

Curriculum Vitae

Personal information **María Cristina Ballesteros Tercero**

Work experience

(Last 5 years)

1. Employer: **AEMPS**

Start date: 032023

End date:

Position: Scientific Assessor of the Biologicals-Immunologicals Area, Department of Veterinary Medicines.

Activities: Assessment of quality, safety & efficacy aspects of IVMP applications and quality aspects of biological VMPs for marketing authorisations and variations submitted via the national, mutual recognition, decentralised and centralised procedures. Assessment of investigational veterinary products and clinical trials. Member of the Methodology European Specialised Expert Community (ESEC) [Specialised Interest Areas: AI and Data Science, Biostatistics and Real-World Data]. Member of the Environmental Risk Assessment ESEC.

Country: Spain

2. Employer: **TRAGSATEC**

Start date: 042022

End date: 032023

Position: Member of the Coordination Unit of Spanish National Plan on AMR, Animal Health Area

Activities: Coordination of the Working Group on Availability of VMP, Coordination of the Working Group on Fish Farming, participation in the implementation of the European Antimicrobial Resistance Surveillance network in Veterinary medicine (EARS-Vet).

Country: Spain

3. Employer: **University of Bristol**

Start date: 012020

End date: 032022

Position: Senior Research Associate

Activities: Refinement of antibiotic resistance (ABR) data-driven research questions, informed by the scientific literature. Coordination of data and sample collection. Development of detailed statistical analysis plan. Data preparation for modelling/associational analysis. Statistical analysis using a range of advanced statistical methods such as multilevel models, regularisation, Bayesian inference and the like. Supervision of other researchers (undergraduate or post-graduate students, etc.) and liaison with students, research associates and researchers internationally. Presentation of the results of research at internal and external meetings and conferences. Participation in dissemination and impact events and activities.

Country: United Kingdom

4. Employer: **Royal Veterinary College**

Start date: 012019

End date: 012020

Position: Research Associate

Activities: Review of the literature on small ruminant reproduction performance indicators in Kenya and risk factors. Develop and pilot a survey questionnaire to small ruminant farmers in Kajiado, Kenya. Analysis of quantitative epidemiological data on prevalence of infectious diseases, reproduction efficiency parameters and risk factors. Development of farm level animal health economic models to assess financial gains and losses of changes in production performance.

Country: United Kingdom

Education and training

MSc in Veterinary Epidemiology

o Start date: 092016

o End date: 092018

o Research Project: *Investigation of "Diagnosis Not Reached" results from bovine samples submitted to the Animal and Plant Health Agency (APHA) laboratories, and their potential use for surveillance.*

o Qualification: Merit

o Organisation: Royal Veterinary College and The London School of Hygiene and Tropical Medicine

o Country: United Kingdom

Doctor of Philosophy

o Start date: 091999

o End date: 072004

o Dissertation title: *Study and characterization of Enterococcus spp. isolates from wild birds with special emphasis on antibiotic resistance patterns and genetic profiles*

o Qualification: Summa cum laude

o Organisation: Universidad Complutense de Madrid

o Country: Spain

Bachelor of Veterinary Science

o Start date: 091994

o End date: 071999

o Qualification: Honors

o Organisation: Universidad Complutense de Madrid

o Country: Spain

A) **Selected training** received (during the last 5 years):

Introduction to Data Visualisation and Web Applications Using R, Bristol Medical School short courses in Population Health Sciences (3-4 February 2025; 12 CPD hours).

Real-World Evidence in Pharmacoepidemiology, London School of Hygiene and Tropical Medicine (21-25 October 2024; 40 CPD hours)
Statistical methods applied to clinical trials and observational studies, Universidad Autónoma de Barcelona (May-October 2024; 2 ECTS)
Automated reports with R, Royal Statistical Society (15-16 July 2024; 6 CPD hours).

Bayesian Spatial and Spatio-Temporal Health Modelling 2024, Hasselt University (10-13 June 2024; 12 CPD hours).

Better Training for Safer Food: Training on Antimicrobial Resistance, European Commission (20-23 June 2022; 22 CPD hours). Training on Prevention and Control of Antimicrobial Resistance in the Context of an Overall "One Health" approach to prevention and control of infections and Reducing AMR.

Causal Inference in Epidemiology: Concepts and Methods, Bristol Medical School short courses in Population Health Sciences (7-9 June 2021; 21 CPD hours).

Economic Evaluation Modelling Using R, Bristol Medical School short courses in Population Health Sciences (19-20 April 2021; 12 CPD hours).

B) Selected training activities provided by **AEMPS**:

Veterinary Pharmacovigilance and quality defects (19-22 June 2023; 20 CPD hours).

Regulatory Affairs of VMP authorisation and other procedures (19-22 June 2023; 20 CPD hours).

Quality Management System at the Department of Veterinary Medicines (12-16 June 2023; 15 CPD hours).

C) Selected training activities provided by **EU Network Training Centre**:

Classification and data requirements for applications for VMPs intended for limited markets and eligible for authorisation under Article 23 of Regulation (EU) 2019/6 (11 December 2024; 8 CPD hours).

QWP 2024 training for quality assessors (4-5 October 2024; 15 CPD hours).

Introduction to Guideline on the development and data requirements of potency tests for veterinary cell-based therapy products and the relation to clinical efficacy (23 November 2023; 2 CPD hours).

Additional information

Publications

Publications in Academic Journals (peer-reviewed)

Arnold, J.-C., Onono, J., **Ballesteros, C.**, Aboge, G. and Alarcon, P. (2024) Modeling the economic performance of small ruminant pastoralist flocks and financial impact of changes in reproductive performance and mortalities in Kajiado county, Kenya. *Front. Sustain. Food Syst.* 8:1406864. doi: 10.3389/fsufs.2024.1406864

Mounsey, O., Marchetti, L., Parada, J., Alarcón, L.V., Aliverti, F., Avison, M.B., Ayala, C.S., **Ballesteros, C.**, Best, C.M., Bettridge, J., Buchamer, A., Buldain, D., Carranza, A., Corti Isgro, M., Demeritt, D., Escobar, M.P., Gortari Castillo, L., Jaureguiberry, M., Lucas, M.F., Madoz, L.V., Marconi, M.J., Moiso, N., Nievas, H.D., Ramirez Montes De Oca, M.A., Reding, C., Reyher, K.K., Vass, L., Williams, S., Giraudo, J., De La Sota, R.L., Mestorino, N., Moredó, F.A., Pellegrino, M. (2024). Genomic epidemiology of third-generation cephalosporin-resistant *Escherichia coli* from Argentinian pig and dairy farms reveals animal-specific patterns of co-resistance and resistance mechanisms. *Appl Environ Microbiol* 90:e01791-23. <https://doi.org/10.1128/aem.01791-23>

Lagrange, J., Amat, J.-P., **Ballesteros, C.**, Damborg, P., Grönthal, T., Haenni, M., Jouy, E., Kaspar, H., Kenny, K., Klein, B., Lupo, A., Madec, J.-Y., Salomonsen, C.M., Müller, E., Muñoz-Madero, C., Nilsson, O., Norström, M., Nykäsenoja, S., Overesch, G., Pedersen, K., Pohjanvirta, T., Slowey, R., Teixeira-Justo, C.T., Urdahl, A.M., Zafeiridis, C., Zini, E., Cazeau, G., Jarrige, N., Collineau, L. and on behalf of the EARS-Vet network (2023) Pilot testing the EARS-Vet surveillance network for antibiotic resistance in bacterial pathogens from animals in the EU/EEA. *Front. Microbiol.* 14:1188423. doi: 10.3389/fmicb.2023.1188423

Ballesteros, C., Mwasi, A., Mungai, E., Ibarahim, A., Thurana_McKeever, C., Aboge, G. O., Onono, J. O. & Pablo, A. (2021) Developing and validating a rapid assessment tool for small ruminant reproduction and production in pastoralist flocks in Kajiado, Kenya. *Veterinary and Animal Science.* 13 (100186). <https://doi.org/10.1016/j.vas.2021.100186>

Zhang, S. X., Carmena, D., **Ballesteros, C.**, Yang, C. L., Chen, J. X., Chu, Y. H., Yu, Y. F., Wu, X. P., Tian, L. G. & Serrano, E. (2021) Symptomatic and Asymptomatic Protist Infections in Hospital Inpatients in Southwestern China. *Pathogens.* 10 (6): 684. doi.org/10.3390/pathogens10060684

Ballesteros, C., Foddai, A., Smith, R. P., Stevens, K. & Drewe, J. A. (2020) Risk factor analysis for "diagnosis not reached" results from bovine samples submitted to British veterinary laboratories in 2013–2017. *Preventive Veterinary Medicine.* 182 (105099). doi.org/10.1016/j.prevetmed.2020.105099

Marco, I., Mentaberre, G., **Ballesteros, C.**, Vischof, D. F., Lavín, S. & Viley, E. M. (2009) First Report of *Mycoplasma conjunctivae* from Wild Caprinae with Infectious Keratoconjunctivitis in the Pyrenees (NE Spain). *Journal of Wildlife Diseases.* 45 (1): 238_241. doi.org/10.7589/0090_3558_45.1.238

Briones, V., Téllez, S., Goyache, J., **Ballesteros, C.**, Lanzarot, M. D. P., Domínguez, L. & Fernández_Garayzábal, J. F. (2004) *Salmonella* diversity associated with wild reptiles and amphibians in Spain. *Environmental Microbiology.* 6 (8): 686_871. doi.org/10.1111/j.1462_2920.2004.00631.x

Moreno, J., Briones, V., **Ballesteros, C.**, Merino, S., Sanz, J. J. & Tomás, G. (2003) Beneficial Effects of Cloacal Bacteria on Growth and Fledging Size in Nestling Pied Flycatchers (*Ficedula Hypoleuca*) in Spain. *Auk* 120(3): 784_790 <https://doi.org/10.1093/auk/120.3.784>

Goyache, J., **Ballesteros, C.**, Vela, A. I., Collins, M. D., Briones, V., Hutson, R. A., Potti, J., García_Borboroglu, P., Domínguez, L. & Fernández_Garayzábal, J. F. (2003) *Corynebacterium spheisci* sp. nov., isolated from wild penguins. *International Journal of Systematic and Evolutionary Microbiology.* 53: 1009_1012 https://doi.org/10.1099/ijs.0.02502_0

Goyache, J., Vela, A. I., Collins, M. D., **Ballesteros, C.**, Briones, V., Moreno, J., Yorio, P., Domínguez, L., Hutson, R. & Fernández_Garayzábal, J. F. (2003) *Corynebacterium spheiscorum* sp. nov., isolated from the cloacae of wild penguins. *International Journal of Systematic and Evolutionary Microbiology.* 53: 43_46. doi.org/10.1099/ijs.0.02343_0

Potti, J., Moreno, J., Yorio, P., Briones, V., García_Borboroglu, P., Villar, S. & **Ballesteros, C.** (2002) Bacteria divert

resources from growth for magellanic penguin chicks. Ecology Letters. 5 (6): 709_714. doi.org/10.1046/j.1461_0248.2002.00375.x

Téllez, S., Briones, V., González, S., García_Peña, F. J., Altimira, J., Vela, A. I., Blanco, M. M., **Ballesteros, C.**, Fernández_Garayzábal, J. F., Domínguez, L. & Goyache, J. (2002) Salmonella septicaemia in a beauty snake (Elaphe taeniura taeniura). Veterinary Record. 151(1): 28_29. doi.org/10.1136/vr.151.1.28

Goyache, J., Vela, A. I., Gibello, A., Blanco, M. M., Briones, V., González, S., Téllez, S., **Ballesteros, C.**, Domínguez, L. & Fernández_Garayzábal, J. F. (2001) Lactococcus lactis subsp. lactis Infection in Waterfowl: First Confirmation in Animals. Emerging Infectious Diseases. 5(6): 884_886. doi.org/10.3201/eid0705.017519

Other publications:

Spanish National Action Plan on AMR (PRAN), French Agency for Veterinary Medicinal Products (ANMV), Portuguese General Directorate of Food and Veterinary (DGAV), and Irish Health Products Regulatory Authority (HPRA). 2024. *Availability of Antimicrobial Medicinal Products and Alternatives to their Use*. NIPO (134-24-012-3). <https://resistenciaantibioticos.es/es/publicaciones/availability-antimicrobial-medicinal-products-and-alternatives-their-use> [Contribution as co-author]

Projects

Research Associate in the following research projects:

FARMS_SAFE: Future_proofing Antibacterial resistance Risk Management Surveillance and Stewardship in the Argentinian Farming Environment. Department of Health and Social Care of England, UK Research and Innovation, UK Aid and Consejo Nacional de Investigaciones Científicas y Técnicas de Argentina (CONICET) (December 2020_May 2023)

OH_DART: One Health drivers of antibacterial resistance in Thailand funded by Tackling AMR _ A Cross Council Initiative MRC/DoH_led 'AMR in a Global Context' development and full awards. Role: Data collation, cleaning, manipulation (November 2020_April 2021)

Strategy for training of veterinary para_professionals on Foot_and_Mouth Disease and similar transboundary animal diseases. Food and Agriculture Organization of the United Nations (2019)

BB/S004866/1 Assessment and economic evaluation of sheep reproduction efficiency, challenges and mitigation strategies in Kajiado, Kenya. Biotechnology and Biological Sciences Research Council (2019)

Evaluation and diagnosis of tuberculosis and paratuberculosis. Epidemiology and reservoirs in wildlife species in Madrid. Government of the Madrid Region (2004) VII Programme of veterinary surveillance on antimicrobial resistance and zoonotic pathogens. Ministry of Agriculture, Fisheries and Food, Spain (2003)

European Wildlife Diseases Network Concerted Action FAIR6 CT98_4361 Concerted Action for the Establishment of a European Network on Wildlife as Reservoirs of Pathogens including Zoonoses (2000_2001)

Principal Investigator in the project *Development and implementation of the first e-Veterinary Vade Mecum in Argentina*. Elizabeth Blackwell Institute Global Public Health research strand. 7/2021-3/2022.

Memberships

1. Contribution to relevant conferences and meetings as **keynote speaker** (last 5 years):

i) Workshop on Antiparasitic veterinary drugs: From the bench to the market crossing (carefully) the environment - Cost Action CA21111 One Health drugs against parasitic vector borne diseases in Europe and beyond, 2024: "We have a promising Veterinary Medicine candidate under research, what's next?"

ii) Workshop on Veterinary Medicines: improving the availability of antimicrobials and their alternatives - PRAN, Spain, 2022: "Challenges, opportunities and next steps to improve the availability of antimicrobials and their alternatives".

iii) 2nd National Workshop of the Universidad Nacional Villa Maria [II Jornada Nacional de Agroalimentos y Sustentabilidad - Universidad Nacional Villa Maria]. Argentina, 2021: "Risks associated with antimicrobial use in animal production".

iv) Annual Research Workshop of the Universidad del Salvador [VII Jornadas Internas del Instituto de Investigación en Veterinaria, Facultad de Ciencias Agrarias y Veterinarias - Universidad del Salvador], Argentina, 2021: *FARMS-SAFE project introduction*.

v) Association for Milk Quality, Argentina, 2021: "Riesgos asociados al uso de antimicrobianos en producción animal" (Risks associated with antimicrobial use in animal production).

vi) First Symposium on New Technologies and Tools for Food Safety (INTA, Argentina), 2021: "Uso de antimicrobianos en producción lechera en Argentina: contexto actual y riesgos asociados" (Use of antimicrobials in dairy farms: current context and potential risks).

vii) 5th International Conference on Responsible Use of Antibiotics in Animals Conference, 2021: "Understanding the drivers for antimicrobial use and resistance in the Argentinian pig and dairy farming environments".

viii) Surveillance Intelligence Forum (Animal and Plant Health Agency), 2019: "Investigation of "Diagnosis Not Reached" results from bovine samples submitted to the APHA laboratories".

2. Guest Editor of Animals Special Issue 'Antibiotic Usage in Dairy farms', 2021.

3. Peer reviewer for Tropical Animal Health and Production (2020-2021).

Other Relevant Information

Teaching:

Associate Fellowship of the HEA (Higher Education Academy). This title recognizes my capacity in teaching/supporting learning experiences in higher education. I have experience in undergraduate, postgraduate and professional teaching, including academic supervision and development of course materials about quantitative methods for evidence-based veterinary medicine.

Besides that, I completed the course **Teaching and Learning in Higher Education** at the RVC in 2019 and I am accredited as an **Associate Lecturer** by the National Quality Assessment and Accreditation Agency of Spain in 2011.