

PROGRESSION OF WHITE SPOT SYNDROME VIRUS (WSSV) INFECTION IN MUD CRAB *Scylla serrata*: VIRAL LOAD DYNAMICS AND INFECTION OUTCOMES ASSAYED USING QUANTITATIVE PCR



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INTRODUCTION

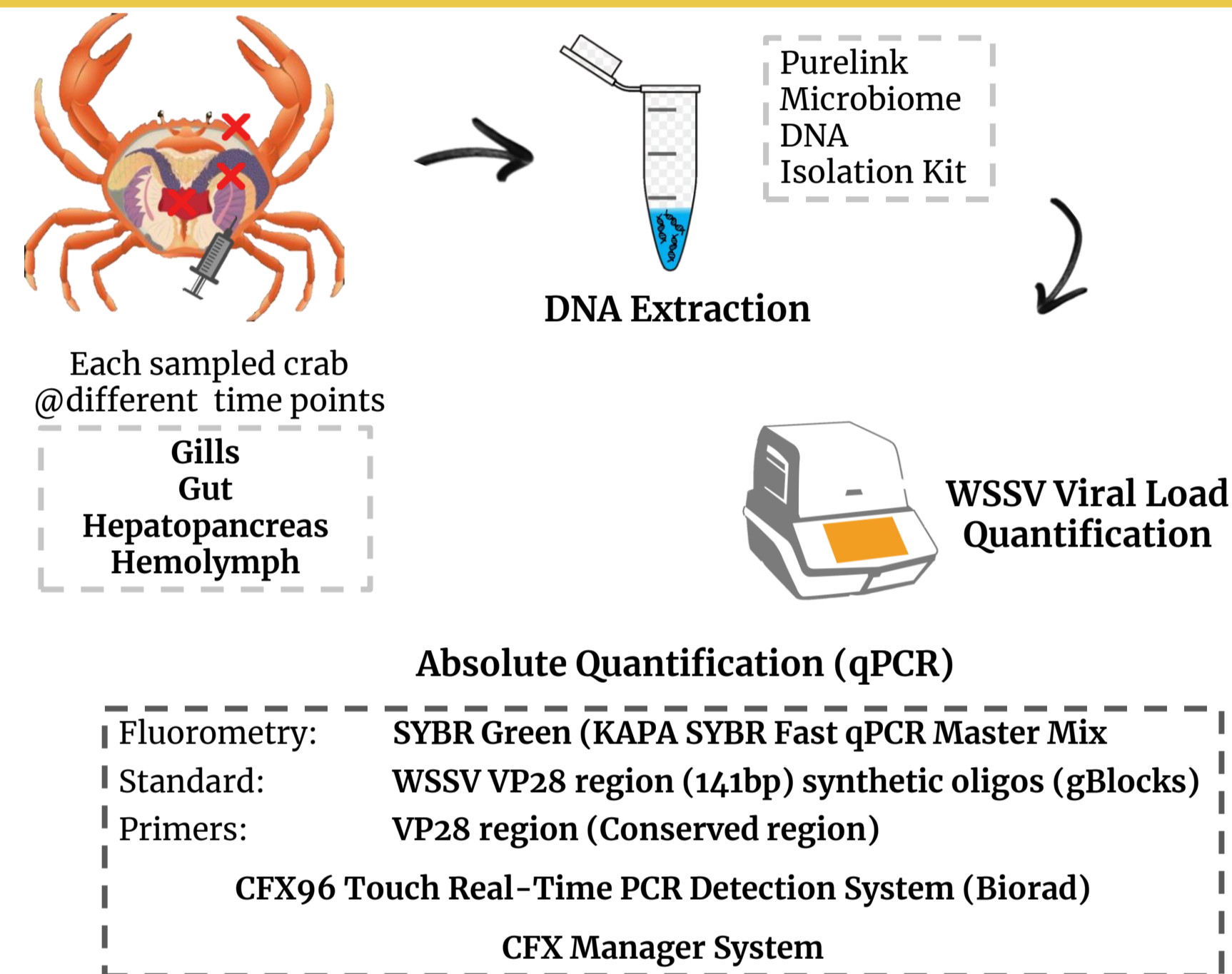
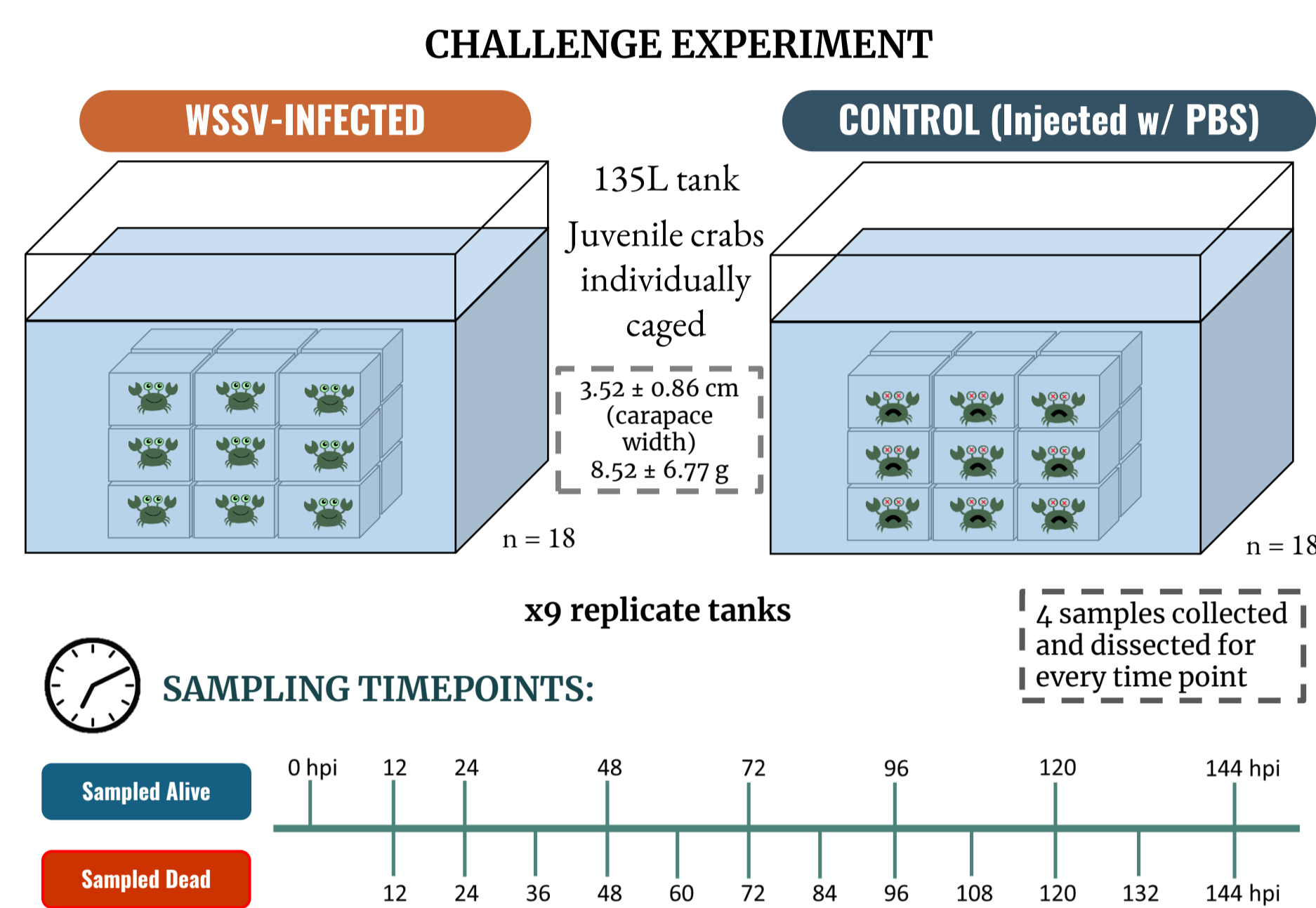
The mud crab *Scylla serrata* is a high-value aquaculture species across the Indo-West Pacific. Like many crustacean species, mud crabs are also known to be susceptible to white spot syndrome virus (WSSV), the causative agent of white spot disease, which remains to be a threat to crustacean aquaculture.



Mud crab *S. serrata* is known for its relative resistance to WSSV, yet our understanding of how viral infection progresses in this species is limited.

Tissue-specific viral load dynamics from mud crab were characterized following WSSV infection.

METHODS



FINDINGS

Viral load curves vary with WSSV infection outcomes in *Scylla serrata*

- Crabs that were **sampled-alive** were able to clear the viral infection, with viral loads comparable to non-infected animals.

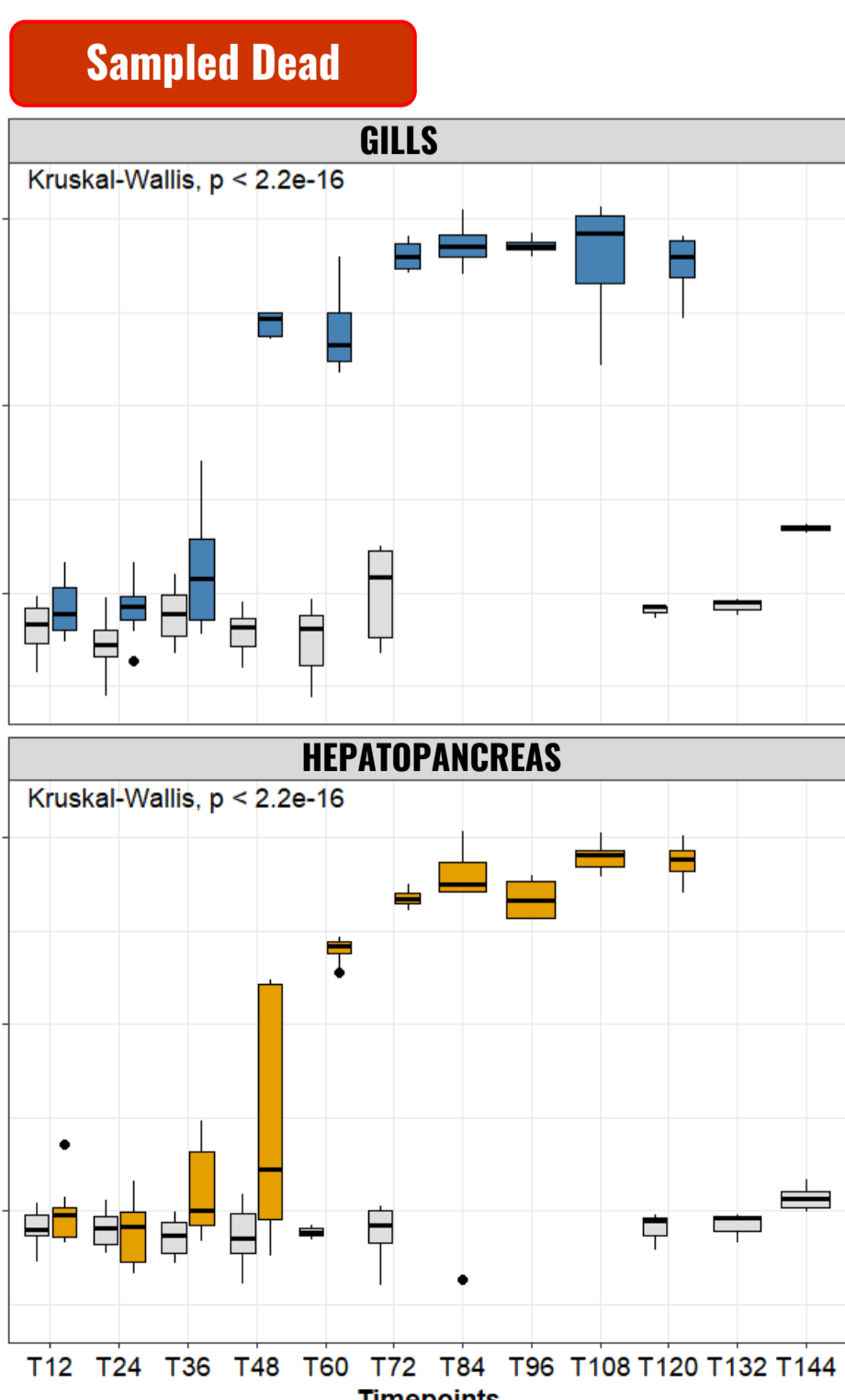
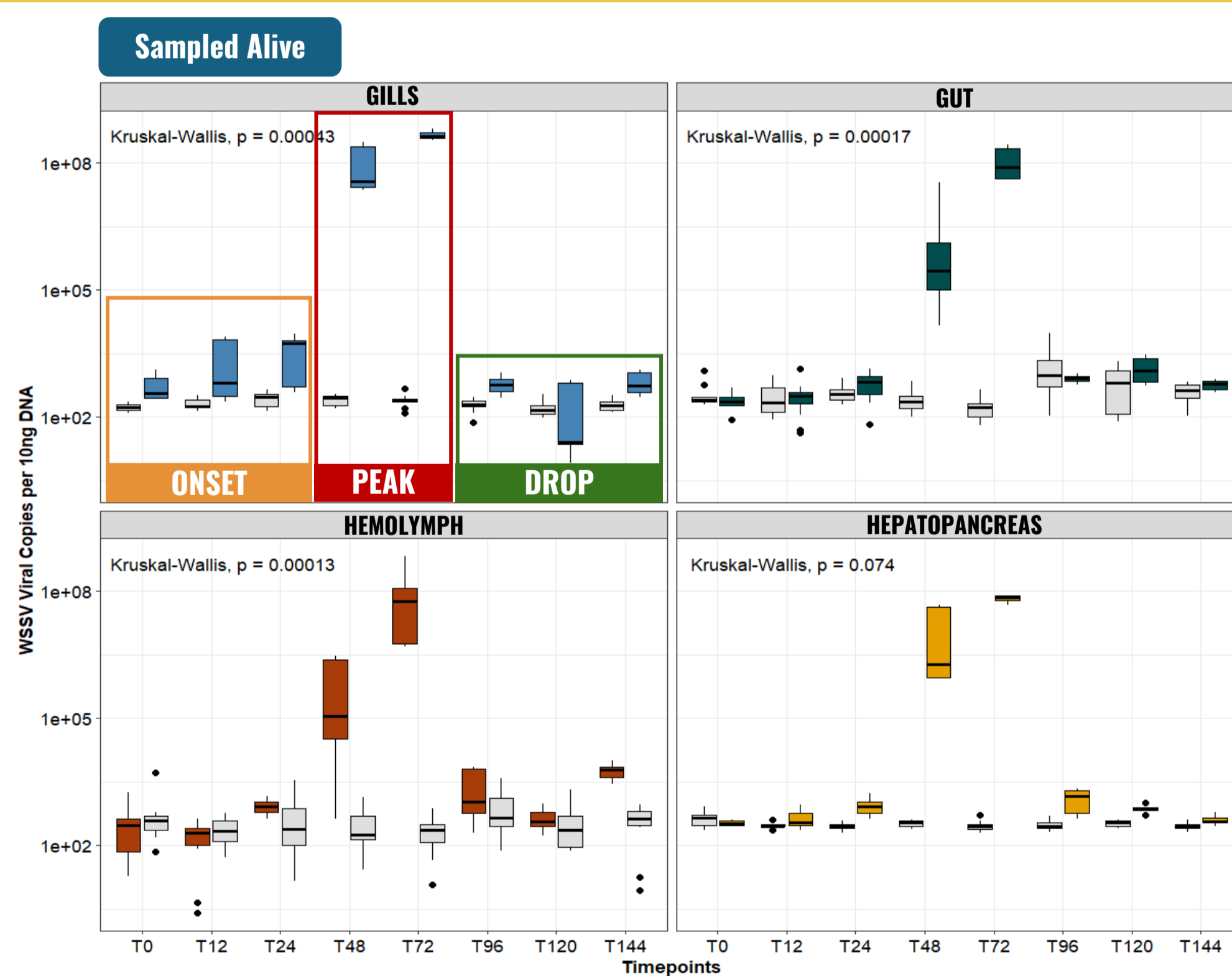
VIRAL PROGRESSION STAGES

ONSET (0 to 24-hpi) | **PEAK (48 to 72-hpi)** Exponential increase of viral load | **DROP (96-hpi onwards)** Resolution phase



POTENTIAL RESISTANCE TO WSSV

- Viral infection in the **sampled-dead** group remained high until 120-hpi, overwhelming the host's immune system and leading to mortality



The establishment of the viral load curve through the progression of WSSV infection represents **novel information** that has key implications on the role of *S. serrata* as carriers/vectors of WSSV.

WSSV-infected *S. serrata* juveniles surviving beyond 96-hpi are likely non-infective, as they exhibit no traces of active WSSV infection as measured by viral load which has returned to the non-infected (control) levels.

This may have **practical implications for disease mitigation measures for aquaculture facilities**, and development of new strategies to prevent and reduce pathogen infection in mud crab to support sustainable aquaculture production.

This is the first report to highlight the progression of WSSV copy numbers in mud crab *Scylla serrata* over 144 hours post-infection

