Harmful and Beneficial Microorganisms

Read the “Microlife” books

EQ: How can a microorganism be both harmful and beneficial?
What is a microorganism?

- A *microorganism* is an organism that can be seen only with the aid of a microscope. They include bacteria, protozoans, algae, and fungi.

- *Beneficial microorganisms* produce a favorable result. They are helpful and useful.

- *Harmful microorganisms* are likely to have a damaging result. They are often called germs.
Bacteria—Harmful or Beneficial?

- Both!
- Read about Bacteria on page 16-17.

Fungi—Harmful or Beneficial?

- Both!
- Read about Fungi on page 18-19.

- *A fungus* (fungi is the plural) is neither a plant nor an animal.
Hidden Helpers in our Body

- Billions of bacteria in our bodies live in our intestines—more than 100 different kinds! (There is enough bacteria in you to fill three coffee cups!)
- These bacteria help us digest our food to get nutrients.
- Other bacteria make vitamins to help keep us healthy and disease-free.
Bacteria In the Air

- Some bacteria float in the air and land on us.
- The helpful ones leave behind substances that keep harmful bacteria off of our skin.
- Harmful bacteria on our skin can cause sores or pimples.
- Harmful bacteria on our hands can transfer to food when we handle it to eat it.
- This is why washing your hands is SO IMPORTANT!!

- Other bacteria enter our body when we breathe. They can get into the nose, mouth, throat, and chest. As always, some are good, and some are bad.
Other ways Microorganisms are Beneficial

- Cleaning Water
- Making Medicine
- Making Cheese, Yogurt, and Bread
Clean Water... “Thank you, Bacteria.”

- To have clean drinking water, a process called filtering occurs.
- At a treatment center, the water filters through sand and stone to catch all the pieces of dirt in it.
- Then the water is exposed to living bacteria that eat or destroy any harmful substances that may still be found in the water.
Bacteria and fungi are grown in large tanks called bio-vats.

In these bio-vats, the microlife float, grow, and feed in a watery liquid. When necessary, some of the liquid is taken from the tanks and medicine is made.

For example, E. coli is a bacteria that can be made into a medicine called insulin. Insulin helps people that have a disease called diabetes.

Penicillin is made from a fungus called Penicillium. Penicillin is used to make antibiotics that kill harmful bacteria.
Yummy Food...“Thank you, Microlife.”

• Yeast in bread is what helps it to rise. Yeast is a fungus.
• Mold, another type of fungus, helps to flavor the different kinds of cheeses we eat.
• Bacteria that is put in milk changes the milk to be thicker and slightly sour. Yogurt bacteria helps our bodies get more nutrients from other foods we eat.
Beneficial Bacteria—Example: Activia

- *Activia* yogurt from Dannon has a bacteria in it called **Bifidus Regularis** that is supposed to help regulate your digestive system.
- “There are as many as five hundred **bacterial** species in the **colon** alone, including bifidobacteria only available in Activia.”
- These bacteria are called **probiotics**. “What are probiotics?”
- Probiotics are living microorganisms that, upon ingestion in sufficient numbers, exert health benefits beyond basic nutrition.”
Harmful Microorganisms...Mold.

- Some mold can be beneficial microorganisms (like the ones that make cheese), but some types of mold are also harmful and will make you sick if you eat them.
- Mold is a fungus.
- Leave out a piece of bread... watch how quickly mold will grow on the bread

← YUCK!!!
Viruses

- Viruses are the smallest of ALL LIVING THINGS.
- They get into our bodies on food, through cuts on the skin, or by breathing them in through the air. Some examples of viruses are colds, the flu, chickenpox, and warts.
- To help our bodies fight off viruses, we get shots called vaccinations.
- Vaccines put a small amount of the germ into our bodies so our bodies get used to fighting it off.
- (One million viruses could fit on the period at the end of one your sentences on your paper.)
Bacteria on your teeth

- Bacteria live in your mouth.
- They like to feed on old food stuck in your teeth.
- As they feed, they make an acid that makes teeth soft and decay. This causes cavities (holes in your teeth).
- Their favorite foods are sweet, sugary foods.
- This is why brushing your teeth is so important!!
A mushroom looks up at a kid playing soccer. He asks, “Hey, can I play?”
The kid says, “Nope.”
The mushroom replies, “Why not? I’m a Fungi.”
Harmful Fungi

- Fungi are related to mushrooms, but the kind that we get on our skin is a type of microlife. (It’s like mold for people.)
- Rashes like ringworm and athlete’s foot are fungi that can live and grow on our skin.
- The rashes are red and itchy and can be treated by an anti-fungal cream from the doctor.
Fleas, Mites, Ticks, and Lice

- Fleas, mites, lice, and ticks are all examples of microlife.
- They are tiny bugs that suck blood from other creatures.

Lice.  Mite  Flea  Tick
Did You Know?

- “Most antibiotics are broad-spectrum, meaning they knock out many different types of bacteria. This also means that they can’t tell good bacteria from bad. We’ve had antibiotic medicines for a little over half a century, but in that time some bacteria have developed resistance to just about every antibiotic invented. The overuse of antibiotics in recent years is also causing problems.”

- Source: [http://school.discoveryeducation.com/curriculumcenter/bacteriaprojectideas.html](http://school.discoveryeducation.com/curriculumcenter/bacteriaprojectideas.html)

- So, it is possible to be “too clean.”