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DEGLI STUDI
DI PADOVA

SHIELD - Strengthening Manila clam's resilience to climate change-related stress and pathogens

SHIELD addresses a critical challenge in aquaculture: improving the resilience of Manila clams (*Ruditapes philippinarum*) to environmental stressors like Perkinsus infections and heatwaves. These stressors have caused widespread mortality in clam populations, threatening the sustainability of this important industry. Through a combination of laboratory and field experiments, SHIELD seeks to investigate two key hypotheses that aim to tackle these challenges from a new perspective. The first hypothesis focuses on the transgenerational effects of Perkinsus infections, examining how parental exposure to the pathogen may affect their offspring's health, growth, and survival. This area remains largely unexplored, and SHIELD aims to shed light on how the effects of infections can be passed down through offspring. By using advanced genomic and epigenomic tools, SHIELD will examine how these changes are inherited and influence the overall fitness of future clam populations. The second hypothesis examines how early microbial exposure can influence the clam's ability to cope with environmental challenges. Hatcheries typically raise clams in sterile conditions, which might leave them more vulnerable to stressors later in life.

SHIELD will test whether exposing clams to a microbiota-enriched environment early in their development can lead to better growth, disease resistance, and survival outcomes when facing real-world stressors like heatwaves and pathogens. By integrating advanced genomic techniques and insights from fieldwork, SHIELD will provide a deeper understanding of how microbiota, pathogens, and environmental stressors interact. This research could offer valuable insights that support more sustainable aquaculture practices, helping ensure the resilience of Manila clam farming in a changing climate.

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