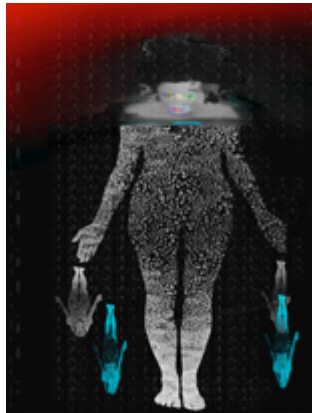


Twisted Gravity

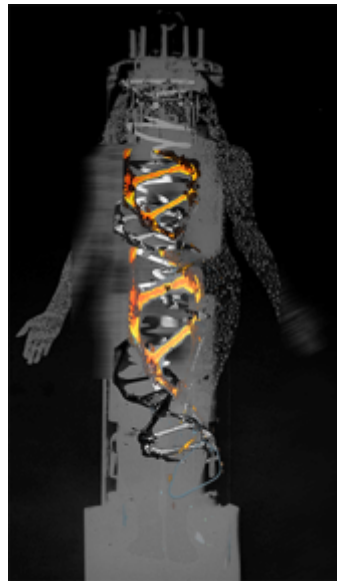
CREATED BY CONCERN FOR A SUSTAINABLE PLANETARY FUTURE

2019 - 2021



Twists of Gravity

- 502,000 people die each year from drinking unsafe water. This twist of art and science creates a portable purification system capable of processing and converting contaminated water into drinkable water one liter per minute, thereby correcting climate change, human carelessness and pollution.

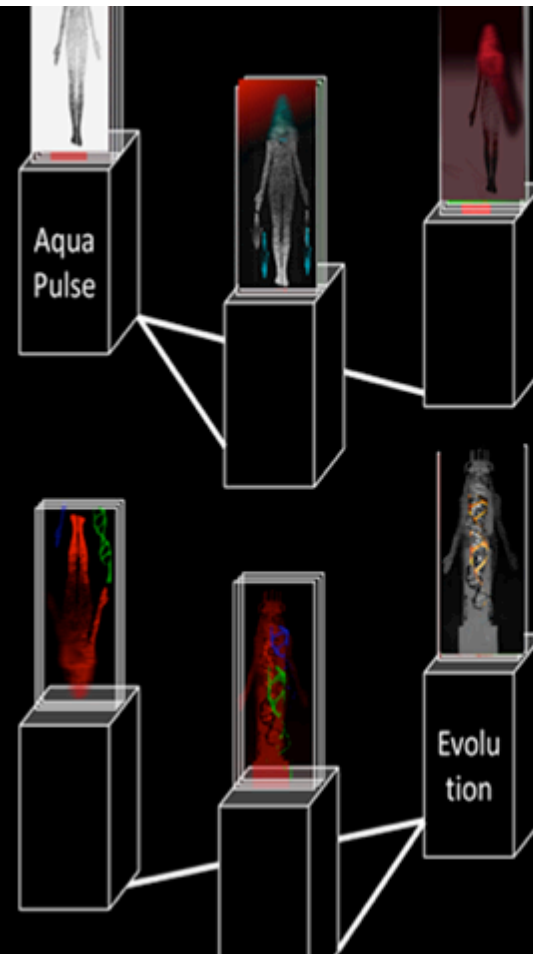


EXHIBITION DESIGN

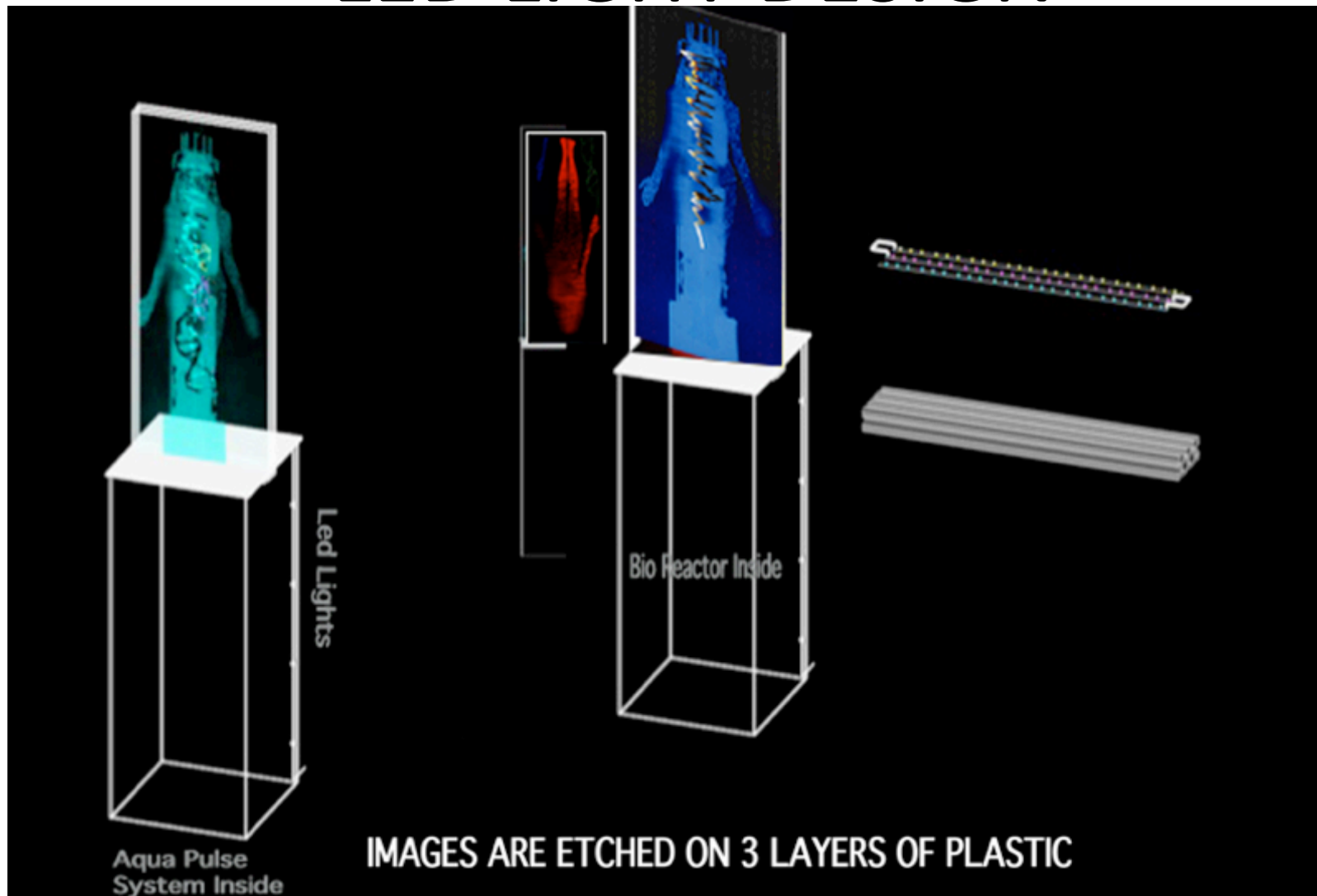
Twisted Gravity

The exhibit consists of six pedestals with three etched panels each

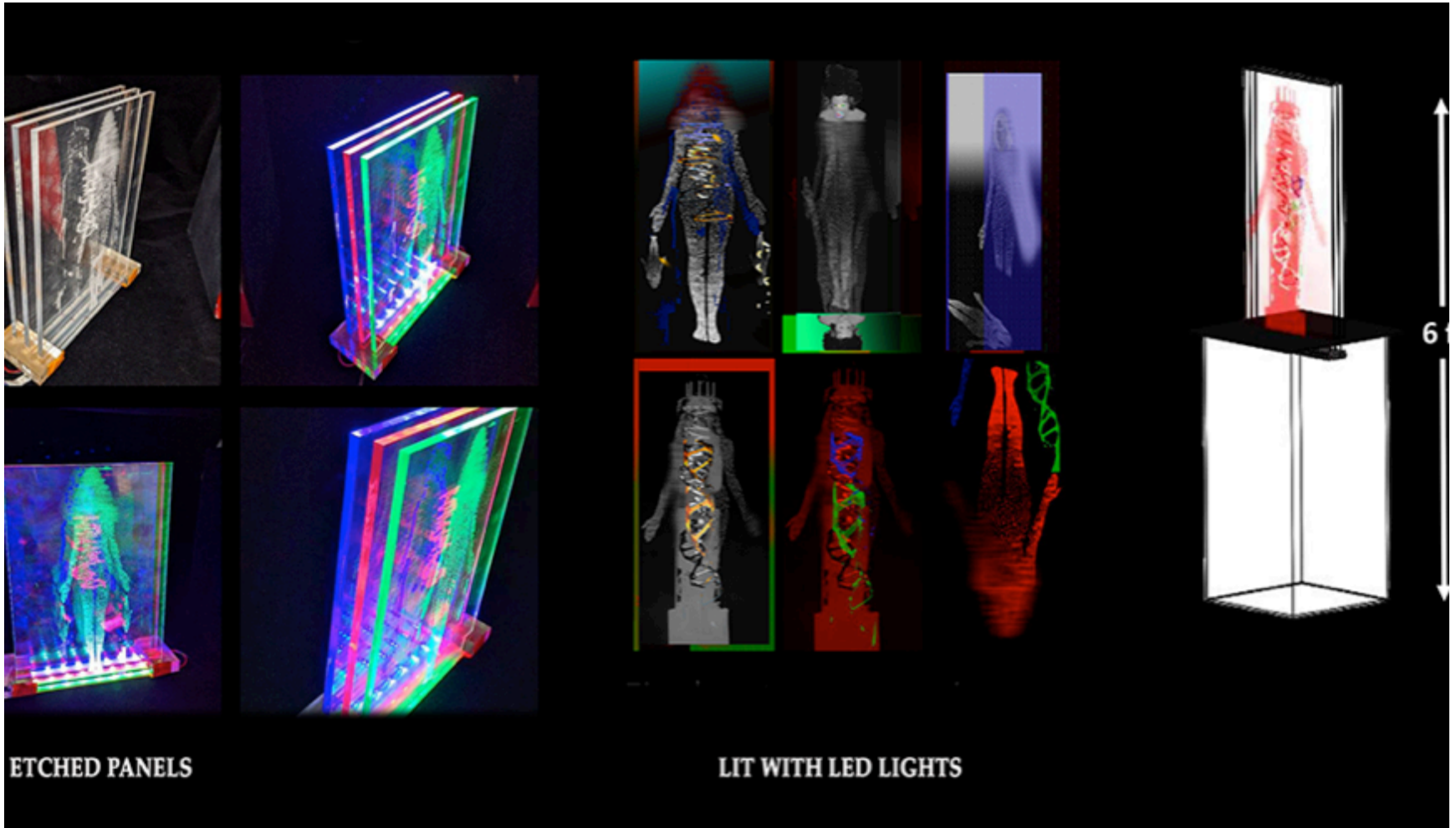
- Aquapulse pedestal
Contains an electro pulsing system that purifies water from pathogenic microorganisms such as bacteria.
- Evolution pedestal
Contains a system to select and propagate microorganism with the ability to degrade plastic.
- Dynamic color changes
Killing efficiency of bacteria and the level of achieved plastic degradation activity will be visualized live by change of brightness of connected etched panels.



LED LIGHT DESIGN

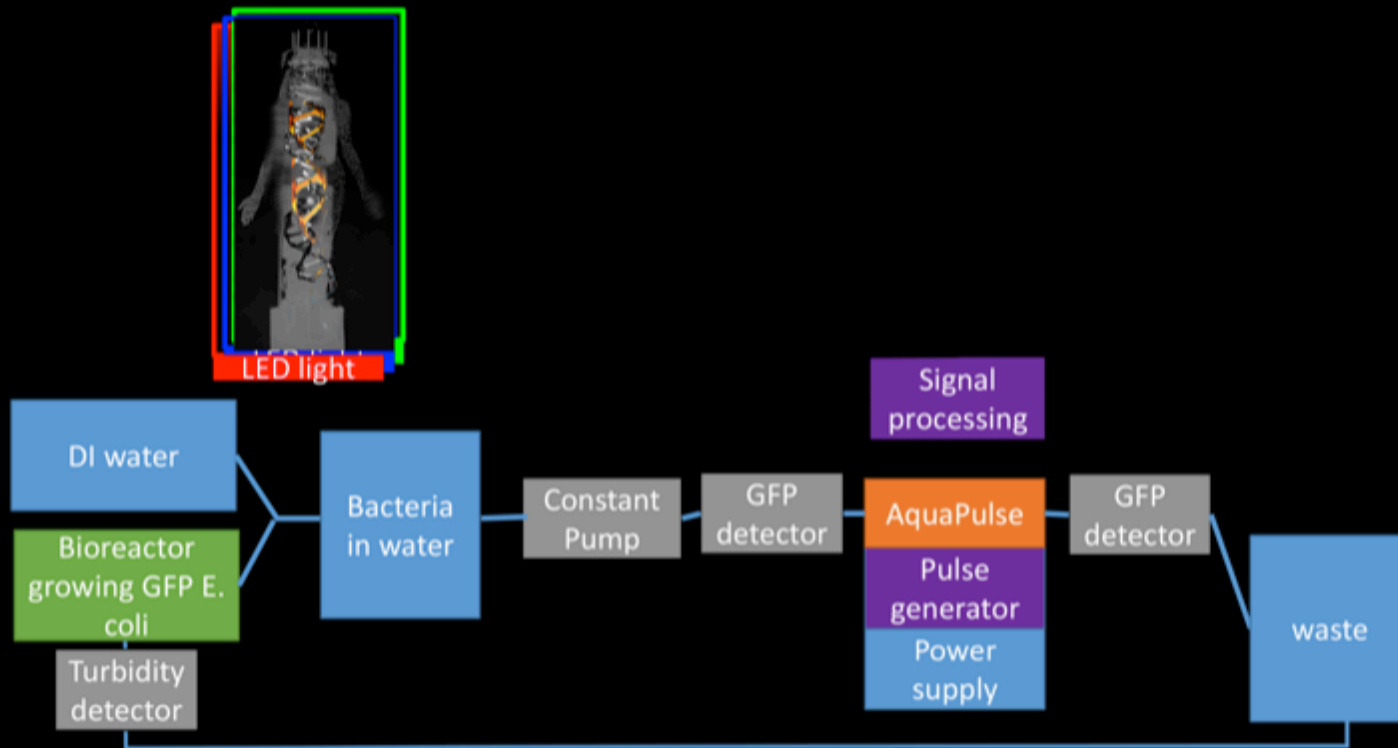


ETCHED PANELS



AQUAPULSE

Aquapulse unit: Concept

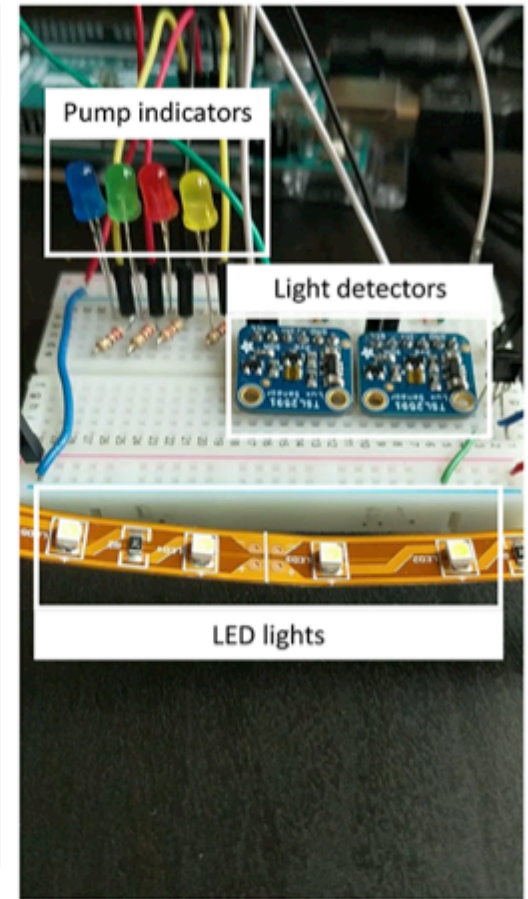
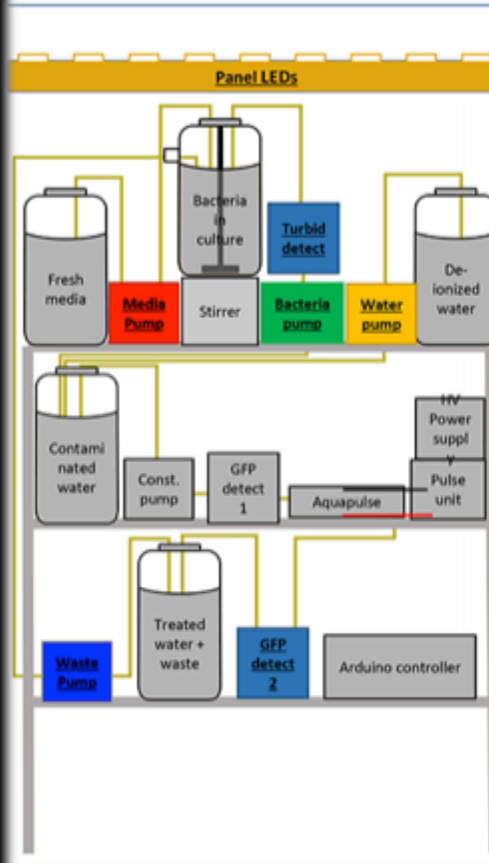


AQUAPULSE CONTROL SYSTEM

AquaPulse Control

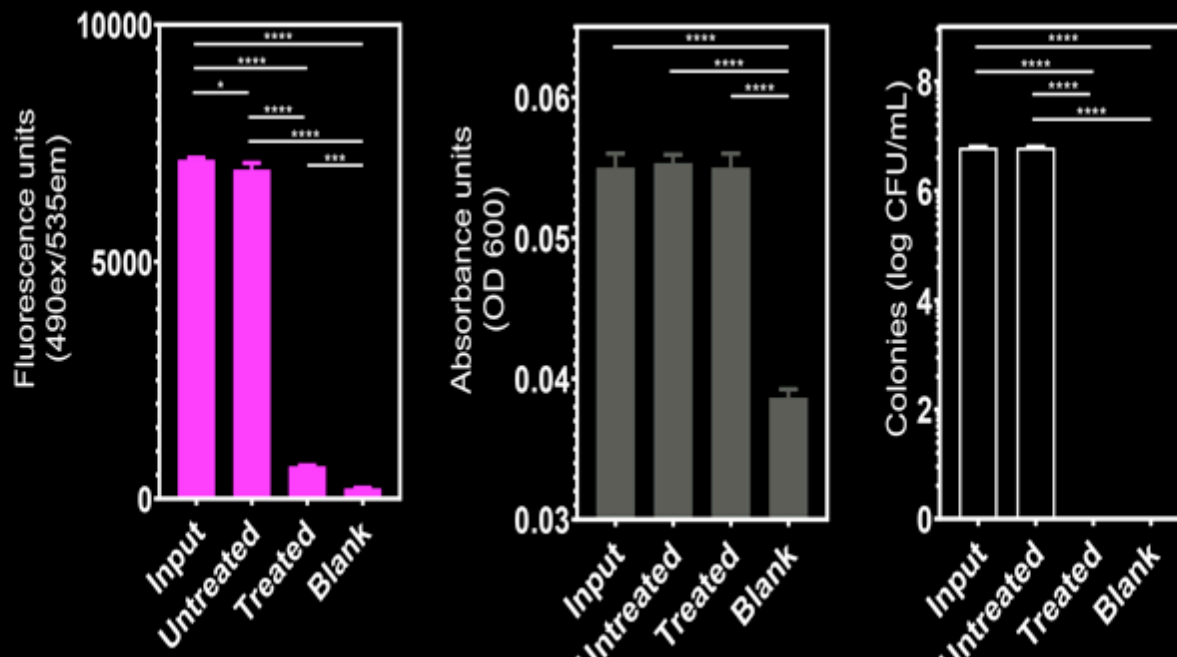
Controls all variable pumps and detectors simultaneously

- Injects bacteria/water to contaminated water
- When GFP detector goes low (killed bacteria), brightens panel LEDs
- When turbidity is high, remove some bacteria and add fresh media
- Bacteria injection takes precedence over waste, preserves ratio for contaminated water
- Can easily add 3rd detector (GFP 1), just don't have access to one right now



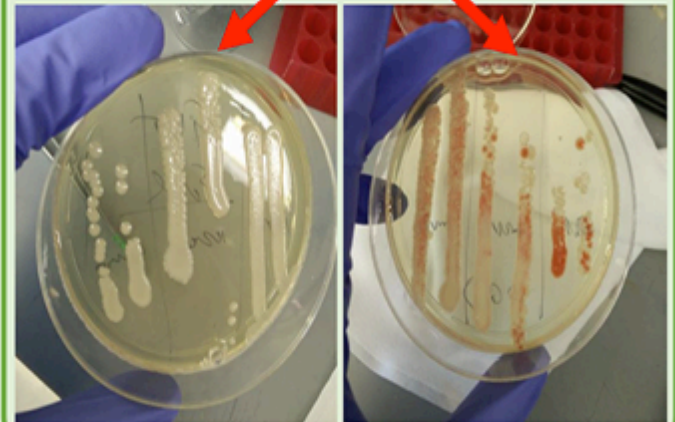
GFP signal drops when killed by AquaPulse

- Measured GFP + bacterial density (plate reader) and counted viable bacteria (plating) for aquapulse treated bacteria
- Significant reduction in GFP in inactivated *E. coli*, no change in density



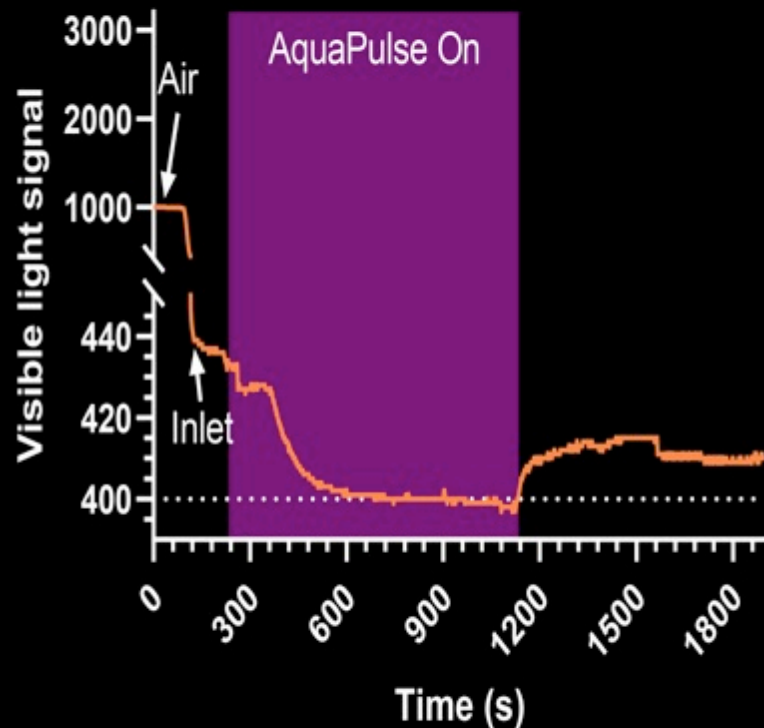
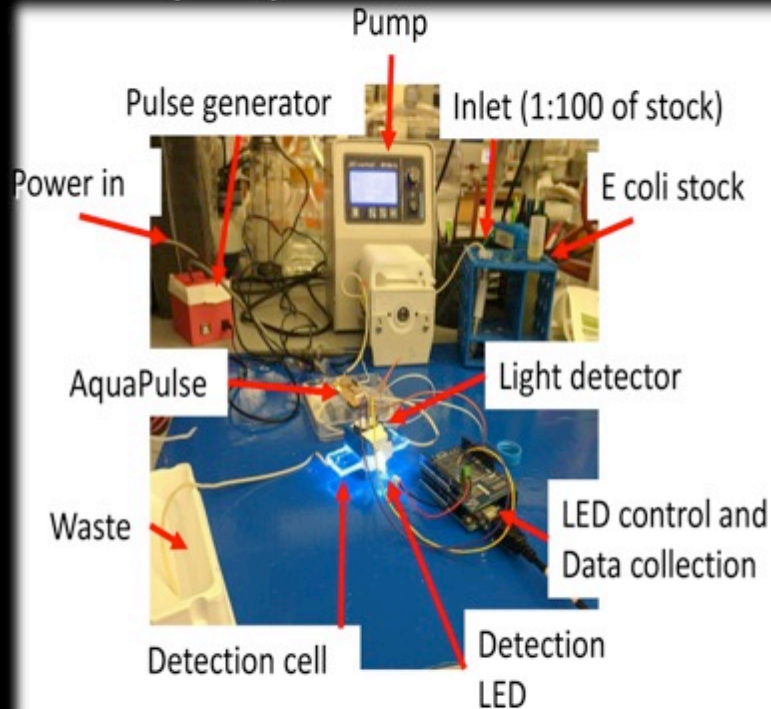
Evolution Module: Degrading plastic

- Collected samples to get a mix of bacteria
 - Soil samples (bacteria growing on plastic trash)
 - Waxworm gut (plastic degrading organism)
- Ongoing: (unmonitored) evolution in lab



Waxworm Img. Credit: <https://flukerfarms.com/reptile-u/care-sheets/wax-worms-care-sheet>

Aquapulse GFP detection



Small, but detectable shift between treated and untreated e coli with flow

LYNN HERSHMAN LEESON

IN COLLABORATION WITH

DR. THOMAS HUBER

RESEARCH DIRECTOR AT ALMIRALL
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