



## 9- Month PhD Report September 2020

**WILBR**

Responsible Partner: Animal and Plant  
Health Agency, UK

## 1. Progress of the research performed in the PhD project and key scientific results

Due to the Covid-19 pandemic in UK and due to the March start of this PhD, only desk based tasks have commenced. A literature review is currently being undertaken on the role of wild birds in dissemination and persistence of antimicrobial resistance (AMR) in the farm environment. The review includes sections on identifying the current situation regarding AMR in different environments; what is currently known about wild birds in relation to carriage and dissemination of AMR; and evaluation of different methodologies for identifying AMR, both by phenotype and genotype, in bacteria.

Due to Covid-19 restrictions we have not been able to recruit outdoor farms for this study. Hence, faecal samples have not been collected or processed from pigs or wild birds present on farm. However, some historical *E. coli* isolated from gull faeces, collected from an outdoor pig farm, during a longitudinal study in the Oh-EJP project ARDIG are being considered for inclusion in this PhD project as a result of the delays caused by COVID-19. Further to this an opportunity has presented itself for examining the role of corvids in disseminating AMR on a pig farm, which is currently being pursued.

A poster was submitted to the OHEJP ASM 2020 meeting, and an oral presentation on the PhD was presented virtually in the 3MT competition for the OHEJP AGM 2020, as part of communicating their research. The student also took part in a workshop at University of Surrey on microbiomes in order to learn from other institutes taking part in metagenomic research, which may be included later on in the WILBR project. The student has also attended the One Health EJP Summer School on Global One Health and the EJP FULL FORCE Plasmid Analysis workshop in order to further develop their skill set for tasks later on in the project.

## 2. Progress of the research project: milestones and deliverables

### Deliverables

PhD Project Reference	Deliverable number	Deliverable name	Delivery date from Annual Work Plan	Actual Delivery Date	If not achieved: Forecast achievement date	Comments
WILBR	1	Literature review of contribution of wild birds to AMR in the farm environment	M32		M33	
WILBR	2	Completion of 9 month review	M33	M33		

## Milestones

PhD Project Reference	Milestone number	Milestone name	Delivery date from Annual Work Plan	Achieved (Yes / No)	If not achieved: Forecast achievement date	Comments
WILBR	1	Completion of literature review	M32	No	M33	
WILBR	2	Recruitment of farms for longitudinal study	M33	No	M35	Delayed due to impact of COVID-19
WILBR	4	Completion of 9 month review	M33	Yes		

### 3. Publications and patents

No publications or patents

### 4. Impact & relevance

The supervisory team brings together leading experts in veterinary, wildlife and environmental AMR, with expertise spanning veterinary and molecular microbiology, bioinformatics, microbial ecology and evolution, as well as wildlife disease.

William Gaze is working with the United Nations Environment Project on AMR in the environment, having recently authored the UNEP Frontiers report on AMR and the environment. He is currently located within two interdisciplinary units, Exeter's Centre for Environment and Human health, and the Environmental and Sustainability Institute, which is also part of the University of Exeter

Beside his work as a researcher within SVA, Stefan Börjesson is involved in the Swedish AMR monitoring program and is also a senior lecturer in clinical microbiology with an emphasis on AMR in a One-health perspective at Linköping University at the Department of Clinical and Experimental Medicine.

Muna Anjum leads the Bacterial Characterisation Workgroup and is the AMR Research Lead at the APHA working at the interface of molecular and veterinary microbiology, within the One Health remit. As lead for the AMR research, she is also involved in supporting national AMR surveillance activities and APHA's response to national outbreaks, and identifying new and emerging threats. She is a member of the DEFRA Antimicrobial Resistance Coordination Group, which advises and reviews the DEFRA activities on antimicrobial usage in animals and AMR in microorganisms from feedstuffs, animals and food, the APHA lead for the Defra AMR in the Environment group, and works closely with colleagues in Public Health England in various research projects and national activities.

### 5. Follow-up of the recommendations and comments in previous review(s) by the Ethics Advisors

Please clearly explain the actions and measures that have been taken to comply with these the recommendations you received from the Ethics Advisors (if applicable).

Requirement (from ethical reviewers)	Measures and actions taken
The beneficiary must confirm that appropriate health and safety procedures conforming to relevant local/national guidelines/legislation are followed for staff involved in this project.	The student will receive extensive training in microbiological procedures that will be carried out, and is required to read and work to the standards stipulated within APHA risk assessments when going on farm surveys and carrying out microbiological testing. Farm surveys will be undertaken alongside other scientists/vets.
Please comment on any implications for the animal. Please state the 3Rs aspects of this work. Please describe how the animals' welfare are protected and considered	Faecal samples will be collected directly from the ground and farm environment; therefore no direct animal handling is required and is outside of the Animal (Scientific Procedures) Act <a href="#">1986</a> . Animal welfare on farm is covered by the animal welfare act <a href="#">2006</a> , and additional controls are required by other farm assurance schemes, which pig farms also adhere to.

## 6. Impact of COVID-19 crisis on the project

Tasks or Subtasks			Milestones and Deliverables				Associated budget	
Name of Task or Subtask	End date according to AWP 2020	Expected end date due to crisis	Associated Milestone or Deliverable	Deadline according to AWP 2020	New proposed deadline	Reason for delay	Budget that will not be spent	Budget that will be spent with delay
			2	M33	M35	COVID-19	not yet known	not yet known

### Comments:

The project has been delayed by COVID-19 as the student by this point should have been recruiting farms in preparation for longitudinal sampling. The recruitment and sampling have both been delayed and if these restrictions persist it may have a major impact on the proposed PhD. The original plan was to sample across five time points in three years, (2x first year, 2x second year, 1 x third year) but this is unlikely to happen as a result of COVID-19. A new estimated completion date is hard to predict, as it is reliant on external factors, such as lockdown restrictions being lifted to allow access to the farms.

## 7. List of critical risks

Description of risk	Yes/No
Loss of PhD supervisor(s)	No
Loss of technical training staff delaying progress of the work	No
Delay in work plan execution	Yes
Conflicts between the collaborative partners that support the PhD	No
Lack of commitment between the collaborative partners that support the PhD	No
Delay in duties, tasks or reporting	No
Poor working relationships within the PhD project team	No
Change in PhD student circumstances requiring temporary leave	No
Other risks (please describe)	None

### Additional information:

## 8. Interactions with on-going JRPs/JIPs or with external (EU or national) relevant projects or initiatives such as national action plans (AMR, Zoonoses etc.), national and international surveillance programmes.

Possibility of collaboration with FARMED EJP project as both have a desire to use Hi-C technology.

This PhD overlaps with the ARDIG project, where wild birds on farm have already been sampled.

There will be possible collaboration with FULL FORCE EJP project as some samples collected during the PhD will be used for this project.

## 9. List of dissemination and communication activities

<b>Name of the activity:</b>	Animal Microbiome Workshop		
<b>Date:</b>	28/02/2020		
<b>Place:</b>	University of Surrey		
<b>Specify the Dissemination and Communication activities linked to the One Health EJP project for each of the following categories</b>			
	Yes / No		Yes / No
Organisation of a Conference		Participation to a Conference	
Organisation of a Workshop		Participation to a Workshop	Yes
Press release		Participation to an Event other than a Conference or a Workshop	
Non-scientific and non-peer-reviewed publication (popularised publication)		Video/Film	
Exhibition		Brokerage Event	
Flyer		Pitch Event	
Training		Trade Fair	
Social Media		Participation in activities organized jointly with other H2020 projects	
Website		Other	
Communication Campaign (e.g. Radio, TV)			
<b>Specify the estimated number of persons reached, in the context of this dissemination and communication activity), in each of the following categories</b>			
	Number		Number
Scientific Community (Higher Education, Research)	27	Media	
Industry	1	Investors	
Civil Society		Customers	
General Public		Other	
Policy Makers			



<b>Name of the activity:</b>	One Health EJP AGM 2020		
<b>Date:</b>	27-29/04/2020		
<b>Place:</b>	Online		
<b>Specify the Dissemination and Communication activities linked to the One Health EJP project for each of the following categories</b>			
	Yes / No		Yes / No
Organisation of a Conference		Participation to a Conference	Yes
Organisation of a Workshop		Participation to a Workshop	
Press release		Participation to an Event other than a Conference or a Workshop	
Non-scientific and non-peer-reviewed publication (popularised publication)		Video/Film	
Exhibition		Brokerage Event	
Flyer		Pitch Event	
Training		Trade Fair	
Social Media		Participation in activities organized jointly with other H2020 projects	
Website		Other	
Communication Campaign (e.g. Radio, TV)			
<b>Specify the estimated number of persons reached, in the context of this dissemination and communication activity), in each of the following categories</b>			
	Number		Number
Scientific Community (Higher Education, Research)	all who attended the online conference	Media	
Industry		Investors	
Civil Society		Customers	
General Public		Other	
Policy Makers			

<b>Name of the activity:</b>	One Health EJP Summer School		
<b>Date:</b>	17-28/08/2020		
<b>Place:</b>	Online		
<b>Specify the Dissemination and Communication activities linked to the One Health EJP project for each of the following categories</b>			
	Yes / No		Yes / No
Organisation of a Conference		Participation to a Conference	
Organisation of a Workshop		Participation to a Workshop	
Press release		Participation to an Event other than a Conference or a Workshop	Yes
Non-scientific and non-peer-reviewed publication (popularised publication)		Video/Film	
Exhibition		Brokerage Event	
Flyer		Pitch Event	
Training		Trade Fair	
Social Media		Participation in activities organized jointly with other H2020 projects	
Website		Other	
Communication Campaign (e.g. Radio, TV)			
<b>Specify the estimated number of persons reached, in the context of this dissemination and communication activity), in each of the following categories</b>			
	Number		Number
Scientific Community (Higher Education, Research)	all who attended the online conference	Media	
Industry	30	Investors	
Civil Society		Customers	
General Public		Other	
Policy Makers			

<b>Name of the activity:</b>	One Health EJP FULL FORCE Plasmid Analysis Workshop		
<b>Date:</b>	07-08/09/2020		
<b>Place:</b>	Online		
<b>Specify the Dissemination and Communication activities linked to the One Health EJP project for each of the following categories</b>			
	Yes / No		Yes / No
Organisation of a Conference		Participation to a Conference	
Organisation of a Workshop		Participation to a Workshop	Yes
Press release		Participation to an Event other than a Conference or a Workshop	
Non-scientific and non-peer-reviewed publication (popularised publication)		Video/Film	
Exhibition		Brokerage Event	
Flyer		Pitch Event	
Training		Trade Fair	
Social Media		Participation in activities organized jointly with other H2020 projects	
Website		Other	
Communication Campaign (e.g. Radio, TV)			
<b>Specify the estimated number of persons reached, in the context of this dissemination and communication activity), in each of the following categories</b>			
	Number		Number
Scientific Community (Higher Education, Research)	all who attended the online conference	Media	
Industry	30	Investors	
Civil Society		Customers	
General Public		Other	
Policy Makers			