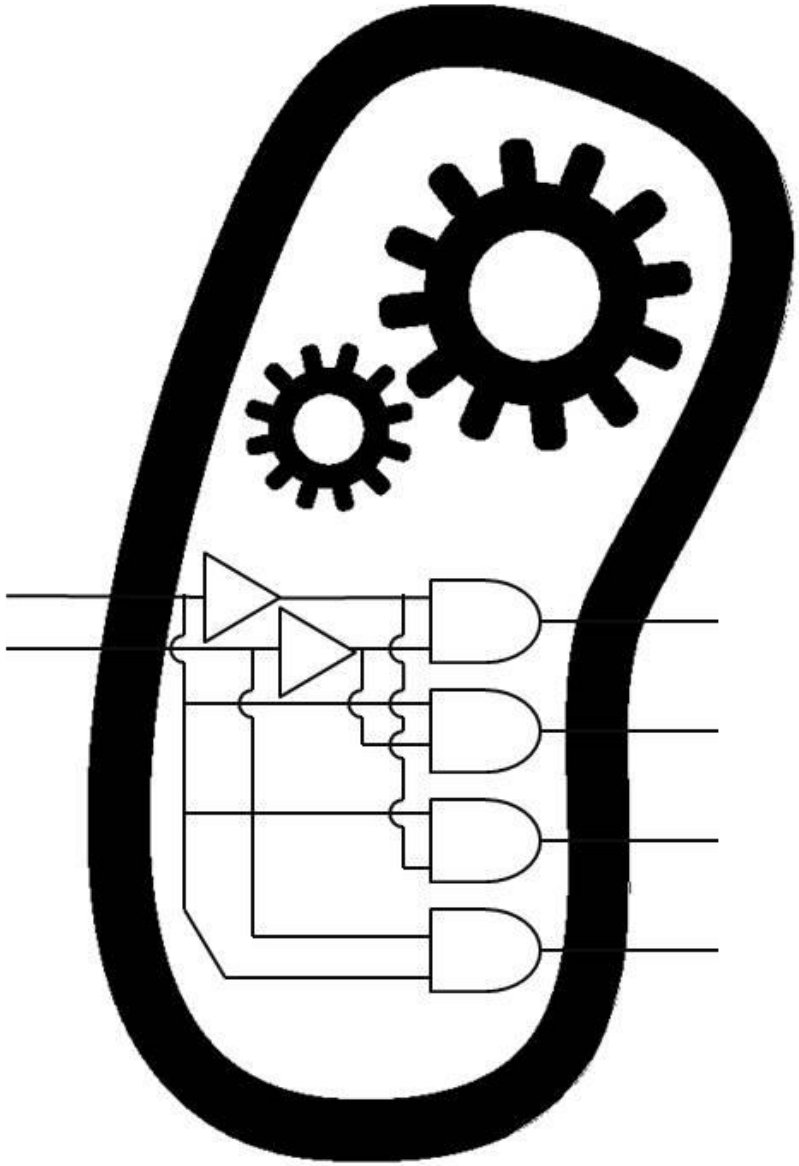
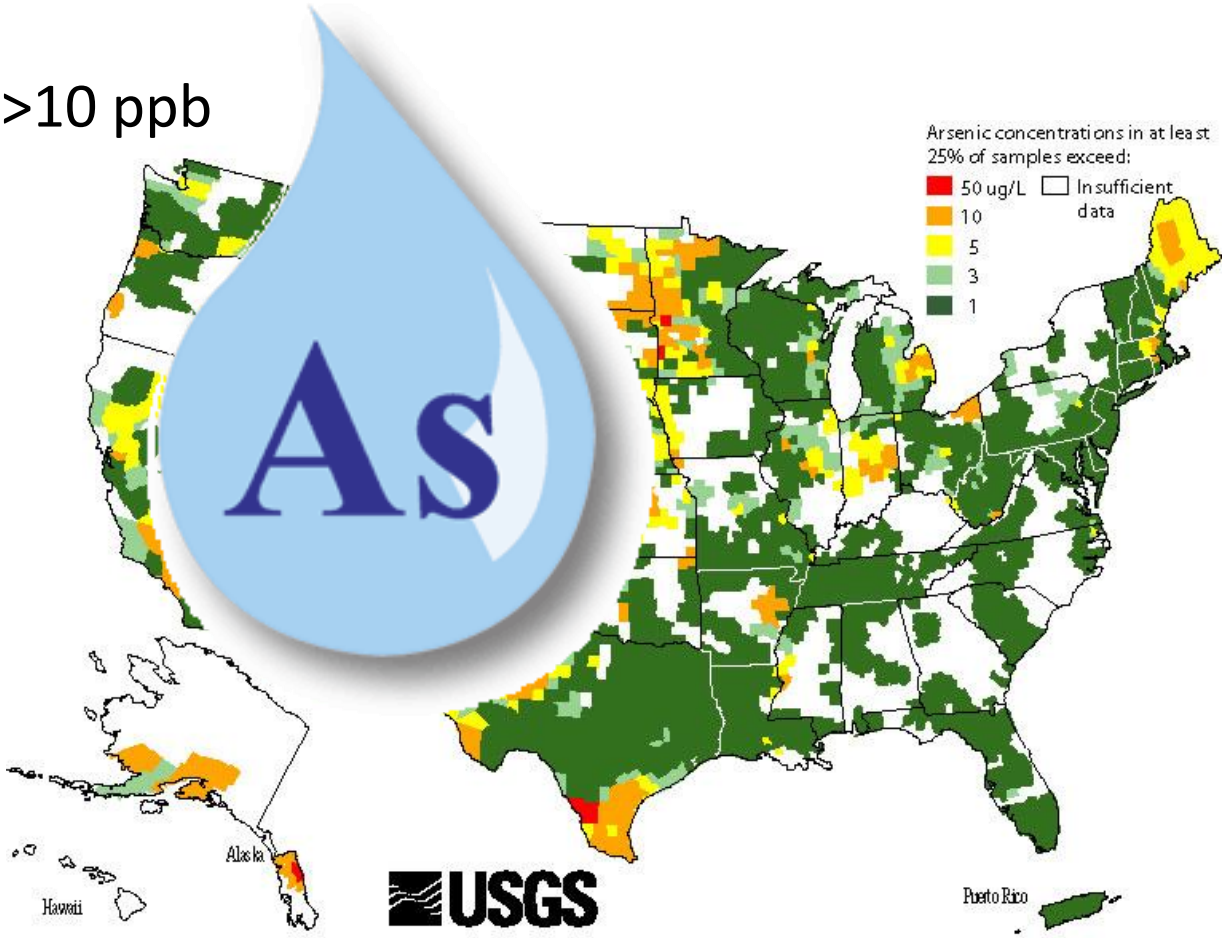


iGEM Bioware Arsenic System!

Project Part II: There is a need to remove arsenic from drinking water

Millions exposed to >10 ppb



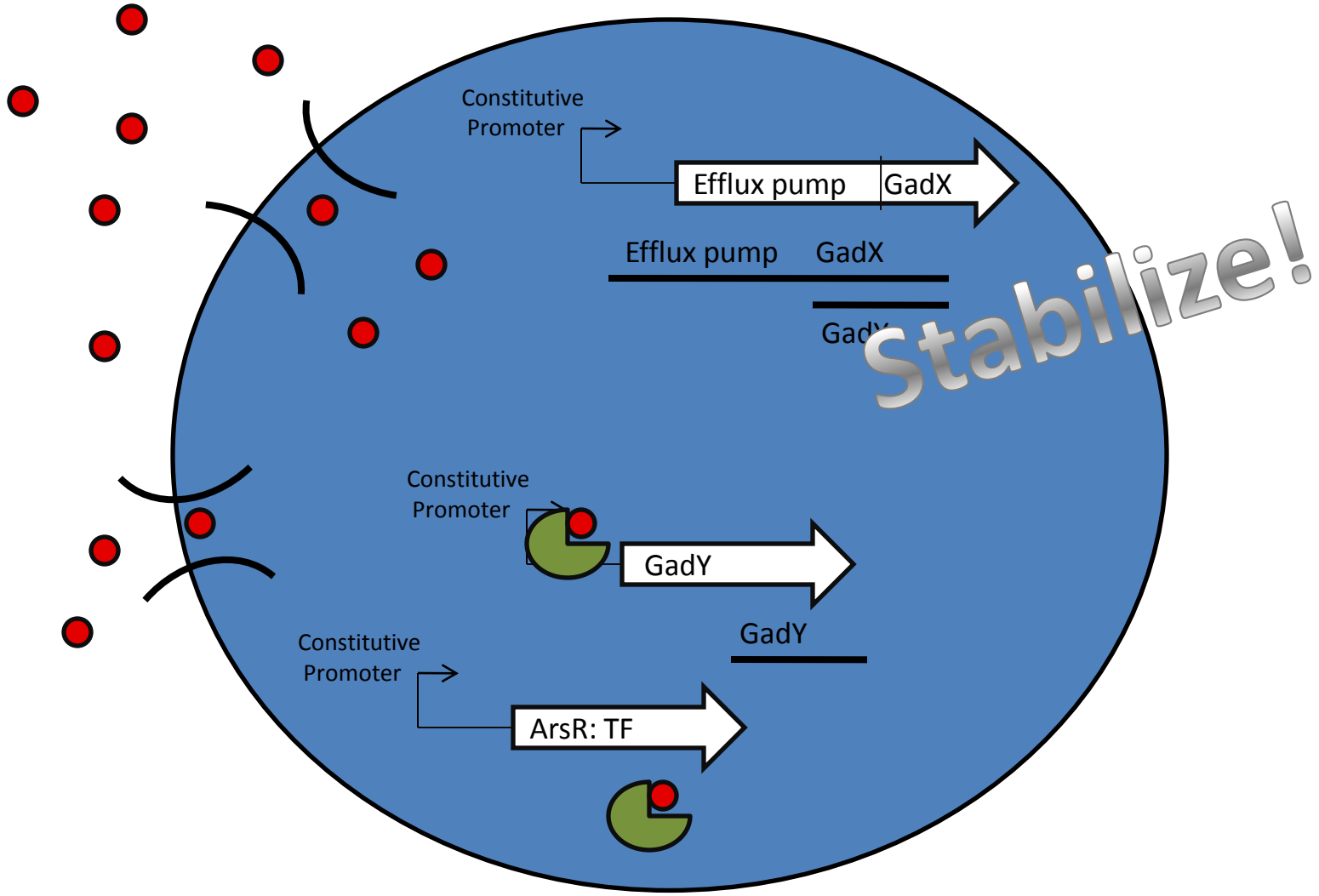
Project Part II: Bacteria are inexpensive and effective solution

No need for expensive chemicals/membranes

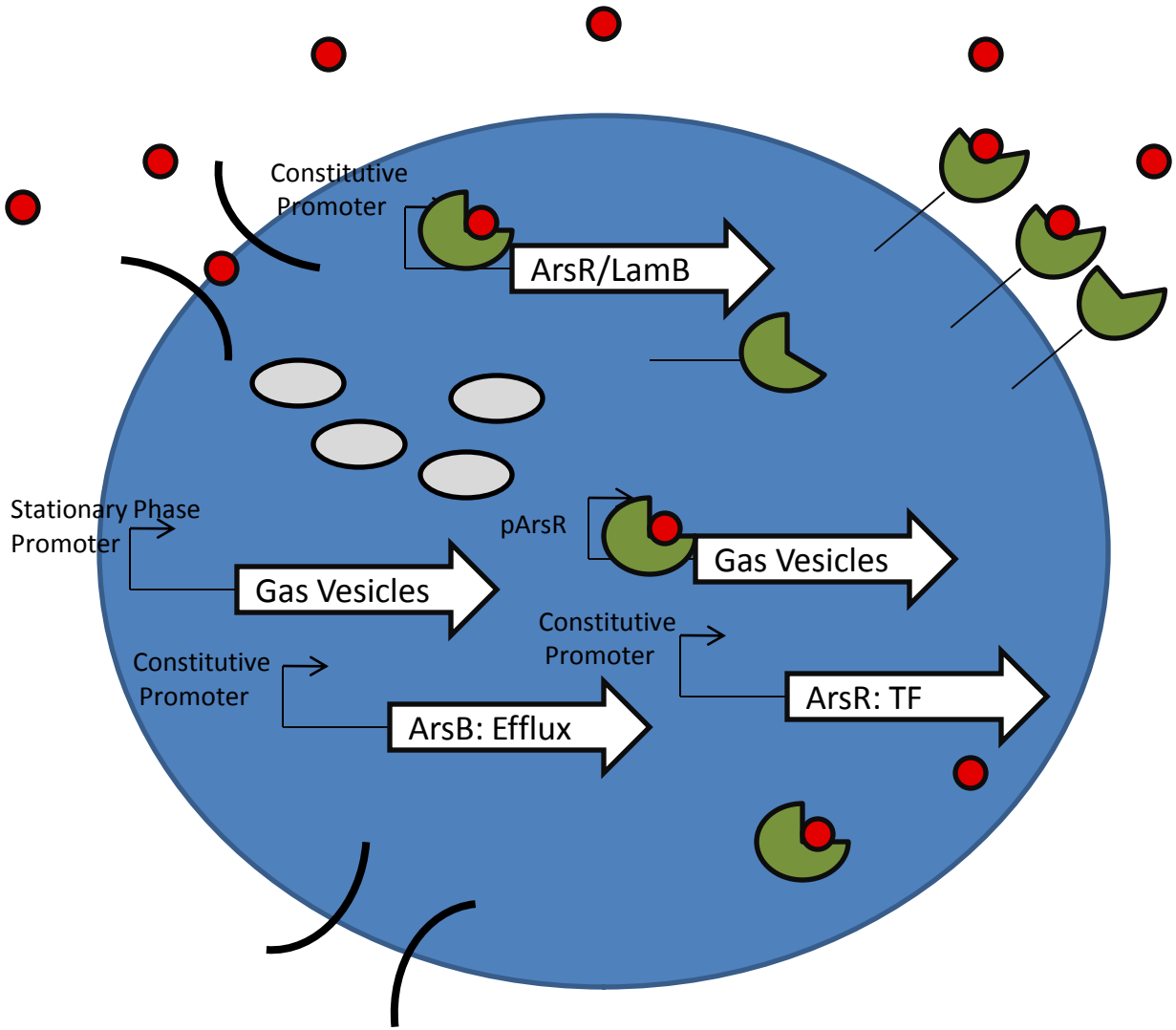
Easy to grow and reuse

Can detect low concentrations

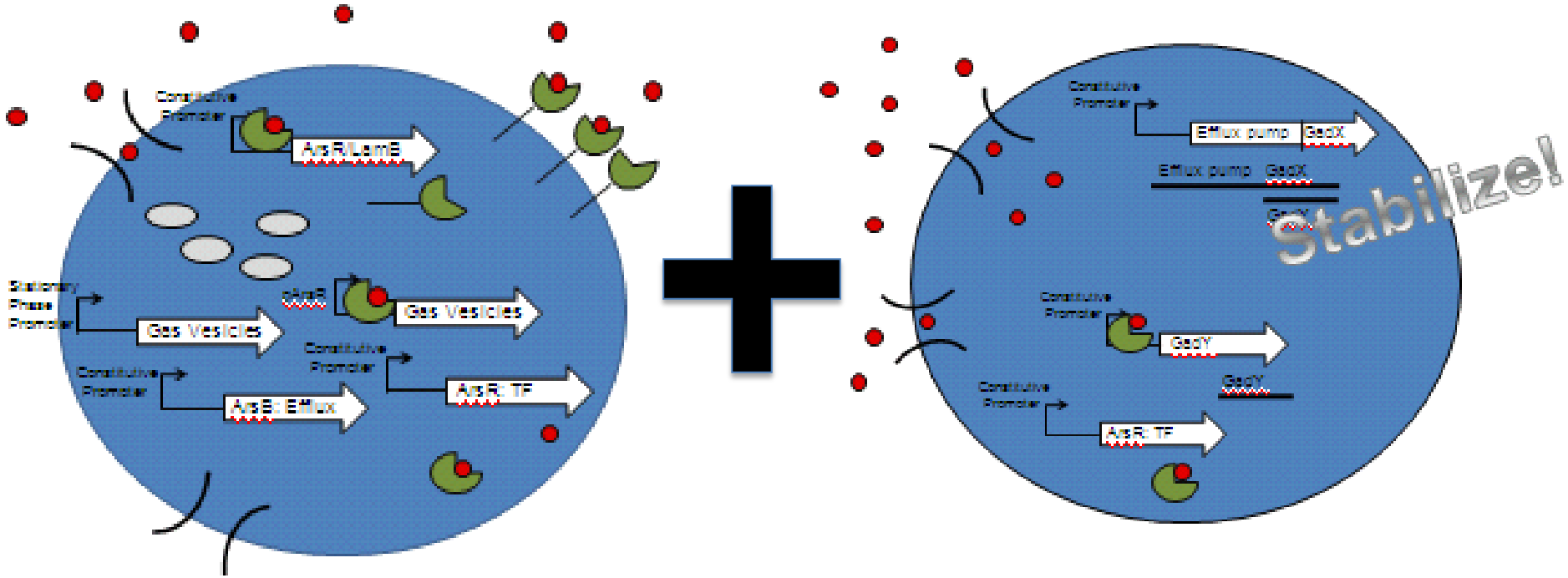
Bioremediation Small RNA Construct



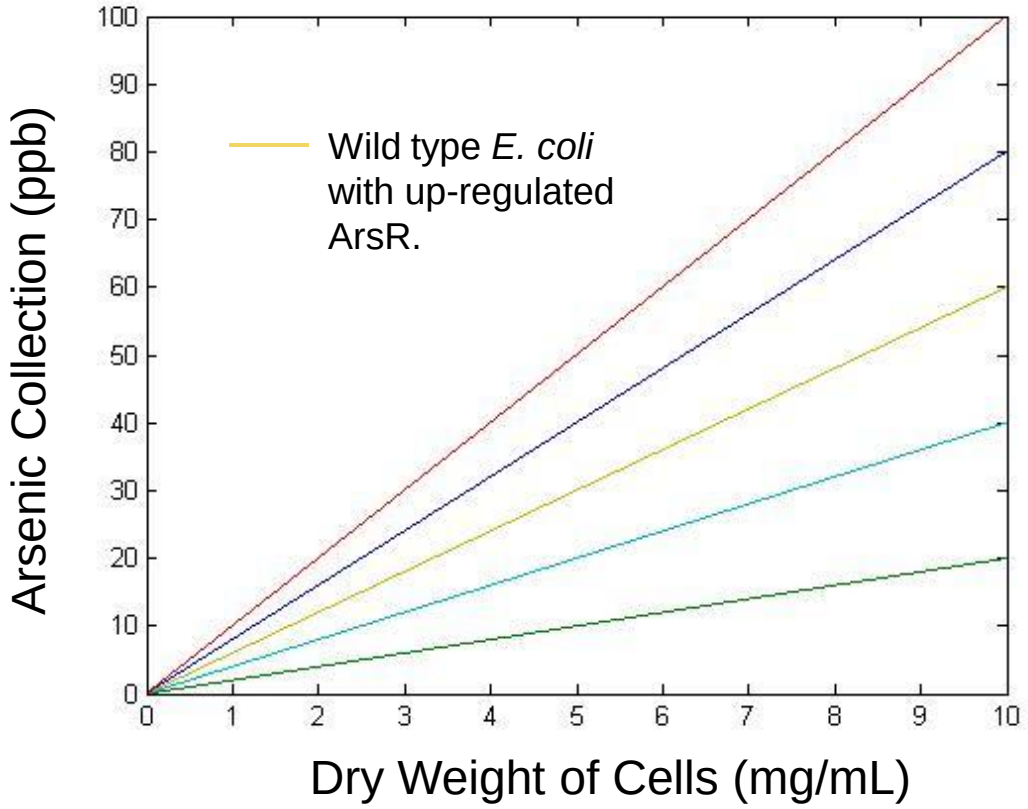
Bioremediation Schematic:



Final Construct



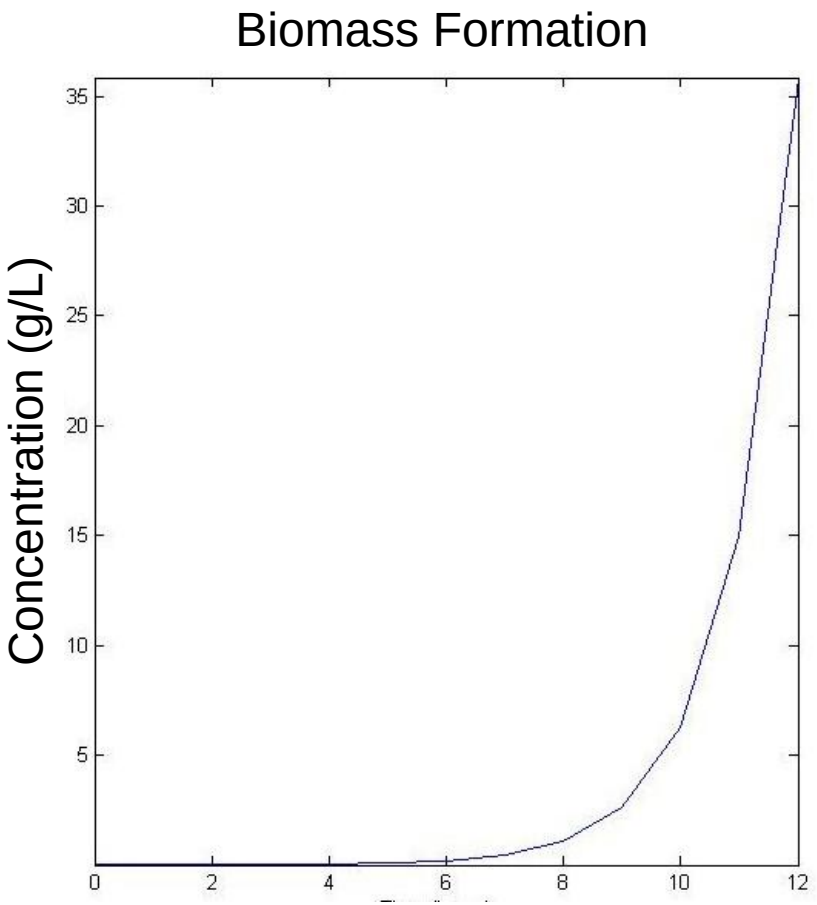
Strong Arsenic Removal Based on Cell Concentration and Affinity for Arsenic



The projected Arsenic collection for our system is well over 50ppb, particularly at cell concentrations over 7mg/mL.

Flux-Balance Analysis Indicates Strong Cell Survivability

- Collaboration with the UIUC-Illinois-Tools team, allowed us to model *E. coli* growth using Constraint-based reconstruction software[1] in MATLAB
- The primary protein additions were assumed to be ArsB, ArsR, and LamB.



BioBricks!

Completed

- ArsR coding
- ArsR +RBS+Terminator

In Progress

- ArsR+RBS+Terminator+ Constitutive Promoter
- ArsB
- Stationary Phase Promoter
- ArsR Promoter