**Virus**

* Viruses are a tiny, **nonliving** particle that enters and then reproduces inside a living cell.
* A virus is composed of genetic material (DNA or RNA) inside a protein coat.
* Viruses are specific to certain host cells.
* A **bacteriaphage** is a virus that infects bacteria.
* A virus must infect a host cell in order to use the cells materials to reproduce more viruses.
* Viruses can cause disease.
* Active vs. Hidden viruses
  + Active viruses multiply immediately after injecting its genetic material into the host cell. Example- **Influenza virus**
  + Hidden viruses can wait to multiply even after injecting its genetic material into the host. Example- **Cold Sore**
* Diseases caused by viruses include:
* Influenza, polio, chicken pox, Ebola, and AIDS
* Treatments: antiviral medications

**Bacteria**

* Bacteria are single celled organisms but can form chains or clumps of independent cells.
* Shapes include **rod, sphere, and spiral**.
* They are **prokaryotes**, the genetic material is not found in a nucleus, but floats freely in the cytoplasm.
* Bacteria do NOT contain organelles other than ribosome’s.
* Bacteria can reproduce through sexual and asexual reproduction.
  + Asexual- called **Binary fission**- A cell first duplicates its genetic material and then divides into two identical cells.
  + Sexual- called **Conjugation**- Bacterium transfers some of its genetic material into another bacterium through a thin, threadlike bridge that joins the two cells.
* Bacteria may have simple, single stranded **flagella** that rotates and allows the bacteria to move.
* Bacteria can cause disease but are also useful in oxygen and food production, environmental recycling and medicine production.
* Antibiotics are chemicals that kill bacterial cells.

Examples:Rabies, Lyme Disease and Leprosy.

Treatments: antibiotics such as Penicillin, amoxicillin, or others

**Protists**

* Most protists are single celled organisms, but some are multi cellular.
* Protists are **eukaryotes**; they have a distinct nucleus containing genetic material.
* Protists may contain **flagella** or **cilia** that allow the cell to move. Some contain **pseudopods** which are temporary bulges of the cell used for movement and trap food.
* Many Protists are carried by a vector, a carrier of a disease that passes it on to a human host ie. mosquito, tick.
* Diseases caused by Protists include: Malaria (*Plasmodia*)

Amoebic Dysentery (*Entamoeba histolytica*)

Giardiasis (*Giardia lamblia*)

Treatment of Protozoan infectious:

**Fungus**

* Most fungi are eukaryotes, they have a distinct nucleus.
* They obtain energy from their environment, meaning they are heterotrophes.
* Reproduction: They reproduce through both sexual and asexual reproduction.
  + Asexual reproduction- similar to mitosis and binary fission certain fungi go through budding or create spores.
  + Sexual reproduction- fungi will exchange DNA and produce spores with the new DNA.
* Examples of Fungal infections are ringworm, and Athlete’s foot (Tinea).
* Treatments include antifungal medications.

**Virus**

* Viruses are a tiny, **\_\_\_\_\_\_\_\_\_\_\_\_\_\_**particle that enters and then reproduces inside a living cell.
* A virus is composed of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_ (DNA or RNA) inside a protein coat.
* Viruses are specific to certain \_\_\_\_\_\_\_\_\_\_\_\_ cells.
* A **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** is a virus that infects bacteria.
* A virus must \_\_\_\_\_\_\_\_\_ a host cell in order to use the cells materials to reproduce more viruses.
* Viruses can cause \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Active vs. Hidden viruses
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Diseases caused by viruses include:

Influenza, polio, chicken pox, Ebola, and AIDS

Treatments: antiviral medications

**Bacteria**

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* Shapes include **\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_**
* They are **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**, the genetic material is not found in a nucleus, but floats freely in the cytoplasm.
* Bacteria can reproduce through sexual and asexual reproduction.
  + Asexual- called **\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_**- A cell first duplicates its genetic material and then divides into two identical cells.
  + Sexual- called **\_\_\_\_\_\_\_\_\_\_\_\_\_\_**- Bacterium transfers some of its genetic material into another bacterium through a thin, threadlike bridge that joins the two cells.
* Bacteria may have simple, single stranded **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** that rotates and allows the bacteria to move.
* Bacteria can cause disease but are also \_\_\_\_\_\_\_\_\_\_ in oxygen and food production, environmental recycling and medicine production.
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are chemicals that kill bacterial cells.

Examples: Lyme Disease and Leprosy.

Treatments: antibiotics such as Penicillin, amoxicillin, or others

**Protists**

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* Diseases caused by Protists include: Malaria (*Plasmodia*)

Amoebic Dysentery (*Entamoeba histolytica*)

Giardiasis (*Giardia lamblia*)

Treatment of Protozoan infectious:

**Fungus**

* Most fungi are \_\_\_\_\_\_\_\_\_\_\_\_, they have a distinct nucleus.
* They obtain energy from their environment, meaning they are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* The live in \_\_\_\_\_\_\_\_\_\_\_\_, moist environments.
* Reproduction: They reproduce through both sexual and asexual reproduction.
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ reproduction- similar to mitosis and binary fission certain fungi go through \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or create spores.
  + Sexual reproduction- fungi will \_\_\_\_\_\_\_\_\_\_\_\_\_\_ DNA and produce spores with the new DNA.
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**Bacteria**

* Bacteria are single celled \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ but can form chains or clumps of independent cells.
* Shapes include **\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_ .**
* They are **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** , the genetic material is not found in a nucleus, but floats freely in the cytoplasm.
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**Protists**

* Most protists are single celled \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, but some are multi cellular.
* Protists are **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**; they have a distinct nucleus containing genetic material.
* Protists have a variety of other organelles including vacuoles, mitochondria, chloroplasts, etc.)
* Protists may contain **\_\_\_\_\_\_\_\_\_\_\_\_\_\_** or **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** that allow the cell to move. Some contain **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** which are temporary bulges of the cell used for movement and trap food.
* There are 3 types of protists:
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ forms (**Euglena)** that get energy through photosynthesis are autotrophes.
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_ forms (**Amoeba and Paramecium**) that move through their environment and eat other organisms or decaying parts of other organisms are heterotrophes.
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ forms (**Slime mold**) that absorb nutrients from their environment are heterotrophes.

**Virus**

• Los virus son una pequeña partícula, no viviente que entra y entonces reproduce dentro de una célula viva.

• Un virus está compuesto de material genético (ADN o ARN) en el interior de una capa de proteína.

• Los virus son específicos para ciertas células huésped.

• Un bacteriaphage es un virus que infecta bacterias.

• Un virus debe infectar una célula huésped con el fin de utilizar los materiales de reproducción de las células más virus.

• Los virus pueden causar enfermedades.

• Los virus activos vs Ocultos

virus S activa inmediatamente después de la inyección de multiplicar su material genético en la célula huésped. Ejemplo-influenza virus

virus ocultos o puede esperar a multiplicarse incluso después de la inyección de su material genético en el hospedador. Ejemplo: herpes labial

**Bacteria**

• Las bacterias son organismos unicelulares, pero pueden formar cadenas o grupos de células independientes.

• Las formas incluyen barra, esfera y en espiral.

• Son procariotas, el material genético no se encuentra en un núcleo, pero flota libremente en el citoplasma.

Las bacterias • No contiene otros orgánulos que ribosoma.

• Las bacterias se pueden reproducir a través de la reproducción sexual y asexual.

o asexual llamado fisión binaria-A primera célula duplica su material genético y se divide en dos células idénticas.

o Sexual-llamado conjugación-bacteria transfiere parte de su material genético en otra bacteria a través de un puente filiforme delgada, que une las dos células.

• Las bacterias pueden tener flagelos simple, una sola cadena que gira y permite que las bacterias se mueven.

• Las bacterias pueden causar enfermedad, pero también son útiles en oxígeno y la producción de alimentos, el reciclaje del medio ambiente y la producción de medicina.

• Los antibióticos son sustancias químicas que matan las células bacterianas.

**Protist**

La mayoría de los protistas son organismos unicelulares, pero algunos son múltiples celular.

• protistas son eucariotas, que tenga un núcleo diferenciado que contiene material genético.

• Los protistas tienen una variedad de otros orgánulos como las vacuolas, mitocondrias, cloroplastos, etc)

• Los protistas pueden contener flagelos o cilios que permiten que la célula se mueve. Algunos contienen seudópodos que son protuberancias temporales de la célula utilizada para el movimiento y la comida trampa.

• Hay 3 tipos de protistas:

o formas semejantes a las plantas (Euglena) que obtienen energía mediante la fotosíntesis son autotrophes.

o Los animales parecidos a los formularios (Amoeba y Paramecium) que se mueven a través de su medio ambiente y comer otros organismos o partes de organismos en descomposición otros heterotrophes.

o parecido a un hongo (moho de fango) que absorben los nutrientes de su entorno son heterotrophes.

List at least 2 differences and 1 similarity.

Explain how each microbe is different from eachother in a paragraph.