



Halting Antimicrobial Resistance Dissemination in Aquatic Environments (HEARD2018)

16-19 September, 2018 – CSF Monte Verità, Ascona, Switzerland

Program

Sunday, 16. September, 2018

From 16.00	Arrival, registration
17.00-17.15	Welcome address by the Organizing Committee
17.15 – 18.00	Célia Manaia , Catholic University of Portugal, Portugal Keynote lecture <i>Evidence and implications of antibiotic resistance in the environment</i>
18.00 – 19.00	Welcome drink
19.00	Dinner

Monday, 17. September, 2018

8.15 – 8.30 CSF and Monte Verità Welcome Address

Session I: Antibiotics and other selective agents in the water cycle and their impact on antimicrobial resistance

Chair: Peter Vikesland

8.30 – 9.00 **Diana Aga**, University of Buffalo, USA
Global reconnaissance of micropollutants in wastewater and surface water

9.00 – 9.15 **Elisabeth Janssen**, Eawag, Switzerland
Environmental fate of antimicrobial peptides

9.15 – 9.45 **Christa McArdell**, Eawag, Switzerland
Antibiotics in wastewater treatment and their release into the aquatic environment – a Swiss overview

9.45 – 10.15 **Poster flash presentations**
Gianuario Fortunato, Francisco Cerqueira, Xin-Lin An
Jangwoo Lee, Federica Mauri

10.15 – 10.45 *Coffee break*

Session II Antimicrobial resistance in wastewater and treatment plants

Chair: Célia Manaia

10.45 – 11.15 **Barth Smets**, DTU, Denmark
Transfer and long-term persistence of antimicrobial resistance encoding plasmids in wastewater treatment microbial communities

11.15 – 11.30 **Heike Schmitt**, National Institute for Public Health and the Environment, The Netherlands
Nationwide surveillance reveals frequent detection of carbapenemase-producing Enterobacteriaceae in Dutch wastewater

11.30 – 11.45 **Kimberly Gilbride**, Ryerson University, Canada
Wastewater treatment systems as a model system for studying the dissemination of antibiotic resistance genes among bacteria?

11.45 – 12.00 **Poster flash presentations**
Ayella Maile-Moskowitz, Ishi Keenum, Erik Paulshus

12.00 – 13.15 *Lunch*

13.15 – 14.00 **Posters session** (“Balint” room)

Session II (continued)

14:00 – 14:30 **Timothy LaPara**, University of Minnesota, USA
The fate of antibiotic resistance genes during the treatment and disposal of municipal wastewater solids

14.30 – 14.45 **Rebeca Pallares**, Wetsus, The Netherlands
Rainfall reduces the removal efficiency of antimicrobial resistance genes during wastewater treatment

14:45 – 15.00 **Jian Qiang Su**, Chinese Academy of Sciences, China
Dynamic of antibiotic resistance gene and integron in Chinese sewage treatment plants

15.00 – 15.15 **Gertjan Medema**, KWR, The Netherlands
(presented by **Luc Hornstra**)
Understanding antimicrobial resistance in water systems

15.15 – 15.45 *Coffee break*

Session III

Chair: Amy Pruden

Methods and indicators for resistance tracking

15.45 – 16.15 **Yu Deng**, University of Hong Kong, Hong Kong
*Partnership of *Arthrobacter* and *Pimelobacter* in aerobic degradation of sulfadiazine revealed by metagenomics analysis and isolation*

16.15 – 16.30 **Li Cui**, Chinese Academy of Sciences, China
Deuterium-labelled single-cell Raman spectroscopy for of antibiotic resistant bacteria in aquatic community and rapid antibiotic susceptibility testing

16.30 – 16.45 **Francois Huber**, University of Basel, Switzerland
Fast assessment of antibiotic resistance in bacteria by using nanomechanical arrays

16.45 – 18.15 **Breakout groups** (rooms “Eranos” and “Pioda”)
Tentative topics:
BG1: Assessing the tools for environmental resistance tracking
BG2: Developing recommendations for risk assessment and environmental guidelines

18.30 – 19.30 Guided Monte Verità tour

19.30 *Dinner*

Tuesday, 18. September, 2018

Session IV Wastewater disinfection and other control strategies

Chair: David Graham

- 8.30 – 9.00 **Michael Dodd**, University of Washington, USA
Antibiotic resistance gene fate during (waste)water disinfection processes: degradation, deactivation, and implications for mitigation of antibiotic resistance dissemination
- 9.00 – 9.15 **Matthew Blair**, Virginia Tech, USA
Effect of multiple advanced potable water reuse treatment barriers on microbial community structure and the occurrence of antibiotic resistance genes
- 9.15 – 9.30 **Gabriela Paulus**, KWR, The Netherlands
The effects of on-site hospital WW treatment on ARG prevalence
- 9.30 – 10.00 **Pedro Alvarez**, Rice University, USA
Proliferation and control of multidrug-resistant “Superbugs” in sewage treatment plants
- 10.00 – 10.15 **Poster flash presentations**
Bruno Bicudo Perez, Lian Yang, Nicolas Personnic
- 10.15 – 10.45 *Coffee break*

Session V Dissemination and fate of resistance in aquatic environments (surface and groundwater)

Chair: Helmut Bürgmann

- 10.45 – 11.15 **Gianluca Corno**, Institute of Ecosystem Study, Italy
Ecological theory and the fate of resistances in surface waters
- 11.15 – 11.30 **Carles Borrego**, Catalan Institute for Water Research, Spain
Tales from the underground: seasonal dynamics of antibiotic pollution and antibiotic resistance genes in an alluvial aquifer
- 11.30 – 11.45 **Luc M. Hornstra**, KWR, The Netherlands
ARGs in source water for production of drinking water
- 11.45 – 12.00 **Feng Ju**, Eawag, Switzerland
Tracking antibiotic resistance genes and bacteria from Swiss wastewater to the receiving river ecosystem
- 12.00 – 13.15 *Lunch*

13.15 – 14.00

Posters session and poster removal (“Balint” room)

Session V (continued)

14:00 – 14:30

Andrew Singer, NERC Centre for Ecology & Hydrology, UK
Considerations for assessing AMR risk in the environment

15.00 – 22.30

Excursion and conference dinner a the Island of Brissago

Wednesday, 19. September, 2018

Session VI **Global perspectives and global drivers in aquatic resistance dissemination. Models and prediction**

Chair: Andrew Singer

- 8.30 – 9.00 **Indumathi M. Nambi**, IIT Madras, India
Environmental antimicrobial resistance – the Indian scenario
- 9.00 – 9.15 **Thomas Berendonk**, TU Dresden, Germany
Sewage from airports exhibits high abundance and diversity of antibiotic resistance genes
- 9.15 – 9.30 **Emily Garner**, Virginia Tech, USA
Global survey of the antibiotic “Resistome” in raw sewage versus treated wastewater treatment plant effluent
- 9.30 – 10.00 **David Graham**, Newcastle University, UK
Assessing cost-benefits of different mitigation options for reducing global antibiotic resistance
- 10.00 – 10.15 CSF Award ceremony
- 10.15 – 10.45 *Coffee break*
- 10.45 – 11.45 Breakout groups presentations and discussion
- 11.45 – 12.00 Conclusions and farewell
- 12.00 *Lunch and departure*
- Shuttle to Locarno station available*
Sign up list will be posted at the conference

Posters list

1. Effect of metals contamination in the survival of antibiotic-resistant bacteria and their genes in soil

Gianuario Fortunato, I. Vaz-Moreira, O. C. Nunes and C. M. Manaia

2. Antibiotic resistance genes distribution and microbiomes along the soil-plant continuum in agricultural fields in Catalonia

Francisco Cerqueira, G. Elsinga, L. Hornstra, V. Matamoros, J. Bayona and B. Piña

3. Distinct effects of struvite and biochar amendment on the class 1 integron antibiotic resistance gene cassettes in phyllosphere and rhizosphere

Xin-Li An, Q. L. Chen, D. Zhu and J.Q. Su

4. Impact of wastewater treatment plants on receiving rivers and downstream fate of anthropogenic input of antibiotic resistant bacteria

Jangwoo Lee, F. Ju, K. Beck, and H. Bürgmann

5. Presence of antibiotic resistance genes in Lugano Lake and some tributary rivers

Federica Mauri and A. Demarta

6. International comparison of antibiotic resistance genes from wastewater treatment plant's final effluent and their receiving environment

Ayella Maile-Moskowitz, M. V. Riquelme, E. Garner, D. S. Aga, I. Nambi, J. Larsson, H. Burgmann, T. Zhang, A. Pruden and P. J. Vikesland

7. Comparing antibiotic resistance genes abundance from an international survey of wastewater treatment plant biosolids

Ishi Keenum, E. Garner, D. S. Aga, I. Nambi, J. Larsson, H. Burgmann, T. Zhang, P. J. Vikesland and A. Pruden

8. Antibiotic resistance genes in distinct wastewater outlets in the Oslo area, Norway

Erik Paulshus, S Hashsham, J Tiedje and H Sørum

9. Wastewater healthy reuse and antimicrobial resistance

Bruno Bicudo Pérez, G. Medema, D. Van Halem and G. Ferrero

10. Fate of antibiotic resistance in ozonation and post-ozonation biofilter treatment

Lian Yang, K. Beck, D. Drissner, F. Ju and H. Bürgmann

11. The *L. pneumophila* quorum sensing system promotes persisters formation in infected *A. castellanii*

Nicolas Personnic, E. Lezan, B. Striedning, A. Schmidt and H. Hilbi

12. Polyvalent bacteriophages: emerging opportunities to address growing challenges of the antibiotic resistant bacteria

Pingfeng Yu, J. Mathieu and P. Alvarez

