

# Colony Forming Units Behind the Human Ear

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# Introduction

This experiment was performed to raise awareness of behind the ear bacteria. Our main question was how many colony forming units can be found behind the ear? We decided to test a washed ear, an unwashed ear, and a sanitized ear. Our hypothesis said that if an ear is unwashed, then it will have far more colony forming units than a sterile or washed ear. This experiment shows how people don't typically think of bacteria that can grow behind their ear. This is one of the reasons colonies of bacteria can be found behind an unwashed ear.

# Experimental Methods

To conduct this experiment, we used three different subjects and three different subject areas on the ear. The first subject had an “unwashed” ear, meaning that the subject hadn’t taken a shower within a 24-hour period. The second subject had a washed ear, meaning that the subject has taken a shower within the last 24 hours. Lastly, the third subject had an alcohol sanitized ear that was cleaned with Kimwipes and Isopropyl alcohol.

First, long swabs were used for collecting the potential bacteria on the subject. The areas swabbed were the bottom and top of the subject's’ left ear and the top of their right ear. The swabs were then whipped on to three MSA and three LB plates. Lastly, six of the swabs were unwrapped and then directly brushed onto the LB and MSA plates to make a control.

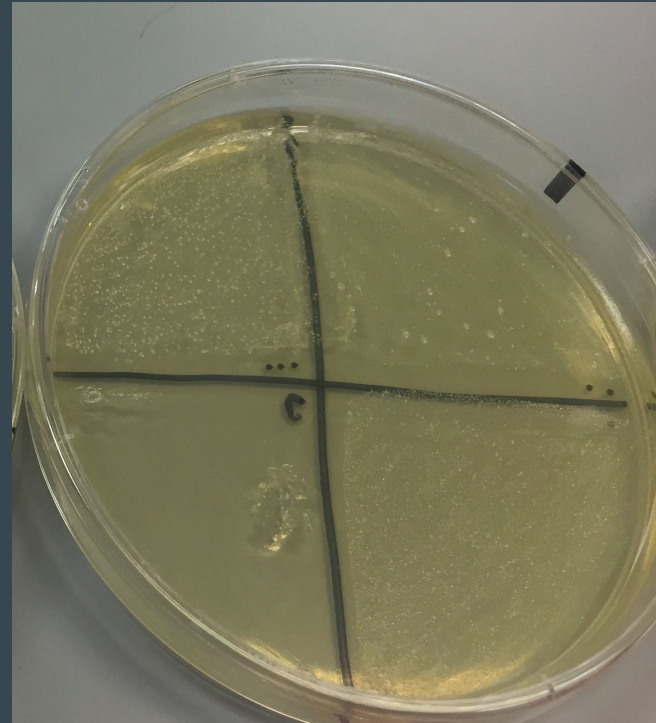
Once all of plates were collected and properly lidded, they were left on the bio lab tables for the professor. The professor then placed the plates into an incubator for 24 hours at 37 degrees Celsius. Once the incubation was done, the professor moved the plates to a refrigerator and left them until the next lab day.

# Results

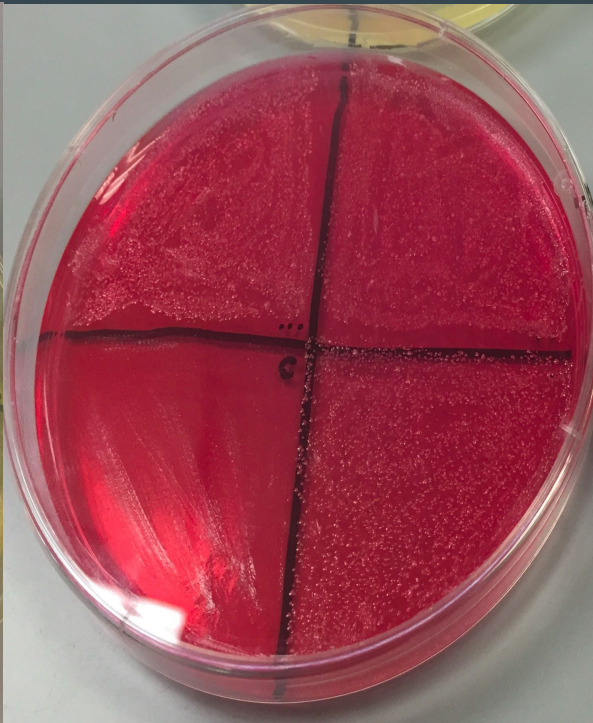
Our results show different structures of the colony forming bacteria and patterns. The structures of the bacteria were changes in the sizes of colonies. With this being said, all of the bacteria was sized by a qualitative judgement. The first pattern would be the lack of color variation. Most of the colonies were strictly white colonies, while others had little hints of discoloration (i.e yellow). The second pattern would consist of population abundance. It was very obvious that more bacteria showed up on the unwashed ear. It was also apparent that the washed ear still had more colonies than the alcohol sterilized ear.

# Plates

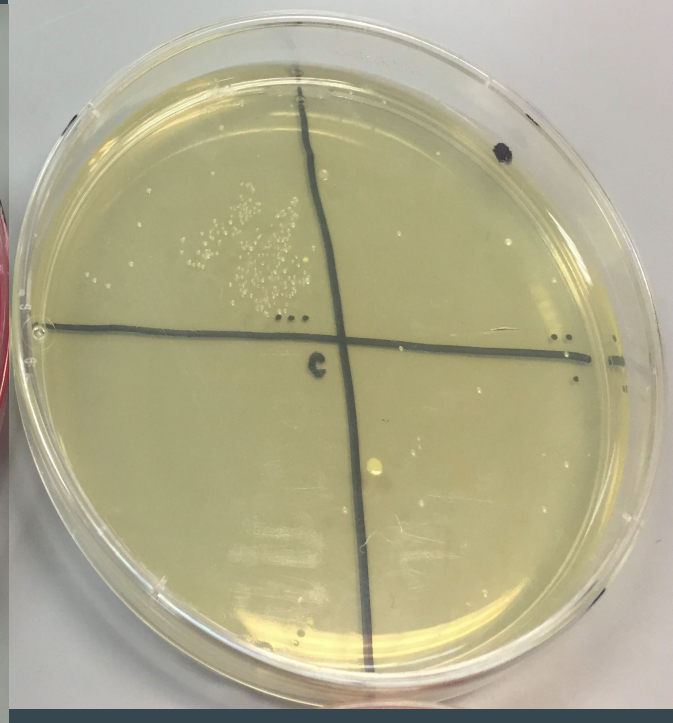
LB Plate of Washed Ear



MSA Plate of Unwashed Ear



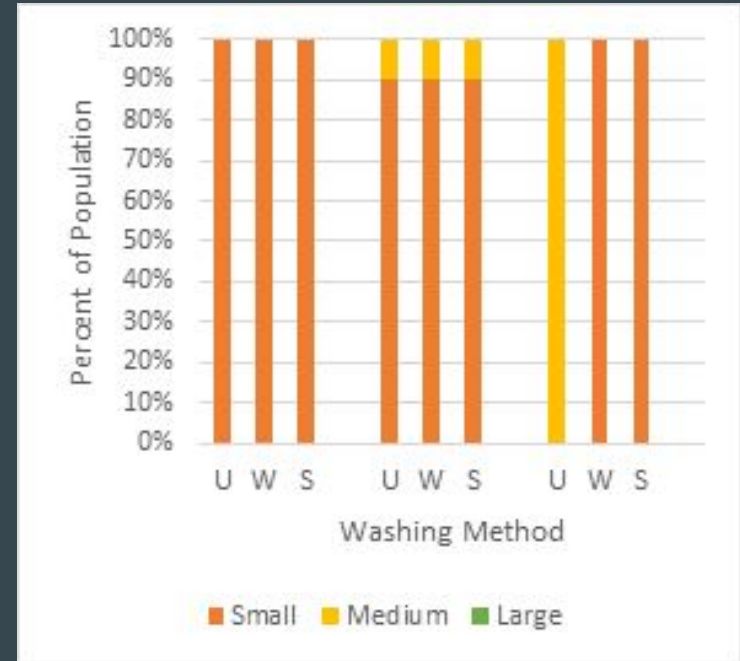
LB Plate of Sterilized Ear



# LB Plates

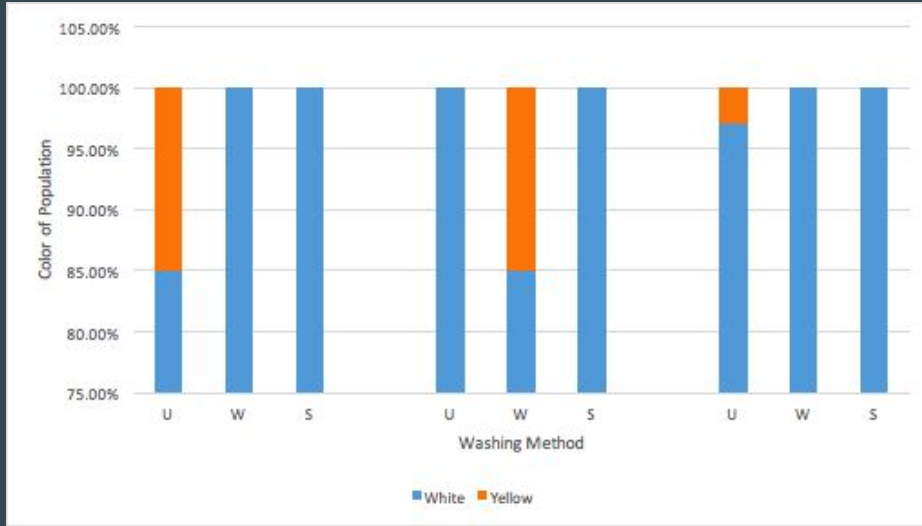


# MSA plates

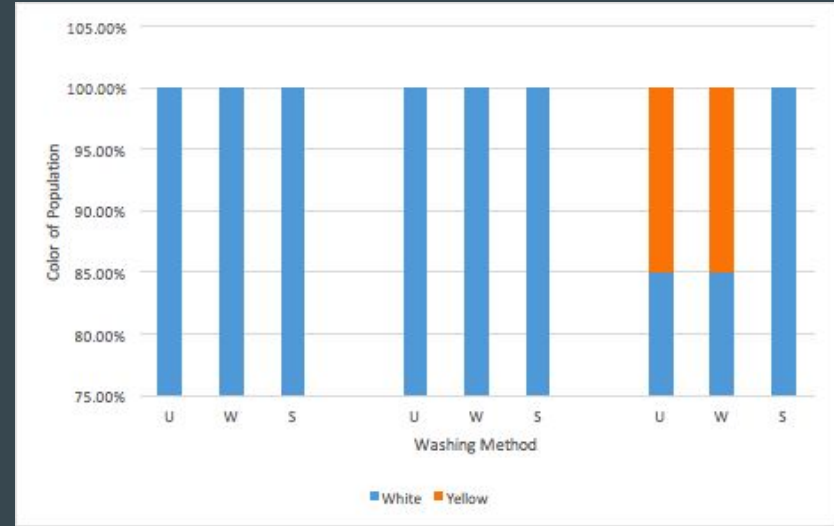


**Figure I. Relative proportions between the sizes of bacteria and the percent of population.** The data is shown for A) LB plates and B) MSA plates. The cleaning methods include an unwashed ear (U), a washed ear (W), and an alcohol sanitized ear (S). The sizing of small, medium, and large are all qualitative judgements.

# LB plates

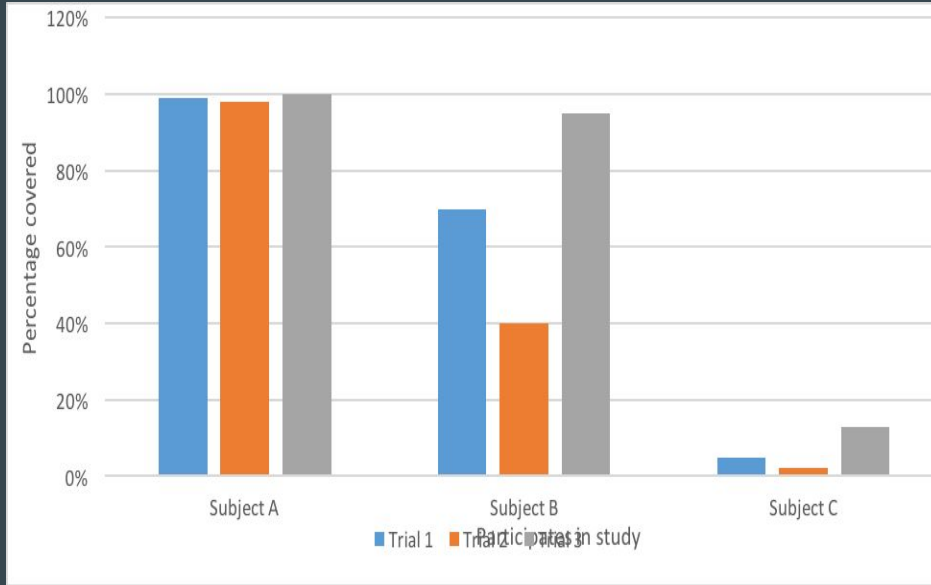


# MSA plates

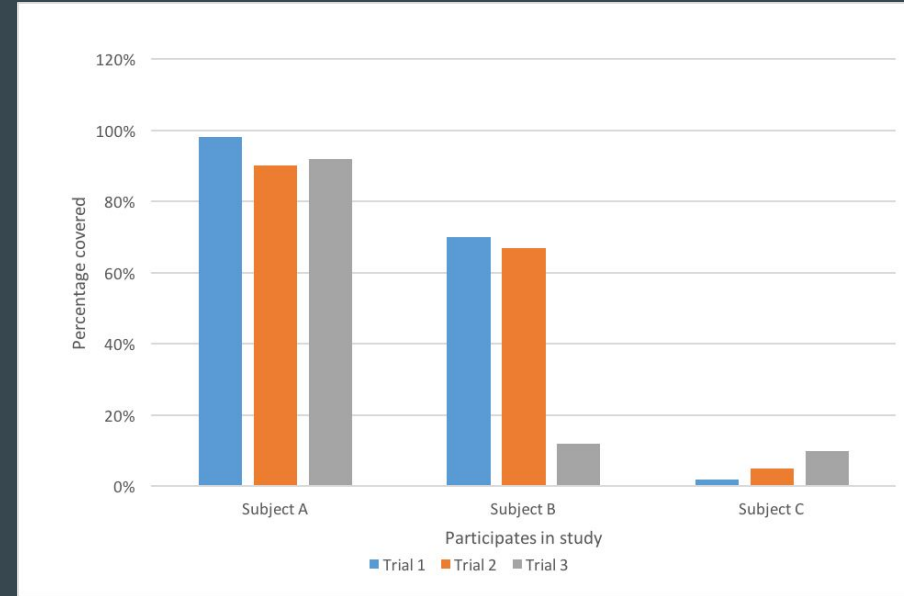


**Figure II. Relative proportions between the color of bacteria and the percent of population.** The data is shown for A) LB plates and B) MSA plates. The cleaning methods include an unwashed ear (U), a washed ear (W), and an alcohol sanitized ear (S). The colors of white and yellow are both qualitative judgements.

# LB Plates



# MSA plates



**Figure III. The amount of space colony forming units take up on the plates.** The data is shown for A) LB plates and B) MSA plates. Subject A is the unwashed ear, subject B is the washed ear, and subject C is the alcohol swabbed ear. This data correlates with the amount of space the colony forming units were taking up on the different sections of the plate which is presented by trial 1, 2, and 3.



# Discussion/Conclusion

Our hypothesis was proven to be true when the amount of colony forming units of bacteria found behind the human ear was larger on an unwashed ear compared to a washed and a sanitized ear. We expected this conclusion so therefore we are not very surprised by the outcome. This experiment showed that bacteria can be found on your body in places that you might think are clean but they really aren't.