Medico-related biofilm research at Aalborg University

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Group of Environmental Biotechnology

Section for Biotechnology

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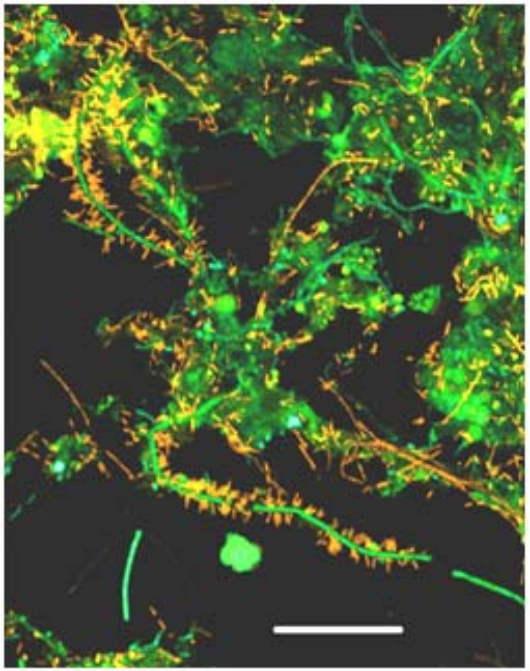
The Group of Environmental Biotechnology
Aalborg University

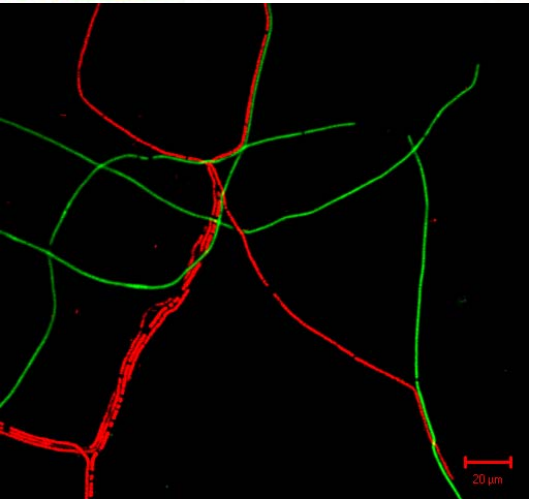
- Per Halkjær Nielsen, professor
- Jeppe Lund Nielsen, associate professor
- Trine Rolighed Thomsen, Caroline Kragelund, research associate professors
- Aviaja Anna Hansen, assistant professor
- 1-2 post.docs. and 7 PhD students
- Approx. 10 Master students and guests
- 3 Technicians
- Funding: FTP, FUU, VMP3, FøSu, Innovation consortia, Danish and foreign companies, Danish WWTPs





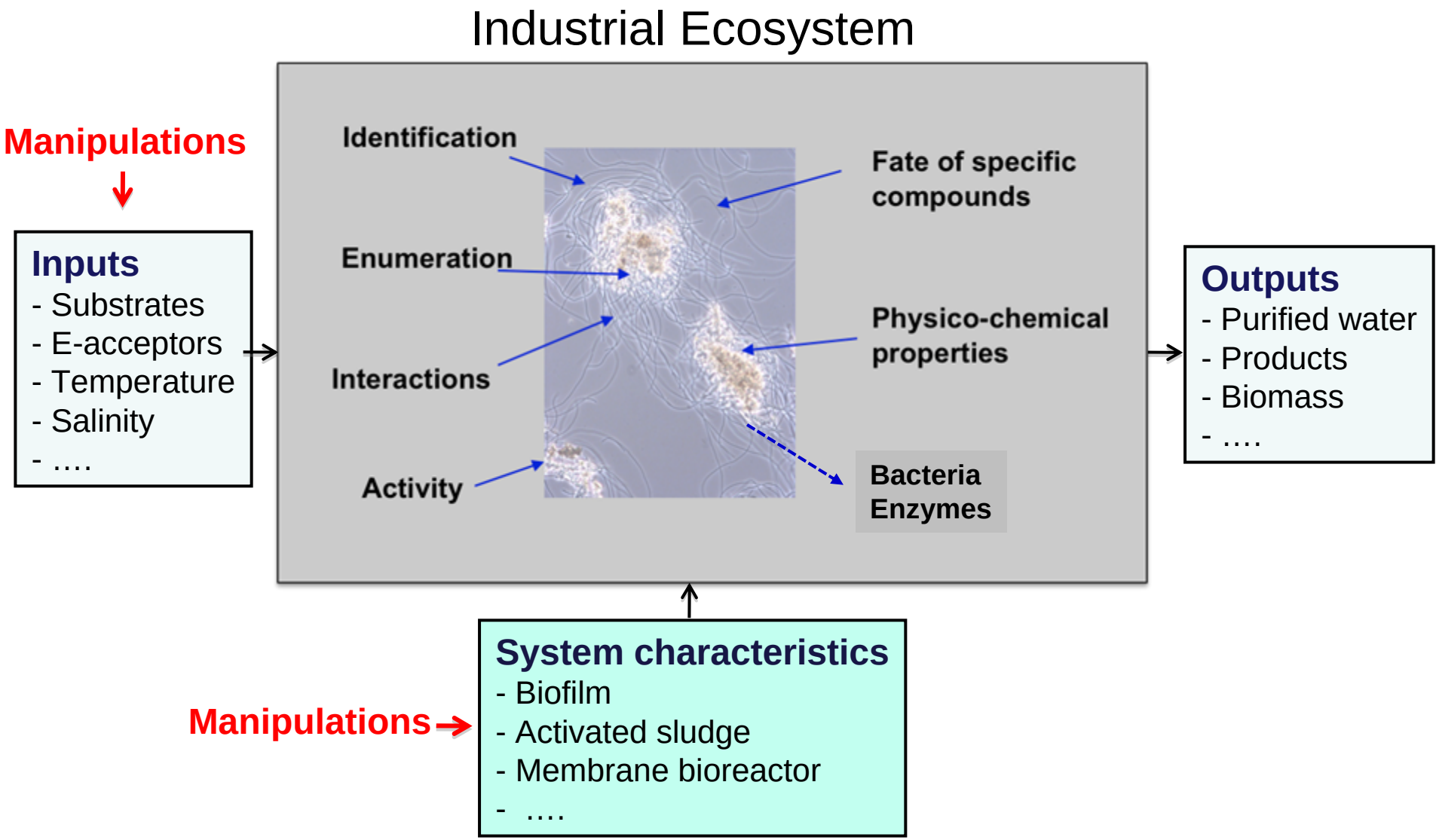
Research topics



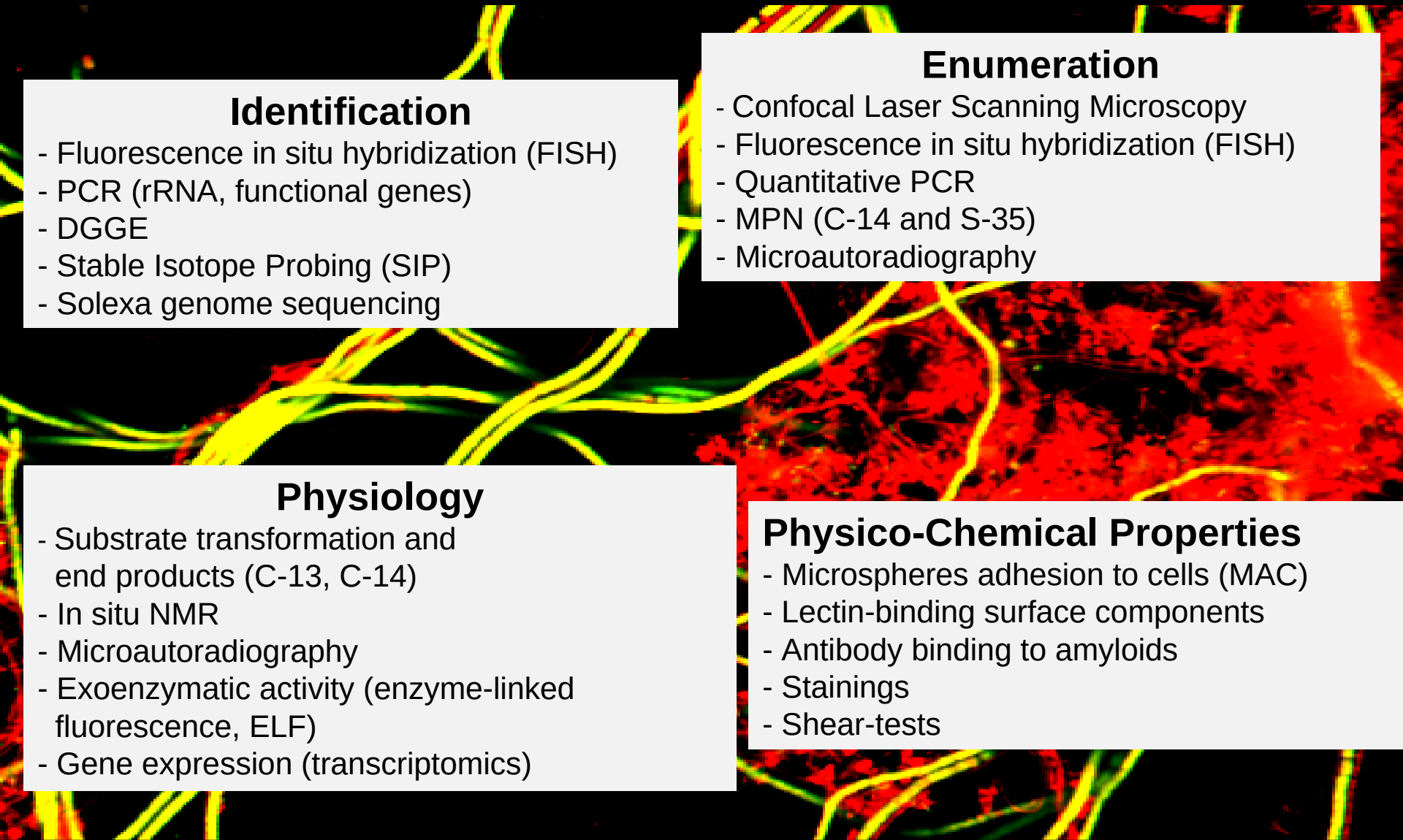


- Biological wastewater treatment
- Degradation of environmental pollutants
- Removal of contaminants in air by biofilters
- Detection of pathogens in environmental samples
- Biofilms – structure and function, exopolymeric (EPS) components
- Medical biofilms

Manipulation of complex microbial system



In situ investigation of microorganisms in complex microbial aggregates - toolbox



Identification

- Fluorescence in situ hybridization (FISH)
- PCR (rRNA, functional genes)
- DGGE
- Stable Isotope Probing (SIP)
- Solexa genome sequencing

Enumeration

- Confocal Laser Scanning Microscopy
- Fluorescence in situ hybridization (FISH)
- Quantitative PCR
- MPN (C-14 and S-35)
- Microautoradiography

Physiology

- Substrate transformation and end products (C-13, C-14)
- In situ NMR
- Microautoradiography
- Exoenzymatic activity (enzyme-linked fluorescence, ELF)
- Gene expression (transcriptomics)

Physico-Chemical Properties

- Microspheres adhesion to cells (MAC)
- Lectin-binding surface components
- Antibody binding to amyloids
- Stainings
- Shear-tests

Research projects – medical biofilms

- **Identification of bacteria by molecular methods – catheters, chronical wounds, others**, Innovationskonsortium – BIOMED, Teknologisk Institut (Trine R. Thomsen), Rigshospitalet (Niels Hoiby, Claus Moser), KU/Panum (Michael Givskov, Thomas Bjarnsholt), Coloplast and others. Bispebjerg Hospital (Klaus Kirketerp-Møller).
- **Forkortelse af indlæggelser ved hurtigere og bedre diagnostik**. ABT-fonden. Rigshospitatet (Niels Hoiby, Claus Moser, Thomas Bjarnsholt), Teknologisk Institut (Trine R. Thomsen)
- **Detection of pathogens in environmental samples by molecular methods (CARD-FISH, q-PCR)**. Innovationkonsortium - AMBA
- **Structure and function of microbial amyloids,in biofilm formation** (Daniel Otzen, Arhus University, Kåre Lehman Nielsen, AAU), AAU, Lundbeck fonden.