vaccines are specific for virus/bacteria - may be from dead or altered viruses or bacteria – now if infected by virus/bacteria the body on alert and can destroy before the disease takes form



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