

# CAN YOU EAT ON A BATHROOM DOOR; BACTERIA GROWTH ON BATHROOM DOORS

By Joshua Bain,  
Caroline  
Verhappen, Isabelle  
Villarreal



Bacteria transfer through contact is one of the main concerns on college campuses, as preventative measurements are often not well-supported or practiced.

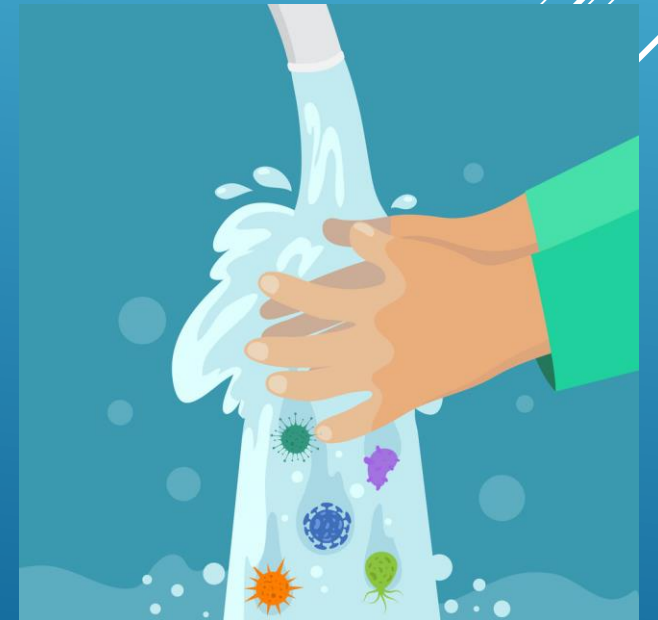
- Some of the main sicknesses on college campuses are spread through contact, such as respiratory tract infections and gastrointestinal tract infections (#1)
- The abundance of bacteria on a bathroom door was investigated

## INTRODUCTION



The presence of bacteria was thought to be more abundant on the outside of the bathroom door rather than the inside

- Those who properly wash their hands after using the bathroom should have less bacteria on their hands to leave behind when they touch the door (#2)
- If the inside and the outside of a bathroom door are swabbed, then the inside of the door should be cleaner due to people washing their hands.



Tested three bathroom surfaces (pull handle on outside, push plate on inside, and top corner of the door) using sterile cotton swabs



Each of the samples were streaked into nutrient rich agar petri dishes into 3 sections according to where the sample was from



They were then sealed and left to incubate at room temperature for one week before we tested the bacterial colonies growth.



Three dependent variables were measured; average colony size, color, and elevation of the colonies.



# MATERIALS AND METHODS OVERVIEW

## Materials Checklist:

- Sterile cotton swabs
- Nutrient rich agar petri dishes
- A Sharpe marker
  - A place to incubate bacteria



Tested three bathroom surfaces (pull handle on outside, push plate on inside, and top corner of the door) using sterile cotton swabs



Each of the samples were streaked into nutrient rich agar petri dishes into 3 sections according to where the sample was from

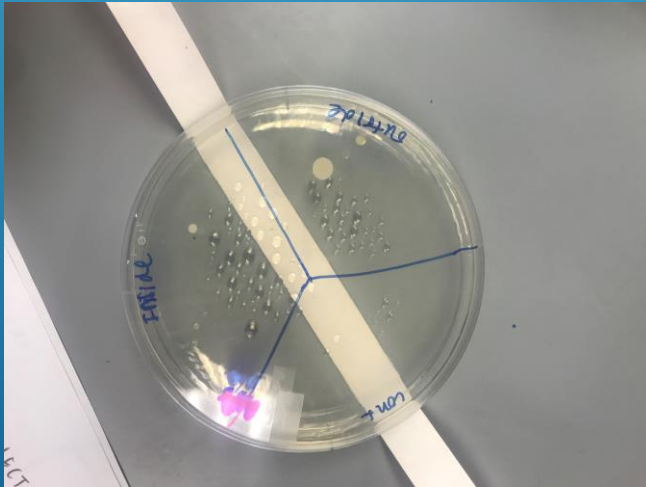


STEPS 1 and 2

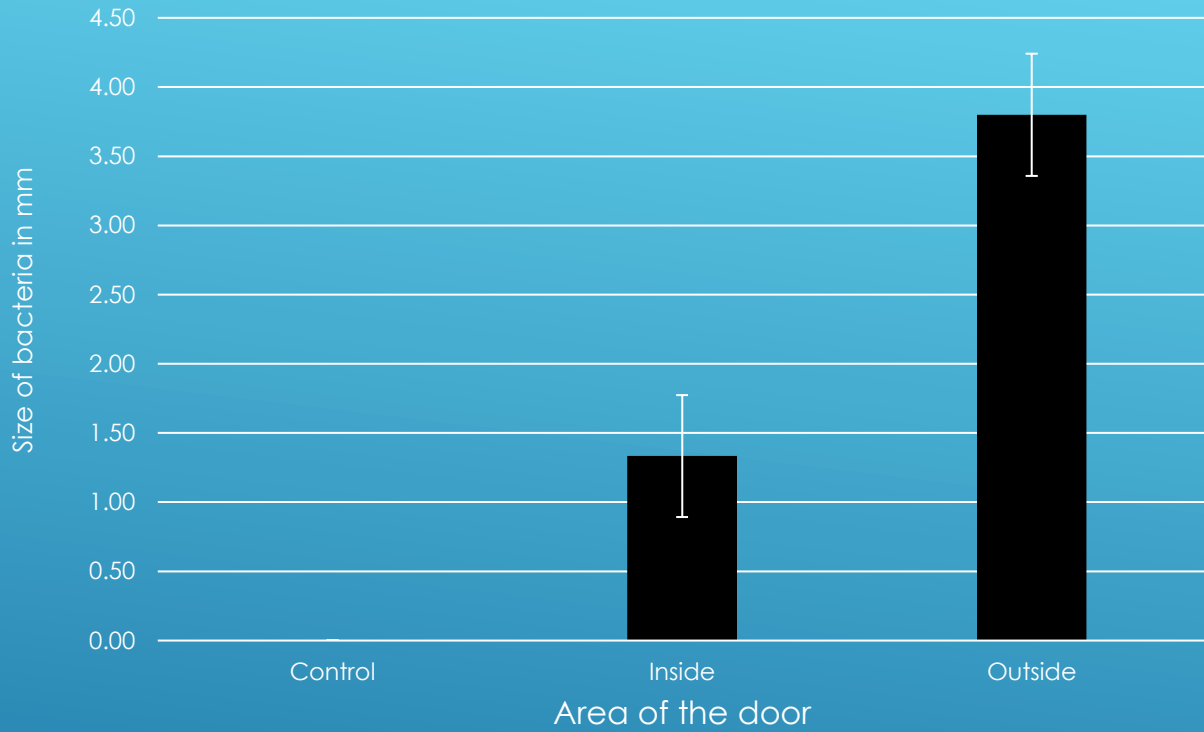
They were then sealed and left to incubate at room temperature for one week before we tested the bacterial colonies growth.



Three dependent variables were measured; average colony size, color, and elevation of the colonies.



# STEPS 3 and 4



**Figure 1. Average colony size of each sample.** The results show very small colonies of bacteria with the control having none and the outside pull handle having the most.

**Table 1. Color of bacterial colonies.** The control group has no colonies reflected in the N/A results while as the table moves towards the outside group the colors become more varied.

	Trial #1	Trial #2	Trial #3
Control	N/A	N/A	N/A
Inside	White	N/A	White
Outside	Yellow/Orange Tint	Off-White	Orange

# RESULTS OVERVIEW

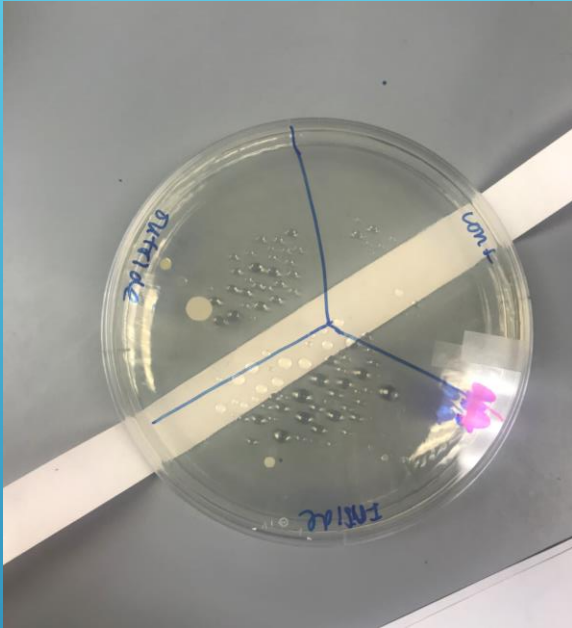


Plate #1

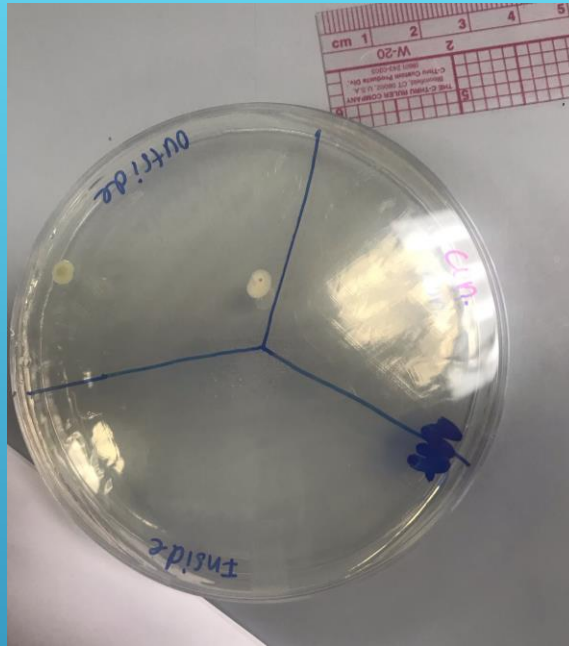


Plate #2

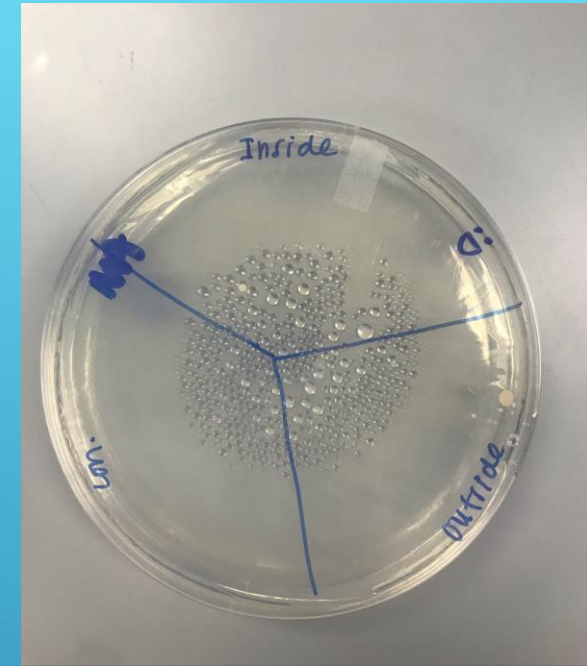


Plate #3

- No bacteria growth was found on any of the plates for the control group

## RESULT SUMMARY



From the data collected from the agar plates it was concluded that bacteria was more abundant on the outside of the bathroom door however the difference in bacteria between the inside and outside of the bathroom door was very similar in size of colonies, color, and elevation (3). There was a minimal amount of bacterial growth on the agar plate from the samples taken from the men's restroom door. Shortcomings of the experiment performed included the process of the Budd cleaning group cleaning the doors of the restroom each night (4). The samples collected helped support the hypothesis by showing that when comparing the bacteria found on the outside of the door was greater than the bacteria found on the inside of the door. Studies done at several other universities explored the idea of excess cleaning of the bathrooms allow for the decreased amount of bacteria found on the inside and outside of the doors (5). Bathroom doors already have some preventative measurements with resistance to the spread of bacteria, such as using metallic copper surfaces due to the antimicrobial activity of copper (6)

## DISCUSSION/CONCLUSION



- 1. Scott, Elizabeth, and Karabeth Vanick. "A Surveu of Hand Hygiene Practices on a Residential College Campus." *American Journal of Infection Control*, vol. 35, no. 10, Dec. 2007, pp. 694–696.
- 2. Prater, KJ., et al. "Poor Hand Hygiene by College Students Linked to More Occurrences of Infectious Diseases, Medical Visits, and Absence from Classes." *American Journal of Infection Control*, vol. 44, no. 1, 1 Jan. 2016, pp. 66–70.
- 3.
- 4.
- 5.
- 6. Grass, G., et al. "Metallic Copper as an Antimicrobial Surface." *Applied and Environmental Microbiology*, vol. 77, no. 5, Mar. 2011, pp. 1541–1547.

## WORKS CITED