

GROUP NAME: BACTERIAL ZONNOSES: BRUCELLOSIS, SALMONELLOSIS, AND STREPTOCOCCAL DISEASE (ZOOBAC)

CODE: A2I_23R



The general aim of the ZooBac group is to generate knowledge and develop tools to facilitate the diagnostic, control, and prevention of particularly relevant bacterial zoonoses. Currently coordinated by Prof. M. Muñoz (CITA), the group has been working on lines of research in animal brucellosis since 1982. In 2006, with the arrival of R.C Mainar to CITA (he is currently professor at UNIZAR), the group expanded its research to cover the epidemiology, diagnostic, and control of porcine salmonellosis. A further line of research in recent years has consisted in studying antibiotic resistance marker bacteria in livestock (headed at CITA by C. Marín). With the incorporation of the two UNIZAR professors J. Arenas and M. C. Arnal in 2021, we expanded our activity to the study of streptococcal zoonotic diseases, along with other diseases that affect wildlife.

LINES OF RESEARCH

- In the areas of brucellosis and streptococcal disease, we conduct research for the development of next-generation vaccines and specific diagnostic methods. By applying genetic engineering and conducting studies on animal models, we investigate bacterial virulence factors and host-pathogen interactions. We develop vaccines, evaluate their efficiency, and endeavor to minimize their diagnostic interference. We also study non-vaccine strategies for the control and eradication of these pathogens.
- In the area of porcine salmonellosis, we study the epidemiological factors along with the wild species that play a relevant role in the transmission and persistence of the infection, as well as the incidence of resistance to antibiotics, along with control strategies proposed as alternatives to the use of antibiotics. .
- We study the presence of antimicrobial-resistant bacteria in Aragonese livestock with the purpose of reducing their repercussions on public health
- We actively collaborate with the Aragon Departments of Agriculture and of the Environment in the implementation of the government eradication and control campaign against animal brucellosis, and in the diagnostic surveillance of infectious diseases that affect wildlife.
- We also organize international missions for the promotion of appropriate strategies for the diagnosis and control of brucellosis in endemic countries

NOTABLE PROJECTS

- BruDIsafe: Ovine brucellosis: *B. melitensis* and *B. ovis* safe vaccines, DIVA strategies and diagnostic tests. RETOS-Investigación (2020–2024)
- REPRODIVAC: Next-generation vaccines and diagnostics to prevent livestock reproductive diseases of worldwide impact. HORIZON-CL6-2021-FARM2FORK (2022-2027)
- TRANSIT: Analysis of transference and resistances to antibiotics shown by a range of human pathogens including *Streptococcus suis*. Evaluation of innovative alternatives for prevention. Líneas Prioritarias de I+D+i del Gobierno de Aragón (2022-2024).
- ABC-VACCINESS: Evaluation of the potential of ABC receptors for the development of new vaccines against *streptococcus suis*. RETOS-Investigación (2021-2023)
- GANARAM: Livestock production systems in Aragon and antimicrobial resistances that affect human health. NextGeneration-UE (2022-2025).
- Brucellosis Vaccine Prize (GalvMed).

MEMBERS

Pilar M. Muñoz Álvaro (CITA) (pmmunnoz@aragon.es)

Jesús A. Arenas Busto (UNIZAR)

Clara M. Marín Alcalá (CITA)

Raúl C. Mainar Jaime (UNIZAR)

M. Cruz Arnal Barrera (UNIZAR)

Montse Barberán Pelegrín (UNIZAR)

Sara Andrés Barranco (CITA)

M. Jesús de Miguel López (CITA)

<https://ia2.unizar.es/>

