**Wash Your Hands!**

**Additional Activity**

**Supplies:**

• 2 different soaps

• Prepared potato slices (see below)

• Sink with running water

• Timer

Prepare potato slices in containers, as instructed above. Have the class test out two different soaps of choice. The soaps should be different brands/types. (For example: you could use bar soap vs liquid hand soap, or you could test antibacterial soap vs regular soap.) Describe the soaps to the students, and show them the soaps. Make a hypothesis on which soap will work the best and why.

Split the students into 3 groups. Group 1 will be using soap 1. Group 2 will be using soap 2. Group 3 will be a control group. The control group will not wash their hands. This will show what bacteria are on our hands without washing, which will in turn highlight the efficacy of the soaps on killing bacteria. (A scientific control is an experiment or observation designed to minimise the effects of variables other than the independent variable. This increases the reliability of the results, often through a comparison between control measurements and the other measurements). By having a group not wash their hands as a control, we can show how well the soap worked. If the control group’s potatoes show lots of bacteria, and the soaps do not, we can see how well the soap cleaned our hands.

Have each student wash their hands for 20 seconds using their assigned soap (or control group). Have a volunteer time the students washing their hands. Use only 1 pump of soap per student. After a student has washed and dried their hands, have them touch the potato slice with their fingers. Close the container immediately afterwards. Let the containers incubate in a warm, dark place. Check growth after 24 hours. Some bacteria may have started growing. Check again in 48 hours and compare the difference. You should see bacterial growth within a few days. Compare the results for Groups 1, 2, and 3. Which soap worked the best?

**Important notes:**

Be sure to have the students wash their hands for the same amount of time. Be sure all students wash their hands with water of the same temperature. Provide paper towels for students so they do not dry their hands on their clothing and pick up bacteria. Make sure every student uses the same amount of soap (liquid soaps are easy to measure pumps). All these tips help ensure consistency of variables which helps to reduce variation in results.

**Additional Experiment options:**

• Test washing hands with cold vs warm water

• Test bar soap vs liquid soap

• Test antibacterial soap vs regular soap

**Rules for working with bacteria:**

1. Never eat or drink near your cultures, be sure to wash your hands after working with cultures at the end of class.

2. Keep the lids on your cultures and remove only briefly as needed.

3. Wash your hands immediately after working with bacterial cultures.

4. Sanitise the work surface you are using before and after working with bacteria.

5. When you have finished with your cultures, clean the container well, and throw away the potato slice. An easy way to clean is to pour in a little bleach into the container with the potato to kill all bacteria, dispose of the potato, and then clean the container.

**Potato preparation:**

Supplies:

• Potatoes

• Knife

• Cutting board

• Clear container

Prepare the potato to grow the bacteria on. Carefully clean one or two large potatoes. Boil potato for 10 mins to sterilise the potato. While the potato is boiling, get a clear lunch container or jar, and clean. Sanitise the container with boiling water. Also sanitise the knife and cutting board with boiling water. After the potato has boiled, drain and let cool. Slice the potato in 1cm slices and place into container. Keep container sealed until the swabbing activity.

If there are enough containers for each student, place one potato slice in each container. Otherwise, split the class into groups, and place those slices into the container (|For example a group of 6 would have 6 slices in a container). The slices should lay flat and not be stacked. The lid should be clear so that students can see the bacteria growth on the potato slice without opening the container.