

## PRELIMINARY PROGRAM

Sun, 13 Aug.	Mon, 14 Aug.	Tue, 15 Aug.	Wed, 16 Aug.	Thu, 17 Aug.
<b>Morning</b>				
<b>Session 1:</b> Natural resistome, selection & evolution	<b>Session 4:</b> AMR/ARG sources, mitigation: terrestrial and agriculture	<b>Session 7:</b> Assessment, mitigation, stewardship; human impact	<b>Session 10:</b> National program or sector outcomes, policy, initiatives	
<b>Coffee Break</b>				
<b>Session 2:</b> ARG genetic linkages, gene/plasmid mobility, HGT	<b>Session 5:</b> ARG/ARG sources, mitigation: water environments	<b>Session 8:</b> Risk scenarios, assessment, modeling	Closing lecture	
<b>Lunch Break</b>				Farewell and Announcements
<b>Session 2:</b> continued	<b>Afternoon</b>			
<b>Session 3:</b> Environmental antibiotic chemistry, bioavailability, metabolism	<b>Session 6:</b> AMR/ARG sources, mitigation: aquaculture, production, hospitals, other	<b>Session 9:</b> Consumer trends, public communication, engagement		
	<b>Coffee Break</b>			
<b>Coffee Break</b>	<b>Poster Session I</b>	<b>Poster Session II</b>	<b>Parallel Roundtables 1-3:</b> Assesment of advances, gaps & path forward for basic knowledge, agricultural sector & water domain	
<b>Early Evening</b> Welcome to EDAR 4				
<b>Opening Lecture</b>				
<b>Evening</b> Welcome Reception			<b>Evening</b> Social Evening	
<b>Key</b>				
Opening/Closure	Session	Poster Session	Social Program	Break

## GENERAL INFORMATION

**Venue**  
Kellogg Hotel & Conference Center  
Michigan State University  
219 S Harrison Rd  
East Lansing, MI 48824  
United States

**Date**  
13–17 August 2017

Conference Homepage  
[www.antibiotic-resistance.de](http://www.antibiotic-resistance.de)



**Conference Chairs**  
James M. Tiedje  
Director, Center for Microbial Ecology  
University Distinguished Professor of Plant, Soil and Microbial Sciences, and of Microbiology and Molecular Genetics  
Michigan State University

Shannon Manning  
University Foundation Professor of Microbiology and Molecular Genetics  
Michigan State University

### International Scientific Committee

- Kimberly L. Cook (US)
- Chase Crawford (US)
- Joakim Larsson (SE)
- Shannon Manning (US)
- Jean E. McLain (US)
- Amy Pruden (US)
- Kornelia Smalla (DE)
- Jason R. Snape (GB)
- James M. Tiedje (US)
- Ed Topp (CA)
- Elizabeth Wellington (GB)
- Tong Zhang (CN)
- Yong-Guan Zhu (CN)

### Professional Congress Organizer

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### Confirmed Invited Speakers (continuously updated)

- Lisa Durso (Lincoln, NE/US)
- Michael Gillings (Sydney/AU)
- Rai Kookana (Glen Osmond/AU)
- Joakim Larsson (Göteborg/SE)
- Ramanan Laxminarayan (Washington D.C., WA/US)
- Céilia Manaia (Porto/PT)
- Amy Pruden (Blacksburg, VA/US)
- Andrew Singer (Wallingford/GB)
- Kornelia Smalla (Braunschweig/DE)
- Jason Snape (Cheshire/GB)
- Ed Topp (London/CA)
- Marko Virta (Helsinki/FI)
- Tong Zhang (Hong Kong/CH)



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# EDAR 4

4<sup>th</sup> INTERNATIONAL SYMPOSIUM ON THE ENVIRONMENTAL DIMENSION OF ANTIBIOTIC RESISTANCE

# 13–17 AUG 2017

LANSING, MICHIGAN • UNITED STATES

MICHIGAN STATE UNIVERSITY



**Call for Abstracts & Preliminary Program**

Michigan State Capitol Building

## WELCOME NOTE



Dear Colleagues,

The threat of antibiotic resistant pathogens has long been recognized, at least by scientists, but only recently has the threat of multidrug resistant strains become broadly recognized to motivate action by leaders in governments as well as by the public. Necessary action includes research to define the scope of the problem including its various sources, the impacts of current practices in the different use sectors, assessment of the global nature of the problem, and identifying mitigation and stewardship practices.

EDAR-1, held in Canada in 2012, was a stimulating international effort to address the environmental aspect of this problem, which continued with EDAR-2 in China in 2013 and with EDAR-3 in Germany in 2015. These meetings have grown in size and interest as they enabled the international exchange of research findings. Addressing the environmental aspect of antimicrobial resistance, as a complement to efforts in the medical arena, helps ensure that all critical aspects of the problem are addressed and treated holistically.

Many of the expanded global research programs will be reaching the first stage of maturity in 2017 making the EDAR-4 meeting very timely for sharing research outcomes as well as identifying the next stage needs to protect public health. To meet these goals, the program is divided into three sections with day 1 focused on the advances in the fundamental aspects of AMR; day 2, on the advances in characterizing sources and mitigation in different use sectors, day 3 on human impact, risk assessment, and consumer trends, and day 4 to close the meeting with national programs and policy directions.

We hope that you will join EDAR-4 to discuss the most recent research progress and their implications for human health and look forward to welcoming you to Michigan State University August 13-17, 2017.



James M. Tiedje  
Conference Chair



Shannon Manning  
Conference Co-Chair

## CALL FOR ABSTRACTS

### Abstract Submission

We cordially invite you to submit your abstracts (length max. 2,000 characters) online at [www.antibiotic-resistance.de](http://www.antibiotic-resistance.de) to the following topics.

Abstracts must be submitted in English **by 14 April 2017**.

An international review panel will evaluate all abstracts according to scientific content and suitability for EDAR. A limited number will be accepted for oral or poster presentations.

Note: The topic descriptions are meant to help assigning your abstract to the adequate session.

### BASIC SCIENCE UNDERPINNING AMR

1. Natural resistome, selection and evolution
  - Natural reservoirs of ARGs, MGEs in ocean, soil, any native biota
  - Selection, co-selection, low concentrations
  - Evolutionary change, adaptations
  - Bioinformatic or experimental studies aimed at new ARG discovery
2. ARG genetic linkages, gene/plasmid mobility, HGT
  - Plasmid ecology
  - Gene mobility
  - Metagenomic assembly, long reads
  - Bioinformatics tools, databases, ARG nomenclature
  - Single cell analyses
3. Environmental antibiotic chemistry, bioavailability, metabolism
  - Environmental conditions for selection
  - Fate and transport of antibiotics
  - Antibiotic residues in different environments and resource settings

### ADVANCES IN CHARACTERIZING ENVIRONMENTAL SOURCES, CONSEQUENCES, STEWARDSHIP AND/OR MITIGATION

4. AMR/ARG sources, mitigation: terrestrial and agriculture
  - Animal agriculture, and at different scales and resource settings
  - Wildlife, pets
  - Manure management, treatment, AMR ecology in manures
  - Horticultural uses
  - ARG cycling via animal worker

## CALL FOR ABSTRACTS

5. ARG/ARG sources, mitigation: water environments
  - Wastewater treatment
  - Drinking water
  - Recycled water
  - Streams, sediments, estuaries
6. AMR/ARG sources, mitigation: aquaculture, production, hospitals, other
  - Caged fish, shellfish
  - Industrial production, formulation, shipping
  - Medical uses and disposal in different resource settings

### LARGER SCALE STUDIES, HUMAN IMPACT, RISK, CONSUMER ENGAGEMENT

7. Assessment, mitigation, stewardship; human impact
  - Updates on multidrug resistant strains (superbugs) of environmental relevance, lessons learned
  - Farm to fork AMR/food safety studies, outcome to humans
  - Implementation of One-Health concepts
8. Risk scenarios, assessment, modeling
  - Quantitative risk assessment, directions
  - Examples of risk evaluation and/or stewardship approaches in low and middle-income countries
  - Modeling evaluating fate, exposure, paths
9. Consumer trends, public communication, engagement
  - Studies of AMR and the consumer
  - Communicating AMR, stewardship to the producer, consumer

### PROGRAM/POLICY DIRECTIONS

10. National program, sector outcomes, policy, initiatives
  - Larger scale studies by animal, fish, water treatment industry, etc. to evaluate mitigation method
  - Outcomes from national programs to minimize AMR risk
  - Regulatory, incentive perspectives, outcomes