

Can coralline algae bolster the climate resilience of Washington's pinto abalone?

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University of Washington



The 11th International
**Abalone
Symposium**

Poua te mana o Pāua ki te tai, kia whakalka te moana!



Photo: J. Bouma





SALISH SEA

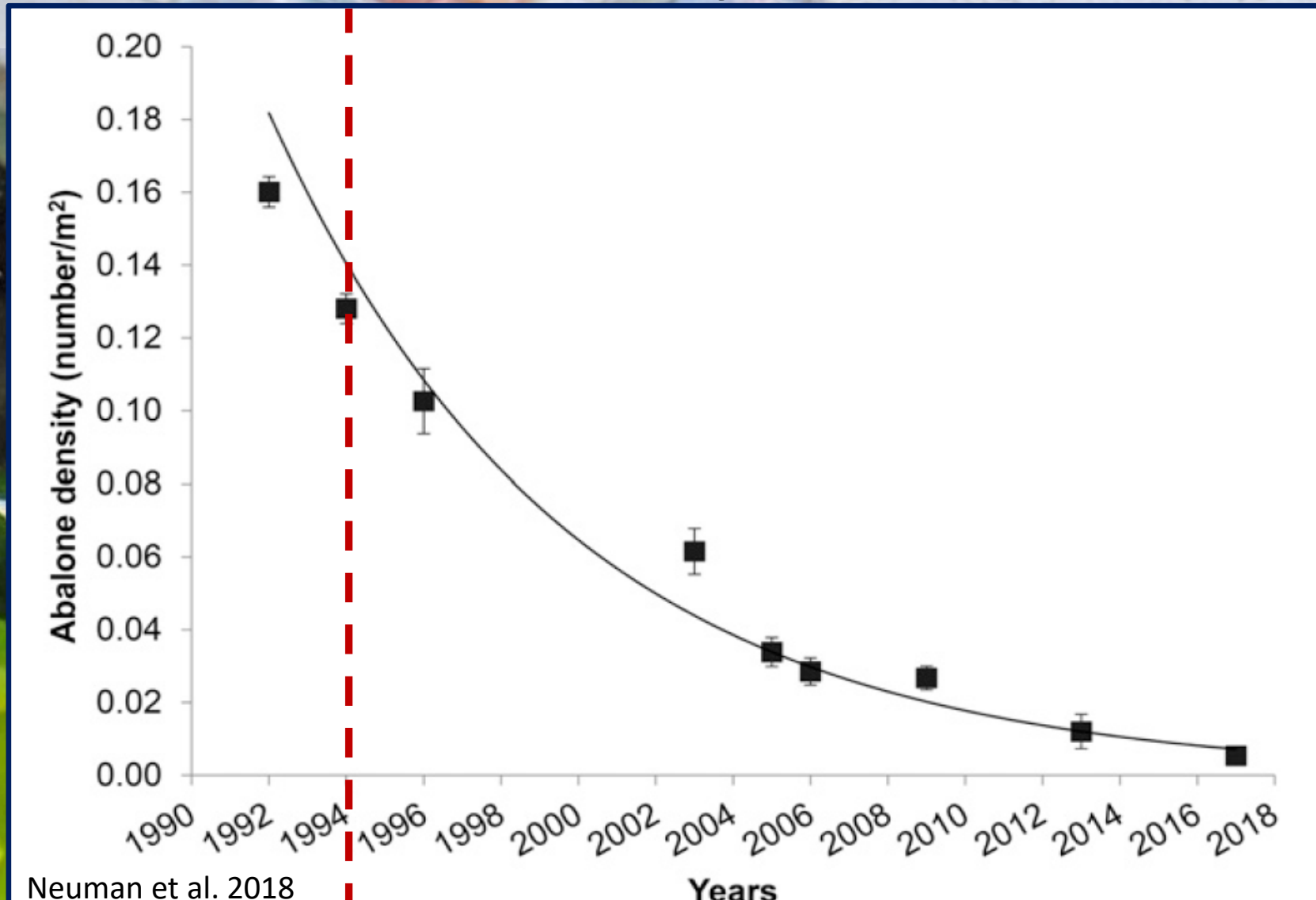
Puget Sound Action Team



SALISH SEA



Washington's pinto abalone population has not recovered, even after fishery closure



Neuman et al. 2018

Restoration aquaculture offers a future for Washington's pinto abalone



A photograph showing several pinto abalone shells resting on a white, perforated tray. The shells are arranged in a row, with some showing their characteristic blue and purple mottled patterns. The background is dark, and a green leafy plant is visible in the lower-left corner. The text is overlaid on the image in two white boxes with black text.

Restoration aquaculture offers a future for
Washington's pinto abalone

Variable success at restoration sites
across the San Juan Islands



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Variable success at restoration sites
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Climate change may hinder
potential recovery of abalone



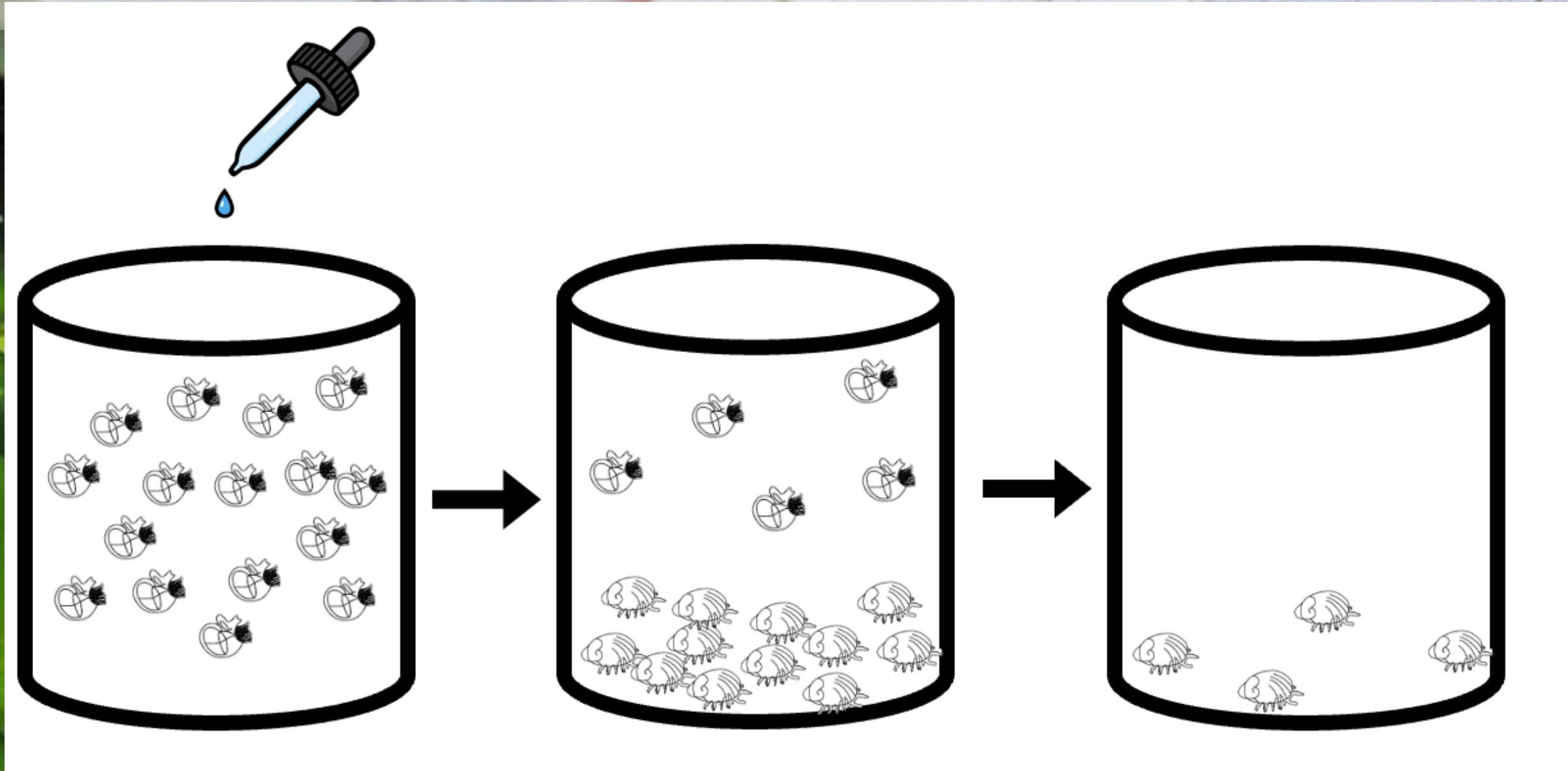
Restoration aquaculture offers a future for Washington's pinto abalone

Variable success at restoration sites across the San Juan Islands

Climate change may hinder potential recovery of abalone

Settlement and juvenile mortalities limit production of abalone

Settlement with GABA in the hatchery

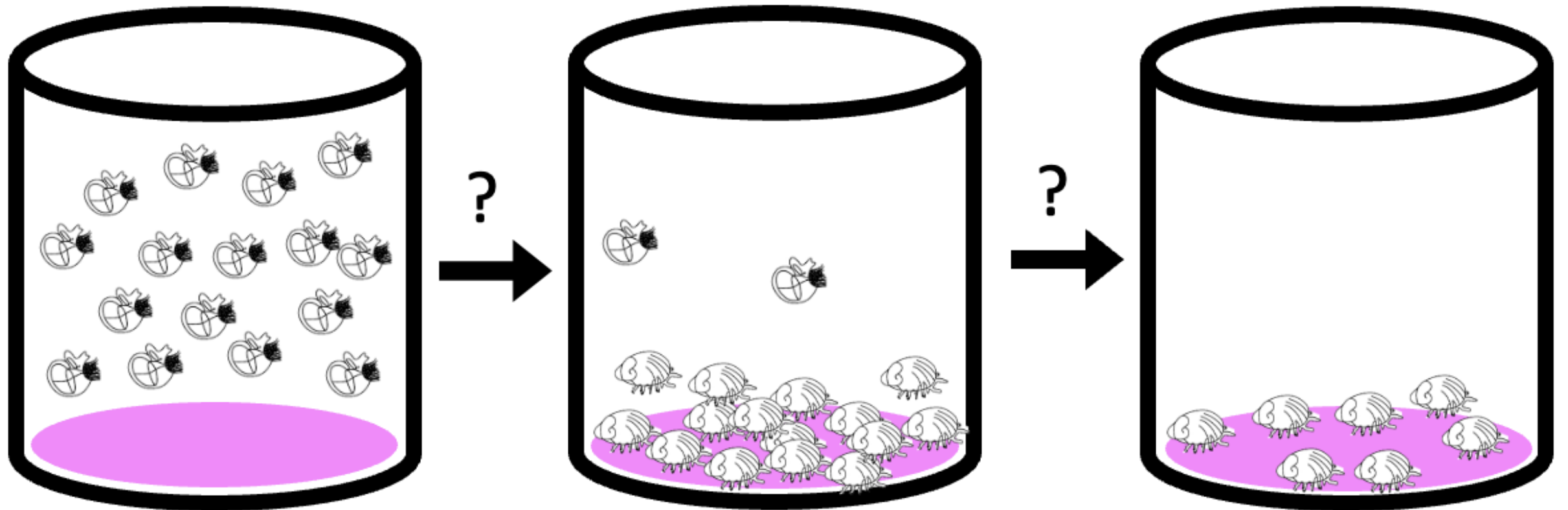


Could coralline algae ameliorate impacts of climate change and increase hatchery production?



Photo: J. Bouma

Could coralline algae ameliorate impacts of climate change and increase hatchery production?

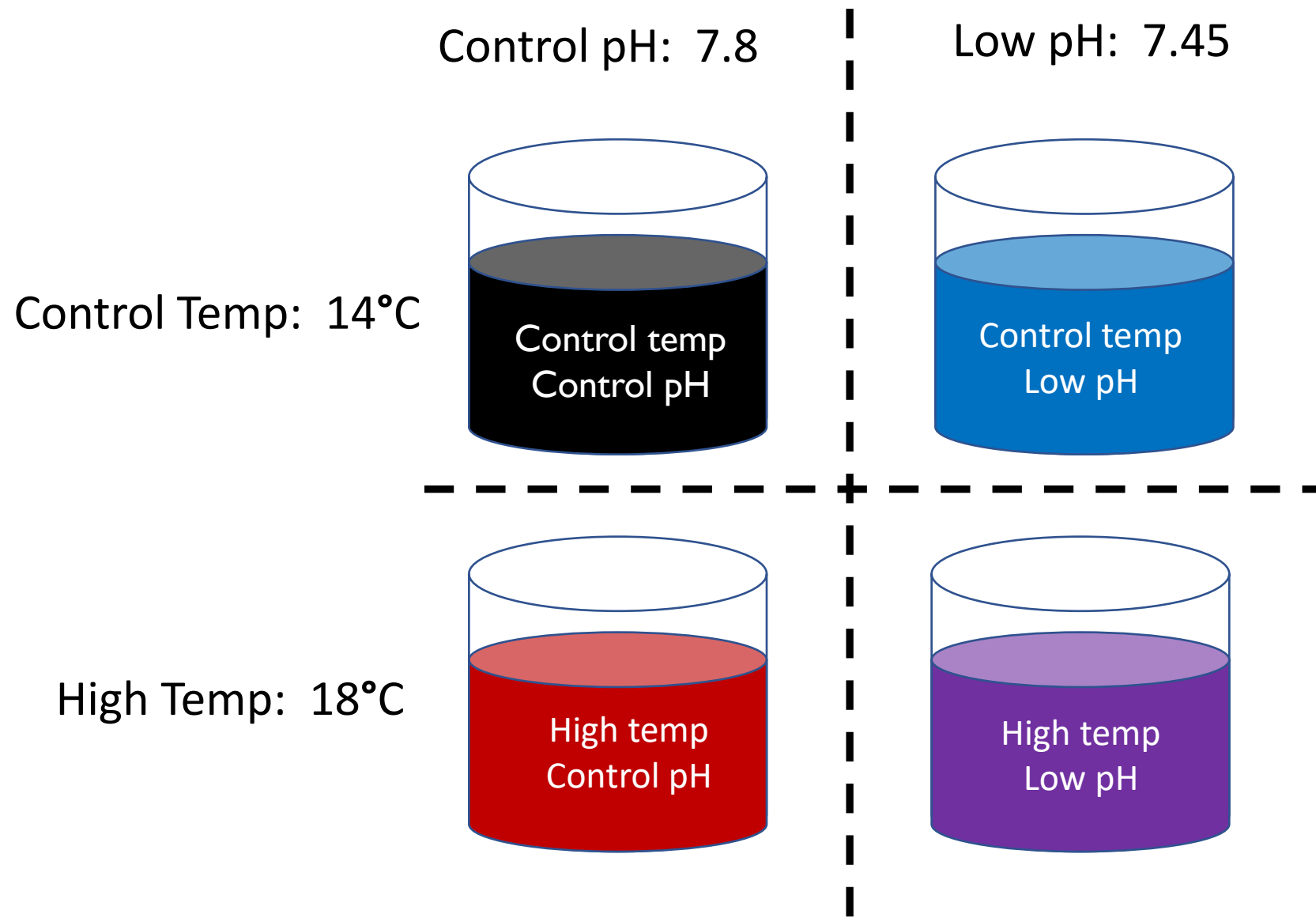


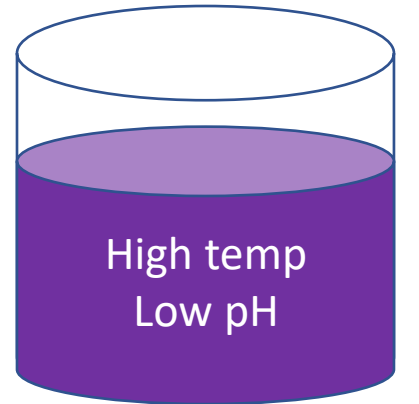
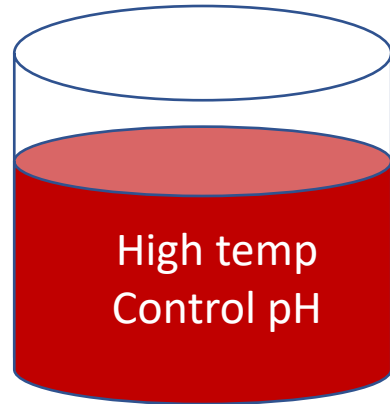
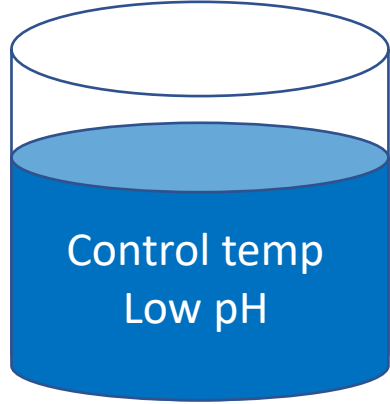
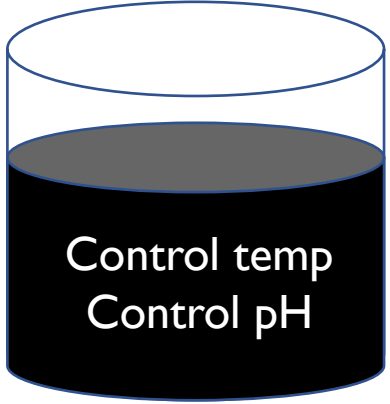




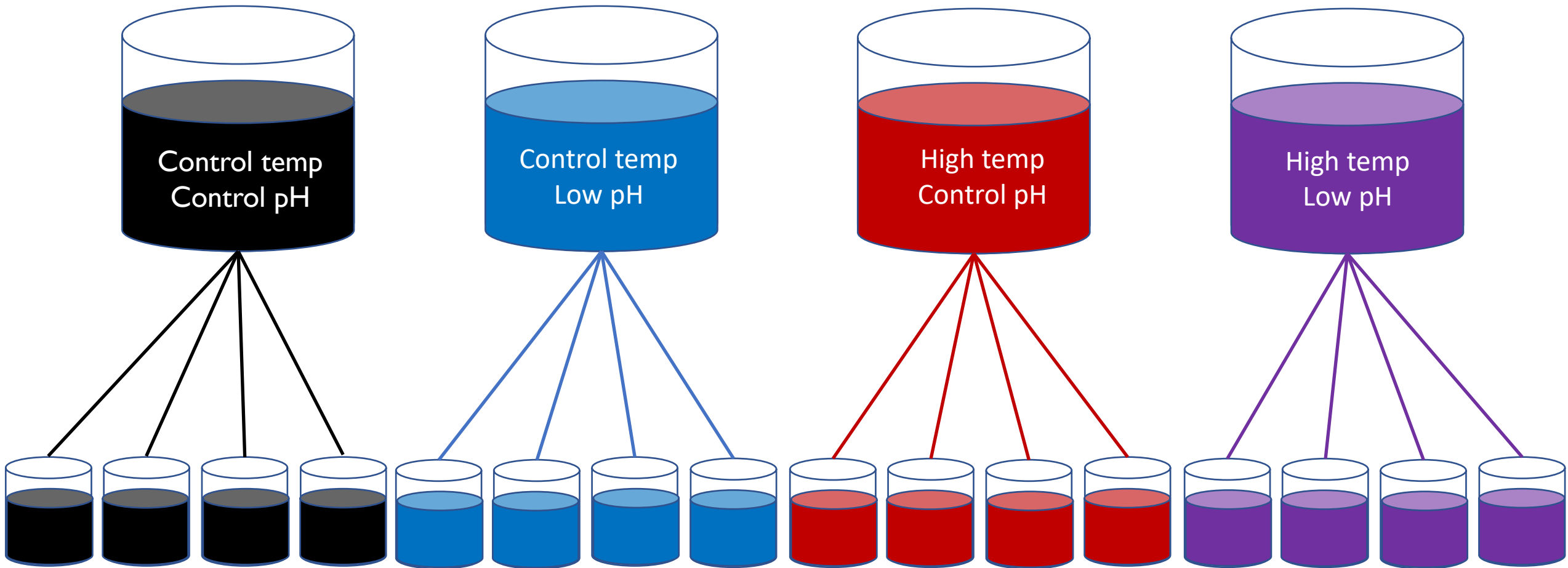
How will pH, temperature, and presence of coralline algae impact abalone settlement?

How will pH, temperature, and presence of coralline algae impact juvenile abalone survival over three months?

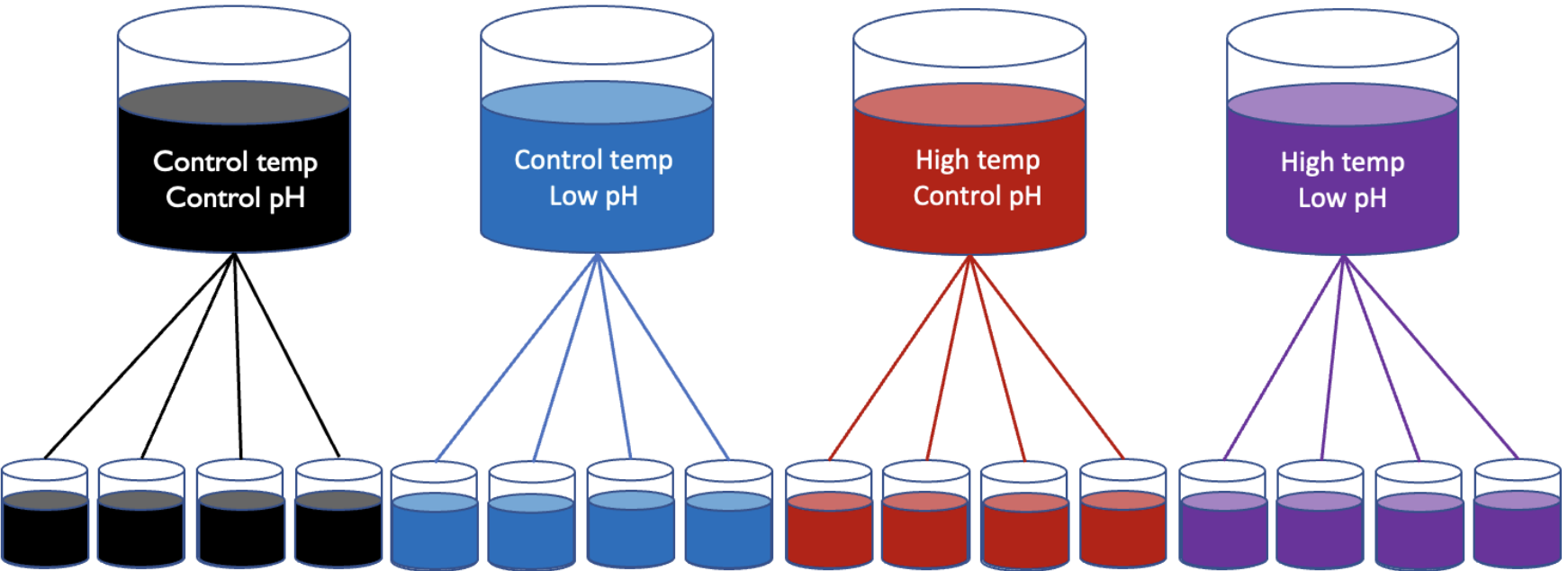




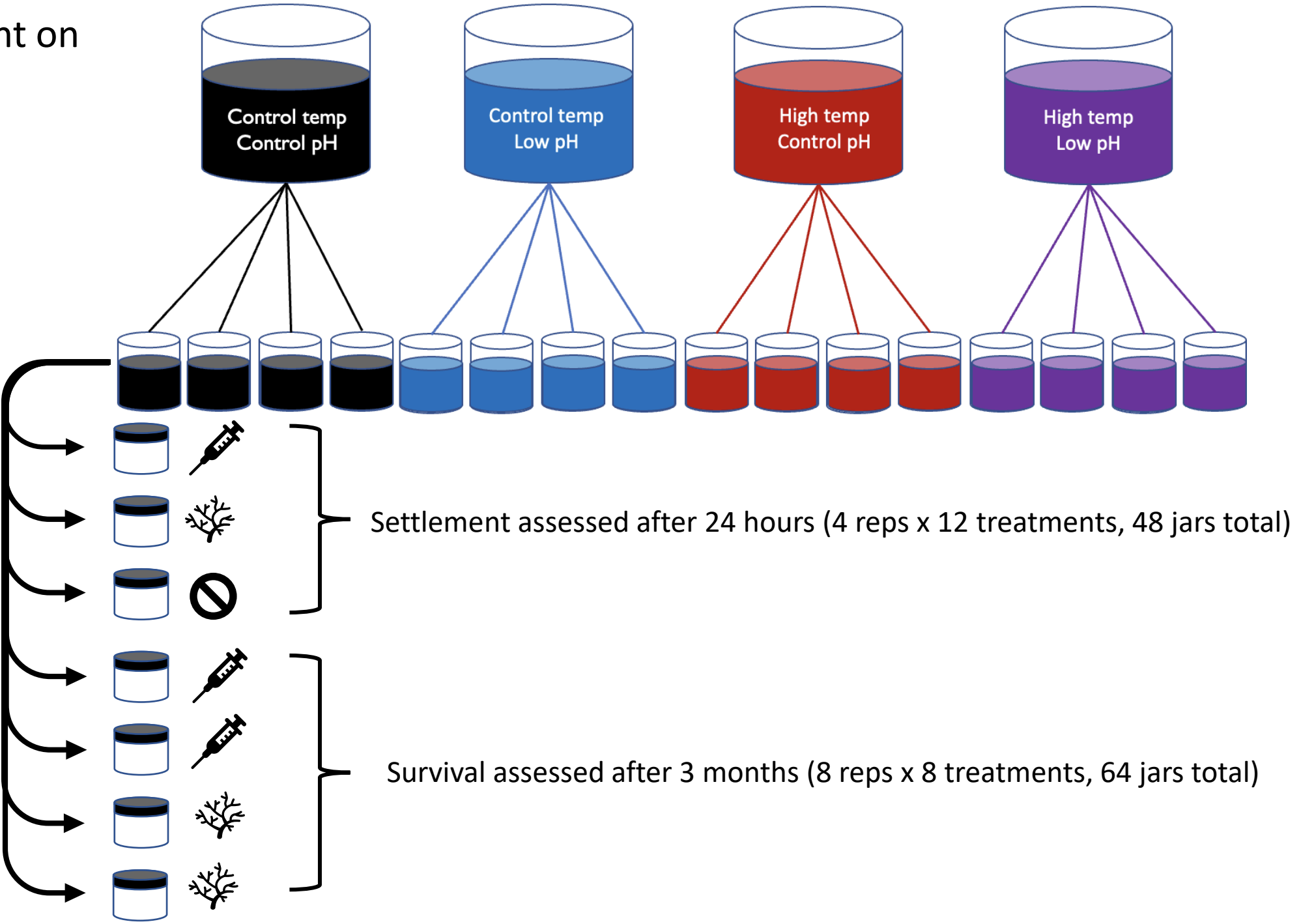
Experiment Days 1-7: larval rearing



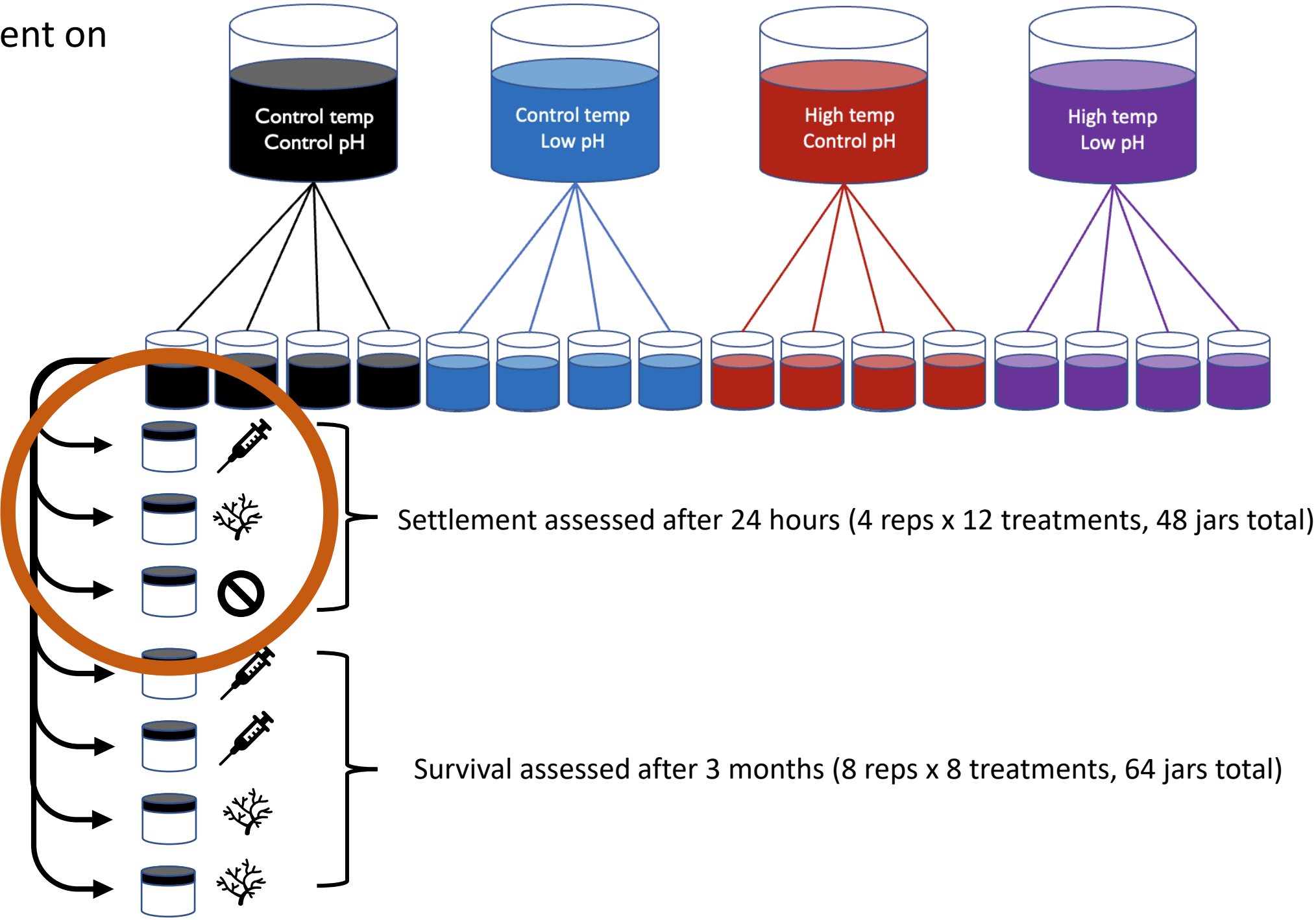
Settlement on day 7



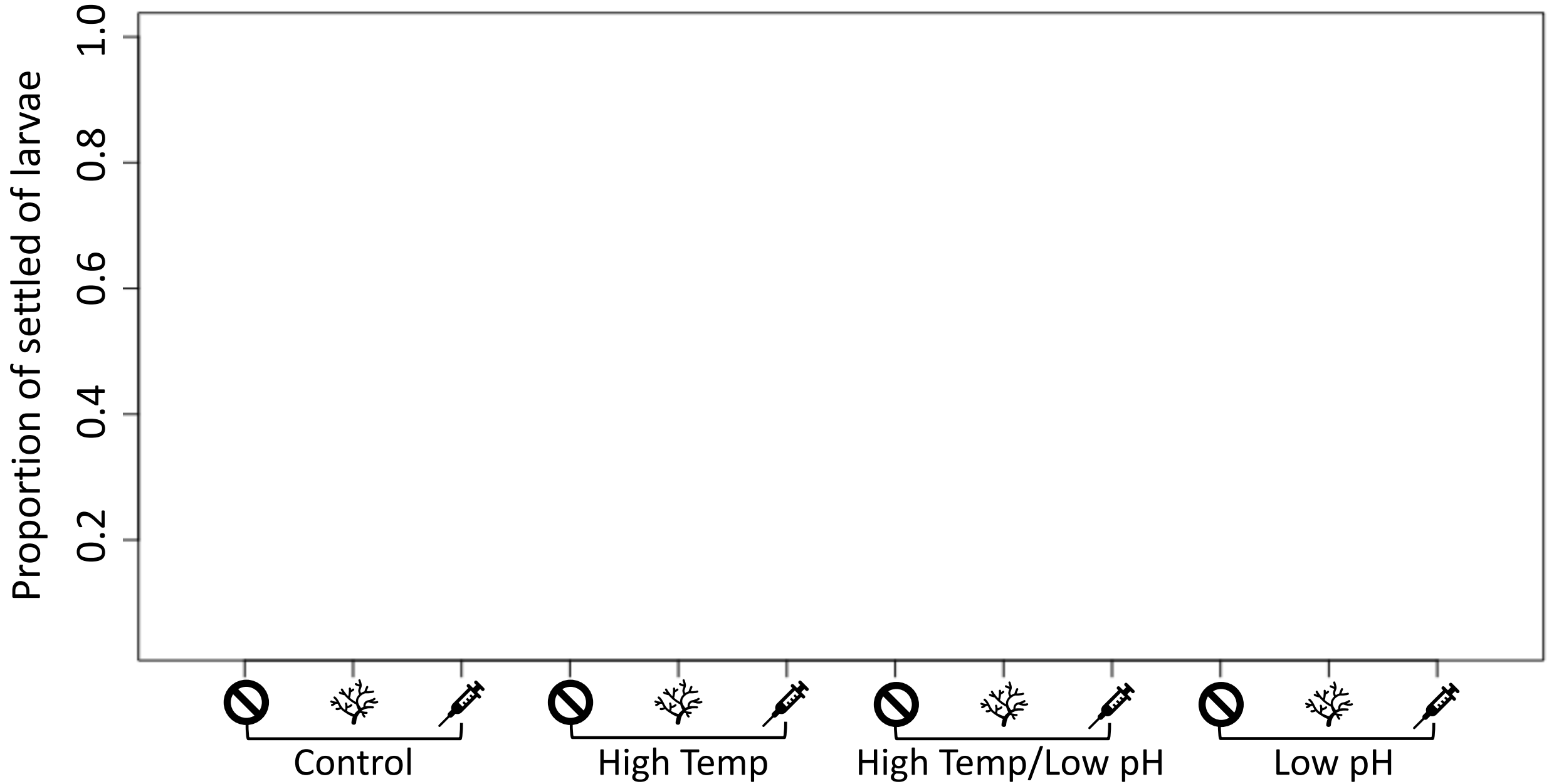
Settlement on day 7



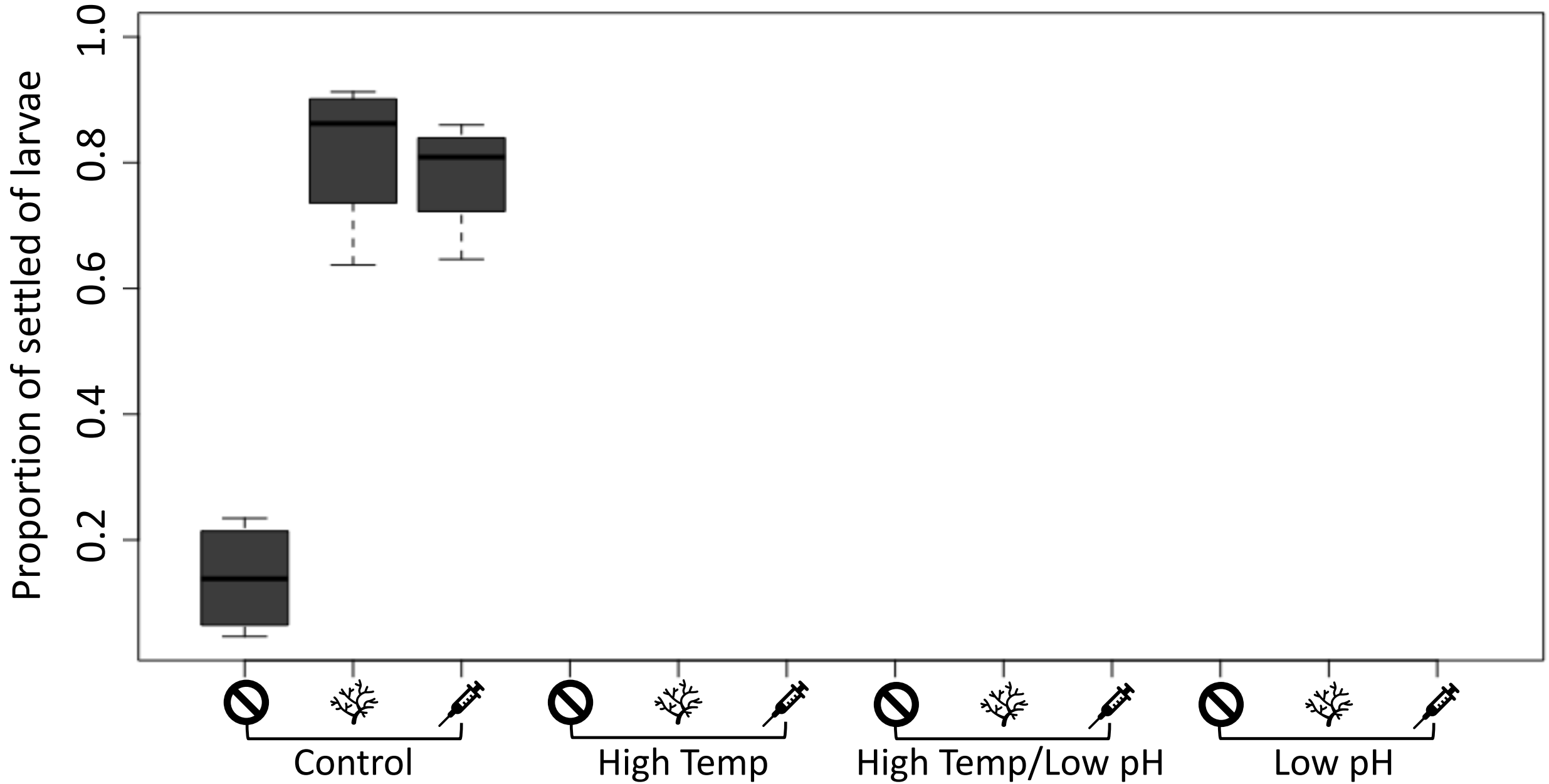
Settlement on day 7



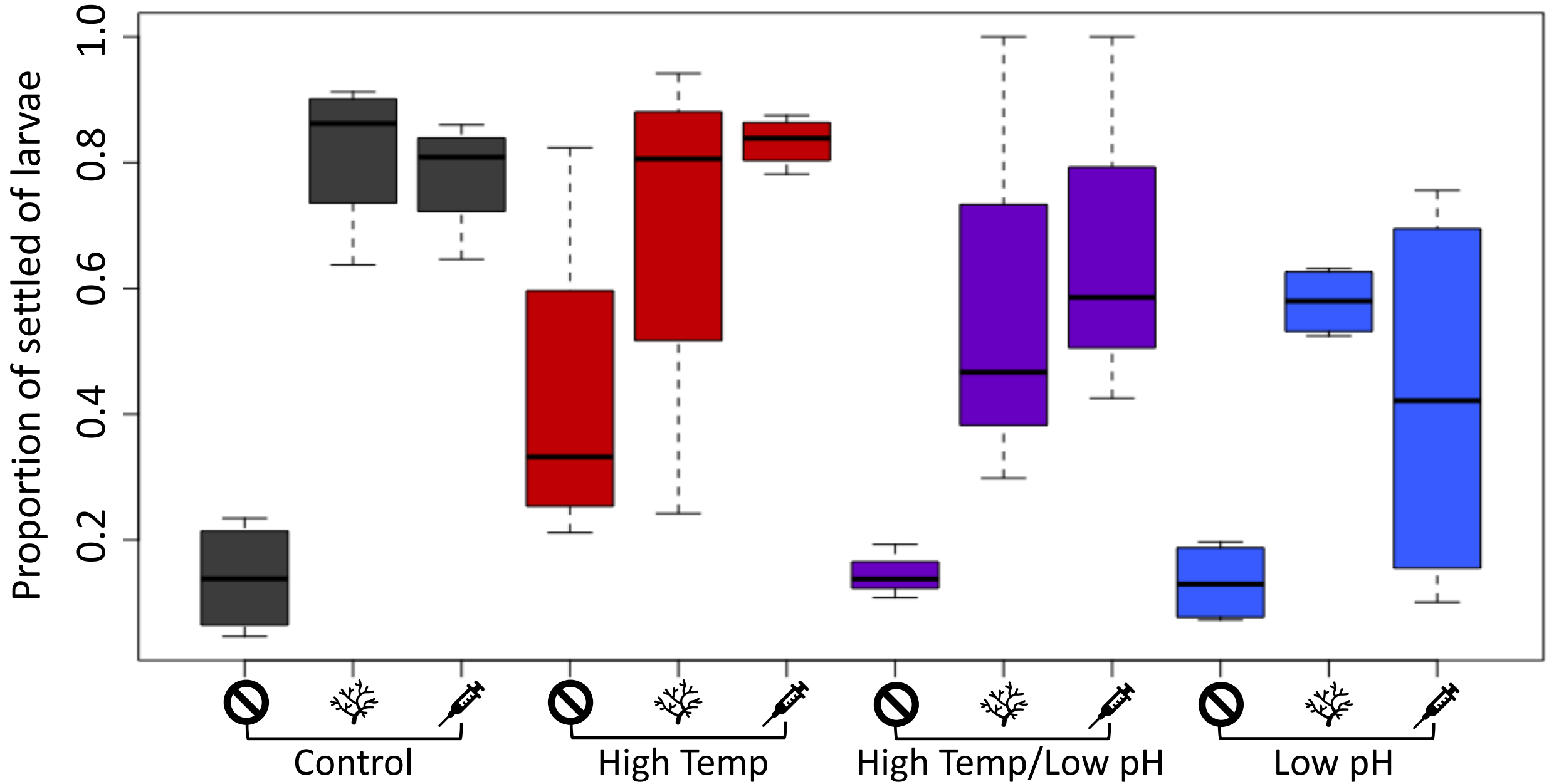
Settlement (assessed after 24 hours)



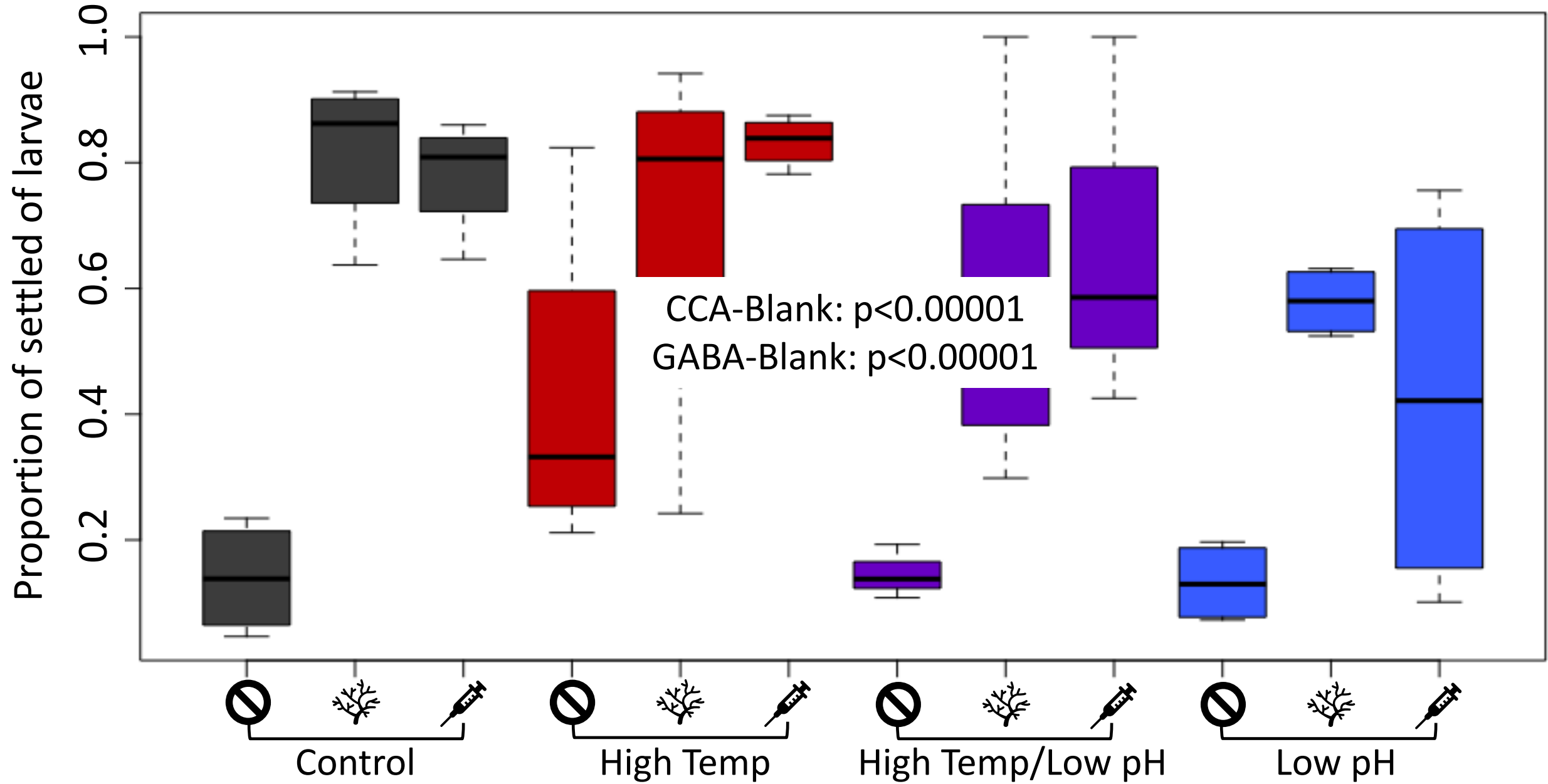
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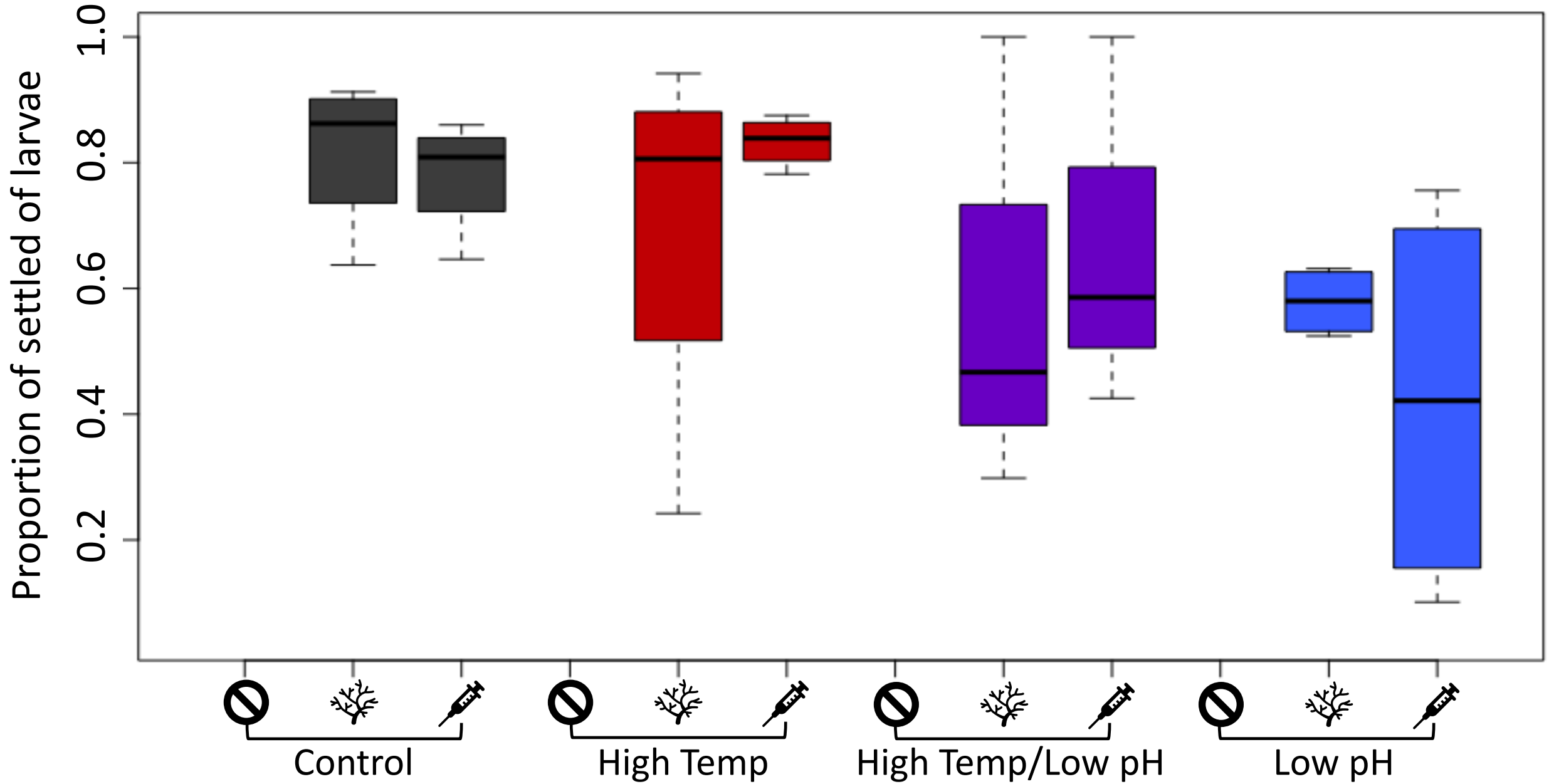
Settlement is higher in both the CCA and GABA treatments



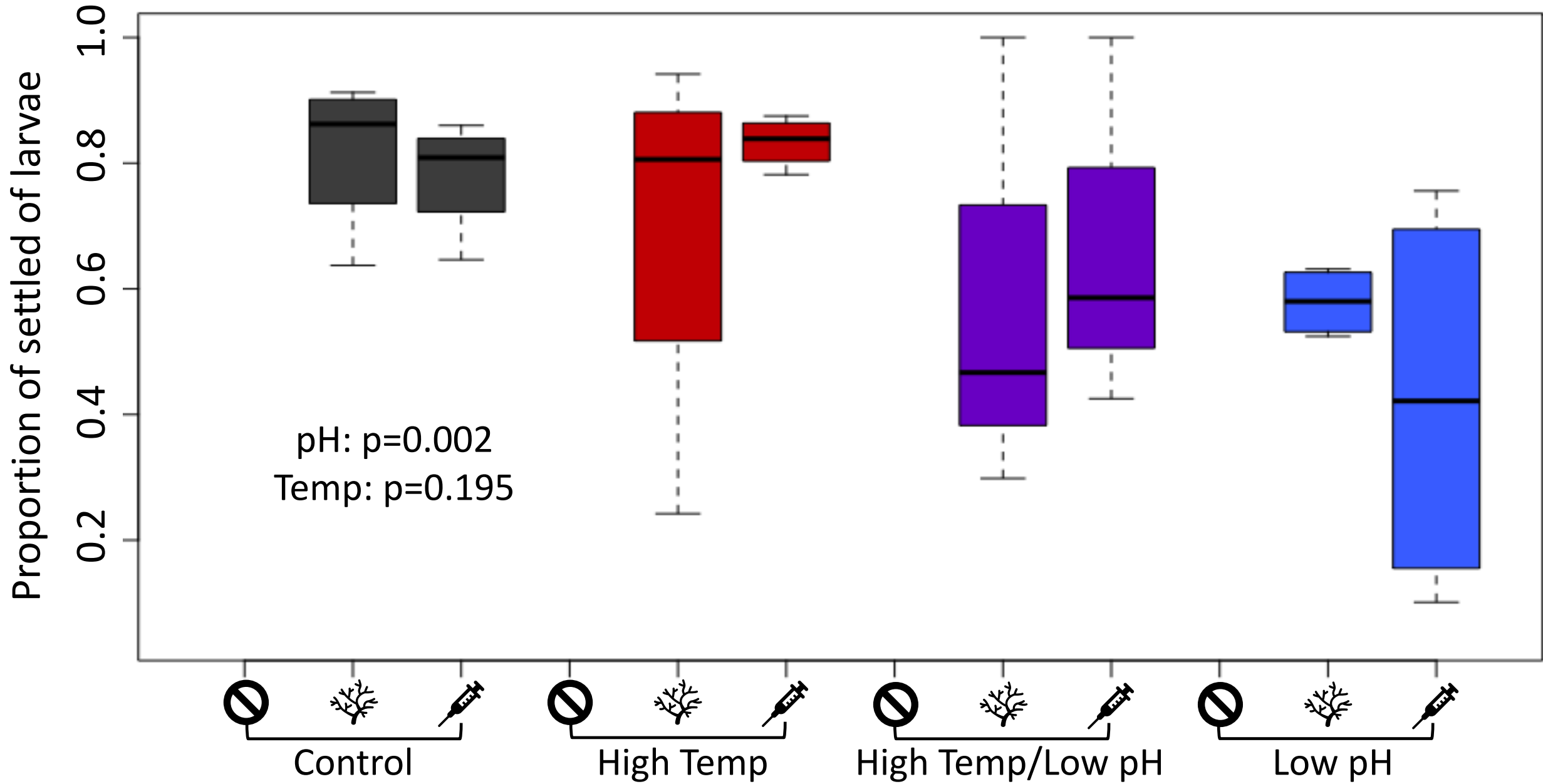
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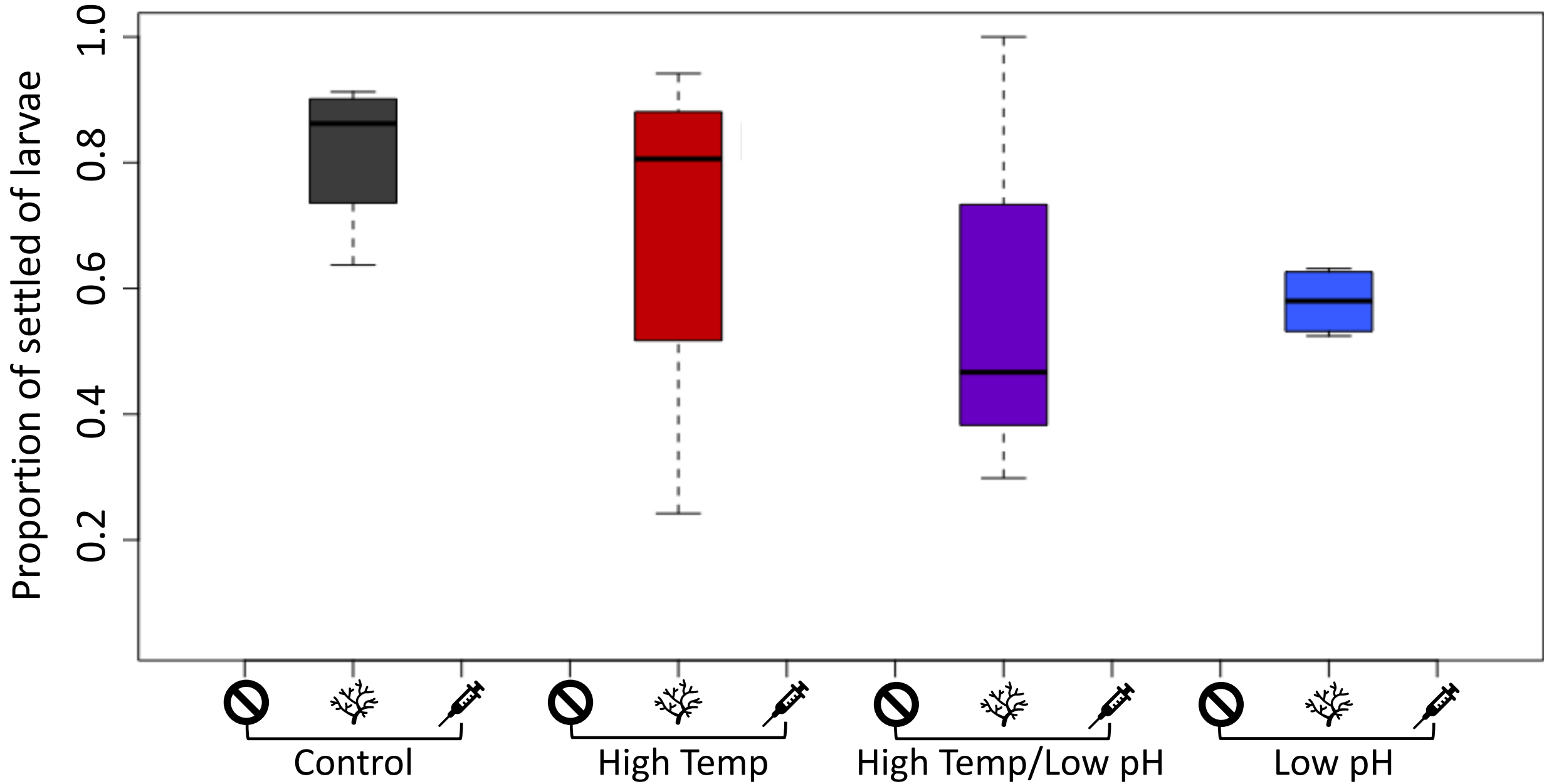
Settlement affected by pH, not temperature



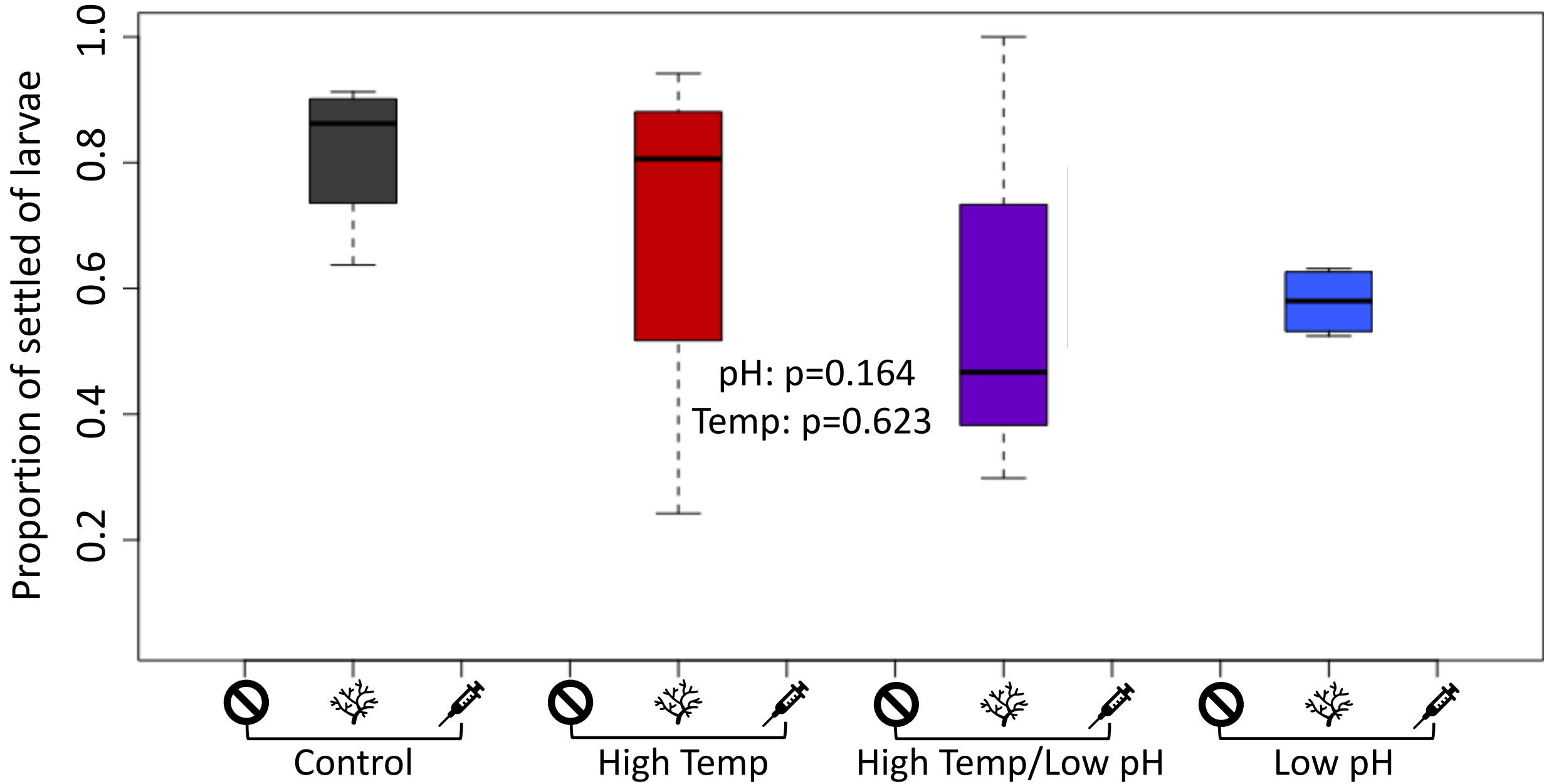
Settlement affected by pH, not temperature



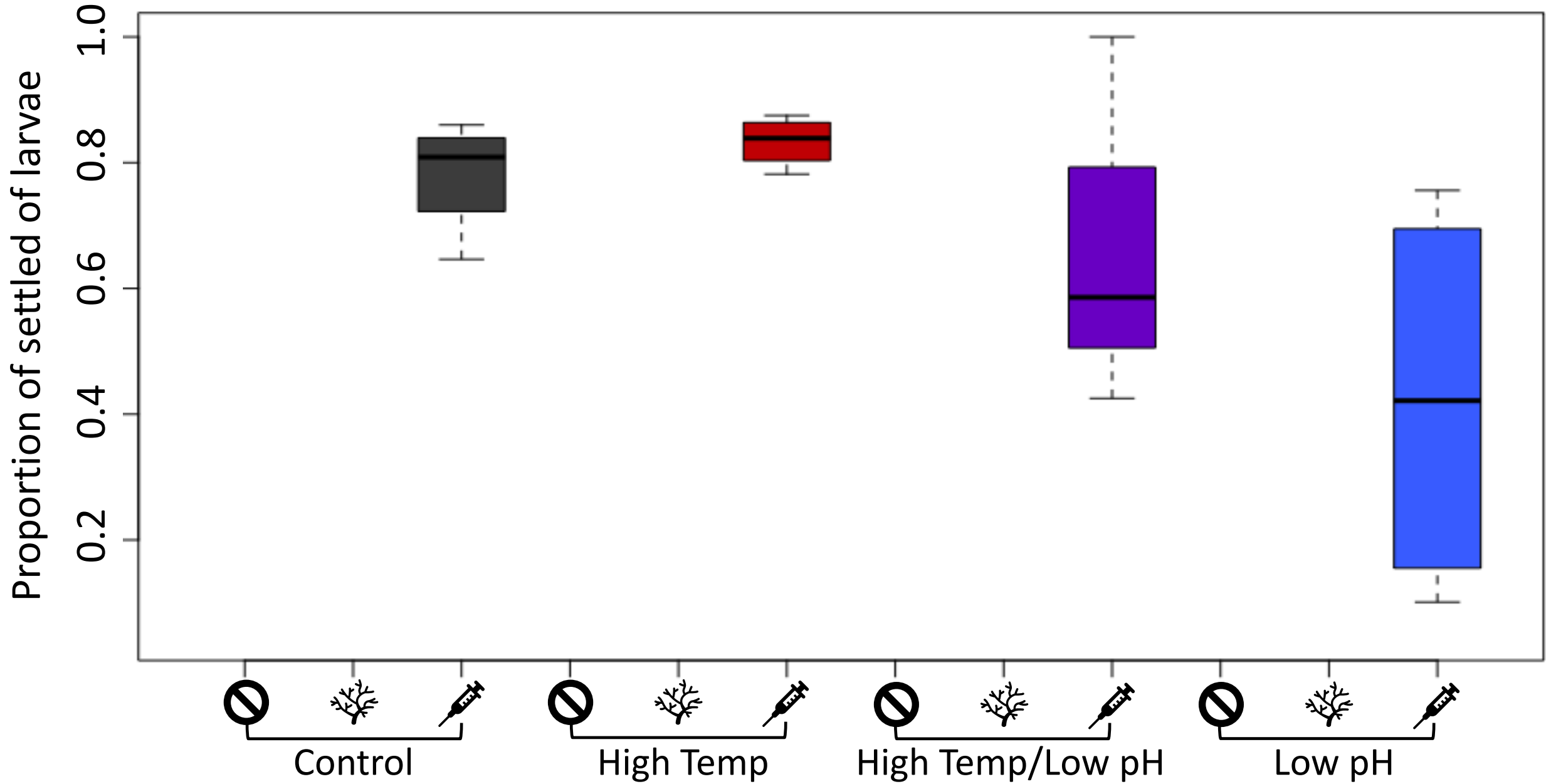
No difference between treatments with CCA



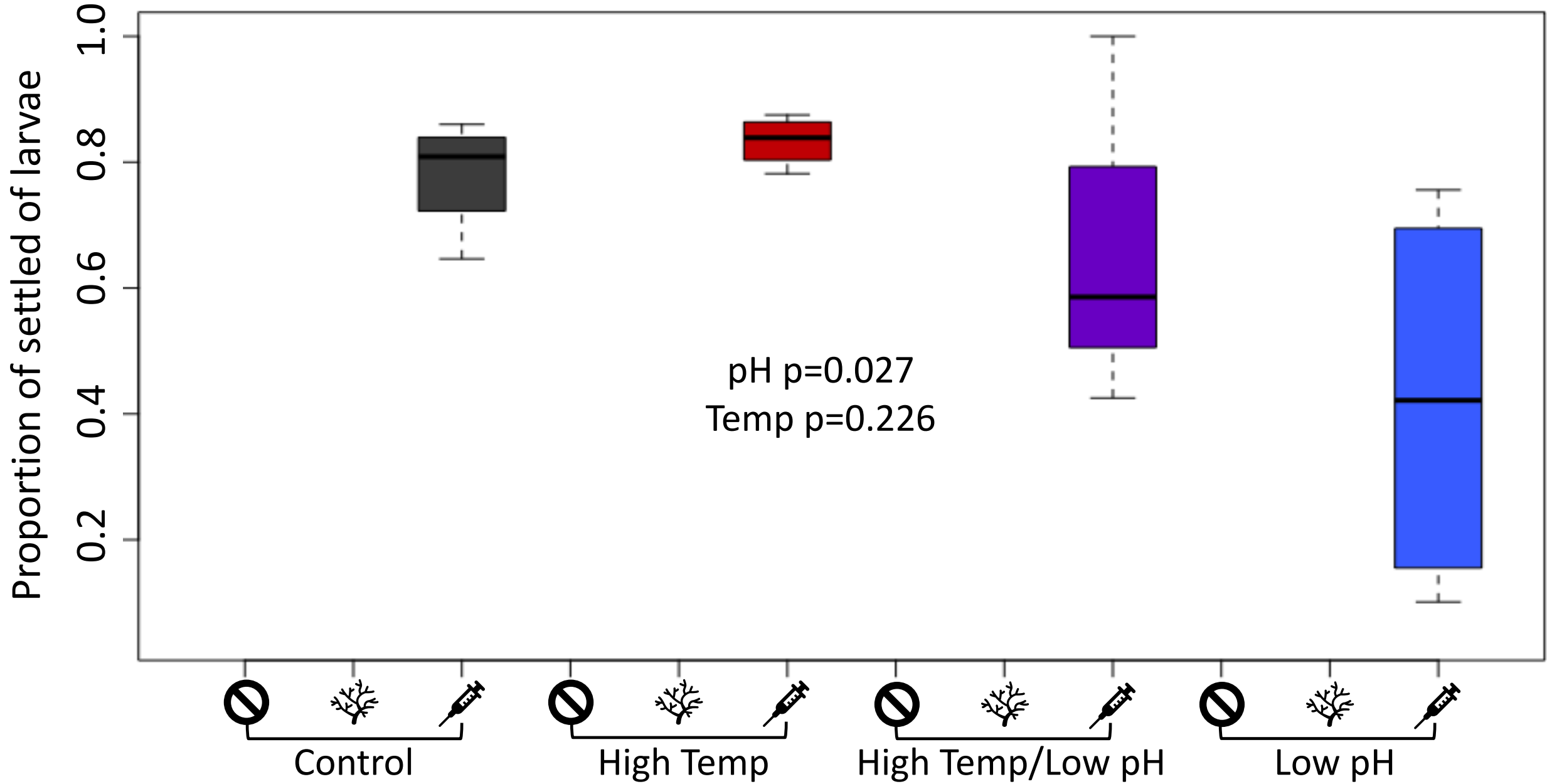
No difference between treatments with CCA



pH does make a difference for GABA treatments

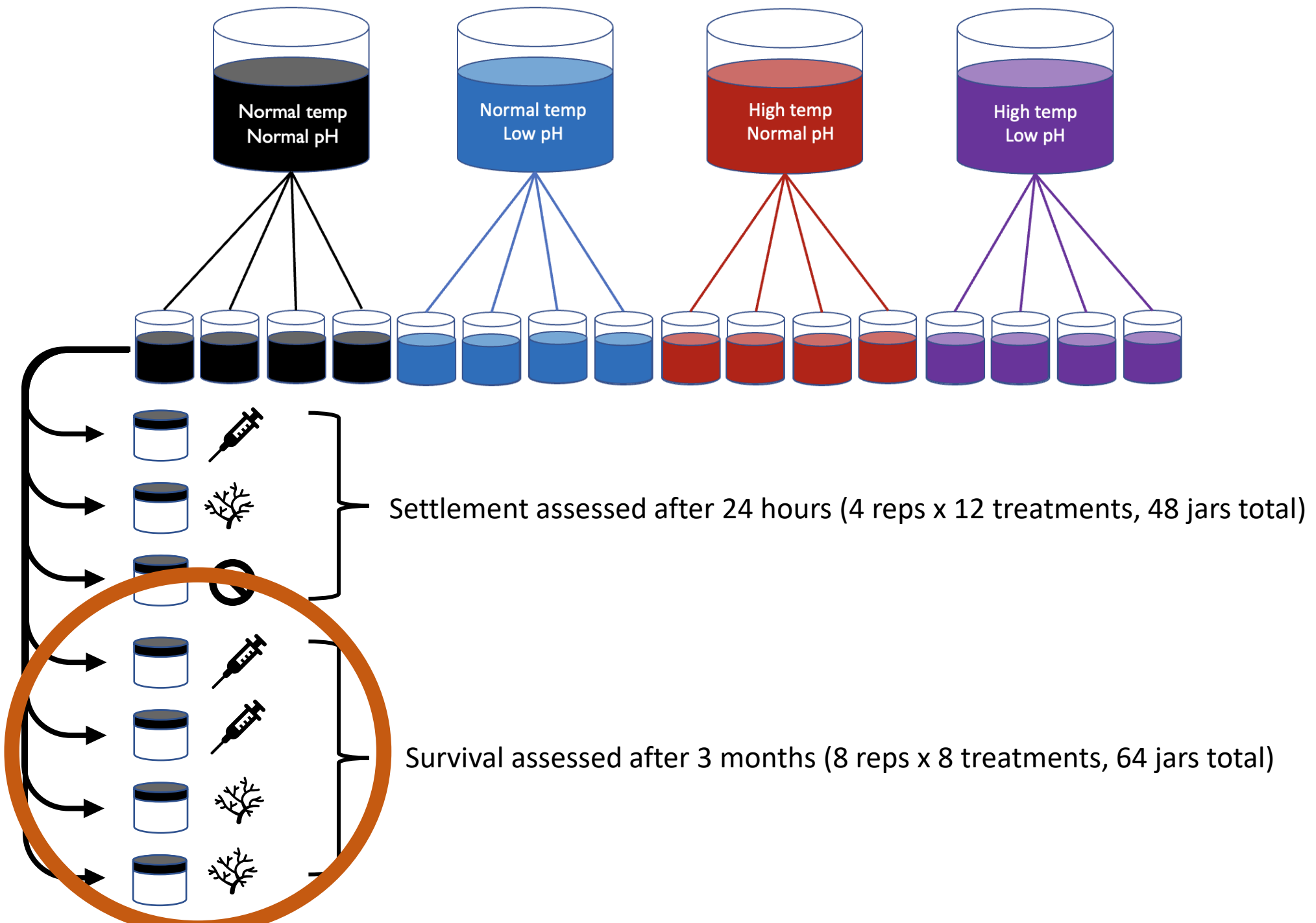


pH does make a difference for GABA treatments

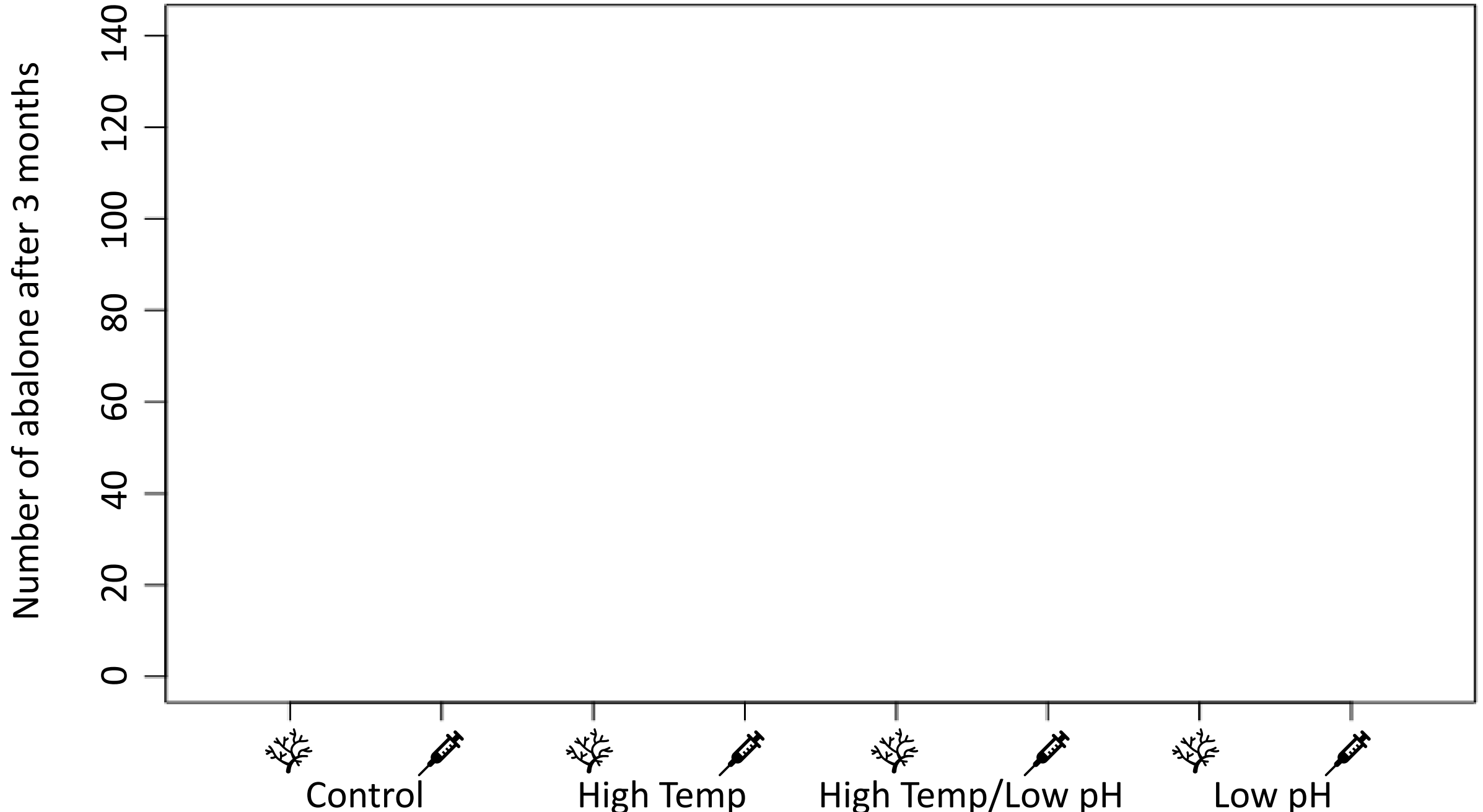


How will pH, temperature, and presence of coralline algae impact abalone settlement? ✓

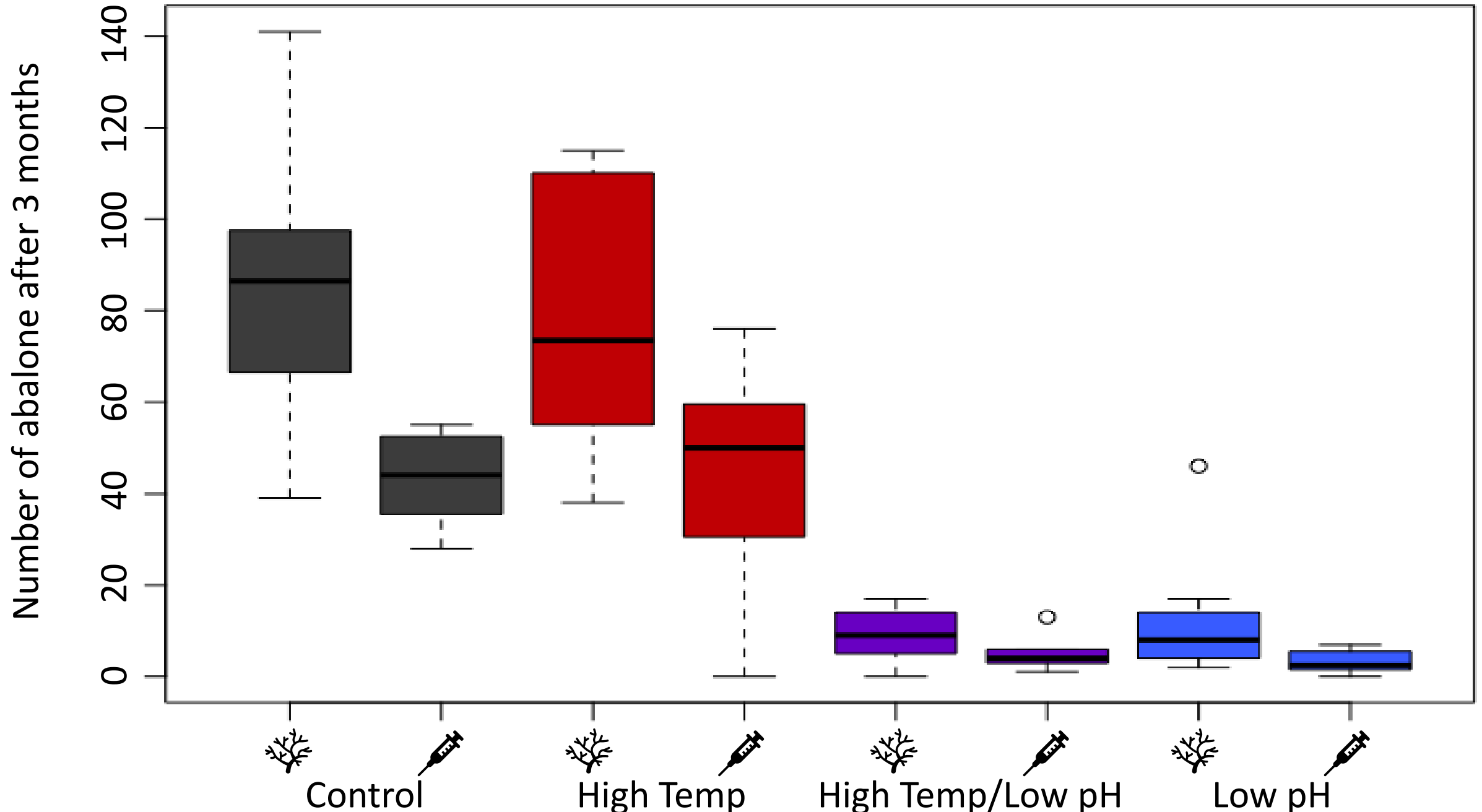
How will pH, temperature, and presence of coralline algae impact juvenile abalone survival over three months?



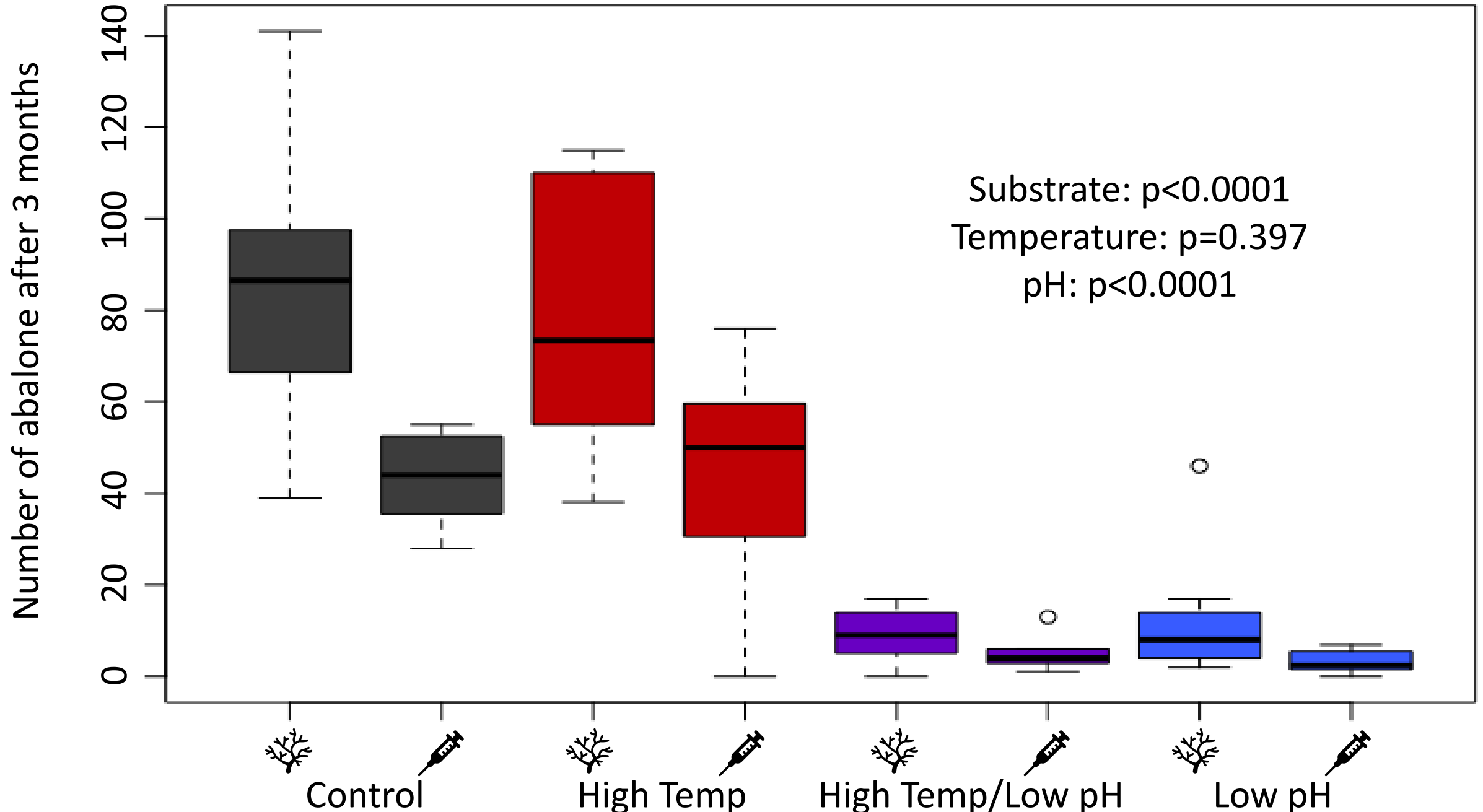
Survival after 3 months

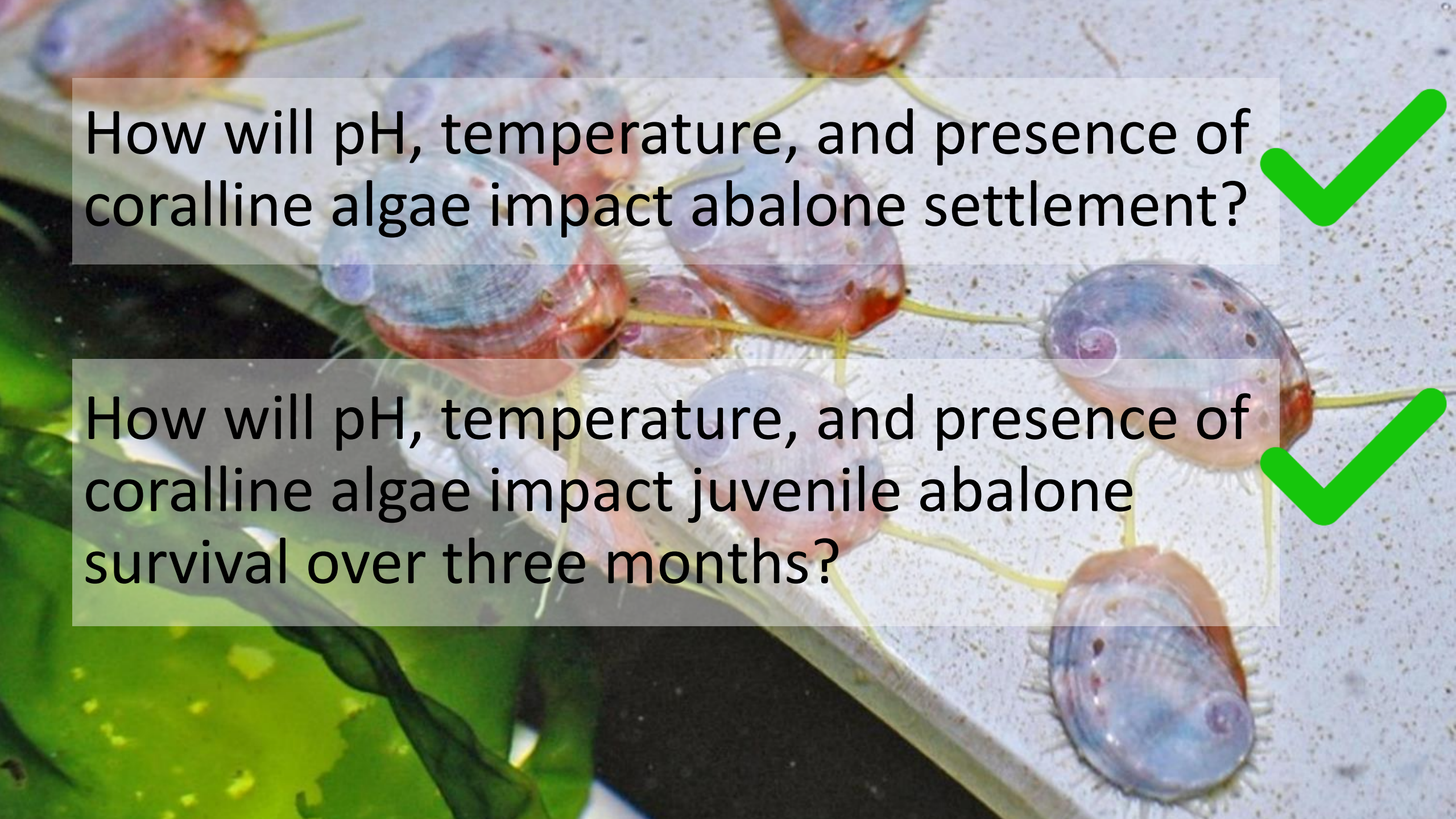


Survival after 3 months



Survival after 3 months



The background of the slide is a photograph of several abalones resting on a white, perforated tray. The abalones have colorful, iridescent shells in shades of blue, purple, and pink. They are connected by thin, yellowish threads. In the bottom left corner, there is a green leafy plant. Two large green checkmarks are overlaid on the right side of the slide, one next to each text box.

How will pH, temperature, and presence of coralline algae impact abalone settlement?

How will pH, temperature, and presence of coralline algae impact juvenile abalone survival over three months?



Implications for hatchery rearing

Implications for growth and survival in the wild

Using what we've learned in the field

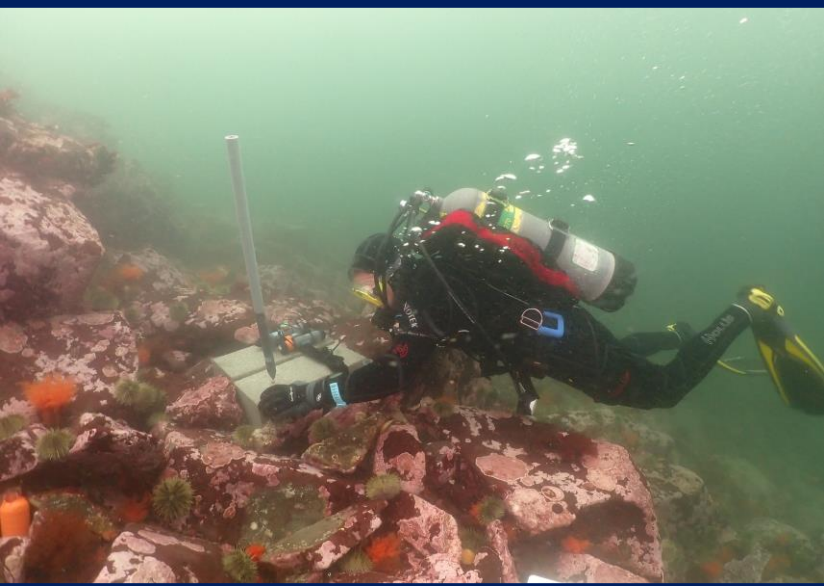


How will habitat quality and water chemistry affect survival of outplanted abalone?



Measuring: pH, temperature, salinity light, currents, dissolved oxygen

How will habitat quality and water chemistry affect abalone survival in the wild?



Measuring: pH, temperature, salinity light, currents, dissolved oxygen

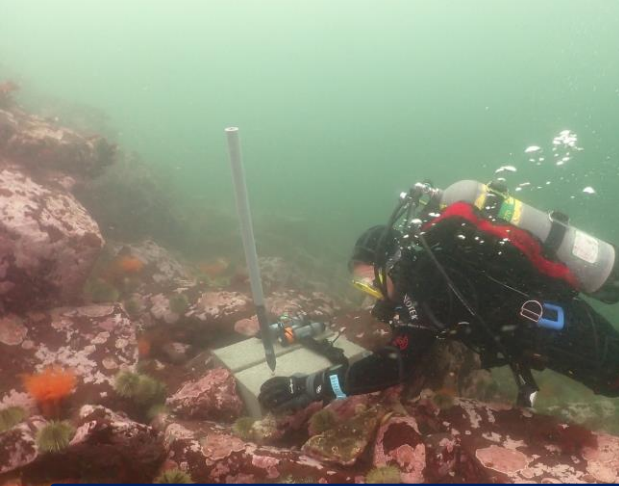
Photos: K. Sowul

How will habitat quality and water chemistry affect abalone survival in the wild?



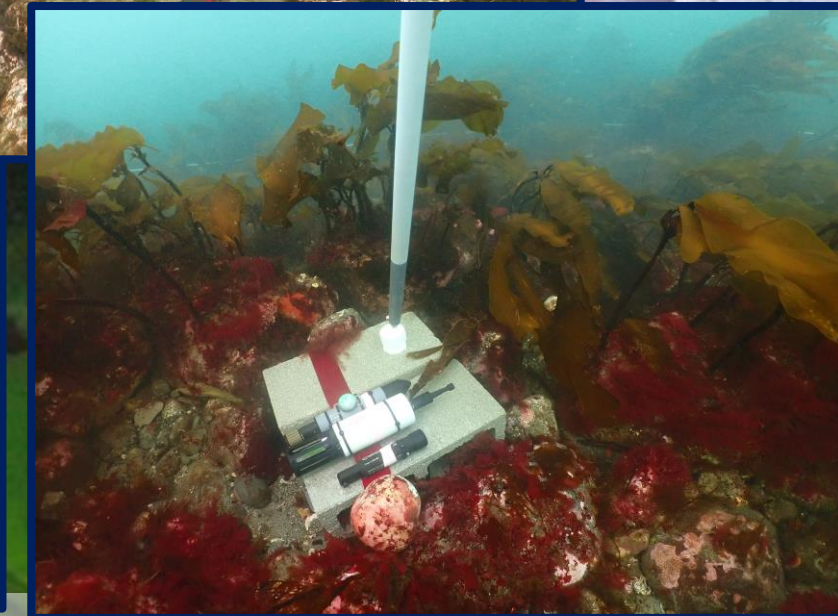
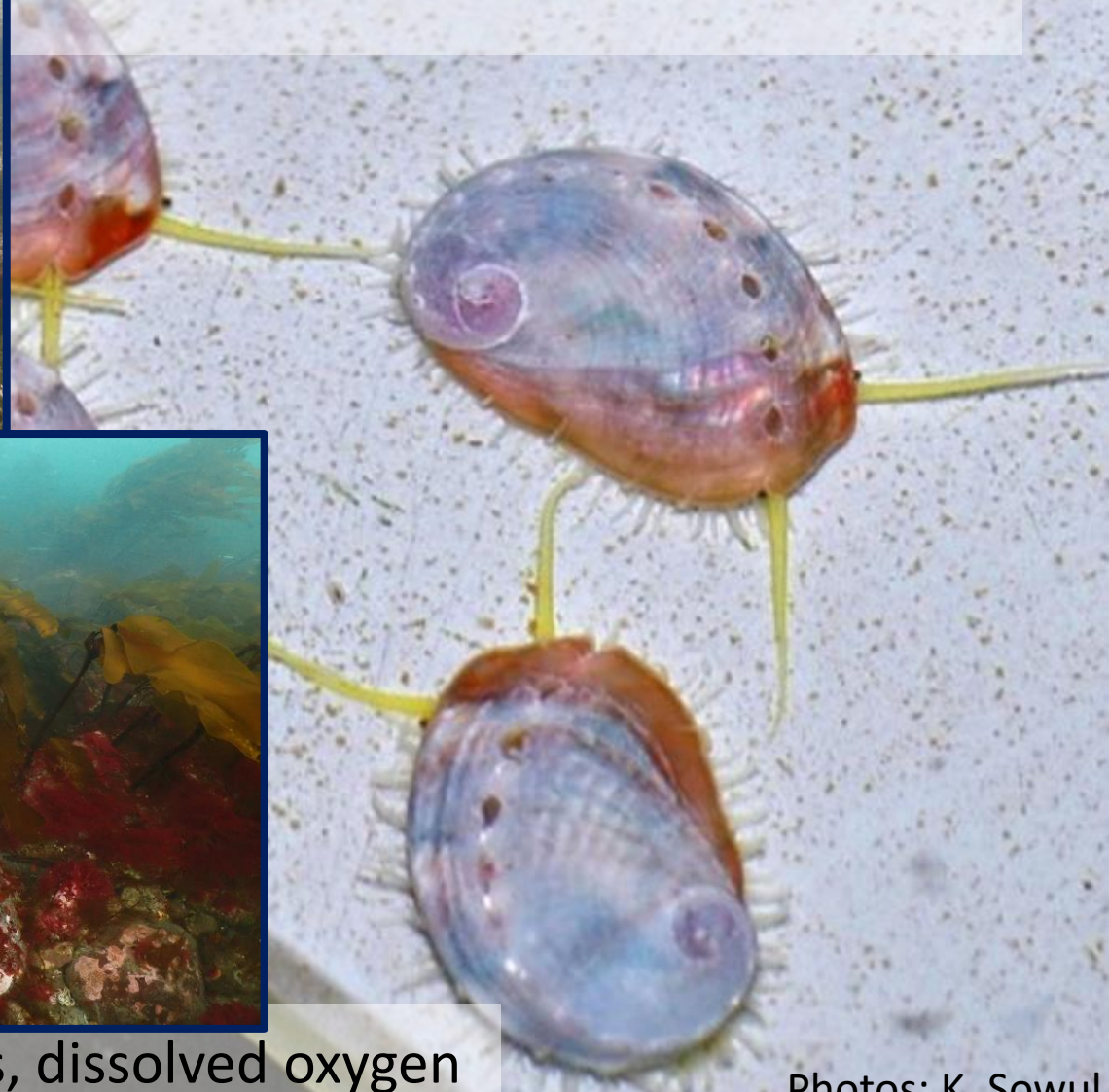
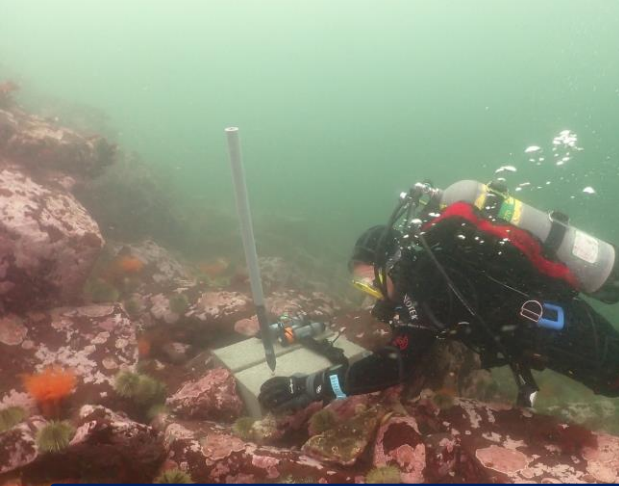
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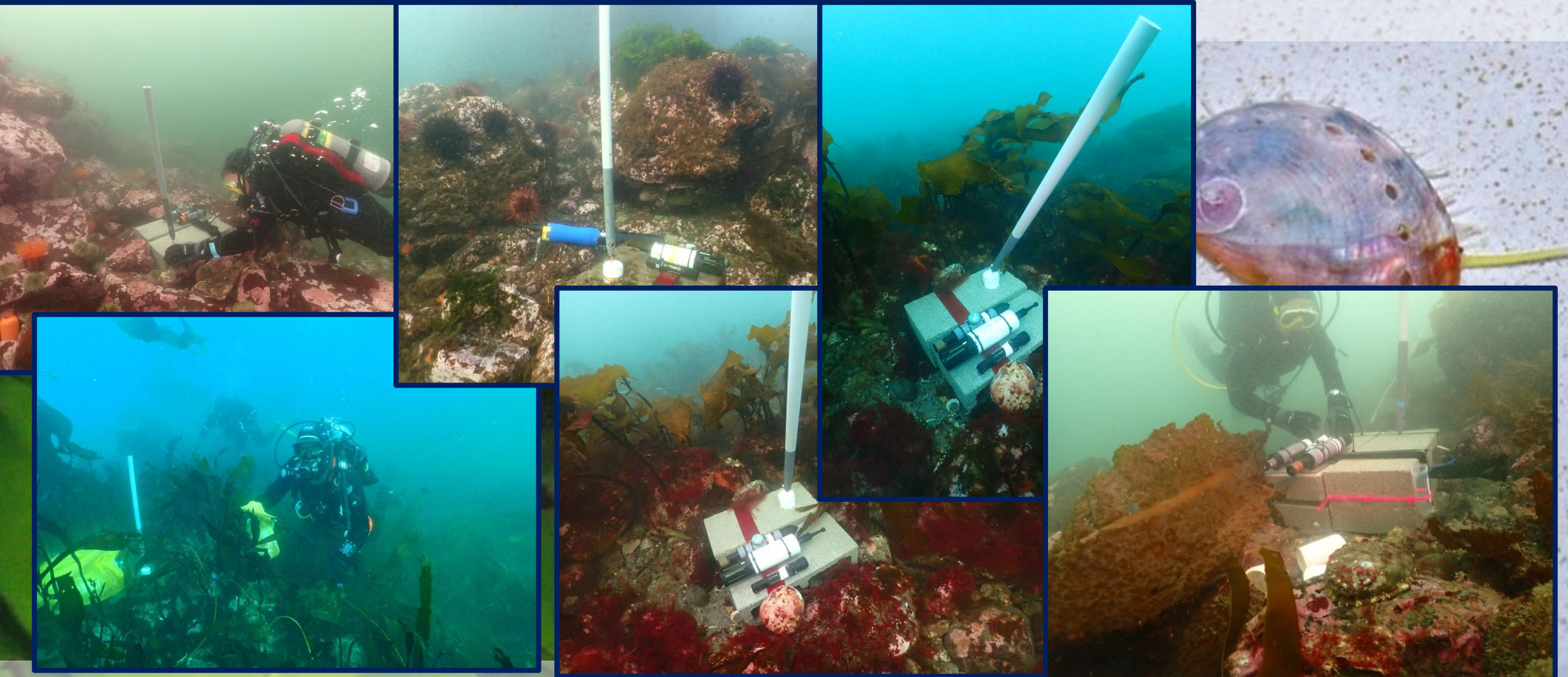
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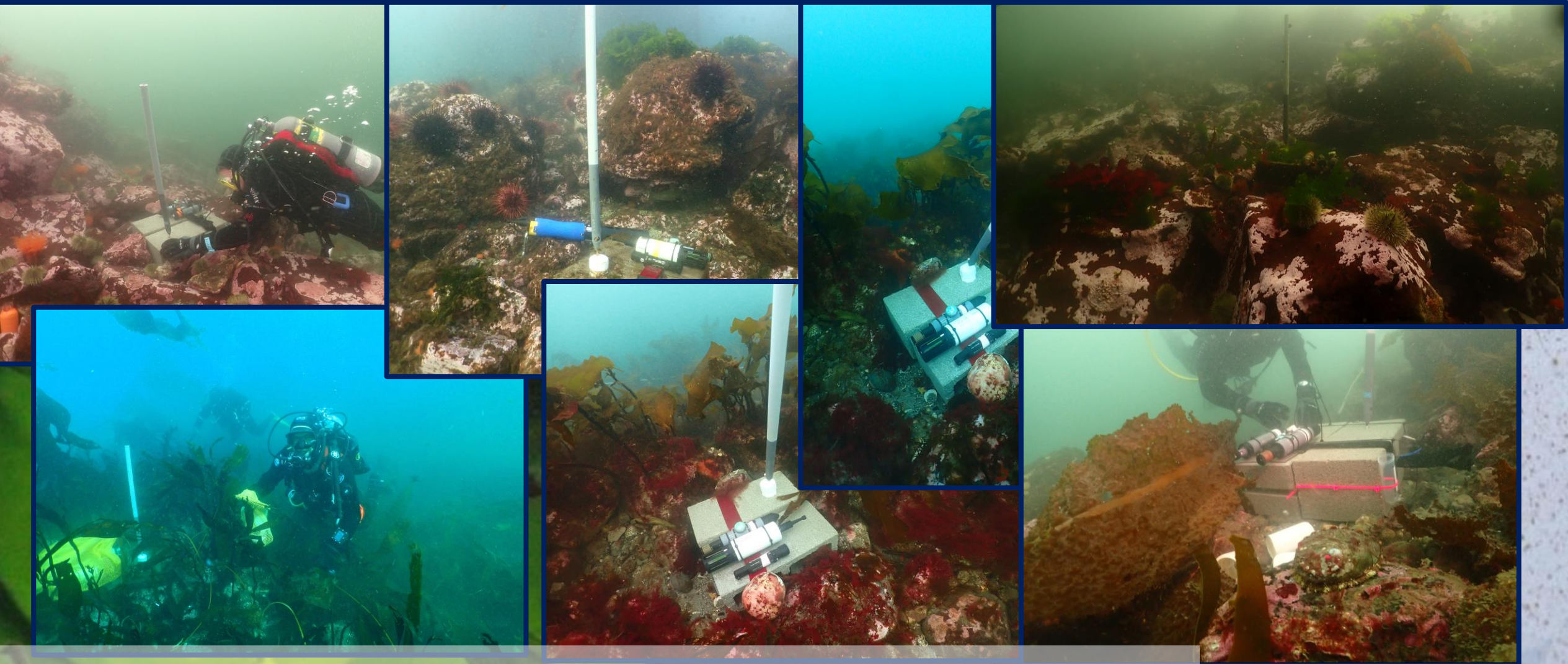
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Photos: K. Sowul

Thank you!



Tim Essington
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Alex Lowe
JPG Lab, ELAF



Katie Sowul
Hank Carson
Taylor Frierson
Emily Loose
Ocean Working
Bethany Stevick



Josh Bouma
Ryan Crim
Jodie Toft
Caitlin O'Brien
Jay Dimond
Malise Yun
Mackenzie Weers



NORTHWEST
Climate Adaptation
Science Center



Thank you!



Questions? Contact: ehbates@uw.edu

