RET Project: Lyophilization of LAMP Reagents for Point-of-Care Saliva

Research Experience for Teachers (RET) Summer 2021

Test

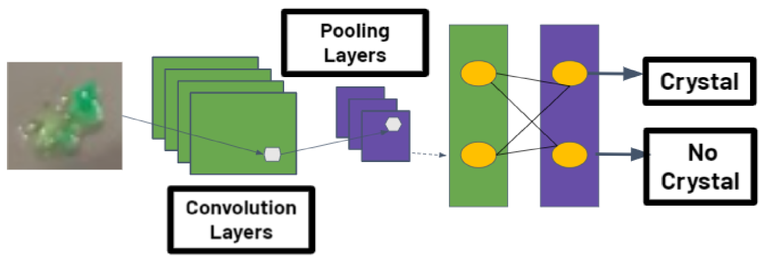
Brianne Loya, Ryan Flores, Jennifer Blain Christen
SenSIP Center, School of ECEE, Arizona State University.

RESEARCH BACKGROUND/DESCRIPTION

- COVID-19 point-of-care (POC) testing is critical in low income, developing countries in order to mitigate the harmful health, social and economic effects on already vulnerable populations.
- Lyophilization of reagents will aid in the development of a disposable, single use point-of-care testing device.

RESEARCH OBJECTIVES/PLAN

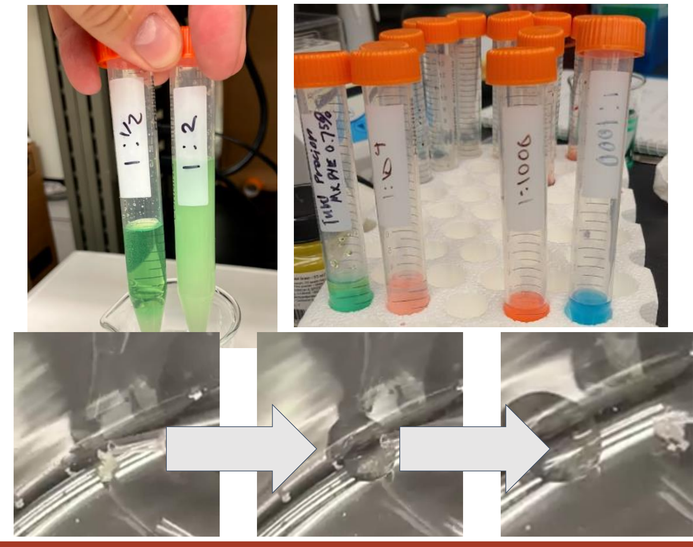
- Determine the ideal formulation of lyophilized sugars to:
  - Form 3-D Crystal Structure
  - Quick rehydration
  - Act as cryoprotectant to LAMP reagents



RESEARCH RESULTS/REMARKS

- Various formulations of trehalose and/or xylitol with water and dye were tested but none were ideal in structure or rehydration rate.
- Mannitol may be used in future trials
- Lyophilizer was not ideal for the development of pellets and in the future a commercial lyophilizer may be used

Solutions with various concentrations of sugars were tested to determine rate of crystal rehydration



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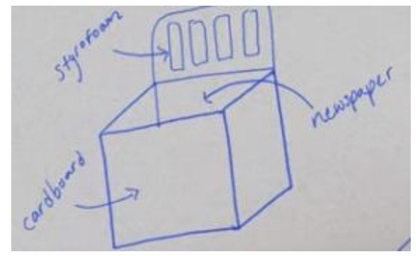
LESSON PLAN OBJECTIVES

- Students will design and build a device capable of insulating “LAMP reagents” exposed to a hair dryer for two minutes to mimic the issue of needing to keep reagents cold when delivering to developing countries.
- In this open-ended inquiry based activity, students will be required to critically think about structure and function of the materials they wish to use to build a device to solve this complex real-world problem based on ASU research.

LESSON IMPLEMENTATION/OUTCOMES

- I am some placeholder text so that you can see what this would look like if I were filled in.
- Please don’t make text much smaller than this font or we won’t be able to read it on a poster.
- I am more placeholder text. Don’t I look super amazing?



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