WAGENINGEN UNIVERSITY & RESEARCH

NORD University

NIVA Norwegian Institute for Water Research

ULPGC Universidad de Las Palmas de Gran Canaria

Universidad de Huelva

ciimar

Algreen every day algae

ERDYN Anticipate Act Assess

GreenCoLab

Fykia biotech

ARTIS MICROPIA

# Key Figures

**48** MONTHS
Oct. 2025 - Sept. 2029

**4.5** M€
total budget

**11** PARTNERS
from 5 countries

Funded by the European Union

Xtremolife

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Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union. Neither the European Union nor the granting authority can be held responsible for them.

@Xtremolife

Xtremolife

# Context

**Extremophiles are micro-organisms that thrive in extreme environmental conditions such as high salinity, extreme temperatures, and pH levels.** They represent a **key research topic** for multiple disciplines, from ecology to evolution, and even for studies on the origins of life and the search for life on other planetary bodies (astrobiology). **Because of the difficulty of accessing and cultivating these habitats, these microorganisms are undoubtedly an underexplored source of bioactive compounds.**

In line with the EU's vision for a biobased circular blue bioeconomy, XTREMOLIFE's ambition is to **accelerate the bioprospecting and biodiscovery of extremophile microorganisms** from desert, polar, and volcanic hotspots and bioactive compounds (enzymes, drugs, metabolites, chemicals).

Our uniqueness is advancing **next-generation sampling technologies tailored for extreme conditions:**
- Enhanced Ferrybox for boats (self-operating)
- Novel XTREMOsensor for hand-held use
- Automated microscopic imagery identification

In addition, **we explore (a large) biodiversity from 3 extremophilic ecosystems by bioprospecting across 5 regions, and 5 untapped culture collections**, enriching our research with diverse microbial extremophile communities.

# Objectives

## 1. Develop and optimize tailor-made sampling methods

- Enhance Ferryboxes (self-operating systems)
- EXTREMOsensor (hand-held)
- Sampling framework and regulations updated

## 2. Investigate marine and other aquatic ecosystems

- Ecological assessment
- 5 hotspot regions covered
- Understand interactions

## 3. Uncover the metabolic, physiological and adaptive mechanisms

- Understand micro-organisms
- Enravel new metabolic pathways
- Discovery of novel compounds

## 4. Optimize the cultivation and production of bioactive compounds

- From Lab to Pilot
- Scale up (to TRL 3-5)
- Feed business cases
- Industrial exploitation

# About

**XTREMOLIFE aims to accelerate the bioprospecting and biodiscovery of extremophile microorganisms** from desert, polar, and volcanic environments, as well as the identification of their bioactive compounds, including enzymes, metabolites, and novel chemical agents.

# Applications


BIOTECHNOLOGY


PHARMACEUTICALS


CHEMISTRY