Microbes Unit Review

Eighth Grade 2008-2009

Volume 1, Issue 1

Main Ideas:

- Microbes are tiny organisms that can only be seen with a microscope.
- Most microbes can make you sick if they get in your body.
- Protists are a group of eurkaryotic organisms that tend to be made of one cell.
- Bacteria are a group of prokaryotic organisms that have a cell wall.
- Viruses are nonliving particles that must have a cell to reproduce.

Inside this issue:

Protists

PROTISTS are organisms that are considered **eukaryotes**, so they have a nucleus and membrane-bound organelles. The kingdom that is made of protists can actually be broken down into other groups. We studied **animal-like protists** and **plant-like protists.**

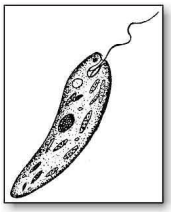
Animal-like protists feed off other organisms. We discussed amoebas and parameciums in this group.

Amoebas (like the picture to the left) are protists that get their food by feeding off other organisms. An amoeba moves and takes in its food using **pseudopods**, which are bulges in the cytoplasm.

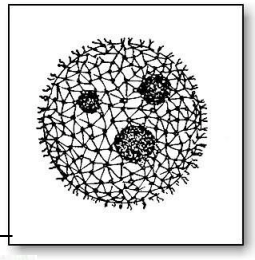
Parameciums (pictured below) are unicellular protists that are often found in ponds. They feed off other organisms by using a structure called an oral groove and move using tiny hairs called **cilia**.

Gina Mikel, www.scientificillustrator.com

Plant-like protists can make their own food. We discussed the volvox and euglena.



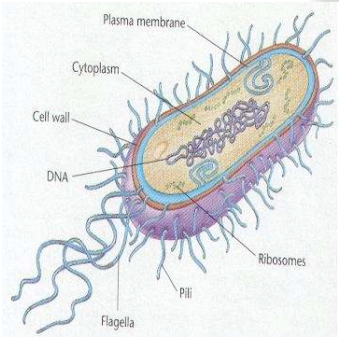
Euglena (to the right) are protists that can make their own food; however, they ALSO have the ability to feed off other organisms. They move using a whiplike tail called a **flagellum**.



Volvox (pictured below) is a unicellular protist that can make its own food using photosynthesis. Volvox move using two flagella and live in colonies (or groups of more than one volvox).

Bacteria

All bacteria are living organisms called **prokaryotes**. Prokaryotes are just cells that do not have a nucleus or membrane-bound organelles. All bacteria are protected by a **cell wall**. They also have ribosomes, a cell membrane, and cytoplasm.



Since bacteria don't have a nucleus, their genetic material floats in their cytoplasm.

All bacteria can be one of three shapes: spheres (called *coccus),* rods (called *bacillus),* and spiral (called *spirillum*).

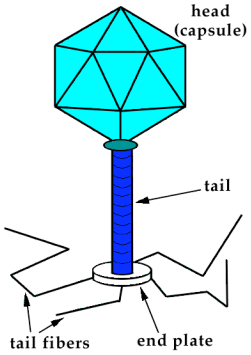
Viruses and Fungi

Viruses are nonliving particles that consist of a nucleic acid (either **DNA** or **RNA**) enclosed in a protein cell called a **capsid.**

Viruses are not living things-. They are not made of cells, and they have to be inside another cell to reproduce. They do not respond to anything in their environment, and they don't use energy for growth.

For a virus to take over the cell, a few things have to happen.

1. The proteins in the virus's capsid have to match up to the proteins in the cell membrane.
2. The virus inserts its genetic information into the cell it is taking over.
3. The cell begins producing virus parts.
4. The cell puts the virus parts together—at this point, the virus's genetic material has totally taken over the cell.
5. The cell bursts, and the new viruses go and infect other cells.



Fungi are living prokaryotes, so their cells don't have a nucleus, but they do have organelles. Fungi have a cell wall to protect their cells. In these ways, they are similar to bacteria.

Most fungi, however, get their food from acting as **decomposers** and feeding off dead organisms.

What Makes Something Alive?

We have talked about how viruses are not living, but how do we know?

Scientists have come up with a list of five characteristics that all living organisms have in common. **If something doesn't meet all five of these characteristics, it is not considered a living organism.** To be considered a living organism, something must::

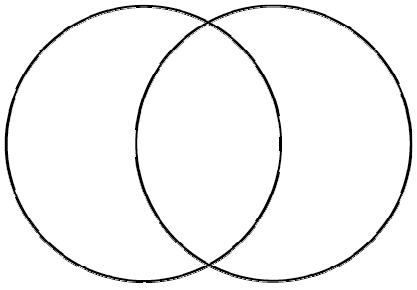
1. be made of cells.
2. perform certain chemical processes, like growing and digesting food.
3. reproduce.
4. make its own food or get food from its environment.
5. respond to stimuli in the environment, such as light and touch.

If something does not do all five of these things, it is not considered living. Protists, bacteria, and fungi are all living, but viruses are not considered alive because they are not made of cell and cannot reproduce without a host cell.

Being around microbes can make you sick if you aren't careful—for more information about this, see the newsletter about infectious disease and preventing diseases.

How do we compare microbes?

On the EOG, you will definitely see some questions that ask you to compare and contrast different microbes.



Remember, **compare** just means to say something that is the same. For example, if you are asked to compare bacteria and fungi, you could say that they are both **prokaryotes**, which means that their cells do not have a nucleus.

Also, don't forget— **contrast** just means to think of differences between two different things. For example, if you are asked to contrast a virus and an amoeba, you could say that an amoeba is alive while a virus is a nonliving particle.

To **compare and contrast** microbes, you could use a **Venn diagram**, like the one to the right. You simply list similarities in the overlapping part of the circles and differences in the two parts that do not overlap.

Inside Story Headline

This story can fit 150-200 words.

One benefit of using your newsletter as a promotional tool is that you can reuse content from other marketing materials, such as press releases, market studies, and reports.

While your main goal of distributing a newsletter might be to sell your product or service, the key to a successful newsletter is making it useful to your readers.

A great way to add useful content to your newsletter is to develop and write your own articles, or include a calendar of upcoming events or a special offer that promotes a new product.

You can also research articles or find "filler" articles by accessing the World Wide Web. You can write about a variety of topics but try to keep your articles short.

Much of the content you put in your newsletter can also be used for your Web site. Microsoft Publisher offers a simple way to convert your newsletter to a Web publication. So, when you're finished writing your newsletter, convert it to a Web site and post it.

Caption describing picture or graphic.

Inside Story Headline

This story can fit 100-150 words.

The subject matter that appears in newsletters is virtually endless. You can include stories that focus on current technologies or innovations in your field.

You may also want to note business or economic trends, or make predictions for your customers or clients.

If the newsletter is distributed internally, you might comment upon new procedures or improvements to the business. Sales figures or earnings will show how your business is growing.

Some newsletters include a column that is updated every issue, for instance, an advice column, a book review, a letter from the president, or an editorial. You can also profile new employees or top customers or vendors.

"To catch the reader's attention, place an interesting sentence or quote from the story here."

Inside Story Headline

This story can fit 75-125 words.

Selecting pictures or graphics is an important part of adding content to your newsletter.

Think about your article and ask yourself if the picture supports or enhances the message you're trying to convey. Avoid selecting images that appear to be out of context.

Microsoft Publisher includes thousands of clip art images from which you can choose and import into your newsletter. There are also several tools you can use to draw shapes and symbols.

Caption describing picture or graphic.

Once you have chosen an image, place it close to the article. Be sure to place the caption of the image near the image.

Organization

Primary Business Address
Your Address Line 2
Your Address Line 3
Your Address Line 4

Phone: 555-555-5555
Fax: 555-555-5555
E-mail:
someone@example.com

Your business tag line here.

WE'RE ON THE WEB!

EXAMPLE.MICROSOFT.COM

This would be a good place to insert a short paragraph about your organization. It might include the purpose of the organization, its mission, founding date, and a brief history. You could also include a brief list of the types of products, services, or programs your organization offers, the geographic area covered (for example, western U.S. or European markets), and a profile of the types of customers or members served.

It would also be useful to include a contact name for readers who want more information about the organization.

Back Page Story Headline

This story can fit 175-225 words.

If your newsletter is folded and mailed, this story will appear on the back. So, it's a good idea to make it easy to read at a glance.

A question and answer session is a good way to quickly capture the attention of readers. You can either compile questions that you've received since the last edition or you can summarize some generic questions that are frequently asked about your organization.

A listing of names and titles of managers in your organization is a good way to give your newsletter a personal touch. If your organization is small, you may want to list the names of all employees.

If you have any prices of standard products or services, you can include a listing of those here. You may want to refer your readers to any other forms of communication that you've created for your organization.

You can also use this space to remind readers to mark their calendars for a regular event, such as a breakfast meeting for vendors every third Tuesday of the month, or a biannual charity auction.

If space is available, this is a good place to insert a clip art

Caption describing picture or graphic.

image or some other graphic.