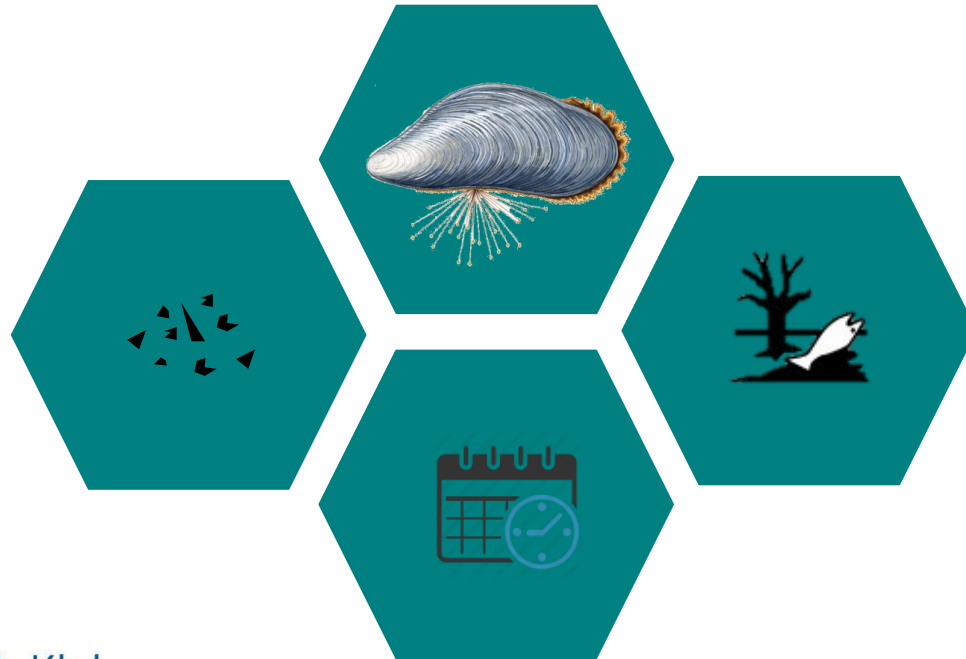


A long-term exposure experiment tests the effects
of clean and contaminated microplastics on
juvenile blue mussels *Mytilus edulis*

Thea Hamm



GEOMAR

Helmholtz Centre for Ocean Research Kiel

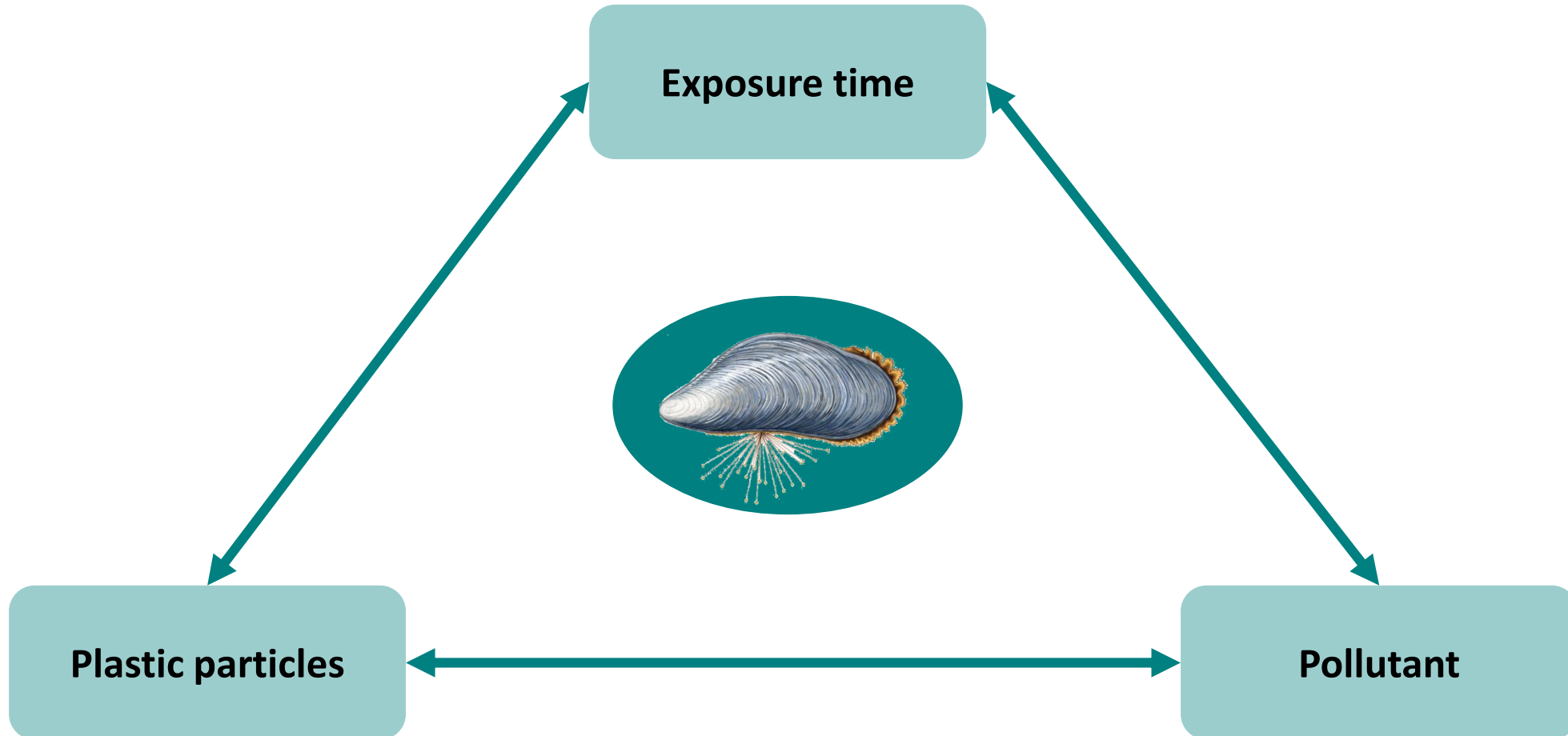
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Overview



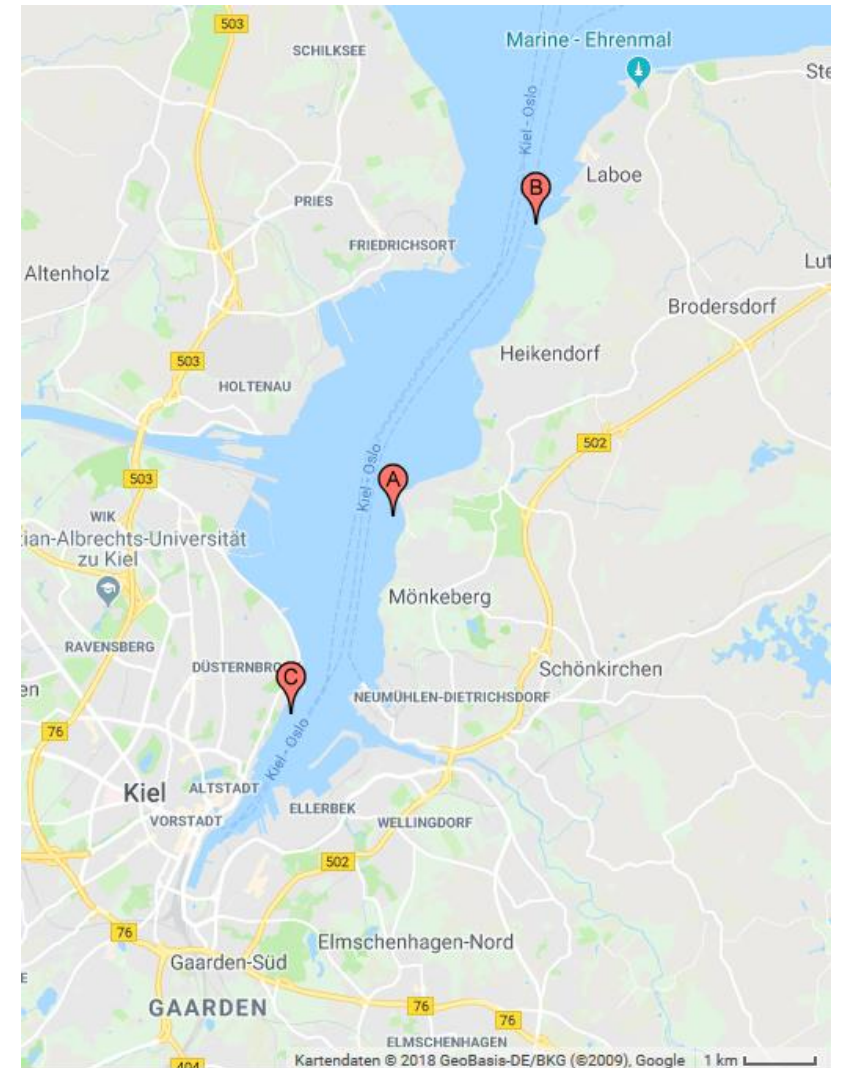
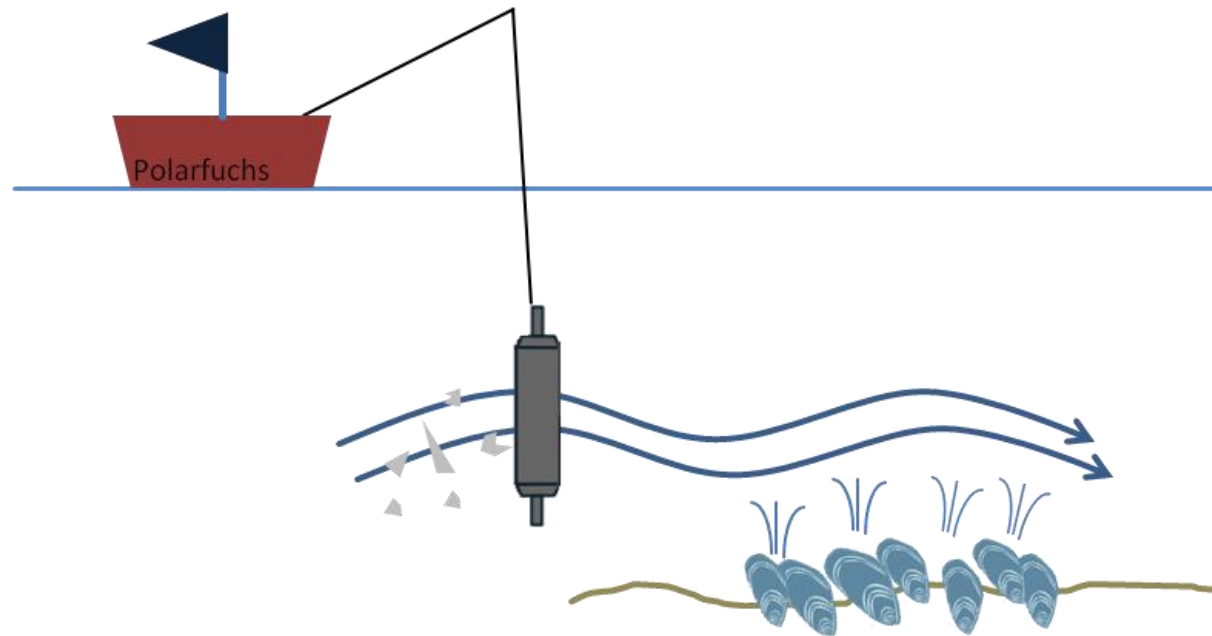
What's new?

- Longterm exposure of 1 year
- Environmentally realistic concentrations of non-spherical plastic particles and
 - a) a pollutant or
 - b) spherical plastic particles
- Use of juvenile mussels as test organisms

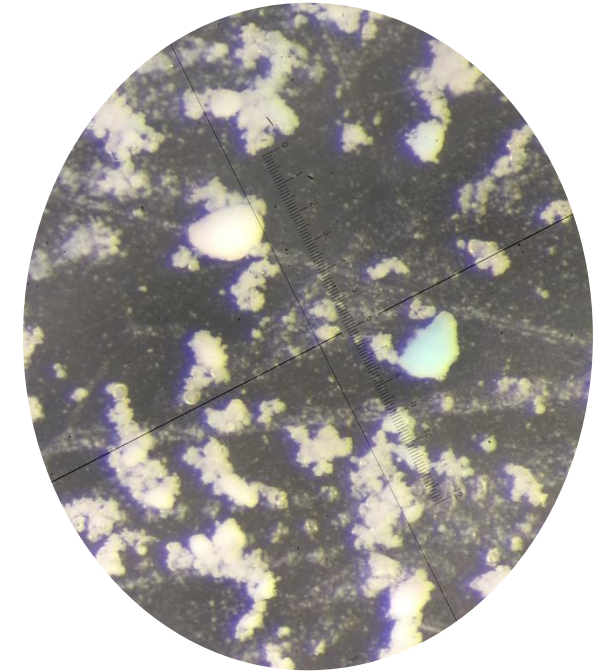
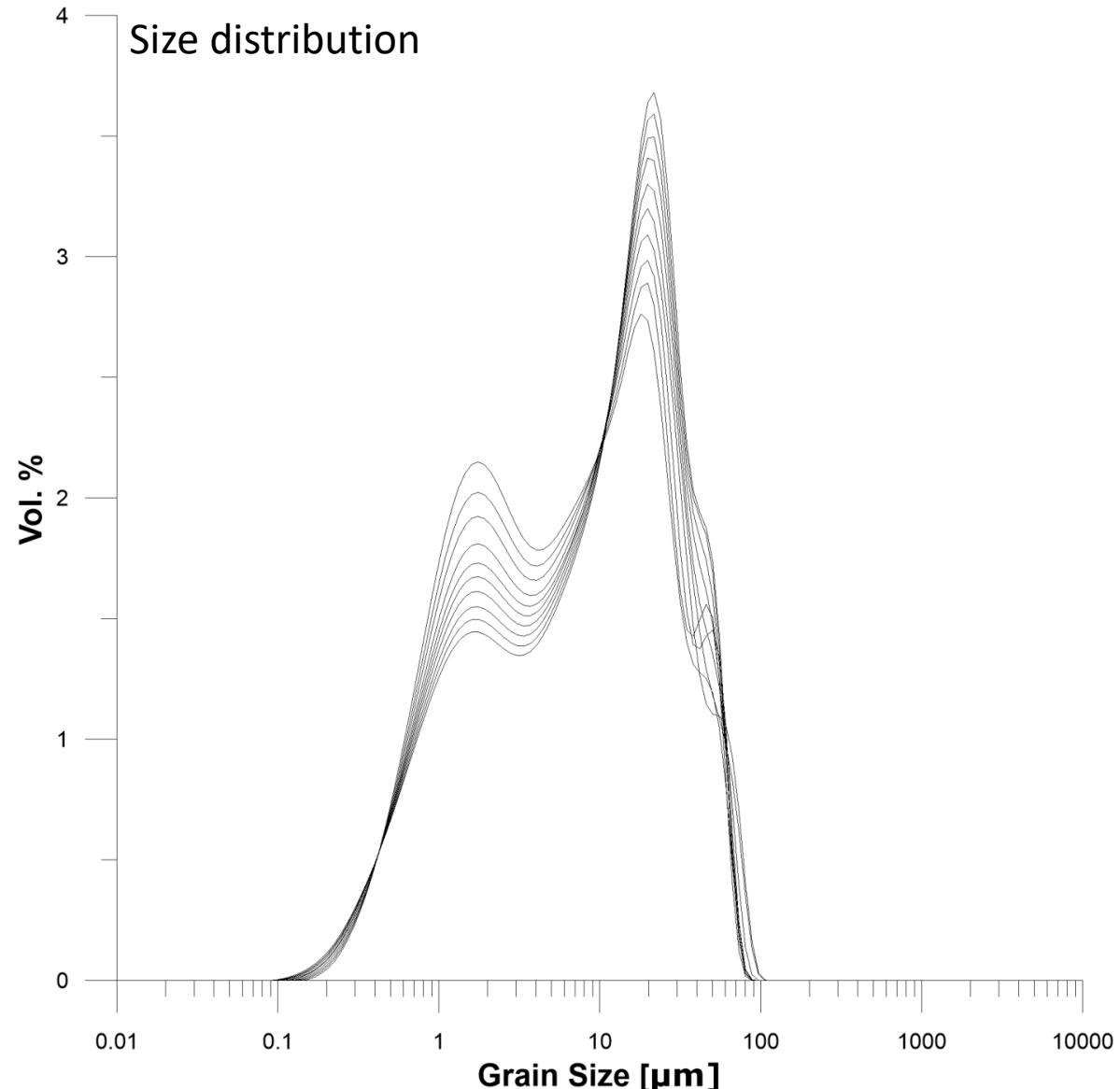
Monitoring

Assessing microplastic (10-100 μm) concentrations in the Kiel Fjord
Identification of particles with FTIR in collaboration with AWI
→ First results: 8 particles per liter (courtesy of Claudia Lorenz)

Results serve as a basis for lab experiments!

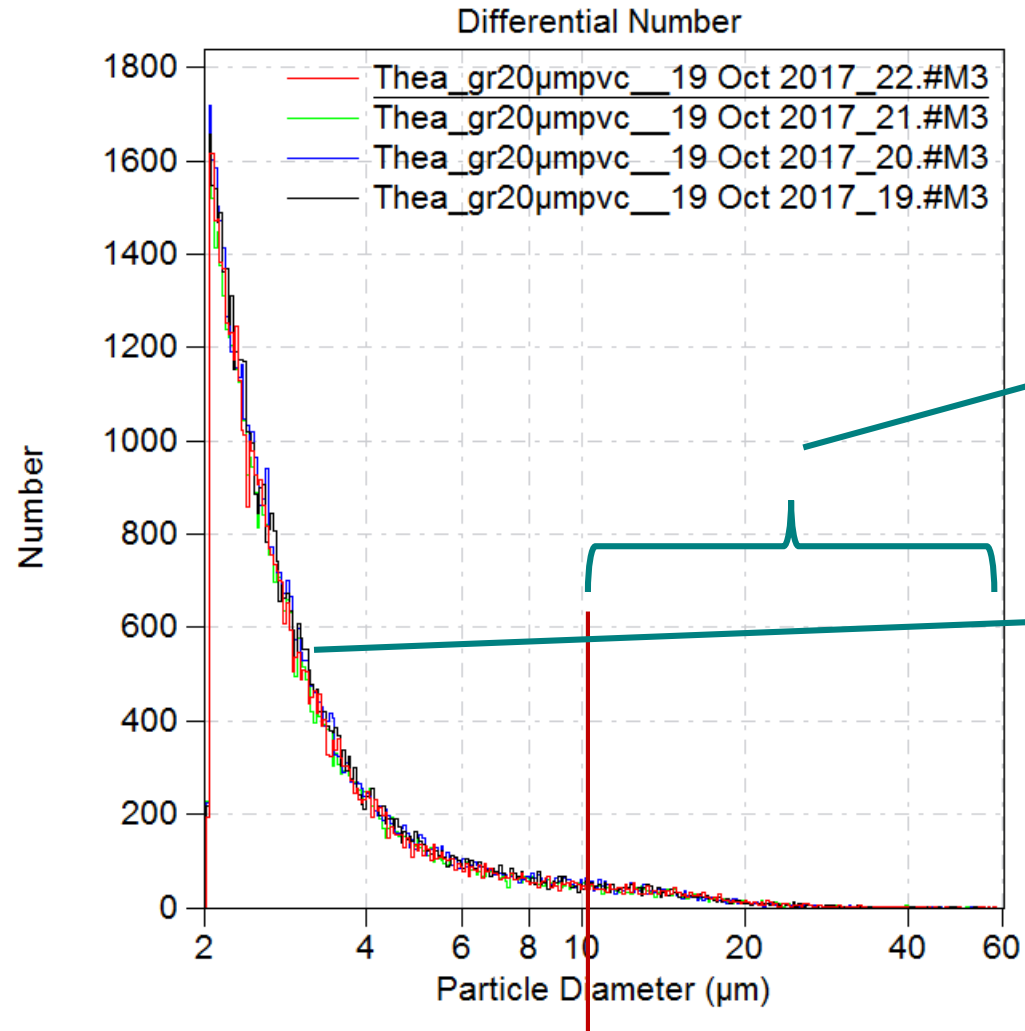


Plastic particles



PVC: 1.4 g/cm^3 , irregularly shaped, no additives

Plastic particles



Targeted fraction for the experiment: 11-60 μm

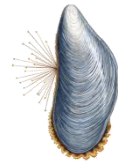
Non-targeted fraction that cannot be removed

Alternative: Polystyrene beads, 40 μm , monodisperse, spherical

Experimental design

a)

control

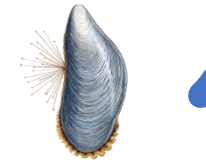
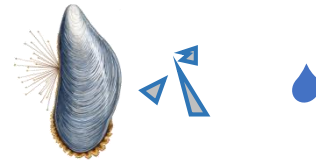
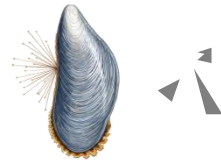


Microplastics (mp) only

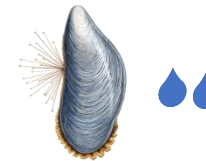
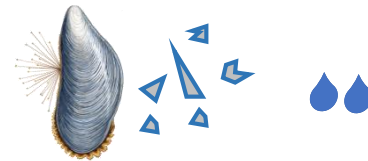
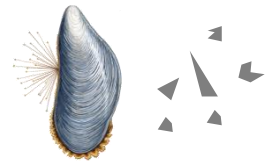
mp + pollutant

Pollutant only

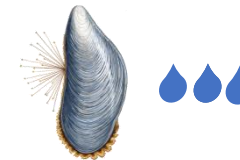
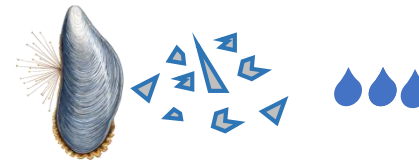
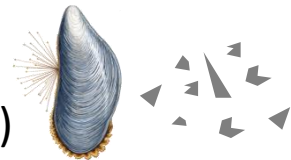
low
(10 particles/L)



medium
(1000 particles/L)



high
(10 000 particles/L)



Experimental design

b)

control

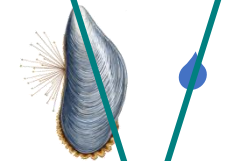
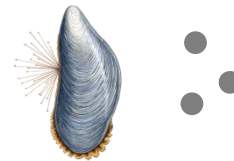
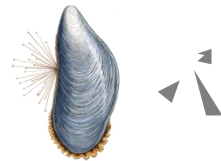


Microplastics = PVC

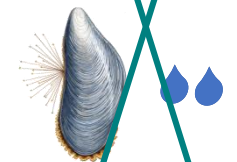
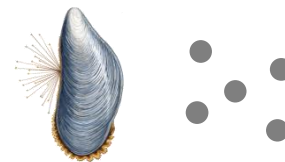
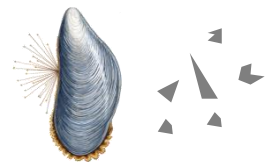
Microplastics = PS

~~pollutant~~

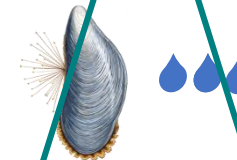
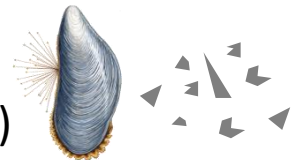
low
(10 particles/L)



medium
(1000 particles/L)



high
(10 000 particles/L)



Thank you for your attention!



Thea Hamm

GEOMAR Helmholtz
Center for Ocean
Research, Germany

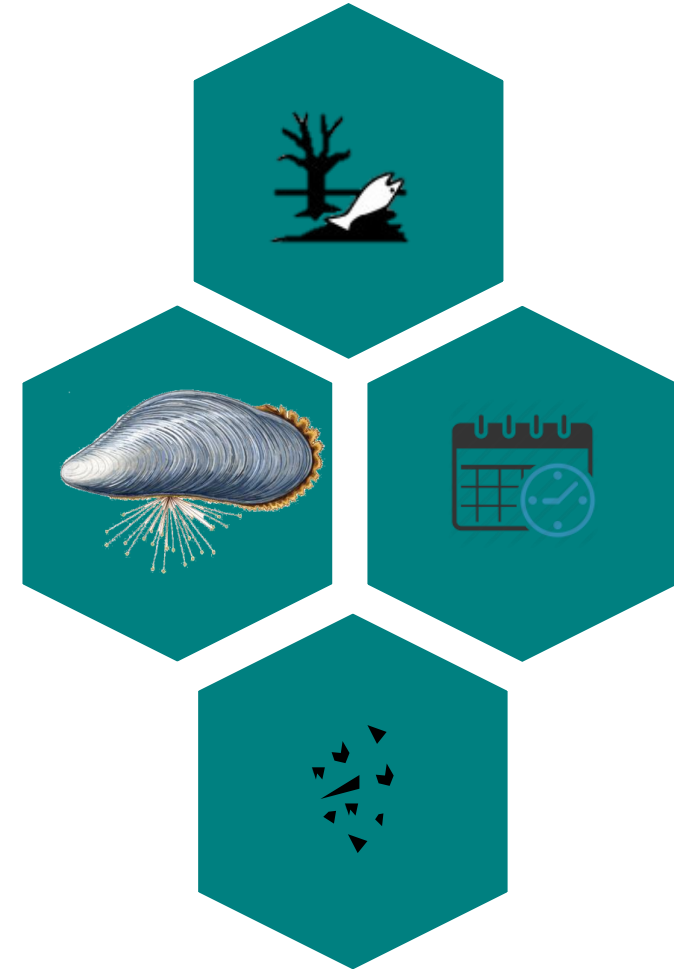
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Dr. Lars Gutow



Indoor setup

