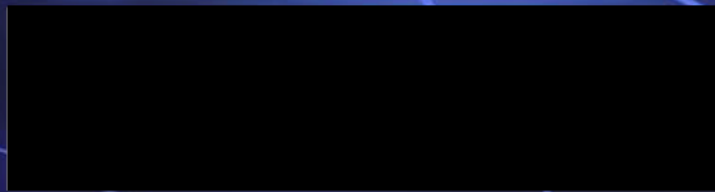
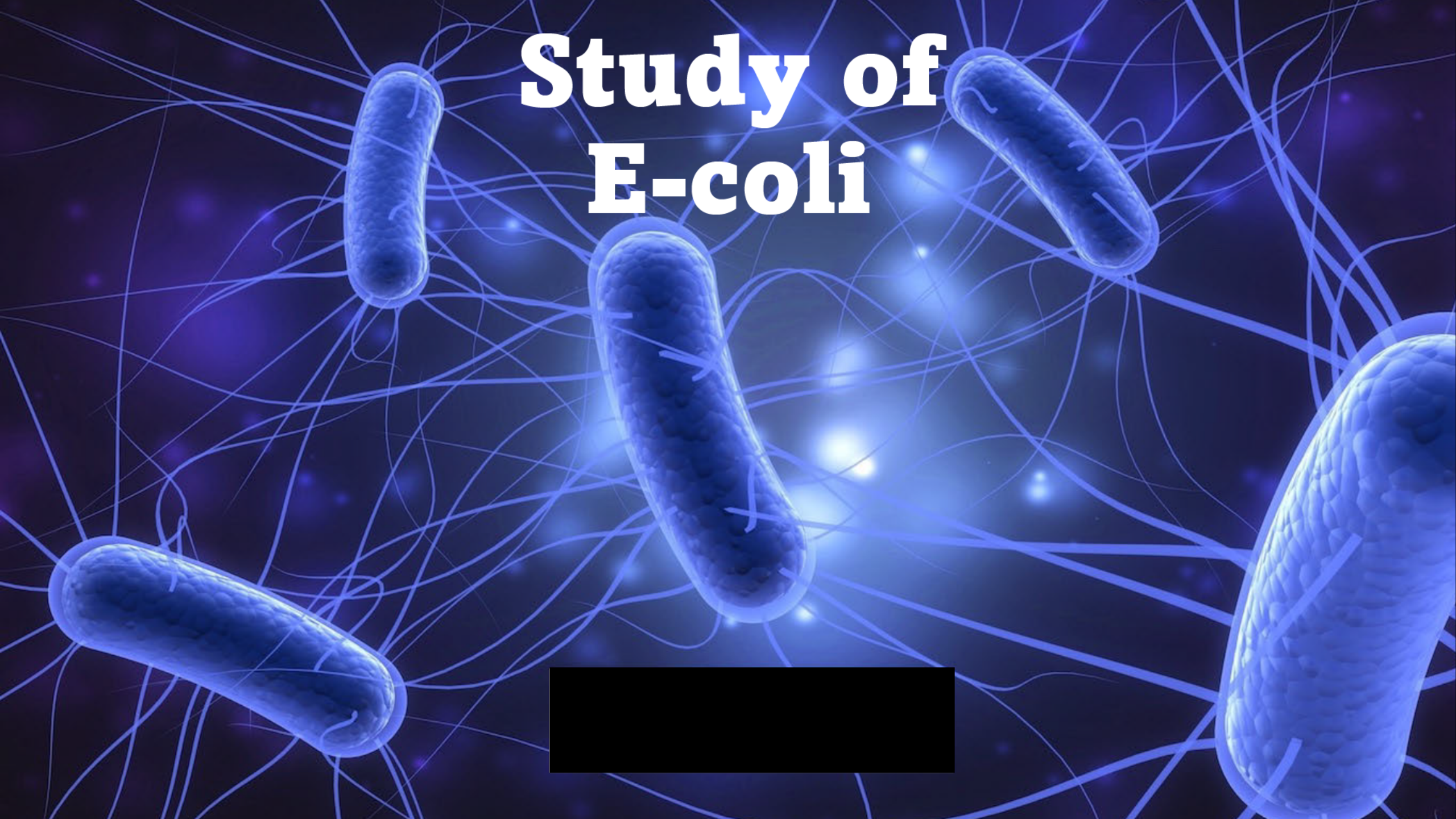


Study of E-coli



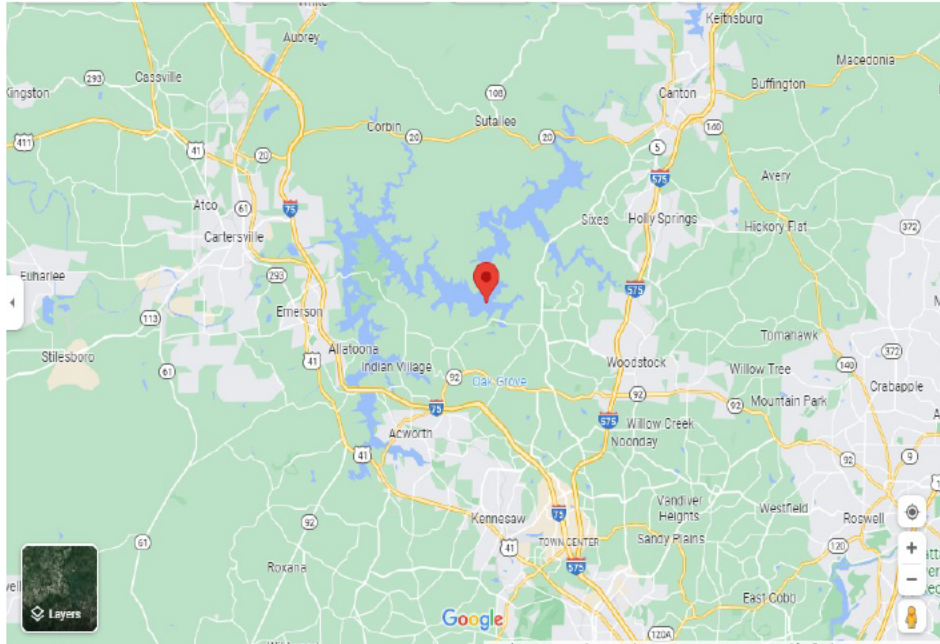
Research Experience

- Lake Allatoona Research Group at GA Highlands
- Water collection process
- Chemical analysis testing using Colorimeter
- Microbiology testing



Lake Allatoona Facts:

- U.S. Army Corp. of Engineers built it
- Built by placing bridge in Etowah river
- Uses
- Safe levels of E-coli: 1–10 MPN/100 ml



- <http://www.allatoonalake.org>

E-coli Facts

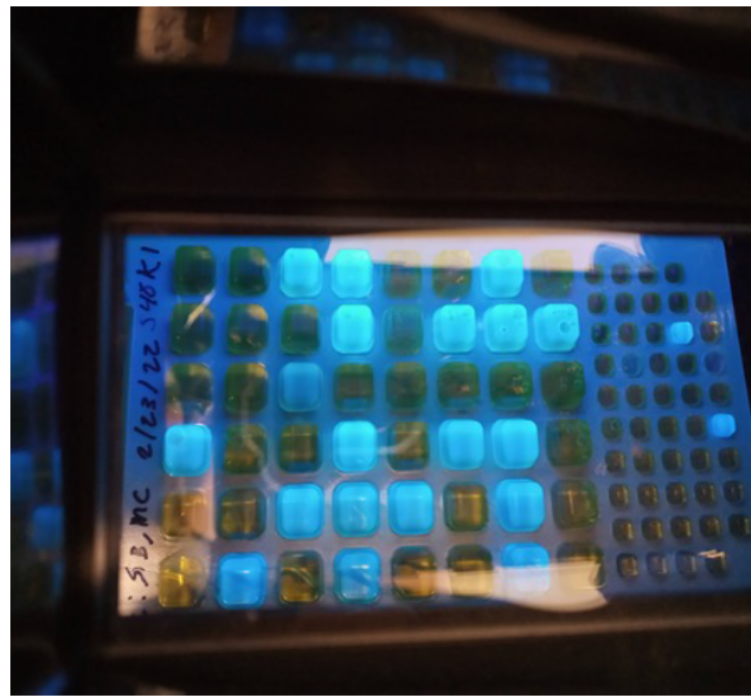
- Can be pathogenetic bacteria
- Found in fecal matter, freshwater, or human intestine
- Reproduce easily in favorable conditions
- Prefer 25 and 37°C temps, neutral pH, and 0.05 mg/L or less of Chlorine



<https://www.google.com/url?sa=i&url=https%3A%2F%2Fwww.bbc.com%2Fnews%2Fhealth-13639241&psig=AOvVaw3M9I2Xc-95he2cqXrfSRD8&ust=1650464553331000&source=images&cd=vfe&ved=0CAwQjRxqFwoTCJj74-GpoPcCFQAAAAAdAAAAABAD>

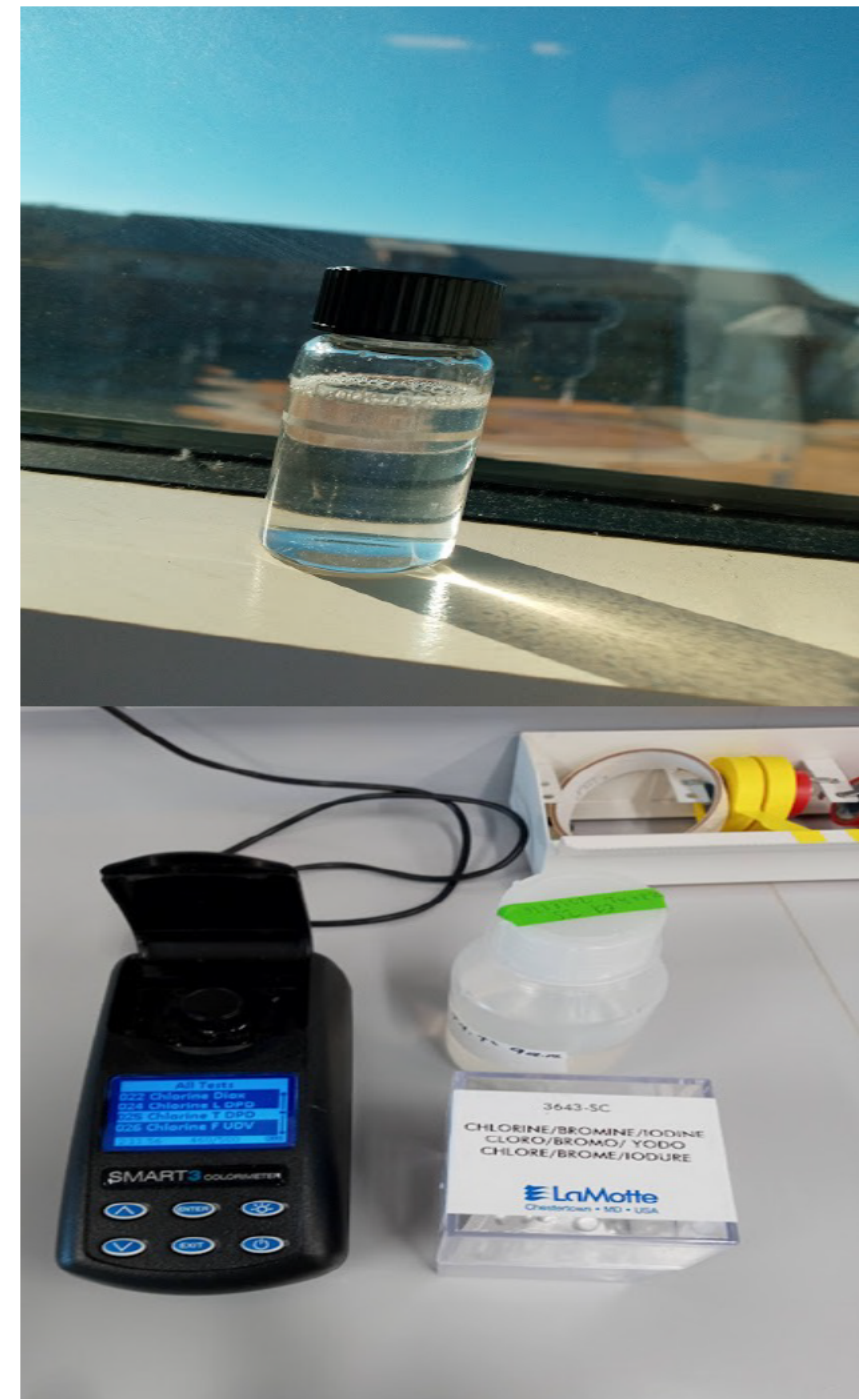
E-coli Testing

- Collection process
- Incubation period and Colilert
- Read using the fluorescence analysis cabinet
- E-coli results and metabolism process
- E-coli count



Chlorine

- Disinfection agent
- Used by CCMWA's treatment system for lake Allatoona
- Hypochlorous acid
- Kills E-coli cells
- E-coli cell death



Study

Background

Researched Cobb County Water Authority website and discovered chlorine was used to kill E-coli in public water sources

Materials

- Colorimeter analysis test
- DPG tablet
- Colilert
- Fluorescence cabinet reader

Hypothesis:

If there is higher levels of Chlorine present in the water samples **then** there will be a lower number of bacteria present at that site

Methods:

1. Collect water samples from different sites

2. Use a colorimeter testing tool and DPG tablets to test Chlorine

3. Mix sample with Colilert and use florescence machine to count E-coli wells

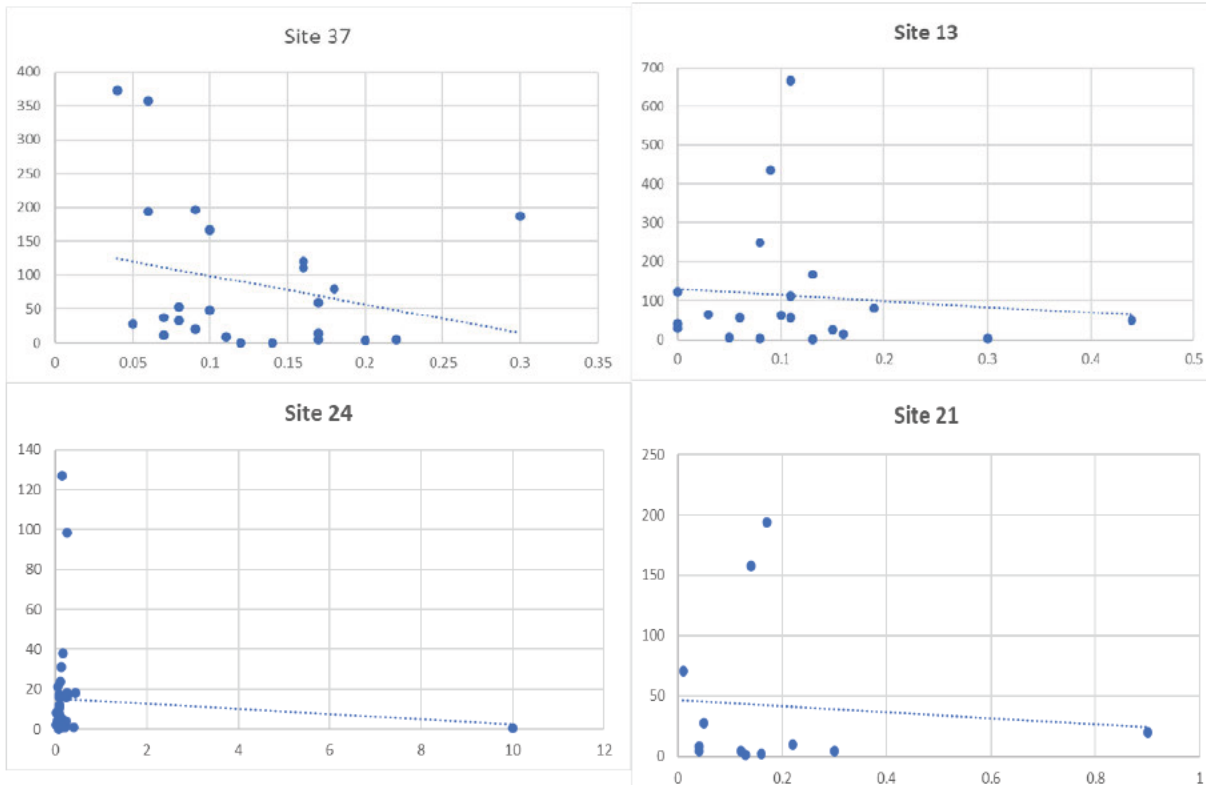
Conclusion

There seems to be a negative correlation between higher level of chlorine and lower number of E-coli presence in water samples



Results & Data

- **Pearson's correlation coefficient: relationship between data**
- **R value: negative vs positive results**
- **Bacteria that survive in higher chlorine levels suggest they are extremophiles**



**Out of 9 sites, all had slight negative R-value.
One site (site 16) was positive can be a result from human error**

Conclusion

- **Why this matters**
- **Bio 1108's investigation of Ecology- chlorine regulates E-coli population**
- **Further research idea: do DNA isolation to figure out surviving E-coli species**
- **Investigate why there is chlorine present in lake water**
- **Join LARG!!!!**



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**Shoutout to all
the members of
Ga Highlands
LARG team and
Professor**



Questions?