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THE CHALLENGE

Farmed seafood is an important protein source for food and animal feed, with a low-carbon footprint, essential for building a sustainable food system. Fish and mollusc diseases significantly limit productivity in the European aquaculture industry, making their prevention and management crucial for **sustainability**. Parasites, viruses, and microbes can wreak havoc on fish and shellfish farms, leading to devastating consequences. Currently, the aquaculture sector lacks comprehensive codes of good practice and advanced technologies for **early detection, prevention, and control of aquatic diseases**. Furthermore, there is a pressing need to explore **alternatives to pharmaceutical treatments**. Another critical aspect requiring focus is **fish welfare**. Currently, there is a noticeable dearth of welfare indicators, hindering the assessment of fish well-being. Bridging the identified gaps is crucial to enhance **disease management** and overall **fish health**.

PROJECT OBJECTIVES

The project will:

- **Improve diagnostics of fish pathogens and develop cost-effective vaccines** to prevent diseases in farmed fish.
- **Identify epigenome, miRNA and microbiome markers** with diagnostic capacity to be integrated to selective breeding programs to improve stress and disease management.
- **Develop new innovative, alternative treatments and new integrative analytics** to help improve fish health and welfare at various life stages.
- **Prioritise fish welfare in aquaculture production** by developing standards that consider different life stages, production systems and knowledge of welfare needs.

AT A GLANCE

PROGRAMME: Horizon Europe

TYPE OF ACTION: Research and Innovation Action (RIA)

TOPIC: Biosecurity, hygiene, disease prevention and animal welfare in aquaculture

DURATION: November 2022 – April 2027 (54 months)

COORDINATOR: Biology Centre of the Czech Academy of Sciences (BCAS), Czechia

CONSORTIUM: 31 partners from 16 countries

TOTAL BUDGET: €4.8 million



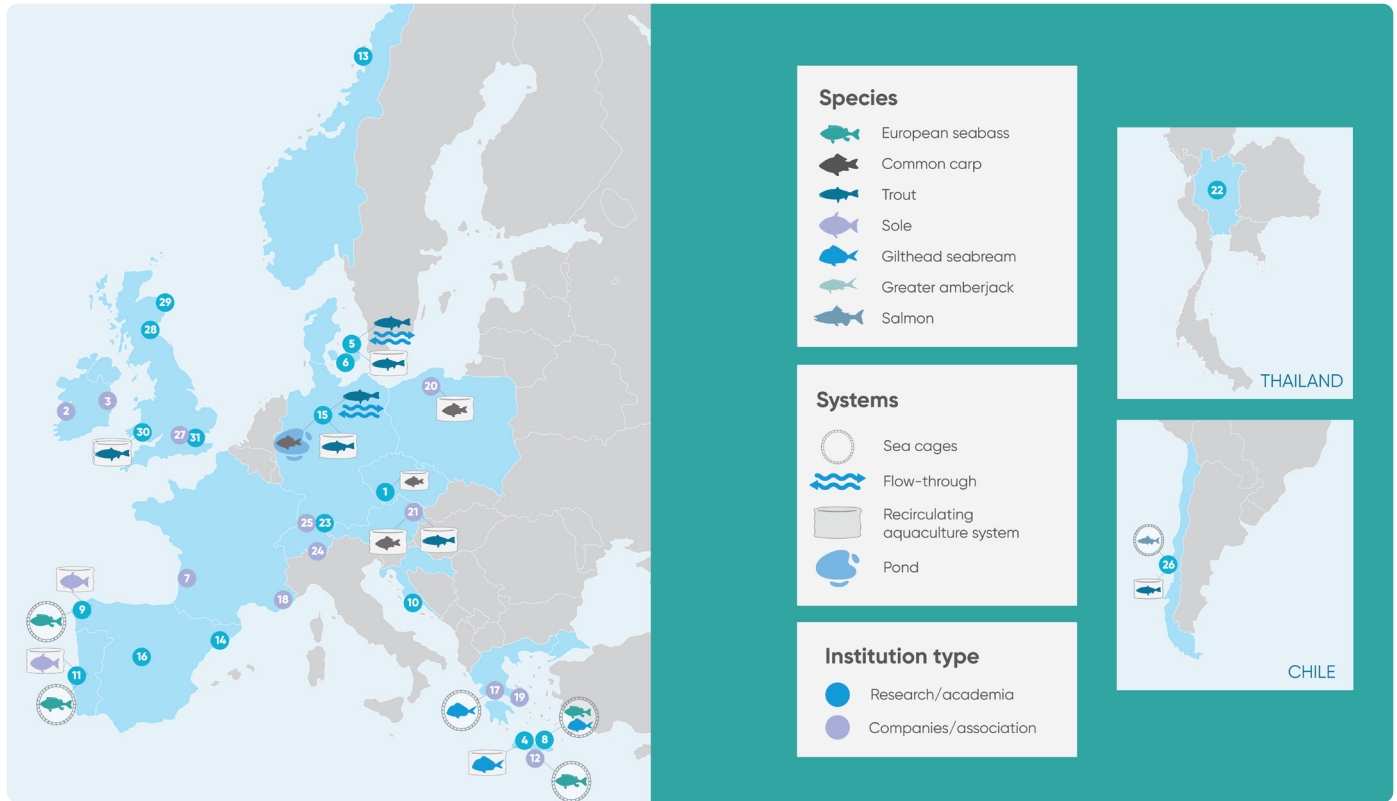
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EXPECTED RESULTS

- **Models:** To decipher mechanisms of emerging disease (including intracellular bacteria) and an operational farm economic model that will support individual fish farms to improve performance, reduce risk, and simulate adoption of recommendations.
- **Prevention:** Vaccines for five key fish pathogens and epimarket panels for selective breeding and farm monitoring
- **Control:** Phage and probiotics application for pathogen control, antimicrobial peptides (AMD) applications and passive immunisation
- **Detection:** Predictive model building using AI, non-invasive reproductive and stress hormone monitoring, new diagnostic biomarkers and rapid low-cost on-farm diagnostic tests, novel laboratory diagnostics standards

CONSORTIUM

The Cure4Aqua consortium consists of an interdisciplinary multinational team of 31 partners from 16 countries.



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| 1 Biology Centre of the Czech Academy of Sciences (BCAS) | 12 Aquatic Biologicals (AB) | 23 Eidgenoessische Technische Hochschule Zuerich (FGCZ) |
| 2 VAI consulting (VAI) | 13 Nord University (NORD) | 24 TissueLabs Sagl (TL) |
| 3 ERINN Innovation Ltd (ERINN) | 14 Universitat Autònoma de Barcelona (UAB) | 25 Pathovet AG (PATH) |
| 4 Hellenic Centre of Marine Research (HCMR) | 15 Stiftung Tierärztliche Hochschule Hannover (TiHo) | 26 Pontificia Universidad Catolica De Valparaiso (PUCV) |
| 5 Technical University of Denmark (DTU) | 16 Consejo Superior de Investigaciones Científicas (CSIC) | 27 Thalassa Limited (THL) |
| 6 University of Copenhagen (UCPH) | 17 Galaxidi Marine Farm S.A. (GMF) | 28 Moredun Research Institute (MRI) |
| 7 Novaptech (NOVA) | 18 BioOceanOr (BIOC) | 29 University of Aberdeen (UNIAB) |
| 8 University of Crete (UoC) | 19 Prorata S.A. (PRO) | 30 Swansea University (SWU) |
| 9 Universidade de Santiago de Compostela (USC) | 20 Dabie Hatchery (DAB) | 31 Imperial College of Science Technology and Medicine (ICL) |
| 10 University of Split School of Medicine (MEFST) | 21 Veterinaermedizinische Universitaet Wien (VUV) | |
| 11 Instituto Politecnico de Leiria (PIL) | 22 Chulalongkorn University (CU) | |

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