C. dubia QA evaluation study

Stakeholder Committee Meeting

January 17, 2023

Agenda

1. Opening remarks and review of agenda (5 min)

2. Review of Progress to Date (5 min)

3. Response to the Expert Science Panel conclusions and recommendations from the Baseline Intercalibration Study (20 min)

4. Preliminary Scoping for the next phase of the study (45 min)

5. Questions from the public (10 min)

6. Schedule and Next Steps (5 min)

Stakeholder Advisory Committee

- Katie Fong (SWRCB)
- Amelia Whitson (EPA Region IX)
  - Rochelle Cameron (alternate)
- Veronica Cuevas (RWQCB4)
- Mitch Mysliwiec (Larry Walker Assoc/CASA)
- Jian Peng (Orange County Public Works/CASQA)
- Sarah Lopez (Central Coast Water Quality Preservation Inc)
- Peter Arth (Enthalpy Laboratories)
- Josh Westfall (Los Angeles County Sanitation Districts)
- Annelisa Moe (Heal the Bay)

Overall Project Tasks

- Task 1- Identify potential sources of variability within and among laboratories
  - Compile historical data **COMPLETED**
  - Conduct baseline intercalibration **COMPLETED**
- Task 2- For potentially largest sources of variability, optimize test conditions and QA parameters to minimize variability **TODAY'S DISCUSSION**
- Task 3- Evaluate efficacy of test conditions and QA refinements
  - Conduct second intercalibration

Expert Science Panel Findings and Preliminary Recommendations for the Ceriodaphnia dubia Toxicity Test

Selected Slides from December 21, 2022

Preliminary Findings and Recommendations

Preliminary Findings

- Some labs did not pass Test Acceptability Criteria
- Variability in mean neonate production between labs is very large
  - Variability between labs was roughly similar to the variability between labs from historical data
- For labs with consistent quality, the IC25s are reasonably consistent

Additional Considerations for the Study from the Expert Panel

- Finding: Insights about lab performance have been gleaned from historical review and from recent lab testing, but important sources of variability remain to be identified

- Recommendation: Additional time is necessary to study the data further before a complete set of final recommendations can be provided

Focus on Ongoing Culture Health and Performance

- Finding: Method guidance exists for an acceptable brood board culturing procedures
- Finding: [Culturing is the] most likely source of the variability in mean neonate production among labs
- Recommendation: Laboratories need to develop clear, step-wise operating procedures (OP's), documentation and evaluation of brood board health and do not initiate tests when cultures do not meet minimum health standards
- Recommendation: Additional method refinement or optimization should focus on brood boards, particularly variability in age of the female used to start the brood board

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Preliminary Scoping for the Next Phase of the Study

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Two Options for the Next Tasks

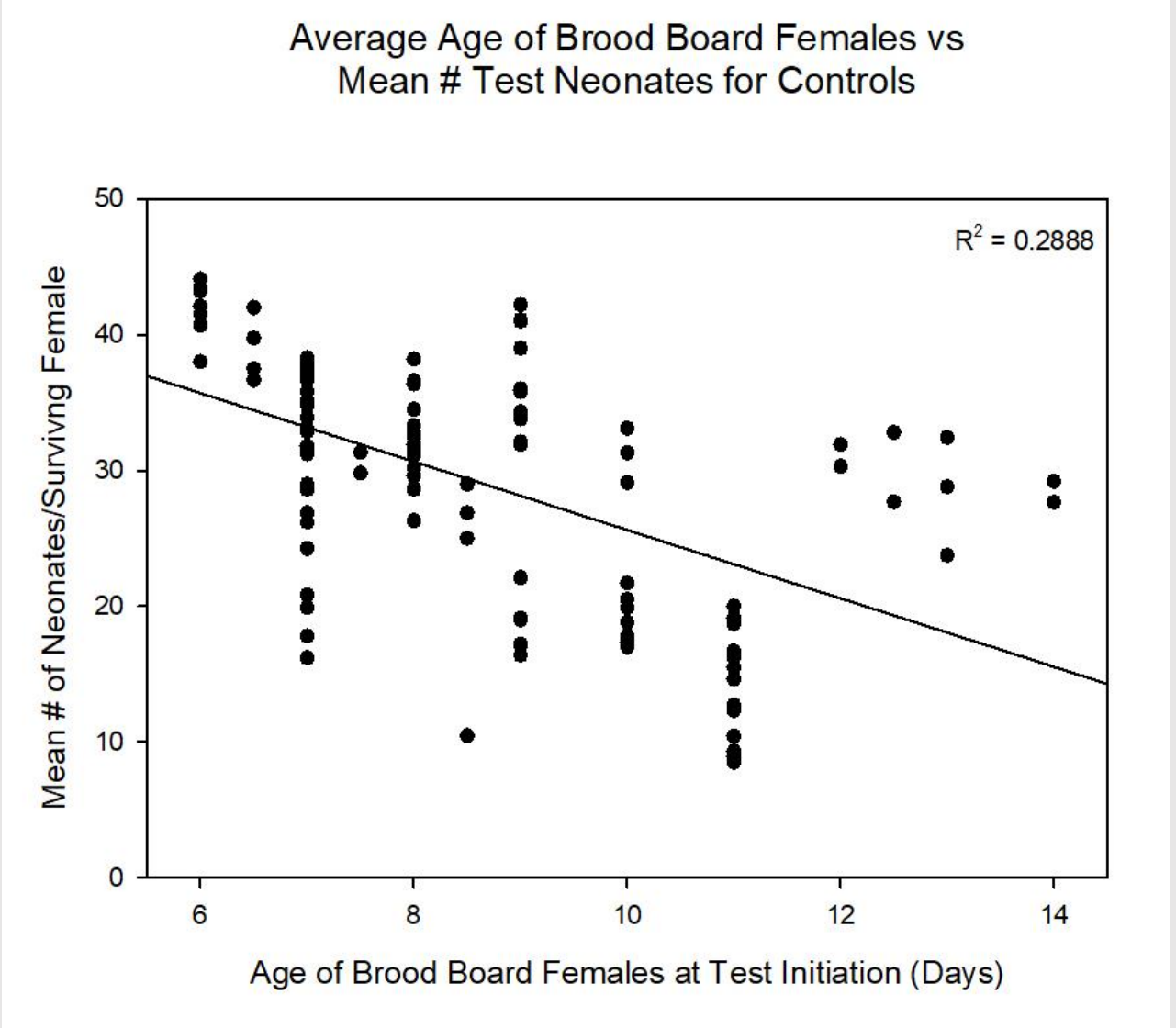
- Option #1: Focus on laboratory training and education regarding culturing and testing
  - Assumes that current guidance is complete and that labs just need additional information to implement consistently
  - Timing allows for a second intercalibration following training and education
- Option #2: Focus on the one variable that came out of the first intercalibration - Age of female at test initiation
  - Directed testing of females of different ages to quantify variability
  - Timing does not allow for a second intercalibration using the optimized method

Option #1: Laboratory Training and Education

- Series of group meetings among laboratories with a goal of mimicking techniques from the best performing laboratories
  - Curriculum yet to be defined
- Techniques identified as being potentially beneficial to improving laboratory performance will be included as revised methods during the second interlaboratory study
- May include audits during second intercalibration to assess implementation success
- Since unquantified, we won't know which technique(s) is the most important

Option #2: Age of Female Used to Initiate Test

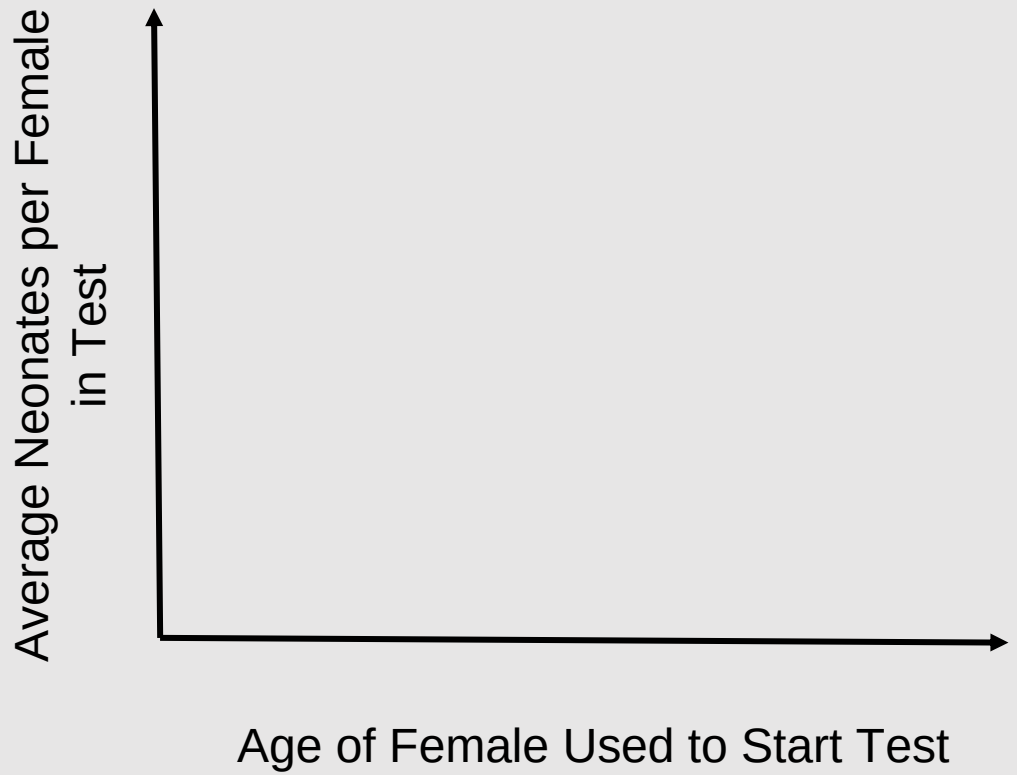
- EPA Method guidance requires females should be <14 days old
  - First intercalibration ranged from 6 to 14 days old
- Intercalibration showed that average neonate production decreased with increasing age of female
- This may not be the only factor causing variability

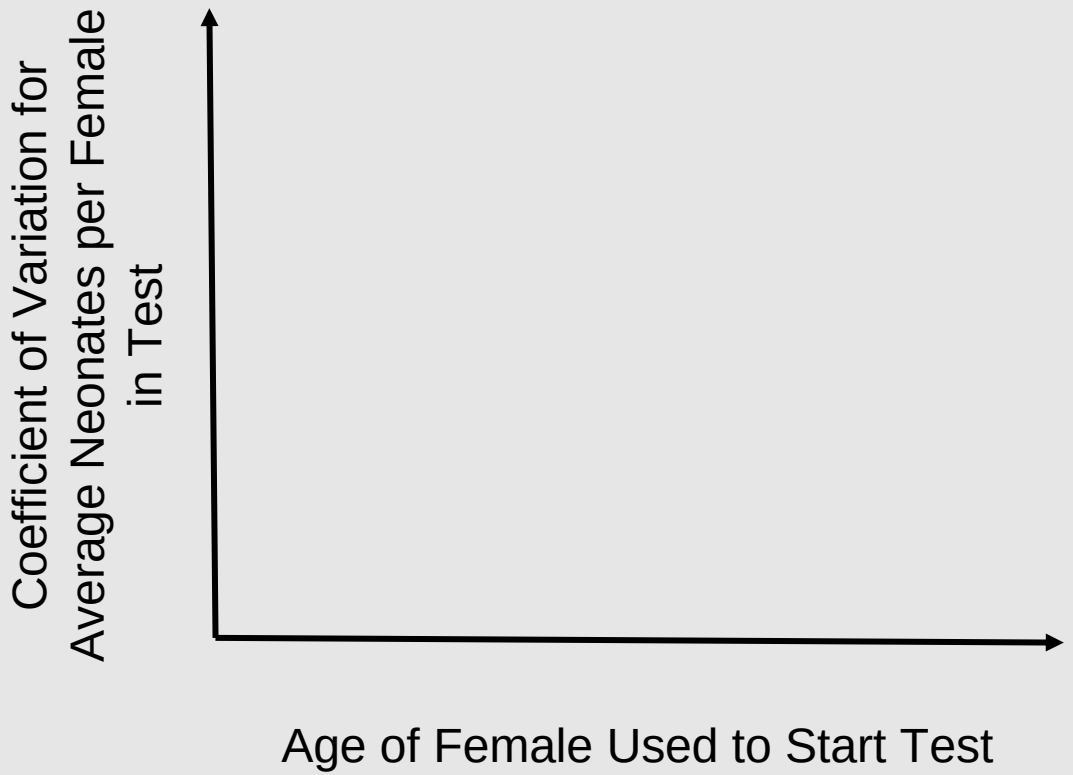


Directed Testing for Quantifying Variability in Age of Female Used to Initiate Tests

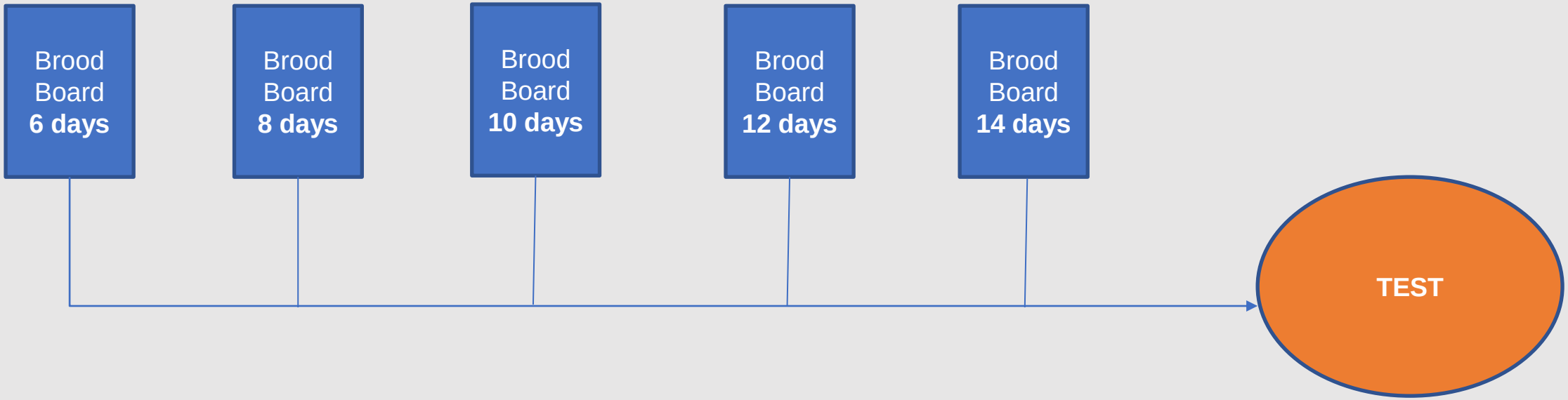
- Use only a single lab to control all other sources of variability
  - Likely one of the more consistent laboratories in first intercalibration
- Quantify neonate production in brood board females of different ages
  - Two alternative study designs (slides to follow)
- Utilize unspiked dilution water
  - May include a spiked sample if resources allow
- Repeat multiple times for replication

Expected Graphics



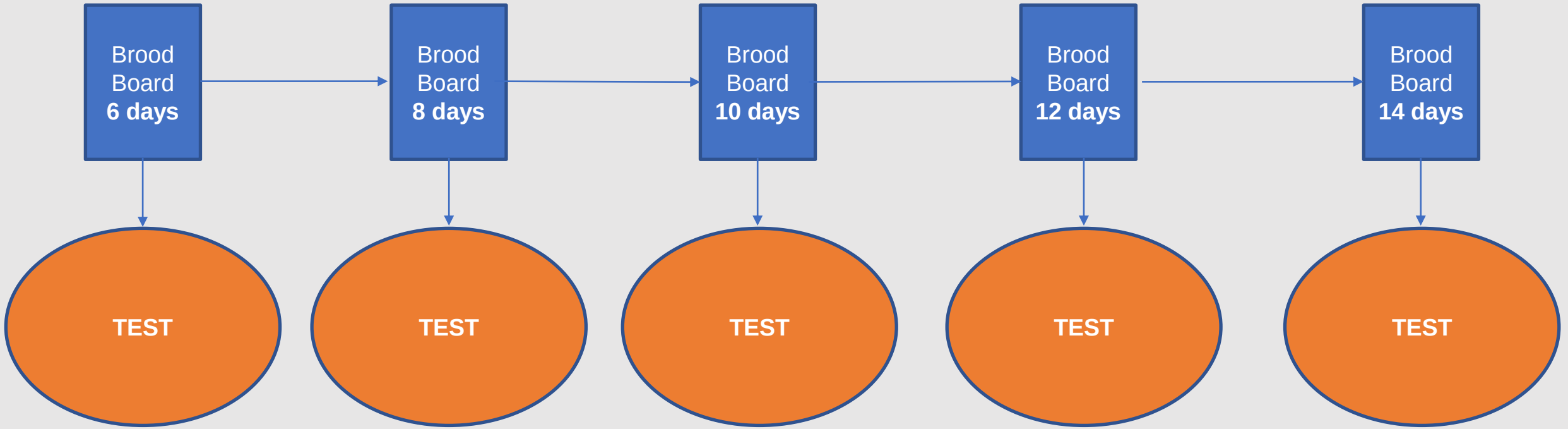


Alternative Design A:
Multiple Brood Boards 2 days Apart



- One lab, repeat three times
- Testing will require 8 weeks minimum

Alternative Design B:
One Brood Board Testing Two Days Apart



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Next Steps

- Summarize recommendations from today for the Expert Science Panel
- If option #1: training and education
  - Prepare a curriculum and a schedule
  - Prepare a written plan for second intercalibration
- If option #2: Age of female testing
  - Select laboratories and delineate final study design
  - Prepare a written plan for directed testing
- Either option will require rapid response to meet SWRCB timelines