

# Hands and Health

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# What is this class about?

- Hands and Health
- Germs
- Scientific evidence
- How to help stay healthy

# Washing your hands?

- Mostly, people don't wash their hands properly or enough
- Do you wash your hands?
  - 97% of females say they do
    - But only 75% actually do
  - 92% of males say they do
    - But only 58% actually do
- In middle and high school only 50% of students wash their hands regularly
  - Only 33% of females and 8% of males use soap

Source: American Society of Microbiology

# So what is the big deal?

- Every time a hand touches another surface--such as your desk, your mouth or your nose--there is an opportunity for an exchange of microbes



Source: Journal of Hospital Infection

# Why does cleaning hands matter?

- Dirty hands can make you sick
- And spread sickness to other people
  - before you know it, everyone around you is coming down with something!
- Clean hands can keep you healthy
- And stop the spread...





# Students get sick too often...

- 40% of students from 5 to 17 years old missed 3 or more school days in the 2009 school year
- 22 million days lost due to colds
- 38 million days lost due to flu
- A study in two Danish schools, kindergarten to 8, found that by requiring hand sanitation or washing three times
  - before the first class, before lunch, and before students went home, reduced absenteeism by 25%.
- In another study, use of hand sanitizer reduced absenteeism by 19.8%

Sources: Center for Disease Control (CDC); American Journal of Infection Control

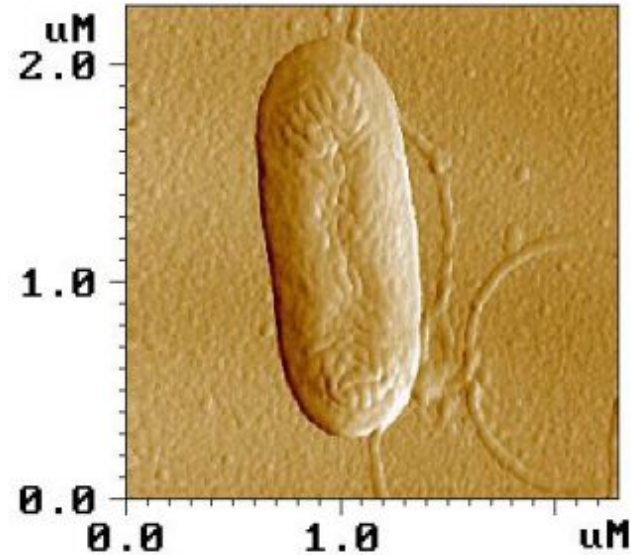
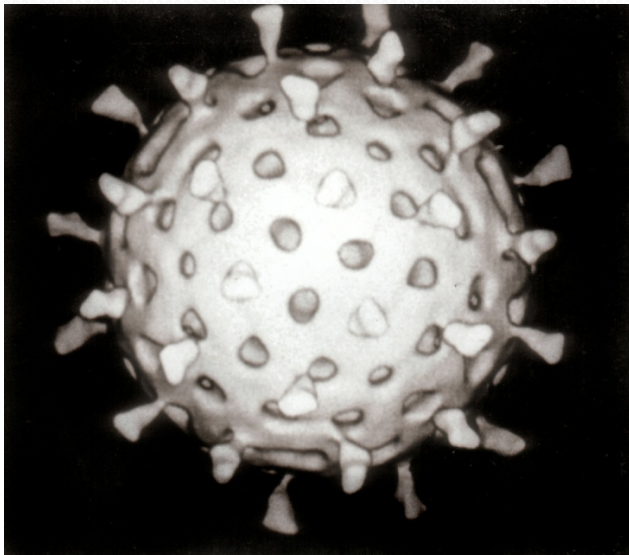
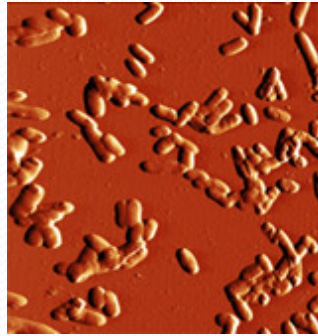
# What is a germ?

- A germ is a microorganism that causes disease
- Good and bad microorganisms live on your hands.
  - Those in the deeper skin layers and are usually harmless
  - Surface germs tend to include the bad ones and are removed by handwashing and hand wipes

Source: Mayo Clinic



# Bacteria & Viruses



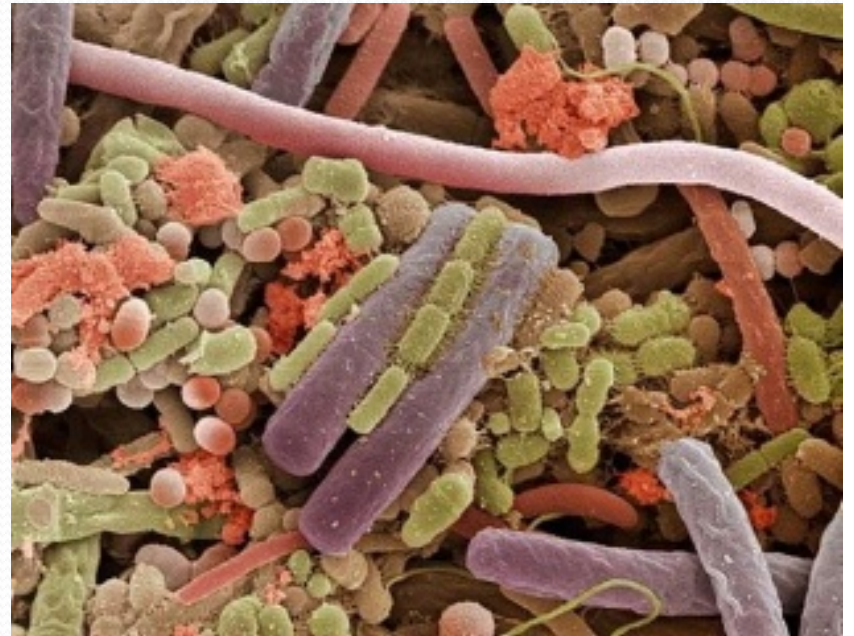


# Counting bacteria

- 229,000 per square inch on the faucet
- 21,000 per square inch on work desks
- As many in the sink as around the toilet
- 7,500 per square inch of your hands
  - This is normal

This is a photo of some Bacteria from your tongue.

Source: Charles Gerba, Professor, Environment Microbiology. University of Arizona



# Bacteria can grow quickly

- On a warm day bacteria can double every 20 minutes
  - So 5 bacteria on a sandwich at lunchtime
  - Can become by 7 o'clock supper time...? (Any guesses?)
    - 10 million!

# Bacteria can grow quickly

- Here's is a picture of a lake
- The green swirls are bacteria
- How many must there be if they can be seen from space!



# Getting rid of germs

- Wipes are fast and easy to use
  - Alcohol-based rubs are 100 time more effective against viruses than hand washing
- Soap is best when your hands are visibly grimy



Source: Journal of School Health





# Getting rid of germs

- A study of 492 students in Utah found when they
  - Were educated about the value hand hygiene,
  - Were reminded to wash or use hand sanitizer by their teachers,
  - And were able to see the actual germs on their hands
- Their hand cleaning went up from 38% to 78%
- ... and they kept doing it properly

Source: Journal of School Health



# The role of medicine

- We have medicines and chemicals that kill germs
- “Antibiotics”
  - Discovered in 1928
  - Has saved millions of lives
  - **But** too much use of antibiotics selects bacteria that are stronger
- So prevention is better than cure



Original photo from 1928



# What to do?

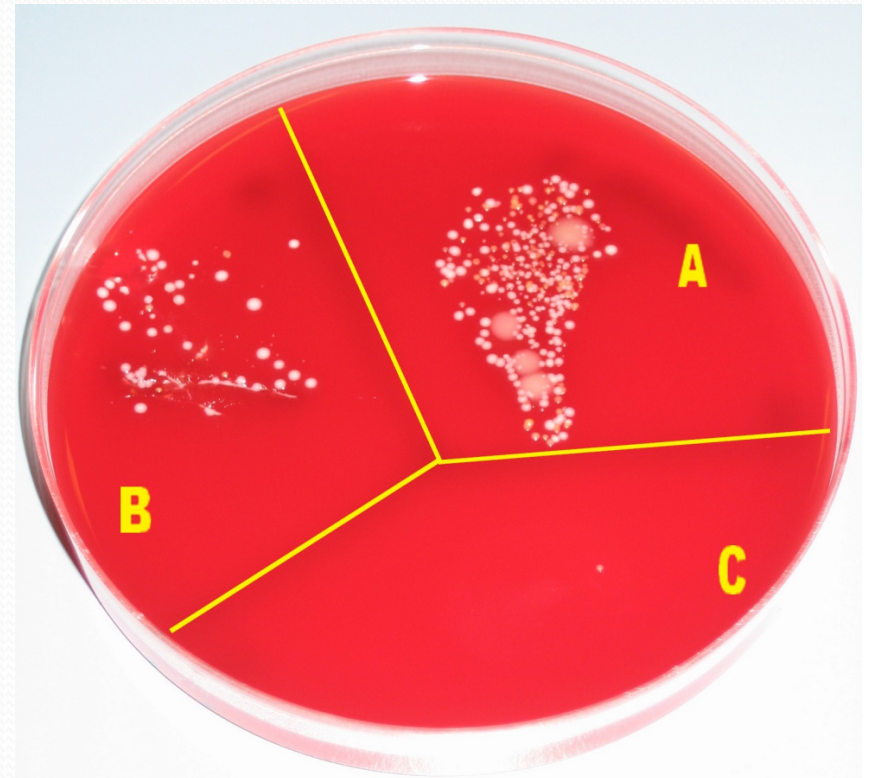
- Keep germs out in the first place !
  - Sleep well;
  - Eat the right foods;
  - Get enough exercise
- But also:
  - Keep our hands clean
  - Wash our hands;
  - use hand wipes;
  - use hand sanitizers



"I COLLECT EXERCISE VIDEOS... EVERY EVENING I HAVE CHEESE CAKE AND HOT CHOCOLATE WHILE I WATCH THEM."

# Washing and sanitizing works

- A. Without washing
  - B. After washing hands with soap
  - C. After using hand rub
- Hand sanitizer breaks the cell walls of both bacteria and viruses
    - Stops them spreading



# So what should we do?

- Wash hands whenever they are visibly dirty
- Use hand wipes or hand sanitizer







# Demonstration

- Palms and back of hand
  - Sides of fingers
  - Sides of hand
  - Nails
- 
- All parts of the hand, with soap, particularly if you can see dirt on them
  - Or simply wipe the same areas of your hands with a hand wipe or sanitizer





End