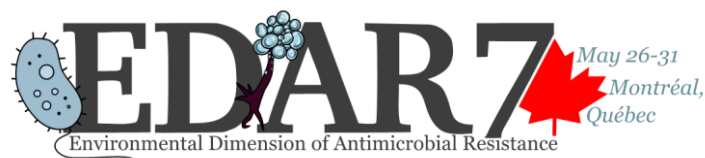


WORKSHOP IN SHORT	
Title of workshop	New detection methods for AMR in managed agriculture and environment
Organizers of workshop (2-3) For each organizer: - Name - Affiliation - URL - Short bio - Identify two contacts with an Asterix	<p>Prof Zhugen Yang*, Cranfield University, UK: He is a Professor in Biosensing and Environmental Health at Cranfield University in the UK, focusing on the development of rapid and low-cost and rapid sensors and microfluidics device for human and environmental health. He is leading the Anglo-Canadian Collaboration on Antimicrobial resistance (ACCAMR), focused on address the global challenge of antimicrobial resistance (AMR). Specifically, the initiative targets managed agricultural environments, which may be key sources of AMR, impacting receiving environments, livestock and humans through a variety of pathways, aligning with the One Health Concept. https://www.cranfield.ac.uk/people/professor-zhugen-yang-23276478</p> <p>Dr Andrew Singer, UK CEH, UK. He is a pollution scientist with research interests focused on understanding its effects on microbial ecology, ecosystem function and human health. https://www.ceh.ac.uk/staff/andrew-singer</p> <p>Prof Xin Zhao*, McGill University, Canada. His research programs focus on the interaction between hosts and micro-organisms (pathogenic bacteria in mastitis and commensal bacteria in poultry gut). One of his research projects is working on antibiotic-resistance in bacteria from dairy farms and poultry farms. He is co-leading ACCAMR https://www.mcgill.ca/animal/staff/zhao</p>
Proposed speakers For each speaker: - Status (pending invitation, confirmed) - Name - Affiliation - URL	<ul style="list-style-type: none"> • Prof Peter Vikesland, Virginia Tech, USA https://cee.vt.edu/people/faculty/pvikes.html • Prof Zhugen Yang, Cranfield University, UK; https://www.cranfield.ac.uk/people/professor-zhugen-yang-23276478 • Prof Caroline Duchaine, Canada Research Chair on bioaerosols, Laval University, www.bioaerosols.ulaval.ca • Amir Sanati Nezhad, Calgary University, https://www.ucalgary.ca/integrated-concussion-research-program/about/icrp-team/amir-sanati-nezhad
Summary (150 words max)	<p>Although AMR has attracted increasing attention, the mechanisms for AMR spread among bacteria, fungi, parasites and viruses between sources is very complex and poorly understood. Certain routes of AMR transmission can occur between the environment, humans, and animals. Managed agricultural environments may be key sources of AMR, impacting receiving environments, livestock and humans through a variety of pathways.</p> <p>This workshop aims to tackle these challenges by taking a transdisciplinary approach to understand the complexity and diversity of AMR sources, pathways, and receptors in managed agricultural environments, including biosensing, microfluidics, molecular method and big data, associated with a UK-Canada BBSRC funded project involved world-leading universities and institutes from both the UK and Canada as well as from other countries.</p> <p>It will bring together inter disciplinary scientists to discuss and brain storm on AMR challenges being faced in Canada and UK and draw synergies and bespoke approaches and align this to proposed techniques such as biosensing, microfluidics, and point-of-use sensors. These will inform the development, and prioritization of interventions, to reduce environmental AMR and transmission from environments to humans, from one health perspective.</p>



Importance for the EDAR community (100 words max)	<p>This workshop provides an opportunity to advance science in collaboration with global scientists and relevant stakeholders (e.g., policy makers) to aid in their understanding of AMR issues and novel technologies being developed to monitor AMR. This opportunity will allow EDAR to broaden their scientific knowledge (e.g., biosensing and microfluidic as an alternative monitoring method) to develop new methods and novel insights. It is expected that such workshop will lead to substantial new ideas to tackle critical research questions in the field of AMR and foster new international collaboration.</p>									
AUDIENCE										
Target audience	<p>Academics, engineers, and industry in the area of microbiology, environmental scientists, biosensing and microfluidics, data scientists. We also plan to invite early career researchers for a flash presentation showcasing their work and providing them with the opportunity to exchange ideas with world-leading experts in AMR.</p>									
Estimated number of participants	<p>60-80</p>									
WORKSHOP CONTENT										
Rationale, objectives and outputs of workshop (300 words max)	<p>Biosensing, biotechnologies and microbial systems provide a range of environmental protection and bioremediation services, forming the basis for some of the world's largest industries across the Water-Food-Soil nexus. Development of such systems to date has been largely empirical and incremental, but the pace is changing in response to the need to match expanding global demand. There are also new challenges to address, ranging from the emergence or re-emergence of diseases due to antimicrobial resistance to the dissemination of drug-resistant pathogens.</p> <p>The current revolution in biological and analytical sciences is creating tools that give unprecedented insights into AMR issues from genetic to community level, and into factors that can potentially be used to control and mitigate the spread of AMR in the environment. At the same time, new approaches allow enhanced measurement and modelling of AMR spread in the environment; while advances in materials science and separation technologies offer the potential for selectively detecting antimicrobial-resistant pathogens to inform mitigation strategies. These developments thus offer a chance to optimize detection and quantification methods as well as monitoring and mitigation. Successful exploitation of these opportunities depends, however, on bringing together knowledge of the underlying science with the ability to apply this in field-scale systems, which must meet both societal expectations and increasingly stringent economic and environmental requirements.</p> <p>The aim of ACCAMR is thus to develop and strengthen links between advanced molecular and applied microbiology, engineering, and systems optimization to maximize the societal impacts and benefits. Its overall goal is to take fundamental discovery science towards practical application in key areas of the human/environment interface and AMR.</p>									
Tentative Schedule	<table border="1" style="width: 100%;"> <tr> <td colspan="2" data-bbox="462 1787 1423 1821"> Tentative programme </td> </tr> <tr> <td data-bbox="462 1821 758 1883"> 13.45 – 13.50 </td> <td data-bbox="758 1821 1423 1883"> Overview of the project and workshop – Zhugen Yang & Xin Zhao </td> </tr> <tr> <td data-bbox="462 1883 758 2011"> 13:50 – 14:20 </td> <td data-bbox="758 1883 1423 2011"> Session 1: Chair Xin Zhao Prof Peter Vikesland, Virginia Tech, USA </td> </tr> <tr> <td data-bbox="462 2011 758 2047"> 14:20 – 14:50 </td> <td data-bbox="758 2011 1423 2047"> Prof Zhugen Yang, Cranfield University, UK; </td> </tr> </table>		Tentative programme		13.45 – 13.50	Overview of the project and workshop – Zhugen Yang & Xin Zhao	13:50 – 14:20	Session 1: Chair Xin Zhao Prof Peter Vikesland , Virginia Tech, USA	14:20 – 14:50	Prof Zhugen Yang , Cranfield University, UK;
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	14:50 – 15.30	<p>Panel Discussion 1 - Chair: Xin Zhao</p> <p>Panelist:, Frederic Coulon, Andrew Singer, Ruben Sakrabani, industry delegate (TBC)</p> <ul style="list-style-type: none"> • Understanding AMR in managed agricultural environments • Human exposure and transmission risks
	15.30-16.00	Coffee break
	16.00 – 16.30	<p>Session 2: Chair Zhugen Yang Prof Caroline Duchaine, Canada Research</p>
	16.30 – 17.00	Amir Sanati Nezhad, Calgary University
	17:00 – 17:40	<p>Panel Discussion 2 - Chair: Zhugen Yang</p> <p>Panelist: Yong-Guan Zhu, Amir Sanati Nezhad, Anna Leonard, industry delegate (TBC)</p> <ul style="list-style-type: none"> • Emerging and novel technologies for AMR detection • Mechanisms of transfer and risk mitigation measure
	17.40 – 18.00	<p>Q&A, and Wrap up</p> <p>Andrew Singer, Xin Zhao, Zhugen Yang</p>
<p>What outcome do you expect to result from the workshop (impact) (200 words max)</p>	<p>Sponsored by UK-Canada ACCAMR project, this workshop will provide a stimulus for developing solutions for understanding and mitigating AMR issues in the environment leading to new technologies and approaches. It will provide opportunities for young researchers and professionals to interact across discipline areas, building collaborative partnerships for the future. The result will be the establishment of a unified community in the field of environmental biotechnology, with outreach to other groups both nationally and internationally, which help to develop an international team in the forefront in this rapidly developing area, and eventually benefit to the global AMR community.</p>	