Yeast4Bio

cost
EUROPEAN COOPERATION
IN SCIENCE & TECHNOLOGY

BioPol

WG & MC Meeting – Prague September 21st – 22nd 2022

BioPol

Marine Biotechnology Center

BioPol

Marine Biotechnology Center

- Located in Skagaströnd, North West Iceland
- Started in 2007
- Initiative from the municipality to boost innovation
- Collaboration with the University of Akureyri from the beginning

BioPol

Main Principles

Research on the biology of Húnaflói-bay

Preservation of marine specimens

Marketing of marine biotechnology products & services

Education at university level in connection with the research

BioPol

Facilities

- Microbiology/biotechnology lab
- Equipment for marine field analysis

- Food-approved production facilities

BioPol

Projects

Utilization of lumpfish skin for collagen production

Monitoring of micro plastics in Húnaflói Bay

Isolation of high-value products from the Icelandic Scallop

Establishment of culture collection of micro- and macro algae

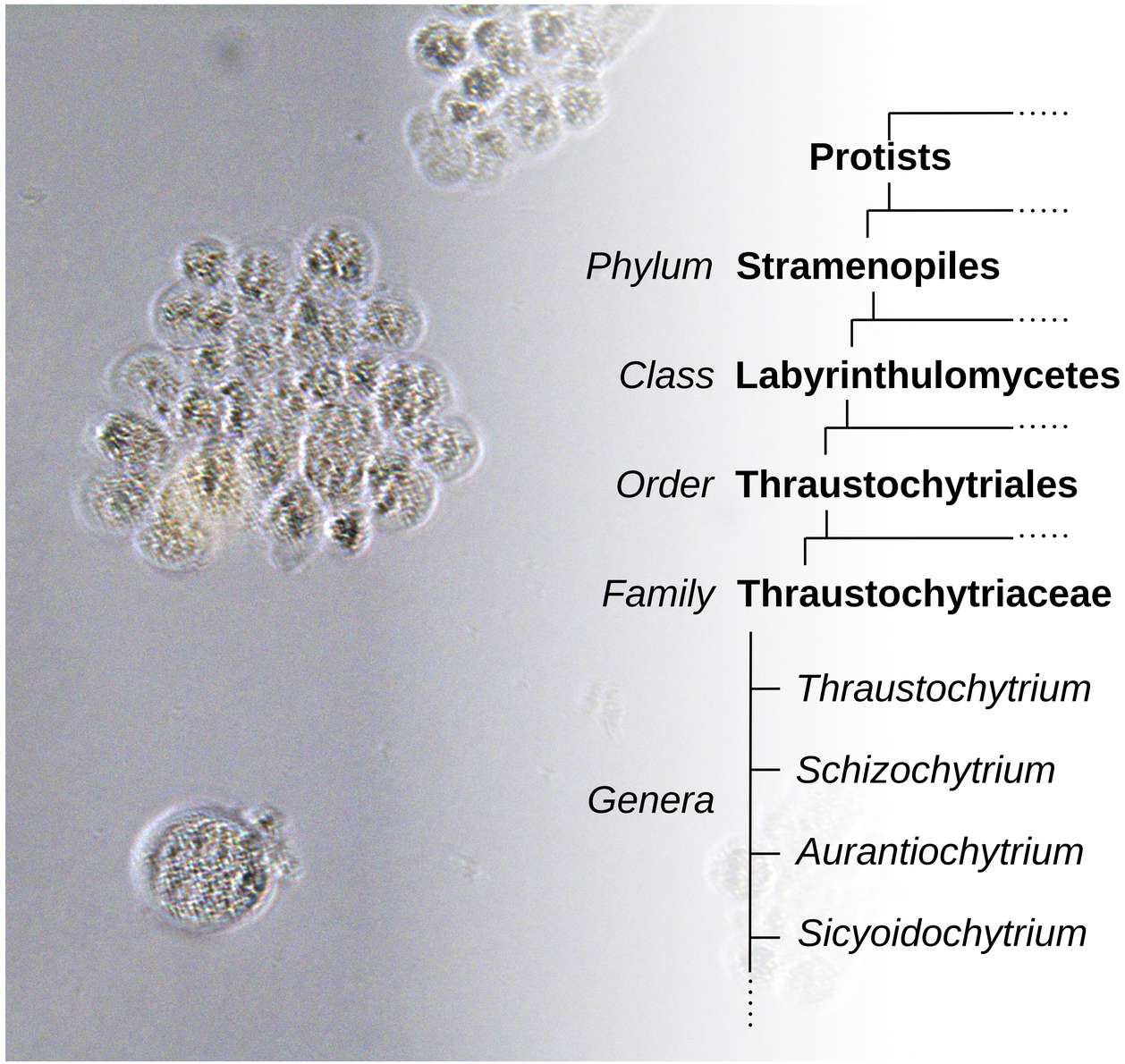
Utilization of Thraustochytrids for production omega-3 oil and carotenoids

Biorefinery of Red Algae for skin care products

Thraustochytrids

The Family

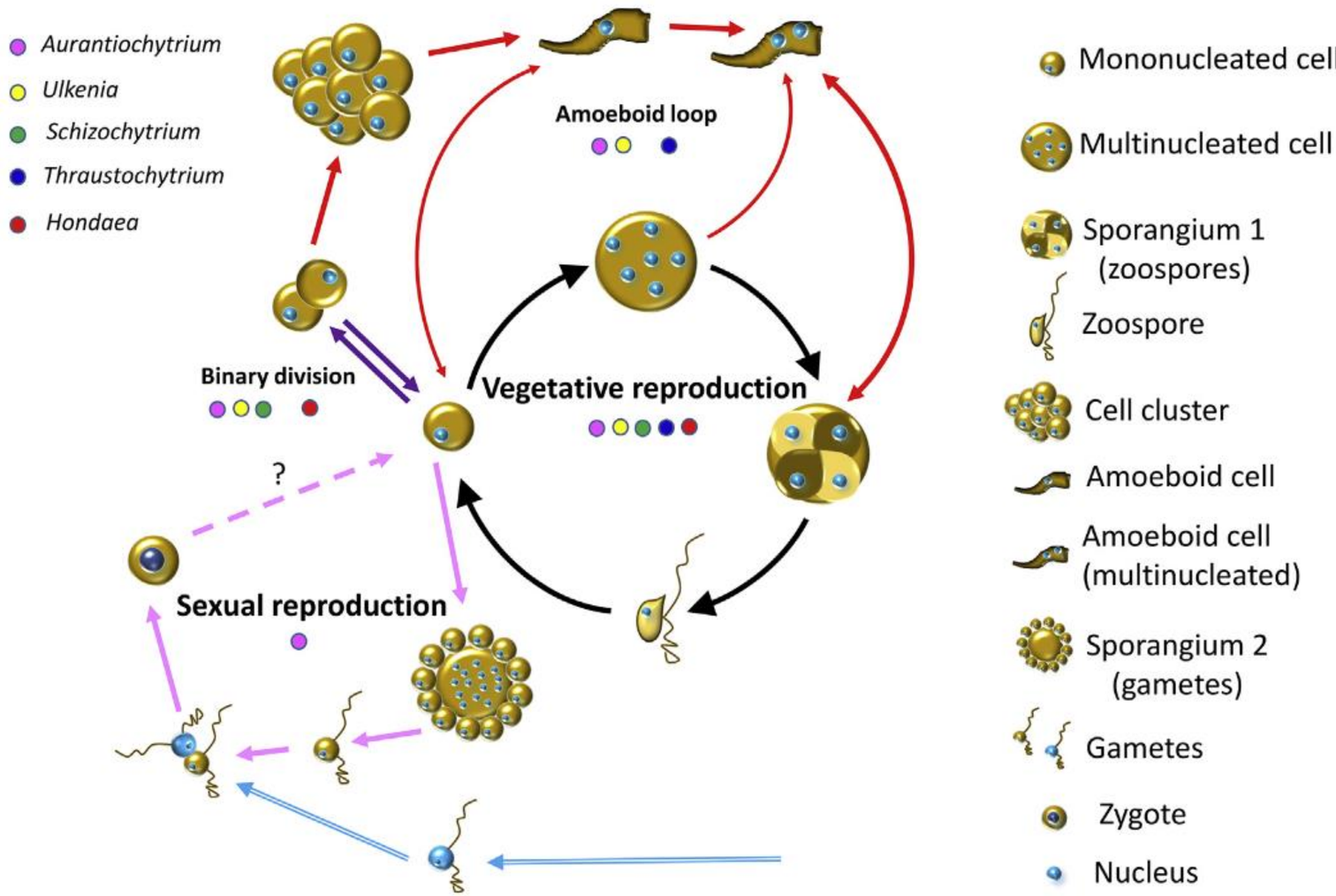
- Single-celled marine heterotrophic protists
- Found all over the world
- Often mistakenly called micro algae
- Live off decaying biological matter



Thraustochytrids

Morphology & Lifecycle

- Heterokont
- Non-cellulosic membrane
- Forms clusters and stick to surfaces
  - Creates ectoplasmic net
- Zoospore formation

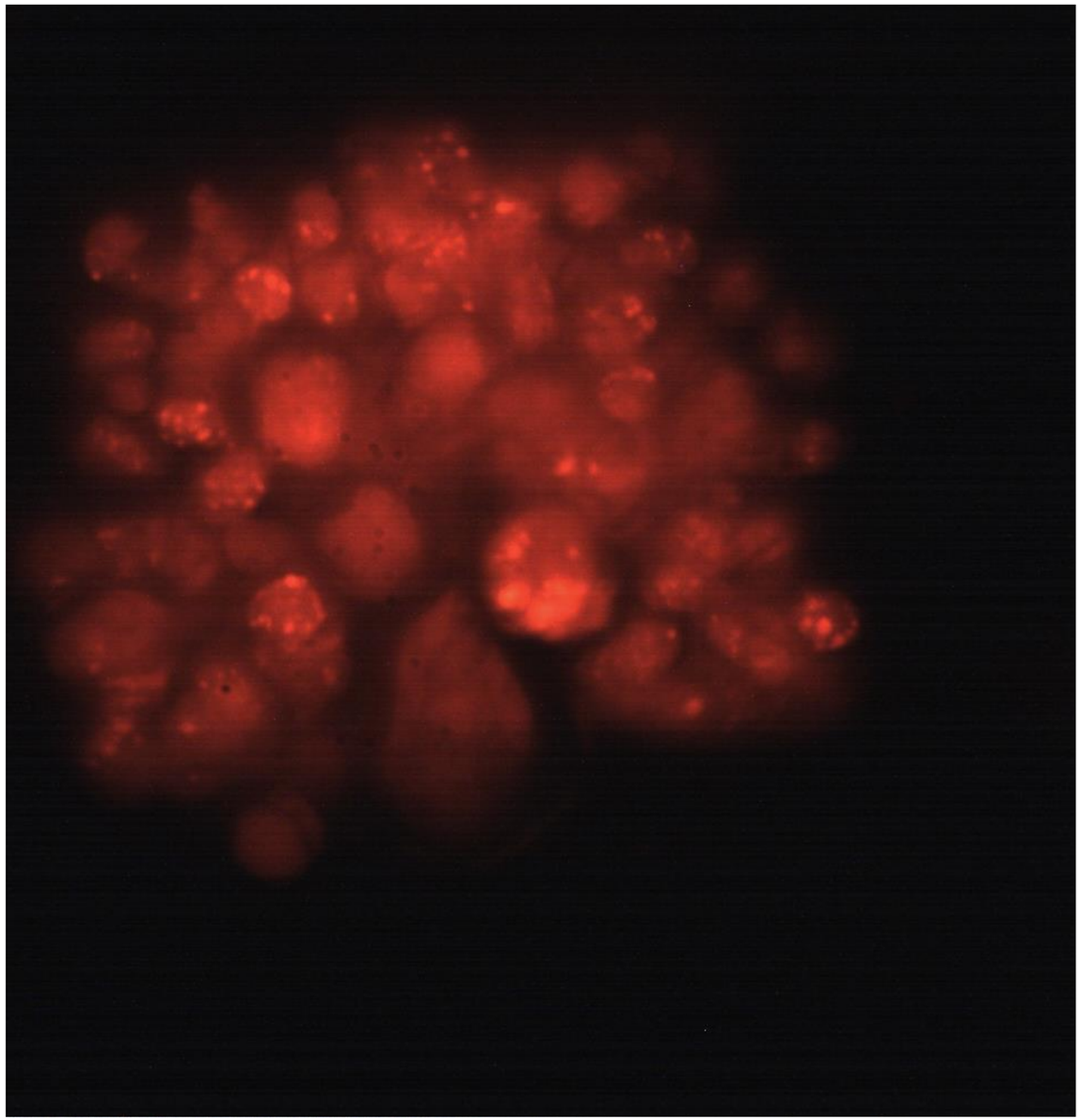


Morabito, C. *et al.* The lipid metabolism in THRAUSTOCHYTRIDS. *Prog Lipid Res* **76**, 101007 (2019).

Thraustochytrids

Production Potential

- LC-PUFA (e.g. DHA and EPA)
- Carotenoids
- Extracellular enzymes
  - *Protease*
  - *Lipase*
  - *Cellulase*
- Squalene

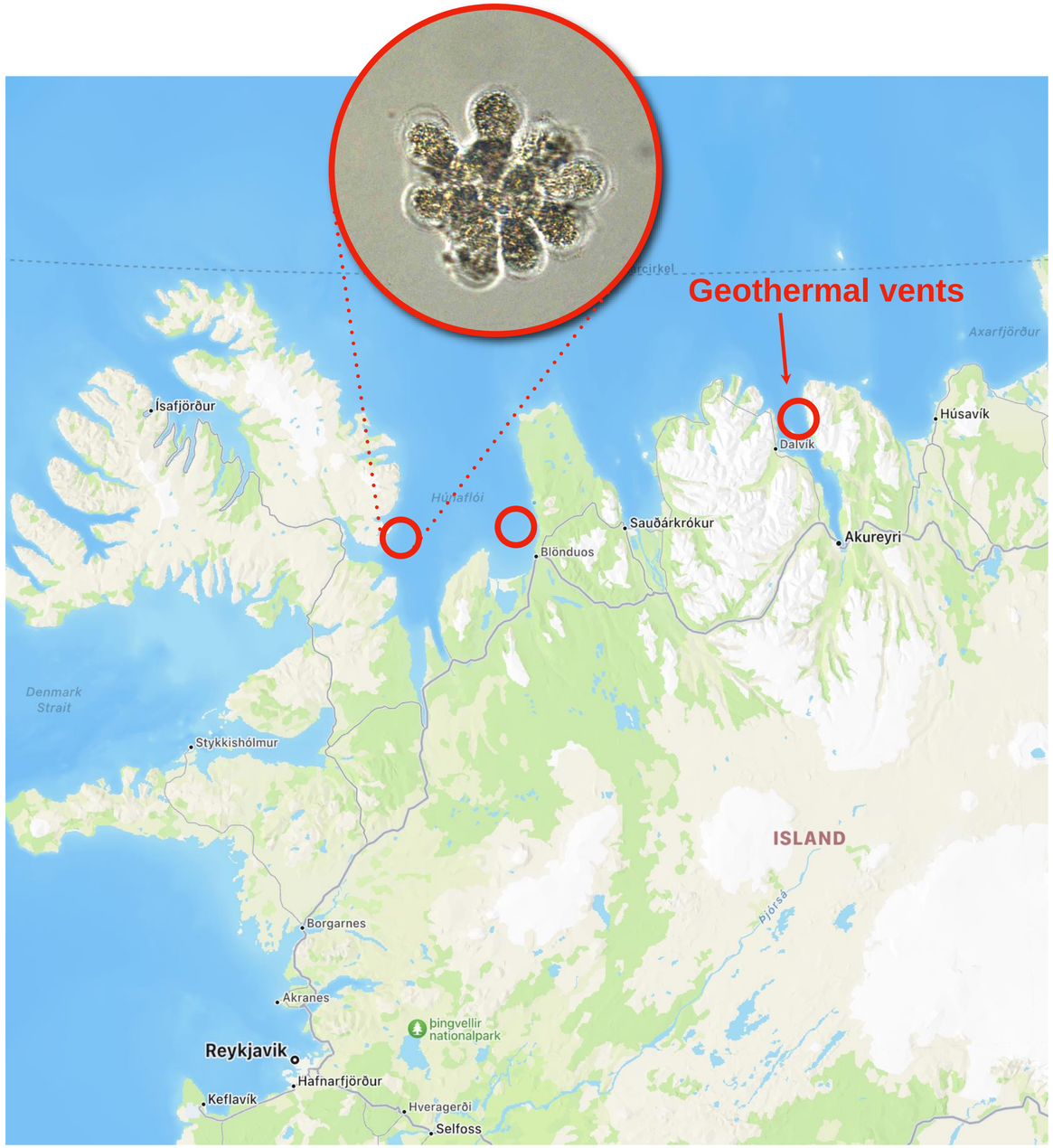


Nile Red staining of cell cluster

Thraustochytrids

BioPol Collection

- 39 strains isolated off North Icelandic coast
- One location near geothermal vents
- Belonging to species *Thraustochytrium kinnei* and *Sicyoidochytrium minutum*



Thraustochytrids

BioPol Collection

- Carbon source
- Nitrogen source

- Growth rate
- Lipid production

- DHA and EPA
- Beta-carotenoid
- Extracellular enzyme

SAFE Project

Sustainable aquaculture feed based on novel biomass from wood by-products

Aim

SAFE project aims at utilizing the potential of oleaginous yeast and thraustochytrids and developing high-value oil enriched biomass containing lipids, carotenoids, astaxanthin and beta-glucans for salmon feed from wood-based materials.

SAFE will develop a process for producing microbial biomass with a high level of omega-3 PUFA and omega-6 MUFA and PUFA by oleaginous thraustochytrids and yeast from the second- generation sugars derived from Nordic woody feedstock.

Consortium

NordForsk

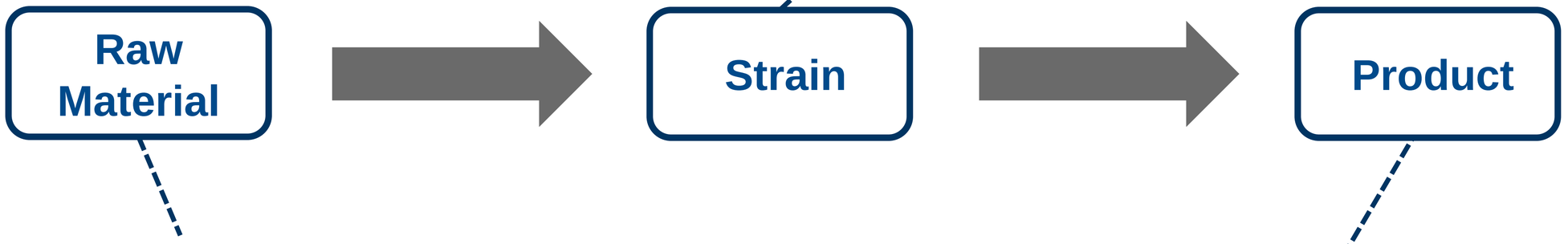
rannís

Other Projects

Thraustochytrid collection

Háskólinn á Akureyri
University of Akureyri

Whole-Genome Sequencing of Thraustochytrid strains



SOUL: Sustainable Omega-3 oil from Underutilized Lumpfish

Characterization of enzymes and carotenoids from Thraustochytrid strains

Matvælasjóður

SÓKNARÁÆTLUN
RÐURLANDS VESTI

Thank you for your attention