

**Author(s):** Megan Nas, Julia Yager

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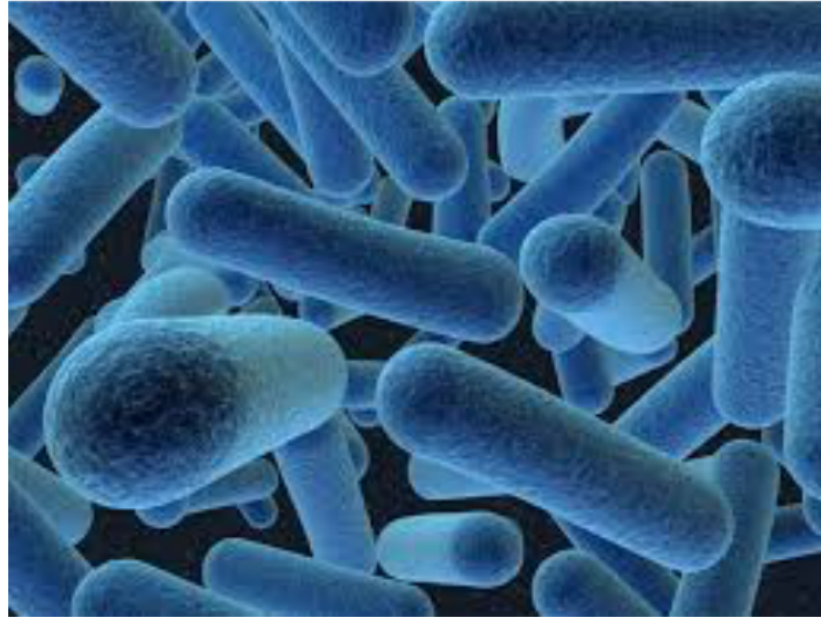
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# Microbiology Madness



with Megan and Julia

# **What is Microbiology?**



# What are bacteria?

[Where do they live?]

Are they good or bad?

Pathogenic vs Non-pathogenic

Where do they live?

Are they good or bad?

# Pathogenic vs Non-pathogenic

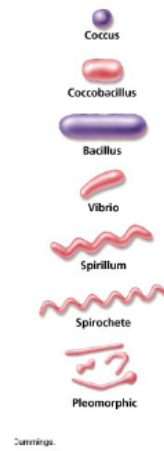




**2 teams..**

**Volunteers to draw on board?**

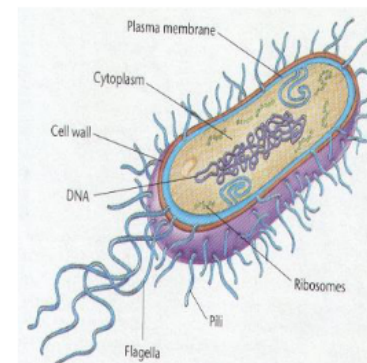
# Shape?



# Nucleus?

# Movement?

# Cell Wall?





**Coccus**



**Coccobacillus**



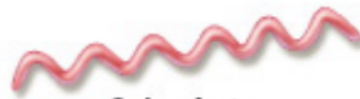
**Bacillus**



**Vibrio**



**Spirillum**



**Spirochete**



**Pleomorphic**

# Nucleus?

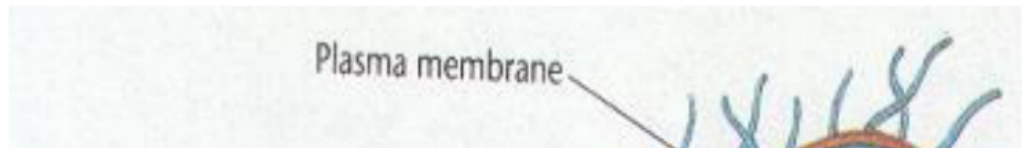


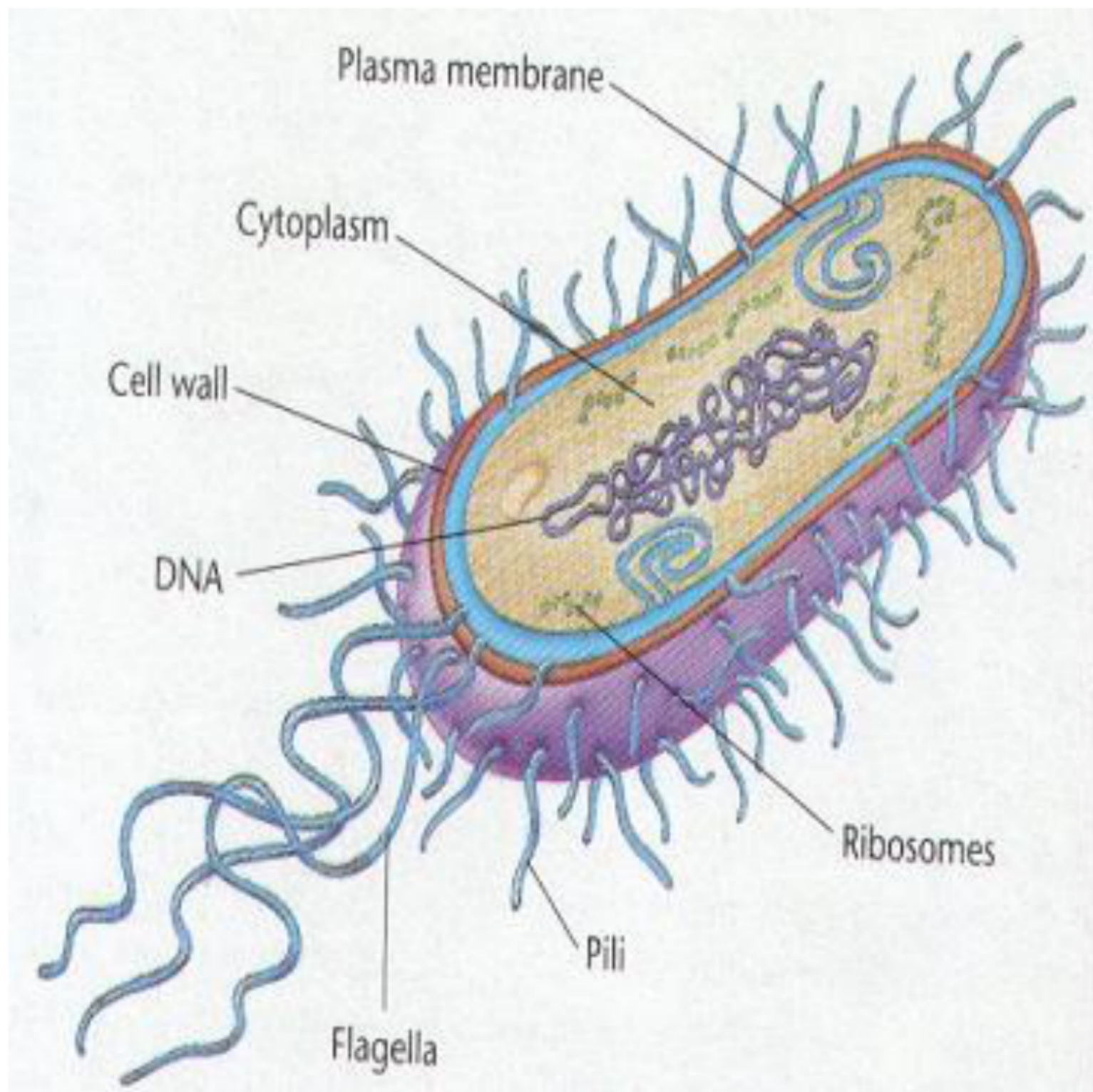


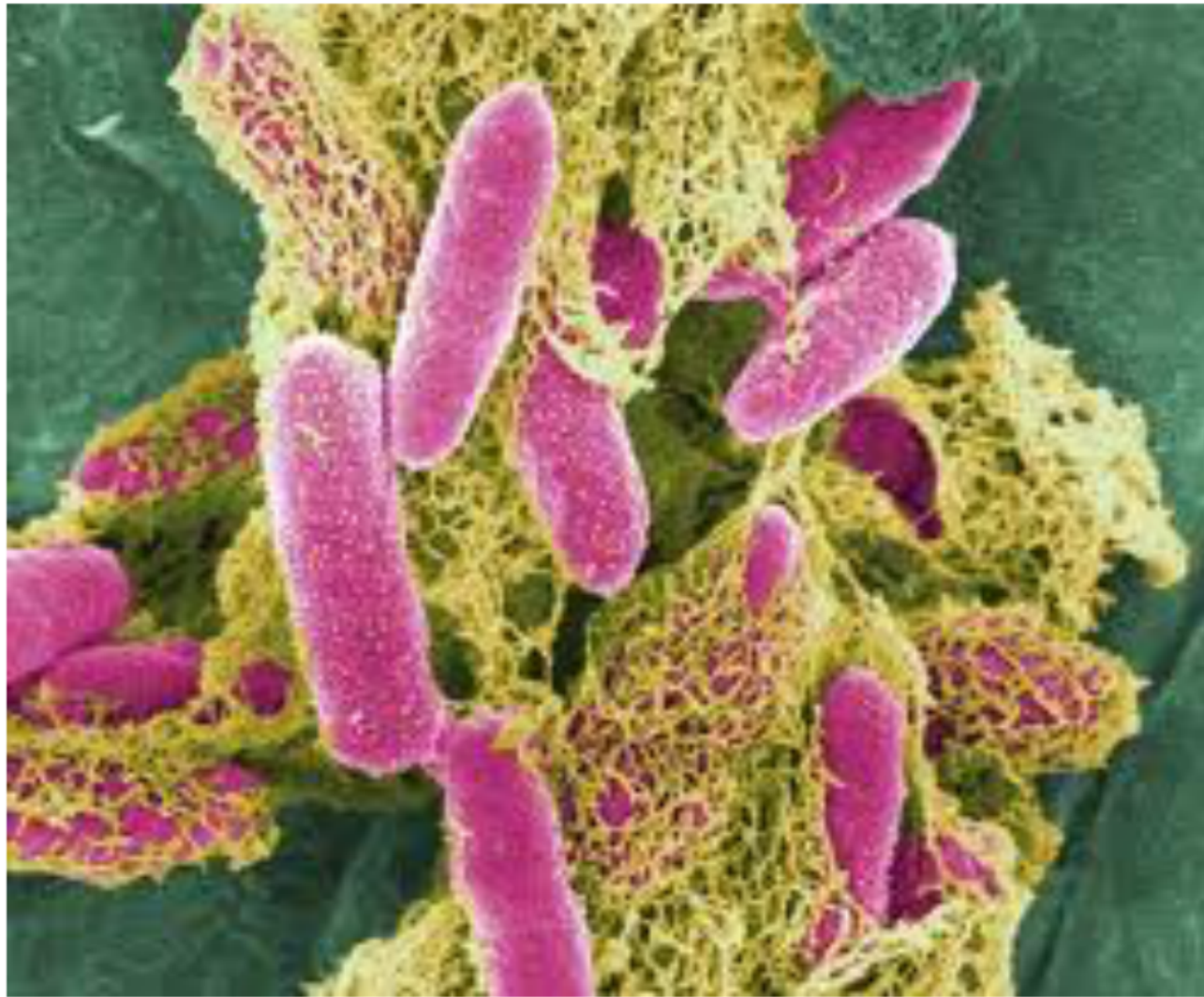
# Cell Wall?



# Movement?

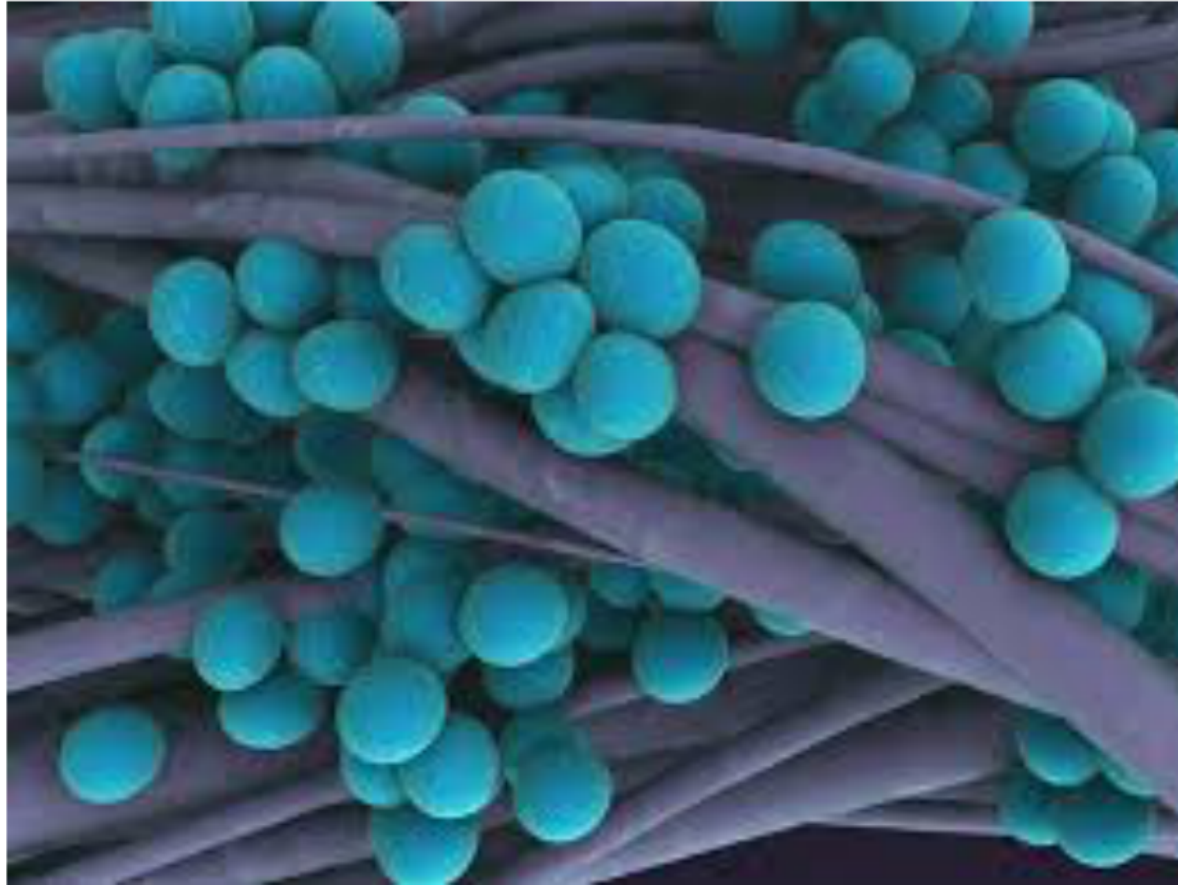






**Escherichia coli**

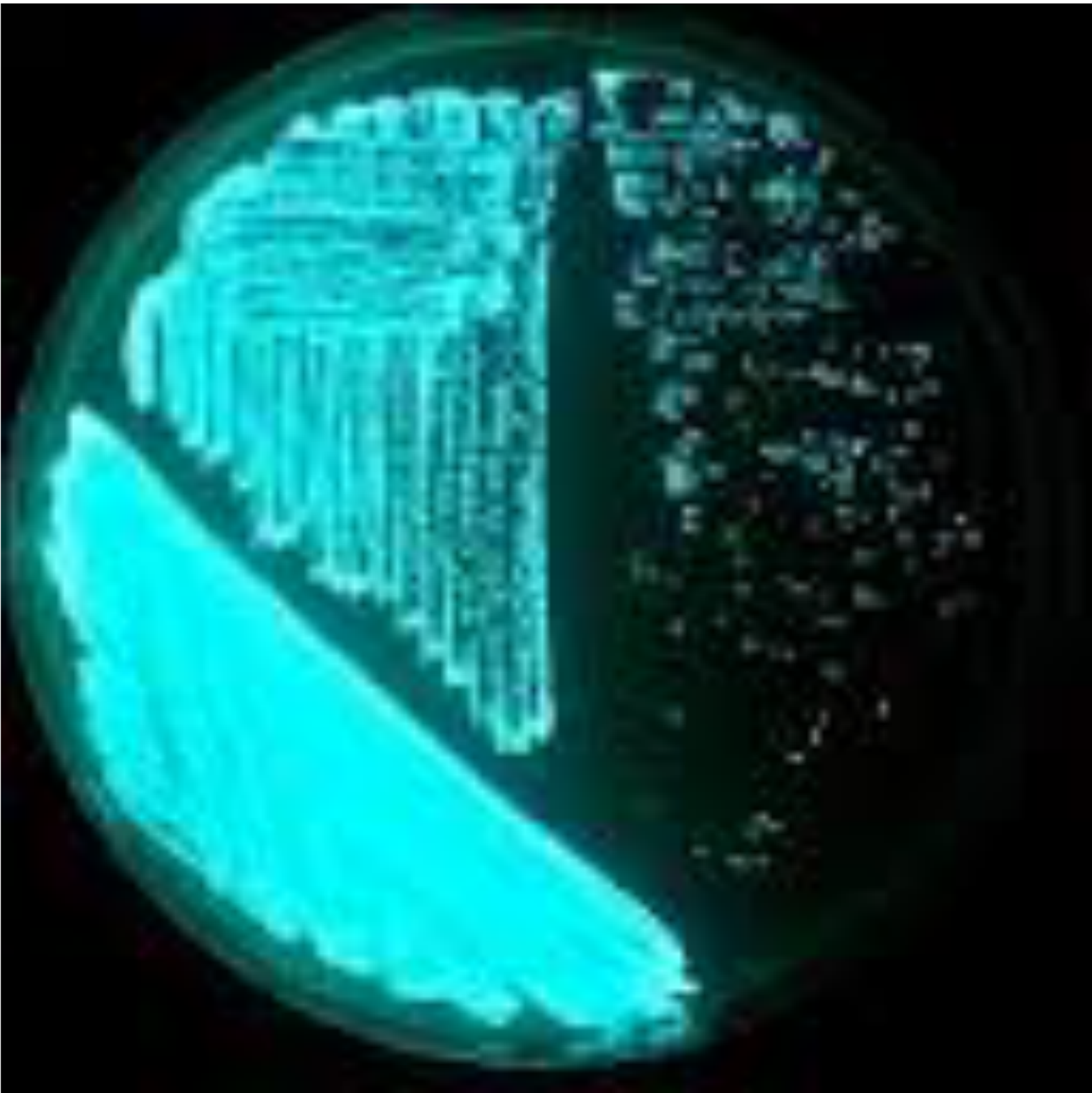




**Staphylococcus aureus**

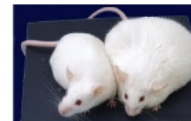
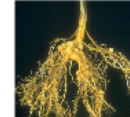








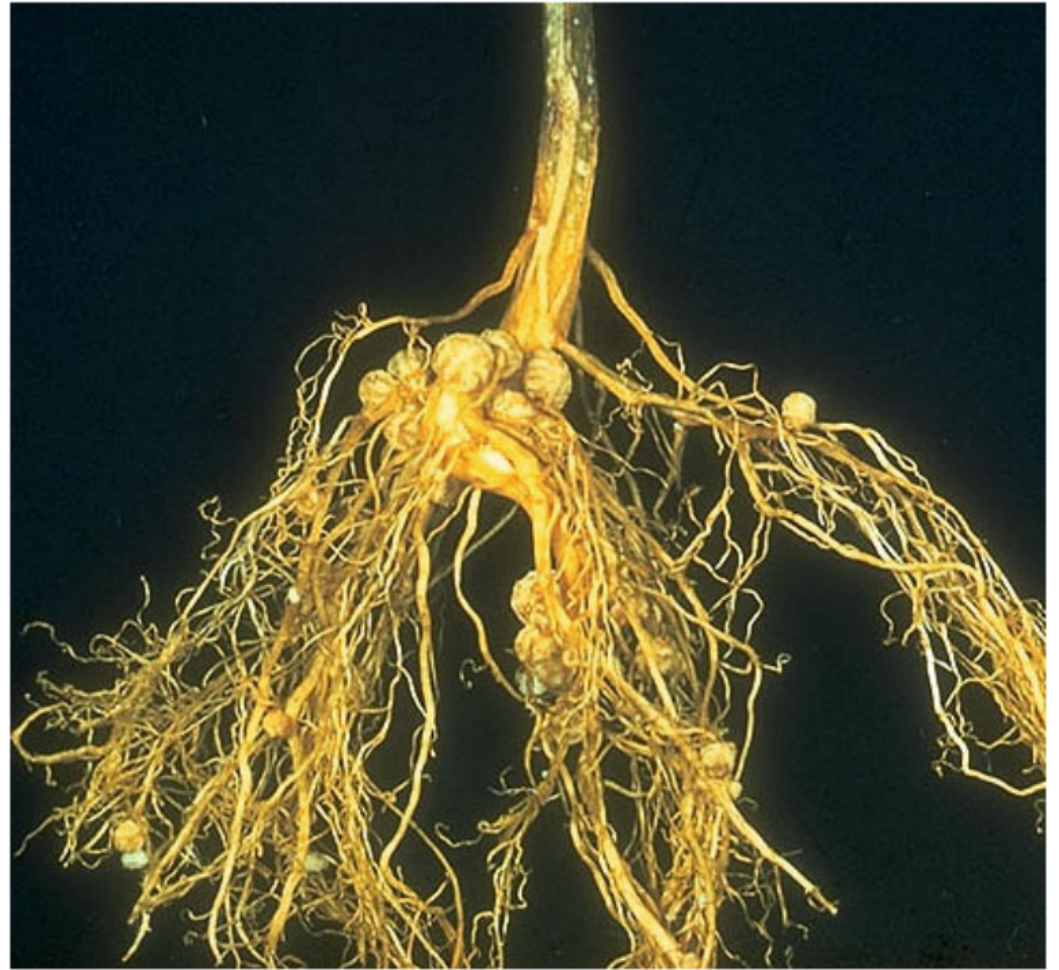
# Where else can we find microbes?



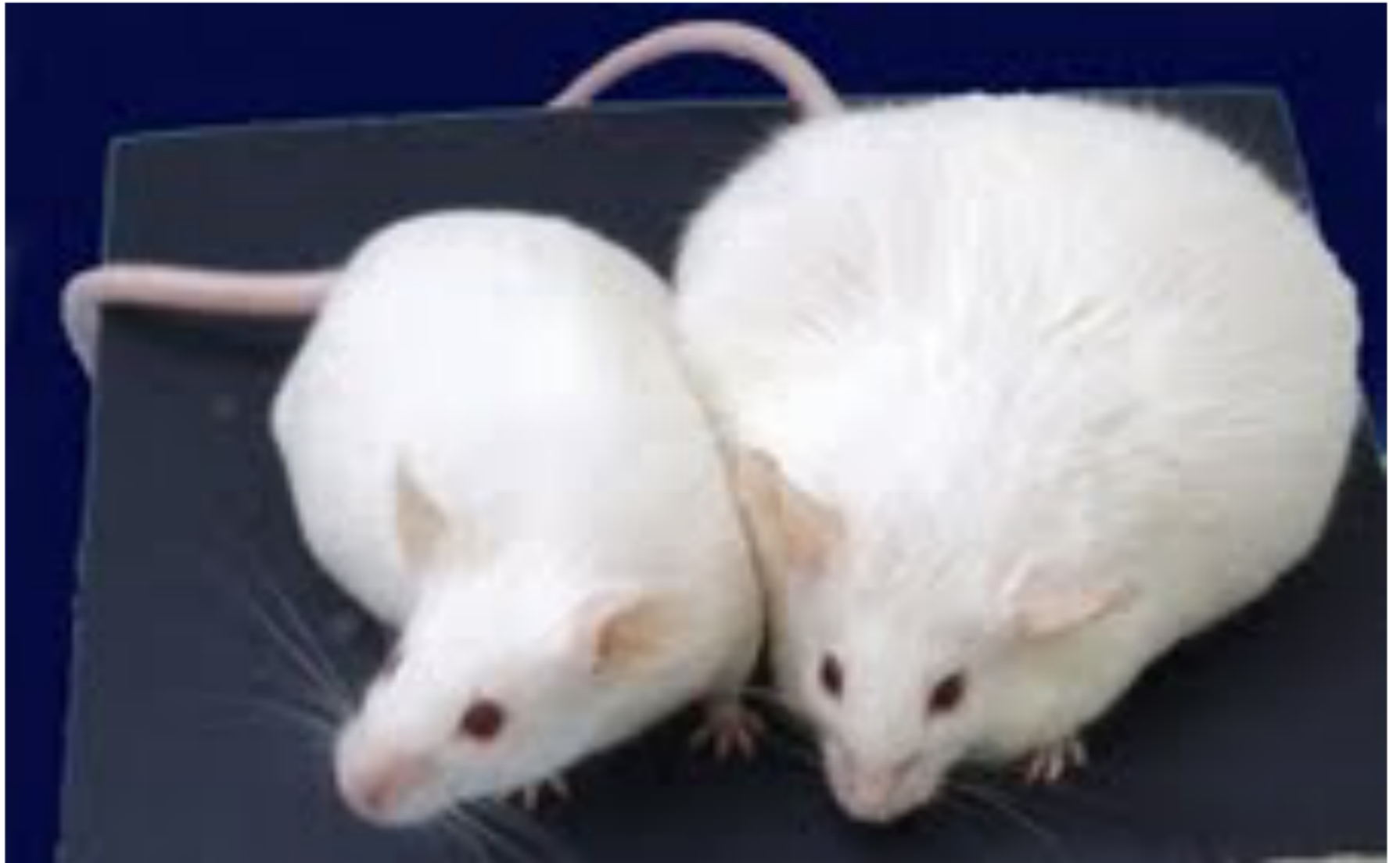
Where on humans do microbes live?















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Where on humans do microbes live?



## **Look what we found!**

- **Door knob to lecture hall**
- **Computer Keyboard**
- **Cell Phone**
- **Megan's arm**

**...pretty much  
EVERYWHERE**



# **Look what we found!**

- Door knob to lecture hall**
- Computer Keyboard**
- Cell Phone**
- Megan's arm**

**...pretty much  
EVERYWHERE**

**That was on Megan's arm?**

**So bacteria are everywhere...**

**...but we can't**

**So bacteria are everywhere...**

**...but we can't see them**

<http://learn.genetics.utah.edu/content/begin/cells/scale/>

**So bacteria are everywhere...**

**...but we can't see them**

<http://learn.genetics.utah.edu/content/begin/cells/scale/>

**So bacteria are everywhere...**

**...but we can't see them**

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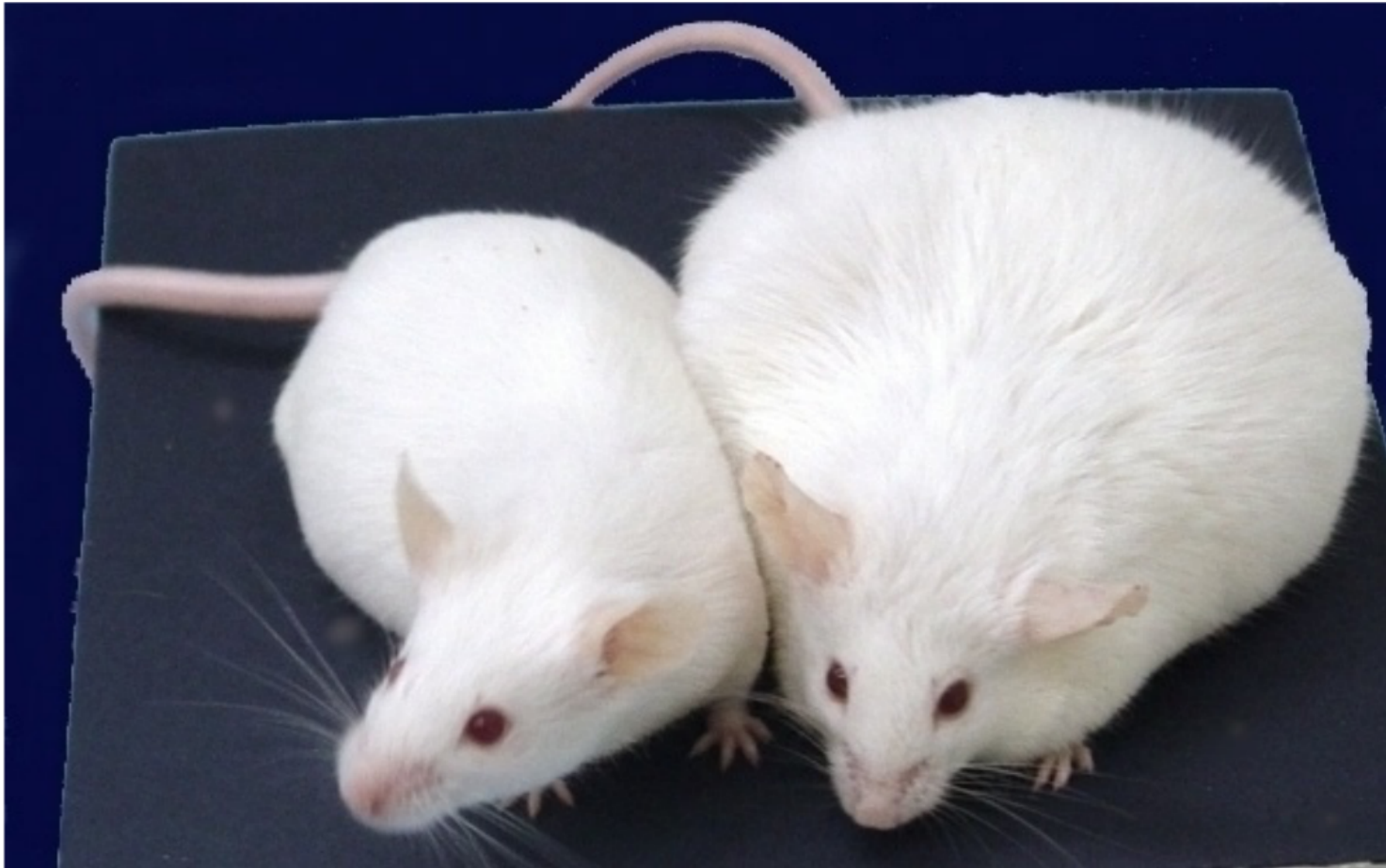
**...and we're not always sick**



# Good Bacteria



# Good Bacteria



What is different about these mice?

# Germ Free Animals

- Microbiome colonization directly linked to good health

- Which mouse do you think was germ free?

Germ free animals show how much bacteria shape our world.

What would it be like if everything was germ free?

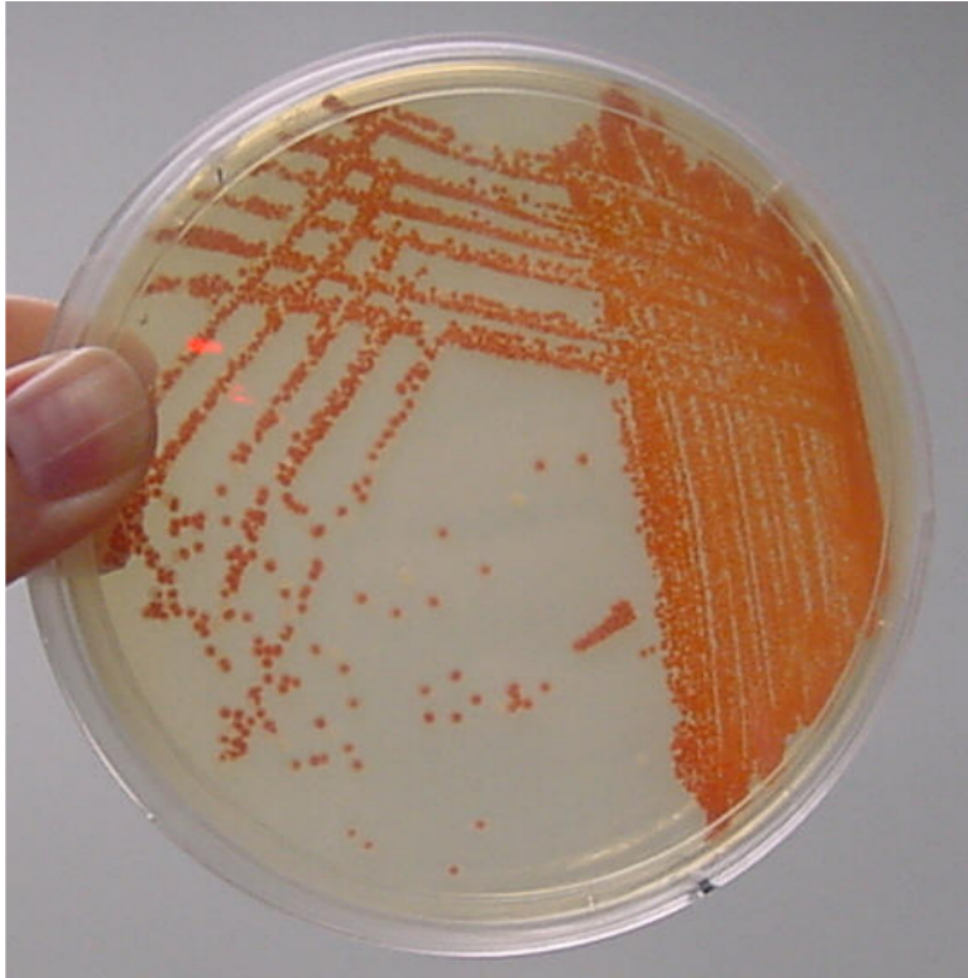
# Antibiotic Resistance

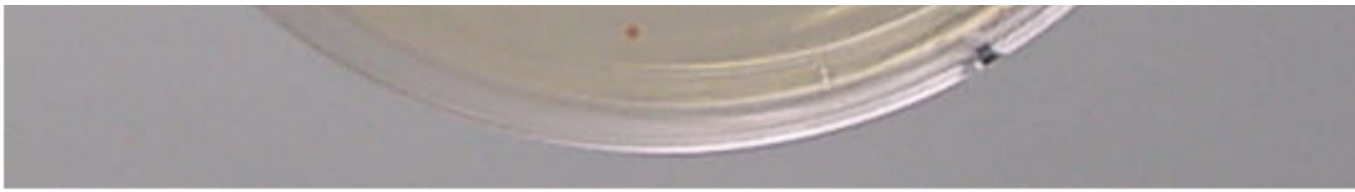
Frequent and unnecessary antibiotic use leads to evolution of "resistant" bacteria

- HUGE problem and very relevant to human health
- New "superbugs" discovered every month
- How could we stop or slow this process?



# Plating





But if you can't see bacteria without magnification  
what are we looking at?

**What's the point of plating?**

**How do you do it in a lab?**

**What are we going to do here?**

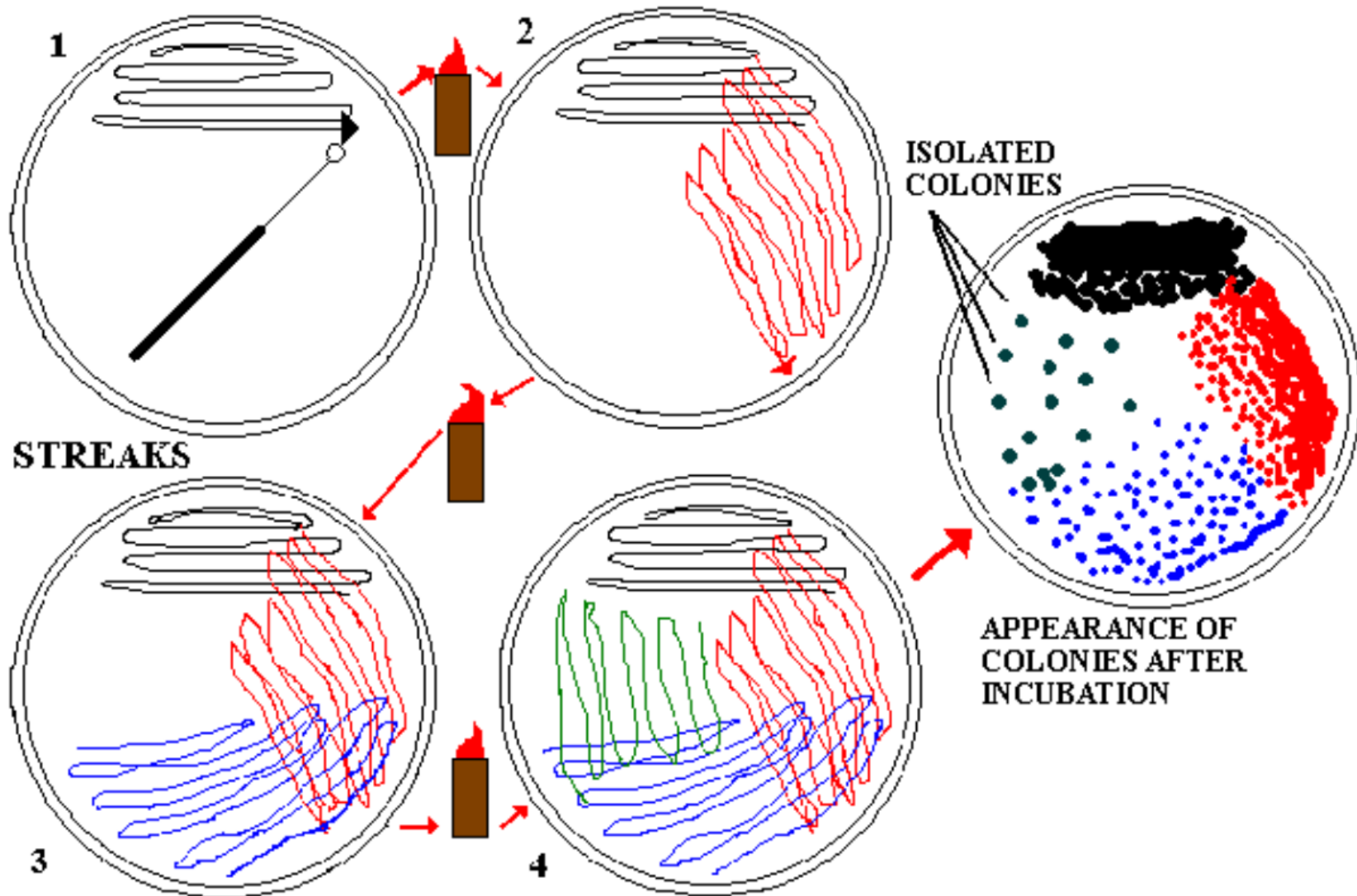
# Streaking Practice

1. Inoculate wire loop with salt water solution
2. Drag wire loop across paper as shown



1. Inoculate wire loop with salt water solution

2. Drag wire loop across paper as shown





**Now with agar plates**

**1. Take lid off plate**

**2. Pipette salt water**

## **Now with agar plates**

- 1. Take lid off plate**
- 2. Pipette salt water solution on to surface**
- 3. Spread with wire spreader**

**Take agar plate home**

- **leave it uncovered to**

## **Take agar plate home**

- leave it uncovered to let it dry**
- salt crystals should form, these are like bacterial colonies**
- typical bacteria take 24-48 hours to grow visible colonies**

Any questions?