



***Salmonella* Isolate Recovery Project**

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Enteric Diseases Laboratory Branch, CDC

APHL West Coast Regional Meeting

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EDLB Project Contributors



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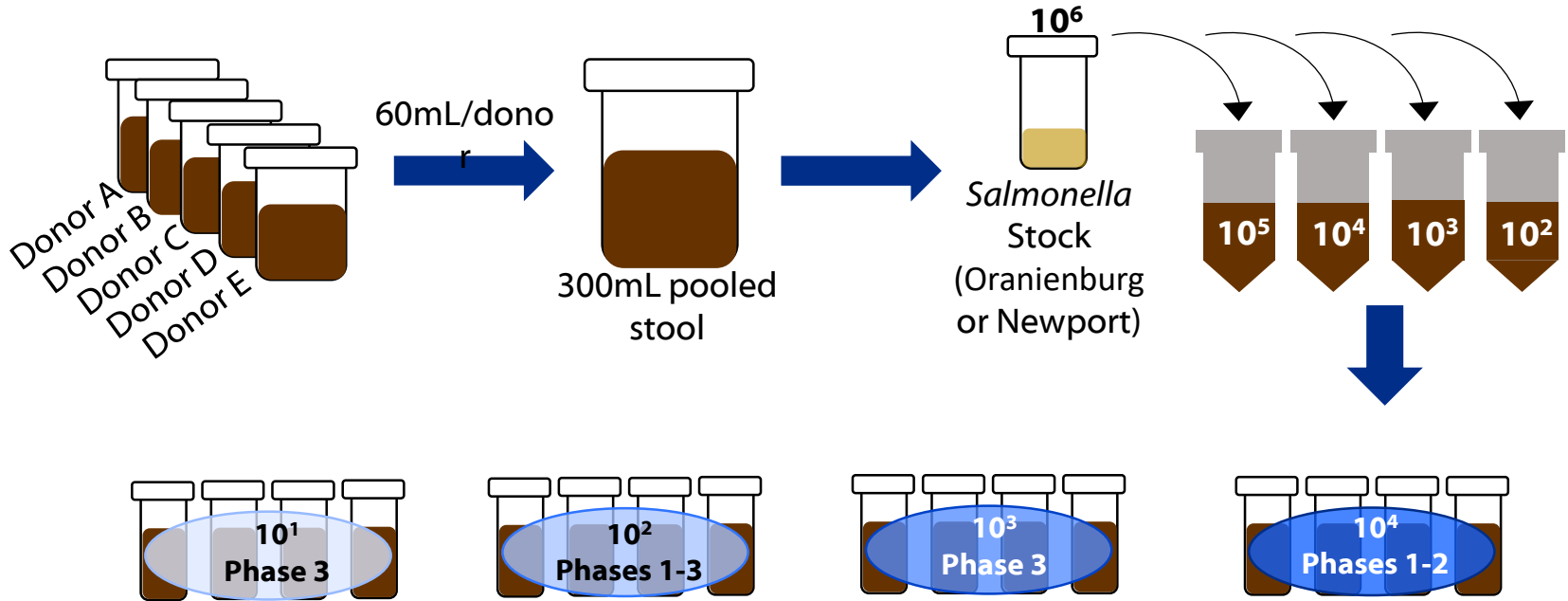
Brooke Aspinwall

Current Project

Replicated testing of the most promising conditions used in previous studies to identify an improved *Salmonella* isolate recovery workflow

STEC recovery testing beginning in spring 2019

Standard Stool Creation



Salmonella spike-in confirmed by plating and qPCR

Phase 1

Which transport media, holding temperature, and plating media best facilitate *Salmonella* recovery?

Phase 1

Experimental Design

Serotype

Oranienburg



Newport



Unspiked



Spike Level

10^4

10^2

US

Days Since Collection

4

8

14

Variables Tested

Transport Media



Cary-Blair



GN Broth

Holding Temperature



22°C



4°C

Plating Media

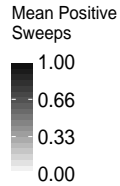
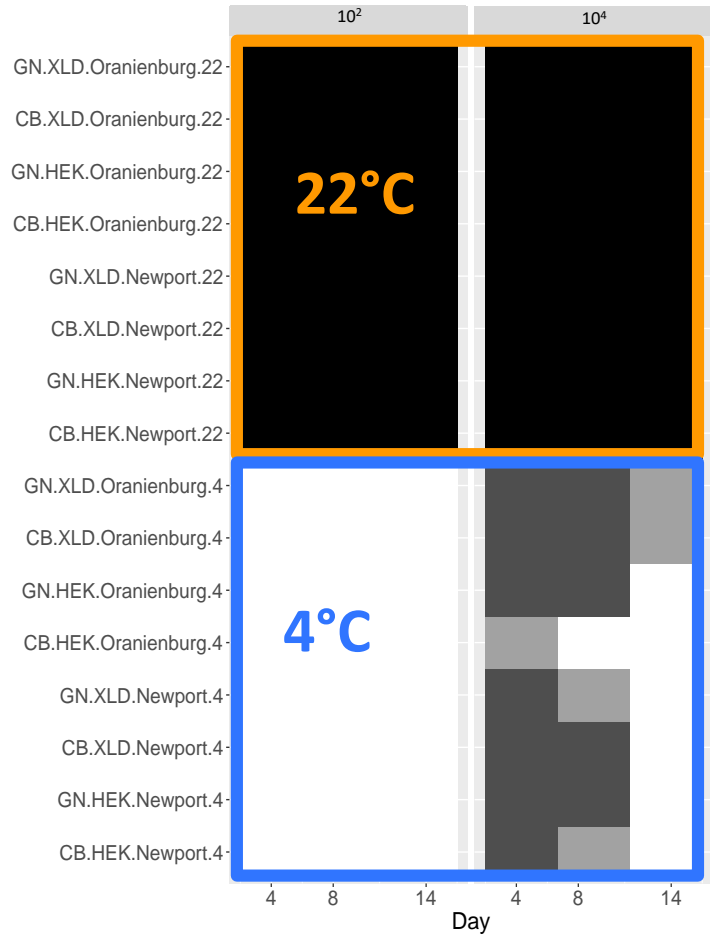


Hektoen



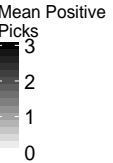
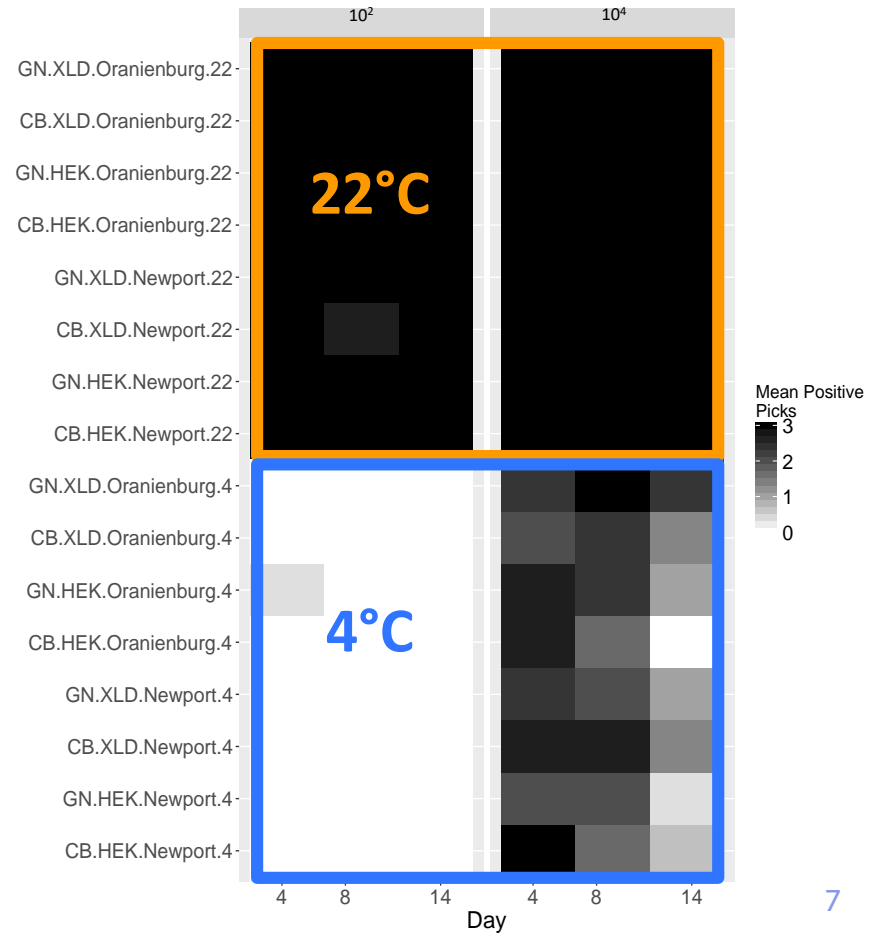
XLD

Sweeps



Darker is better

Picks



Phase 1 Outcomes



Cary-Blair is more widely used

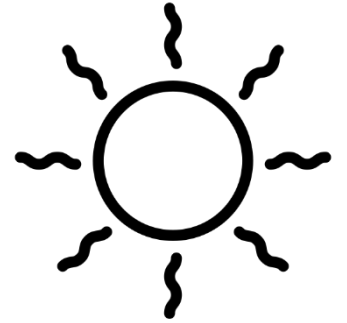


Hektoen has a longer shelf-life

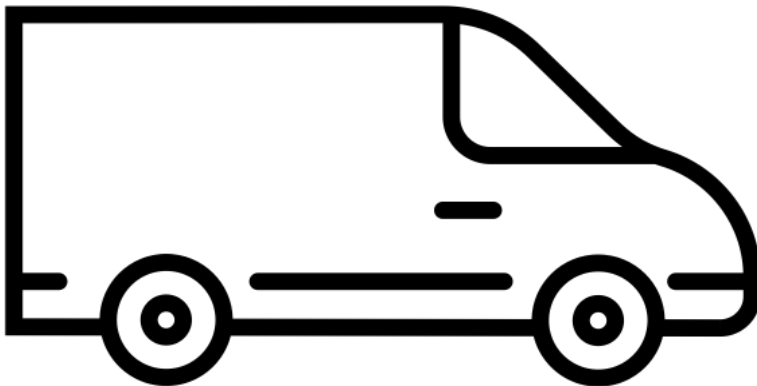


Recovery best when specimens transported/stored at 22°C

Phase 2 “Hot Truck”






Are heat spikes during transport detrimental to *Salmonella* recovery?



Phase 2

Experimental Design

Serotype



Oranienburg	Newport	Unspiked
		

Spike Level

10^4	10^2	US
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Days Since Collection

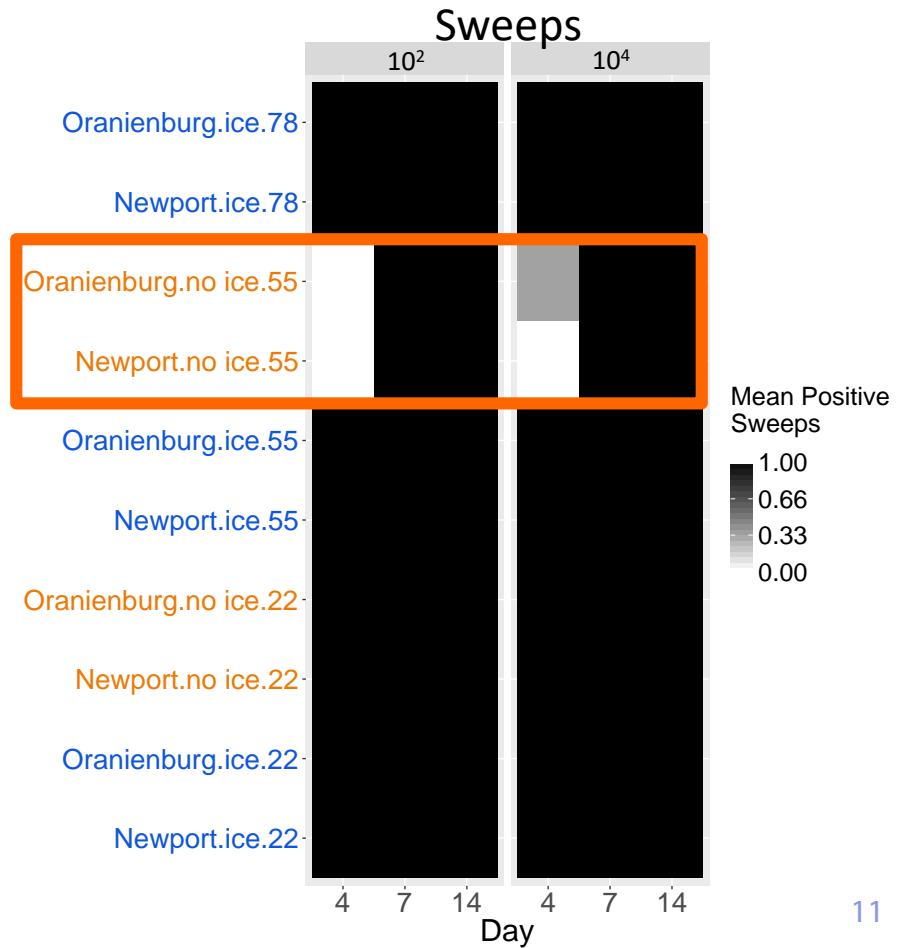
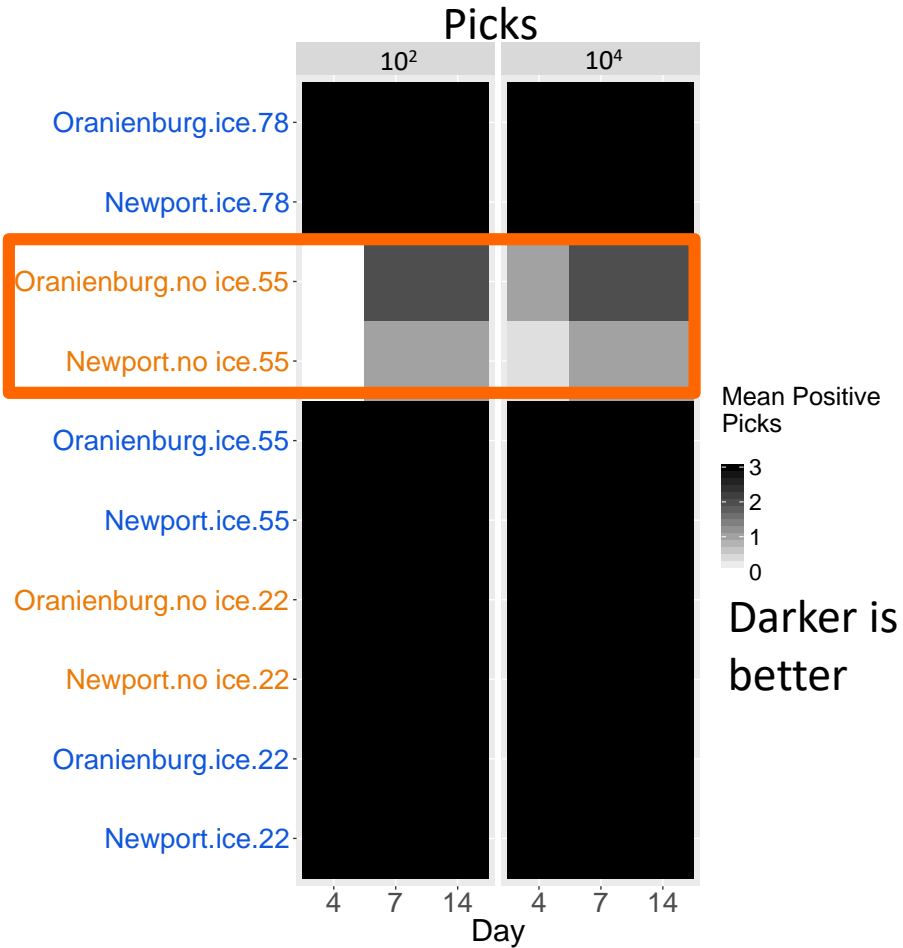
4	7	14
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Transport Media	Plating Media
 Cary-Blair	 Hektoen

Variables Tested

Holding Temperature

				
78°C	55°C	55°C	22°C	22°C



Phase 2 Outcomes

- No difference in recovery between specimens on ice vs 22°C
 - For Phase 3, hold samples at 22°C
- We recommend that during warmer months...



Clinical Lab

22°C



SPHL Lab

22°C




Phase 3

Which enrichments best facilitate *Salmonella* recovery?

Phase 3

Experimental Design

Serotype



Oranienburg	Newport	Unspiked
		

Spike Level

10^2	10^1	US
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Days Since Collection

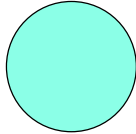



4	7	14
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Transport Media	Plating Media
 Cary-Blair	 Hektoen

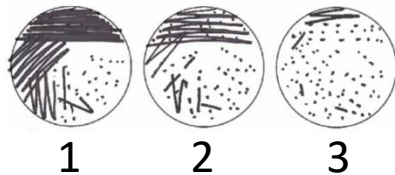
Holding Temperature  22°C

Variables Tested

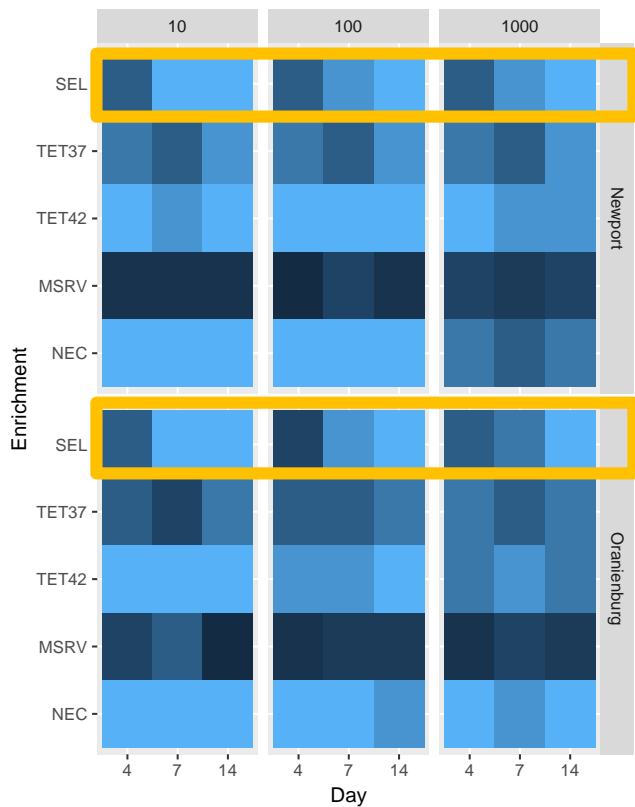
Enrichment

			
MSRV	TET37	TET42	SEL

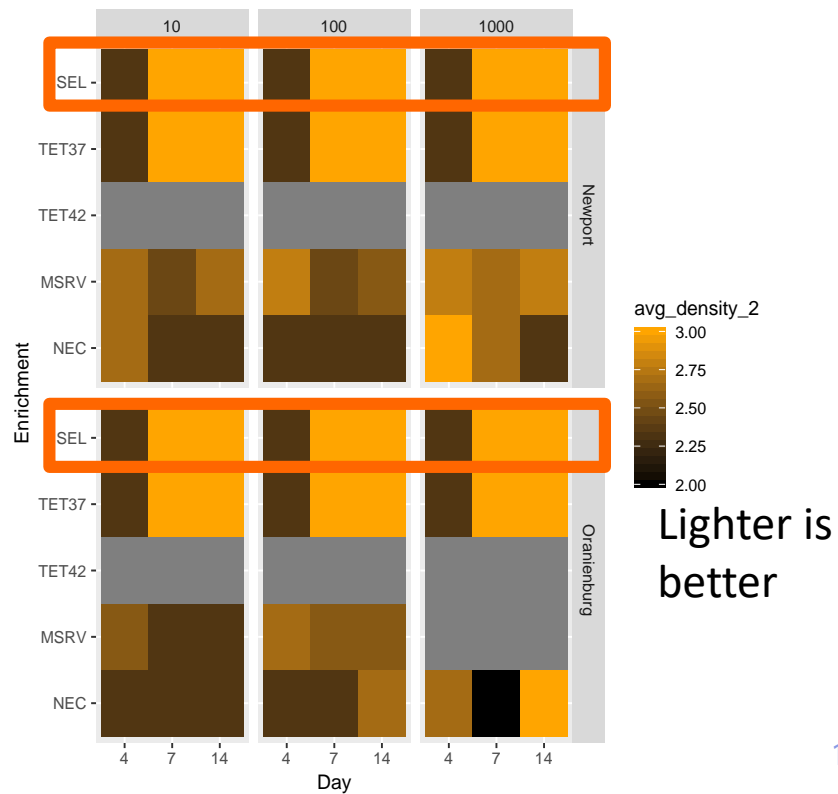
100% Recovery!!



Salmonella Density



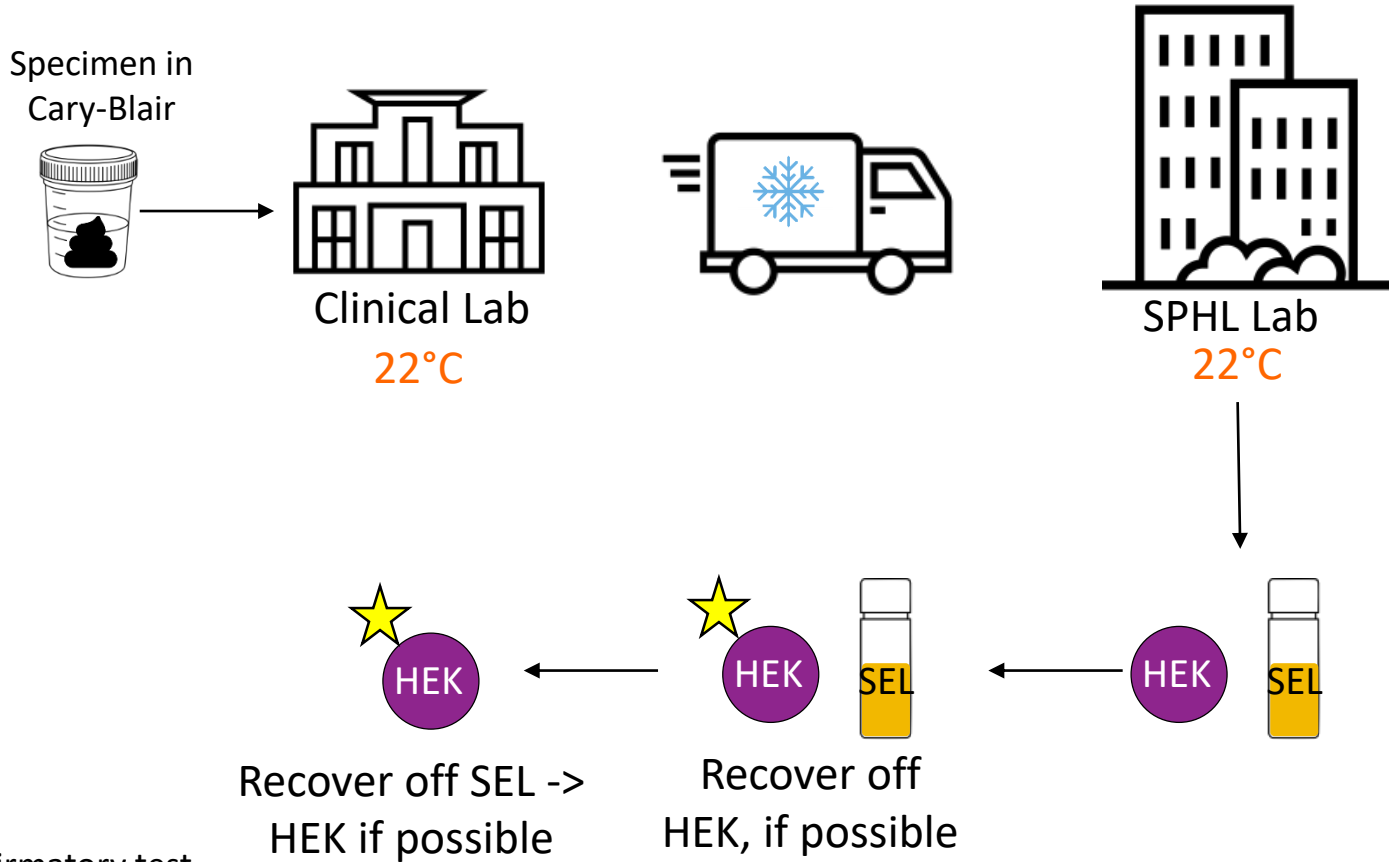
Commensal Density



Phase 3 Outcomes

- 100% recovery across all enrichments
 - Tet37 and selenite perform similarly
- Selenite chosen based on:
 - Cost
 - Preparation difficulty/time
 - Commensal suppression
 - Shelf-life

The Golden Path



Our Collaborators:

- **Department of Health and Human Services (HHS)**
- **Centers for Disease Control and Prevention (CDC)**
 - EDLB: Michele Parsons, Efrain Ribot, Peter Gerner-Smidt, Cheryl Bopp, Michelle Sanders, Samantha Olson, and Christine VanTubbergen
- **Association of Public Health Laboratories (APHL) Isolate Recovery Subcommittee**
- **Oak Ridge Institute for Science and Education (ORISE)**
- **CO Department of Public Health & Environment, Laboratory Services Division**
- **Los Angeles County Department of Public Health**
- **MN Department of Health, Public Health Laboratory**
- **TN Department of Health**
- **University of IA, State Hygienic Laboratory**

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Thank you!

For more information, contact CDC
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The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

