

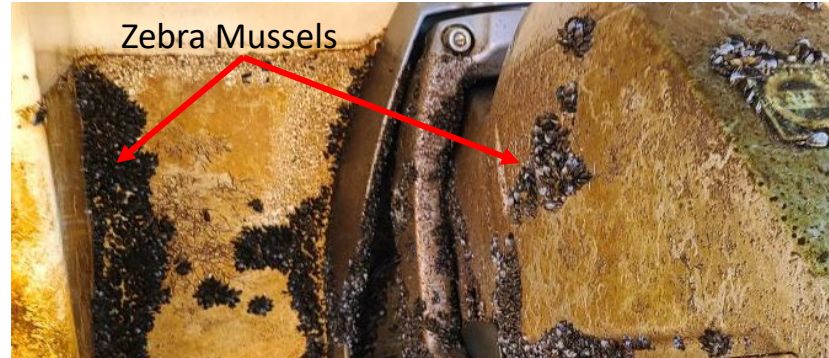
Using Bacterial Communication to Reduce the Spread of Aquatic Invasive Species

Reed Jacobson

Elias Lab, University of Minnesota

Aquatic Biofouling

Aquatic Biofouling is process of unwanted organisms attaching to submerged surfaces

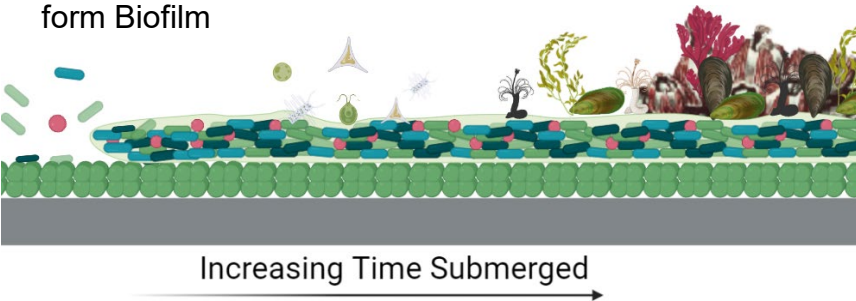


Biofouling Problems:

- Increased drag
- Biocorrosion
- Increase spread of aquatic invasive species (AIS)
- Current control methods are toxic

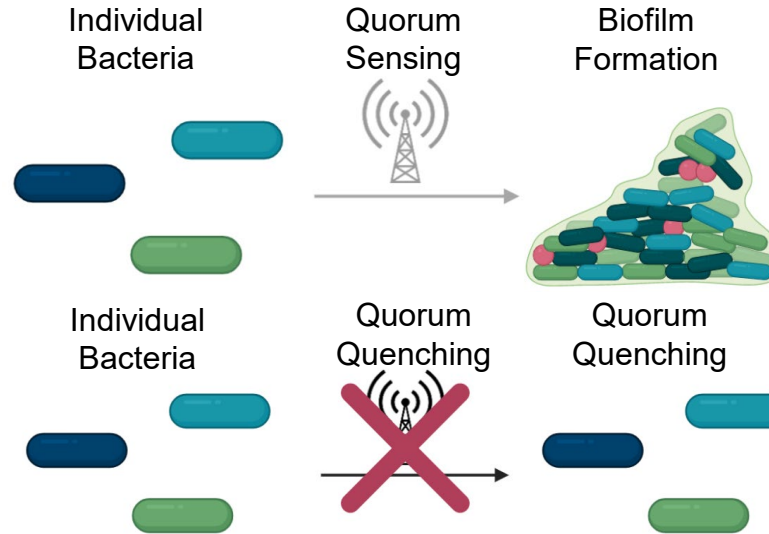
Biofouling Process

1. Bacteria Attach and form Biofilm
2. Larvae and Macroalgae Attach
3. Macroorganism Community



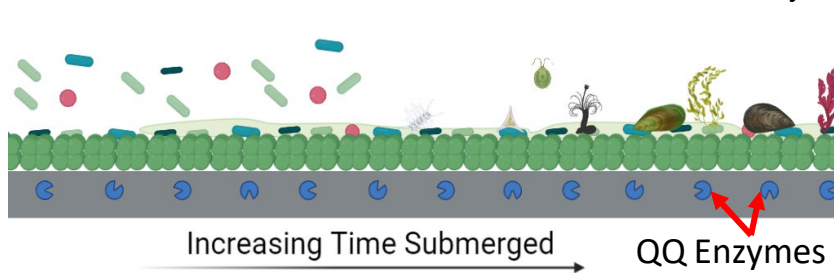
Quorum Sensing (QS) Quorum Quenching (QQ)

- Microbes form biofilm via quorum sensing
- This process can be halted via quorum quenching



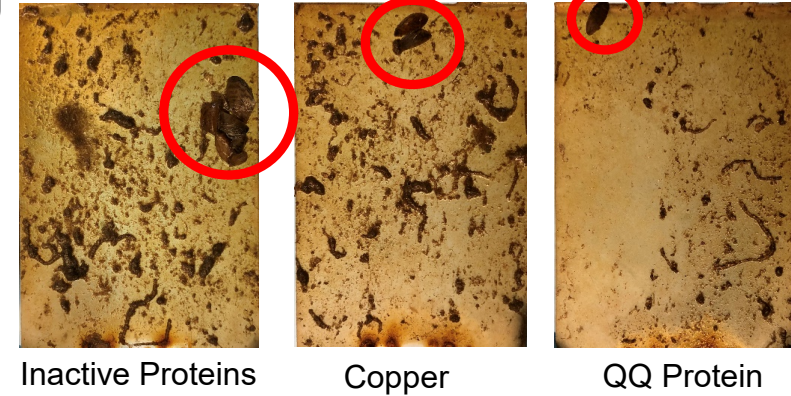
QQ to Prevent Biofilm and Biofouling

1. Bacteria Attach with Limited Communication
2. Reduction in Larvae and Macroalgae Settlement
3. Reduced Macroorganism Community



Experiments

Comparing Paint Additive Zebra Mussel Attachment



Zebra Mussel Boat Experiment



Conclusion

With this technology we hope to be able to include QQ proteins in aquatic paints to

- Reduce biofouling
- Reduce the spread of AIS
- Be an eco-friendly alternative to current control methods.

