

# Handscrubbing

Normally, you will wash your hands first thing when you come into the lab. Today – wait until after you’ve done this exercise. **READ OVER THE INSTRUCTIONS BEFORE YOU BEGIN!**

1. Work in groups of four. Each student in the group should obtain two plates.
2. Label the **BOTTOM** of each of your agar plates (the part that actually has the agar in it – not the lid), by writing around the outer edge:
  - Your name
  - “Before cleaning” on one plate and “After cleaning” on the other.
  - Your instructor’s name
  - The date
3. Decide which student in your group will do which of the following: (Wait! Don’t do it yet! Just decide.) *Student A*) Wash with cold water and no soap, *Student B*) wash thoroughly with warm soap and water, *Student C*) clean with an alcohol-based sanitizer, or *Student D*) wash thoroughly with warm soap and water and then use an alcohol-based sanitizer.
4. Add to the label on your plate which procedure you will do:
  - Water only
  - Soap and water
  - Sanitizer
  - Soap + sanitizer
5. Before cleaning your hands – have one of the other students in your group open your “before cleaning” plate. Touch the surface of the plate with three or four fingers of your dominant hand. Make good contact with the agar, but don’t squish your fingers into it. The other student should put the lid back on the plate as soon as you’re done.
6. Clean your hands as follows – and be careful not to touch anything other than the clean paper towel that you dry your hands with before you touch the second agar plate. Let your lab partner turn the water on and off, squirt the soap or sanitizer if you are using it, and dispense the paper towel (without touching it).

*Student A:*

- Wash hands briefly with cold water – no soap.
- Dry your hands with a clean paper towel.

*Student B:*

- Wash your hands with warm water and soap, using the handwashing guidelines recommended for health care workers:
  - 1) Wet your hands and get a generous squirt of liquid soap.
  - 2) Lather and scrub for at least 20 seconds. Be sure to wash between your fingers, under your fingernails, and the tops of your hands.
  - 3) Rinse for 10 seconds.
- Dry with a clean paper towel.

*Student C:*

- Clean your hands with an alcohol-based sanitizer, using the guidelines for using a sanitizer recommended for health care workers:
  - 1) Place a dime-sized amount of 65%-70% alcohol-based sanitizer in the palm of one hand.
  - 2) Thoroughly scrub your hands with the sanitizer for at least 15 seconds. Be sure to scrub between your fingers, under your fingernails, and the tops of your hands.
  - 3) If your hands are not “air-dried” by the time you finish scrubbing, dry with a clean paper towel.

*Student D:*

- 1) Follow the hand-washing procedures for Student B above and then after you have dried your hands with a clean paper towel,
  - 2) Follow the procedures for cleaning your hands with an alcohol-based sanitizer as for Student C above.
7. After you have finished cleaning your hands, have your lab partner open your “after cleaning” plate and touch the same three or four fingers to that plate, in the same way as you did before.
8. Stack your two plates on top of each other, **upside down** – that is, resting on their lids. Tape your plates together using masking tape. Write your name on the tape to make them easier to find later. Place your plates on the red tray near the sinks in the back of the room.

## Next lab period

Arrange all of the plates from your class in four groups, according to the handscrubbing method they used. Place each student’s two plates next to each other.

Students are often surprised by how many microorganisms remain on their hands even after scrubbing. (This is why nurses should don sterile gloves when, for example, they insert a catheter.)

But it’s still important to wash your hands! See if you notice overall trends when observing all of the plates:

1. Did handwashing reduce the number of microorganisms on the person’s hands in most cases?
2. Did handwashing reduce the number of different types of microorganisms? Some microorganisms are more easily removed by handwashing than others.
3. Which method seemed most effective?