

# The effect of crayfish plague pathogen infection on growth of juvenile marbled crayfish *Procambarus virginalis*

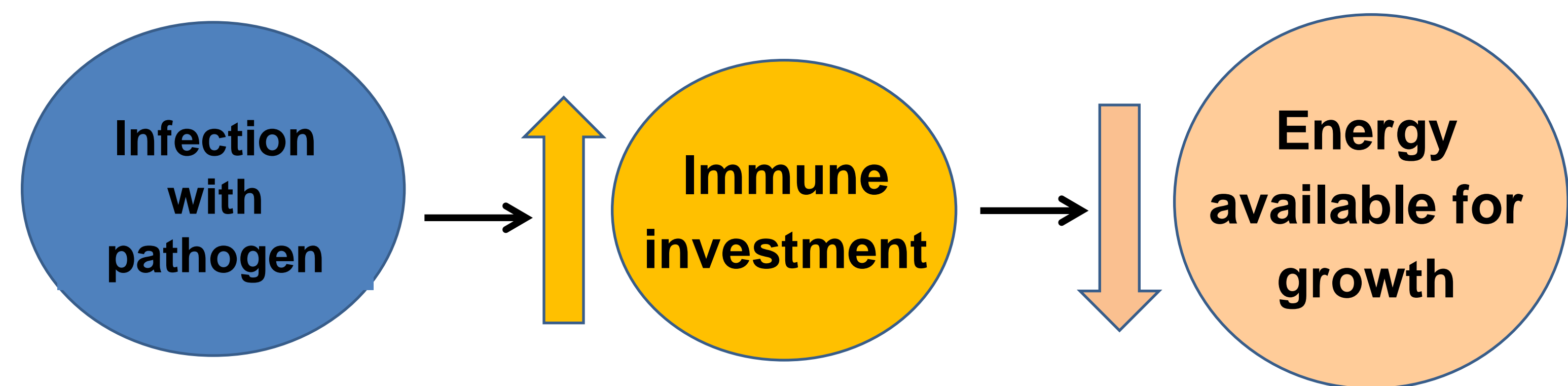
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## BACKGROUND

Investment in immune response affects invasion success.  
Effective immune function may be **costly**, and lead to a **trade-off** between these traits in an invader.

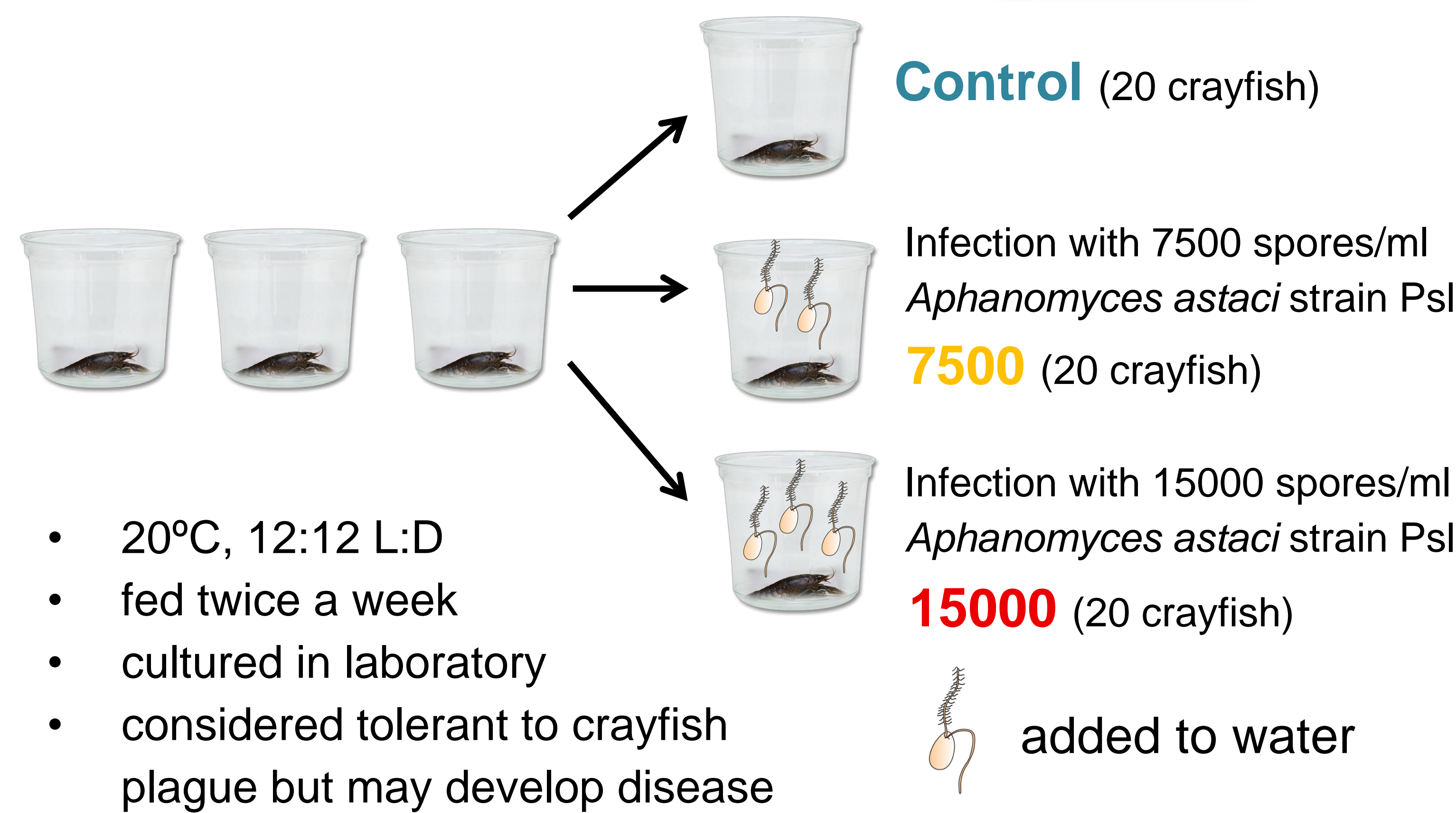


## STUDY AIMS

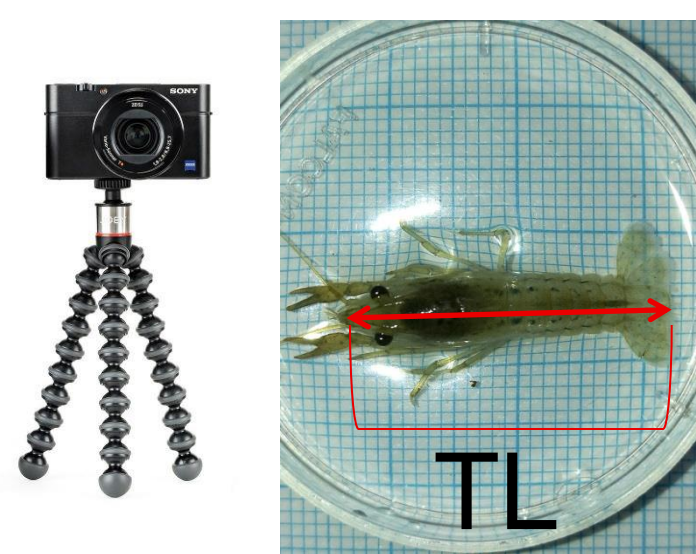
To examine the energetic costs immune response to infection by crayfish plague pathogen (*Aphanomyces astaci* strain Psl) on growth & mortality of juvenile marbled crayfish.

## METHODS

Individually kept juvenile marbled crayfish



Every 2 weeks:



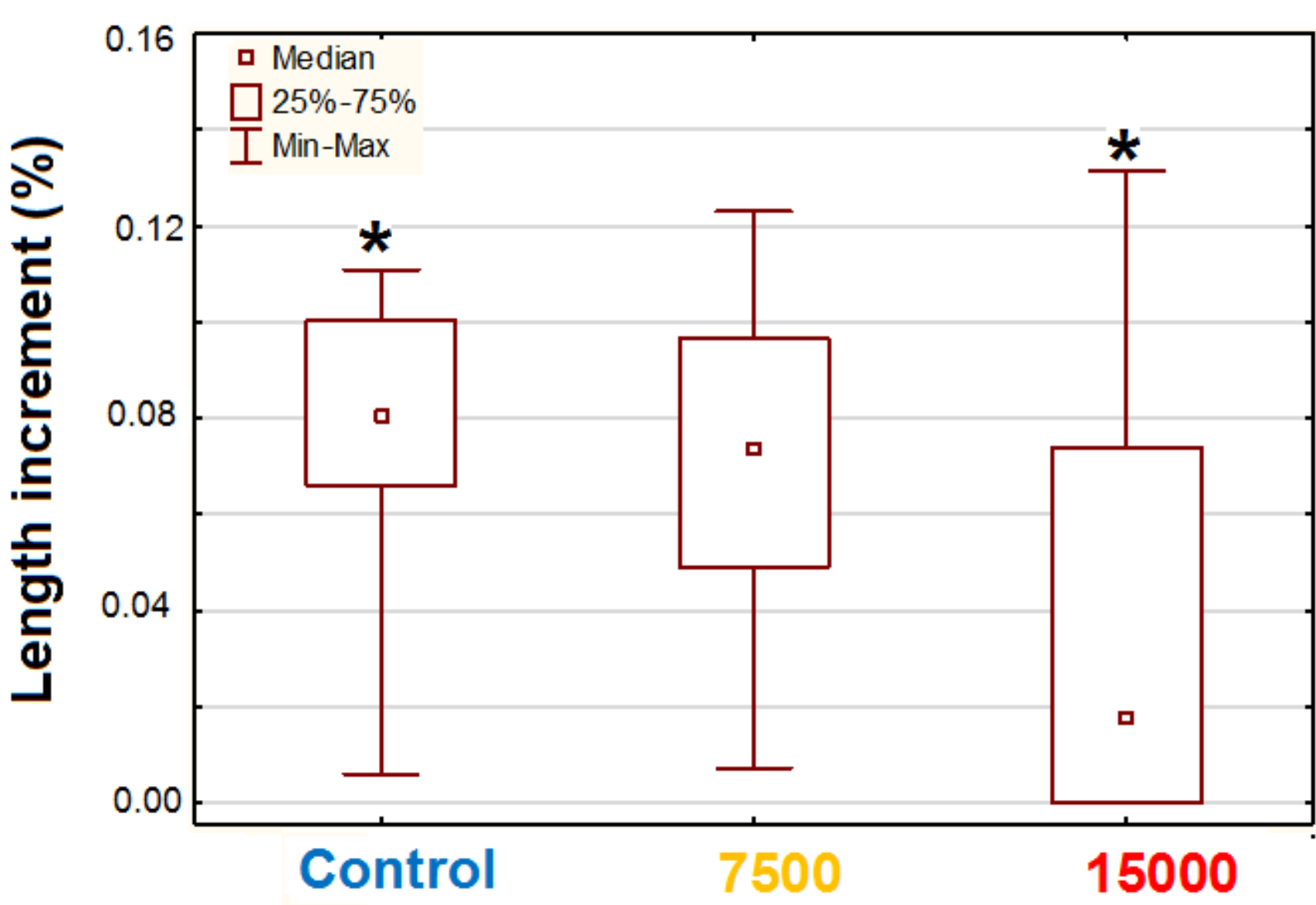
- Animals photographed & total length (TL) measured using imageJ
- Animals weighted (precision 0.00001g)
- Length & weight increments calculated:  
 $(W_{\text{beginning}} - W_{\text{end}}) / W_{\text{beginning}}$
- Mortality recorded twice a week

Mortality, length & weight increments compared between **Control**, **7500** & **15000**

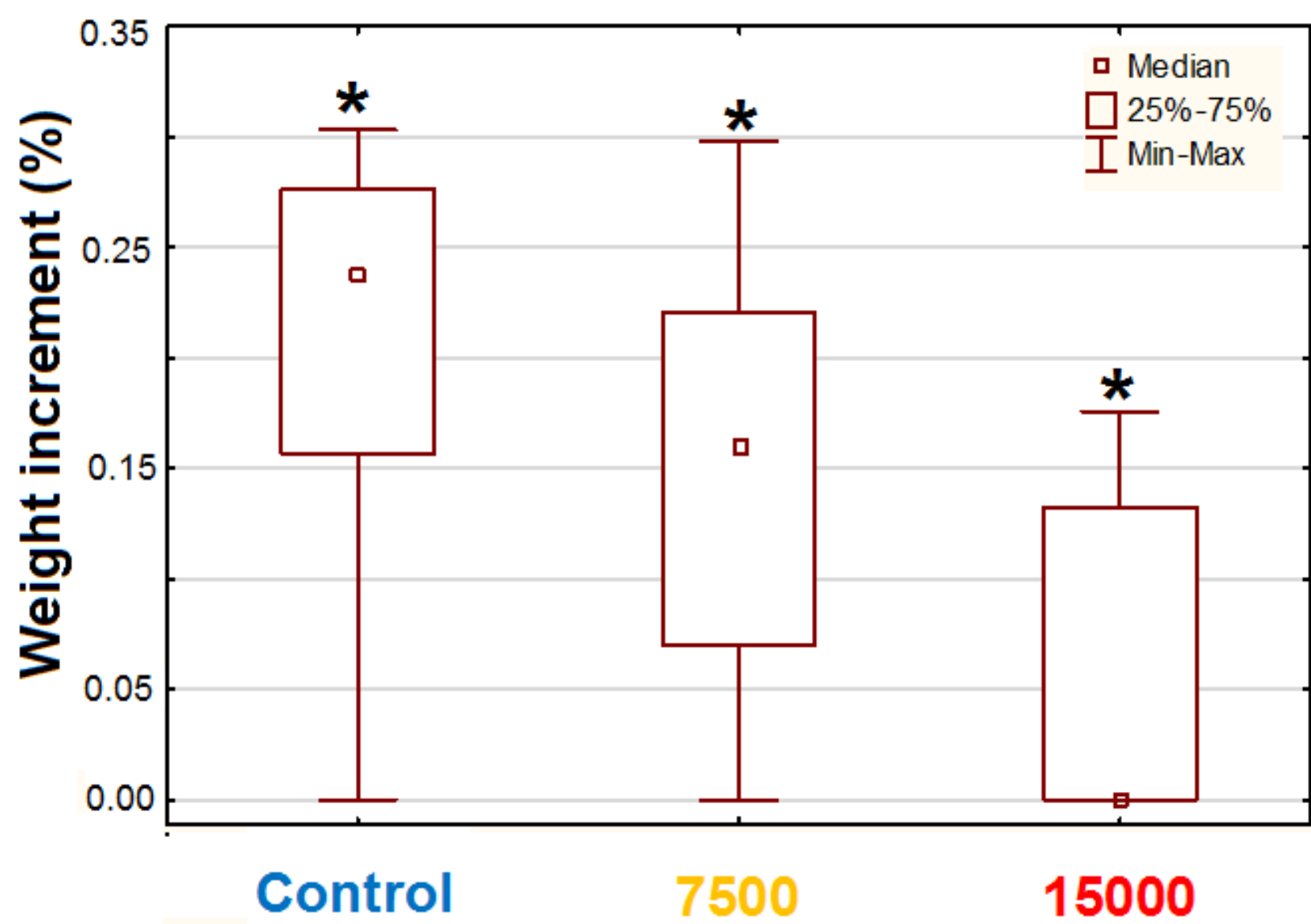
## RESULTS

Survival (%)	
Control	100 %
7500	100 %
15000	70 %

Significantly higher mortality ( $p=0.0014$ ) at the highest infection level



Significant differences in LENGTH increment between **Control** and **15000**



Significant differences in WEIGHT increment between all groups

## CONCLUSIONS

- Observed short term effect of exposure to pathogen on growth of juvenile marbled crayfish (effect of acute activation of immune system)

Future directions:

- to identify whether these effects are visible in the long-term, upon cessation of infection trials
- to analyse long term effects of trade-offs between chronic and acute activation of the immune system and growth on the invasive success of marbled crayfish using dynamic energy budget (DEB) models

This research was financed by: