
BACTE
RIA

Kingdom Eubacteria (True Bacteria)

Bacteria are located **everywhere** – air, water, land, and living organisms including people.

General Characteristics:

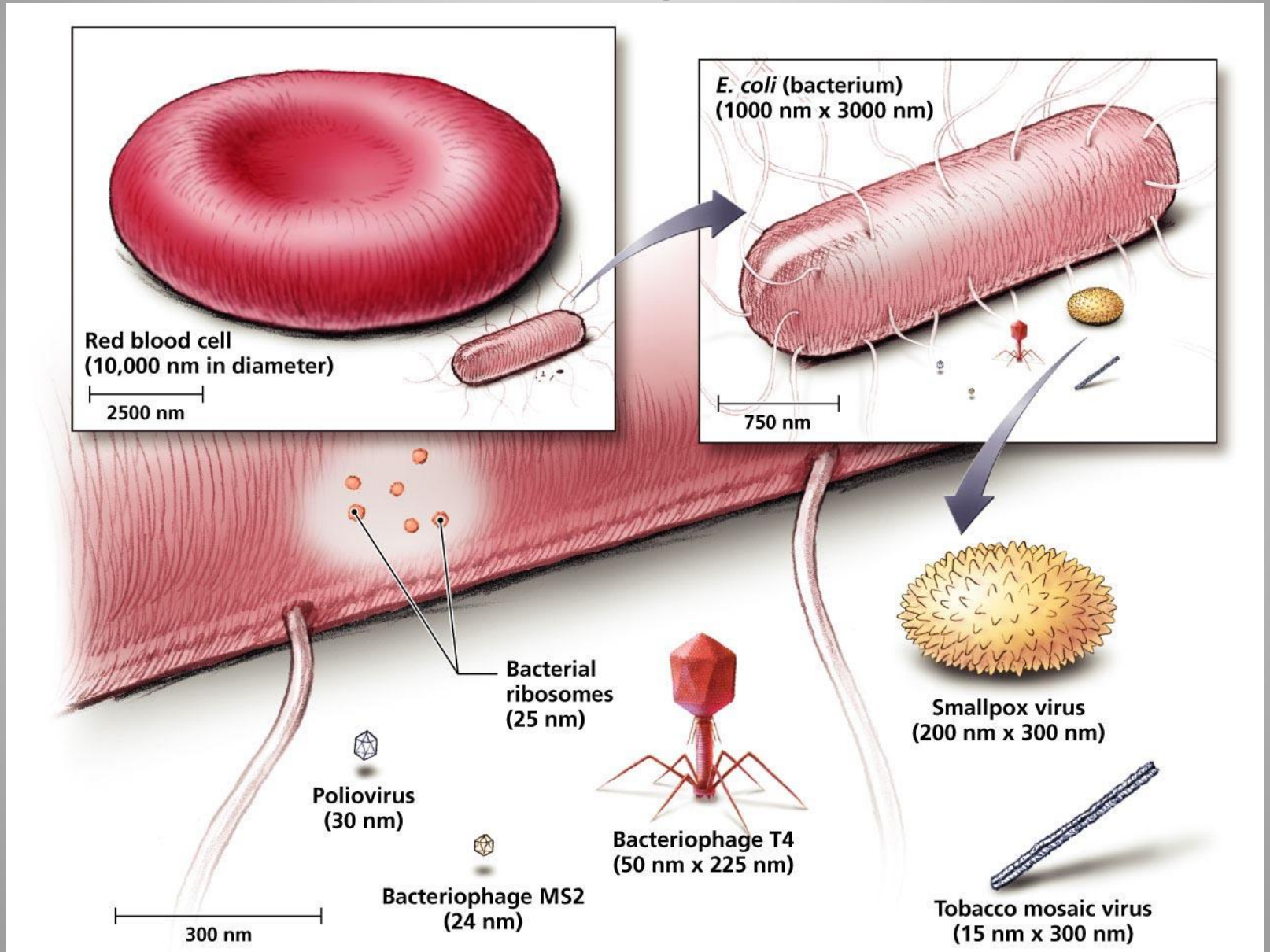
1. All are **unicellular** (**one-celled** structural level)

2. All are **prokaryotic** - cells that lack **nucleus** (no nuclear envelope) (**PRO = NO** nucleus)

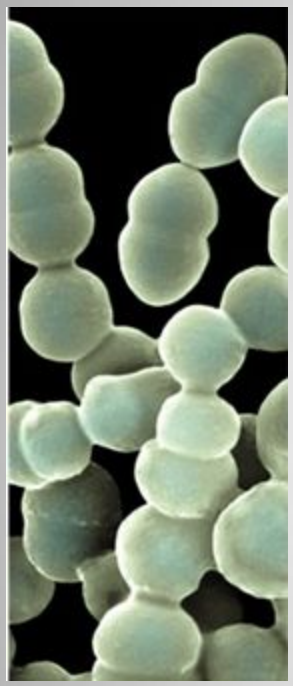
3. All have **cell walls** – NO **cellulose** in cell walls

4. Can live in both **aerobic** **(with O_2)** and **anaerobic** **(without O_2)** environments

5. Bacteria are much **larger** in size than viruses.

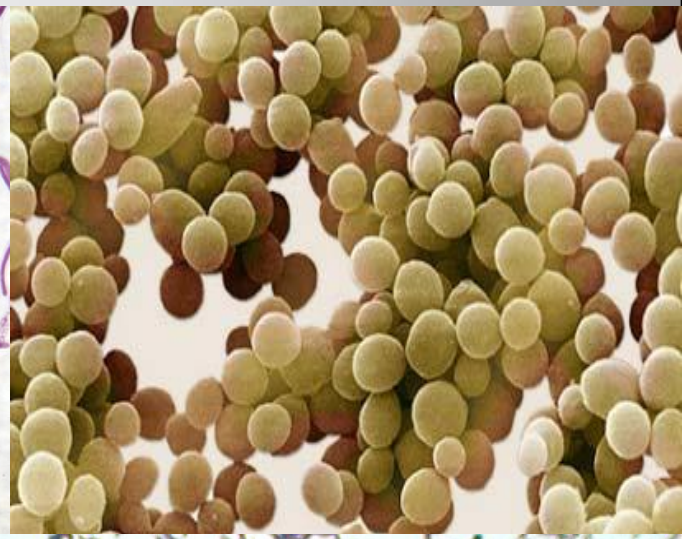


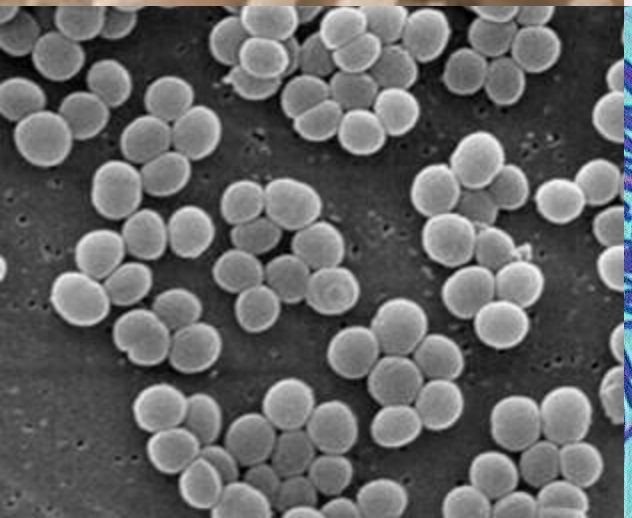
6. Bacteria usually have one of three different cell shapes:

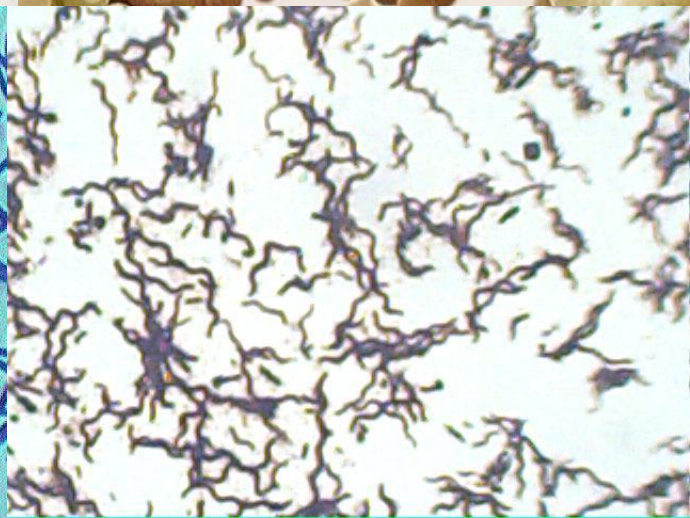


Coccus	Bacilli	Spirillum
(Sphere-shaped)	(rod-shaped)	(Spiral-shaped)
Ex: Streptococcus	Ex: Lactobacillus	Ex: Spirillium

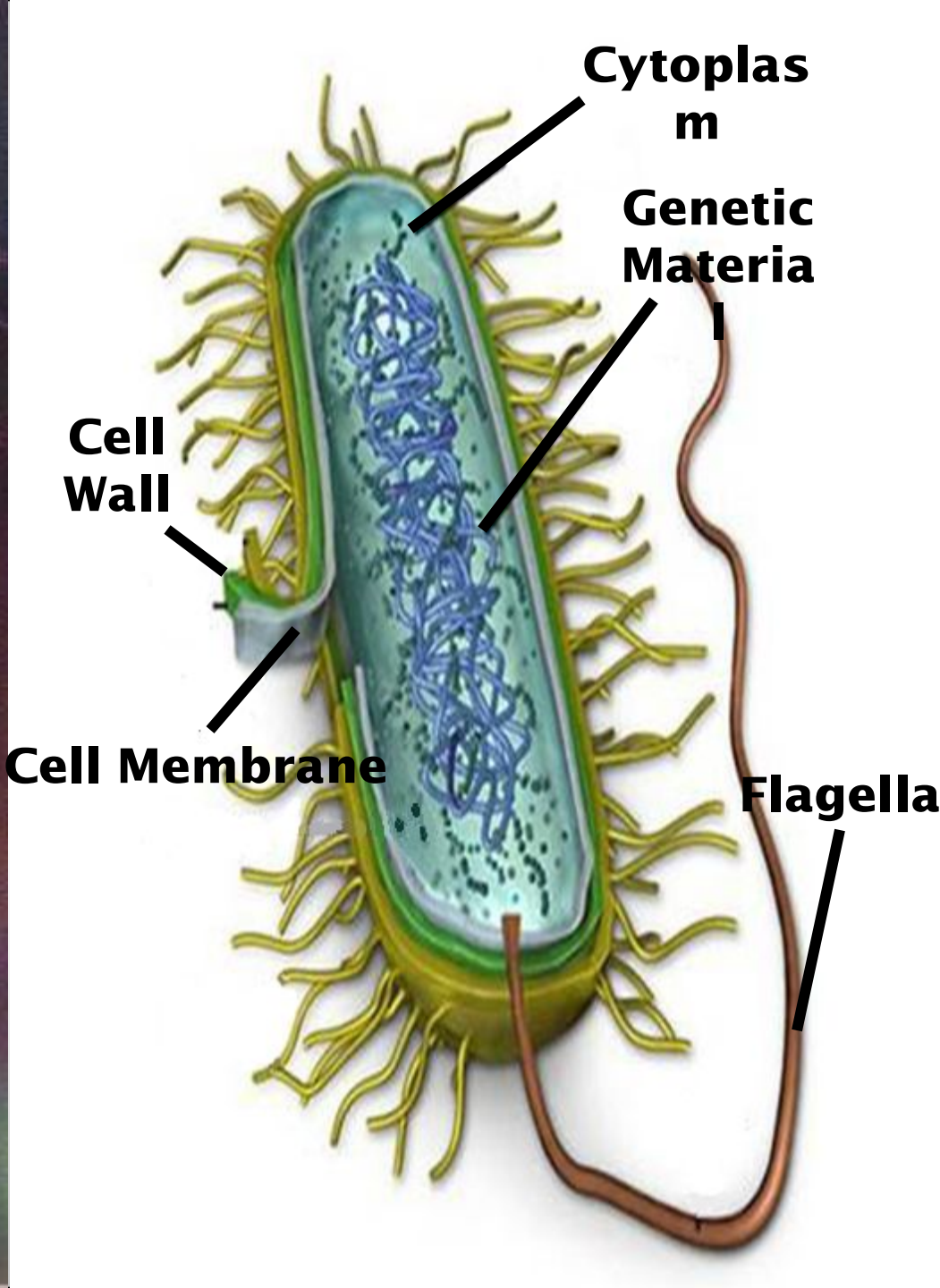
What shape?








Example:


Cytoplasm
Genetic Material
Cell Wall
Cell Membrane
Flagella

Causes Disease by:

1. **Destroying cells** of infected organisms by breaking the cells down for **food**.

2. Releases **toxins** (poisons) which **destroy** cells of infected organism.

3. Must have access to **new hosts** to spread.

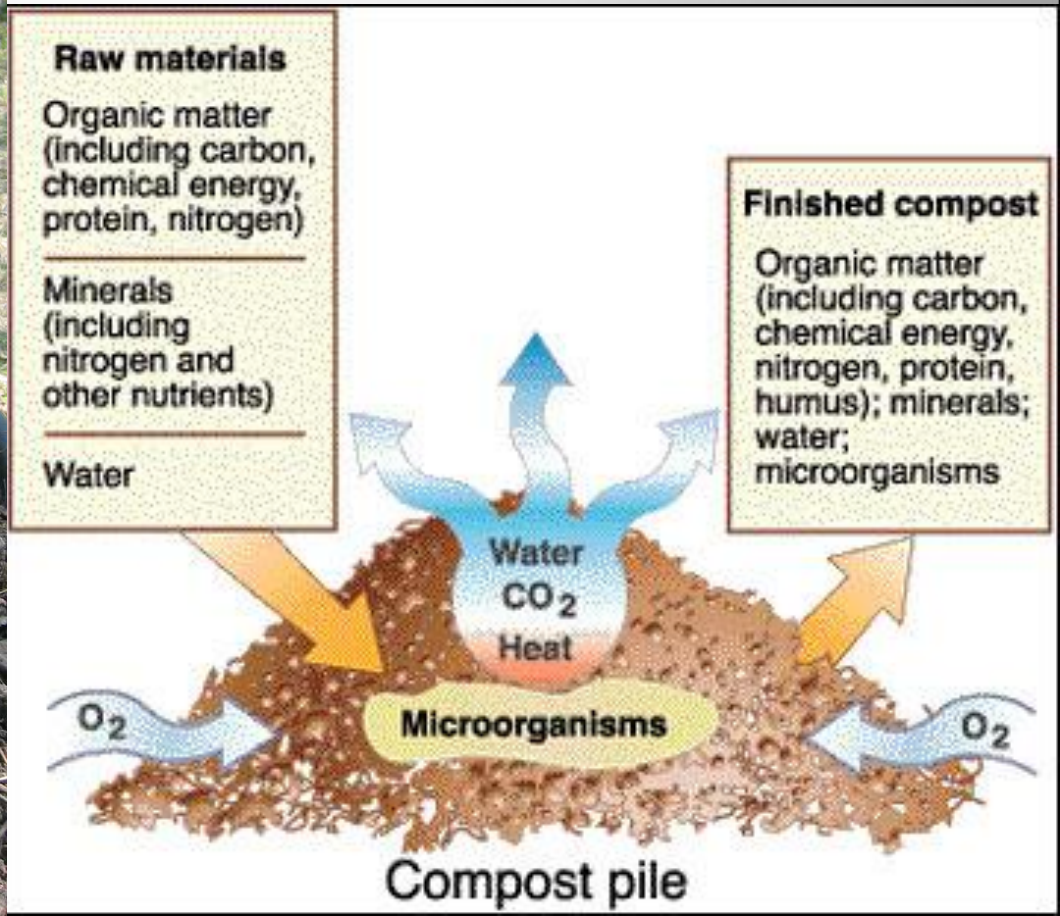
Different Hosts

D. Importance:

1. *Beneficial*

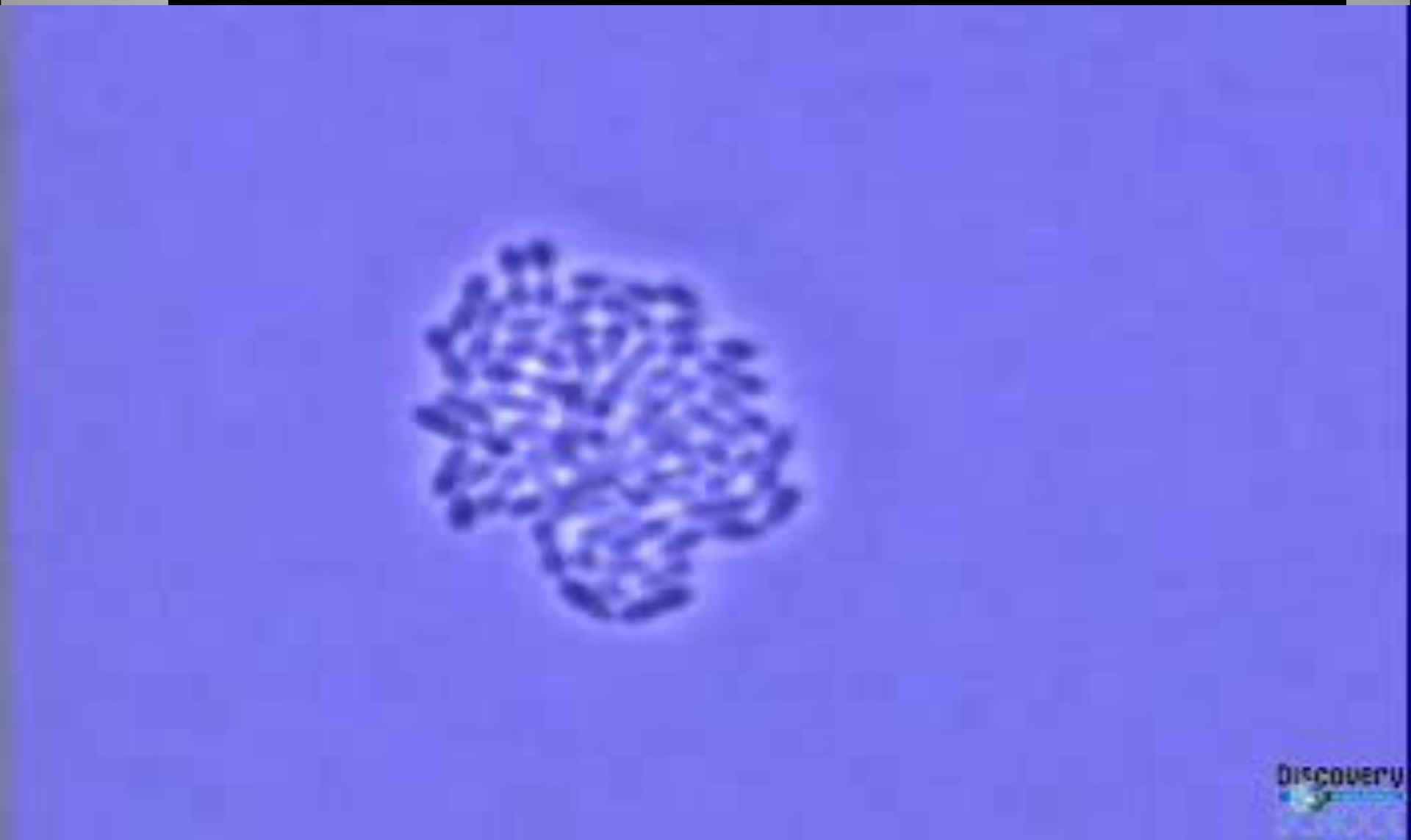
a. breakdown dead matter to <u>recycle nutrients</u> into ecosystem - <u>decomposers</u>

Example: Compost piles need microorganisms (ex. bacteria) to decompose (breakdown) matter.

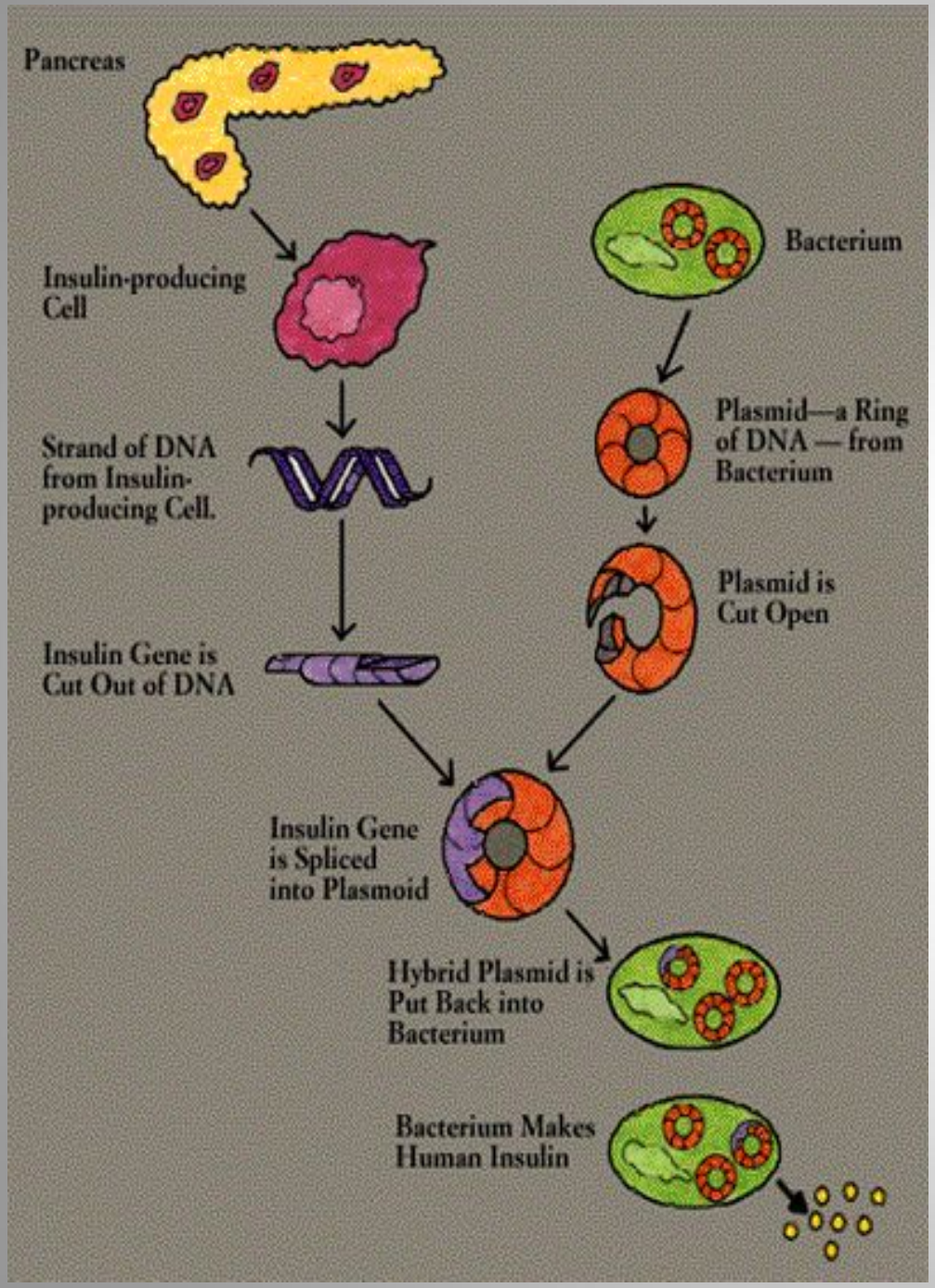


b. dairy industry - **bacteria in yogurt, sour cream and cheese**

2:08 minute video



c. Oil spills - <u>bacteria can digest small oil spills</u>



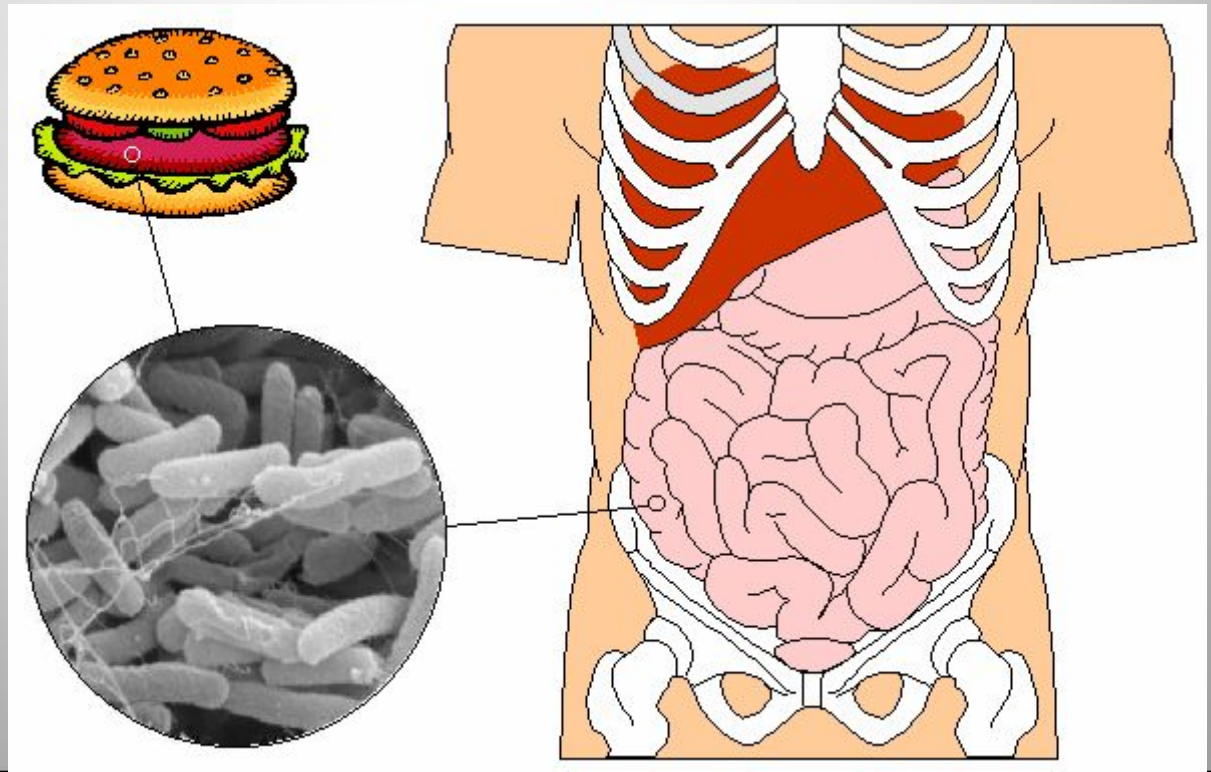
d. Genetic engineering—

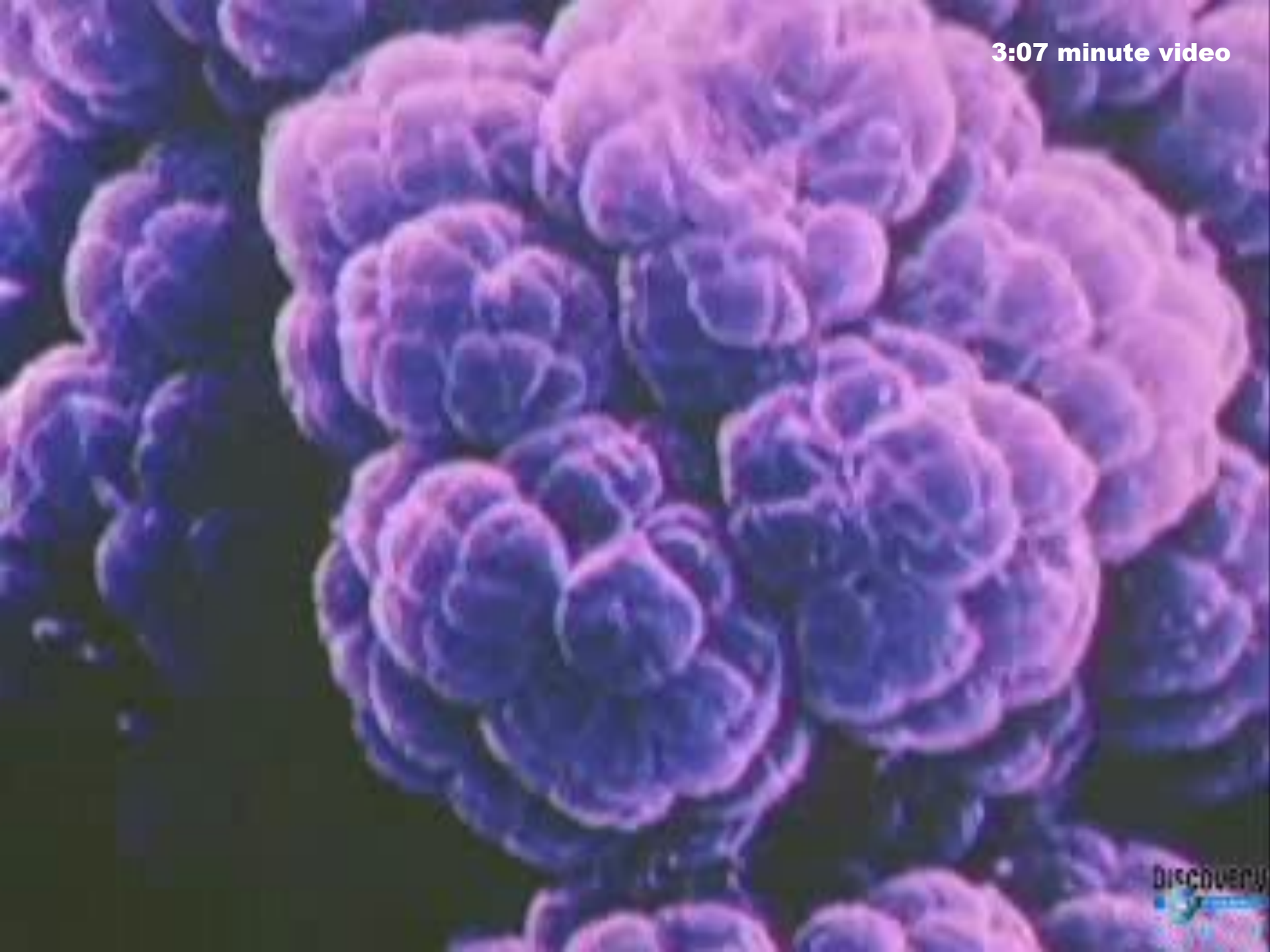
<u>Recombinant/synthetic DNA (Ex: Insulin)</u>

e. symbiotic relationship - *E. coli* and our intestines-both organisms benefit

Example: E. coli in intestines helps us digest food and make vitamins (such as Vitamin K and B-complex) In return, human intestines provide food and shelter for bacteria.

(This strain of *E. coli* is different from the *E. coli* strain that causes food poisoning.)



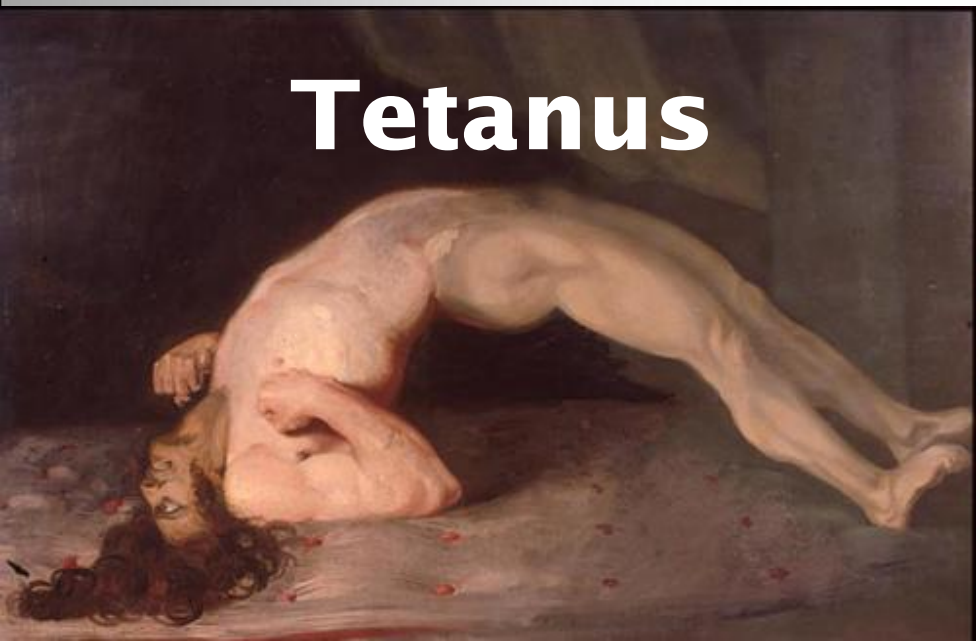

3:07 minute video

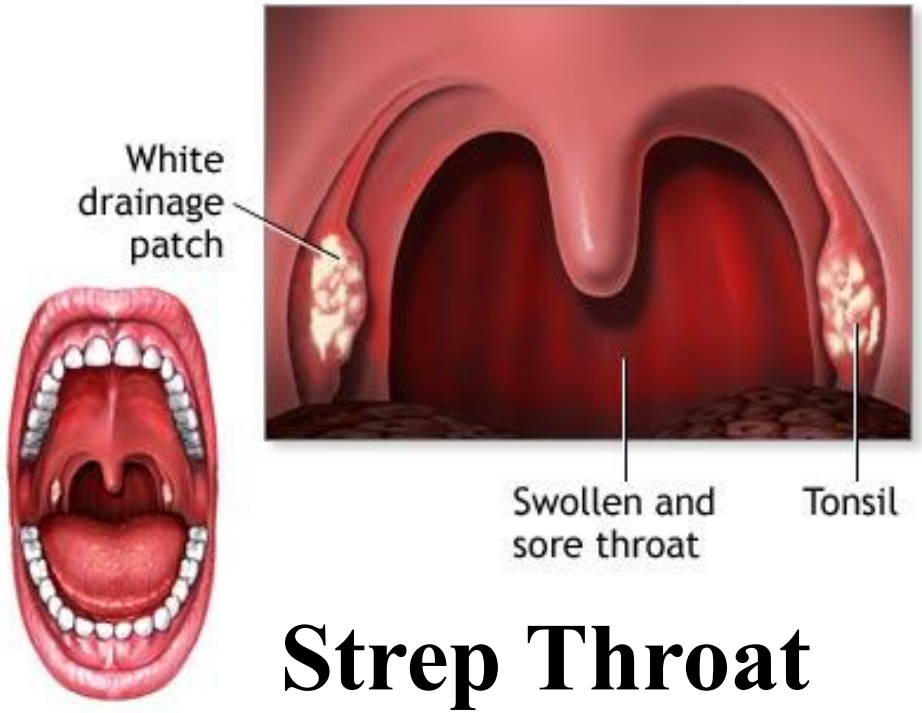
Harmful :

a.human diseases –

strep throat, tuberculosis, tooth decay and bad breath, anthrax, plague, tetanus, food poisoning

Anthrax

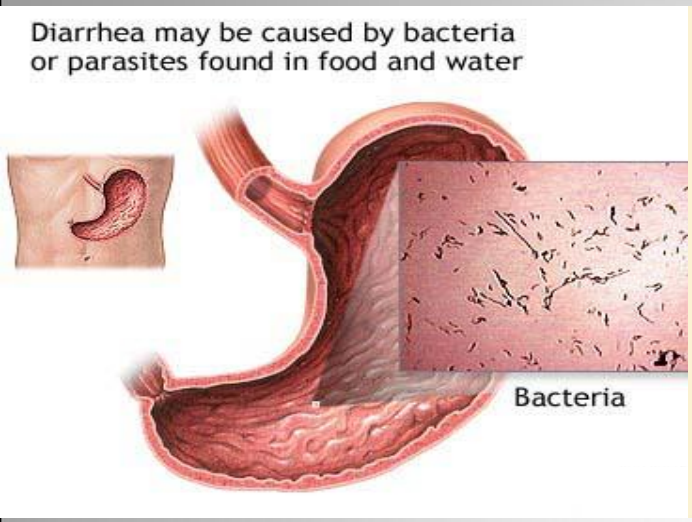


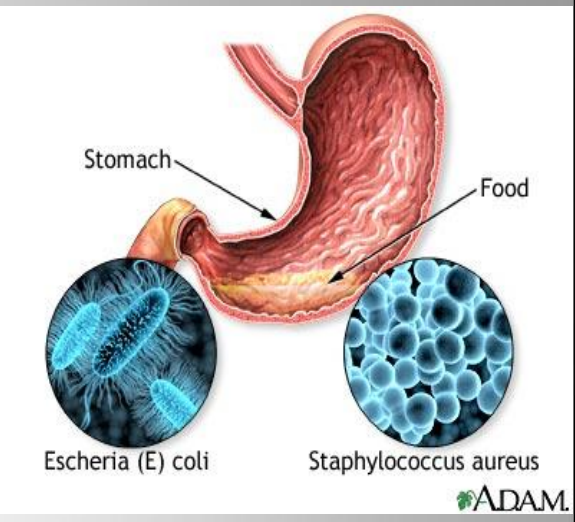


Strep Throat


3:15 minute video
Discovery

b. food spoilage and poisoning – caused by **Salmonella** and **Staphylococcus**





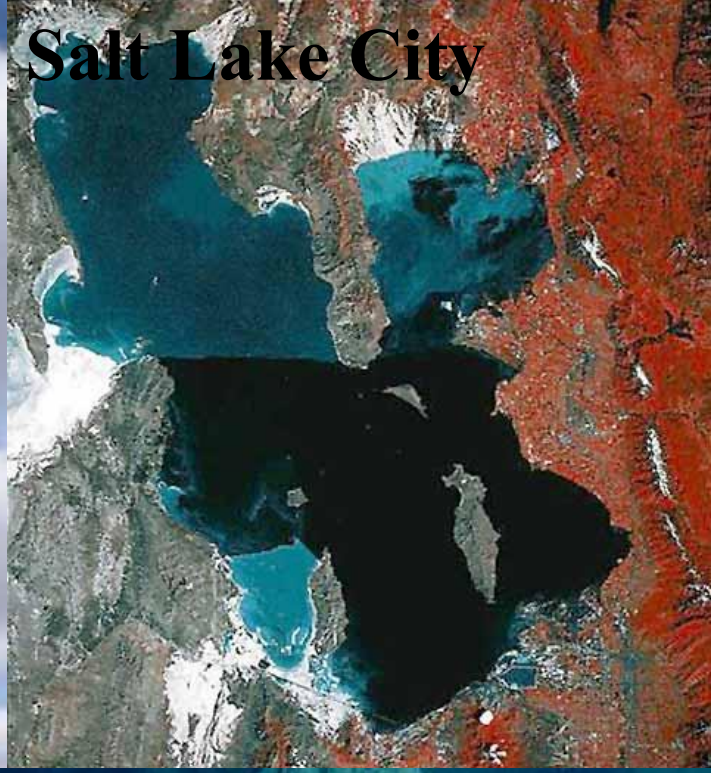
c. Treated with **antibiotics** – Some bacteria are able to survive in presence of antibiotics that kill other bacteria – **antibiotic resistant** bacteria

Note: This is why doctors tell you to take the entire amount of medicine given even if you start to feel better because if not, bacteria will have the chance to evolve and become antibiotic resistant.

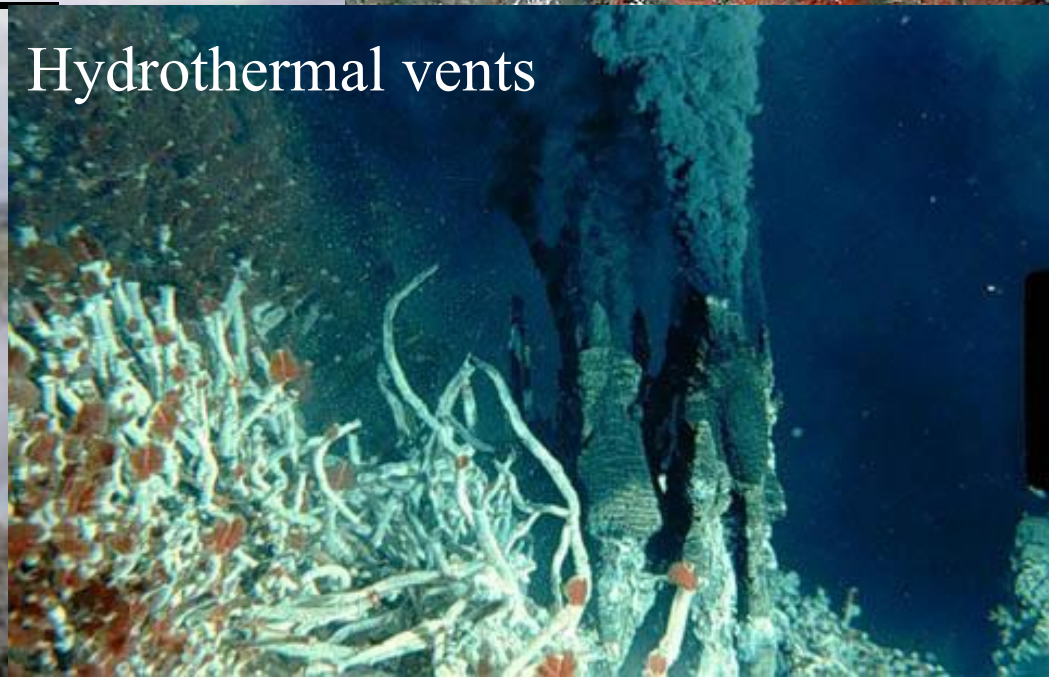
Kingdom Archaebacteria

a. First known **prokaryotes**- **Archaebacteria (archae=ancient)**

b. Live in very harsh environments (known as **extremophiles**)– **high salt content, hot temperatures, acidic or alkaline environments**



Salt Lake City



Hydrothermal vents

Geyser


3:12 minute video
Discovery

c. Live in **intestines** of animals, especially cows and other grazing animals – **methanogens**

Produce **methane** gas – greatly affects our **atmosphere** by combining with O_2 to make CO_2 for **photosynthesis**

methanogenic archaebacteria

d. Same size and shape as Eubacteria, but different biochemical makeup