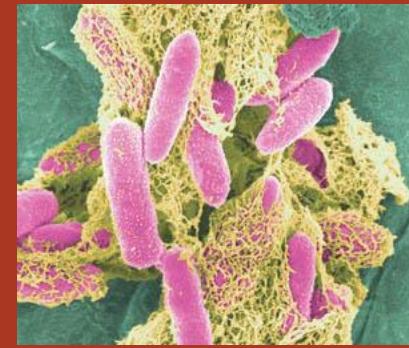


Introduction to Bacteria



What are bacteria?

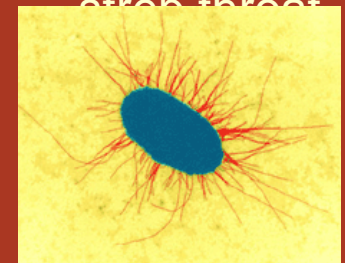
- Single celled organisms
- Very small
- Need a microscope to see
- Can be found on most materials and surfaces
 - Billions on and in your body right now



E. Coli O157:H7
can make you
very sick



Streptococcus
can cause
strep throat



This *E. coli* helps you
digest food.

What do they look like?

- Three basic shapes
 - Rod shaped called bacilli (buh-sill-eye)
 - Round shaped called cocci (cox-eye)
 - Spiral shaped



Bacilli

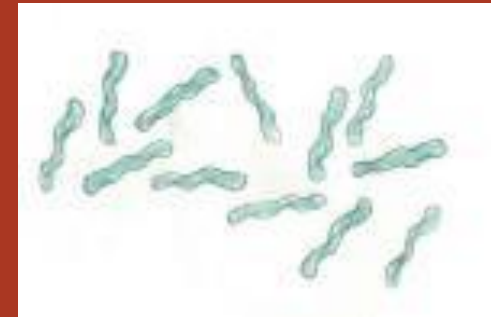


Cocci

- Some exist as single cells, others cluster together

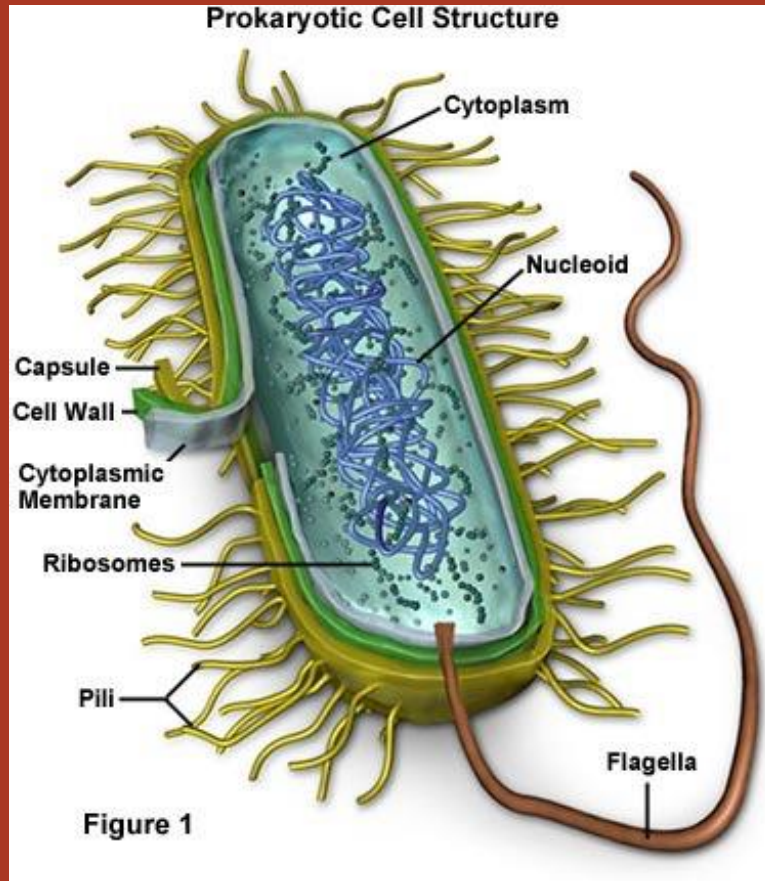


Cluster of cocci



Spiral

Bacteria are **ALIVE!**



- They reproduce (make more of themselves)
- They need to eat

How do bacteria reproduce?

- Grow in number not in size
 - Humans grow in size from child to adult
- Make copies of themselves by dividing in half



How do bacteria eat?

- Some make their own food from sunlight—like plants
- Some are scavengers
 - Share the environment around them
 - Example: The bacteria in your stomach are now eating what you ate for breakfast
- Some are warriors (pathogens)
 - They attack other living things
 - Example: The bacteria on your face can attack skin causing infection and acne



Photosynthetic
bacteria



Harmless bacteria
on the stomach
lining



E. coli O157:H7
is a pathogen

What is a pathogen?

- Bacteria that make you sick

– How do they make you sick?

- They produce poisons (toxins) that result in fever, headache, vomiting, and diarrhea
• Some toxins destroy body tissue





Indirect contact

Where do you get a pathogen?

- Contact with people who are sick
 - Direct or indirect
- Food, Water, or other Surfaces that are contaminated

Foods that could be contaminated



Direct contact

A Closer Look – Where do you get a pathogen



Indirect Contact



Direct Contact



Foods and water may be contaminated



Are all bacteria pathogens?

- No, most are harmless
- Some are even helpful
 - Examples of helpful bacteria:



- Lactobacillus: makes cheese, yogurt, & buttermilk and produces vitamins in your intestine



- Leuconostoc: makes pickles & sauerkraut

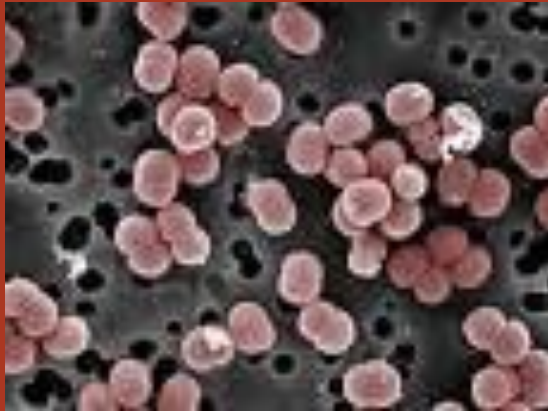


- Pediococcus: makes pepperoni, salami, & summer sausage



A Closer Look – Helpful Bacteria

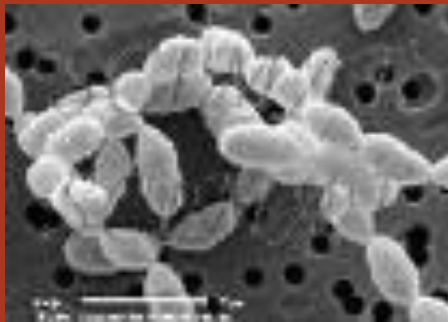
www.bioweb.usu.edu



Pediococcus - used in production of fermented meats



Lactobacillus casei – found in human intestines and mouth to improve digestion



Leuconostoc cremoris – used in the production of buttermilk and sour cream



Lactobacillus bulgaricus – used in the production of yogurt

What are some common pathogens?

- Pathogenic *E. coli*
(like O157:H7)

- Found in ground beef, contaminated fruits and vegetables

E. coli
O157:H7



- *Salmonella*

- Found in raw meats, poultry, eggs, sprouts, fruit and vegetables



Salmonella

- *Listeria*

- Found in deli foods, lunch meats, smoked fish and vegetables



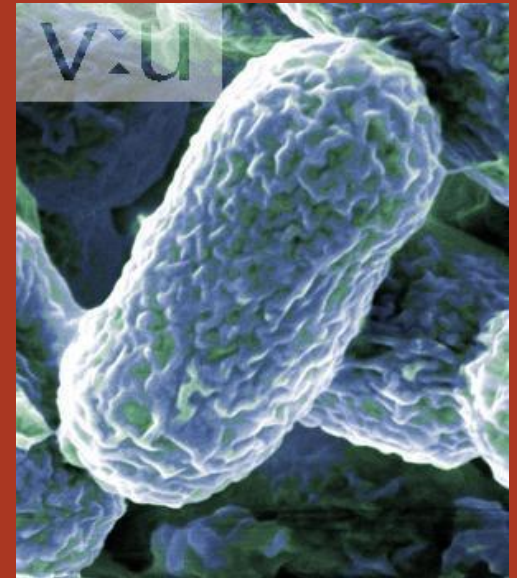
Listeria

Examples of Pathogens

Salmonella



E. coli O157:H7



Staphylococcus aureus



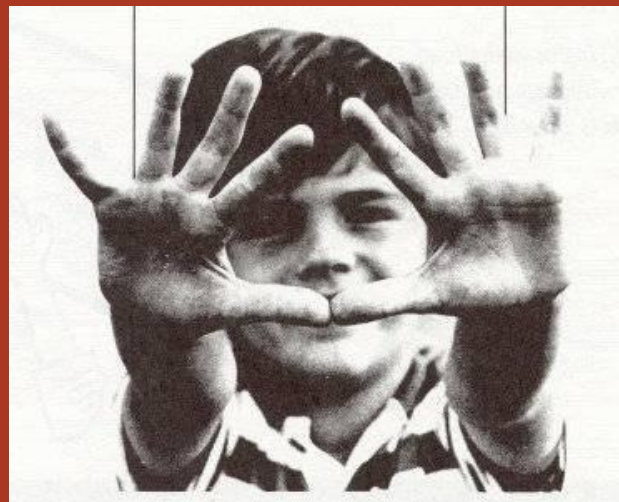
What shape are these bacteria?
Cocci, bacilli, or spiral?

Campylobacter jejuni



How can I avoid pathogens?

- Wash your hands often so you won't transfer bacteria to your mouth or food
 - Warm water with soap for 20 seconds, rub hard between fingers and nails



How can I avoid pathogens?

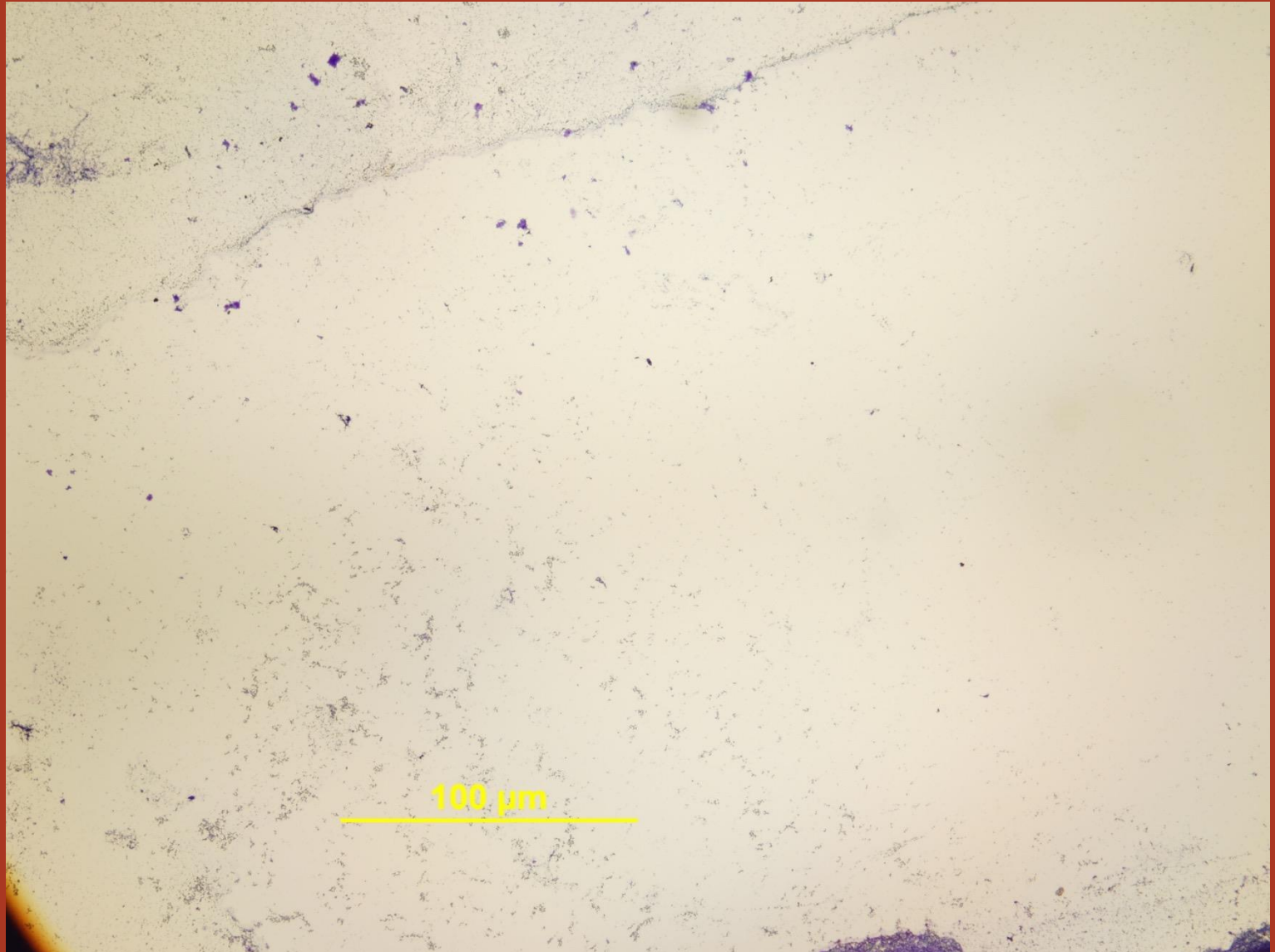
- Cook food thoroughly to kill any pathogens that may be in your food
- Store food properly to limit pathogen growth
 - Cold temperatures (40°F)



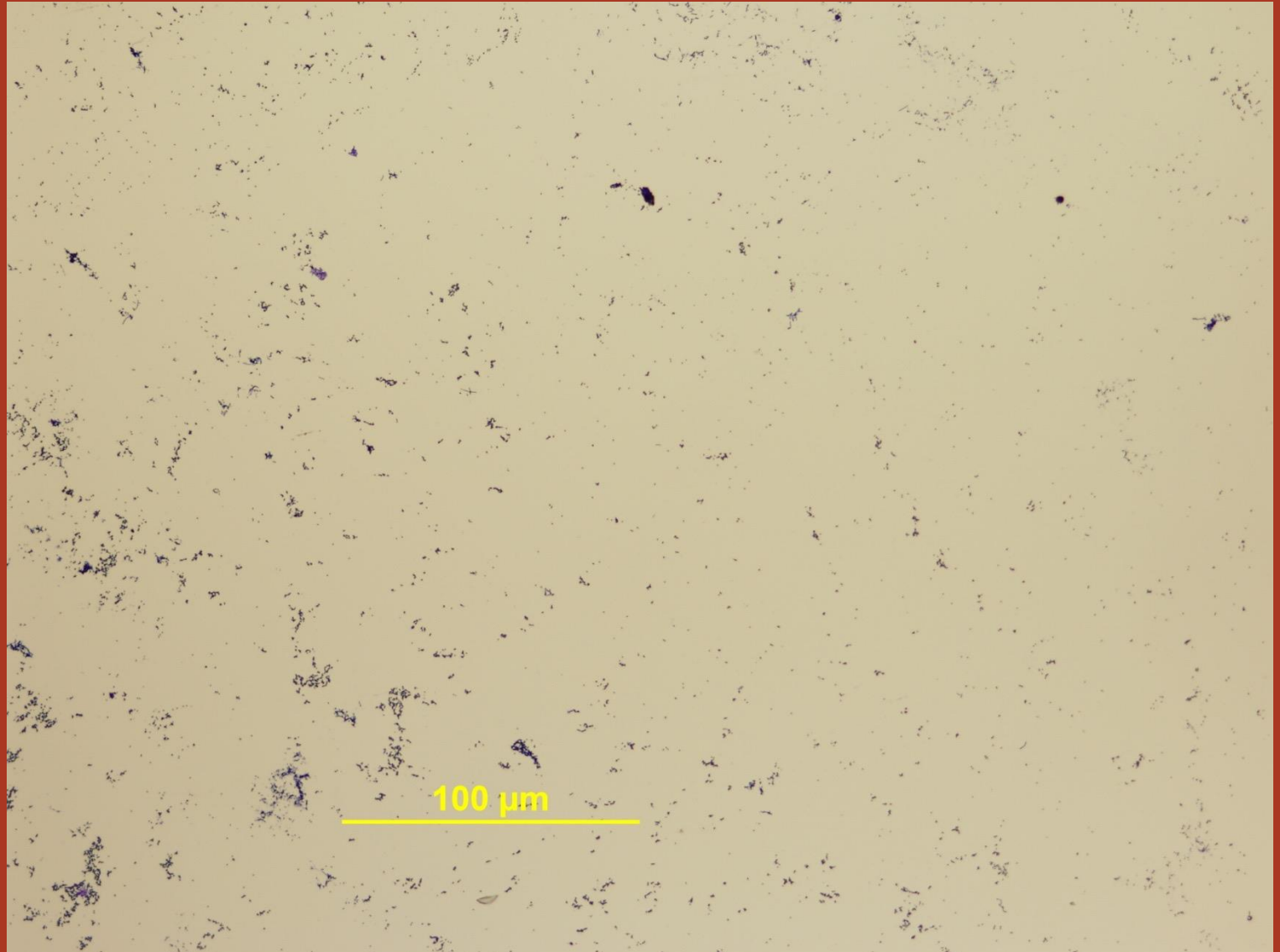
Review

- Bacteria are living organisms
- Most are harmless
- A few are pathogens that make you sick
- You can reduce the risk of getting sick by washing your hands and handling food properly.

Stained Bacteria Cells at 4x



Stained Bacteria Cells at 10x



Stained Bacteria Cells at 40x

