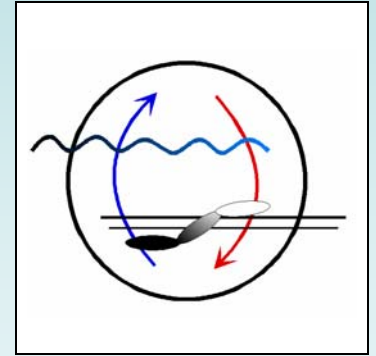


Dr. Jens Harder, Dep. of Microbiology

Dr. Friederike Hoffmann, Dep. of Biogeochemistry, Microbial Habitat Group

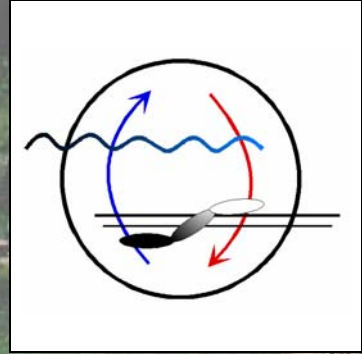


**Max-Planck-Institute for Marine
Microbiology, Bremen**



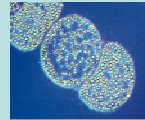


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Dept. of Biogeochemistry

Prof. Dr. Bo Barker Jørgensen



Microsensor Group

Dr. Dirk de Boer

Microbial Habitat Group

Prof. Dr. Antje Boetius

Dept. of Microbiology

Prof. Dr. Friedrich Widdel

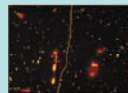


**Junior Group for
Magnetotactic Bacteria**

Dr. Dirk Schüler

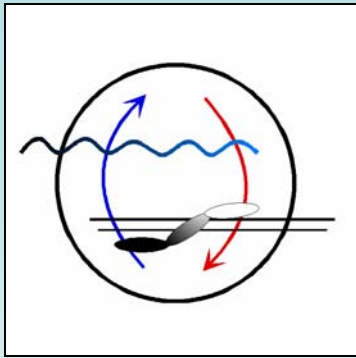
Dept. of Molecular Ecology

Prof. Dr. Rudolf Amann



Microbial Genomics Group

Prof. Dr. Frank Oliver Glöckner



Max Planck Institute for Marine Microbiology

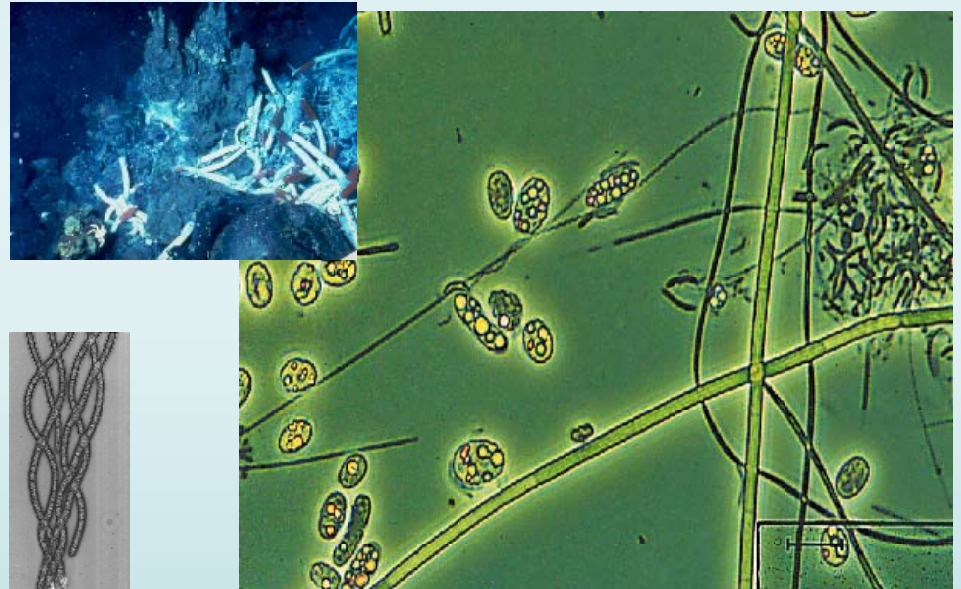
Central questions:

Microorganisms

- Species?
- Number?
- Activity?



- Concentrations?
- Gradients?
- Fluxes?



Max Planck Institut
für Marine
Mikrobiologie
Bremen



Dep. of
Biogeochemistry
Microbial Habitat
Group

Sponge-microbe interactions

Dr. Friederike Hoffmann



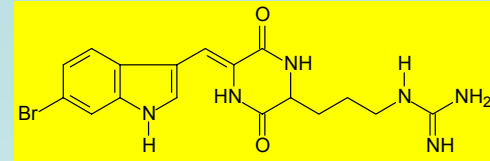
Marine sponges: Phylum richest in secondary metabolites

- Antimicrobial
- Antiviral
- Antifungal
- Cytotoxic



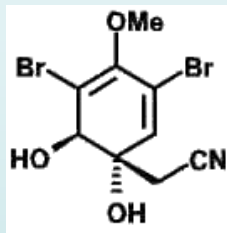


Geodia barretti –
Norwegian Sea



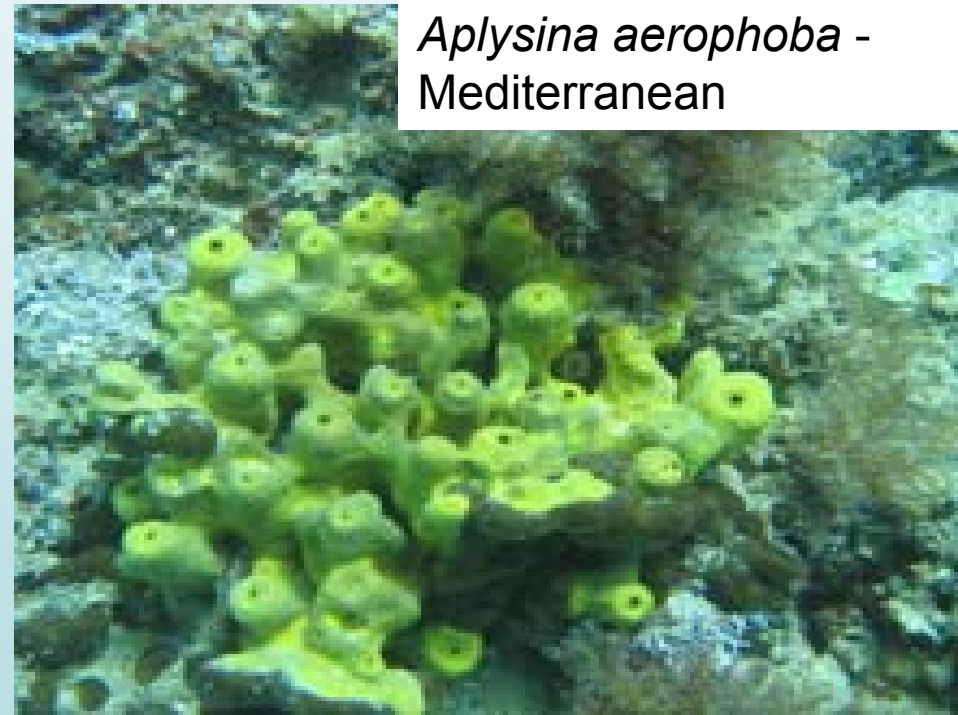
Barettin

- Anti-fouling
- Anti-microbial



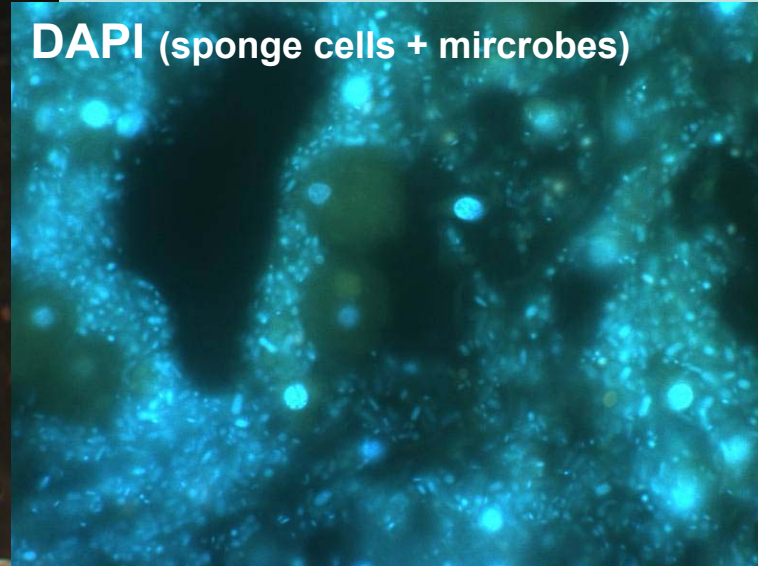
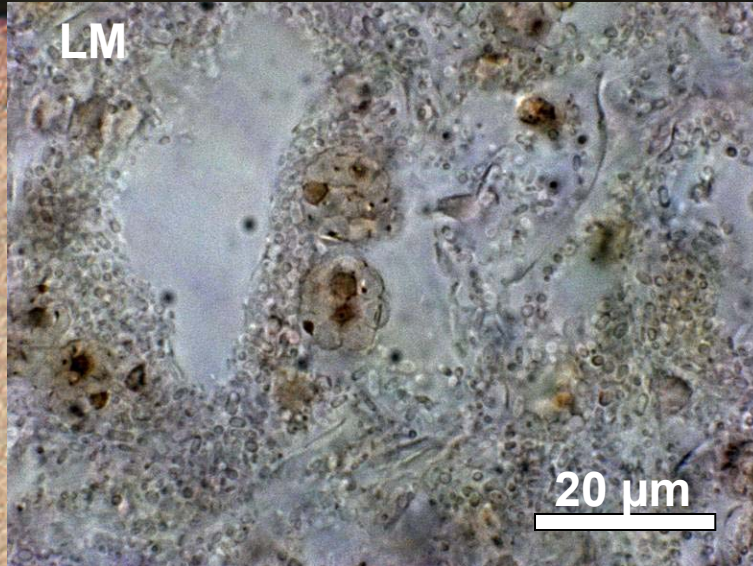
Aplysinin-1

- Anti-microbial
- Anti-tumor



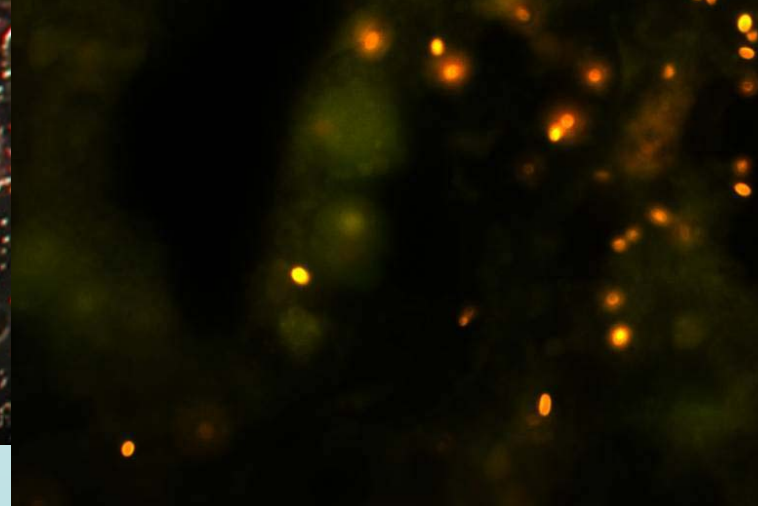
Aplysina aerophoba -
Mediterranean

„Bacteriosponge“ *Aplysina aerophoba*

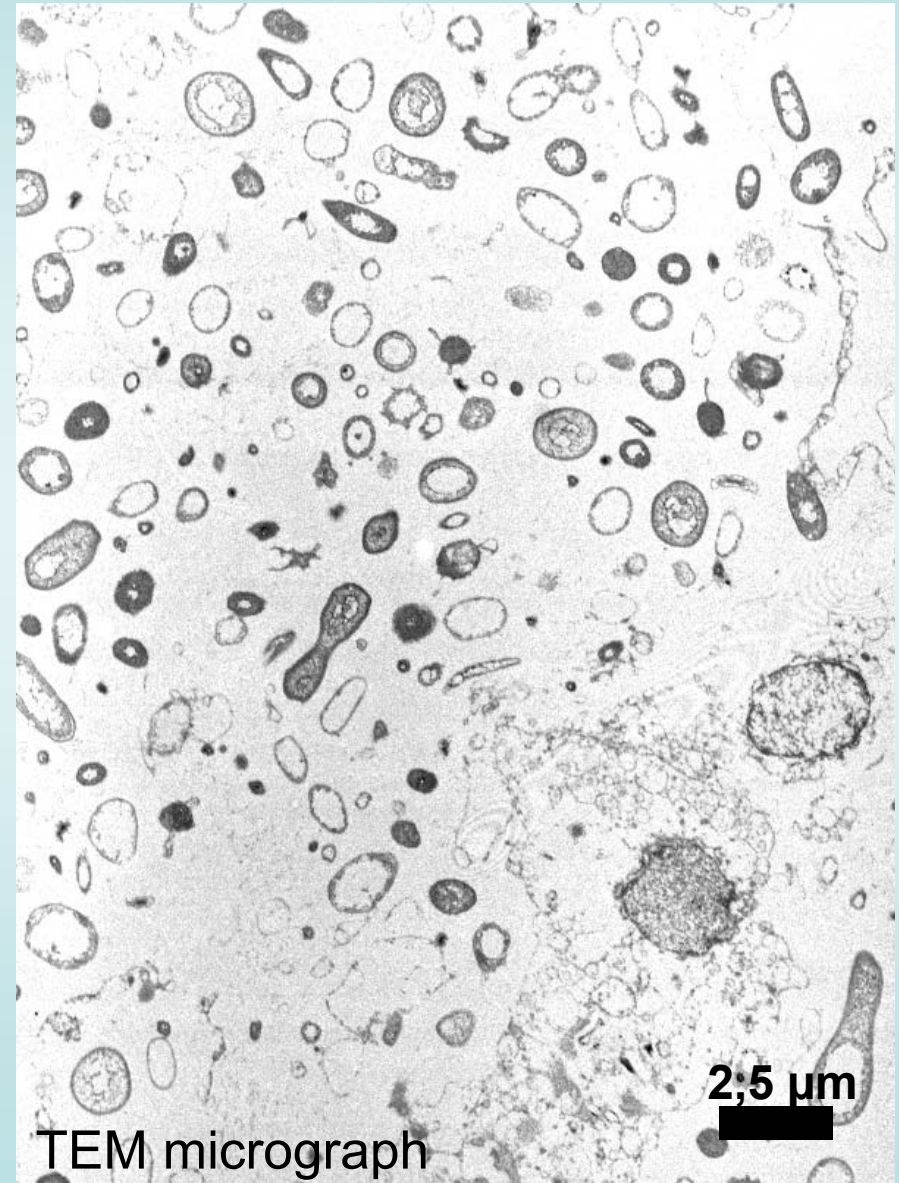
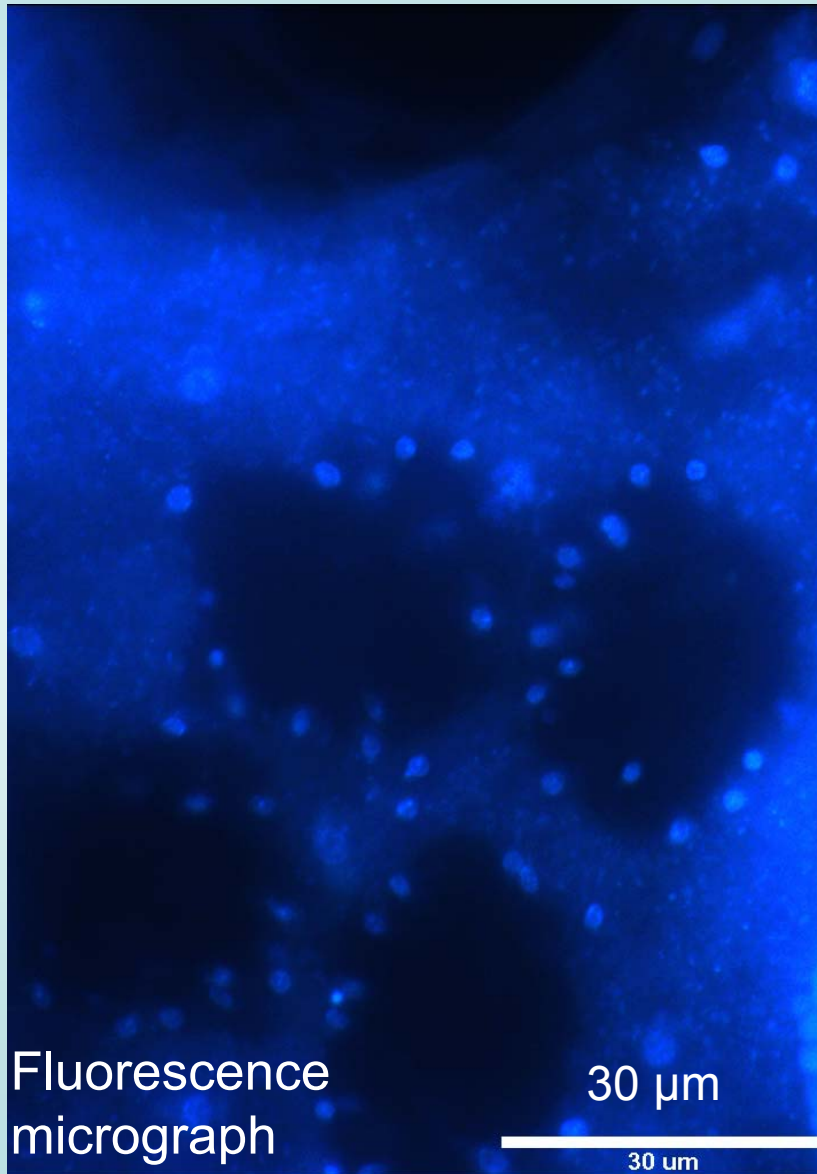


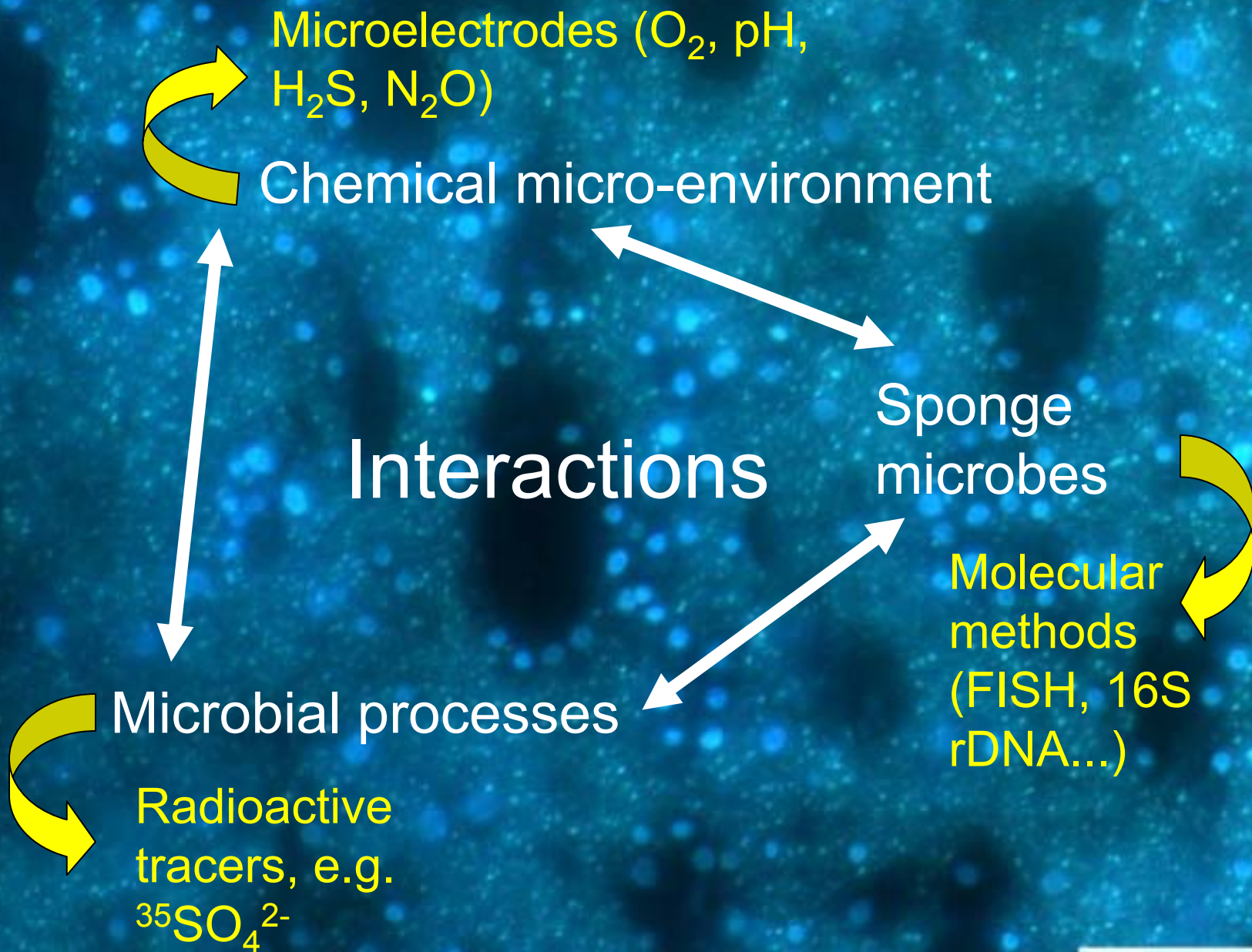
Ca. 10^8 bact/cm³

Autofluorescence (Cyanobact.)

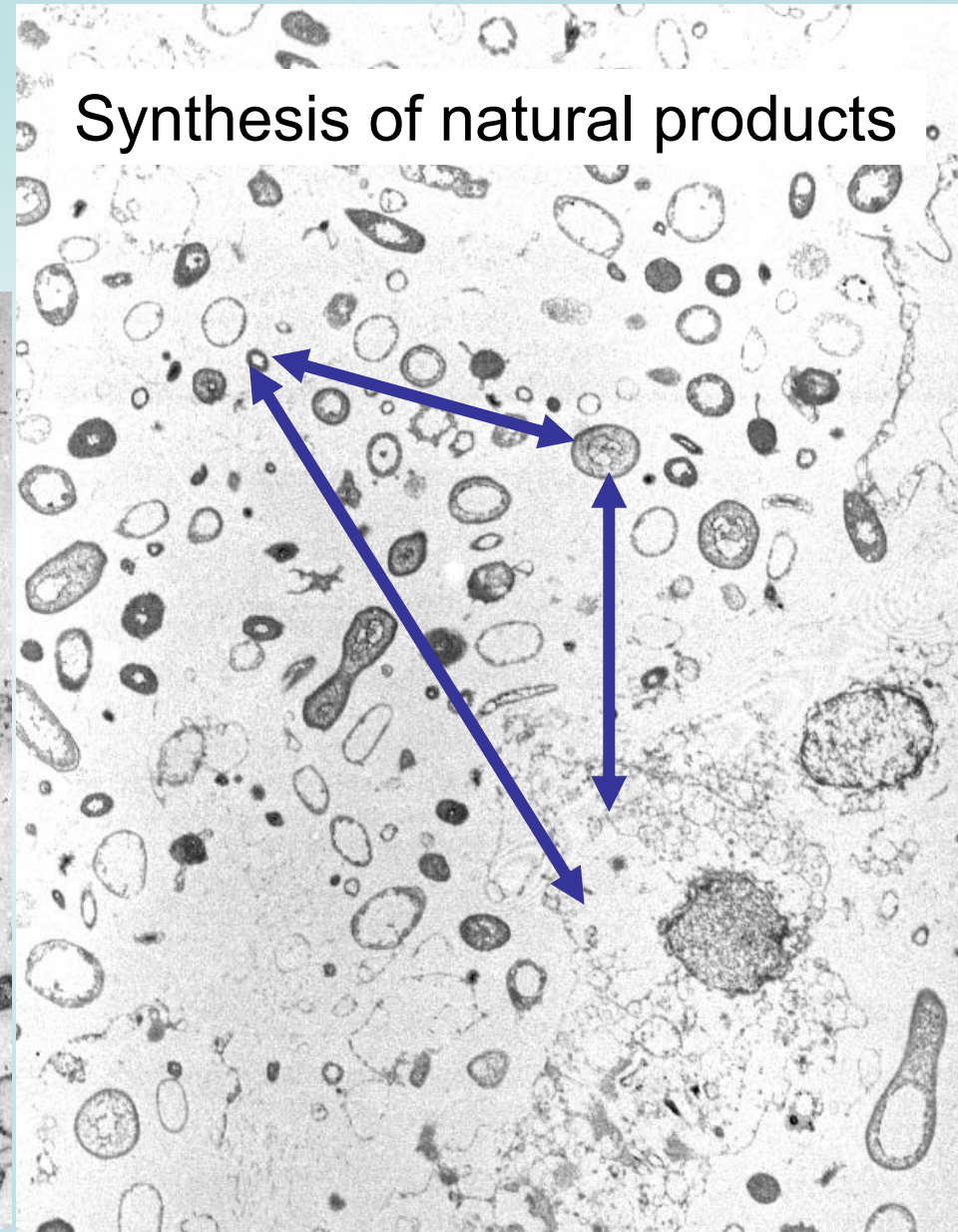
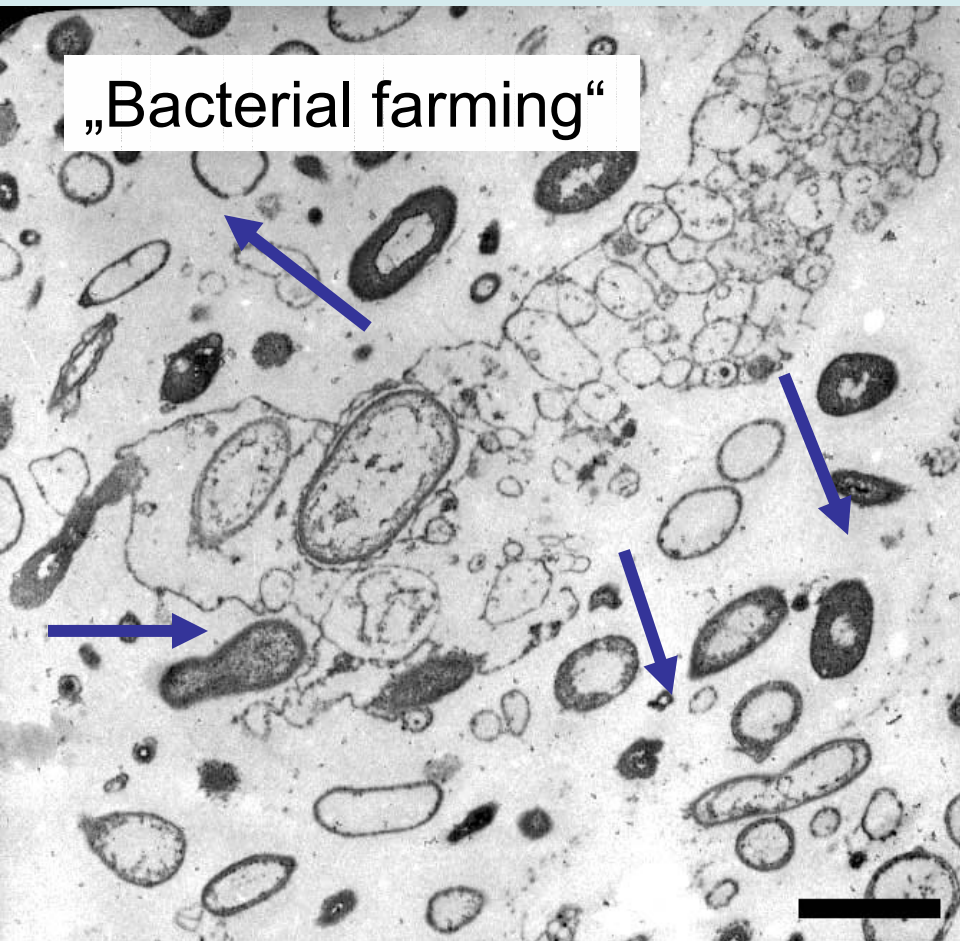


„Bacteriosponge“ *Geodia barretti*





Possible interactions



A grayscale micrograph showing a dense population of microorganisms, likely within a sponge. The organisms exhibit various shapes, including circular, oval, and elongated forms, some with distinct internal structures like nuclei or flagella. The background is a light gray, textured matrix.

Chemical
communication –
the language in the
sponge-microbe-system

Example 1: Complex healing processes

0 days



6 days



20 days



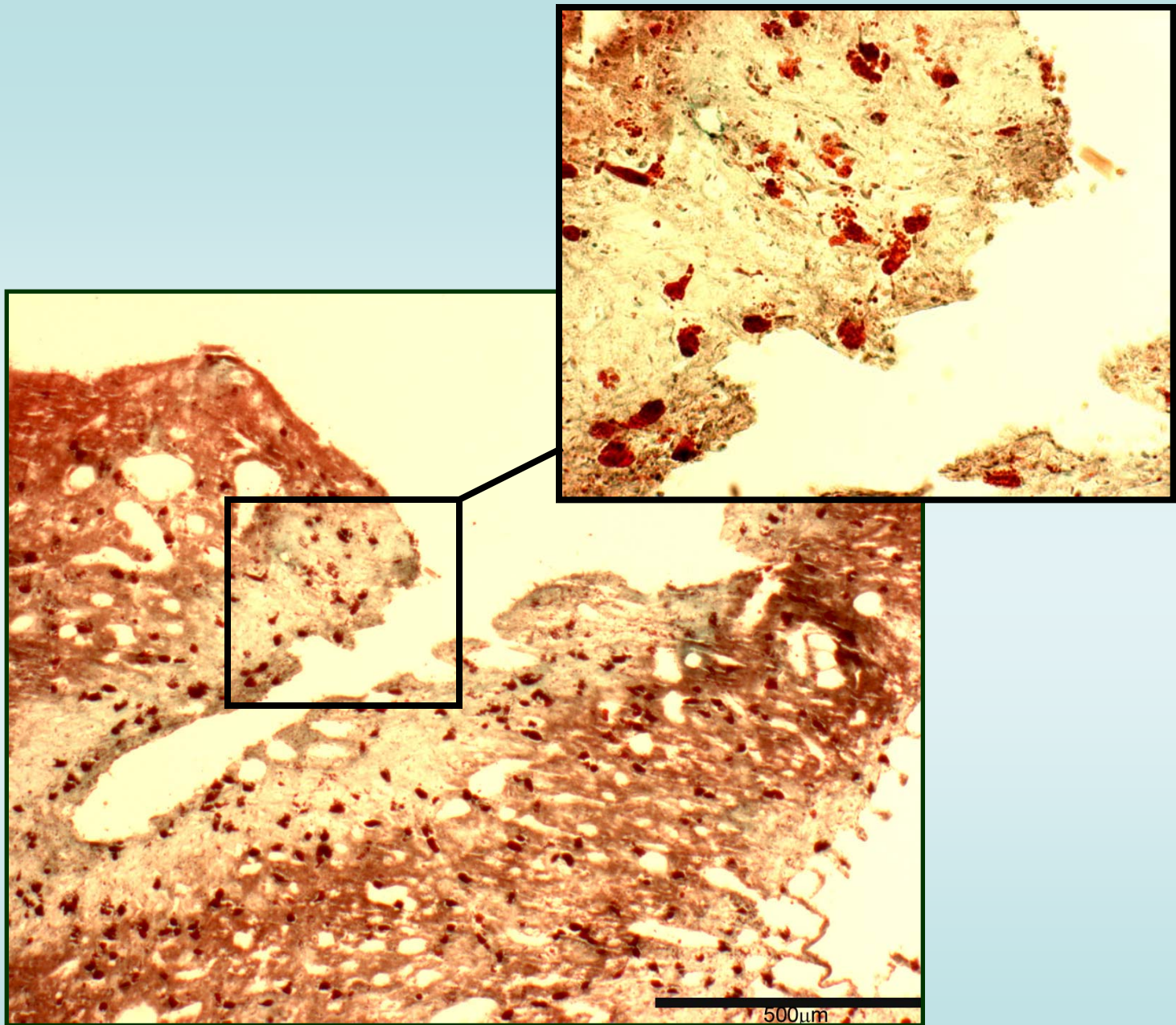
1 cm



8 months

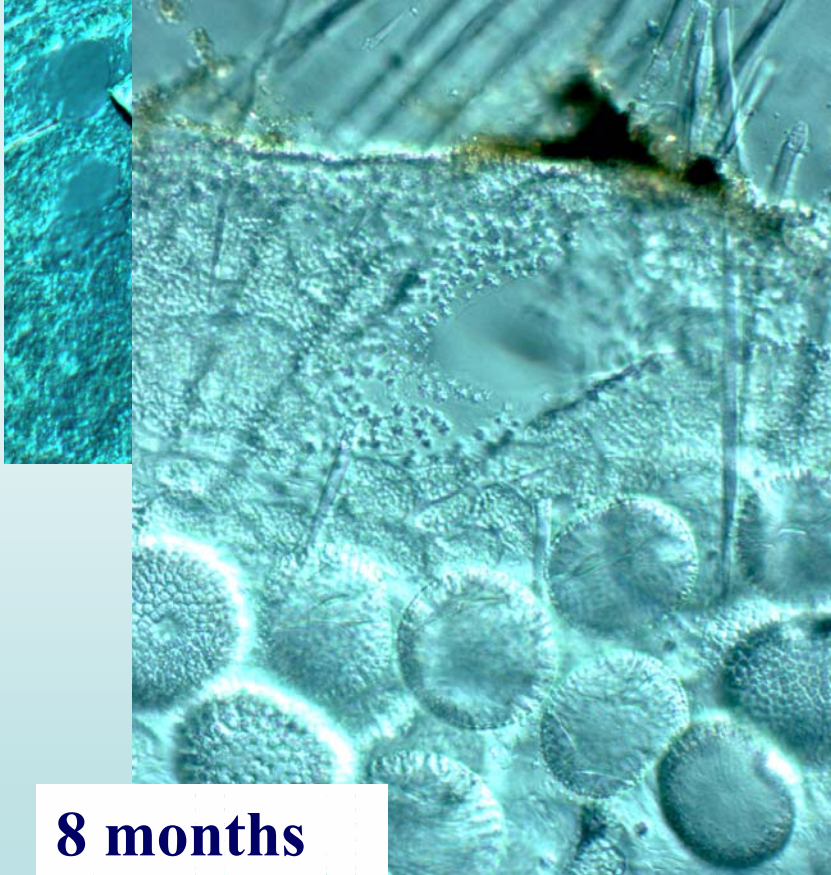
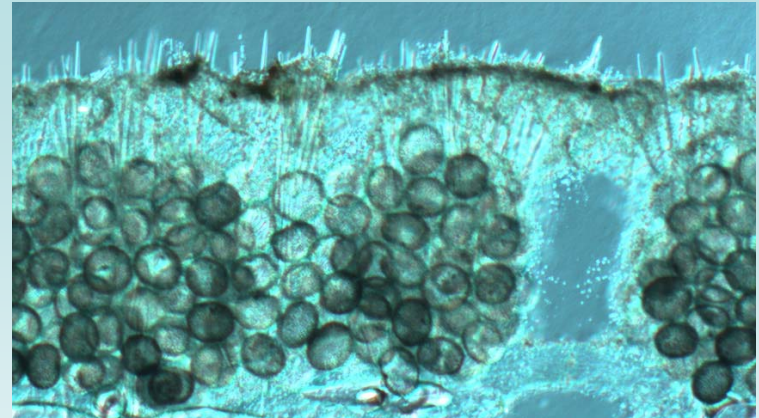
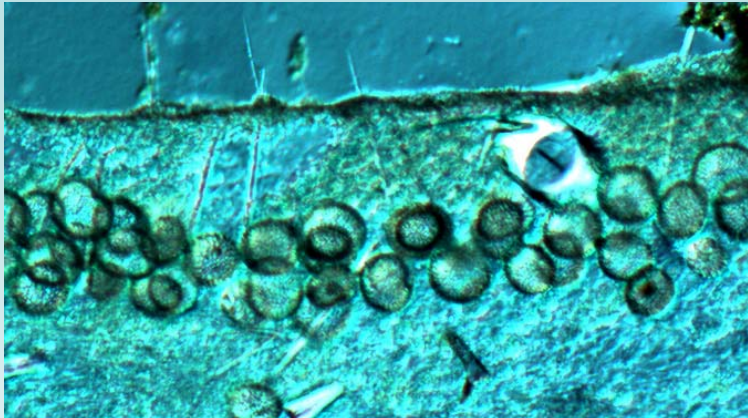


(Hoffmann et al 2003: J. Biotechnol.)



Regeneration: initiative growth (2 days)

(Hoffmann et al 2003:
J. Biotechnol.)



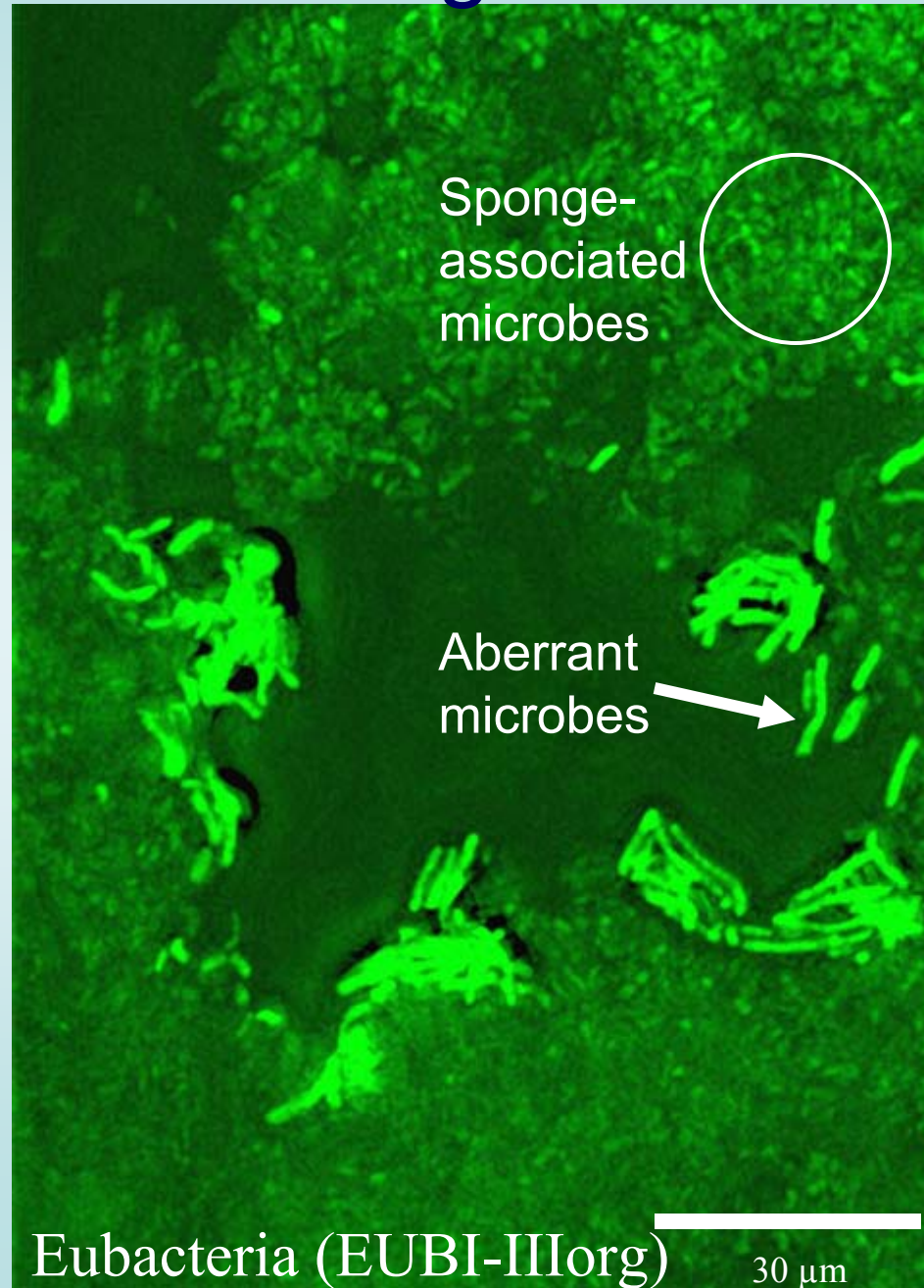
8 months

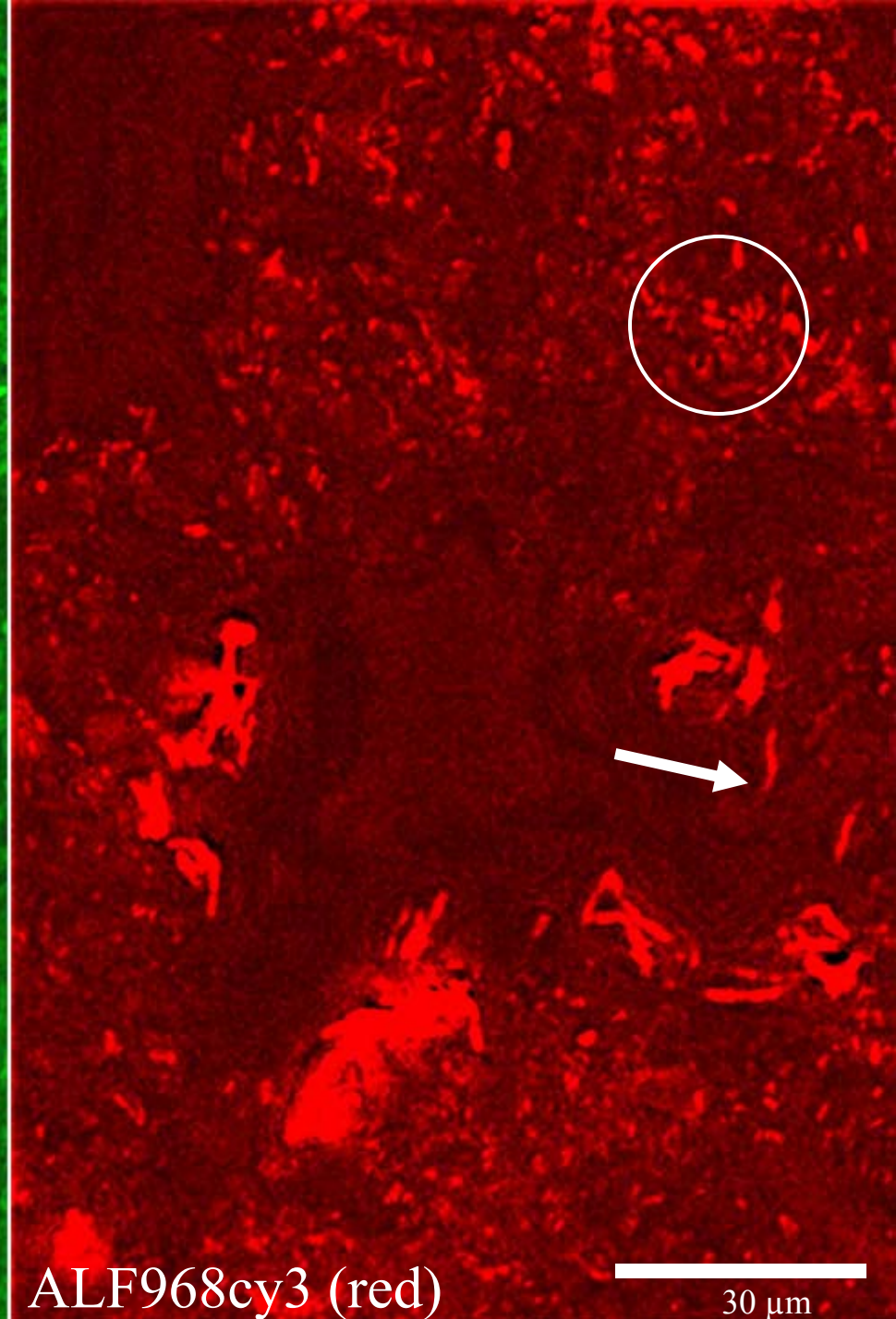
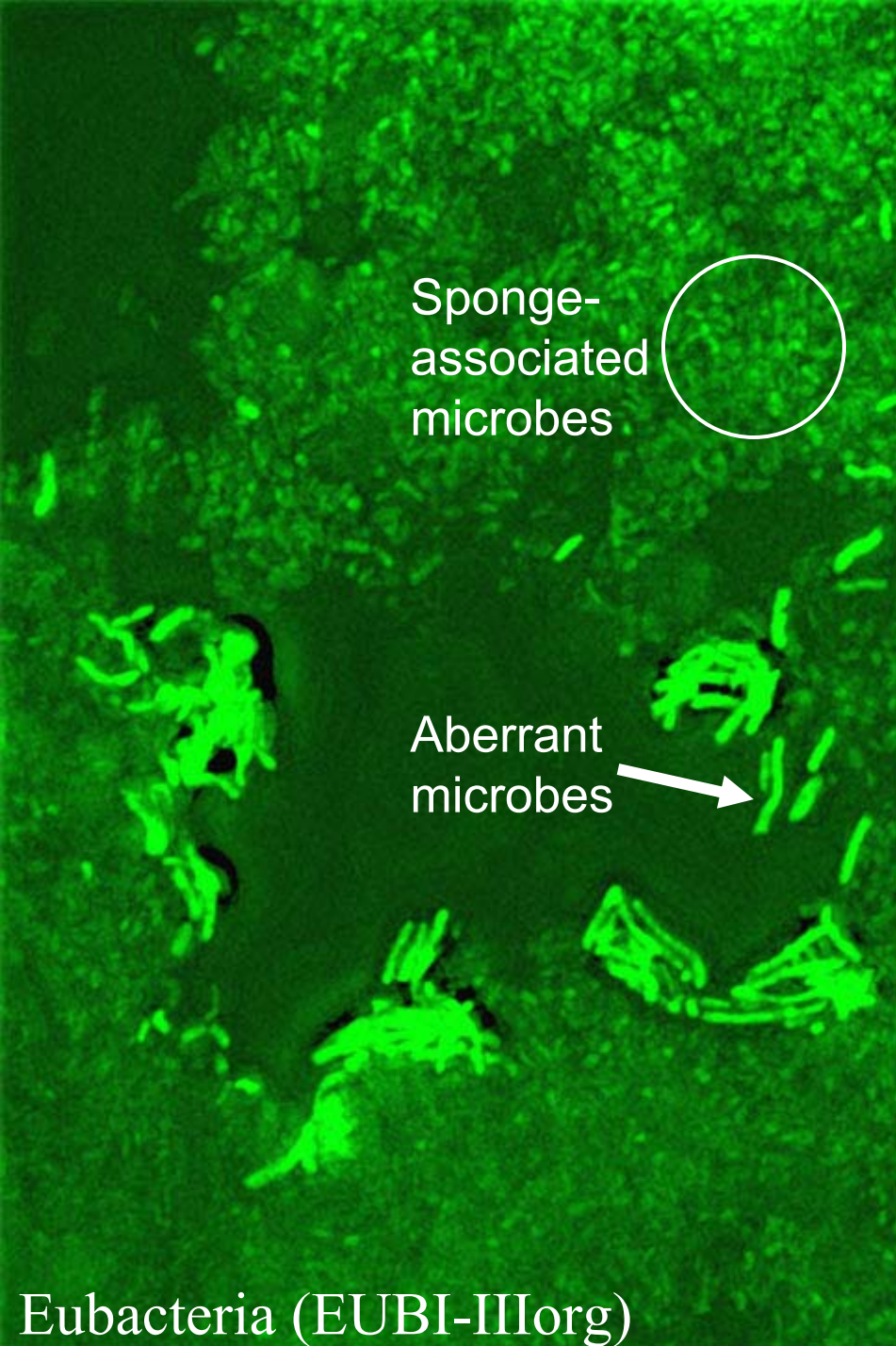
Old cortex

(Hoffmann et al 2003: J. Biotechnol.)

Example 2: Defense against infection

Fluorescence
in situ
hybridization
(FISH)
on sponge
sections

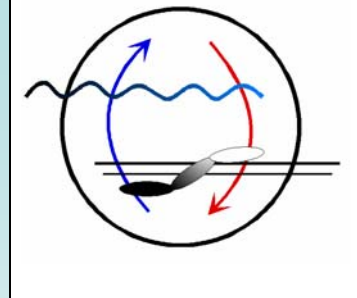






Max-Planck-Institute for Marine Microbiology, Bremen

Jens Harder, Friederike Hoffmann



What do we have to offer?

Expertise on various
microbiological, biogeochemical, molecular
methods

➡ Short-term sabbaticals for training

➡ Contribution to ROSEMEB-workshop

www.mpi-bremen.de