Science Virtual Learning

LEP Science

Viruses and Bacteria

May 18, 2020

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Lesson: May 18, 2020

Objective/Learning Target: I can explain the differences between viruses and bacteria in terms of structure, reproduction, and eradication.

Let’s begin by watching this video and taking some notes as you answer questions.

Check your notes against these here.

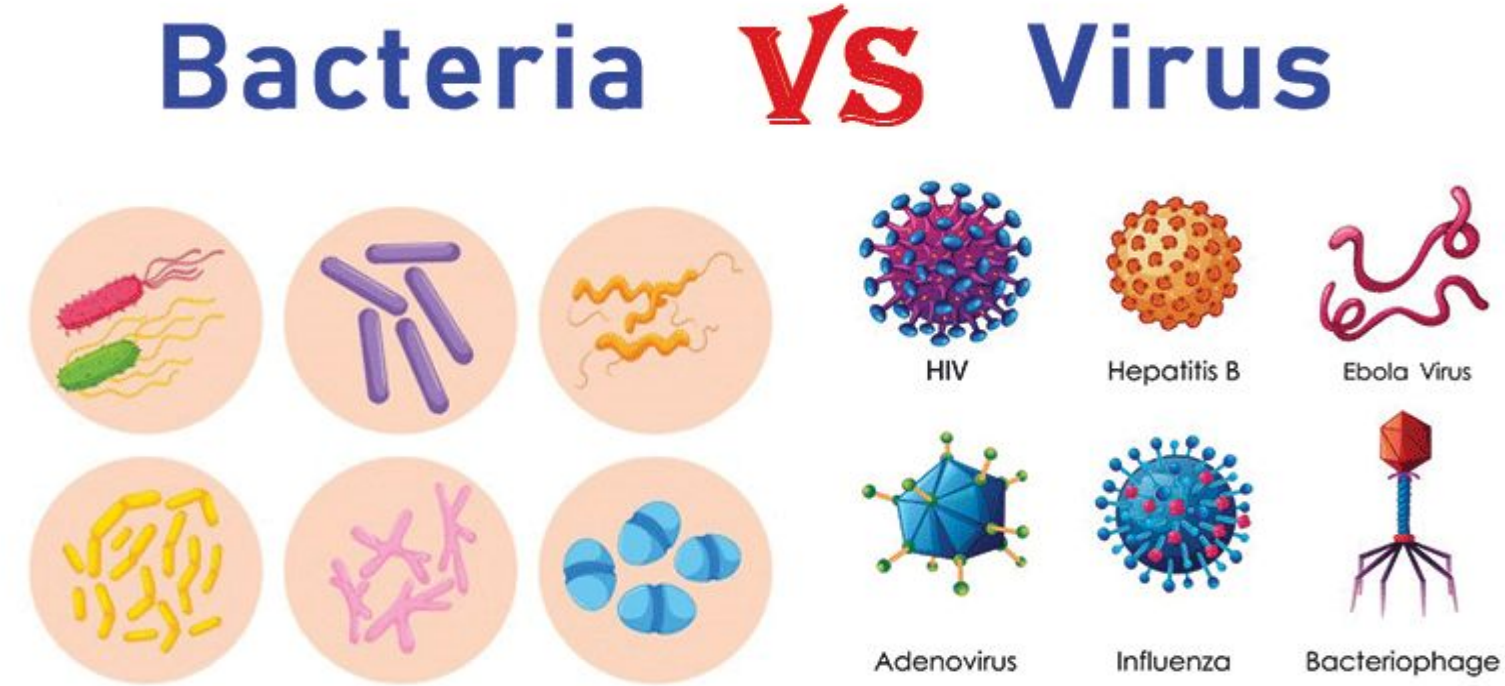
Viruses and bacteria are both microscopic and can cause illness.
Viruses are smaller than bacteria
Bacteria are alive because they can reproduce on their own, while viruses are not because they need a host to reproduce.
Viruses infect cells by binding to the cell surface, injecting its DNA (or genetic material) and hijacking the host cells manufacturing equipment to make more of the virus. When the cell is full of viral particles, it will burst (lyse) and allow the newly made viruses to infect more cells.

Viral infections usually are shorter in duration than bacterial infections.
Viral infections can be treated with Antiviral medications (if administered within a specific time window) otherwise, rest and fluids is the best course of action. Bacterial infections can be treated with antibiotics.
Common viruses: rhinovirus (cold) and influenza (flu); common bacteria (helicobacter pylori (ulcers) and salmonella (food poisoning)

Using the images and image links on the next 4 slides. Create a chart that compares and contrasts viruses to bacteria in terms of:

- Structure
- Reproduction
- Treatment (Eradication)

Let's look at the structures of viruses and bacteria.

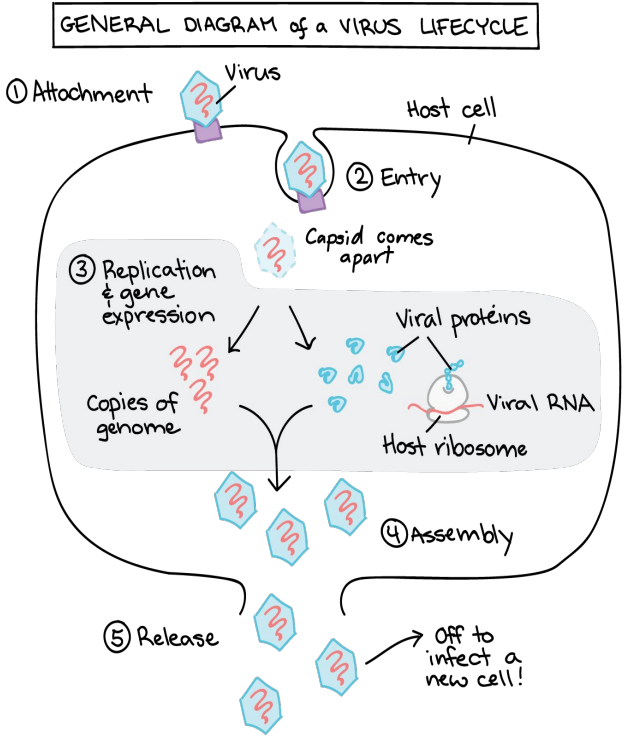


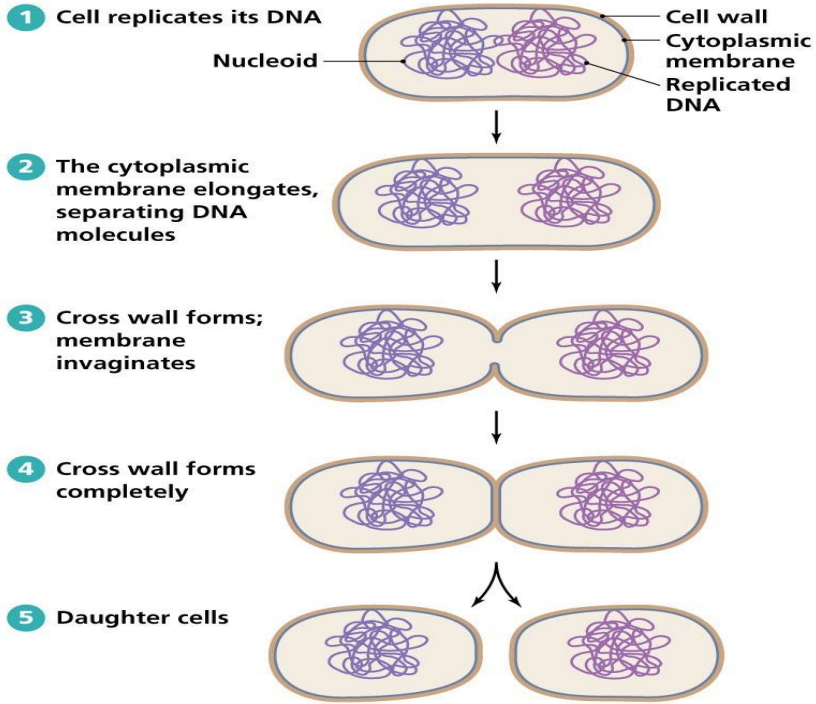
Viruses and Bacteria come in all shapes and sizes. Make a chart to show similarities and differences. Use this image link and this image link to fill in your chart.

Now, let's look at how each reproduces.

VIRUS

BACTERIA





Eradication: How do we treat or get rid of infections?

Feeling Sick?

Do you ever wonder what is causing your illness?

It could be a virus or a bacteria... and the differences are important.

Virus	vs.	Bacteria
Viruses are particles that invade your body's cells. Viruses contain genetic material (DNA or RNA) and a protein coat. Viruses take many shapes and are much smaller than bacteria.		**Bacteria** are one-celled organisms that take several shapes - spheres, rods, spirals. They are found everywhere - in food, dirt, and on our bodies. Bacteria can live outside our body's cells. Most bacteria are good -such as those that help with digestion, but some can cause infections.
Viruses cause diseases such as the common cold, many sinus infections, acute bronchitis and most sore throats. The body fights against viral infections by producing a fever or inflammation.		**Bacteria** cause infections such as strep throat by invading the body's cells. The body fights against bacteria by producing a fever or inflammation. Symptoms of bacterial infections are similar to those caused by viral infections.
Antibiotics cannot kill viruses. Antibiotics will not help a viral infection or stop the spread of a viral infection to others. Taking antibiotics for viral infections can increase the chance of an antibiotic-resistant infection later. Minnesota Antibiotic Resistance Collaborative · Rest, drink fluids · Relieve symptoms with over the counter medications · Call your doctor if your symptoms worsen		**Bacterial** infections usually need to be treated with an antibiotic - medications that kill bacteria. If you are prescibed an antibiotic, follow instructions closely: · take all the medication as directed even if you feel better · do not share antibiotics or save them for the next time you are sick 

When antibiotics are misused, bacteria can develop resistance to the antibiotics over time.
Antibiotic resistance affects everyone. YOU can help keep antibiotics working!

www.MinnesotaARC.org

	Viruses	Both	Bacteria
Structure	Capsid Coat Envelope	Genetic Material (DNA/RNA)	Ribosomes Cytoplasm Cell Membrane Cell Wall
Reproduction	Must use a host: 1. Attachment 2. Entry 3. Replication 4. Assembly 5. Release		Binary Fission 1. DNA is copied 2. Cell pinches into 2.
Eradication/Treatment	Antivirals Rest Fluids		Antibiotics

Additional Practice

Use this Texas Gateway interactive to guide you through more learning. There are embedded questions, quizzes, and activities as you work through the lesson.

Additional Resources

Virus vs Bacteria article
Virus vs Bacteria Video
Comparison notes