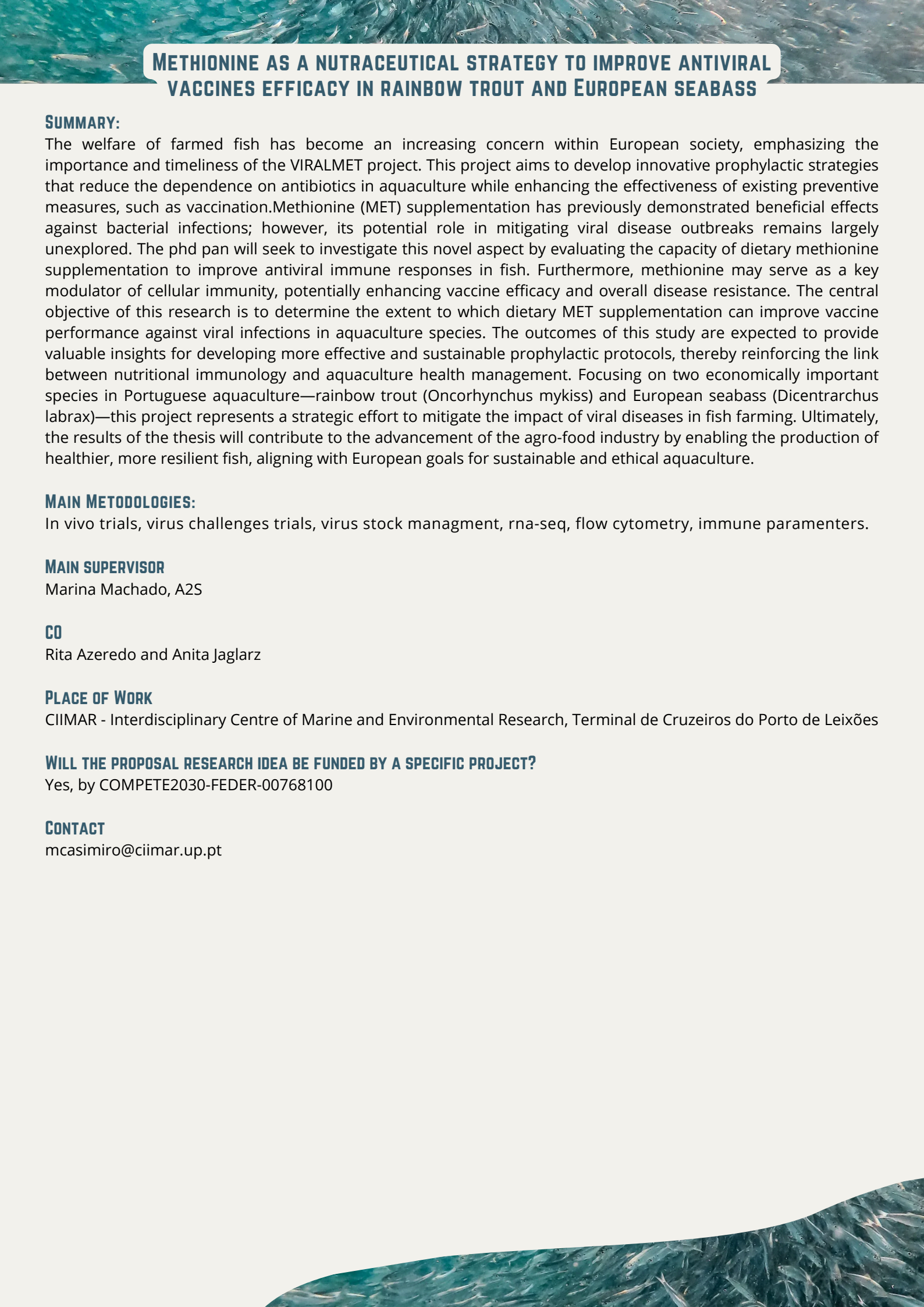




METHIONINE AS A NUTRACEUTICAL STRATEGY TO IMPROVE ANTIVIRAL VACCINES EFFICACY IN RAINBOW TROUT AND EUROPEAN SEABASS

SUMMARY:

The welfare of farmed fish has become an increasing concern within European society, emphasizing the importance and timeliness of the VIRALMET project. This project aims to develop innovative prophylactic strategies that reduce the dependence on antibiotics in aquaculture while enhancing the effectiveness of existing preventive measures, such as vaccination. Methionine (MET) supplementation has previously demonstrated beneficial effects against bacterial infections; however, its potential role in mitigating viral disease outbreaks remains largely unexplored. The PhD candidate will seek to investigate this novel aspect by evaluating the capacity of dietary methionine supplementation to improve antiviral immune responses in fish. Furthermore, methionine may serve as a key modulator of cellular immunity, potentially enhancing vaccine efficacy and overall disease resistance. The central objective of this research is to determine the extent to which dietary MET supplementation can improve vaccine performance against viral infections in aquaculture species. The outcomes of this study are expected to provide valuable insights for developing more effective and sustainable prophylactic protocols, thereby reinforcing the link between nutritional immunology and aquaculture health management. Focusing on two economically important species in Portuguese aquaculture—rainbow trout (*Oncorhynchus mykiss*) and European seabass (*Dicentrarchus labrax*)—this project represents a strategic effort to mitigate the impact of viral diseases in fish farming. Ultimately, the results of the thesis will contribute to the advancement of the agro-food industry by enabling the production of healthier, more resilient fish, aligning with European goals for sustainable and ethical aquaculture.

MAIN METHODOLOGIES:

In vivo trials, virus challenge trials, virus stock management, RNA-seq, flow cytometry, immune parameters.

MAIN SUPERVISOR

Marina Machado, A2S

CO

Rita Azeredo and Anita Jaglarz

PLACE OF WORK

CIIMAR - Interdisciplinary Centre of Marine and Environmental Research, Terminal de Cruzeiros do Porto de Leixões

WILL THE PROPOSAL RESEARCH IDEA BE FUNDED BY A SPECIFIC PROJECT?

Yes, by COMPETE2030-FEDER-00768100

CONTACT

mcasimiro@ciimar.up.pt