

Water Contaminant Testing on ISS

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EE and BioE departments
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Problem: What contaminating microbes are in the drinking water on the International Space Station?

Goals of the project:

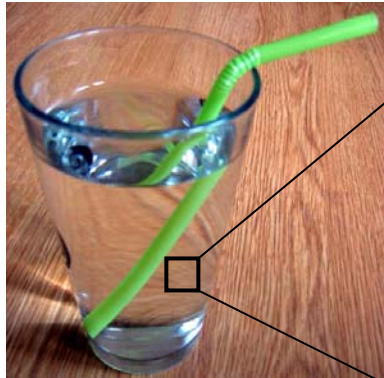
- Implement existing testing chemistry in a microfluidic setting
- Aid scientists on the ISS by speeding up their water analysis
- Design a cheap, single-use testing platform that requires a smaller water sample



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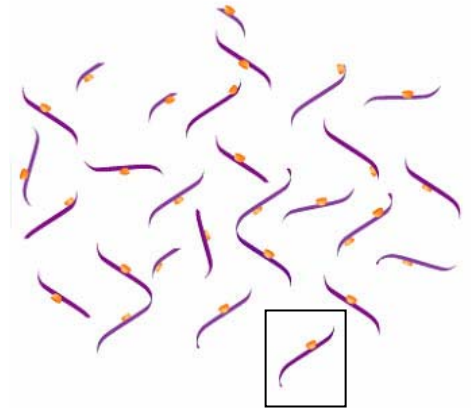


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*Break open microbe,
extract RNA*

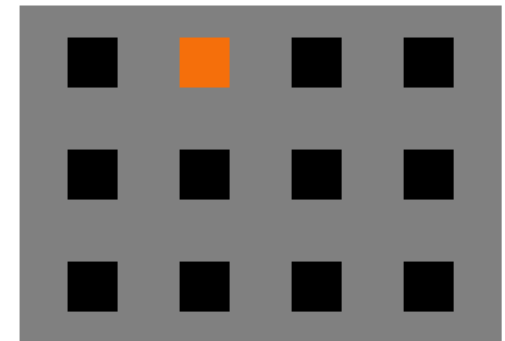
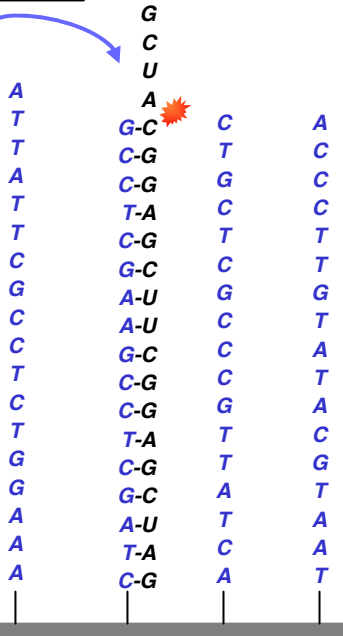
*Fragment RNA
& label with fluors*



Fluorescent tag



*RNA binds to
DNA probes*



*Location of fluorescence determines
Which microbes have been detected*



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Finished: 1st iteration of Microfluidic Design

What's Next?

- **Revise card design** to better bind the RNA to DNA probes
- **Integrate** the RNA fragmentation and fluorescent labeling onto existing card
- **Develop robust imaging processing techniques** to accurately interpret the fluorescent signals

