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Postdoc
Bacteriology
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Short presentation

So far, my research focus has been to resolve how structure/function relationships affect the optical and chemical microenvironment in microbial communities as well as in animal and plant tissues. I have a strong expertise in different sensor techniques such as electrochemical microsensors, nanoparticle- and fiber-based optical sensors, and advanced fluorescence microscopy. I have strong experience in both theoretical and practical aspects of chemical and optical sensing, from development to field-testing of novel sensors, and the development of new experimental setups and methodologies. During my PhD, the focus was to characterize chemical microenvironments and understand microscale chemical processes in aquatic photosynthetic tissues and complex microbial biofilms. I now focus on investigating the heterogeneity of chemical landscapes in and between biofilm aggregates to elucidate interactions between the chemical microenvironment and the physiology of bacteria.

Employment

Research Assistant

Marine Biology

Helsingør, Denmark

1 Oct 2016 → 31 Dec 2016

Postdoc

Bacteriology

København N.

1 Jan 2018 → nu

Research outputs

Catalase protects biofilm of *Staphylococcus aureus* against daptomycin activity

El Haj, C., Lichtenberg, Mads, Nielsen, K. L., Bjarnsholt, Thomas & Jensen, Peter Østrup, 2021, In: Antibiotics. 10, 5, 511.

In-Situ Metatranscriptomic Analyses Reveal the Metabolic Flexibility of the Thermophilic Anoxygenic Photosynthetic Bacterium *Chloroflexus aggregans* in a Hot Spring Cyanobacteria-Dominated Microbial Mat

Kawai, S., Martinez, J. N., Lichtenberg, Mads, Trampe, Erik, Kühl, Michael, Tank, M., Haruta, S., Nishihara, A., Hanada, S. & Thiel, V., 2021, In: Microorganisms. 9, 3, 22 p., 652.

Nitric-oxide-driven oxygen release in anoxic *Pseudomonas aeruginosa*

Lichtenberg, Mads, Line, L., Schrameyer, V., Jakobsen, Tim Holm, Rybtke, M. L., Toyofuku, M., Nomura, N., Kolpen, M., Tolker-Nielsen, Tim, Kühl, Michael, Bjarnsholt, Thomas & Jensen, Peter Østrup, 2021, In: iScience. 24, 12, 103404.

Vertical Migration Optimizes Photosynthetic Efficiency of Motile Cyanobacteria in a Coastal Microbial Mat

Lichtenberg, Mads, Cartaxana, P. & Kühl, Michael, 25 May 2020, In: Frontiers in Marine Science. 7, 13 p., 359.

Lactobacillus rhamnosus strains of oral and vaginal origin show strong antifungal activity *in vitro*

Jørgensen, Mette Rose, Rikvold, P. T., Lichtenberg, Mads, Jensen, Peter Østrup, Kragelund, Camilla & Twetman, Svante, 2020, In: Journal of Oral Microbiology. 12, 1, 8 p., 1832832.

Do Mixed-Species Biofilms Dominate in Chronic Infections? Need for in situ Visualization of Bacterial Organization

Kvich, L., Burmølle, Mette, Bjarnsholt, Thomas & Lichtenberg, Mads, 2020, In: Frontiers in Cellular and Infection Microbiology. 10, 12 p., 396.

In Situ Monitoring of the Antibacterial Activity of a Copper-Silver Alloy Using Confocal Laser Scanning Microscopy and pH Microsensors

Ciacotich, N., Kragh, Kasper Nørskov, Lichtenberg, Mads, Tesdorpf, J. E., Bjarnsholt, Thomas & Gram, L., 2019, In: Global Challenges. 3, 11, 9 p., 1900044.

Optical Properties of Corals Distort Variable Chlorophyll Fluorescence Measurements

Wangpraseurt, D., Lichtenberg, Mads, Jacques, S. L., Larkum, A. W. D. & Kühl, Michael, 2019, In: Plant Physiology. 179, 4, p. 1608-1619

Vertical Distribution and Diversity of Phototrophic Bacteria within a Hot Spring Microbial Mat (Nakabusa Hot Springs, Japan)

Martinez, J. N., Nishihara, A., Lichtenberg, Mads, Trampe, Erik, Kawai, S., Tank, M., Kühl, Michael, Hanada, S. & Thiel, V., 2019, In: Microbes and Environments. 34, 4, p. 374-387 14 p.

Photosynthesis and Metabolism of Seagrasses

Larkum, A. W. D., Pernice, M., Schliep, M., Davey, P., Szabo, M., Raven, J. A., Lichtenberg, Mads, Brodersen, Kasper Elgetti & Ralph, P. J., 2018, *Seagrasses of Australia: Structure, Ecology and Conservation*. Larkum, A. W. D., Kendrick, G. A. & Ralph, P. J. (eds.). Springer, p. 315-342

Light sheet microscopy imaging of light absorption and photosynthesis distribution in plant tissue

Lichtenberg, Mads, Trampe, Erik, Vogelmann, T. C. & Kühl, Michael, Oct 2017, In: Plant Physiology. 175, p. 721-733 13 p.

Radiative energy budgets of phototrophic surface-associated microbial communities and their photosynthetic efficiency under diffuse and collimated light

Lichtenberg, Mads, Brodersen, Kasper Elgetti & Kühl, Michael, 28 Mar 2017, In: Frontiers in Microbiology. 8, 17 p., 452.

Diffusion or advection? Mass transfer and complex boundary layer landscapes of the brown alga *Fucus vesiculosus*

Lichtenberg, Mads, Nørregaard, R. D. & Kühl, Michael, Mar 2017, In: Journal of the Royal Society. Interface. 14, 128, 20161015.

Radiative energy budgets of phototrophic surface-associated microbial communities and their photosynthetic efficiency under diffuse and collimated light

Lichtenberg, Mads, Brodersen, Kasper Elgetti & Kühl, Michael, Jan 2017

Microscale Canopy Interactions in Aquatic Phototrophs

Lichtenberg, Mads, 2017, Department of Biology, Faculty of Science, University of Copenhagen.

***In situ* hydrogen dynamics in a hot spring microbial mat during a diel cycle**

Revsbech, N. P., Trampe, Erik, Lichtenberg, Mads, Ward, D. M. & Kühl, Michael, 2016, In: Applied and Environmental Microbiology. 82, 14, p. 4209-4217 9 p.

Fiber-optic probes for small scale measurements of scalar irradiance

Rickelt, L. F., Lichtenberg, Mads, Trampe, Erik & Kühl, Michael, 2016, In: Photochemistry and Photobiology. 92, 2, p. 331-342 12 p.

Nanoparticle-based measurements of pH and O₂ dynamics in the rhizosphere of *Zostera marina* L. effects of temperature elevation and light-dark transitions

Brodersen, Kasper Elgetti, Koren, K., Lichtenberg, Mads & Kühl, Michael, 2016, In: Plant, Cell and Environment. 39, 7, p. 1619-1630 12 p.

Photosynthetic acclimation of *Symbiodinium in hospite* depends on vertical position in the tissue of the scleractinian coral *Montastrea curta*

Lichtenberg, Mads, Larkum, A. W. D. & Kühl, Michael, 2016, In: Frontiers in Microbiology. 7, 13 p., 230.

Epiphyte-cover on seagrass (*Zostera marina* L.) leaves impedes plant performance and radial O₂ loss from the below-ground tissue

Brodersen, K. E., Lichtenberg, Mads, Paz, L. & Kühl, Michael, 2015, In: *Frontiers in Marine Science*. 2, 11 p., 58.

Epiphyte-cover on seagrass (*Zostera marina* L.) leaves impedes plant performance and radial O₂ loss from the below-ground tissue

Brodersen, Kasper Elgetti, Lichtenberg, Mads, Paz, L. & Kühl, Michael, 2015, In: *Frontiers in Marine Science*. 2, 11 p., 58.

Pronounced gradients of light, photosynthesis and O₂ consumption in the tissue of the brown alga *Fucus serratus*

Lichtenberg, Mads & Kühl, Michael, 2015, In: *New Phytologist*. 207, p. 559-569 11 p.

Radiative energy budget reveals high photosynthetic efficiency in symbiont-bearing corals

Brodersen, Kasper Elgetti, Lichtenberg, Mads, Ralph, P. J., Kühl, Michael & Wangpraseurt, D., Jan 2014, In: *Journal of the Royal Society Interface*.

Radiative energy budget reveals high photosynthetic efficiency in symbiont-bearing corals

Brodersen, K. E., Lichtenberg, Mads, Ralph, P. J., Kühl, Michael & Wangpraseurt, D., 2014, In: *Journal of the Royal Society. Interface*. 11, 93, 20130997.