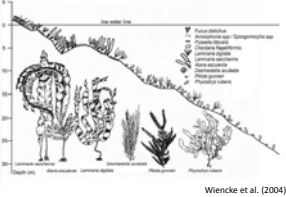


# Biology of Arctic Macroalgae KOL 06

## Ecosystem Kongsfjord

The KOL 06 programme has been established soon after the opening of the Koldewey Station in 1991. The first expeditions focussed on the species diversity and the zonation of marine benthic macroalgae from Kongsfjorden. Most dominant species are meanwhile in culture. Since 1996 with the detection of stratospheric ozone depletion over the Arctic, the effects of enhanced UV radiation on macroalgae from Kongsfjorden came into the centre of our studies and we learned that the juvenile life-stages of macroalgae are the stages the most susceptible to environmental perturbations. In recent years the interactive effects of enhanced UV radiation and increasing temperatures due to the greenhouse effect became the focus of our studies. We work from the molecular to the community level and develop scenarios for the future of macroalgal communities from Kongsfjorden in view of global climate changes.

### Zonation of seaweeds in Kongsfjorden

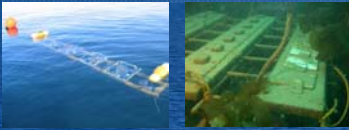


Wiencke et al. (2004)

### Anna Fricke:

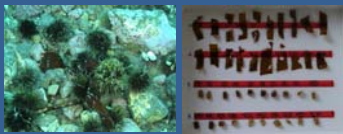
"Effects of UV radiation on the succession of benthic communities in Spitsbergen"

May 16- July 10, 2006



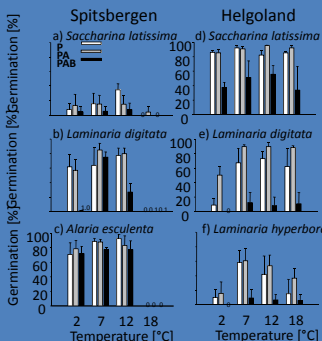
### Markus Molis & Hendrik Wessels

"To be or not to be: On the fate of *Alaria esculenta* refuges in urchin barrens at Kongsfjordneset" 2000-2009

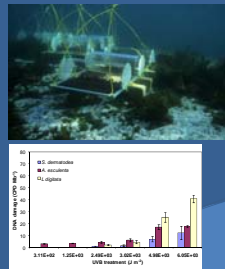


### Ruth Müller:

"Interactive effects of UV radiation and temperature on micro-stages of Arctic brown algae (Laminariales)" 2006-2007



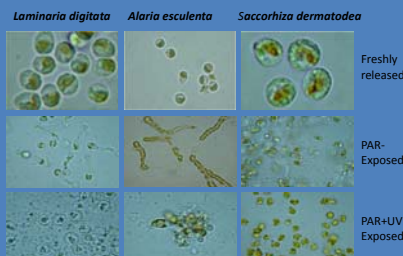
### Michael Roleda



"Germination, photosynthesis, pigments and DNA damage and repair in various seaweed spores" 2001-2008

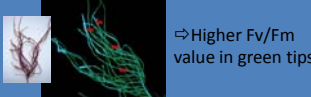
### Christian Wiencke & Ulrike Lüder

"Life strategy, ecophysiology and ecology of seaweeds in polar waters" 2004



### Jana Fredersdorf:

"Interactive effects of radiation, temperature and salinity stress on marine macroalgae from Spitsbergen (*Devaleraea ramentacea*, *Alaria esculenta*, *Laminaria solidungula*, *Saccharina latissima*)" 2004-2006



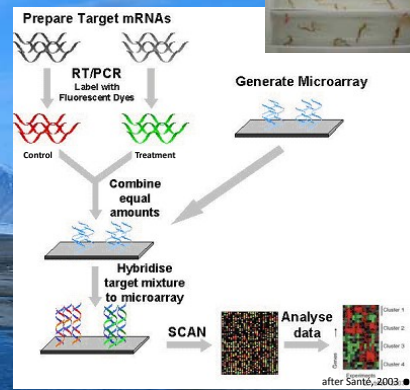
### Lena Brey

"Acclimation of kelp photosynthesis to seasonal changes in the underwater radiation regime of a high Arctic fjord system" 2004-2008



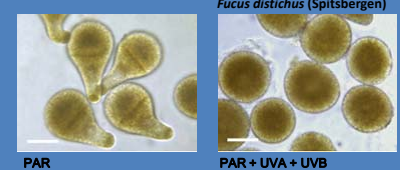
### Sandra Heinrich

"Gene expression analysis of *Saccharina latissima* under UV and temperature stress" 2008-2011



### Monica Schoenwaelder

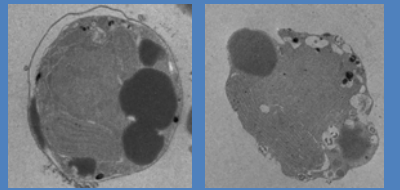
"Sensitivity of macroalgae from Spitsbergen (Arctic) and Helgoland (North Sea) to UV radiation"



→ Differential germination capacity of *Fucus* zygotes from the Arctic and North Sea after UV exposure

### Franciska Steinhoff:

"Interactive effects of UV and temperature on the ultrastructure of zoospores" 2006



"Phlorotannins as UV protective substances" 2007-2010

