



# Siderophore Quantification of *C. basilensis* SRS



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## Introduction

- Bacteria produce siderophores, molecules that transform ferric iron from the environment to useful ferrous iron
- Cupriavidus basilensis* SRS was isolated from metal and radionuclide contaminated streams at the Savannah River Site. It's siderophore production abilities are unknown
- I worked to determine if *C. basilensis* produced siderophores and in what concentration

## Materials

- Chrome Azurol S (CAS)
- Hexadecyltrimethylammonium bromide (HDTMA)
- 1mM iron solution
- C. basilensis* SRS



Creating the CAS Assay

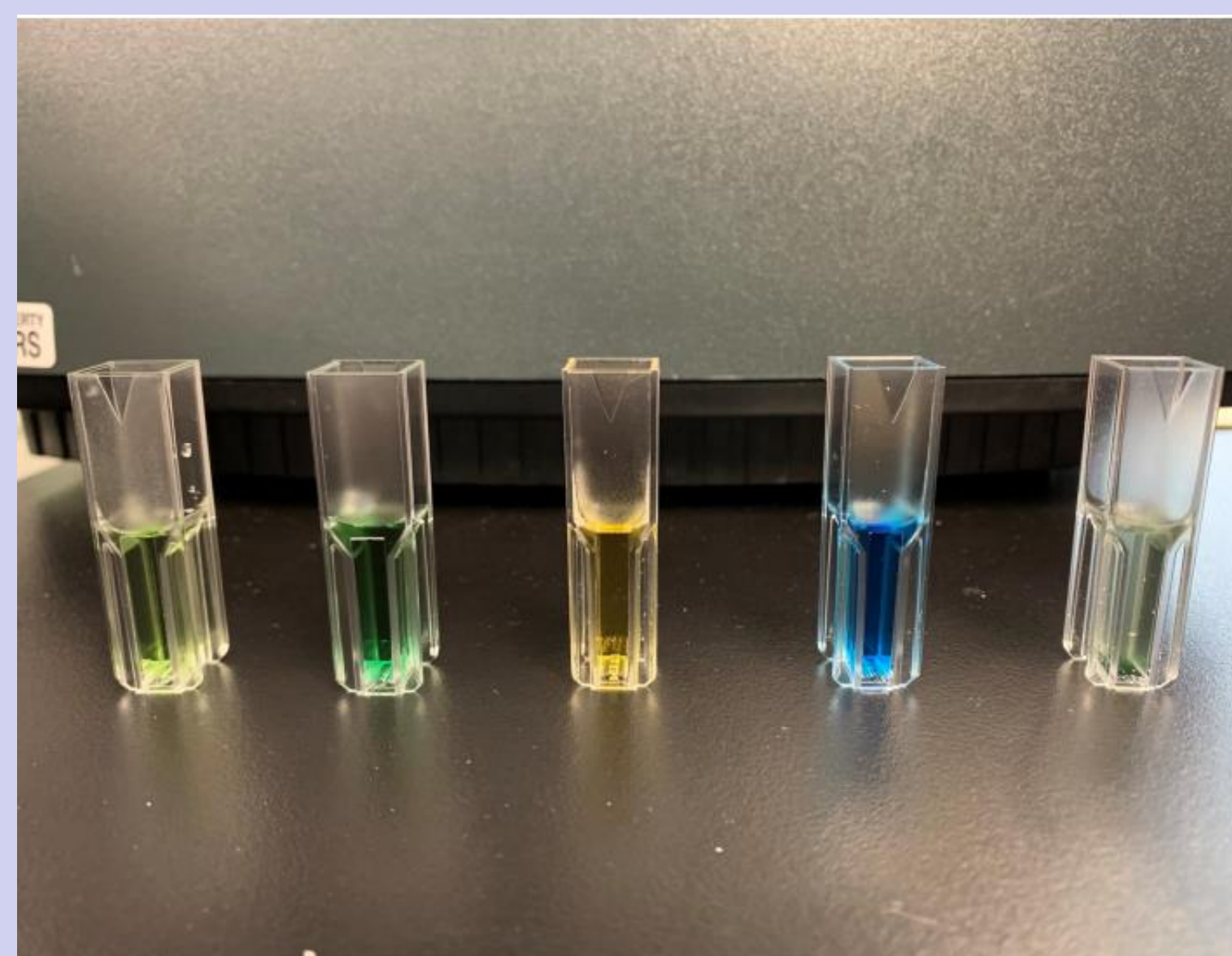
## Methods

### Time Trial:

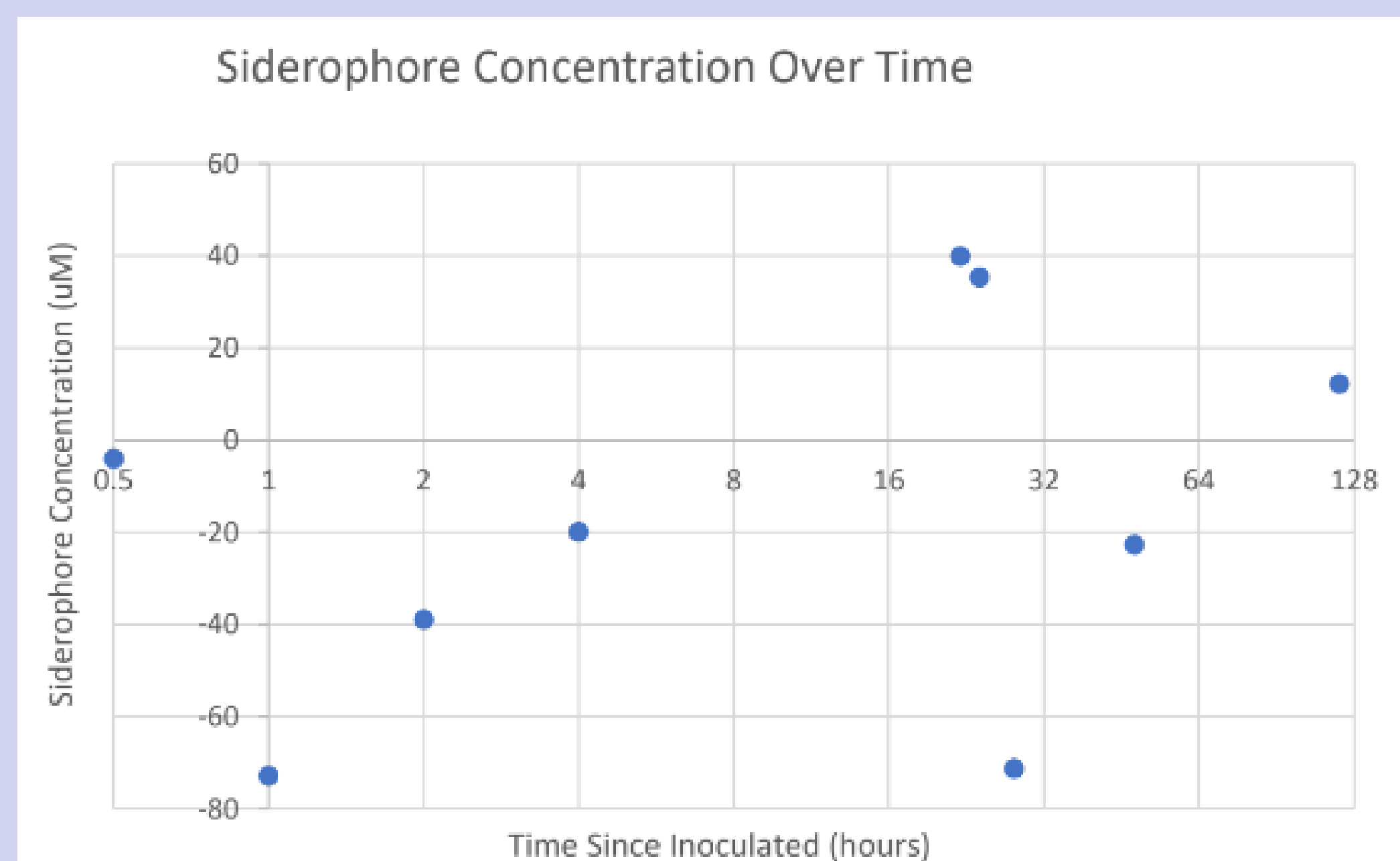
- At 0, 1, 2, 4, 22, 24, 28, 48, and 120 hours after inoculation, 1.5mL of broth was centrifuged for 10 minutes.
- A 50:50 mixture of filtered supernatant and CAS assay was prepared and absorbance measured.

### Changing Growth Conditions:

- C. basilensis* SRS was grown in media rich in Fe(aq), Fe(s), Cu(aq), Ce(aq), La(s), La(aq), and normal media.
- At 0, 2, 24, and 48 hours after inoculation, 1.5mL of broth was centrifuged for 10 minutes.
- A 50:50 mixture of filtered supernatant and CAS assay was prepared and absorbance measured.

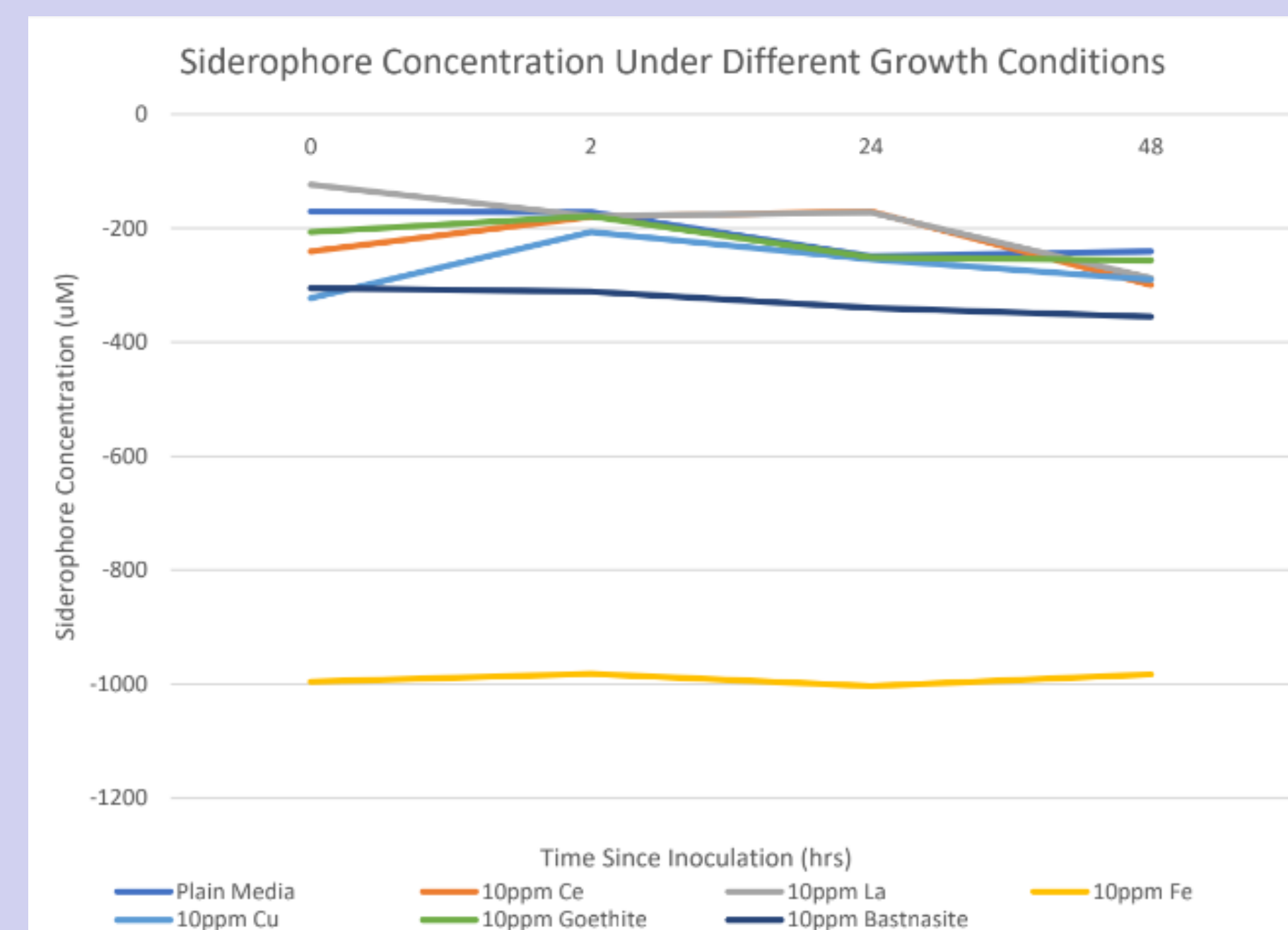


CAS Assay in Various Stages of Activation



- C. basilensis* SRS does produce siderophores
- Siderophores are used more in early stages of growth, evidenced through fewer siderophores present in solution

## Results



- Usually, siderophore concentration levels do not vary greatly
- In Fe rich conditions, siderophore production is severely suppressed

## Site Information

Name of Site: Savannah River National Laboratory ([www.srnl.doe.gov](http://www.srnl.doe.gov))

Address: 227 Gateway Drive, Aiken, SC

Supervisor: Dr. Robin Brigmon, Dr. Alex Kugler

Site mission: Investigation of scientific matters important to the Department of Energy

## Acknowledgments

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