**Essential Questions: 8.L.1**: How do diseases spread?

How can diseases harm living organisms?

**8L1.1:** How do the basic characteristics of viruses, bacteria, fungi and parasites influence the treatment and/or prevention of disease?

In what ways do the basic characteristic of viruses, bacteria, fungi, and parasites affect the spread of disease?

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Comparing Microbes &

Microbes and Infectious Disease: **The who, what, when, and how of microbes and infectious disease.**

* Microbiology
* Explores microscopic organisms that include: \_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_

Is It Alive

* Microbes include a \_\_\_\_\_\_\_\_\_\_\_\_ variety of organisms.
* Scientists use a set of criteria to constitute what is a living organism.
  + Composed of \_\_\_\_\_\_\_\_\_
  + Perform certain chemical process such as \_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Make their \_\_\_\_\_\_\_\_ nutrients or \_\_\_\_\_\_\_\_\_\_\_\_ nutrients from environment
  + Respond to a stimuli such as \_\_\_\_\_\_\_\_\_and \_\_\_\_\_\_\_\_\_

**Types of Microbes**   
(3 types, these are also called Pathogens)

* \_\_\_\_\_\_\_\_\_\_\_\_\_ – Have to have a host to survive/reproduce
* \_\_\_\_\_\_\_\_\_\_\_\_\_ – Do not need a host to survive/reproduce, most can survive without oxygen
* \_\_\_\_\_\_\_\_\_\_\_\_\_ – Feed off of a host, usually harms the host. Does not need the host to reproduce

**Viruses**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ organisms that get inside a healthy cell and often \_\_\_\_\_\_\_\_\_\_\_ the cell.
* Many viruses cause diseases such as the common cold, flu, acquired immune deficiency syndrome (AIDS).
* A virus \_\_\_\_\_\_\_\_\_\_\_live or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, it requires a host – a living thing the virus/parasite lives on or in.
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_DO NOT kill viruses - Rest and fluids recommended. Vaccine or anti – viral drug is used.
* Most \_\_\_\_\_\_\_\_\_\_\_\_\_\_ illnesses among humans.
* Ranges from mild fevers to some forms of cancer
* Several other severe and fatal diseases.
* Transmission can be by: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, through water or a bite.

Bacteria: (also known as Prokaryotes)

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Can live in \_\_\_\_\_\_\_\_\_\_\_ of places, with oxygen, without oxygen, extreme hot or cold.
* \_\_\_\_\_\_\_\_\_(do not need a host to survive)
* Have three basic shapes. What are they? draw
* Many diseases caused by bacteria are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Bacterial diseases can be treated with an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Some bacterial diseases are Strep throat, sinus infections, tuberculosis
* What happens if we over use antibiotics?

What is created from the overuse of antibiotics?

**Parasites**

* A parasite is an organism that gets its \_\_\_\_\_\_\_\_\_\_ from another \_\_\_\_\_\_\_\_\_\_ organism (a host)
* Lives either on or in the host.
* Parasites can come in the form of a \_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_or tiny \_\_\_\_\_\_\_\_\_\_\_\_\_.
* Parasites cause diseases such as malaria, athlete’s foot, elephantiasis, etc.
* Natural selection favors adaptations that allow the parasite to efficiently \_\_\_\_\_\_\_\_\_ its host.

**Fungi**

* \_\_\_\_\_\_\_\_\_\_\_
* Most are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ heterotrophs.
* \_\_\_\_\_\_\_\_\_\_ to its environment
* \_\_\_\_\_\_\_\_\_\_\_ the tissues of living plants and animals and cause disease.
* Major concern for humans: not only affects \_\_\_\_\_\_\_ sources but can become a \_\_\_\_\_\_\_\_\_\_ for nutrients from the food.
* Mold spores are usually \_\_\_\_\_\_\_\_\_\_ and have allergic reactions

**Mutagens**

* Are substances that causes a person’s cells to mutate, or change form
* Examples of mutagens: X-rays, cigarette smoke, even sunlight
* Sunlight causes skin cells to change/mutate which may cause skin cancer.

**How Infectious Disease Spreads**

* \_\_\_\_\_\_\_\_\_\_ – transmit a pathogen from a \_\_\_\_\_\_\_\_ to a new organism. Ex: mosquito bites animal infected with malaria and then bites a person
* \_\_\_\_\_\_\_\_\_ – An organism that passes diseases to others even though they may not feel sick. A human with HIV can transmit HIV virus to another human being even if they do not show any symptoms.

**Infectious Diseases**

* Diseases that can be passed from \_\_\_\_\_\_\_ living thing to \_\_\_\_\_\_\_\_\_\_.
* May also be caused by \_\_\_\_\_\_\_\_\_\_ parasites, which may be in intestines, blood or tissues.
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ by coughing, sneezing, direct or indirect contact.
* Examples: Flu, cold, measles, mumps, chicken pox, STD’s
* Avian Flu (H5N1) – Person contacts an infected bird. Not passed person to person.

**Non-Infectious Disease**

* Usually develops due to a mutation in the DNA or from lifestyle choices.
* Examples (DNA): Cancer, MS(multiple sclerosis), MD (muscular dystrophy), Cystic Fibrosis
* Examples of lifestyle choices: Smoking, drinking, taking drugs. These can lead to cancer, liver disease, and immune disorders.

Vocabulary: Microbiology, Virus, Bacteria (spherical, rod-like, spiral or cork screw), fungi, parasite, disease, unicellular, host cell, antibiotics, treatment, prevention