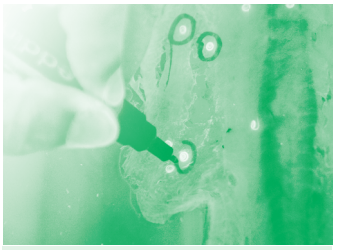
PROJECT PROFILE

THE PARASITE CONSORTIUM



CONTACT

Rosa Fernández Otero
Head of Technology Transfer Area, Technology Centre of the Sea, CETMAR Foundation, and Lead Partner for communication and innovation actions, the PARASITE consortium

CETMAR Foundation
Rúa Eduardo Cabello
36208, Vigo
Pontevedra
Spain

T +34 986 247 047
E rfernandez@cetmar.org

www.parasite-project.eu

@PARASITEPROJECT

http://bit.ly/LI_PARASITE

FUNDING

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ROSA FERNÁNDEZ OTERO is Head of the Technology Promotion and Transfer Area at the CETMAR Foundation, Spain. She obtained an MSc in Economics and a Master's in Business Management and Administration from the University of Santiago de Compostela, Spain. She has been involved with research and innovation management since 1996, and has been a project manager under diverse EU funding mechanisms such as the Framework Programme on Research and Technological Development, Life+ and Interreg. Most of her professional experience has has focused on marine research-related activities. She is Lead Partner for communication and innovation actions for PARASITE and Project Coordinator for the OYSTERECOVER project.

Parasite

RESEARCH GOALS

The oceans are swimming with parasites, and some of these worms are capable of infecting humans. The PARASITE consortium, coordinated by Dr Santiago Pascual of the Spanish National Research Council, serves to meet the research requirements of the European Food Safety Authority (EFSA) regarding seafood-borne parasites. Rosa Fernández Otero leads the project's communication and dissemination activities.

The PARASITE consortium works to monitor and mitigate the risk of zoonotic parasites, which are naturally transmitted between animals and humans in imported fishery products. Composed of 21 partners across Europe and Asia, PARASITE is an international and intersectoral network.

Over 50 zoonotic parasite species can be found in seafood, and human infection typically results from the ingestion of raw or undercooked contaminated fish. The *Anisakis simplex* nematode poses the greatest parasitological threat to human health from fish consumption, causing the excruciating anisakiasis infection. Listed as a rare disease by the National Institutes of Health, anisakiasis' incidence is slowly rising, and the EFSA is urging researchers to direct their attention towards this increasingly prevalent health issue.

The project's objectives range from the acquisition and analysis of epidemiological data, to the development of new hazard identification and characterisation methods. With the ultimate goal of making European seafood safer, PARASITE has its work cut out.

METHOD

The PARASITE team advocates a particular method of nematode detection – the UV-press method. This technique relies on the capacity of *Anisakis* to fluoresce under ultraviolet light, a property associated with their release of lipofuscin on degradation. Fish fillets are compressed to around 2 millimetres in thickness, before being frozen so as to cause the parasite cells within to break, thus releasing their fluorescent pigment. The resultant sample may then be viewed under a UV light, revealing fluorescent spots indicative of nematode contamination.

PARASITE conducted an interlaboratory trial involving five partner institutions and found that the UV-press method surpassed alternative detection methods in accuracy, sensitivity and specificity. The project has also demonstrated that UV-press detection lends itself to automatisation, and can be conducted on non-processed fishery products. Through close alliance with end-users, the PARASITE consortium is refining the UV-press procedure and ensuring the provision of adequate training to those who may ultimately use the technique.

Another key method employed by PARASITE is quantitative risk analysis. Using powerful statistical modelling, the team hopes to predict consumer exposure to seafood-borne zoonotic parasites based on trends in collected epidemiological data. Such analyses will allow for the identification of spatiotemporal hotspots for infection, and determine the probability of illness following ingestion of raw or partially cooked seafood.

IMPACT

PARASITE's epidemiological data will illustrate how such information may be useful to determine the ways in which fish stocks in locations of low parasite contamination risk can be found. Furthermore, the reliability of parasite detection will benefit from the UV-press method promoted and refined by PARASITE, meaning a lesser risk of contamination in the end product. PARASITE's work therefore also serves to reinforce the competitiveness of European seafood, upholding its reputation for quality.

The project has even developed a highly specific *Anisakis* sensitisation diagnostic tool. By improving the diagnosis of this allergy, those affected by it may be identified and advised accordingly. This novel diagnostic strategy will also produce fewer misdiagnoses, meaning patients will receive the appropriate treatment and care.

Finally, by better understanding *Anisakis*' spatiotemporal distribution, risk mitigation strategies and infection diagnosis, the PARASITE project stands to oppose the upwards trend of anisakiasis' incidence.