

Attention Biology and Biotechnology students

Master Thesis Project

Isolation and heterologous expression of cellulase genes from a reindeer rumen bacterium

We offer an exciting project which aims to isolate and heterologously express cellulase genes from *Ruminococcus flavefaciens*, a fibre degrading bacterium in the rumen of the reindeer. Cellulases are very important enzymes breaking up cellulose. This reaction is used, for example, for bio-energy production and fabrics treatment (stone-washed jeans). Within this project you will first isolate and clone the cellulase gene from the rumen bacterium and express it in *E. coli*. It is also planned within this master thesis to transfer the gene into photosynthetic cyanobacteria, in order to develop a CO₂ neutral expression platform. This project will give you a chance to learn a range of modern DNA and protein techniques, as well as being part of our effort to develop energy effective and environmentally friendly biotechnologies.

The project is mentored by **Dr. Anton Liaimer** and **Prof. Monica A. Sundset** in tight collaboration with the group of **Prof. Kirsten Krause**, all from the Department of Arctic and Marine Biology.

Are you interested? Contact anton.liaimer@uit.no



Cyanobacteria | 40 μm

Reindeer house symbiotic bacteria in their rumen that allow the breakdown and utilization of plant cell wall fibre. In this project we will go hunting for important enzymes that can be used to degrade cellulose for e.g. bio-energy production. The enzymes will be transferred to photosynthetic cyanobacteria to develop a CO₂ neutral expression platform.