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Growing Cellulose Spheres for Consumption & Encapsulation

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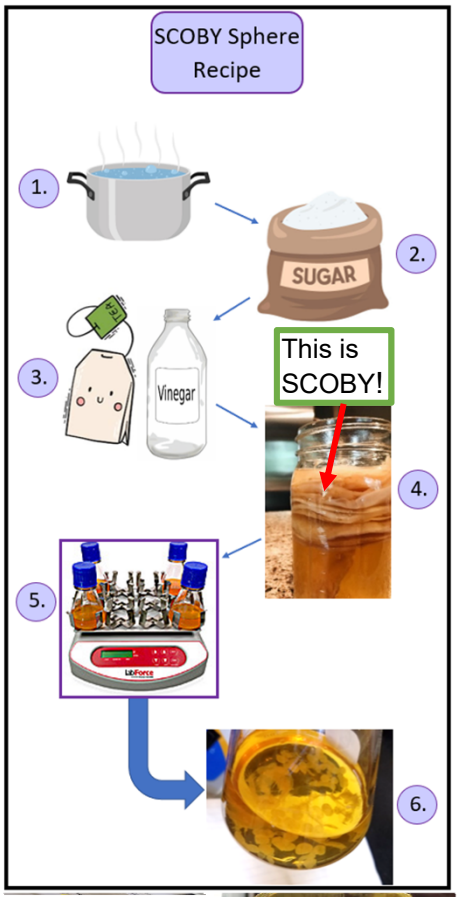
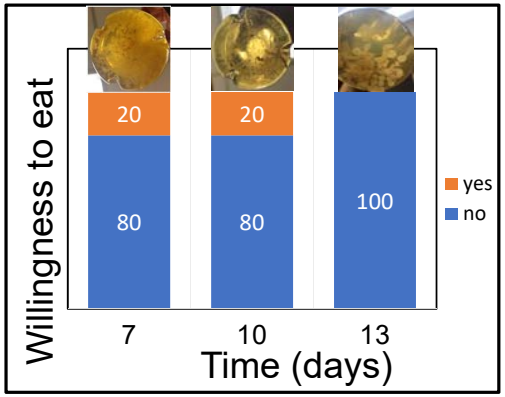
Environmental Eng *Petroleum Eng.* *Environmental Eng.* *Met. & Materials Eng.* *Mechanical Eng.* *Environmental Eng.*

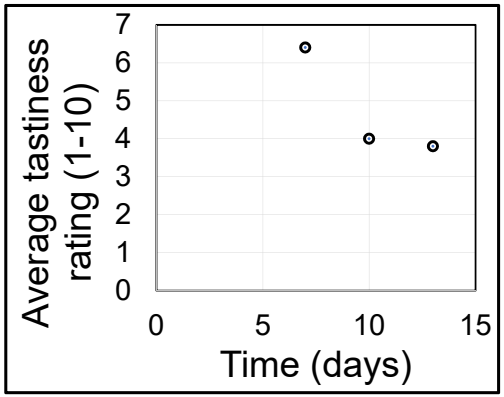


Goals

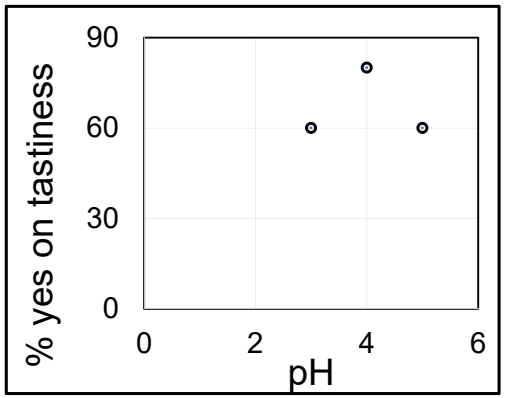
- Make a product from kombucha mat that normally goes unused
- Create cellulose spheres that will appeal to consumers



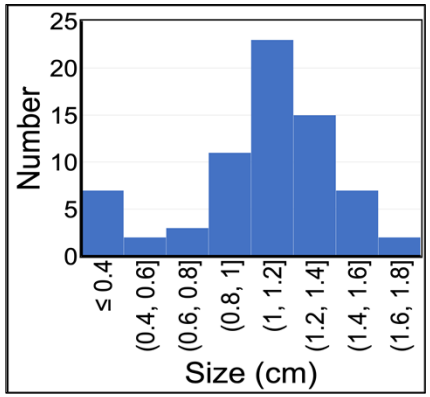
SCOBY Spheres Appear Least Appetizing after 13 Days



SCOBY Spheres Appear Most Tasty at 7 Days



Kombucha Mixture is Most Tasty at a pH of 4



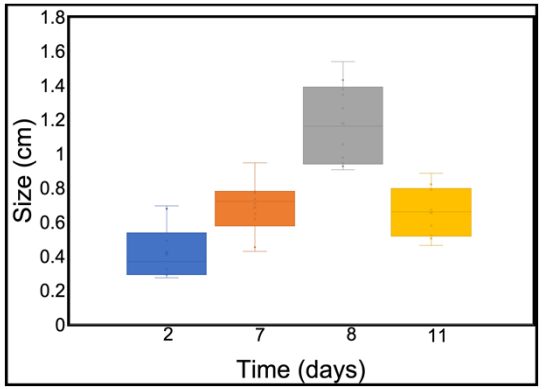
SCOBY Spheres at a Size Range from 1-1.2 cm are Most Abundant

SCOBY Sphere Uses

- Boba tea pearls
- Encapsulation
- Timed-release fertilizer

Future Research

- Ability to encapsulate
- Improve edibility
- Marketing approach



SCOBY Spheres are Largest on Day 8

Variable	Values
Agitation method	Stir vs. **shake**
Shake speed	42, 100, 120, **140**, 156 [rpm]
Flask type	Smooth vs. **baffled**
Sugar amount	7.3, 10.8 [mass % of soln.]
Hotel liquid amount	16.7, **28.6**, 33.8 [m % of soln.]

References

1. Toyosaki, Naritomi, et al. *BBB.* 2020, 59:8, 1498-1502.
2. Eggensperger Giagnorio, et al. *Environ. Sci. Technol. Lett*. 2020, 7:3, 213-218.
3. Goh, Rosma, et al. *Int. Food Research J.* 2012. 19:1, 153-158.

About the Team

The RAMPer's are all engineering students from different backgrounds. Tyler's major is MET/MME, Grace and Laurel both study environmental, and Adolfo's focus is in petroleum. We have enjoyed bringing our different areas of expertise together to create SCOBY spheres!