Program

Sunday, 28. April, 2019

From 15.00
Registration

18.30 – 19.45
Welcome reception (Apéro Riche)

Opening Session
Chairperson: Kathrin Fenner, Eawag, Switzerland

19.45 – 20.00
Kathrin Fenner, Eawag, Switzerland
Welcome address

20.00 – 21.00
Jörg E. Drewes, Technical University of Munich, Germany
Understanding microbial biotransformation of contaminants in natural and engineered systems: The past, present and future
Monday, 29 April 2019

Analytical and experimental toolbox
Chairperson: Christian Zwiener, University of Tübingen, Germany

08.15 – 08.45

Tong Zhang, Hong Kong University, China
Metagenomics Insights into microbial bio-transformation of environmental pollutants

08.45 – 09.15

Juliane Hollender, Eawag, Switzerland
High resolutions mass spectrometry has boosted biotransformation research

09.15 – 09.35

Boris Bugsel, University of Tübingen, Germany
LC-HRMS screening for precursors and transformation products of poly- and perfluorinated alkyl substances (PFAS) in contaminated soil

09.35 – 09.55

Stefan Achermann, Eawag, Switzerland
Analysis of micropollutant biotransformation kinetics and products reveals reaction-type-specific behavior

09.55 – 10.15

Arne Wick, Federal Institute of Hydrology, Germany
Biotransformation of anthropogenic trace organics by cell-free lysates and enzyme fractions of activated sludge

10.15 – 10.30

Discussion

10.30 – 11.00

Coffee break

Environmental and operational factors
Chairperson: Juan Lema, University Santiago de Compostela, Spain

11.00 – 11.15

CSF and Fondazione Monte Verità
Welcome address

11:15 – 11.45

Tillmann Lüders, University of Bayreuth, Germany
Stable isotope-guided omics to dissect pollutant-degrading microbiomes in the water cycle

11.45 – 12:05

Thorsten Reemtsma, UFZ, Germany
The evolution of a new biodegradation potential in municipal wastewater treatment - the case of Acesulfame and Bosea sp. 3-1B

12.15 – 13.30

Lunch
Environmental and operational factors (cont.)

13.30 – 13.50 Christian Köhler, Environmental Research and Innovation, Luxembourg
Systematic monitoring by passive samplers on WWTPs provides new insights in micropollutant elimination, related process parameters and degradation pathways

13.50 – 14.10 Cresten Mansfeldt, Eawag, Switzerland
Entwined factors: the influence of ammonia on protozoa’s interaction with trace organic contaminants

14.10 – 14.30 Discussion

14.30 – 15.00 Coffee break

15.00 – 17.00 Individual exchange/free time

17.00 – 17.20 Poster Pitches I (1 minute-1 slide for each poster) in plenary

17.20 – 19.00 Poster Session I

19.00 – 20.30 Dinner

Chairperson: Lukas Wick, UFZ Helmholtz Centre for Environmental Research, Germany

20.30 – 21.30 Michael Sander, ETH Zurich, Switzerland
Microbial bio-transformation of synthetic polymers in agricultural soils: Development of analytical tools to advance a mechanistic process understanding
**Tuesday, 30 April 2019**

**Bioavailability and accessibility**  
**Chairperson: Anna Sobek, Stockholm University, Sweden**

08.30 – 09.00  
*Kankana Kundu, Technical University of Munich, Germany*  
An interplay between mass-transfer limitation and physiological adaptation determines turnover of organic micropollutants in the environment

09.00 – 09.20  
*Kiran R. Patil, European Molecular Biology Laboratory, Germany*  
Bioaccumulation of therapeutic drugs by human gut bacteria

09.20 – 09.40  
*Lukas Wick, Helmholtz Centre for Environmental Research - UFZ, Leipzig Germany*  
Mycosphere processes for contaminant degradation

09.40 – 10.00  
*Felix Stibany, RWTH Aachen, Germany*  
Environmental risk assessment of poorly soluble substances: Improved tools for assessing biodegradation, (de) sorption, and modelling (CEFIC LRI-ECO32)

10.00 – 10.15  
Discussion

10.15 – 10.45  
*Coffee break*

**Linking enzymes to biotransformation**  
**Chairperson: John Parsons, University of Amsterdam, The Netherlands**

10:45 – 11.15  
*Kathrin Fenner, Eawag, Switzerland*  
Linking micropollutant bio transformation with microbial community characteristics in activated sludge (and beyond)

11.15 – 11.45  
*Michael Zimmermann, Yale University School of Medicine, USA*  
Systematic identification of drug-metabolizing bacteria and responsible gene products to predict gut communities’ drug metabolism

11.45 – 12.05  
*Klaus Fischer, University of Trier, Germany*  
Embedding the enzymatic transformation of xenobiotics in the context of environmental enzymology

12.15 – 13.30  
*Lunch*
Linking enzymes to biotransformation (cont.)

13.30 – 13.50  Michael T. Zumstein, Cornell University, USA
Enzyme activity and biotransformation of antibiotics in different enzyme fractions derived from wastewater microbial communities

13.50 – 14.10  Lorena Gonzalez-Gill, University of Santiago de Compostela, Spain
Unravelling the enzymatic transformations behind the anaerobic removal of organic micropollutants

14.10 – 14.25  Discussion

14.30 – 15.00  Coffee Break

15.30 – 17.00  Working Groups I - IV

17.00 – 17.20  Poster Pitches II (1 minute-1 slide for each poster) in plenary

17.20 – 19.00  Poster Session II

19.00 – 20.30  Dinner

Chairperson: Lorenz Adrian, UFZ, Germany

20.30 – 21.30  Elizabeth A. Edwards, University of Toronto, Canada
Metagenomics of anaerobic microbial consortia
Wednesday, 1 May 2019

Linking key species to biotransformation
Chairperson: Futoshi Kurisu, *The University of Tokyo, Japan*

08.30 – 09.00 **Jeppe Nielsen, Aalborg University, Denmark**
New functional genes involved in degradation of micropollutants

09.00 – 09.20 **Ke Yu, Peking University, China**
An integrated meta-omics approach reveals substrates involved in synergistic interactions in a bisphenol- A (BPA)-degrading microbial community

09.20 – 09.40 **Mengyan Li, New Jersey Institute of Technology, USA**
Untangling the robust versatility of soluble di-iron monooxygenases in initiating the biotransformation of emerging and legacy water pollutants

09.40 – 10.00 **David Wolff, Federal Institute of Hydrology, Germany**
Micropollutant degradation and taxonomic composition in hybrid MBBR – a comparison of biofilm and suspended sludge

10.00 – 10.15 Discussion

10.15 – 10.45 Coffee break

Linking key species to biotransformation (cont.)
Chairperson: Olivia Molenda, *University of Toronto, Canada*

10.45 – 11.15 **Dimitrios Karpouzas, University of Thessaly, Greece**
Using multiomic approaches to dissect the genetic network driving pesticides biodegradation by individual bacteria and bacterial consortia

11.15 – 11.35 **Claudia Coll Mora, Stockholm University, Sweden**
Influence of bacterial community composition on biodegradation of micropollutants

11.35 – 11.55 **Jonathan Sharp, Colorado School of Mines, USA**
Nitrogen attenuation reliance on intertwined biogeochemical processes in non-vegetated engineered wetlands

12.00 – 13.15 Lunch

Linking key species to biotransformation (cont.)

13.15 – 13.35 **Pedro N. Carvalho, Aarhus University, Denmark**
Constructed wetlands for organic pollutants treatment: linking design factors with microbial community function
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<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>13.35 – 13.55</td>
<td><strong>Maria Vila-Costa, IDAEA-CSIC, Barcelona, Spain</strong>&lt;br&gt;Microbial responses to anthropogenic dissolved organic carbon in the ocean</td>
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<td>13.55 – 14.15</td>
<td>Discussion</td>
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<td>14.30</td>
<td>Departure for afternoon excursion and conference dinner at the Island of Brissago</td>
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Thursday, 2 May 2019

Implications for biotransformation prediction and assessment
Chairperson: Silvia Berkner, German Environment Agency, Germany

08.30 – 09.00  Lawrence Wackett, University of Minnesota, USA
Biodegradation prediction and utility

09.00 – 09.20  Lorenz Adrian, Helmholtz Centre for Environmental Research - UFZ, Leipzig Germany
Fate prediction of halogenated aromatics in technical and natural anoxic environments

09.20 – 09.40  Michael S. McLachlan, Stockholm University, Sweden
Can benchmarking be employed to describe the spatial and temporal variability in biotransformation?

09.40 – 10.00 Paola Meynet, Newcastle University, UK
Accuracy in predicting micropollutant fate under temperature stresses

10.00 – 10.15 Discussion

10.15 – 10.45 Coffee break

Designing next-generation treatment processes
Chairperson: Russel Davenport, Newcastle University, UK

10:45 – 11.15 Uwe Hübner, Technical University of Munich, Germany
New water treatment concepts to take advantage of functionally-modified microbial communities for enhanced biotransformation of trace organic chemicals

11.15 – 11.45 Victor de Lorenzo, CSIC, Spain
How environmental bacteria invent new reactions—and how we can capitalize on them

11.45 – 12.05 Jose J. Ortega-Calvo, CSIC Sevilla, Spain
Operating on bioavailability processes with biodegradable chemicals: Roles of pollutant phase exchange and microbial dispersal

12.15 – 13.30 Lunch
Designing next-generation treatment processes (cont.)

13.30 – 13.50      Jens Aamand, Geological Survey of Denmark and Greenland, Denmark
Introduction of pesticide-degrading bacteria to rapid sand filters as a tool to remediate pesticide-polluted drinking water

13.50 – 14.10      Benjamin Horemans, KU Leuven, Belgium
Pesticide-degrading bacteria for the removal of micropollutants from drinking water. From limitations to opportunities

14.10 – 14.30      Discussion

14.30 – 15.00      Coffee break

15.30 – 17.00      Working Groups I - IV

17.00 – 19.00      Free time

19.00 – 20.30      Dinner

Chairperson: Jörg E. Drewes, Technical University of Munich, Germany

20.30 – 21.30      Nancy Love, Michigan State University, USA
Teasing out the influence of water, sanitation and food on the childhood microbiome: a case study from Addis Ababa, Ethiopia
**Friday, 3 May 2019**

**Chairperson: Elizabeth Edwards, University of Toronto, Canada**

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<th>Time</th>
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| 08.30 – 09.30 | Catherine Fan, University of Oxford, UK  
SimCells and Single-cell Raman technology for environmental engineering |
| 09.30 – 10.45 | Working Group Reports                                                  |
| 10.45 – 11.30 | Coffee break                                                          |
| 11.30 – 12.00 | Awards and Wrap-up                                                    |
| 12.15 – 13.30 | Lunch and departure                                                   |
Poster Session I (Monday, 29 April, 2019)

The following posters will be introduced during a plenary poster-pitch session by a 1-minute, 1-slide presentation on Monday at 17.00. Authors will be available by their posters during the following poster viewing session.

1. Christian Zwiener, University of Tübingen, Germany
Transformation products of the antidiabetic metformin in wastewater – identification by electrochemical and biodegradation experiments

2. Thorsten Gravert, Aarhus University, Denmark
Suspect screening for potential endocrine-disrupting transformation products of phytosterols using nanoflow UHPLC-UHRMS

3. Christian Zwiener, University of Tübingen, Germany
Biotic and abiotic transformation products of the antidepressant fluoxetine

4. Mohammad Sufian Bin Hudari, Helmholtz Centre for Environmental Research-UFZ, Germany
Biogeochemical effects of temperature changes on microbial communities and groundwater contaminations

5. Karina Knudsmark Sjøholm, Technical University of Denmark, Denmark
Temperature dependency of biotransformation kinetics in environmental surface waters

6. Aaron Redman, ExxonMobil, Belgium
Limited temperature dependence observed on biodegradation of hydrocarbons

7. Annie Chalifour, Eawag, Switzerland
Biotransformation of pesticides and pharmaceuticals in a lake ecosystem

8. Rikke Hammershøj, Technical University of Denmark, Denmark
Investigating the effect of test concentration on biodegradation kinetics of two hydrophobic complex mixtures

9. Martin Elsner, TU Munich, Germany
Membrane permeability: an overlooked bottleneck for micropollutant degradation at low concentrations?

10. John Parsons, University of Amsterdam, the Netherlands
Effects of adaptation of WWTP sludge on the biodegradation of emerging pollutants

11. Charlotte Bopp, Eawag, Switzerland
Impact of oxygen activation on substrate isotope effects of enzymatic oxygenations
12. **Anastasia Athanasakoglou**, Eawag, Switzerland
Investigation of the genetic and biochemical basis of biotransformation reactions in activated sludge

13. **Russel Davenport**, Newcastle University, UK
Identifying enzyme candidates for estrogen transformation in rhodococci by comparative genomics and gene expression analysis

14. **Olivia Molenda**, University of Toronto, Canada
Genomic and proteomic identification of a novel operon catalysing benzene activation from Deltaproteobacteria ORM2 under methanogenic conditions

15. **Nadia Morson**, University of Toronto, Canada
Vinyl chloride reductase, bvcA, genomic island identified in bacteriophage genome in dechlorinating microbial consortium KB-1
Poster Session II (Tuesday, 30 April, 2019)

The following posters will be introduced during a plenary poster-pitch session by a 1-minute, 1-slide presentation on Tuesday at 17.00. Authors will be available by their posters during the following poster viewing session.

16. Marie Aggerbeck, Aarhus University, Denmark
Biodegradation of endocrine disruptors

17. Riccardo Perri, FHNW, Switzerland
Erythromycin mineralization by bacterial isolates

18. Yue Huang, The University of Hong Kong, China
Bacterial populations responsible for acesulfame degradation

19. Bing Li, Tsinghua University, China
Sulfamethazine Biodegradation by Paenarthrobacter sp. A01: Genomic Characterization, Kinetics study and Pathways Elucidation

20. Joseph Donald Martin, Aarhus University, Denmark
Identification of pesticide biodegradation pathways using toxicometabolomics

21. Anna Sobek, Stockholm University, Sweden
Changes in sediment bacterial community diversity and structure throughout an OECD308 test with ten micropollutants

22. Silvia Berkner, German Environment Agency, Germany
(How) Can regulatory studies provide information to better understand transformation of pharmaceuticals in environmental compartments?

23. Christian Köhler, Luxembourg Institute of Science and Technology (LIST), Luxembourg
Adaption of the microbial community structure in wastewater due to long-term exposure of micropollutants and the impact on elimination performance

24. Chuanzhou Liang, Aarhus University, Denmark
Co-metabolism or competitive inhibition between acetate and pharmaceuticals in post-treatment moving bed biofilm reactors (MBBR)?

25. Mengyan Li, New Jersey Institute of Technology, USA
Microbial community analysis in biologically active filters exhibiting efficient removal of emerging contaminants and impact of operational conditions

26. Christian Wurzbacher, Technical University of Munich, Germany
Coupling the degradation capacities of fungi to advanced water treatment processes
27. **Futoshi Kurisu**, The University of Tokyo, Japan
Screening organic matters consumed by the bacterial growth in treated wastewater

28. **Karina Knudsmark Sjøholm**, Technical University of Denmark, Denmark
Sludge transformation in WWTPs leads to increased exposure for hydrophobic organic chemicals

29. **Benjamin Horemans**, KU Leuven, Belgium
Catabolism of the groundwater micropollutant 2,6-dichlorobenzamide (BAM) in Aminobacter sp. MSH1 involves an unusual chlorobenzoate metabolic pathway

30. **Benjamin Horemans**, KU Leuven, Belgium
Occurrence of 2,6-dichlorobenzamide (BAM) biodegradation capacity in top soils in and around graveyards with dichlobenil application history