**WOAH Reference Laboratory Reports Activities 2022**

**Activities in 2022**

This report has been submitted: 28 février 2023 15:26

**Laboratory Information**

<table>
<thead>
<tr>
<th>Name of disease (or topic) for which you are a designated WOAH Reference Laboratory:</th>
<th>Antimicrobial Resistance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address of laboratory:</td>
<td>Animal and Plant Health Agency, New Haw, Addlestone, Weybridge, Surrey, KT15 3NB, UNITED KINGDOM.</td>
</tr>
<tr>
<td>Tel.:</td>
<td>+443000600023</td>
</tr>
<tr>
<td>E-mail address:</td>
<td><a href="mailto:christopher.teale@apha.gov.uk">christopher.teale@apha.gov.uk</a></td>
</tr>
<tr>
<td>Website:</td>
<td><a href="http://apha.defra.gov.uk/apha-scientific/index.htm">http://apha.defra.gov.uk/apha-scientific/index.htm</a></td>
</tr>
<tr>
<td>Name (including Title) of Head of Laboratory (Responsible Official):</td>
<td>Mr David Holdsworth CEO, Animal and Plant Health Agency.</td>
</tr>
<tr>
<td>Name (including Title and Position) of WOAH Reference Expert:</td>
<td>Dr Christopher Teale MRCVS, Head of Antimicrobial Resistance.</td>
</tr>
<tr>
<td>Which of the following defines your laboratory? Check all that apply:</td>
<td>Veterinary Surveillance Governmental Research agency</td>
</tr>
</tbody>
</table>

**TOR1: Diagnostic Methods**

1. Did your laboratory perform diagnostic tests for the specified disease/topic for purposes such as disease diagnosis, screening of animals for export, surveillance, etc.? (Not for quality control, proficiency testing or staff training)

   Yes

<table>
<thead>
<tr>
<th>Diagnostic Test</th>
<th>Indicated in WOAH Manual (Yes/No)</th>
<th>Total number of test performed last year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indirect diagnostic tests</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>NO</td>
<td>0</td>
</tr>
<tr>
<td>Direct diagnostic tests</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

WOAH Reference Laboratory Reports Activities 2022
### TOR2: REFERENCE MATERIAL

2. Did your laboratory produce or supply imported standard reference reagents officially recognised by WOAH?
   
   No

3. Did your laboratory supply standard reference reagents (nonWOAH-approved) and/or other diagnostic reagents to WOAH Members?
   
   Yes

<table>
<thead>
<tr>
<th>TYPE OF REAGENT AVAILABLE</th>
<th>RELATED DIAGNOSTIC TEST</th>
<th>PRODUCED/ PROVIDE</th>
<th>AMOUNT SUPPLIED NATIONALLY (ML, MG)</th>
<th>AMOUNT SUPPLIED INTERNATIONALLY (ML, MG)</th>
<th>NO. OF RECIPIENT WOAH MEMBER COUNTRIES</th>
<th>COUNTRY OF RECIPIENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antibiotic discs, MIC test plates</td>
<td>Disc diffusion and MIC susceptibility tests</td>
<td>Provided</td>
<td>NA</td>
<td>NA</td>
<td>1</td>
<td>Africa</td>
</tr>
</tbody>
</table>

4. Did your laboratory produce vaccines?
   
   Not applicable

5. Did your laboratory supply vaccines to WOAH Members?
   
   Not applicable

### TOR3: NEW PROCEDURES

6. Did your laboratory develop new diagnostic methods for the designated pathogen or disease?
   
   Yes

<table>
<thead>
<tr>
<th>NAME OF THE NEW TEST OR DIAGNOSTIC METHOD DEVELOPED</th>
<th>DESCRIPTION AND REFERENCES (PUBLICATION, WEBSITE, ETC.)</th>
</tr>
</thead>
</table>

7. Did your laboratory validate diagnostic methods according to WOAH Standards for the designated pathogen or disease?
   
   No

8. Did your laboratory develop new vaccines for the designated pathogen or disease?
   
   No

9. Did your laboratory validate vaccines according to WOAH Standards for the designated pathogen or disease?
   
   No

### TOR4: DIAGNOSTIC TESTING FACILITIES

10. Did your laboratory carry out diagnostic testing for other WOAH Members?
    
    No

11. Did your laboratory provide expert advice in technical consultancies on the request of an WOAH Member?
    
    WOAH Reference Laboratory Reports Activities 2022
**TOR5: COLLABORATIVE SCIENTIFIC AND TECHNICAL STUDIES**

12. Did your laboratory participate in international scientific studies in collaboration with WOAH Members other than the own?  
Yes

<table>
<thead>
<tr>
<th>Title of the study</th>
<th>Duration</th>
<th>PURPOSE OF THE STUDY</th>
<th>PARTNERS (INSTITUTIONS)</th>
<th>WOAH MEMBER COUNTRIES INVOLVED OTHER THAN YOUR COUNTRY</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMR in Salmonella in Wild Birds</td>
<td>2 years</td>
<td>Occurrence and AMR of Salmonella in Wild Birds.</td>
<td>Bangladesh Livestock Research Institute</td>
<td>BANGLADESH</td>
</tr>
<tr>
<td>AMR in Enterobacterales</td>
<td>2 years</td>
<td>Antimicrobial susceptibility</td>
<td>University of Ibadan, University of Jos</td>
<td>NIGERIA</td>
</tr>
<tr>
<td>AMR in Salmonella</td>
<td>2 years</td>
<td>Susceptibility of Salmonella</td>
<td>University of Accra</td>
<td>DOMINICA</td>
</tr>
</tbody>
</table>

**TOR6: EPIZOOLOGICAL DATA**

14. Did your Laboratory collect epidemiological data relevant to international disease control?  
Yes

IF THE ANSWER IS YES, PLEASE PROVIDE DETAILS OF THE DATA COLLECTED:

Antimicrobial resistance data covering zoonotic bacteria and commensal bacteria occurring in animals and veterinary bacterial pathogens.

15. Did your laboratory disseminate epidemiological data that had been processed and analysed?  
Yes

IF THE ANSWER IS YES, PLEASE PROVIDE DETAILS OF THE DATA COLLECTED:

Surveillance and monitoring of AMR in zoonotic bacteria (Salmonella, Campylobacter), indicator bacteria (E. coli and enterococci) and veterinary pathogens from animals.

16. What method of dissemination of information is most often used by your laboratory? (Indicate in the appropriate box the number by category and list the details in the box)

a) Articles published in peer-reviewed journals:

12  
Dierijx C; Borjesson S; Perrin-Guyomard A; Haenni M; Norstrom M; Divon HH; Karinllag H; Granier SA; Hammerum A; Kjeldgaard JS; Pauly N; RANDALL L; ANJUM MF; Smialowska A; Franco A; Veldman K; Slettemeas JS (2022)
A European multicenter evaluation study to investigate the performance on commercially available selective agar plates for the detection of carbapenemase producing Enterobacteriaceae.
Journal of Microbiological Methods 193, 106418.
https://doi.org/10.1016/j.mimet.2022.106418

Larsen J; Raisen CL; Ba X; Sadgrove NJ; Padilla-Gonzalez GF; Simmonds MSJ; Loncaric I; Kerschner H; Apfalter P; Hart R; Deplano A; Vandendriessche S; Balfoiaka BC; Hulva P; Arendrup MC; Hare RK; Barnadaz C; Stegger M; Sieber RN; Sov RL; Petersen A; Angen O; Rasmussen SL; Espinosa-Gongora C; Aarestrup FM; Lindholm LJ; Nykasenoja SM; Laurent F; Becker K; Walther B; Kehrenberg C; Cuny C; Layer F; Werner G; Witte W; Stamm I; Morani P; Jorgensen HJ; de Lencastre H; Cercenado E; Garcia-Garrote F; Borjesson S; Haeugmann S; Perreter V; TEALE CJ; Waller AS; Pichon B; Curran MD; Ellington MJ; Welch JI; Peacock SJ; Seilly DJ; Morgan FJE; Parkhill J; Hadjiriin NF; Lindsay JA; Holden MTG; Edwards GF; Foster G; Paterson GK; Didelot X; Holmes MA; Harrison EM; Larsen AR (2022)
Emergence of methicillin resistance predate the clinical use of antibiotics.
Nature 602 (7895) 135-141.
https://doi.org/10.1038/s41586-021-04265-w

EFSA Panel on Biological Hazards (BIOHAZ); Koutsoumanis K; Allende A; Alvarez-Ordonez A; Bolton D; Bover-Cid S; Chemaly M; DAVIES R; De Cesare A; Herman L; Hilbert F; Lindqvist R; Nauta M; Ru G; Simmons M; Skandamis P; Suffredini E; Arguello H; Berendonk T; Cavaco LM; Gaze W; Schmitt H; Topp E; Guerra B; Liebana E; Stella P; Peixe L (2021)
Role played by the environment in the emergence and spread of antimicrobial resistance (AMR) through the food chain.
EFSA Journal 19 (6) e06651.
https://doi.org/10.2903/j.efsa.2021.6651

MARTELLI F; ABUOUN M; CAWTHRAW S; STOREY N; TURNER O; Ellington M; Nair S; Rainset A; TEALE C; ANJUM MF (2022)
Detection of the transferable tigecycline resistance gene tet(X4) in Escherichia coli from pigs in the United Kingdom (letter).
Journal of Antimicrobial Chemotherapy 77 (3) 846-848.
https://doi.org/10.1093/jac/dkab439

MCCARTHY C; Viel A; GAVIN C; Sanders P; SIMONS RRL (2022)
Estimating the likelihood of ESBL-producing E. coli carriage in slaughter-aged pigs.
Microbial Risk Analysis 20, 100185.
https://doi.org/10.1016/j.mran.2021.100185

High prevalence of vancomycin non-susceptible and multi-drug resistant enterococci in farmed animals and fresh retail meats in Bangladesh Vet Res Commun. 2022. DOI: 10.1007/s11259-022-09906-7

STOREY N; CAWTHRAW S; TURNER O; RAMBALDI M; LEMMA F; HORTON R; RANDALL L; DUGGETT NA; ABUOUN M; MARTELLI F; ANJUM MF (2022)
Use of genomics to explore AMR persistence in an outdoor pig farm with low antimicrobial usage.
Microbial Genomics 8 (3) 000782.
https://doi.org/10.1099/mgen.0.000782

Alikhan N-F; Moreno LZ; Castellanos LR; Chattaway MA; McLachlin J; Lodge M; O’Grady J; Zamudia R; Doughty E; PETROVSKA L; Cunha MPV; Knobl T; Moreno AM; Mather AE (2022)
Dynamics of Salmonella enterica and antimicrobial resistance in the Brazilian poultry industry and global impacts on public health.
Plos Genetics 18 (6) e1010174.
https://doi.org/10.1371/journal.pgen.1010174

OLORUNLEKE S O; KIRCHNER M; DUGGETT N; ABUOUN M; Okorie-Kanu O; Stevens K; CARD R M; Chah K F; Nwanta J A; Brunton L A;
Molecular characterization of extended spectrum cephalosporin resistant Escherichia coli isolated from livestock and in-contact humans in Southeast Nigeria.

Frontiers in Microbiology 13 937968. https://dx.doi.org/10.3389/fmicb.2022.937968

Samad MA; Sagor M S; Hossain M S; Karim M R; Mahmud M A; Sarker M S; Shownaw F A; Mia Z; CARD R M; Agunos A; Johanna L (2022)
High prevalence of vancomycin non-susceptible and multi-drug resistant enterococci in farmed animals and fresh retail meats in Bangladesh.
Veterinary Research Communications 46 (3) 811-822. https://doi.org/10.1007/s11259-022-09906-7

Light E; Baker-Austin C; CARD R M; Ryder D; Alves M T; Al-Sarawi A; Abdulla K H; Stahl H; Al-Ghabshi A; Alghoribi M F; Balkhy H H; Joseph A; Hughes A; LeQuene W J F; Verner-Jeffreys D W; Lyons B P (2022)
Establishing a marine monitoring programme to assess antibiotic resistance: a case study from the Gulf Cooperation Council (GCC) region.

Mellor K C; Blackwell G A; CAWTHRAW S A; MENSAAH N E; Reid S W J; Thomson N R; PETROVSKA L; Mather A E (2022)
Contrasting long-term dynamics of antimicrobial resistance and virulence plasmids in Salmonella typhimurium from animals.
Microbial Genomics 8 (8) 000826.

b) International conferences:

2
7th World One Health Congress. Singapore. 7-11 November 2022
FAO Fleming Fund Africa Planning Conference. Nairobi, Kenya. 07 December 2022

c) National conferences:

1
Fleming Fund: London Workshop. Virtual Event. 15 February 2022

d) Other (Provide website address or link to appropriate information):

National AMR report, published annually.

**TOR7: SCIENTIFIC AND TECHNICAL TRAINING**

17. Did your laboratory provide scientific and technical training to laboratory personnel from other WOAH Members?
Yes

a) Technical visit:
b) Seminars:

c) Hands-on training courses: 2

d) Internships (>1 month)

<table>
<thead>
<tr>
<th>Type of technical training provided (a, b, c or d)</th>
<th>Country of origin of the expert(s) provided with training</th>
<th>No. participants from the corresponding country</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>Ghana</td>
<td>1</td>
</tr>
<tr>
<td>C</td>
<td>Nigeria</td>
<td>1</td>
</tr>
</tbody>
</table>

**TOR8: QUALITY ASSURANCE**

18. Does your laboratory have a Quality Management System?

Yes

<table>
<thead>
<tr>
<th>Quality management system adopted</th>
<th>Certificate scan (PDF, JPG, PNG format)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISO17025</td>
<td>17025 certificate.pdf</td>
</tr>
</tbody>
</table>

19. Is your quality management system accredited?

Yes

<table>
<thead>
<tr>
<th>Test for which your laboratory is accredited</th>
<th>Accreditation body</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disc diffusion susceptibility test</td>
<td>UK Accreditation Service</td>
</tr>
</tbody>
</table>

20. Does your laboratory maintain a “biorisk management system” for the pathogen and the disease concerned?

Yes

Biorisk management applies for all bacterial pathogens which have acquired AMR.

**TOR9: SCIENTIFIC MEETINGS**

21. Did your laboratory organise scientific meetings related to the pathogen in question on behalf of WOAH?

No

22. Did your laboratory participate in scientific meetings related to the pathogen in question on behalf of WOAH?

No

**TOR10: NETWORK WITH WOAH REFERENCE LABORATORIES**

23. Did your laboratory exchange information with other WOAH Reference Laboratories designated for the same pathogen or disease?

Not applicable (only WOAH Reference Laboratory designated for the disease)

24. Are you a member of a network of WOAH Reference Laboratories designated for the same pathogen?

Not applicable (Only WOAH Reference Laboratory designated for the disease)

25. Did you organise or participate in inter-laboratory proficiency tests with WOAH Reference Laboratories designated for the same pathogen?

Not applicable (Only WOAH Reference Laboratory designated for the disease)

26. Did your laboratory collaborate with other WOAH Reference Laboratories for the same disease on scientific research projects for the diagnosis or control of the pathogen of interest?
Not applicable (Only WOAH Reference Laboratory designated for the disease)

**TOR11: OTHER INTERLABORATORY PROFICIENCY TESTING**

27. Did your laboratory organise or participate in inter-laboratory proficiency tests with laboratories other than WOAH Reference Laboratories for the same pathogen?

Yes

<table>
<thead>
<tr>
<th>Purpose for inter-laboratory test comparisons1</th>
<th>Role of your reference laboratory (organizer/participant)</th>
<th>No. participating laboratories</th>
<th>Region(s) of participating WOAH Member Countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>E. coli AMR proficiency testing scheme</td>
<td>Organiser</td>
<td>22</td>
<td>Africa, Asia and Pacific</td>
</tr>
<tr>
<td>AMR Proficiency Testing Scheme</td>
<td>Participant</td>
<td>28</td>
<td>Europe</td>
</tr>
<tr>
<td>Staphylococcus aureus proficiency testing scheme</td>
<td>Organiser</td>
<td>5</td>
<td>Europe</td>
</tr>
</tbody>
</table>

**TOR12: EXPERT CONSULTANTS**

28. Did your laboratory place expert consultants at the disposal of WOAH?

No

29. Additional comments regarding your report:

No