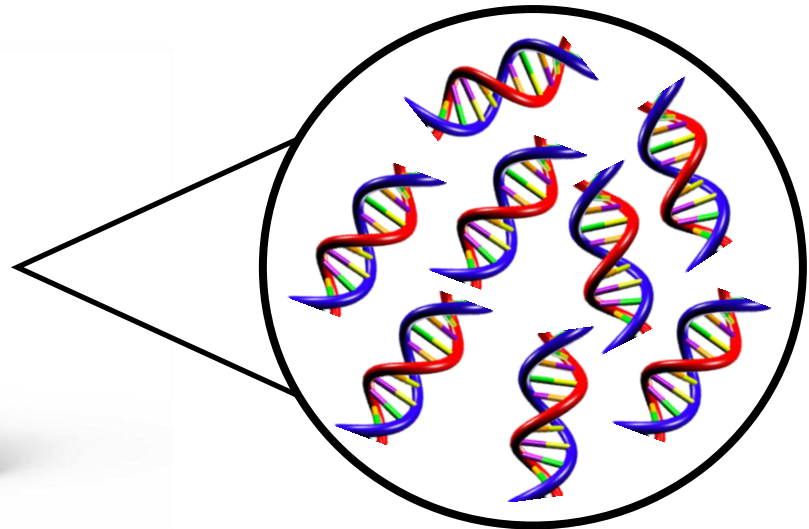


Field detection of pathogens (*Renibacterium salmoninarum*) using a handheld qPCR system

Austen Thomas, Katherine Haman, Maria F. Chacon-Heszele, Mieke Sinnesael
and Phong Nguyen, Brian Quinton



Personal Disclaimer



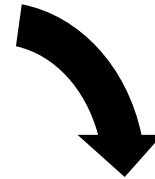
The standard pathogen detection model



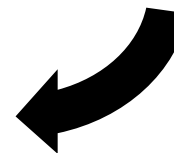
Informed treatment



Sampling



Sample transport



Laboratory analysis



Sample 1	+
Sample 2	-
Sample 3	+

Diagnostic reporting



Problems with this model



- Diagnostic results can take weeks
- Stock losses can occur during delay
- Limited number diagnostic labs
- Diagnostic services can be costly
- The lab controls data and timeline

A revolution in diagnostics portability (Bringing the lab to the sample)



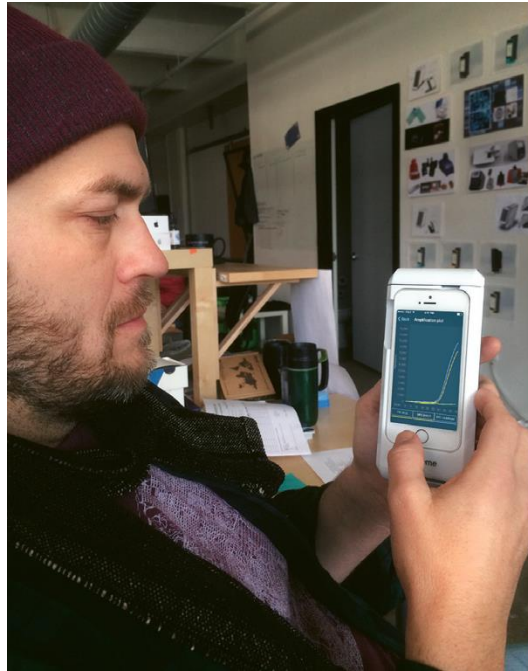
PCR heads into the field

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Vivien Marx

Analyzing samples with PCR is routine in the lab. New approaches let researchers do this assay wherever they need.

A revolution in diagnostics portability (Bringing the lab to the sample)



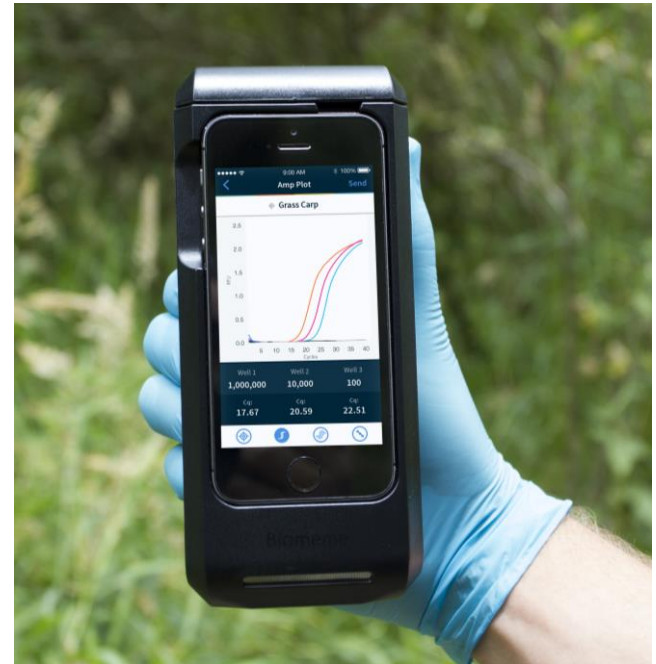
PCR heads into the field

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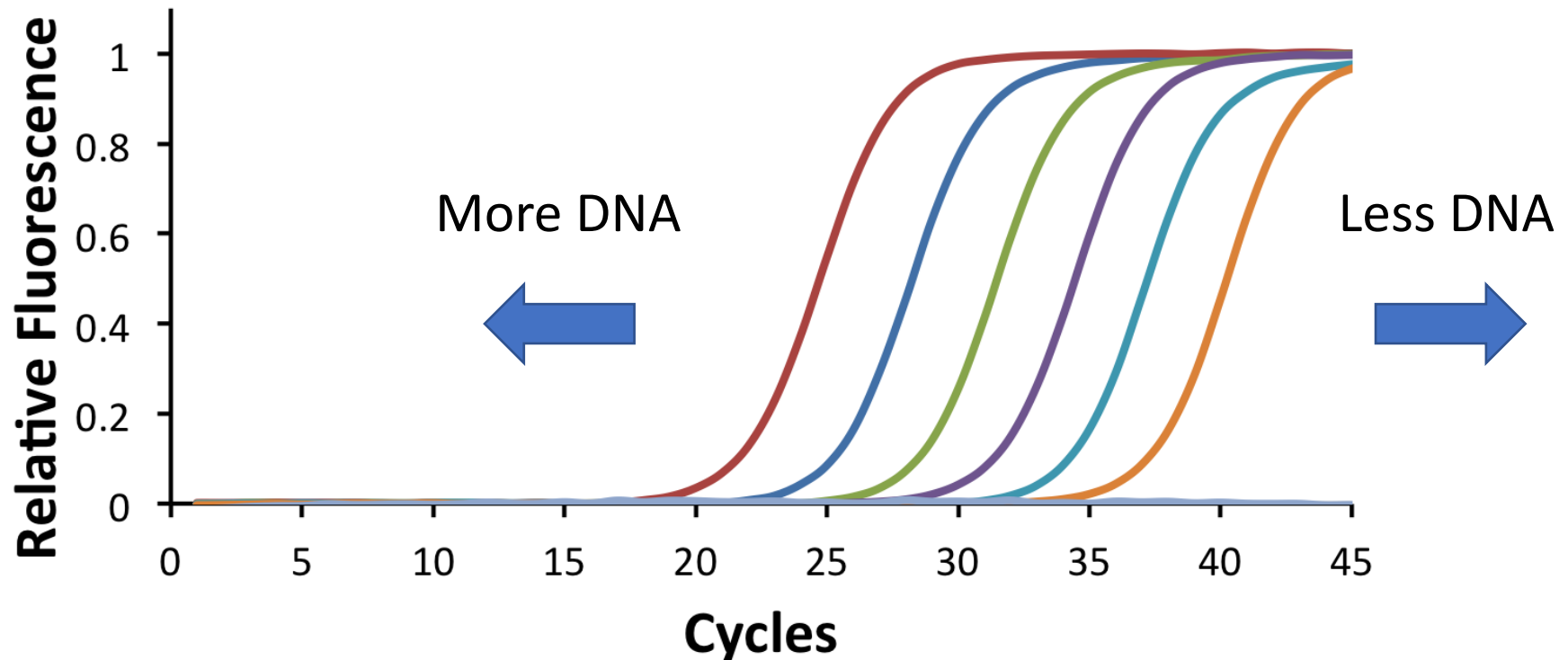
PCR heads into the field

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Vivien Marx

Analyzing samples with PCR is routine in the lab. New approaches let researchers do this assay wherever they need.

What is quantitative PCR (qPCR)?



Biomeme field-portable qPCR system



1. Field DNA sample prep



4. Data portal services



2. Species-specific test packets



3. Portable qPCR device



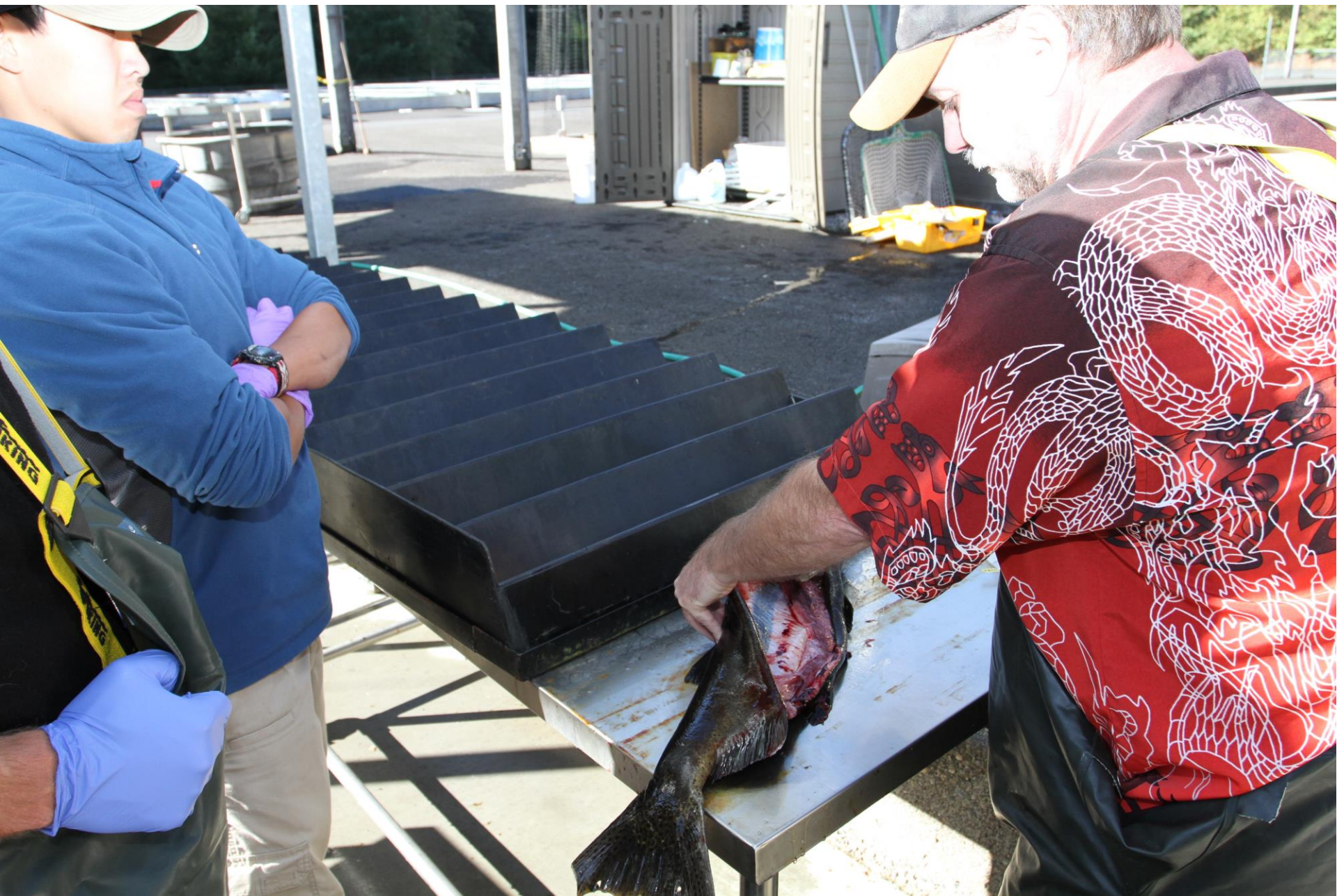
Proof of concept study

(*Renibacterium salmoninarum*) BKD causative agent



- How does Biomeme compare to ELISA?
- How does Biomeme compare to bench qPCR?
- Feasibility of using this platform for aquaculture

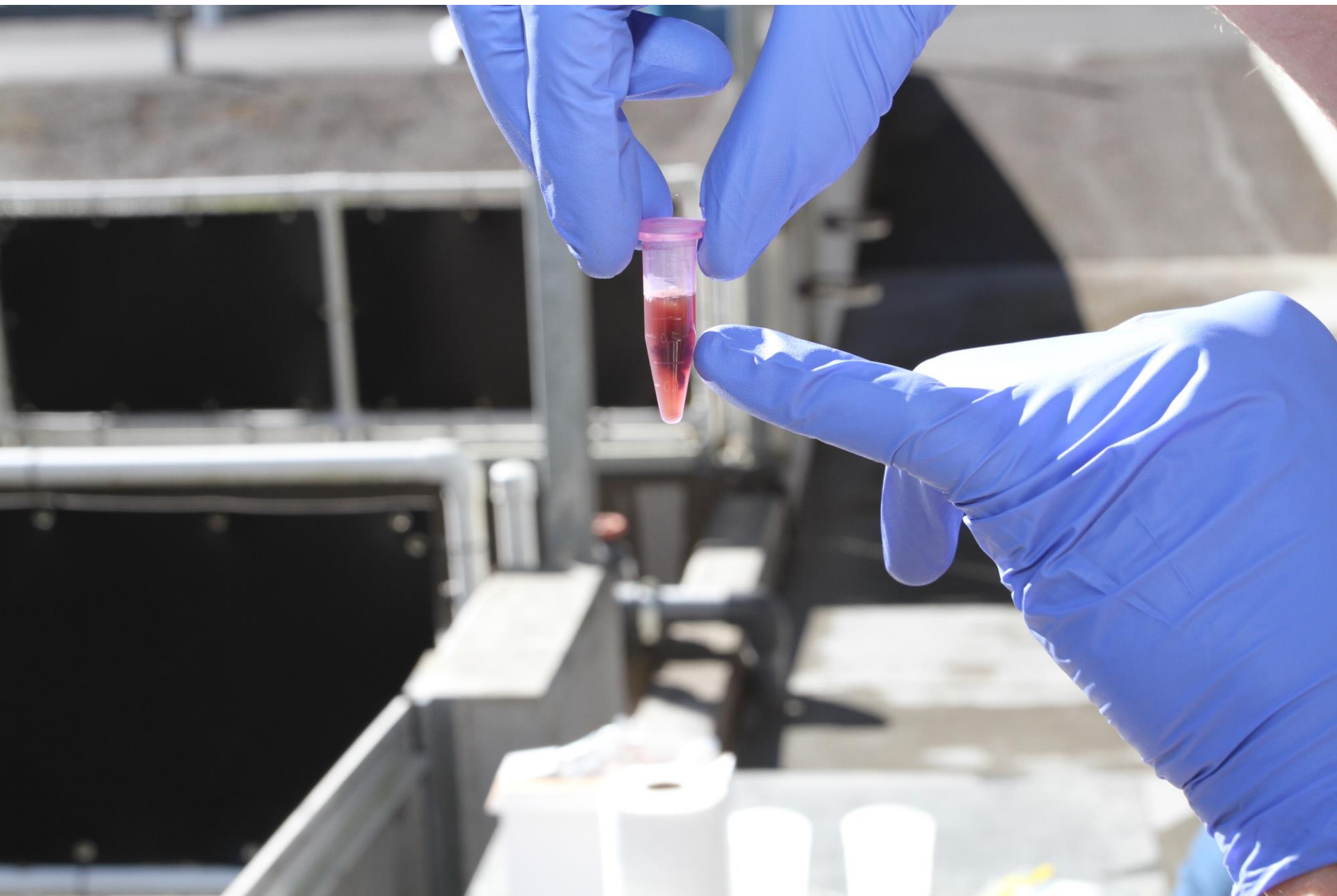


















No SIM

10:53 AM

Stop

HW109_SP_BKD_9-21-16

40

minutes
remaining

Annealing



100%
Device Battery



03/40
Cycles

HW109

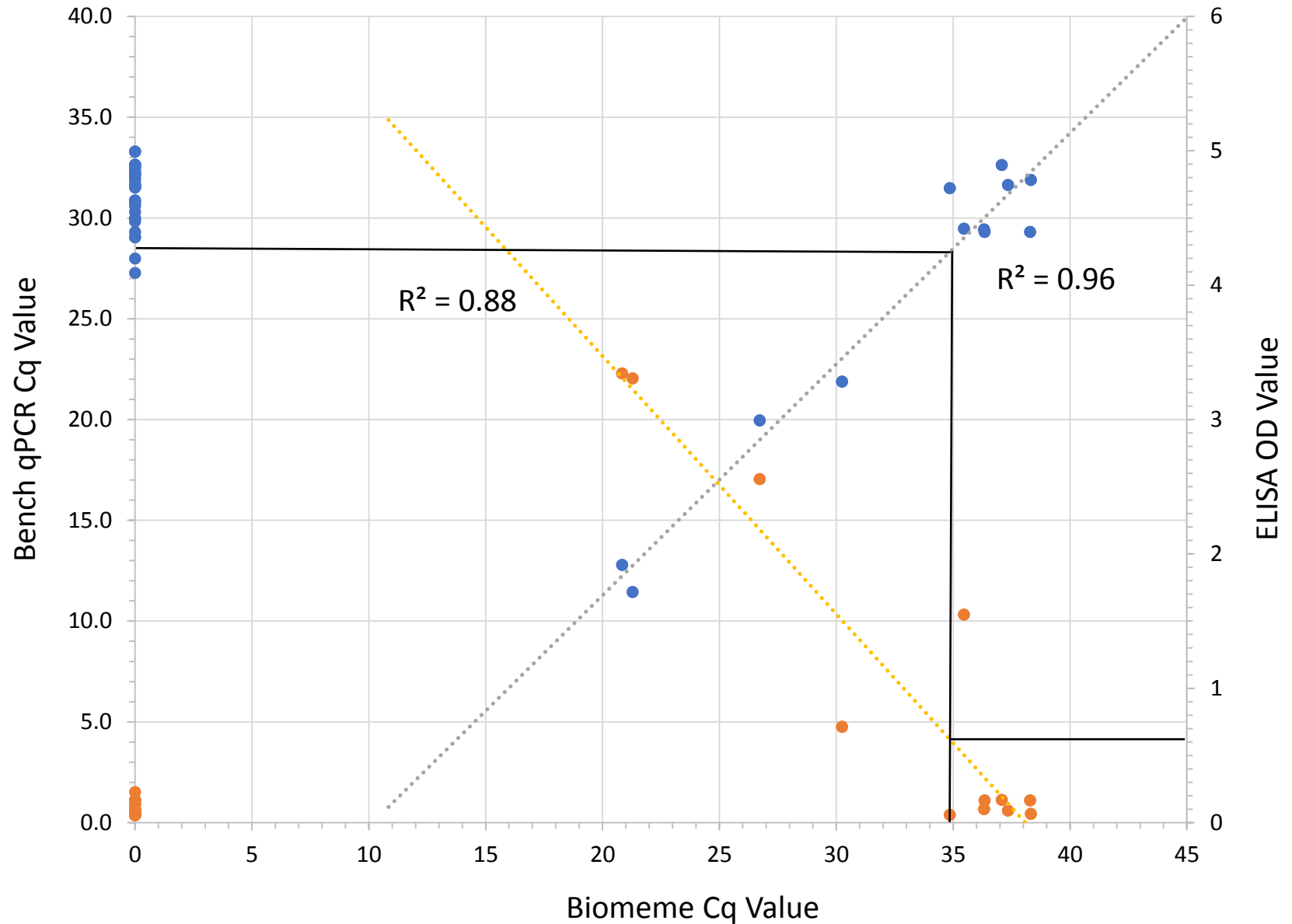
HW109



Results in 45 min for 3 samples



Preliminary Results

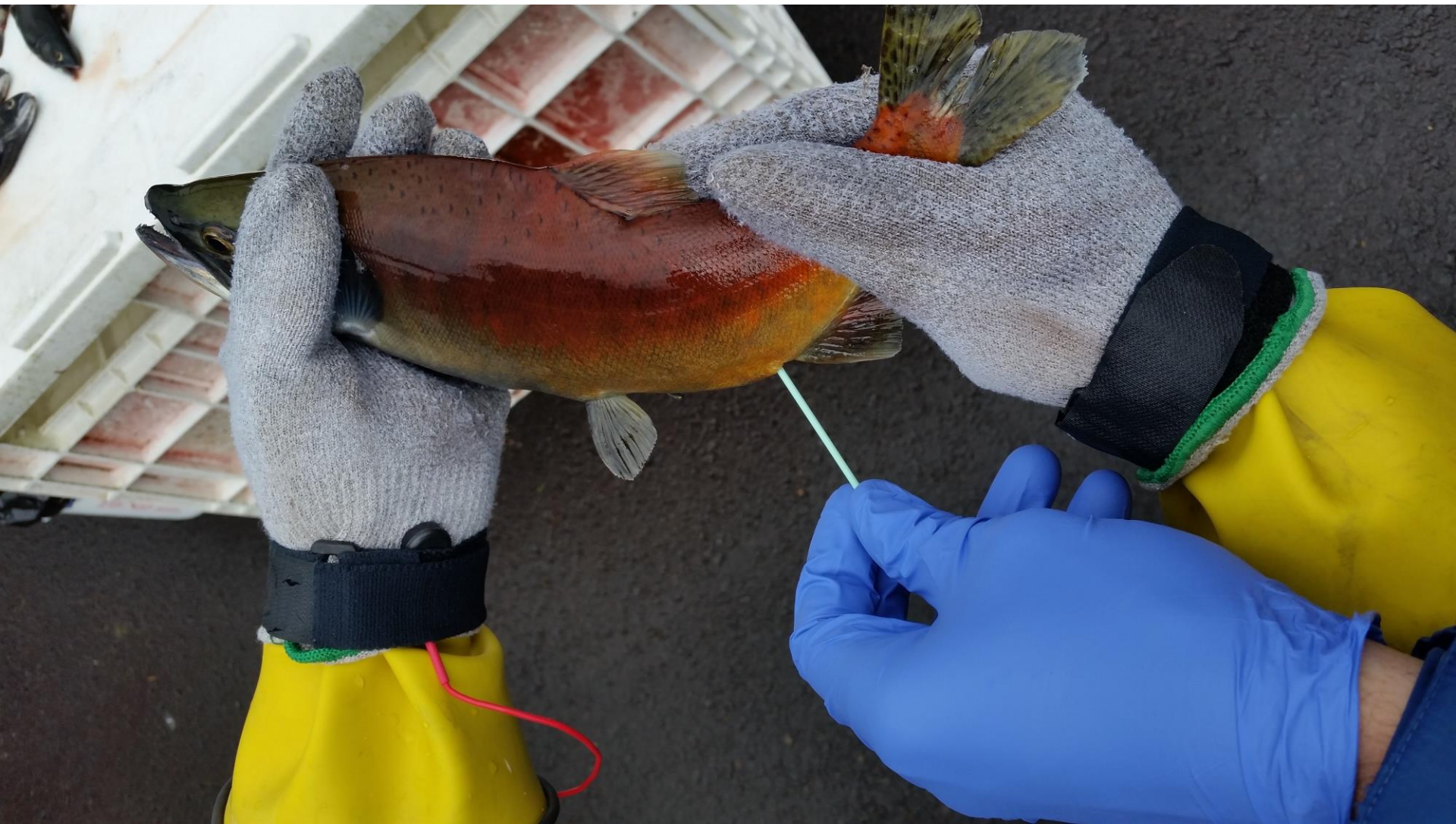


Early impressions

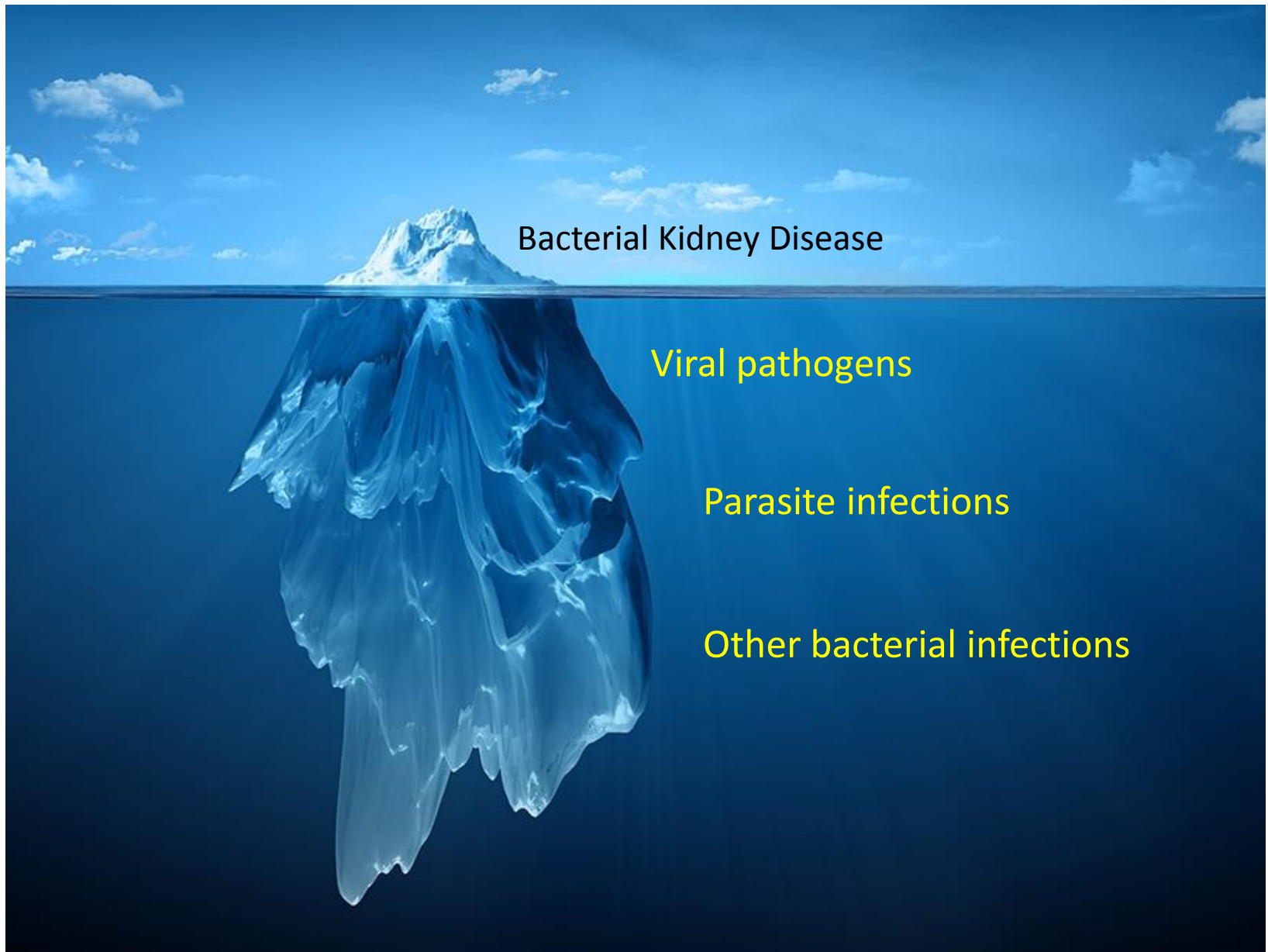
- Comparable sensitivity to ELISA
- Better specificity than ELISA
- Less sensitive than bench qPCR
- Rapid, on-site diagnostic tool
- User-friendly workflow
- Highly flexible platform



Nonlethal sampling?



BKD is only the beginning



How does this work?

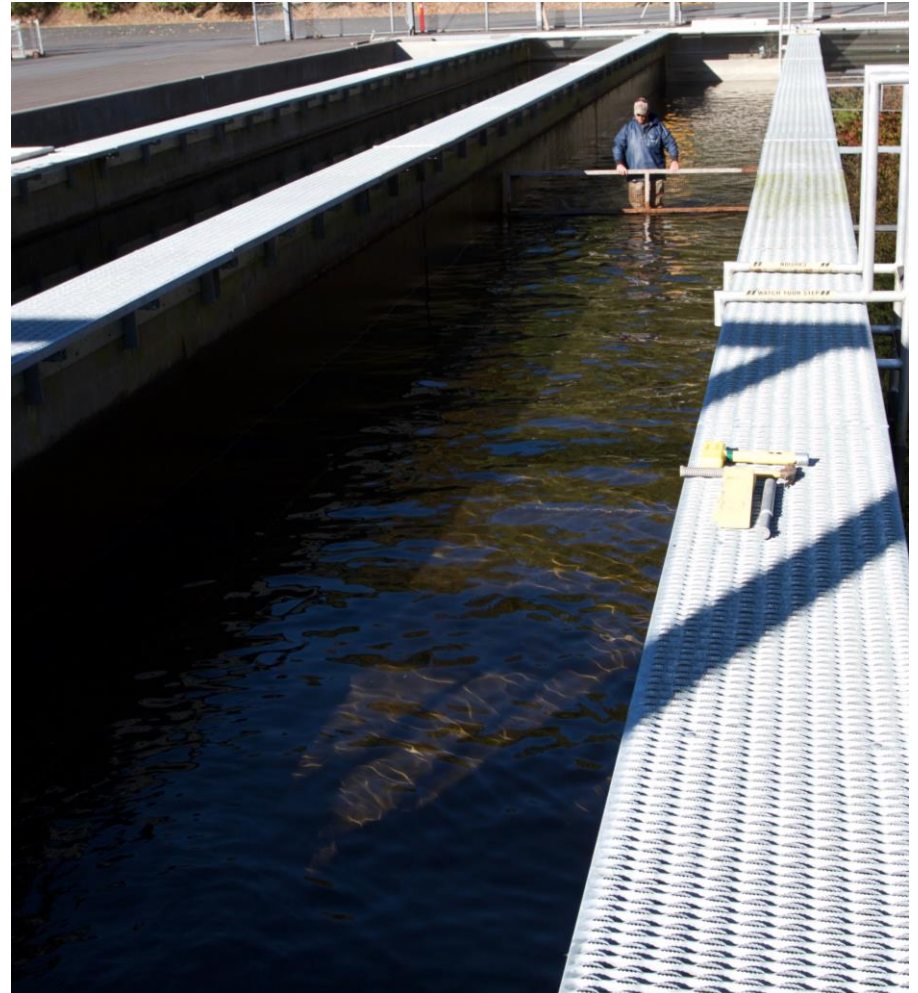


Biomeme



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- Speelyai Hatchery
- Lewis River Hatchery
- Cowlitz Hatchery
- Kendall Creek
- WDFW Fish Health
- Biomeme team
- Tacoma Power
- Pacific Corp



Thank you!

