

ORCID: 0000-0002-3044-7714

DATE OF BIRTH: June 16, 1964 (Danish citizen)

CONTACT: +45 40476304; mkuhl@bio.ku.dk

EDUCATION:

PhD in microbial ecology (1992), MSc in biology (1988), both at University of Aarhus

SCIENTIFIC FOCUS AREAS: Ecology, biogeochemistry and photobiology of surface-associated microbial communities, aquatic plants and symbioses; Development and application of microsensor and imaging techniques; Biophotonics; Microenvironmental controls of photosynthetic and respiratory processes; 3D Bioprinting; Bio-optics.

POSITIONS

2020- Visiting Professor, Climate Change Cluster, University of Technology Sydney (UTS), Australia
2011-15 Visiting professor, Singapore Centre for Environmental Life Science Engineering, Nanyang Technological University, Singapore
2010-20 Adjunct professor, , Climate Change Cluster, UTS, Australia
2008- Full professor, Marine Biological Section, Department of Biology, University of Copenhagen, DK
2003-2008 Professor with special responsibilities, Department of Biology, UCPH, DK
1998-2003 Ole-Rømer fellow / Associate professor, Department of Biology, UCPH, DK
1995-1998 Head of Microsensor Research Group (German C3 professorship), Max-Planck Institute for Marine Microbiology (MPI), Bremen, Germany
1992-1995 Founder and senior scientist of the Microsensor Research Group, MPI Bremen

ACADEMIC HONORS AND POSITIONS OF TRUST, SELECTED

2020- 25 Investigator Award, *Gordon and Betty Moore Foundation*, USA
2014-18 Sapere-Aude Top Researcher award, *Independent Research Fund Denmark*
2006- Elected member, *Royal Danish Academy of Science and Letters (KDVS)*
1998-2003 Ole-Rømer fellowship, *Independent Research Fund Denmark*

RESEARCH LEADERSHIP/MANAGEMENT

2006-16 Deputy Head of Department for Research, Dept. of Biology, UCPH
2006-16 Chair, Dept. of Biology Research Committee
2006 Scientific cruise leader, Galathea 3 expedition (leg, Ghana- South Africa)
1992- Organizer and participant in >30 expeditions/field campaigns

MAIN CURRENT FUNDING

2023-2026 *Australian Research Council*: "Resolving the threat of ocean deoxygenation to coral resilience" (ARC Discovery grant, 3 years, Co-PI, 3.5 million DKK)
2023-2026 *European Union*: "3D fluorescence lifetime imaging and analysis (FLImagin3D)" (MSCA DN ITN grant, Co-PI and main supervisor for 1 PhD student, 2 million DKK)
2020-2025 Investigator award, *Gordon and Betty Moore Foundation* (PI, 12 mio DKK)
2020-2023 *European Union*: "Bio-inspired and bionic materials for enhanced photosynthesis (BEEP)" (EU ITN Grant, Co-PI and main supervisor for 1 PhD student, 2 million DKK)
2020-2023 *Australian Research Council*: "Functional dynamics of skeletal microbiota in healthy and bleached corals" (ARC Discovery grant, 3 years, Co-PI, 3.5 million DKK)
2018-2023 *Independent Research Fund Denmark | Technical and Production Sciences (FTP)*: "Resolving chemical microenvironments of large microbes" (PI, Project type-1 grant, 2.5 million DKK)

2 group members are funded by personal *MSCA postdoctoral fellowships* (2023-2024 & 2024-2025), and 1 group member is funded by a personal *Villum Foundation Experiment grant* (2023-2025)

SUPERVISION AND TEACHING:

Current research group: 5 post-doctoral scientists, 2 PhD students, 2 external PhD students, 1 technician, several BSc and MSc students and 4-6 international visitors per year. Supervised 16 postdocs, 17 PhD (incl. 5 external), 31 MSc, and 43 BSc students since 1992. Current teaching: *General Biochemistry*; *Field Biology* (marine); *Applied Marine Biology*, *Marine Biology*, *Experimental Marine Biology*, *Arctic Biology*, *Advanced Bacteriology II*, *Marine Microbiology and Virology*.

Organizer of international PhD courses on *Microsensor analysis in the Environmental Sciences* (bi-annually since 2000) and the *Advanced Biofilm Course* (annually since 2005).

INNOVATION

Patent application: Kühl, M., Koren, K., Trampe, E., Gelinsky, M., Lode, A., Krujatz, F., and Akkineni, A. R. (2018) Sensor functionalised bioink. PCT-Application (WO2019197522A1). Priority 2018-04-11 • Filed 2019-04-11 • Published 2019-10-17.

Several former students/postdocs have created successful companies based on their research background:

Zenzor Aps selling light microsensors; started by Lars Rickelt (former PhD student)

PyroScience GmbH developing and selling optical sensors and sensor systems; started by Roland Thar (former Masters student , PhD student, Postdoc), Ingo Klimant (former postdoc)

Presens GmbH developing and selling optical sensors and sensor systems; started by Ingo Klimant (former postdoc), Gerhard Holst (former postdoc), and Achim Stanglmeyer

Several developed microsensors are commercialized by companies:

Fiber-optic O₂ microsensors (*Presens GmbH, PyroScience GmbH*)

Hydrogen sulfide microsensor (*Unisense AS*)

Fiber-optic scalar irradiance microsensor (*Zenzor Aps*)

RECENT REVIEWER AND GRANT EVALUATION ACTIVITIES

Assoc. Editor/Editorial board member of the journals

Environmental Microbiology, Frontiers in Marine Science – Coral Reef Research, Biofilm

2023 Panel Member for the *Norwegian Research Council*

RECENT OUTREACH ACTIVITIES

2022- Collaboration with film maker and artist Maja Friis on communicating coral biology (via events at Cph:Dox and the Bloom festival in 2023, and a week long installation during the Danish Science Festival in 2022 (*Ministry of Higher Education and Science: "Breathing Corals"* (Grant for outreach on climate change effects on corals as an event during the Danish Science Festival 2022, PI, 0.63 million DKK).

BIBLIOMETRICS (as of June, 2023)

A total of 334 publications (published or in press) from 1992-present (29 as first author, 138 as senior author, 55 as co-author with student/postdocs as first/senior author.

Includes 2 *Nature* [IF>69], 1 *Trends in Plant Science* [IF>22], 1 *Nature Climate Change* [IF>21], 1 *Trends in Ecology and Evolution* [IF>20], 1 *Advanced Functional Materials* [IF>19], 1 *Trends in Microbiology* [IF>18], 1 *Nature Communications* [IF>17], 1 *Biotechnology Advances* [IF>17], 1 *Microbiome* [IF>16], 1 *International Journal of Antimicrobial Agents* [IF>15], 1 *FEMS Microbiology Reviews* [IF>15], 1 *Science Advances* [IF>14], 1 *Water Research* [IF>13], 1 *Global Change Biology* [IF>13], 2 *PNAS* [IF >12], 12 *ISME Journal* [IF>11], 2 *Environmental Science & Technology* [IF>11], 1 *Journal of Membrane Science* [IF>10], and 4 *New Phytologist* [IF>10] papers.

H-index: Web of Science: 66, Google Scholar: 81.

Citations: Web of Science: 14100: Google scholar: 21100

INTERNATIONAL RELATIONS

Numerous collaborations with researchers in USA, Europe, United Kingdom, Australia, Saudi Arabia, Israel, New Zealand. Includes several EU network grants, exchange of students/postdocs and joint funding abroad.