Subject: Thesis Defense - Stella Sanderson, MS Biology
Date: Tuesday, July 2, 2024 at 11:13:09 AM Eastern Daylight Time
From: SSB Faculty List on behalf of Diane St. Germain
To: SSB-FACULTY-LIST-L@LISTSERV.GMU.EDU

Thesis Defense Announcement
To: The George Mason University Community

Candidate: Stella Sanderson

Program: M.S. in Biology

Date: Tuesday July 16, 2024

Time: 1:00 PM Eastern Time (US and Canada)

Join Zoom Meeting
https://gmu.zoom.us/j/96814899533?pwd=pNsRfRYRo9QgfzJWbPU7nnu0r9Ukcd.1

Committee Chair: Dr. Monique van Hoek

Committee Members: Dr. Ramin Hakami, Dr. Brett Froelich

Title: "Poly-gamma-glutamic acid and the *cap-BCA* locus in *Francisella tularensis LVS* and *NIH B-38*"

Abstract:
The *capBCA* locus in *Francisella tularensis* is an important virulence factor and critical for intracellular growth with *capB* deletion strains being considered as vaccine candidates, however the exact function of this locus is still unknown. Sequence homology comparisons between the *Live Vaccine Strain (LVS)* and *Bacillus anthracis* have indicated the possibility that the locus may be involved in the production of poly-γ-glutamic acid (PGA) capsule, however no previous study has been able to successfully isolate a PGA capsule from *Francisella*. In the present study, we were able to isolate what is likely PGA from *LVS* and *NIH B-38 (ATCC 6223*) strains using an adjusted separation and extraction procedure used previously for extracting PGA from *Bacillus subtilis*. The agarose gel separation showed material present. Our studies suggest *Francisella* CapB and CapC are required for PGA production. This is the first demonstration of *Francisella LVS* and *NIH B-38* possibly producing PGA as previous studies have focused on environmental strains of *Francisella*. While our modified western blot technique was unable to confirm the product as PGA, this study gives a base for future research looking into possible mechanisms of *Francisella* PGA production and the possible role of the *capBCA* locus."

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