

Master Thesis in Geobiology – Microbiology & Geobiology

Title: **What if there is a leakage from a seafloor CO₂ storage site?**

Supervisor: Rolf-Birger Pedersen

Co-supervisor: Laila Johanne Reigstad (laila.reigstad@bio.uib.no)
Tamara Baumberger

What?

As you all know, we are letting a lot of CO₂ into the atmosphere and this potentially changes the Earth's climate. An alternative to emit the CO₂ to the atmosphere is to store it below the seafloor, as is currently done below the Sleipner platform in the North Sea. We at the Centre for Geobiology (CGB) are currently involved in three projects focussing on this sub-seafloor storage of CO₂.

One of the projects is focussing on possible consequences for the marine environment if a CO₂ leakage occurs from a storage site. As the responses of ecosystems to elevated CO₂ concentrations is poorly understood, researchers at CGB are now starting up studies focusing on the effects of elevated CO₂ in marine sediments. In our experiments, CO₂ will be bubbled through seafloor sediments and downstream of this we will search for changes in the bacterial and archaeal communities, changes in the proteins they express, or changes in the reduction rates of sulphate.

The studies are multidisciplinary, focussing both on the microbiology, macrobiology, geology and geochemistry aspects.

Who?

We hereby invite master students with interest in microbiology & geomicrobiology to join the project from the very beginning!

You have the possibility to join from the time of sampling out at sea, or at the start-up in the lab!



When?

The seafloor sediment cores will be sampled this summer from two selected locations: The first sampling site will be the seafloor close to the Sleipner platform in the North Sea. This sediment is overlying the CO₂ storage site where Statoil has stored CO₂ since 1996, resulting in a total of ~12 million tons of CO₂ stored at present. The second sampling site is the seafloor by the Troll platform, overlying a candidate storage site for the CO₂ from Mongstad.

Fieldwork in 2011:

Opportunity to join the 10 days cruise with G.O. Sars to the Sleipner and Troll areas in the North Sea in mid June 2011.

Opportunity to join the 12 days “Nordic field course in Geobiology” held in Iceland in August 2011 (5 ETCS). The course includes lectures, field trips and practical exercises to introduce field and laboratory techniques used in microbiology, molecular ecology, biogeochemistry and geology. A great place to start! Please find info at www.uib.no/geobio

Lab work in 2011-2012:

- 1) Join the set-up of sediment cores as laboratory experiments.
- 2) Flushing the sediments with CO₂.
- 3) Monitor different parameters during the CO₂ flushing to register initial changes.
- 4) Isolation of RNA and DNA from the sediments after ended CO₂ flushing.
- 5) Perform community analyses of Bacteria and Archaea based on 16S rRNA and protein encoding genes.

The master student will face up-to-date molecular methods like isolation of RNA and DNA, PCR, quantitative PCR, gel electrophoresis, gene cloning, DNA sequencing and software programs for phylogenetic analyses.

Financing: Centre for Geobiology (CGB).

Working place:

The geomicrobiology lab at Centre for Geobiology at 4th floor of Realfagbygget.
Welcome ☺

Contact:

Laila Johanne Reigstad (CGB research scientist),
Office: Realfagbygget 3rd floor, room 3122,
Office phone: 55 58 87 53,
Email: laila.reigstad@bio.uib.no

