COLLEGE OF ENGINEERING

Mechanical, Industrial, and Manufacturing Engineering

MIME4.24

Affordable Bacteria Imaging

Making an effective and affordable solution for plate-imaging

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What is Plate-Imaging?

Agar plates grow bacterial and fungal samples. Taking pictures of bacterial or fungal samples lets scientists count the number of colonies. This can tell a lot about the sample's growth during various tests.

Previous Design

Pros:

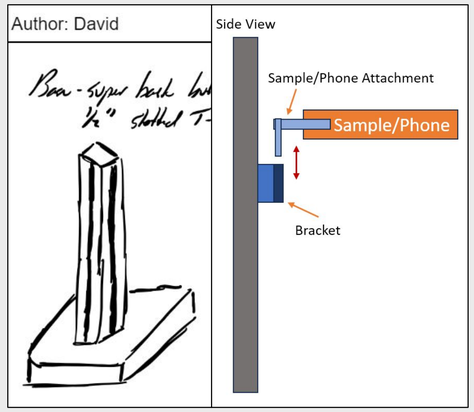
- Fits all sample sizes
- Extremely robust

Cons:

- Many custom machined parts
- Inadequate lighting
- Difficulty cleaning
- Poor single-handed adjustability
- Heavy
- Expensive

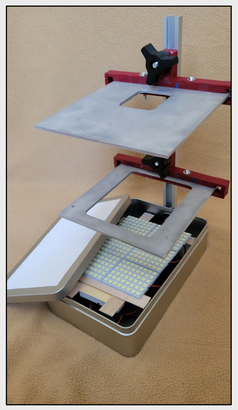
Oregon State University

Our Process

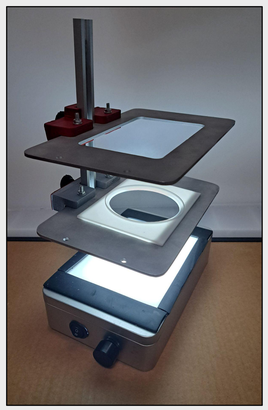


The Concept

Gen 1



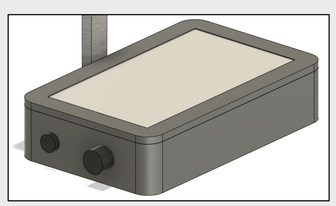
Gen 2



Gen 3

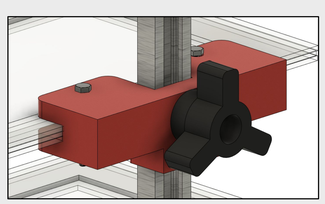
Main Features

The Light Source



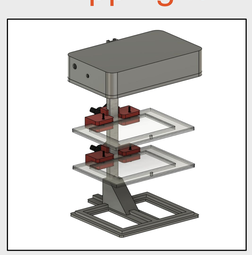
- Brighter lights
- Even diffusion
- Battery and wall powered
- Easy access to inner electronics

Brackets



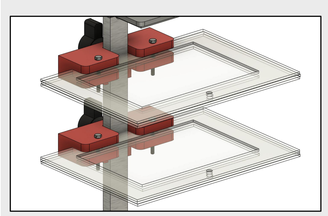
- Easy access at the back of the system
- Simple T-slot fixture
- Utilizes off the shelf T-rail

Flipping It



- Top down lighting
- Negates the need for two lightboxes

The Trays



- Fits all sample sizes
- Reversible design
- Easy to clean

Current Solutions

- **SmartDoc Imaging System - $689.96**
- **Biorad Gel Doc XR+ - $8355.00**
- **CGOLDENWALL - $289.00**

Our Cost: $90

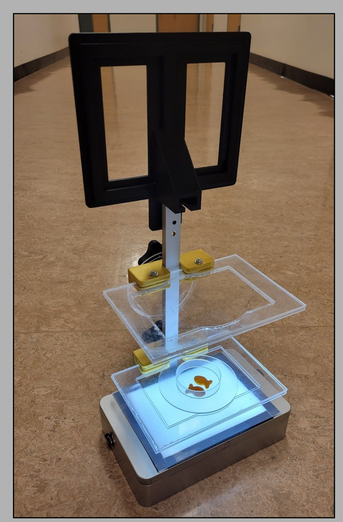
Customer Requirements

- **Sanitizability**
- **Portability**
- **Power + Rechargeability**
- **Manufacturability**
- **Modularity**

Target Customer

- **Researchers**
- **High Schoolers**
- **Hobbyists**

Final Design



Improvements:

- **Fewer custom parts**
- **Fewer manufacturing steps**
- **Improved lighting coverage**
- **Lighter**
- **Lower cost!**